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Land Use and Water Supply

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Land Use and Water Supply

As New Mexico grows and develops, there is a continuing increase in water demand and the need to provide additional supplies. Recent studies estimate the current population of the State to be about two million people, and the population is expected to grow to approximately 3,400,000 by 2050. Regional water plans project water demands for 16 regions within New Mexico. The total projected new water use associated with population growth—the public water supply and associated commercial sectors, exclusive of agriculture, mining, or other industries—ranges from 280,000 to 380,000 acre-feet per year of new water supply needed in the next 40 years. While there is uncertainty in these estimates, it is clear that there will be continuing pressure on our water resources. Accommodating this new growth and development, without adverse impacts to existing users and our river systems, will require careful land use and water management.

Land use decisions that direct the type and location of development that occurs are often made by local governing bodies, whereas most water management decisions are made at the State level. Besides local governments, land use can be affected by economics and broader policies, such as transportation, state, and federal agricultural policies; watershed management policies on state and federal land; and state and federal environmental regulation that have the potential to impact water quality. Land use decisions can potentially affect both water quantity and water quality; similarly, decisions regarding water management can potentially affect land use. Nevertheless, the decisions are not always well-coordinated, and it is difficult to integrate land use and water planning decisions on local, regional, and statewide levels.

Optimization of our land and water resources, while balancing sometimes conflicting goals such as protection of the environment, supporting economic growth and development, and respecting senior water rights, will require careful land use and water management decisions that integrate local, regional, and state wide goals and objectives.

“As Western cities come to grips with limited supplies, the role of local and state governments in promoting more sustainable growth will be a new chapter in the history of western water law and land use law.”

Lora Lucero and A. Dan Tarlock,
“Water Supply and Urban
Growth in New Mexico: Same
Old, Same Old or a New Era?”,
Natural Resources Journal,
Vol. 43, Summer 2003

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Land and Water Use Decision Making

Land and water use decisions are made by various levels of government including local, county, state, Tribal, and federal, and by private property owners. Some of the key existing regulations and programs affecting land and water use are discussed below.

Municipalities: Municipalities have planning and platting jurisdiction within their boundaries and, except for Albuquerque, have jurisdiction for the perimeter area beyond the municipal boundary to provide control over a reasonable growth area. Water supply is typically dealt with by the developer obtaining a certificate of water availability from a local water provider, obtaining a water right, or, in some cases, through drilling domestic wells. Smaller municipalities frequently do not have resources to conduct detailed land use or water availability studies. In many cases they may rely on existing utilities to state whether or not they will provide water service, but there is not always oversight to determine if the utility has the water rights and financial capacity to effectively expand services.

County Regulation: The local county commission through its zoning authority and the Subdivision Act govern subdivision development outside of municipalities. The Subdivision Act requires counties to adopt appropriate rules of procedure for approval of subdivision proposals. Prior to 1995, the Subdivision Act only required that the developer would provide information about local water availability and information about how water would be supplied.

The legislature amended the Act in 1995. Those revisions require counties to develop rules for quantifying a subdivision's water needs, assessing the availability of water to

meet those needs, and conserving water for those subdivisions located within the County that are not inside incorporated municipal land. The revised statute requires the Office of the State Engineer (OSE) to evaluate whether a subdivision's water supply proposal conforms to county rules, whether the developer can complete the proposal, and whether water is available to fulfill the proposal. If the developer proposes to use domestic wells, the OSE does not evaluate whether the wells will impair other users. The 1995 revisions temporarily made the OSE's approval a mandatory prerequisite of subdivision approval. However, since 1997, a county commission can approve a subdivision against the OSE's recommendation. The Subdivision Act does not apply to incorporated municipalities within a county.

In addition to complying with the Subdivision Act, counties also give other direction affecting growth and land use. Counties typically develop countywide plans that guide development decisions. Zoning ordinances create more specific and binding guidance regarding land use, although zoning can be changed as well. Water availability or water quality protections are typically not concerns that are integrated into zoning decisions.

