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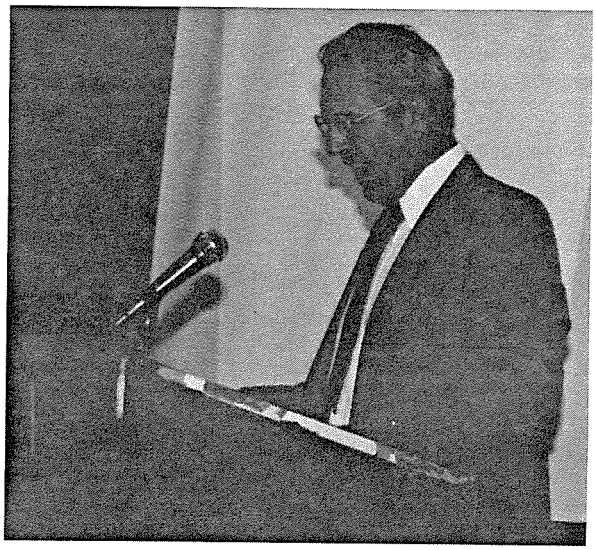

AN OVERVIEW OF STATE AND FEDERAL LEGISLATION DESIGNED TO PROTECT GROUNDWATER FROM CONTAMINATION

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NATURE OF THE PROBLEM

Most of us in the water resources field have no difficulty in thinking of good examples of groundwater pollution in New Mexico. A better way of stating the problem is that none of us would have any real difficulty thinking of some bad examples of groundwater pollution in the state. The latest count of known instances is on the order of 1500 separate sites according to the March 1990 New Mexico Water Quality Control Commission report entitled, *Water Quality and Water Pollution in New Mexico*. The sources and nature of the contaminants are quite diverse as is the affected aquifer's hydrogeology. The pollution has been the result of:

- casing failures in oil wells
- oil-field produced salt-water discharged into ponds
- seepage from tailings ponds used to store mill-waters from the mineral industry
- tailings spills accidentally discharged into dry arroyos
- metal cleaning operations at federal installations
- improper disposal of liquid wastes in landfills
- over-pumping of aquifers used for irrigated agriculture
- seepage from manure ponds at dairies
- leakage from underground storage tanks
- tens of thousands of septic tanks in the state
- almost every other imaginable cause and source

New Mexico is probably not much different than most states. When asked to rank their principal sources of groundwater contamination, 33 states listed underground storage tanks, 25 gave municipal landfills as a major source, 22 cited agricultural activities, and 20 states identified septic tanks as a prime source (USEPA 1988, State Section 305(b) CWA reports).

A pattern of groundwater contamination prevails throughout America: one-sixth of the public water supplies in the U.S. show contamination from volatile organics, pesticide residues, and/or nitrates from septic tanks or agricultural activities. While most of the contaminants are at levels far below those of serious public health concern, the susceptibility of fresh-water aquifers to pollution has been demonstrated across the country. For example, based on a 1981 Environmental Protection Agency (EPA) survey reported in *Ground Water Supply Survey*, about 10 percent of the community water supply wells contain pollution from one or more of the dozen or so volatile organic compounds that are in common commercial and industrial use (USEPA 1983).

A recent study of agriculture-related groundwater pollution from nitrates and pesticides showed a similar, but less severe pattern. Nitrate concentrations greater than 10 mg/L (nitrates as nitrogen) were found in 1.2 percent of community wells and residues of at least one pesticide were found in 10 percent of these wells (AWWA 1990).

If the levels of these contaminants are typically quite low (below safe drinking water levels), why the concern? For two reasons: over 90 percent of New Mexico's population takes its drinking water from a groundwater source, and aquifer restoration is a costly and almost impossible task. For these, and a host of other reasons, the U.S. Congress and the New Mexico Legislature have each enacted a series of measures over the past fifteen years designed to provide a comprehensive state and national program to limit and control groundwater pollution.

Others might take a different view and say that there is no single comprehensive piece of federal legislation dedicated to groundwater-source protection and that what we have is a complex patchwork of state and federal laws. While not being "one law," taken in its totality in so far as New Mexico is concerned, the system of laws and rules that are in effect are comprehensive in their coverage of potential sources of aquifer pollution. The result is an interlocking program founded on four basic elements:

- state supremacy in the management, planning, and allocation of its groundwater resources;
- delegation of federal programs and powers related to groundwater protection to the states;
- a system of state and federal regulations that establish permits for the siting, construction, operation, and/or termination of operation of potential sources of pollution; and
- monitoring of public water supply sources and potential pollution sources, notification of accidental releases of pollutants, and notification of the contamination of a public water supply.

FEDERAL LEGISLATION

The Clean Water Act

The 1972 Federal Water Pollution Control Act has been amended a number of times since initial passage, but it remains a comprehensive system of controls that was designed to end surface-water pollution. The act has been utilized effectively by the EPA to achieve its goals. While there is no single section of the law that deals with groundwater protection, most of the programs act to limit potential sources of aquifer contamination. For example, the use of "best available control technology" is required for all point sources of effluent discharge. The pre-treatment of industrial wastewaters is required prior to their discharge into a municipal sewer system. Through a permit system, siting of all wastewater treatment plants must be approved. Each state must adopt water quality standards that limit the concentration of toxics in surface streams. Monitoring and permits are required for major sources of storm-water runoff. A "no net loss" policy of wetlands has been adopted. The overall effect has been to reduce greatly the production and discharge of industrial chemicals that might otherwise have resulted in groundwater pollution.

