EXPLORATION DRILLING:
RESONANT SONIC DRILLING

One of the numerous advantages of a sonic rig is its ability to make the soil fluidize.

While the soil is fluidized a controlled water flow will push the material out of the way. The sonic head is based upon the principle of high-frequency vibration. The hydraulic motors on the exterior of the head oscillate off set internal weights at speeds reaching 5,000 rpm. As a result of the weights being off set, a vibration in excess of 140 Hz is created.

CONSTANT CASING ADVANCEMENT
The sonic advantage to this method is its ability to constantly case the borehole after it advances the sample tooling to the next sample interval. If a sample is not required, it will further advance the core barrel and follow it with the casing, keeping a constant open and clean hole. This minimizes the risk of lodged tooling below ground surface. If the override casing begins to get tight, the sonic is capable of drilling a larger override casing to reduce the skin friction on the down hole tooling without removal of the already installed drill steel. This allows the sonic to maximize its depth capability ranging from 250 to over 500 feet, depending on the formation.

STRENGTHS OF SONIC DRILLING
+ Constant open and clean hole
+ Strict environmental projects — isolate contaminated zones
+ Efficient drilling in aggregate, sand, gravel and karst formations
+ Separate, temporary casings
+ No drilling fluids necessary

SOLUTIONS
+ Drilling in heap leach piles
+ Production and monitoring wells — mining, industrial, environmental
+ Nested wells
+ Vertical water sampling
+ Isolating aquitards
+ Aggregate, sand and gravel exploration

METHODS AND SIZES
Layne has two styles of sonic drill rigs. One of the rigs, a rubber track-mounted rig, was designed and built by Layne to operate in tight conditions. Layne also provides truck-mounted drill rigs that are used to maximize production due to their 26-foot stroke mast. Both are capable of larger diameter drilling, up to 12 inches.