Ground-Water Protection and Manure Management

Matthew Culp[1]

Confinement livestock-production practices in Iowa produce large volumes of manure. The manure is stored in large earthen lagoons or basins for treatment or containment prior to disposal. Animal confinement owner/operators are required to submit a Manure Management Plan to the Iowa Department of Natural Resources (DNR). These plans describe method(s) for manure disposal. The most common method of manure disposal proposed is to apply it on agricultural land as a nutrient resource. The concentration of livestock, related waste, and land application of manure has increased concern for ground-water protection from chemicals and pathogens found in animal manure. Specific concerns include seepage of manure-derived contaminants from lagoons and basins in vulnerable ground-water areas. To evaluate the potential for ground-water contamination, the Iowa Geological Survey Bureau conducts site assessments of proposed lagoon, basin, or manure-application areas.

A vital tool used by the Iowa Geological Survey Bureau in conducting an assessment is the application of Geographic Information System (GIS) technology. The GIS contains a wide range of geologic and cultural data (called themes), which can be layered together in map form to examine a particular area or site. These data themes can be easily retrieved from computerized databases and shown on the computer screen to allow for comparison and interpretation of the geographic features and hydrogeologic conditions of any location. Being able to bring together the most accurate, up-to-date information available from numerous sources of data is a state-of-the-art tool that is very efficient and useful in assisting the geologist to evaluate a site's potential for ground-water contamination.

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[1]Iowa Department of Natural Resources, Geological Survey Bureau, Henry Wallace Building, East 9th and Grand, Des Moines, IA 50319-0034 (mculp@max.state.ia.us)