



8. Findings and Recommendations

General findings based on the population projections made by BBER (2001), the Duke water supply study (2001), the white papers (Appendix F), and legal research by the legal team (Appendix D) identify water supply issues and a projected gap between supply and demand. Section 8.1 summarizes the general findings of the planning process and Section 8.2 provides recommendations to address identified water supply issues.

8.1 General Findings

The following general findings provide the impetus behind the recommended alternatives presented in Section 8.2.

8.1.1 Findings Related to the Vulnerability of Water Supply

- The amount of water diverted from groundwater in some areas is much greater than the recharge rate, resulting in undesirable water level declines.
- Surface water, which comprises 74 percent of the water supply for irrigation and municipal use in the region, is vulnerable to drought, watershed degradation, and secondary impacts following catastrophic fires.
- In most years, water supplies are insufficient to fulfill all existing surface water rights in the region. Therefore, communities that plan to use surface water to meet demands will be vulnerable to water shortages most years unless they develop a contingency plan.
- Water supplies are vulnerable to water quality degradation resulting from catastrophic fire, septic tanks, or other sources.
- Evaluation of sustainability and development potential of groundwater resources within the region would benefit from a better understanding of the hydrogeology and a regional





numerical groundwater and surface water model that is acceptable to all parties. This type of model presently does not exist.

- Determination of seniority and quantity of water rights is not possible in the absence of adjudications. Until adjudications are complete, innovative solutions that require quantification of water rights for analysis and implementation cannot be pursued.
- Domestic wells divert an estimated 7,700 acre-feet from the region (based on a per capita demand rate), supplying 35 percent of the water supply for municipal/domestic needs in the region. In some areas, domestic wells impact surface water supplies and senior water rights holders.

8.1.2 Findings Related to the Projected Gap between Supply and Demand

- Based on current trends, the population in the region is projected to increase from 160,000 in 2000 to 360,000 in 2060.
- Population growth of an additional 200,000 people would increase residential and commercial water demand by 31,500 acre-feet per year at current per capita water demand rates.
- Available SJC Project water with return flow credits cannot meet the entire projected increase for the region, even if the maximum contracted firm yield is available. In the most optimistic assessment, existing SJC contracts could meet only 40 percent of the projected gap. Therefore, alternatives other than SJC Project water must be pursued.
- Using agricultural water rights to meet the remaining increased municipal/industrial water demand may have negative public welfare implications if the transactions do not consider the needs of the region's communities.
- The amount of available water rights that could be transferred from agricultural to other uses is not known. To meet 50 percent of the annual 31,500-acre-feet gap projected for





2060, approximately 60 percent of the agricultural land within the region, or 10 percent of the agricultural land within the Middle Rio Grande Conservancy District, would have to be retired. Even more would likely need to be retired to provide an additional cushion during drought periods.

- The projected gap between supply and demand cannot be reduced entirely through conservation.
- If all residents in the region eliminated outdoor watering with potable water, a 50-percent reduction of the 31,500-acre-feet increase projected by 2060 could be achieved. However, such drastic conservation measures may be detrimental to public welfare of the region. Alternatively, a 25-percent reduction in the projected increase in demand could be achieved with minor compromises to the quality of life.
- The projected gap between supply and demand cannot be reduced entirely through growth management.
- Growth management could reduce the projected increase in demand of 31,500 acre-feet by 2060 by as much as 50 percent, but if growth management is not implemented consistently throughout the region, it may only shift the growth from one area to another. Also, growth management may have negative public welfare impacts.

8.2 Recommendations

The following recommendations address the implementation of this water plan. The first two recommendations, which are unnumbered, have overarching impacts on the implementation of the remaining numbered recommendations. The numbered recommendations are grouped into five categories. Recommendations under Categories I, II, and III describe actions that address management, protection, and restoration of water supplies, none of which will result in new wet water rights. Recommendations under Categories IV and V describe actions that will address the projected water supply/demand gap as discussed in Section 7.2. The implementation of recommendations under Categories I through III will depend on appropriate staffing or funding





from regulatory and natural resource management agencies and/or local governmental entities. This regional water plan does not specifically detail how communities should close the projected gap between supply and demand as discussed under Categories IV and V; instead, it provides options that communities can implement to close this gap. Communities with a projected gap that cannot be closed with a moderate level of conservation and/or the use of SJC Project water will have to use measures that may impact public welfare of the region. These impacts may include:

- Impacts to quality-of-life, if more severe conservation measures are implemented
- Private property rights, if growth management measures are pursued
- Degradation of the rural character of the region, if water rights are transferred from agriculture to urban use

To minimize public welfare impacts to communities, municipalities with the greatest projected demands should consider developing partnerships with agricultural communities. These partnerships could be used to foster transactions that minimize negative impacts to the region. An example of this type of partnership/transaction is the funding of conservation measures (e.g., lining of irrigation ditches or leveling of fields) that would reduce agricultural demands and transfer “saved” water to urban uses. Careful study of irrigation systems and the current fate of “lost” water would be required to determine the efficacy of such a plan. Adjudication of water rights would be desirable before such a plan is implemented to determine the value and risk or vulnerability of the water rights transaction. Other partnerships/transactions may involve the transfer of agricultural water only during times of drought or working with communities that no longer have agrarian-based economies.

