Late Stage 1 Assets

GROUNDWATER BANKING

Description: This asset will provide additional storage to allow greater flexibility to the system and increased water supply reliability. Groundwater banking is a form of conjunctive use that involves the storage of surplus or wet-year water in groundwater basins that have existing storage space. Currently, a number of basins both north and south of the delta have available storage for groundwater banking.

The following groundwater banking projects have been identified as the most promising potential Late Stage 1 Assets:

	Project Area	Minimum Storage (acre-feet)	Potential Storage (acre-feet)
1)	South Sacramento County	500,000	1,000,000
2)	Eastern San Joaquin Basin	500,000	2,000,000
3)	Madera Ranch	300,000	500,000
4)	Kings River Fan	500,000	1,500,000
	Total:	1,800,000	4,000,000

The "Minimum Storage" values for these projects were calculated based on the volumes of existing cones of depression and a conservative specific yield factor of 0.1. These storage values are currently being used in CALFED's Water Management Strategy modeling effort to make a preliminary evaluation of conjunctive use potential in the Central Valley.

The "Potential Storage" values are estimates based on raising regional water tables beyond the point of filling cones of depression, but within elevations that would not likely result in unacceptable impacts. These numbers will be revised as project specific data become available.

Project Costs: Groundwater banking costs will vary with the infrastructure required to operate the project. Some projects will utilize spreading basins, while others may use injection wells. In lieu projects, where surface water is provided so that groundwater pumping could be reduced, will also be considered. Additional infrastructure could include conveyance facilities, diversions, pump stations, filtration plants, and extraction wells.

Preliminary cost estimates for each of the projects listed above are currently being developed. In general, cost estimates for groundwater banking projects can range from $100 to $400 per acre-foot.

Timing: From a strictly technical perspective, a groundwater banking project can be designed and implemented within two to three years. However, for each of the above projects, a number of institutional and political issues will need to be addressed prior to actual implementation. Given the complexity of these issues, it will likely take at least three to five years for any of these projects to become operational.

Project Benefits: The primary benefit of groundwater banking is additional storage to the system. The minimum cumulative storage from the above projects is 1.8 million acre-feet. This amount of added storage will improve system flexibility and increase water supply reliability. An additional benefit will be improved groundwater basin management. Properly managed projects should not result in water quality impacts. Groundwater banking is generally environmentally neutral, and in many cases such projects can create wetland habitat and other environmental benefits.

Assumed Duration of Project Benefits: Project benefits would continue for the life of each project. With proper operation and maintenance, groundwater banking projects can continue indefinitely.

Assumed Operational Restrictions: The key operational restrictions include availability of water to be banked, recharge rates, land availability for spreading basins, and extraction rates.

Impacts on Others: Improperly managed groundwater banking projects can result in third-party impacts, including changes in water table elevations, water quality degradation, and subsidence. The Minimum Storage Groundwater Banking projects listed above would avoid many of the impacts typically associated with conjunctive use projects since they involve the filling of existing storage space in the respective groundwater basins. However, each of the above projects would require a thorough evaluation of the specific potential impacts, and development of appropriate monitoring and mutually agreeable mitigation measures. Additionally, water rights issues would need to be addressed.

Permits or Other Approvals Needed: SWRCB temporary change in place of use permits, pursuant to Water Code Section 1725, may be required. Additionally, many counties have adopted ordinances that require permits for exportation of groundwater. There is some uncertainty regarding the applicability of Water Code sections 1220 and 1011.5 with respect to some import/export groundwater banking projects.

Procedure for Obtaining Permits and Other Approvals: Developing a contract between banking partners, addressing third party impacts, applying for SWRCB and local permits, complying with CEQA/NEPA. This process could take two to three years. Clarification of Water Code sections 1220 and 1011.5 may also be needed.

Implementation Responsibility: The contracting parties.

Necessary Cooperating Parties: Contracting parties, local landowners and permitting entities.

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