Role of the State: In addition to the OSE role in the subdivision water availability analysis, the OSE has many other roles related to the interface between land use and water. The OSE reviews transfers of water rights and applications for new appropriations, determines whether there is impairment of others' water rights, determines whether the application is contrary to water conservation, and considers the public welfare concerns associated with a proposed transfer or appropriation. The OSE reviews 40-year water development plans that are provided as part of a permit application and that are used to show that water rights held by municipalities and others should be allowed to be held for a period up to forty years without being subject to forfeiture for non-use.

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The Interstate Stream Commission (ISC) is the lead agency for the State Water Plan and oversees regional water planning activities. The State Water Plan recognizes the need to support a strong connection between water availability and land use decisions, including the need to develop land use regulations and design criteria that can be used to reduce future water consumption by limiting landscaped areas, requiring native or drought tolerant vegetation, and requiring low-flow water fixtures. The OSE and the ISC both play key roles in water management decisions in New Mexico.

The New Mexico Environment Department (NMED) is involved in numerous programs that monitor and protect the water quality of surface and groundwater supplies. Many land use decisions can potentially impact water quality. NMED, in general, does not have a direct role in land use decisions, though they do issue permits for certain types of facilities. Their role is to evaluate threats to water quality and to ensure compliance with environmental regulations.

Role of the Federal Government: While the federal government generally has no role in local land use decisions, they may have indirect impacts on land and water use. For example, the U.S. Department of Agriculture (USDA) and the U.S. Congress set agricultural policies through periodic updates to the Farm Bill. These policies impact agricultural practices through the economics of growing certain crops or through programs such as the Conservation Reserve Program, which compensates farmers for protecting certain lands enrolled in the program. These federal policies do not necessarily consider local or statewide water resources impacts. The U.S. Bureau of Reclamation (Reclamation) also plays a key role in water management in New Mexico, primarily through management of releases from some major reservoirs in the state, and in directing water management actions as needed for compliance with the Endangered Species Act (ESA). Large tracts of federal land managed by the U.S. Forest Service, the U.S. Bureau of Land Management, and the

U.S. Department of Defense are located within watersheds that contribute to key water supplies in the state. Management actions on these federal lands have the potential to impact both water quantity and water quality of water resources that leave federal land and flow toward other users.

Tribes and Pueblos: Sovereign Tribes and Pueblos also play an important role in land and water management in New Mexico, due to their large land holdings within New Mexico as well as their senior water rights. These nations govern agricultural and other land use practices on their land, and undertake major construction activities and habitat restoration projects. They can adopt their own water quality standards and manage various water quality and environmental cleanup programs with approval from the U.S. Environmental Protection Agency.

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The Land and Water Problem

Land use and water management decisions are frequently made by different levels of government with different statutory authorities and sometimes-conflicting goals. This can lead to a disconnection between plans and results. Key problems regarding water and land issues in New Mexico are summarized below.

Water is a limited resource for which there is increasing demand. New Mexico is a semi-arid state with limited resources. Except for minor, unusual cases, all of the fresh water in New Mexico is appropriated, and any new use must rely on the discontinuance of an existing use. Limited new supplies, usually with poor water quality (salinity), where they are available, are extremely expensive to develop. Recent population and water use projections indicate the need to identify

significant new resources or discontinue existing uses, in order to accommodate new population growth successfully. Periodic drought and climate change resulting in increasing temperatures may exacerbate water supply shortages.

Land use approvals and water management decisions may not always consider the long-term effects on land, water availability, and water quality. New Mexico statutes assign responsibility for water administration to state agencies and delegate land use decisions to cities and counties. There is no formal structure for coordination between the two levels. State agencies often have limited staff resources and are not always able to complete detailed studies necessary to thoroughly

without accounting for the effects of the new water use on existing users or on other values associated with the water.

Strategies for Improved Land and Water Management

In order to ensure future economic vitality, support sustainable communities, protect the natural environment, maintain agricultural land, and preserve New Mexico’s cultural heritage, some steps should be considered. Many actions can help to provide better coordination regarding land and water decision-making. Some of these key actions are:

Implement a State Planning Function: In the past, a bill has been proposed by the New Mexico Chapter of the American Planning Association to create a state planning office. The purpose of the state planning office would be to provide coordination among different planning activities at many different levels of governments. Such an office, or other type of organizational entity, would help provide improved communication regarding land and water planning functions that now occur at many different levels of government, often with no formal interaction. Specific tasks might include development of guidelines to achieve consistent population projections and provision of assistance to local governments in adhering to existing land use, environmental, and water laws. The office might help local governments research and address problems that are common to many of them, such as the problems created by antiquated subdivisions (*see below*). Finally, the planning office could provide coordination among state agencies regarding infrastructure decisions and policy objectives.