The recommendations are derived from the white papers presented in Appendix F, which provide details of technical, legal, and cost estimates of various alternatives and discuss how these alternatives might be implemented. JySWPC has indicated which recommendations it intends to pursue as a council. Entities within the region need to first set their own priorities and then pursue appropriate recommendations alone or in combination with partners. Each community or water utility should conduct a feasibility study to prioritize planned water projects and to weigh the cost benefits and other implications of various alternatives.





Many of the recommendations presented below are either underway or under consideration, as evidenced by the results of the water system survey presented in Appendix G. For example, the Santa Fe County Land Development Code, which in effect is a method of growth management, may already be contributing to demand reduction. Furthermore, Rio Arriba has recently passed land use ordinances, which may impact the projected population growth. Likewise, conservation efforts by the City of Santa Fe have reduced per capita water consumption. Diversion of SJC Project water is being pursued actively by the City and County of Santa Fe and the City of Española. Although many of these activities are already underway, this plan serves to demonstrate how far these plans can go towards filling the projected gap between supply and demand.

8.2.1 Recommendation to Create One or More Advisory Boards

Water advisory boards should be established for areas with specific mutual interests. Within the designated areas, these boards would serve as a foundation for pursuing the implementation of the recommended alternatives under Categories I through V, as appropriate. The JySWPC will serve as an interim committee to help move this process forward and will act as an advocate for recommendations. As indicated below, workshops will be held to develop strategic plans and to develop funding approaches for implementation of some of the regional alternatives. Most alternatives will need to be pursued by individual communities or through partnerships. Actions such as reducing the use of septic tanks and domestic wells by providing regional services may best be implemented through a water advisory board or other mechanism.

8.2.2 Recommendation to Adjudicate Water Rights

The adjudication of water rights is presently underway by OSE. This process should be expedited to better define the water rights in the region, including those rights not presently being put to use (Table 13). Quantification of water rights and determination of priority dates impact many of the recommendations discussed below. For instance, the development of drought contingency plans, as discussed in Recommendation 20, is impacted by the priority dates of water rights held or leased by communities. If water banking is part of the drought contingency plan, the vulnerability of the leased water during a drought must be understood.





The transfer or lease of water rights, subject to Recommendation 24, is impacted by the determination of whether or not the right has been put to beneficial use. While the lack of adjudication does not prevent such a transfer, it does result in uncertainty in determining the relative value and vulnerability of the water right during drought periods.

In addition, adjudication of the water rights above the Otowi Gage would help New Mexico determine if water rights based on the 1929 condition of the Rio Grande Compact are being used. Appropriation of water up to the 1929 condition is the subject of White Paper 10 in Appendix F.

