

## **NOSA EVALUATES OIL SHALE WATER USAGE**

The National Oil Shale Association (NOSA) has conducted an evaluation of the estimated water usage for current oil shale projects. NOSA requested input from developers and received confidential input from several. The input was summarized by insitu and surface technologies and averaged in each of the two categories.

This is a very complicated subject because there are so many variables to consider. The future is uncertain as to which technologies that will be employed as most are in the R,D&D phases and do not have data from commercial demonstration scale facilities. The water estimated to be used by the technologies being developed varies widely. Uncertainties such as the following complicate the evaluation: will shale oil upgrading will be conducted on-site or remote from the production facility; will flushing be conducted for insitu retorts (or will retorting be conducted in a non-aquifer zone); does spent shale from surface retorts require significant amounts of water for stabilization (or does the technology produce spent shale of a more stable character without significant addition of water); is electric heating the dominant insitu source of heat or will shale gas or other fuels be used; and what degree of hydro-treatment is anticipated to produce either a syncrude or transportation fuels on the site?

Therefore the results of this analysis are preliminary, but considered better than rules of thumb that have come down from past estimates, and are considered appropriate for water planning purposes.

Surface Retorting 2.0 Bbls water/Bbl of shale oil (B/B), or 14 gallons of water/MMBTU of energy produced\*

Insitu Retorting 1.7 Bbls water Bbl of shale oil (B/B), or 12 gallons of water/MMBTU of energy produced\*

\*Figures based upon Shale Oil upgrading off site. If upgrading is included on-site add 0.6 to 1.6 B/B (average of 1.1 B/B).