Groundwater Reliability Plus

WateReuse Inland Empire Chapter Meeting

September 26, 2017
Agenda

• EMWD Overview
• Groundwater Reliability Plus Overview
  – Existing Facilities
  – Objectives
  – Current and Proposed Operations
• Purified Water Replenishment
  – Proposed Facilities
  – Salinity Benefit
  – Additional Benefits
  – Other Potable Reuse Projects
  – Community Outreach
• Schedule of Projects
EMWD Overview
About EMWD

- Established in 1950
- Provide water, wastewater and recycled water services
- 555 square miles
  - Seven cities and unincorporated areas
- Population: 804,000
- Nearly 40 percent built out
- One of 26 member agencies of The Metropolitan Water District of Southern California (MWD)
- Five district-elected board members
- More than 600 employees
Where Our Water Comes From

Water Supply Challenges:
- Limited groundwater supplies
- Recurring drought
- Increasing imported water costs
- Population growth

EMWD Local Supplies:
- Groundwater
- Desalted Groundwater
- Recycled Water
- Stormwater Capture
EMWD’s Water Supply Portfolio

Calendar Year 2016 – 119,046 acre feet (AF)

Local Supplies: 54%

- Recycled Water: 36%
- Groundwater: 12%
- Desalter: 6%

Imported Supplies: 46%

- Colorado River and State Water Project from MWD: 46%
- Desalter: 6%
- Groundwater: 12%

Source: 2016 Data (Various Finance/Ops Records)
Recycled Water Infrastructure - Drought-proof Sustainable Supply

• Program started in 1960’s:
  – Four tertiary treatment plants – averaging 42 MGD of recycled water
  – Agricultural irrigation (10,800 acres)
  – Sport fields, golf courses, parks, schools, medians, recreational
  – Industrial (regional power plant, manufacturing)

• More than 7,010 AF of seasonal storage reservoir capacity
  – 900 AF additional storage brought on-line in 2017

• $188 million in total capital investments

Currently 100% of wastewater is recycled for beneficial use

Integrated Recycled Water System

More than 35,000 AF sold in FY 16/17
Existing Groundwater Recharge Facilities

- **Existing Facilities**
  - Integrated Recharge and Recovery Program - Recharge Ponds
  - Monitoring Wells
  - 33 inch Raw Water Supply Pipeline

- **Sources of Recharge Water***
  - Settlement Water: 7,500 acre-feet per year (afy) on average basis
    - 2016 Recharge: 12,565 afy

* Excludes recharge of storm water captured in San Jacinto River, Soboba Pit and Grant Avenue Recharge ponds
San Jacinto River Diversions

- River diversions since November 2016 – 3,094 AF
- Storm water capture flows up to 23.5 million gallons per day
- Currently diverting approximately 2,100 gallons per minute
- Maximum permitted diversions per year – 5,760 AF
Groundwater Reliability Plus Overview
Groundwater Supply Objectives

• Increase groundwater recharge
  – Construct raw water and recycled conveyance facilities, recharge basins

• Increase sources of recharge water
  – Existing Source:
    • Soboba Settlement Recharge Water (imported from MWD)
  – Proposed sources:
    • Water Banking
      – Increased State Project Water through new MWD connection
    • Potable Reuse
      – Advanced treated purified water (Reverse Osmosis)
      – Tertiary treated recycled water
Water Banking

- **Seasonal Water Banking** *(recharge and annual extraction)*
  - Store and extract banked water for use during the same year
  - Recharge water during wet and average years at a rate up to the capacity of the recharge facilities, 7,000 afy or more
  - Total extraction in any given year would not exceed 7,000 af

- **Extended Water Banking** *(recharge and future year extraction)*
  - Store water in the bank for use during an emergency or drought in future years
  - Recharge water during wet years at a rate up to the capacity of the recharge facilities, 7,000 afy or more
  - Extract the banked water only during emergency or drought, up to 7,000 afy
  - Uses the same recharge and extraction facilities as Seasonal Water Banking
Potable Reuse

- Highly regulated, planned introduction of recycled water into potable system
- Uses a proven technology and is safe
- Used in California since early 1960’s
- Four approaches:
  - Reservoir augmentation
  - Raw water augmentation
  - Treated water augmentation
  - Groundwater augmentation – Purified Water Replenishment
- Potable reuse water distributed for municipal use is safe, high-quality water that meets or surpasses state and federal drinking water standards.
Current and Proposed Operations

Existing Recharge Sources
(Imported MWD Settlement Water 7,500 afy)

Water Banking
(10,000 – 20,000 afy)

Tertiary Recycled Water
(0 - 2,000 afy)

Purified Water Replenishment
(2,000 afy)

Proposed Projects

Recharge Ponds

Soil Aquifer Treatment

Groundwater

Disinfection

EMWD’s Water Distribution System
Purified Water Replenishment Overview
Purified Water Replenishment Process

Disinfected Tertiary → Continuous → MF / RO

0 - 2,000 afy Seasonal → 2,000 afy

Recharge Ponds

Soil → Aquifer → Treatment

Required travel time in groundwater aquifer
Proposed Facilities

- Treatment Facilities
  - Advanced Water Treatment Facility
  - Pump Station at Advanced Water Treatment Facility
  - Brine Evaporation Pond

- Conveyance Facilities
  - Advanced Treated Water Pipeline
  - Tertiary Recycled Water Pipeline

- Recharge Ponds
  - Mountain Avenue North Percolation Basin
  - Mountain Avenue East Percolation Basin
  - Mountain Avenue West Percolation Basin

- Production Facilities
  - Three Groundwater Wells
Proposed Purified Water Replenishment Facilities
Salinity Management Benefit

Cumulative Basin Impact: ~76,000 tons less salt
Additional Benefits

- Provides a safe, environmentally-responsible and cost-effective drinking water source
- Improves water quality
  - Lowers projected salinity levels in groundwater basin
- Increases regional groundwater levels
  - Lowers pumping costs
- Increases reliability of groundwater supplies
  - Drought-proof local supply
  - Reduces dependence on imported water supplies
- Safely used across state and nation for decades
California Potable Reuse Projects

Red = Permitted groundwater—204,545 AFY
Blue = Planned groundwater -- 206,047 AFY
Black = Planned surface water augmentation— 110,953 AFY

(May 31, 2016)
Community Outreach

- Agency presentations
- Community presentations
- Newsletters
- Website
- Social media
- Email updates
- Facility tours
Schedule of Projects
Schedule

- Water Banking
  - Estimated groundbreaking: 2018
  - Estimated completion: 2020/2021
- Purified Water Replenishment
  - Estimated groundbreaking: 2019
  - Estimated completion: 2022
Thank you

Joe Mouawad,
Assistant General Manager
Planning, Engineering, and Construction
(951) 928-3777 Ext. 4463
mouawad@emwd.org