8.2.3 Category I: Recommended Actions to Protect Existing Supplies

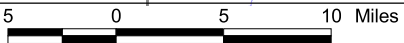
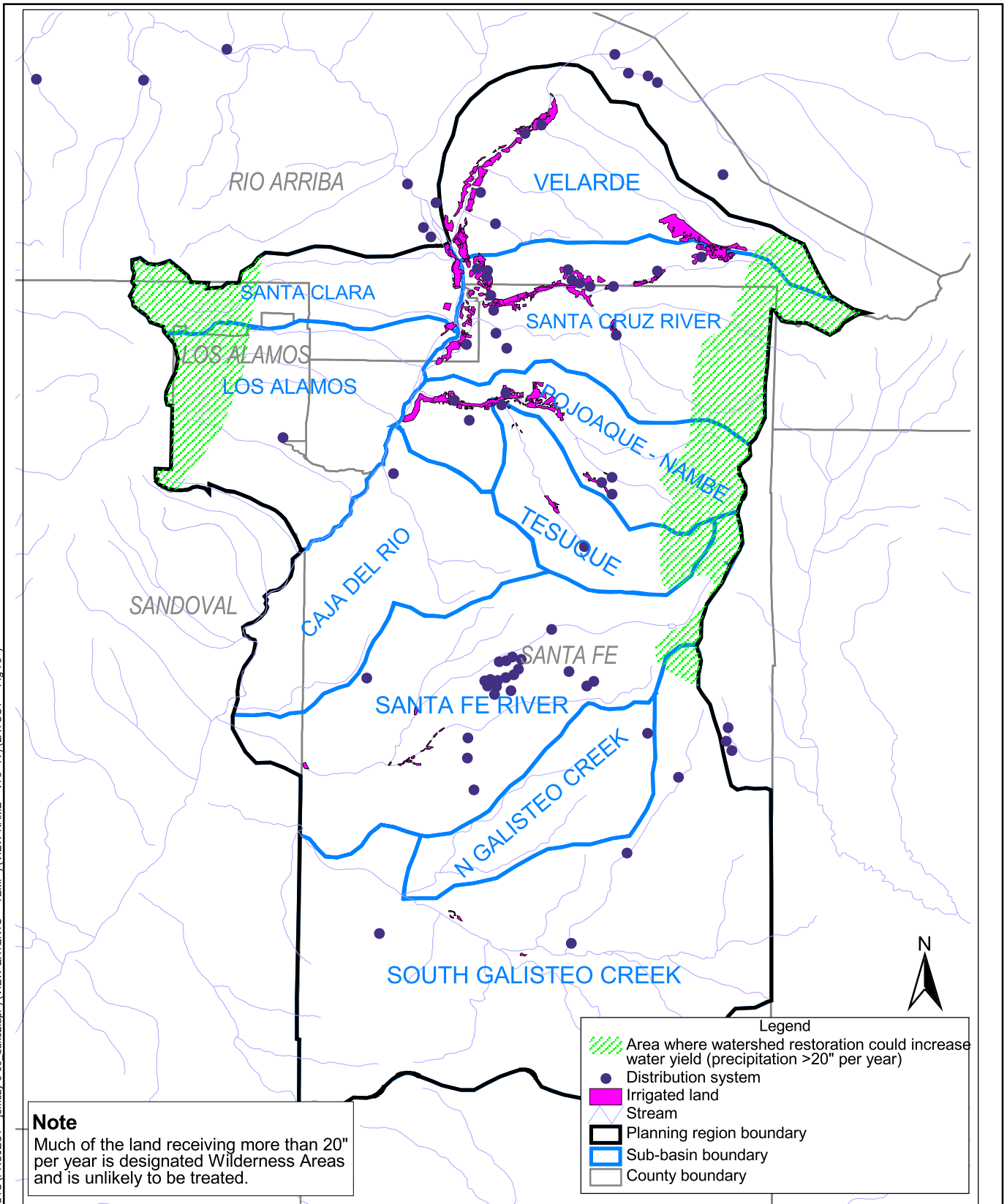
1. *Restore watersheds.* Pursue restoration of piñon-juniper, ponderosa pine, and higher elevation vegetative zones (e.g., mixed conifer) to reduce risk of catastrophic fire and severe erosion and subsequent filling of reservoirs with sediment and debris. Restoration of the forests and riparian areas is also recommended to improve overall ecosystem health.

The improvement can be achieved by reducing tree densities in forests and increasing forb and grass cover. This will reduce runoff during high intensity storms and prolong duration of flow in ephemeral and intermittent streams. Overall annual yield of surface flows may increase if the tree canopy density is reduced, allowing more snow to reach ground and ultimately melt and run off in stream systems or recharge aquifers. Potential for improved watershed yield is greatest at higher elevations and least likely in piñon-juniper woodlands. The increase in steady flow in streams will not only provide greater, reliable supply to water diverters, but will also establish healthy riparian areas, which provide for stream bank stability and shade, which help New Mexico meet total maximum daily load standards for turbidity and temperature.

Figure 75 shows areas for watershed restoration that would result in increased water yield. These areas are based on (1) vegetative zones that receive more than 20 inches of precipitation annually and (2) dependence on surface water supplies, as shown by the irrigated lands. Additional areas in Colorado, which are not shown on this figure, are



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JEMEZ Y SANGRE REGIONAL WATER PLAN
 Areas with Potential to Increase Yield
 from Watershed Restoration

Figure 75





also water supply sources for this region. Much of the land receiving more than 20 in/yr of precipitation is in designated Wilderness Areas and unlikely to be treated. Also not shown are the areas that, if restored, would reduce the risk of catastrophic fire and improve the characteristics of storm water runoff. The City of Santa Fe and the U.S. Forest Service have completed an EIS to restore the Santa Fe Watershed. The Hyde Park Water Association has also begun a restoration program and the community of Los Alamos is actively working on forest restoration both in areas that escaped the Cerro Grande Fire in 2000 and in areas that were burned.

The JySWPC will convene a workshop to develop strategies for creating partnerships and seeking funding for this alternative. To implement a watershed restoration program, the land holders, most likely including the U.S. Forest Service, must partner with local communities and develop alternatives for restoration that are sensitive to the ecosystem and reduce the risk of a catastrophic fire threat in a timely manner. Working together, partners can seek funding for grant dollars.

2. *Manage storm water to enhance recharge.* Develop municipal or county procedures and/or projects that capture storm water to enhance aquifer recharge and minimize erosion.

Much of the moisture in the region falls in high intensity rainfall events. Under historical natural conditions, this precipitation fell on native vegetation that served to hold moisture in place and release it slowly through runoff or recharge. Currently, because of the increased surface area of roads, parking lots, and roofs, precipitation moves into storm drainage systems much more quickly. Actions that reduce runoff velocity will enhance recharge to aquifers and reduce erosion in acéquias and streams.