Revise the Subdivision Act and Municipal Codes: The State Water Plan recommends strengthening the OSE water availability review process. Significant progress has been made in the past several years to streamline and standardize the process, but several areas of improvement might be considered. One area would be to standardize the methodology for determining whether or not

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address planning questions. Land use planning is conducted mainly by larger municipalities and counties and is often cost-prohibitive for smaller areas. Although there are some requirements to ensure water availability for new developments, there are many exemptions to the existing requirements, and different types of local agencies follow different procedures. The current methods of evaluating water supply for new development do not consistently take into account the cumulative, long-term impacts of previously approved subdivisions.

Water planning is not well connected to land use plans and regional water plans within the same river basins may not always be consistent with each other. Water planning is conducted at local, regional, and statewide levels. Most water plans make very broad assumptions about growth. They fail to connect specific patterns of land use with specific demands for water. Local and regional land use planning also tends to make only broad assumptions about water availability and water infrastructure needs,

there is water available to meet the annual water requirement as defined in the subdivision code. When counties or subdividers do their own analysis of water supply availability, there may not be consistent technical standards or criteria regarding issues such as long-term cumulative impacts. Standardization would provide clarity in regulations and assist developers in knowing what to expect. In addition, the current process that allows counties to approve subdivisions even when the OSE has issued a negative opinion regarding water availability should be examined. In some counties, hydrologists review the project and modify the proposed development based on the OSE opinion, but other counties don't have the resources. In any event, the county is not obligated to report back to the OSE. At a minimum, it would be useful to have a reporting mechanism to track the subdivisions that are approved when there has not been an adequate showing of a sufficient water supply to support the development.

Research and Address Antiquated Subdivisions: Antiquated subdivisions are obsolete subdivisions that have been approved and platted in the past, but have never been built and may not be built out for decades. They may not be in compliance with current regulatory standards for water supply and other infrastructure components. Evaluation of the implications of the subdivisions for water and other infrastructure is needed. This could be done by local governments where it is an issue, if sufficient resources are available. Alternatively, it could be undertaken by a State Planning Office if established, or through outside researchers such as a university or planning group.

Support Initiatives to Improve Quantitative Understanding of the Water Supply and Water Uses: The State Water Plan recognizes the need for improved metering and measuring. The OSE conducts an inventory of water use in the state every five years; however, for some sectors such as agriculture, there is not good metering data for much of the state, and water use must be estimated. In

addition, while some groundwater resources have been well characterized with field tests and numerical models that can evaluate cumulative impacts of developments, in other areas, there are few field measurements and there is a poor understanding of parameters, such as recharge, that are important when considering sustainable development. There is a need for continued scientific study and consistent reporting of information to better inform land and water use decisions. State agencies need to have adequate resources to improve metering and monitoring efforts.

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Support Agricultural Policies Leading to Efficient Water Management: Since most of the water in the state is used for agriculture—about 75 percent, although that number varies from one region to another—many people consider transferring water from agriculture as a future safety net to meet the demands of growth. However, cyclical drought and climate change may reduce surface flows and reduce the amount available for agriculture. While a farmer may be able to use less water, with lower yields, in dry years, and continue to farm the next year, transfers to other industries or uses may not have flexibility. In addition to the need to protect farmland as a future food source and not decimate our rural communities, water transfers from agriculture may not be legally available in many cases. The legislature has provided protection to acequias, which enact bylaws seeking to protect their water rights from transfer. For more information, please see the “Acequias” chapter in this edition of *Water Matters!*. Furthermore, the 2009 legislature enacted a statute limiting the powers of municipalities to condemn agricultural water rights.

