http://www.sciencedirect.com/science/journal/00221...

Abstract/Summary

Significant amounts of fluoride are found in the abstracted groundwater of San Luis Potosí. This groundwater withdrawal induces a cold, low-fluoride flow as well as deeper thermal fluoride-rich flow in various proportions. Flow mixing takes place depending on the abstraction regime, local hydrogeology, and borehole construction design and operation. Fluoride concentrations (≈3.7 mg l−1) could become higher still, in time and space, if the input of regional fluoride-rich water to the abstraction boreholes is enhanced. It is suggested that by controlling the abstraction well-head water temperature at 28–30 °C, a pumped water mixture with a fluoride content close to the maximum drinking water standard of 1.5 mg l−1 will be produced. Further, new boreholes and those already operating could take advantage of fluoride solubility controls to reduce the F concentration in the abstracted water by considering lithology and borehole construction design in order to regulate groundwater flow conditions.