Municipalities should conduct a thorough review of drainage in urban areas to identify recharge areas for supply wells and optimal locations for detention ponds, infiltration basins, or instream measures to enhance recharge that are consistent with the Rio Grande Compact. Existing detention ponds can be modified with low-flow outlets and opportunities may exist to convert culverted road crossings into low-flow detention





ponds. Check dams and instream measures to increase infiltration in natural channels should be designed and constructed in accordance with local river corridor master plans. The City of Santa Fe, El Vadito de los Cerrillos, and the State Land Office have storm water management ordinances, and Los Alamos County is proposing such an ordinance.

The JySWPC will develop a subcommittee to work on strategies for educating appropriate authorities about methods for enhancing storm water management.

3. *Conduct pilot cloud seeding project.* Form partnerships and explore funding mechanisms for pilot cloud seeding projects.

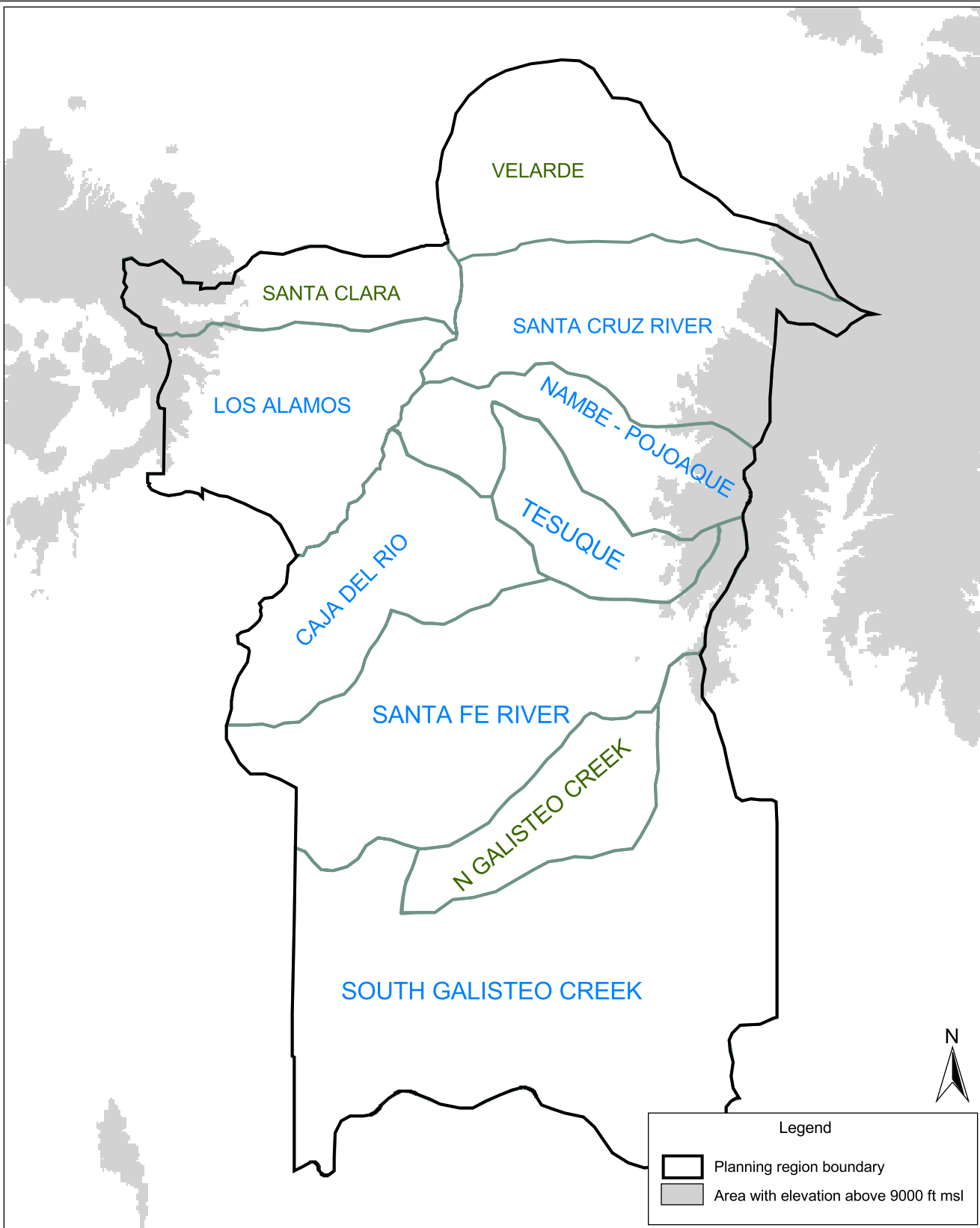
Although the effectiveness of a cloud seeding project would need to be demonstrated and associated water rights may be impossible to establish due to difficulty in proving ownership, cloud seeding holds promise for increasing snowpack and surface supplies for existing water rights holders and enhancing stream flow for health of ecosystems. A pilot project involving monitoring could demonstrate the feasibility and effectiveness of such a project to support future funding requests for a full-scale project. Ideal localities for cloud seeding include areas where watershed elevation is above 9,000 feet, as shown in Figure 76. The JySWPC will convene a workshop to develop partnerships, seek funding for one or several pilot cloud seeding projects, and work with ongoing state initiatives.

