Calcium Carbonate Scaling

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Several students who took CEE 6530 can analyze how much acid must be added to the Las Vegas water to move it away from supersaturation and to prevent precipitation in the distribution system. This task will be a one or two week task. The chemical analysis should be done using Mathcad.

The composition of the groundwater should be assumed to be rainwater that is in equilibrium with calcium carbonate at a given input temperature. Thus the initial pH of the groundwater should be a calculated value. The temperature of the water in the distribution system is another important input. The system of equations should calculate the amount of acid that must be added to keep the water from precipitating. The required dose of aluminum sulfate should also be calculated. It may be possible to create a simple algebraic equation to solve this problem. Explore the options for creating a simple equation because simple equations provide insight into what is controlling the process.

SANAA conducted studies on the scaling problem and this report has water characteristics and an analysis of the saturation index. A report on the composition of the scalel provides further evidence that the scale is calcium carbonate that releases carbon dioxide on ignition leaving Calcium oxide behind.
SANAA also provided design recommendations for an AguaClara water treatment plant including jar test analysis and dosing recommendations
Professor Lion has provided an example solution.
Recommendations for monitoring scaling.

Current Research

Members

Andrea Castro
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Documents

	Challenges	Tasks	Teach-In	Presentation	Final Report
Spring '13		? Unknown Attachment			? Unknown Attachment