The Safe Drinking Water Act

This 1974 federal law has had a major impact in limiting groundwater contamination. Parts of the act that have contributed to the protection of groundwater are:

- the sole-source aquifer protection program that provides for a review and approval process for all federal activities on the recharge zone of a groundwater system that is found to be the only available water supply source for a community;
- the rural water supply study that made funds available to sample water supplies in small villages across the country, giving a comprehensive view of the nature of the nation's groundwater contamination problems;
- the protection of all groundwater aquifers where the concentration of total dissolved solids is less than 10,000 mg/L, as future potential sources for public water supplies;
- the underground injection program that provides for a permit system, monitoring, and inspection of wells that discharge pollutants into subsurface aquifers;
- the siting and monitoring requirements placed on all public water supply systems; and
- the national groundwater protection strategy that was adopted by EPA in an effort to stimulate interest at the state level in the adoption of pollution prevention programs.

The Resource Conservation and Recovery Act

Enacted in 1976, the Resource Conservation and Recovery Act (RCRA) has been, by far, the most important act passed by the U.S. Congress to insure control of potential groundwater pollutants. When the law was initially passed, it was thought that the act's greatest impact would be to control and/or eliminate the discharge of industrial chemicals into pits, ponds and lagoons. The act certainly has achieved that goal as there are now only a few unlined surface impoundments in existence that receive hazardous wastes. In the mid 1970s, there were over 250,000 surface industrial-waste ponds in the U.S. The permit process and site review provided under RCRA, and the site closure and post-closure requirements are potentially so expensive, that the major effect of the law has been to reduce the volume and toxicity of the wastes generated in America and to encourage the recycling of these materials. RCRA has become a resource conservation act. The act's reporting requirements stipulate that EPA must be notified when "reportable quantities" of a hazardous material are spilled or lost; when community representatives use and ship "planning " quantities of a hazardous material; and when manifest is used to track the movement of hazardous materials. These requirements have made serious groundwater contamination much more unlikely. The establishment of action levels for emergency cleanup is another important element in the RCRA regulations.

Perhaps the most important element is a ban on a very large number of toxic chemicals (over 450) from disposal on or near the land or to injection wells. This EPA rule will require EPA treatment for over 40 million tons of hazardous wastes that traditionally have been sent to landfills, lagoons, and injection wells.

A few RCRA regulations will limit the opportunity for groundwater pollution:

- groundwater protection and monitoring
  40 CFR 264.90-.109
- landfill closure and post-closure rules
  40 CFR 264.110-.120
- rules on containers and tanks
  40 CFR 264.170-.199
- monitoring rules on surface impoundments
  40 CFR 264.220-.249
- operation, siting and design of landfills
  40 CFR 264.300-.339
- land treatment and disposal rules
- 40 CFR 264.270-.299

The Underground Storage Tank Act

Because of the many metal storage tanks located underground and containing products such as gasoline and farm and industrial chemicals, Congress passed an act requiring that existing tanks be monitored. This assists in the detection of leakage and the eventual replacement and upgrading of tanks (Federal Register Vol. 53, No. -185, Sept.23,1988) so that by 1996:

- all underground tanks will have corrosion protection;
- all tanks will be equipped with spill and overfill equipment; and
- monthly monitoring will be provided to detect releases.

Superfund (Comprehensive Environmental Response, Compensation and Liability Act)

The so-called "Superfund" was initiated in 1981 as a tax on industrial chemicals and oil to provide funds for the cleanup of the four to five hundred abandoned hazardous waste disposal sites initially identified. In the 10 years since the program was started, this number has increased to over 10,000. While many sites have been investigated and some remedial action taken, the majority remain as potential groundwater pollution problems that will take many years to rehabilitate.

NEW MEXICO LEGISLATION

New Mexico's Water Rights Laws

New Mexico has some of the oldest and most effective laws that control an individual's right to take and use water. While they have seldom been used as a means of controlling groundwater contamination, the potential is there as laws require that water be conserved, and that it be put to beneficial use in an efficient manner. The New Mexico State Engineer Office issues permits for the drilling of wells in all of the state's declared basins and it has a series of rules that restrict the manner and method of drilling wells.

The New Mexico Water Quality Act

This act provided for a commission that reviews water quality issues and adopts regulations to prevent pollution. The most important, in the context of this paper, are the rules requiring a state approved groundwater discharge plan for any discharge of a liquid waste to a surface impoundment. The Water Quality Control Commission also sets the stream standards as to the acceptable quality in each reach of the state's stream system.

New Mexico Solid Waste Management Regulations

These rules, first established in 1988, should provide an effective means of controlling pollution from municipal landfills. Some provisions of this comprehensive set of regulations are:

- requirements for periodic inspection of materials brought to a landfill and restrictions that preclude the placement of petroleum wastes, septage, sewage sludge, or any bulk liquids in a landfill with municipal solid wastes;
- requirements that certain wastes be placed in special fill areas such as asbestos, infectious wastes, and incinerator ash;
- establishment of a number of site selection criteria such as a minimal distance to groundwater, location in a flood plain, and location near an active fault;
- requirements for a closure and post-closure plan that provides a "cap" that must meet specific design criteria, monitoring for methane and groundwater contamination for a 25-year period, and a plan for corrective action if necessary; and
- requirements for certain operating procedures such as daily cover of the filled material, maintenance of inspection records, and operator training.

SUMMARY

While there is no single piece of legislation that can be used to limit or control groundwater pollution in New Mexico, there are national and state laws and regulations that, taken in their totality, provide the state with all the authority and tools needed to manage and protect its groundwater resources.