4. *Pursue sustainable management of water resources through better understanding of hydrogeology.* Establish a regional technical advisory group to guide aquifer study and management activities.

The JySWPC has identified a need for a regional model that will facilitate better understanding and management of our water resources (and support the development of CMAs). Many communities are proposing to drill additional municipal wells, which will accelerate the need for a better understanding and management of the groundwater resource. Decision makers within the region need a regional model that incorporates hydrologic boundaries of aquifer systems and is capable of simulating actual hydrologic



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JEMEZ Y SANGRE REGIONAL WATER PLAN
Areas Where Elevation is Above 9,000 Feet



Figure 76



processes occurring in the basin (e.g., stream aquifer interconnection, dipping beds, and compressibility of aquifers). The first step in developing a hydrologic model is to determine if sufficient data exist to support the development of a new model or the modification of existing models.

Plans for hydrologic studies within the region and development a new model or a modified version of an existing regional model should be pursued through a consensus process. The JySWPC recommends that a technical advisory group with broad regional representation work through this process to achieve the desired goal of developing or modifying a regional model. Members of the advisory group should have a hydrogeological background and represent governmental entities in the region.

The OSE has convened the Española Basin Technical Advisory Group, with representatives from the JySWPC, LANL, USGS, NM Bureau of Geology, Bureau of Indian Affairs, UNM, and OSE to share information on ongoing studies. LANL is in its fifth year of developing a regional model that focuses on contaminant transport simulations and the OSE is initiating the drilling of monitor wells and collection of water level data. A subgroup of the existing Española Basin Technical Advisory Group may be an appropriate forum for addressing groundwater management. Working together, decision makers within the region will be better positioned to secure funding from entities such as the Water Trust Fund for hydrologic studies needed to provide information about decisions critical to the region's water resources. Most importantly, if a model is developed through a consensus process, stakeholders will have confidence in the model results, which will alleviate concerns that the model is biased.

5. *Evaluate establishing Critical Management Areas to protect groundwater resources.* Establish CMAs to limit groundwater production in areas where senior water rights and stream and spring flow should be protected.

An overview of CMAs is provided in Appendix D. The entities that wish to pursue this option should work with the OSE to define areas appropriate for consideration. Candidates for CMA designation include areas where:





- Wells are drying up
- There is demonstrated contamination
- Senior water rights are affected
- The habitats of threatened and endangered species are impacted in areas where surface water is depleted
- The aquifer is thin
- Groundwater production rates are not sustainable
- There is a significant groundwater decline
- Protection of a spring or source area for a spring is necessary

Entities interested in CMAs should also work with the OSE to develop appropriate best management practices (BMPs) to be applied in CMAs. Examples of management tools that could be used to protect CMAs include:

- Critical evaluation of transfers in and exports out of the CMA that could be detrimental
- Land use zoning in and around the CMA
- Restrictions or prohibitions related to increased diversions within the CMA
- Stringent regulation of domestic wells (existing or new) including metering and restriction of use to a specified amount
- Requirements that new developments to be served by a community system
- Permission to provide replacement and supplemental wells
- Permission to increase drawdown on nearby wells within a CMA when evaluating a water right transfer based on a specified expected lifetime of the aquifer

JySWPC will host a workshop to further discuss the development of CMAs. Santa Fe County has proposed a CMA in an area south of the City of Santa Fe.

6. *Develop conjunctive use strategies.* Explore the potential of combining surface and groundwater rights to maximize renewable supplies when available, and to preserve aquifers for periods of drought.





Water resource management could be enhanced if water purveyors have the flexibility to alternate between the use of surface water and groundwater depending on availability of the supplies. During wet periods, particularly when Elephant Butte Reservoir is spilling (and New Mexico has no potential for incurring a debt on the Rio Grande), water purveyors should rely on surface water and rest the aquifer. This will help reduce vulnerability of the region during periods of drought and allow flexibility for addressing needs of endangered species, such as the silvery minnow. To conjunctively manage water rights, permission of the OSE must be obtained, and modeling will be needed to support an OSE application. The OSE and the ISC must determine whether conjunctive management would impact the Rio Grande Compact or senior water rights. A regional model that has the buy-in of neighboring water users who are likely to protest such an application would provide an essential foundation for proceeding with this alternative. The City of Santa Fe, Eldorado, El Vadito de los Cerrillos, Cuatro Villa Mutual Domestic Water Users, and Santa Fe County currently have or have proposed conjunctive use strategies.

