

# Design Features for a Groundwater Banking Program

Sacramento Central Groundwater Authority

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## OVERALL PROJECT DESIGN:

- Banked water would be imported *surface water or in-lieu recycled water*. Thus, aquifer would be actively recharged with water not otherwise available;
- Recharge and extraction facilities would be sited within an existing water district service area or within a groundwater sustainability planning area;
- The banking operations (recharge and recovery) would be performed by (under the control of) the overlying water district or groundwater management authority;
- Local benefits in the form of water or cash payments would be obligated in enforceable contracts. These commitments could take the form of rights of first refusal in favor of the local water district or authority that is operating the bank (or its individual members) to utilize either the banked water or the aquifer storage capacity or both; and
- Issues, alternatives, and mitigations would be routinely analyzed in NEPA/CEQA documents with full public participation.

## IMPROVEMENTS IN HYDROGEOLOGIC INFORMATION:

- Measures to improve baseline data in the project area would be undertaken. Local groundwater users would be included in the process of collecting, interpreting, and modeling the data. Efforts would be made to prompt DWR to aggressively improve aquifer baseline information in the areas most suitable for banking.

## HYDROLOGIC ASSURANCES:

- "Groundwater substitution" projects would only be conducted where subsequent recharge is assured—perhaps through escrow arrangements;
- In lieu banking would be conducted only where substitute surface water deliveries are assured—perhaps through escrow arrangements;
- Groundwater substitution arrangements and in lieu arrangements should be avoided in areas with shallow wells unless the project is operated within tolerance limits or it pays for deepening the wells or it provides a substitute water supply out of the bank to neighbors with shallow wells;

- The project would commit to recharge more water than it recovers by a specified percentage to provide a buffer against hydrogeologic uncertainties, or the project would provide some other type of hydrologic assurance;
- The project would be operated within specific water table elevation limits to avoid inundating root zones or structures;
- The recharge and extraction facilities would be located near the center of the overlying water district or groundwater management authority to avoid or minimize effects on external groundwater users;
- The project would cease pumping or provide automatic compensation whenever monitoring wells indicate interference with neighboring wells. Where this potential is significant, the project would allow neighboring groundwater users to order cessation pending investigation of the impacts;
- The project would extract water on a schedule designed to avoid impacts on irrigators. The schedule could be subject to modification by the monitoring committee. For example, the extraction schedule would be limited to seasons or days when neighboring wells are not in operation such as nights, weekdays or before or after the peak irrigation season;
- The groundwater bank should be located as far as possible from surface streams (unless interaction is desired);
- The contract terms should assure that water deliveries to beneficiaries will cease at the termination of the contract period. Enforcement mechanisms might include export permits of limited duration or substantial liquidated damages; and
- Recharge water will be subject to water quality criteria that will assure that the recharge water is of higher quality than the in situ groundwater.

## **FINANCIAL ASSURANCES:**

- Costs incurred by neighboring landowners due to increases in power requirements to lift groundwater—for any reason—will be compensated out of project revenues. Such compensation arrangements will feature streamlined and simplified claims processing procedures; and
- The customers of a groundwater banking project will defray the costs incurred by the water district or groundwater management authority that is providing the banking services even if delivery constraints beyond the control of such banker prevent the delivery of water to such customers.

The customers may also be required to pay those costs in advance. If the banked water cannot be delivered, banking district can purchase that water at their marginal costs of substitute supplies.

### **LEGAL ASSURANCES:**

- In groundwater basins that are in a condition of chronic overdraft, groundwater users' historic rates and volumes of pumping would be immune from legal action by groundwater bankers. Unless the basin is adjudicated, the formula for defining "historic use" would be specified in the contract setting up the groundwater bank;
- In groundwater basins in which current extractions are less than natural recharge, groundwater users' would also be immune from legal action to the extent of the "safe yield" surplus in the basin. Unless the basin is adjudicated, the formula for defining "safe yield" and surplus would be specified in the contract setting up the groundwater bank;
- For in situ projects, either all of the local groundwater users would be brought into the project via contract (probably unrealistic), or the program will have to be operated in a manner that avoids injury—perhaps by allowing "take" only after a period of "put"; and
- A groundwater banking project will have the burden of proving that its operations will not cause injury to legal users of water, including groundwater users, where the project is required to obtain a permit or order from the State Water Resources Control Board or a local groundwater management authority.

### **MONITORING PROGRAM:**

- A banking project will establish a groundwater monitoring program directed by a committee representing the local groundwater users as well as project participants. The program will include perimeter monitoring wells and adequate monitoring infrastructure. The program will monitor specified quantity and quality parameters. The committee will possess the power to modify the pumping regime when specified thresholds are exceeded; and
- The committee will also be vested with authority to resolve disputes regarding project operations either directly or by referring the dispute to an arbitration panel comprised of technical experts.

### **LOCAL PARTICIPATION:**

- The overlying water district or groundwater management authority that will provide the banking services will consult with the local groundwater

community, involve it in the project design and operations, and solicit and use "local knowledge" of groundwater conditions;

- Where possible, the project will be located in areas where groundwater banking is already an established practice;
- The project proponents will make all technical investigations transparent and provide ample opportunities for early review and comment;
- The proponents will complete all technical investigations and public review before implementation steps are taken; and
- That will include thorough and convincing NEPA/CEQA compliance.

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