A Southern California Water Market - Managing in a Time of Scarcity

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Background: California Groundwater

- 1/3 of potable water supplies are from groundwater
- In dry periods, groundwater represents more than 50% of supply in some areas
- There are 431 groundwater basins in California
  - 127 are high or medium priority: many with overdraft conditions
  - 27 basins are adjudicated: A Watermaster or other governing body regulates groundwater use

California Groundwater - SGMA

- Many groundwater basins are in overdraft
- The 2014 Sustainable Groundwater Management Act (SGMA) is California’s first overall groundwater management regulation
- Non-adjudicated high- and medium-priority groundwater basins need Groundwater Sustainability Agency(s) (GSA)
- A Groundwater Management Plan (GMP) is required for each basin
- GMP considers six sustainability criteria

Getting to Sustainability

- Overdrafted groundwater basins face big challenges in reducing water demands
- Water markets can help ease the transition to sustainable groundwater use
- About 3% of water supplies are bought/sold or traded on water markets in California
- Water markets have not been easy to establish
- Most water markets or transfers are within single groundwater basins. The Mojave River basin is a good example

Mojave River Basin

- Inland drainage, with no outlet to the sea
- ~3,800 square miles in area
- Elevations from about 10,000 to 1,500 feet
- Desert climate
  - Hot and dry area
  - Average annual maximum is 80°F
  - Average annual precipitation is 4 to 5 inches
- Sources of potable supply are groundwater and imported Northern California water
Mojave River Basin

- Divided into 5 inter-connected subareas
- Alto Subarea is the most populated: 333,000+
- Communities of Victorville and Hesperia have grown considerably

Intensive Use of Groundwater

- Groundwater is the main source of supply for 333,000 people in the Alto Subarea
- Since 1950, groundwater levels have dropped 50 to 100 feet
- Groundwater use has shifted from agriculture to municipal and industrial uses
- The production safe yield of the Alto Subarea aquifers is 70,000 acre-feet (AF) per year
- Base annual water production was 120,000+ AF per year

Mojave River Judgement

- A 1996 Judgement to reduce overdraft
- In July 2002 legal challenges were settled
- Watermaster and Mojave Water Agency (MWA) manage basin water conditions and provide imported water from California State Water Project (SWP) Aqueduct
- Judgement established Base Annual Production (BAP) rights for about 450 major pumpers (% of production safe yield)
- Judgement established annual Free Production Allowances (FPA)
- FPAs are to decline over time, so pumping will better match production safe yield

Reduction in FPA

- Pumpers can extract up to their FPA without penalty
- Pump more than your FPA: pay Watermaster a Replacement Water Fee so they may buy and recharge imported aqueduct water
- Alternatively, buy (lease) someone else’s unused FPA (a cheaper alternative) for the year
- Or buy someone’s FPA on a permanent basis

Mojave Basin Alto Subarea

- Water market allows for:
  - Selling and buying (leasing) unused pumping allowances for any single year (FPA - Temporary Transfer)
  - Selling and buying production rights in perpetuity (FPA – Permanent Transfer)
- Transactions are performed by unofficial “Brokers”
  - About 100 temporary transfers in 2015-2016
  - Six permanent transfers in 2015-2016
- Three main factors are controlling prices
  - Reduction in allowable pumpage (FPA)
  - Shift in water use from agricultural to industrial
  - Increased market stability related to Judgement

Alto Subarea Free Production Allowance

- FREE PRODUCTION ALLOWANCE
  - Municipal FPA
  - Agricultural FPA
  - Reduction in FPA over time
Shift in Use
- Some farmers are fallowing land and/or changing crops and selling their unused allowance
- Some farmers are selling their land and keeping their water rights
- Municipal & industrial users buy FPA from farmers or others
  - Victor Valley Water District permanent FPA purchases
  - Baldy Mesa Water District temporary FPA purchases
  - City of Hesperia advertising for permanent FPA purchases

Mojave Basin Alto Subarea

Trends in Prices
- Prices of annual leases and permanent purchases have risen at an average of about 12% per year
- Prices generally track with Watermaster’s Replacement Water Assessment costs

Market Conditions
- Every year there are unused FPAs in the Alto Subarea
- A few buyers are paying the Replacement Water Fee even though it costs more than FPAs that might be available
- There is an “untapped” market for FPAs, however the current decentralized market makes it difficult to utilize them
  - Buyers, such as cities, need to search out potential sellers
  - Sellers must search out buyers
  - For each transaction, there is uncertainty about prevailing market prices
- A centralized market place will help stabilize prices and increase utilization of available FPA

Questions?