7. *Appropriate flood flows.* Pursue appropriation of flood flows on the Rio Grande or its tributaries during years when Elephant Butte is spilling.

New Mexico cannot accrue a debt under the Rio Grande compact during years when the Elephant Butte Reservoir spills. Thus, diversions of surface water could be increased during these years, provided that senior water right users and the environment are not harmed. Although only 6 of the last 60 years have been spill years, the potential to use excess flow during spill years through existing water diversion facilities or to store the water for future use could help the region reduce its dependence on groundwater. Santa Fe County has already submitted an application to appropriate excess flows. However, environmental groups, such as Rio Grande Restoration, have protested a similar application by the City of Albuquerque and have indicated that they would protest additional applications. The application will need to be supported by technical analyses to address issues of potential impairment and determine if such an appropriation would be detrimental to the health of the Rio Grande. Should the application be successful, local governmental entities could develop contracts or joint powers agreements to





establish allocations for appropriated water and a plan for diverting and storing it when it becomes available. The recommendation for conjunctive use and for aquifer storage and recovery should be pursued in conjunction with this strategy to allow for effective use of flood flows.

8. *Remove trace constituents to protect human health.* Consider requiring local or regional water supply systems in areas where trace constituents (arsenic, uranium, nitrate, fluoride, etc.) exceed water quality standards.

In areas where water quality is naturally poor or degraded due to septic tanks, regional water systems are the most effective method to provide safe potable supply. The northern portion of the JyS Water Planning Region is a good candidate for such systems due to widespread instances of poor quality water in the valley between Española and Pojoaque. Water planners in all sectors need more current, accurate, and complete data on groundwater contamination, including concentrations, sources, trends, and depth. This information will help them to prioritize areas that would best be served by water systems rather than domestic wells. Cañoncito at Apache Canyon, the City of Santa Fe, El Vadito de los Cerrillos, and Santa Fe County are proposing upgrades to treatment facilities.

9. *Address septic tank water quality degradation.* Monitor and reduce contamination from septic tanks through the most applicable method.

A better understanding of water quality deterioration from septic tanks is necessary, particularly in areas with fractured granite or basalt, areas where the depth to groundwater is shallow, or areas with other conditions that reduce natural denitrification processes. Once the problem is better characterized, contamination could be addressed through either extending service to homes from local or regional wastewater treatment plants or establishing regular maintenance plans to provide routine pumping and inspection of septic tanks, as appropriate.

10. *Cleanup of contaminated groundwater and surface water.* Support increased funding to the NMED to pursue investigation and remediation of “orphaned” groundwater





contamination sites for which no responsible party has been identified. Support increased funding for NMED to address contamination of surface water, including acéquias, which are particularly vulnerable to contamination.

11. *Continue funding programs to protect surface water and groundwater.* Support ongoing monitoring and regulation by the NMED and Pueblos for various programs that serve to protect the surface water and groundwater in the region.
12. *Support restoration of stream reaches to their designated uses.* The EPA and NMED should aggressively pursue protection of stream reaches to meet TMDL standards to prevent further environmental degradation.

8.2.4 Category II: Recommended Actions to Improve System Efficiency

13. *Require wastewater reuse.* Encourage new subdivisions (particularly those relying on imported water) that will be served by a new or existing wastewater treatment system to plan for wastewater reuse, either through the use of greywater or treated effluent, which can be used for return flow credits, watering turf, or other nonpotable uses.

The use of septic tanks for wastewater disposal degrades water quality and reduces options for wastewater reuse. The OSE has convened a committee to develop guidelines for building water efficient homes, including the reuse of greywater and black water. JySWPC will continue to work with this committee to educate the public and decision makers about methods of wastewater reuse, including greywater reuse. Wastewater is currently being used by the City of Santa Fe, Hyde Park Water Users Association, Las Campanas, and Los Alamos County, and is under consideration by many other communities.

14. *Encourage rainwater collection.* Encourage rainwater catchment to supplement outdoor watering and reduce dependence on potable water.

Residents and businesses should be encouraged or required by ordinance to harvest roof water, to the extent practical, before this water enters municipal or natural drainage





networks. Land owners would build and maintain roof water harvesting tanks or ponds according to local government requirements. The OSE committee for building water efficient homes, of which the JySWPC is a participant, is developing guidelines for encouraging rainwater collection and storm water harvesting.

15. *Line ditches.* Consider lining ditches or utilizing piping, where appropriate, to extend supplies to all users.

The effectiveness of a ditch-lining project is site specific and may have undesired effects such as loss of riparian habitat or bosque. Ditch lining may help farms located at the end of a ditch to receive their full supply by reducing water loss from infiltration. Acéquia del Cano and the Cuatro Villa Mutual Domestic Water Users Association have ongoing projects to line ditches and the Lower Cerro Gordo Ditch Association has proposed a ditch-lining project.

