INDIRECT REUSE REPLENISHMENT PROJECT (IRRP) UPDATE

April 8, 2014
Upper District

- A special district formed in 1960
- 144 square mile service area
- Population served: 900,000
- Provides supplemental water to San Gabriel Valley communities
- Metropolitan Water District member agency
- Total water demand is about 200,000 acre feet of water annually.
- 2013/14 Budget $32.1 million
California’s Current Drought

- Governor’s emergency declaration
- 0% State Water Project Allocation
- $1,300 per AF + spot market water transfer prices (typical dry-year price is $300 - $350 per AF)
- 17 communities without water in 60 days or less
Project History: Motivation

BALDWIN PARK KEY WELL WATER SURFACE ELEVATION

ELEVATION IN FEET

180 200 220 240 260 280 300 320

WATER YEAR


STETSON ENGINEERS INC.
Covina  San Rafael  Mesa, Arizona
WATER RESOURCE ENGINEERS

UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT

BALDWIN PARK KEY WELL ELEVATION
Renewed Interest

Dem& & Supply in 2035 (Drought Conditions)

Expected to occur 1 in 10 years

Dem&'s Existing Supplies

- Allocated MWD Firm Supply
- Existing Recycled Water
- Surface Water (dry year)
- Groundwater w/o replenishment

Shortage 33,000 AF (15%)
Past Efforts

1991: San Gabriel Valley Water Reclamation Program (16,000 AFY)

1996: San Gabriel Valley Recycled Water Demo Project (8,100 AFY)

2008: Groundwater Reliability Improvement Project (GRIP) (25,000 AFY)
Alternatives Unit Costs

May 2013

Cost ($ per AF)

- **$416** - $565 - $743
- **$579** - **$618** - $1,135
- **$1,471** - $1,761
- **$1,464** - $2,865

Alternative 1 (Tertiary)
Alternative 2 (O₂/BAC)
Alternative 3 (FAT)

MWD Tier 1 Untreated Water Rate (2013)
Groundwater Recharge with Recycled Water - “Indirect Reuse”

- Current widespread practice
  - Lower San Gabriel River
  - Orange County
  - San Bernardino County

- 3.3 billion gallons per year (20,000 households)
- 8 miles of > 36” diameter pipeline
- Pump station
Identified Spreading Location
Developed Project Boundary

- Completed Extensive Groundwater Modeling
- Tentative Regulatory Acceptance
- Travel time and boundary defined
Treatment Optimization

Bench-scale Ozone System
Since December 2011, Upper District was selected by WateReuse Research Foundation, USBR, and MWD to perform Pilot Level Testing of Advanced Treatment Technologies:

- WRRF/USBR = $375K Ozone Treatment Pilot
- WRRF = $150K for Soil Aquifer Treatment Pilot
- MWD FAF = $150K BAC Treatment Pilot
- Suppliers and other agencies = $700K for Advanced Treatment Pilot Research
Treatment Optimization

- Total research = $1.4M to test advanced water technologies including Ozone, BAC, UV and SAT
- Upper District benefits:
  - Demonstrate proposed advanced treatment technologies and advance regulatory review by CADPH and Regional Board
  - Research will help enhance project cost estimates
  - Nationally accepted pilot and research program with CADPH participating every step of the way
Advanced Treatment Pilot Plant

BAC

MF

Ozone
Advanced Treatment Pilot Plant

New Ozone Equip.
Advanced Treatment Pilot Plant
Available Diluent Water

Initial Diluent Water Requirement for 10,000 AFY Project
Preliminary Pilot Research Results

- Ozone and BAC pilot results show that most CEC’s are eliminated while reducing TOC by 30 – 40%
SAT Pilot Research

- Research Initiated in September 2013 to Study the natural occurring Soil Aquifer Treatment (SAT) process (WRRF 12-12)
- Benefits of the SAT pilot work:
  - Establish removal of CECs that should occur in the natural environment for regulators and permitting
  - Establish removal of key pathogens that may be of concern for drinking water wells that are close to project boundary
  - Demonstrate effectiveness of ozone versus chlorine to remove additional TOC in natural environment
2014 Revised Project Schedule

Indirect Reuse Replenishment Project

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Blue bars represent current schedule for approved tasks.
Green bars represent future tasks and are tentatively scheduled to begin not sooner than indicated.
Diversified Portfolio of Sustainable Water Supplies

Recycled water is 1/3 of our ability to reduce exposure to imported water risks!

The Water Bond is needed to triple the use of Recycled water by 2018!

Figure 7-5
Resource Mix for Alternative 5 Compared to Status Quo in Year 2035 during a Drought
QUESTIONS?