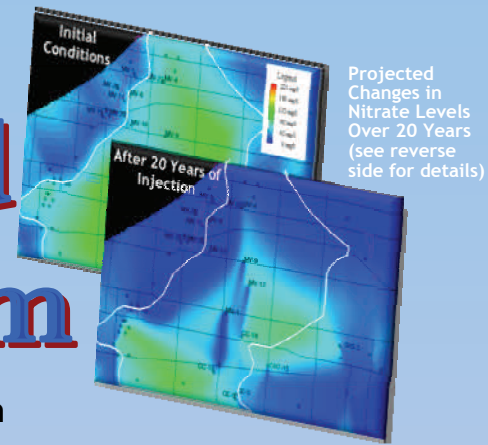


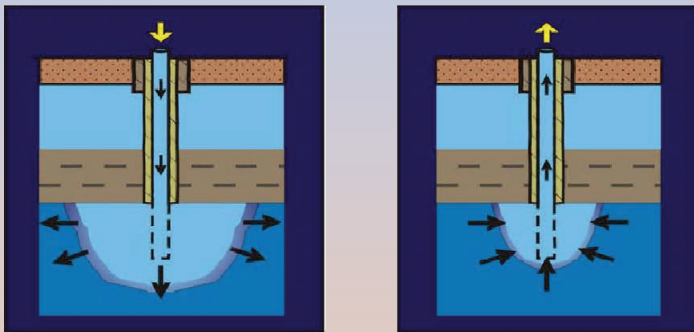
# Aquifer Storage and Recovery Program

Enhancing the Management of the Chino Groundwater Basin



## What is Aquifer Storage and Recovery?

Aquifer Storage and Recovery (ASR) is a process of improving water supply reliability and groundwater quality by managing a groundwater basin, or aquifer, as an underground reservoir. ASR wells inject high quality water into the ground when water is plentiful, usually in wet winter months. When additional groundwater production is needed, in the hot summer months or in times of severe drought, ASR wells reverse operations and extract groundwater from the aquifer similar to typical groundwater production wells.



STORAGE RECOVERY  
Graphic Illustration of the ASR Process

By injecting higher quality water into an aquifer of lesser quality, ASR wells create a zone or “bubble” of better quality water to be recovered at a later time. Additionally, injecting high quality water over a number of years will improve the overall quality of water in a groundwater basin, increasing local water supply resources.

Monte Vista Water District’s ASR program is the first of its kind in the Inland Empire region.

## Monte Vista Water District’s Aquifer Storage and Recovery Wells

Monte Vista Water District’s ASR Program consists of four ASR wells (one jointly owned with the City of Chino). These wells are able to inject high quality imported water from Northern California, purchased from Metropolitan Water District of Southern California through Inland Empire Utilities Agency. The imported water is treated at the Water Facilities Authority’s Agua de Lejos Water Treatment Plant in Upland, partially owned by the District.

The District began construction of its ASR wells in 2005 after the completion of a Groundwater Recharge Feasibility Study by Camp Dresser & McKee Inc. (CDM) in 2003. All four wells became operational in Summer 2008 with a combined total injection capacity of 15 acre-feet per day (4.9 million gallons).

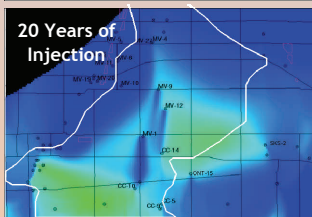
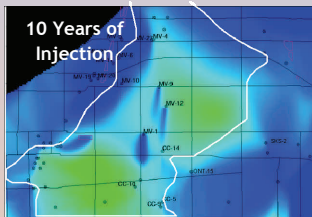
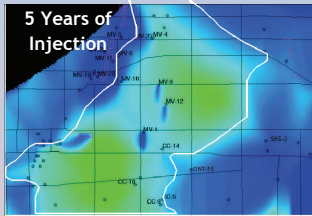
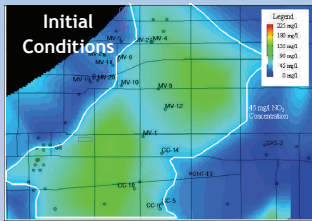


ASR Well 30 Pump House



## Benefits of Aquifer Storage and Recovery Program

- ◆ Increases Local Water Supply For Use in Times of Shortage or Drought
- ◆ Improves Groundwater Quality (see below)
- ◆ Recharges Aquifer without Large Spreading Basins – Ideal for Urbanized Locations
- ◆ Meets Objectives of Chino Basin Watermaster’s Optimum Basin Management Plan



Nitrate Reduction Over Time

### *How Will the Aquifer Storage and Recovery Program Improve Groundwater Quality in the Chino Basin?*

Through the ability to inject high quality water directly back into the groundwater basin, Monte Vista Water District has the ability to significantly improve local water quality.

Portions of the groundwater in Chino Basin contain high levels of nitrate, requiring either the blending of water supplies or the use of wellhead treatment before water is delivered to customers. Both of these approaches increase water supply costs. Through the use of Aquifer Storage and Recovery (ASR) wells, the injection process creates a zone or “bubble” of better quality water to be recovered at a later time.

Camp Dresser & McKee Inc.’s (CDM) 2003 Groundwater Recharge Feasibility Study modeled the groundwater basin, using ASR wells for injection for recharge. Their study demonstrated that the nitrate levels would decrease over time, resulting in improved water quality.

Clean-up of groundwater in the Chino Basin is a major goal of the Chino Basin Watermaster’s Optimum Basin Management Plan (OBMP) adopted in 2000. The District has evaluated the environmental effects of the ASR well projects and has determined that the potential changes in groundwater levels and water quality are consistent with or better than what was identified in the OBMP’s Program Environmental Impact Report (Program EIR).

#### Program Funding

<b>Total Program Cost:</b>	<b>\$17 Million</b>
<b>CA Department of Water Resources</b>	
Feasibility Study Grant:	\$100,000
Low-Interest Loan (2.4%):	\$4.3 Million
<b>Metropolitan Water District</b>	
Proposition 13 Grant:	\$3.1 Million
<b>Cities of Chino and Chino Hills</b>	
Local Funding Share:	\$3.7 Million

*Monte Vista Water District’s Aquifer Storage and Recovery Program received a prestigious “2005 Integrated Project of the Year Award” from the Santa Ana Watershed Project Authority in April 2005.*



Monte Vista Water District, a county water district formed in 1927, provides retail and wholesale water supply services to a population of over 130,000 within a 30-square mile area, including the communities of Montclair, Chino Hills, and portions of Chino.

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