16. *Remove sediment in Santa Cruz Reservoir and investigate Nambe Reservoir.* Remove sediment in Santa Cruz reservoir to increase reservoir capacity by 1,800 acre-feet and enhance operation of the system. The Bureau of Reclamation should investigate the potential for increasing storage capacity in Nambe Reservoir by removing sediment.

17. *Repair leaks in water systems.* Conduct water audit and replace old and leaking water lines to reduce system demands.

The average water loss in a municipal or mutual domestic system may exceed 10 percent. While this lost water may help recharge wells that produced the water, the recharge is not immediate and the loss reduces water system performance. Repairing leaks will help water purveyors meet daily demands, particularly where infrastructure is strained in terms of meeting peak day demands. Community and municipal systems need to better understand the losses that occur through leaks by conducting water audits and developing plans and budgets to replace leaking pipes.

18. *Consider aquifer storage and recovery (ASR) of excess water.* Consider ASR as a viable method of managing excess water, when and if such water is made available





through treated effluent or capture of flood flows from the Rio Grande (in years when Elephant Butte has spilled). Further study is required to determine if ASR would be a viable beneficial method to store excess water. Considering the water supplies available to date, the direct use of excess surface water, which will result in reduced groundwater pumping, is likely the optimal approach.

19. *Pursue increased storage capacity in Abiquiu Reservoir.* Pursue increased storage capacity by securing the 17,000 acre-feet of storage easements in Abiquiu Reservoir that are within the authorized amount.

If a greater amount of storage capacity is desired (to hold flood flows or other water rights), the region would need to seek authorization from Congress. However, storage amounts above the 200,000 acre-feet (the total authorized storage amount of the reservoir once the 17,000 acre-feet is secured) would inundate homes and roads and may have negative ecological and aesthetic consequences. Increased storage capacity is especially desirable in the short term to increase the pool of water available, as the need for additional storage will be lessened when the City and County of Santa Fe begin diverting water directly from the Rio Grande rather than through the Buckman well field. Increased storage could also be used to appropriate flood flows, as described in Recommendation 7.

8.2.5 Category III: Recommended Actions to Address Drought

20. *Develop drought contingency plans.* Develop or maintain drought contingency plans, including measures such as emergency conservation ordinances and/or provisions for temporary leasing from other sources (see White Paper 15 on Water Banking, Appendix F).

Drought management can be undertaken at a regional level through cooperative agreements or locally by individual counties, municipalities, community water systems, acéquias, irrigation districts, or Pueblos within the region. Drought planning that addresses both local and regional mitigation efforts will be most effective.





The following actions would be required to develop and implement a regional drought plan:

- Convene a meeting of water users/stakeholders to develop a regional plan or in developing their own drought plan.
- Conduct technical analyses to evaluate the correlation between historical data and drought triggers and to define appropriate triggers.
- Conduct an analysis of drought severity and vulnerability of water supplies.
- Evaluate vulnerability of water rights to priority calls that may be made during a drought.
- Evaluate and adopt mitigation measures through a series of meetings that develop consensus on appropriate measures.

Communities that rely on surface water supply should also consider the need for contingency alternate supplies in case of catastrophic fire or for routine firefighting. The City of Santa Fe, El Vadito de los Cerrillos Mutual Domestic Water Users, La Vista Home Owners Association, and Santa Fe County have emergency water conservation ordinances for drought management. Acéquias, irrigation districts, and Pueblos have systems in place for sharing water during drought periods that have worked for hundreds of years (see Section 6.5). Communities that plan to shift their supply to surface water must develop drought contingency plans to be prepared for drought periods. Communities that rely on groundwater may also need to develop drought contingency plans to accommodate increasing demands during drought periods, particularly if the water supply system is struggling to meet demands in an average year.





8.2.6 Category IV: Recommended Actions to Reduce Projected Demand

21. *Pursue water conservation.* Pursue water conservation through a variety of measures. Municipalities that want to reduce demand through conservation need to:

- Know their customers' use habits.
- Elevate water conservation consciousness by establishing incentive rates.
- Provide ongoing education and outreach to all customer groups on how to save potable water through appropriate landscaping and use of nonpotable water for irrigation.
- Encourage the installation of conservation fixtures (efficient toilets, showerheads, sprinklers, evapotranspiration controllers, low-flow washing machines, recirculating hot water systems, drip irrigation, etc.) through rebates or other incentive programs.
- Encourage energy-saving fixtures and habits to reduce the amount of water used at power plants, which impacts water demand in other regions.
- Establish efficiency in new developments through regulations.

Conservation is most critical in the Santa Fe River, Caja del Rio, North Galisteo, and South Galisteo Sub-Basins, which have very uncertain future water supplies for meeting projected demand. The communities of Santa Fe, Eldorado, Cerrillos, Madrid, Galisteo, Sunrise Springs, and Santa Fe County have adopted water conservation ordinances. All communities in the region should adopt similar ordinances to discourage the waste of water.

