

AGGREGATE MINE ERP COMPLIANCE

Services Provided

- Water Resource Evaluation
- Hydrologic Data Collection
- Saltwater Intrusion Modeling
- Permit Compliance

Client

Private Industry

SDI developed a hydrologic field investigation and saltwater intrusion model as part of a work plan for compliance with an aggregate mine's environmental resource permit (ERP). The study assessed groundwater quality in the vicinity of the mine and addressed the potential for saltwater intrusion from future mining activities. The model separated natural hydrologic influences from anthropogenic influences.

Permit Compliance

Florida DEP directed that a hydrologic investigation be conducted to ensure that planned mine expansions would not cause saltwater intrusion and potentially impact water quality in nearby domestic wells. The results of the study were also being used to support the mine's Water Use Permit renewal.

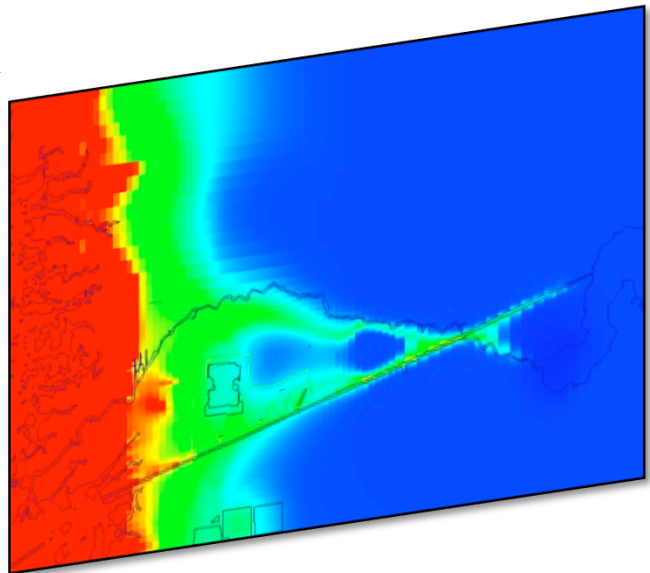
Water Resource Evaluation

The aggregate mine is located in a complex hydrogeological area near the gulf coast. Sources of chloride in the vicinity of the mine include the coast and several large surface water features. Groundwater discharging at the coast from the lower portions of the upper Floridan aquifer is a source of sulfates.

SDI assisted with setting up the data collection program and with aquifer testing to develop the hydrogeological framework. Historical data were reviewed to assess the horizontal and vertical movements of total dissolved solids, chloride, and sulfates.

Variable-Density SEAWAT Modeling

New monitor wells were installed to provide the data for the groundwater model calibration. In addition, three deep borings were drilled to determine the depth to the Middle Confining Unit of the Floridan aquifer and for vertical assessment of lithology, water levels and water quality.



SDI utilized the USGS saltwater intrusion model SEAWAT 2000 to develop a transient 3-dimensional variable-density groundwater model to predict potential changes in total dissolved solids, chloride, and sulfate concentrations in groundwater from the current and proposed mine operations. Modeling indicated that expanding the mine would not cause adverse water quality changes off mine property.



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