Groundwater Recharge and Recovery Projects Recharge projects improve groundwater basin yields by supplementing natural recharge sources with potable or possibly recycled water. Projects proposed in the San Pasqual Basin, the Lower San Dieguito Basin, and the Lower Santa Margarita River are good examples. In addition, the potential for groundwater storage and recovery in the San Diego Formation near the San Diego Bay and the Mission and Bonsall Basins located in the Lower San Luis Rey River Valley are under evaluation (See **Figure 4-4**).

4.4.2 Issues

Economic and Financial Considerations

Because of the saline nature of the groundwater basins in San Diego County, the cost of groundwater development usually includes demineralization, which can be costly to construct and operate. However, because treated groundwater is suitable for all potable uses, groundwater recovery projects face less variation in demand than recycling projects and do not require the construction of separate distribution facilities. In addition, reductions in the cost and operation of low pressure RO membranes have made the demineralization of saline groundwater less expensive and these types of projects are continuing to be more cost-effective and competitive with the development of other supplies. Projects dependent on natural recharge sources, such as surface runoff, can be affected by local hydrologic conditions, which are highly variable and therefore provide less supply reliability than recycled water projects. Therefore, agencies are pursuing development of conjunctive use projects that rely in part on imported or recycled water as a source of recharge to increase reliability. Additionally, project costs could be optimized through the purchase of imported and recycled water during off-peak periods when supplies are more plentiful and prices are lower. After retirement of debt service, these projects may be the lowest cost option available.

Institutional, Legal Issues, Water Quality Issues

Institutional and legal issues can be another obstacle to project development. Because most basins contain multiple water agencies and numerous private wells, water rights are a primary concern. Agencies are often reluctant to implement groundwater development projects unless jurisdictional and water rights issues are resolved beforehand.

Uncertainty over future regulatory requirements for drinking water supplies can pose another barrier to project development. When developing facilities and compliance plans for groundwater recharge projects, agencies must take into account proposed or potential regulatory changes related to water quality issues. Some of the regulations for which changes are expected over the next decade include: (1) state and federal drinking water standards; (2) federal storm water regulations; and (3) DHS groundwater recharge regulations.

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Environmental Regulatory Constraints

Regulatory issues related to environmental protection are common to many of the groundwater projects proposed within the Authority's service area. They include potential impacts from groundwater pumping to endangered species or groundwater-dependent vegetation. Such impacts may occur if a project results in seasonal or long-term increases in the depth to groundwater. Although potential environmental impacts can generally be mitigated, mitigation costs can reduce the cost-effectiveness of a project. Concentrate disposal requirements for brackish groundwater recovery projects can also be a constraint for projects sited in inland basins without access to an ocean outfall.

4.4.3 Future Groundwater Supplies

In an effort to inventory existing and proposed groundwater use, the Authority prepared the 1997 Groundwater Report. This report surveyed existing groundwater use, and evaluated planned projects and projects that were currently under study in the Authority's service area at that time. The report estimated a possible annual production (including some recovery of stored imported water) of 92,000 AF. Since then, project planning has continued and project concepts have been revised and/or refined. Current project planning by the Authority's member agencies is reflected in **Table E-3**, **Appendix E**.

The Authority has identified at least eight potential groundwater development projects in its service area. These projects are far enough along in the planning process to support a forecasted potential yield. Estimates of total projected supply from these potential projects along with existing groundwater supplies are shown in **Table 4-7**. These projections were provided by the local agencies proposing to implement the projects. It should be noted that as local agencies continue to evaluate the feasibility of potential groundwater projects, an even greater potential supply could be realized. A detailed list of the projects and projected supplies can be found in **Table E-3**, **Appendix E**. Two of the projects, the City of Oceanside's proposed 6.37 mgd (approximately 4 mgd expansion) demineralization facility and the Sweetwater Authority's proposed 8 mgd demineralization facility (4 mgd expansion), are expansions of existing brackish groundwater recovery projects. The other projects would require the construction of new facilities.

TABLE 4-7
PROJECTED GROUNDWATER SUPPLY
(AF/YR)

2005	2010	2015	2020
31,100	53,500	57,500	59,500

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