22. *Pursue growth management to reduce demand.* Governmental entities that wish to pursue this option should conduct an educational and consensus-building program to formulate an approach. The approach should be perceived as egalitarian in the way it affects people and groups and should be integrated with other community goals. While





growth management should not be considered only as a last resort, if the projected water supply/demand gap is not closed through conservation efforts or increasing the water supply (including SJC Project water), growth management will be the final option for closing the gap.

Demand reduction through growth management may be essential in the South Galisteo Sub-Basin, where the outlook for future water supplies is bleak. Growth management may also be necessary as part of the water plan for North Galisteo, Santa Fe River, and Caja del Rio Sub-Basins, where the ability to increase the water supply is uncertain. Growth management is currently utilized by the City of Española, City of Santa Fe, Madrid Water Cooperative, Rancho Galisteo, Santa Fe County, and Cuatro Villa Domestic Water Users Association.

8.2.7 Category V: Recommended Actions to Increase Water Supply

23. *Utilize San Juan-Chama Project water as appropriate.* The City and County of Santa Fe presently divert SJC Project water through the Buckman well field; however, the City's ability to divert SJC water through this method is limited by the aquifer capacity. Los Alamos County has nearly completed a feasibility study for developing SJC Project water. A direct diversion of SJC water, combined with the flexibility to utilize the well field during periods when river flow is low, will enhance resource management.

To the extent that other SJC water may be available for purchase or lease (from Los Alamos, the Jicarilla Apache, San Juan Pueblo, etc.), the City and County of Santa Fe should pursue agreements to use such water, even for a short period (20 years), to offset past pumping of the Buckman well field. This will be essential, particularly if the City is unable to increase the SJC water in storage over the next few years. The City of Española should also pursue diversion of its SJC water, combined with a conjunctive use strategy that will allow for use of groundwater during times of drought. Diverters of SJC water may have an opportunity to develop strategies for delivering water that will benefit other needs, such as those of the silvery minnow, without compromising their





contracted amount or compact obligations (i.e., releasing contracted amount during periods of low flow).

24. *Transfer water rights through consensus process.* Pursue transfer of water rights from agriculture to urban use through partnerships/transactions that take into account community concerns. Inventory the processes that allow for consensus-based transactions in other areas of New Mexico or in other states where areas of origin have been protected. Develop mechanisms and pursue options for developing area of origins protections that are appropriate for this region.

An overview of areas of origin issues is provided in Appendix D. Consideration of practical minimum flow requirements must be included in any transaction to evaluate impairment to the acéquias. The JySWPC will convene a subcommittee to seek funding to develop the inventory of successful models for consensus-based transactions. The JySWPC will work with parties interested in pursuing consensus based transactions. The City of Santa Fe, Santa Fe County, and Las Campanas have transferred water rights in the past and propose to transfer additional water rights in the future. The State Land Office and Sunlit Hills of Santa Fe may also consider transferring water rights in the future.

25. *Limited use of domestic wells.* Continue to allow developments to be based on individual domestic wells in areas where senior water rights are not impaired, spring flows and stream flows are not impacted to the detriment of the Rio Grande Compact, and environment and water quality are suitable.

Areas in the Velarde Sub-Basin near the Rio Grande may meet these criteria. However, if well usage causes New Mexico to exceed the 1929 condition on the Rio Grande above the Otowi Gage, new domestic wells may be in conflict with the Rio Grande Compact. All domestic wells are subject to a priority call and individuals should be aware of the risk involved in providing a supply based on a very junior water right. CMAs that restrict domestic wells should be developed in areas where new domestic wells are a problem. County and municipal governments have authority to limit drilling of domestic wells where water service connections are available or through lot size restrictions. Currently,





the City of Santa Fe, Santa Fe County, El Vadito de los Cerrillos, La Vista Home Owners Association, and the Madrid Water Cooperative restrict the drilling of domestic wells within their service boundaries.

8.3 Conclusions

Many of the recommendations under Categories I, II, and III involve actions that are regional in nature or best suited to partnerships among interested parties. Establishment of a funded water advisory board or other entity will assist with the task of implementation of these recommendations. Because many government entities are focused on addressing immediate emergencies, long-term goals such as better groundwater management and watershed restoration may end up on the “back burner” without assistance from a water advisory board or similar entity.

The recommendations under Categories IV and V for reducing the projected gap between supply and demand involve balancing the public welfare implications that each alternative presents. Decision makers must balance the desire for economic development based on growth against the hardships resulting from extreme conservation measures or the potential changes in the character of the region that may accompany the transfer of water rights from agriculture to urban uses. Some stakeholders will argue that economic development can occur without growth and others will claim that a significant portion of the agricultural water rights are not being used anyway, and that the regional character is already changing due to the low profitability of farming. These issues are complex and will take a great deal of work to resolve. The goal of the JySWPC is to play an active role in education and interaction with the public as communities work to address their water supply problems.

