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Craig Roepke
Interstate Stream Commission

April 29, 2011

Dear Craig:

On behalf of my colleagues, I am submitting this preliminary Tier-1 proposal for consideration by the committee overseeing the Arizona Water Settlement Act.

Our proposal is focused on water utilization associated with geothermal power generation along the San Francisco River Watershed in New Mexico. There are numerous hot springs along the San Francisco River. We plan to focus on the Frisco hot springs area where geochemical geothermometers and hot spring discharges suggest reservoir temperatures between 120-160 ^{o}C. These hot springs are in close proximity to electrical transmission lines to Arizona making this project feasible. The hot springs are located on a mix of private, BLM and US Forest Service lands. We propose to work with ORMAT to install a 10MW power plant, which can use large quantities of water for evaporative cooling. Before a power plant can be installed, a feasibility study must be performed to "prove the resource". This will involve field work in which we will conduct surface geophyiscal surveys (resistivity, SP, DTS) and collect geochemical based geothermometry from all hot springs in the area to estimate deep reservoir temperatures. Ultimately, several deep test wells will have to be drilled to demonstrate that an aquifer exists with sufficient flow rates and temperatures to justify the significant investment of installing a power plant. Our proposal calls for drilling one test well to and to conduct a 7-day aquifer test.

We have assembled a team of some of the most qualified experts in geothermal energy in the State/Nation. Jim Witcher is a leading authority of geothermal energy in New Mexico. He has drilled dozens of geothermal wells and has published numerous articles on geothermal energy in New Mexico (see reference list at the end of this letter). Fred Phillips, Andy Campbell and I are currently conducting a state wide geothermal assessment for the New Mexico Energy, Minerals & Natural Resources Department. I have worked on geothermal systems and hydrothermal modeling with Carl Gable at Los Alamos National Labs for a number of years (see reference list). We have developed a powerful, single-phase geothermal simulation model (PGOEFE) with unique grid generation capabilities using the program LaGrit. ORMAT is one of the most viable geothermal company in existence today (http://www.ormat.com). They have pioneered the development of binary geothermal power plants. They have designed and installed geothermal power plants all over the world. One of my former doctoral students (Lara Owens) works at ORMAT in Reno Nevada.

Sincerely,

Mark Person

Mark Person
Professor of Hydrology
NM Tech

List of Publications on Geothermal Energy by Proposing Team

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Witcher, J., 2002f, J&K Growers, Las Cruces NM, Oregon Institute of Technology-*Geo Heat Center Bulletin*, v. 23(4), p. 45.

Witcher, J., 2002g, Faywood Hot Springs, Oregon Institute of Technology-*Geo Heat Center Bulletin*, v. 23(4), p. 46.

Witcher, J., 2002h, Ojo Caliente – America's Oldest Spa, Oregon Institute of Technology-*Geo Heat Center Bulletin*, v. 23(4), p. 47.

Witcher, J., Schoenmacker, R., Polka, R., and R. Cunniff, 2002, Geothermal Energy at New Mexico State University in Las Curces, Oregon Institute of Technology-*Geo Heat Center Bulletin*, v. 23(4), p. 30-36.