

## **NEBRASKA'S NATURAL RESOURCES DISTRICTS: EXPERIENCES IN MANAGING NITRATE IN GROUND WATER**

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### **Abstract**

Nebraska's 23 Natural Resources Districts (NRDs or Districts) were formed in 1972, and are quasi-local entities which are charged with various responsibilities in managing the State's soil and water resources. The Districts are governed by locally-elected Boards of Directors, managed by professional staff, and have independent taxing authority. They have broad responsibilities in ground water quantity and quality management, and one of the major efforts NRDs have engaged in over the past several decades has been the monitoring and management of nonpoint source (NPS) ground water contamination by nitrate. Monitoring of nitrate in ground water is done independently and in cooperation with other local, state, and federal entities, and involves obtaining samples from a variety of well types, especially irrigation and dedicated monitoring wells. This monitoring information, including nitrate and pesticide results, is managed in a statewide database supported by several state agencies, and is available online at [www.dnr.ne.gov](http://www.dnr.ne.gov).

Natural Resources Districts' programs for monitoring and managing ground water quality are contained in state-approved Ground Water Management Plans (GWMPs), which set out general goals as well as specific "triggers" for management actions. These triggers vary by District, but are typically set at a percentage of the federal Maximum Contaminant Level (MCL) for nitrate-nitrogen, which is 10 mg/l. As nitrate levels increase over an area, this will result in increasing levels of management actions by the NRD. The Districts' authorities for managing ground water quality are broadly laid out in Nebraska statute, but for nitrate management some of the most common actions or requirements include required attendance at education/certification classes, required monitoring of soil and/or irrigation water for residual nitrate, restrictions on timing or methods of fertilizer applications, and other best management practices. Ongoing monitoring of ground water nitrate levels has shown some possible indications of positive impact on ground water quality, but the complexity of the ground water systems involved as well as the effect of residual nitrate buildup in the unsaturated zone makes it difficult to evaluate overall progress.

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