

Mountain County Water Resources Association



Innovative Water Technologies for California

“Water Banking – There is a market for it!”

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Aquifer Storage and Recovery

- Conjunctive management: Coordinated planned use and management of surface water and groundwater
- Objective: Maximize the availability and reliability of water supplies
- Example: Kern Water Bank

Kern Water Bank



Image courtesy of Kern Water Bank Authority website

Benefits of Conjunctive Water Management

- Prevents groundwater depletion by maintaining baseflow to streams
- Increases the reliability and amount of water supply
- Flood management
- Environmental water use
- Water quality improvement

Various Methods of Aquifer Storage and Recovery

- Storage methods
 - In-lieu recharge
 - Basin recharge or spreading
 - Direct recharge or injection
 - Induced natural recharge
- Recovery methods
 - Direct use
 - Pump back
 - Surface water exchange

Southwestside Groundwater Basin



Image courtesy of San Francisco Water and Power Website

Southwestside Basin



Image courtesy of San Francisco Water and Power website

List of Other Bay Area ASR Programs

- Santa Clara Valley Water District (serving Campbell, Cupertino, Gilroy, Los Altos Hills, Milpitas, Monte Sereno, Morgan Hill, Mt. View, Palo Alto, San Jose, Santa Clara, Saratoga and Sunnyvale, and the towns of Los Altos and Los Gatos)
- Alameda County Water District (serving Fremont, Newark, and Union City)
- Zone 7 Water Services Agency (serving Livermore, Pleasanton and Dublin)

Main Issues: Hydrogeologic Feasibility

- Available groundwater storage capacity
- Water source
- Conveyance, recharge and extraction
- Pre- and post-treatment facilities

Where is the Recharge Zone for the Aquifer?

- What is the mechanism and rate of recharge?
- Is the recharge zone connected to the aquifer?
- What are the soil, sub-soil, and aquifer characteristics?
- Specific yield
- Available groundwater storage capacity

What is the Water Source?

- Imported
- Runoff
- Treated wastewater

What is the Conveyance System?

- Canals
- Pipelines
- Surface streams
- CVP/SWP

Semitropic Image



Photo courtesy of Semitropic Water Storage District website

The Five Project Development Components:

- Groundwater planning and management
- Project construction and operation
- Institutional structures
- Funding
- Operator skill building

Semitropic Water Storage District **Water Banking Project Allocations (1.65 MAF)**

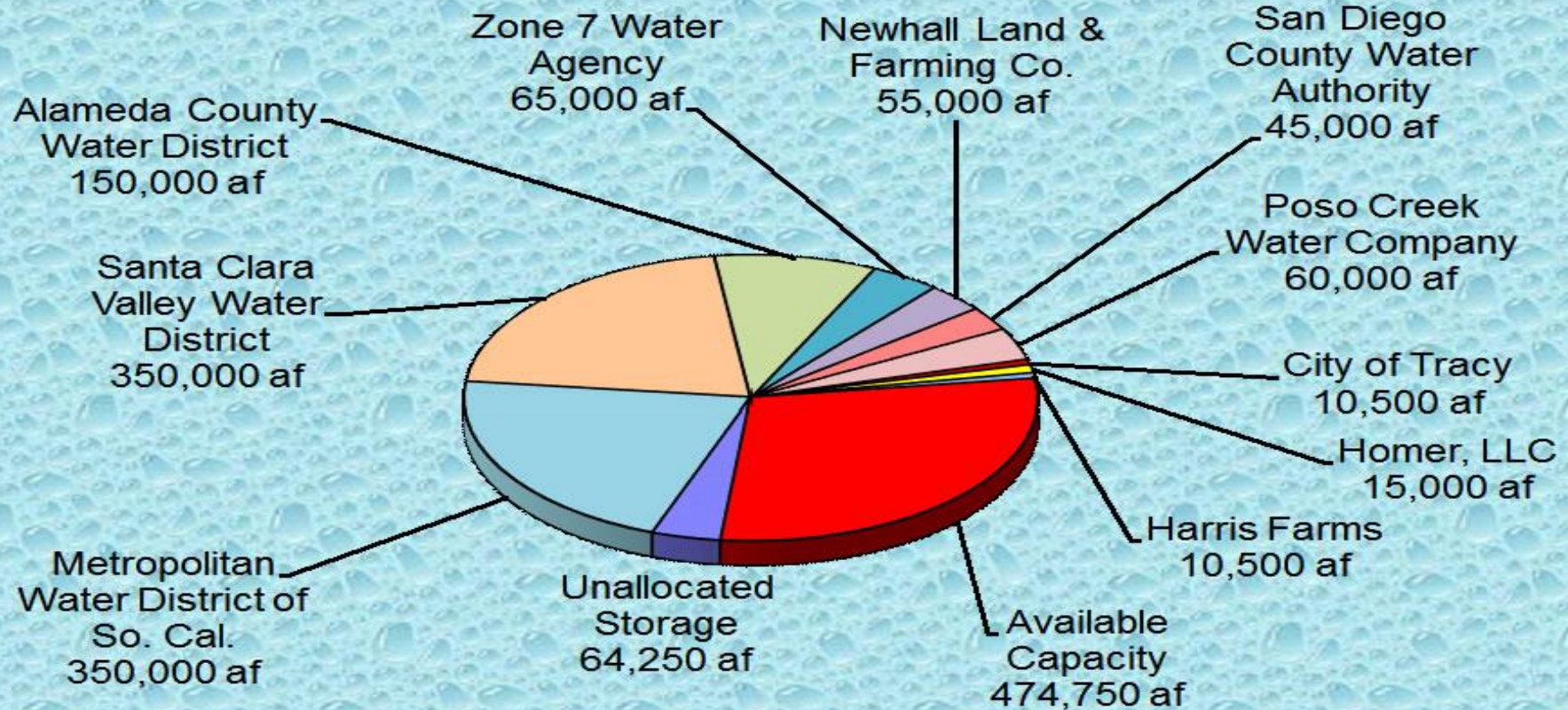


Image courtesy of Semitropic Water Storage District website

New Regional Based Programs

- Simple example:

Laguna Irrigation District – 52 acres of recharge basins to capture floodwater and recharge the basin. Financial contributions from DWR, Coca-cola and LID. Part of Kings River basin that has an annual overdraft of 150,000 – 200,000 acre feet.

Opportunity Sacramento Groundwater Authority:

- California American Water
- Carmichael Water District
- Citrus Heights Water District
- Del Paso Manor Water District
- Fair Oaks Water District
- Folsom
- Golden State Water Company
- Natomas Central Mutual Water Company
- Orange Vale Water Company
- Rio Linda/Elverta Community Water District
- Sacramento
- Sacramento Suburban Water District
- San Juan Water District
- Agricultural and self-supplied representatives

Example:

Valley Water District pumps from aquifer on edge of overdraft condition and has access and contract rights to stream system. Blue Water System. (Storage Space)

Mountain Water District diverts water from Sierras and has excess surface supply hydrologically connected to the Blue Water System during wet years, spring runoff (water source).

Example:

Valley Water District and Mountain Water District systems are not directly connected.

Urban Water District also diverts from Blue Water System and has treated wastewater available.

All water districts need additional dry year supply.

ASR Program could benefit all districts.

Questions?



Thank you!

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