

ABSTRACT

Salts and nutrients are common contaminants in urban groundwater systems, and at certain levels these pollutants have been associated with adverse effects on agriculture, corrosion and mineral deposits on industrial piping, a decrease in the drinkability of water, and serious health problems. Groundwater pollution can stem from both natural and anthropogenic sources and given the high costs of remediation, groundwater managers are tasked with monitoring groundwater contamination and controlling its sources. With its large population, close proximity to the coastline and arid climate, Los Angeles County provides an important study area for the spatial and temporal analysis of salt and nutrient constituents across each of its 10 groundwater basins. This thesis study utilizes the California Regional Water Quality Control Board data set consisting of groundwater quality samples drawn from underground storage tanks, site clean-up programs and land disposal sites to determine the spatiotemporal patterns across each basin. Results show that no spatiotemporal pattern was recognized, except that the salt constituents routinely exceeded the respective Basin Plan limits (unlike the nutrient constituents). In the end, more conclusive results could be determined with additional analysis and modeling that was better designed for sample collection and better controlled over the locations and depths at which the samples were taken.