Domestic Wells: State and local policies and laws on domestic wells can have a huge impact on land use. The State Water Plan

recognized the importance of better regulation of domestic wells and in 2006, after a series of public meetings, the State Engineer adopted extensive new regulations which, among other major changes, limit the allowed use from a domestic well permit to one acre-foot annually per household. In 2013, the legislature passed two new bills that limit the use of domestic wells for supplying water to new subdivisions. For more information, please see the “Domestic Wells” chapter in this edition of *Water Matters!*.

Support of Watershed Restoration and Protection Initiatives: Local watershed groups have formed in many parts of the state, and there is a need for ongoing support and expansion of watershed initiatives. Watershed restoration programs can help to identify watershed concerns, many of which have the potential to affect water supply and/or quality. Climate change may increase the likelihood of catastrophic wildfire, which can severely degrade the water supply. Watershed groups can play a key role in riparian restoration and protection, which is a stated goal in many water and land use plans.

xeriscaping, roof-top harvesting, and graywater and wastewater reuse—are all areas that deserve continued support and further development of programs.

Provide for Better Linkage between Planning Programs and Funding Sources: Water plans are prepared on a local, regional and statewide basis. Forty-year water development plans provide the information necessary to hold unused water rights for future expected beneficial use, whereas regional and state plans are more focused on broader issues and strategies. Comprehensive land use plans, as well as the existing water plans, are not enforceable and are frequently not consulted when local land-use decisions are being made. There is a need for better planning for water projects and programs that are carefully considered in statewide funding decisions. A comprehensive water planning program, such as exists in Texas, is one mechanism for linking water supply projects to funding resources. However, to do this effectively, Texas spends considerably more than has ever been considered for New Mexico programs. Creating a mechanism for funding long-term planning programs would be useful.

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Maximize Water Conservation for New Growth and Development: Water conservation is one of the most efficient mechanisms that can be used to balance gaps between supplies and demand. Revisions to the Statewide Building Code to add consistent statewide conservation measures would be helpful. Steps should be taken to ensure that new developments, as well as older areas, maximize storm water management for water quality and on-site water supply when feasible. Programs like the Leadership in Energy and Environmental Design (LEED) and other sustainability initiatives—such as appliance retrofits,

Support Ongoing Public Education Programs: Many New Mexico citizens are better informed about water issues now than in the past, yet there is a need to continually support public education programs. These programs can provide valuable information on topics such as water conservation, drought contingency planning, source water protection, and many other issues. When citizens are better informed about New Mexico water issues and costs, they can contribute to better decisions and are more likely to be supportive of water rates or budget allocations that are sufficient to address adequately the needed water projects. Watershed groups with strong public involvement have been successful in helping to address many water quality and riparian restoration issues around the state.

Recognize the Connection between Energy Development and Water Use: Some of our existing energy sources, such as coal-fired power plants, use large amounts of fresh water for cooling purposes. For example a coal-fired power plant uses 110 to 300 gallons per megawatt hour. In the western United States, Reclamation estimates that 98 percent of energy conservation goals can be met with 68 percent of the cost if water conservation is used as a strategy. There are lots of embedded energy costs in water use, such as the cost of pumping or heating the water. New renewable sources of energy, such as solar, can also be large users of water. For example, a solar parabolic trough plant uses 760 to 920 gallons per megawatt hour. When making decisions about bringing this type of energy development to New Mexico, consideration of water availability is important. Industries may be able to use substantially less water through alternative cooling processes, but there can be significant additional costs.

Conclusion

Improving land and water use decision-making to optimize and protect our limited resources will require good planning programs, coordination between different governmental entities, and reliance on well thought-out plans. Given what we know and what we don't know about New Mexico's future water supply and its variability, we have a responsibility to invest in good planning programs and to direct our activities towards the most feasible, cost effective and sustainable strategies.

This paper is based in part on a paper being developed by an informal group convened by Consuelo Bokum and 1000 Friends of New Mexico to study issues surrounding land use and water availability. Principal participants in the land and water group are: Conci Bokum, Susan Kelly, Sig Silber, Mary Helen Follingstad, Barbara Calef, Carol Romero Wirth, Alan Hamilton, and Kathy Holian. Many others have contributed.

By Susan Kelly, J.D. and Joanne Hilton, Hydrologist (2009)

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