

# Gravel Mining Impacts on a Municipal Drinking Water Supply

## Carmel, Indiana

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### Key Project Areas

Groundwater Modeling

Water Quality

Source Water Protection

*The change in heads between current conditions and when the gravel pits are actively mined.*

Carmel Utilities supplies water to one of the fastest growing counties in Indiana; consequently, it is critical that the city protects the underlying aquifer from contamination. However, as the county grows, so does demand for gravel and aggregates for roads, bridges, and buildings. A local mining company that has mined near the Utility's water supply for several years proposed expanding its operations and opening pits in new locations to satisfy the growing demand for aggregates.

Carmel Utilities hired Layne to determine whether the new mining activity would affect its drinking-water supply. We used groundwater models to understand the change in the aquifer's water levels near the well fields and changes in the source of the water pumped by the well fields. We examined the impacts both during and after mining.

Layne determined that additional mining could reduce groundwater levels while the mines were active and that there would be an increase in the amount of drinking water coming from abandoned gravel pits and ponds. We developed an extensive monitoring well program for evaluating the interaction between inactive pits and production wells.