EVMWD Indirect Potable Reuse (IPR) Future Consideration
Agenda

- IPR Feasibility Study Summary
- Recycled Water Supply
- Preliminary Alternatives Analysis
- Groundwater Injection Alternatives
- Surface Water Augmentation Alternatives
- Cost Comparison
- Recommendations
IPR Feasibility Study Summary

District Receives USBR Funding

Preliminary Alternatives Analysis

Refined Alternatives Analysis

Project Recommendation:
Produce full advanced treated water for injection in the Back Basin
Available Recycled Water Supply

Regional WRF
Recycled Water Supply

AFY
Available Recycled Water Supply

- **Phase 1 Design**: 3,375 AFY
- **Phase 2 Design**: 6,750 AFY

**Regional WRF**
- **Recycled Water Supply**
- **Temescal Creek Discharge**
- **Lake Elsinore Replenishment**

**IPR Product Water**

**Brine**
Preliminary Alternatives Analysis

Surface Spreading Locations

Surface Water Augmentation

Direct Injection

Lee Lake
Quarries
Warm Springs
Regional WRF
North Lake
Back Basin Injection Wellfield

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Preliminary Alternatives Analysis

Surface Spreading Locations Not Viable

- Unsuitable geology
- Shallow aquifer
- Less hydrogeology data available
- Land acquisition required

Direction Injection in Back Basin is Viable

Surface Water Augmentation at Canyon Lake is Viable
Back Basin – Most of District’s Groundwater Production
Injection Well Locations with 2 Alignment Alternatives

Pipe Crossing with Future Bridge

Pipe Crossing Under Inlet

Total Pipeline Length
Phase 1 = 5.7 miles
Phase 2 = 1.0 miles

RWRF
Phase 1 = 2,100 gpm
Phase 2 = 4,200 gpm
75 HP (2 duty+1)
TDH = 96 ft

Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, IFC, NRCAN, Esri Japan, METI, Esri China
Direct Injection Advanced Treatment Process

Microfiltration or Ultrafiltration → Two-Stage RO → UV Reactor → Air Stripper → Post Stabilization → Elsinore Basin

RWRF RW → To Brine Disposal → Third Stage RO (CCD)

Lime
Brine Disposal via Inland Empire Brine Line

- District owns 0.8 mgd of capacity
- $50 per AF of product water
Groundwater Travel Time to Nearest Production Well
Surface Water Augmentation @ Canyon Lake

- 12,000 AF of storage
- 9 mgd surface water filtration plant
Surface Water Augmentation @ Canyon Lake

Retention Time = 9 months > 6 months ✔

Dilution Factor = 270:1 > 100:1 ✔
Surface Water Augmentation Advanced Treatment Process

- Sodium Hypochlorite
- Lime
- UV Reactor
- Two-Stage RO
- Microfiltration or Ultrafiltration
- Third Stage RO (CCD)
- Carbon Dioxide
- Post Stabilization
- Quenching Agent
- Free Chlorine Disinfection in Pipeline
- To Brine Disposal
- To Canyon Lake
Economic Analysis Parameters

- 2016 Dollars
- 25 years
- Discount rate = 4%
- General cost escalation = 2%
- Energy cost escalation = 4%
- Construction contingency = 30%
- Engineering & Administration = 20%
Net Present Costs

- Direct Injection 1
- Direct Injection 2
- Canyon Lake 1
- Canyon Lake 2
- Canyon Lake 3

Capital Costs

O&M Costs
Non-Economic Analysis Criteria

- Public Acceptance: 10%
- Basin TDS Improvement: 25%
- Implementation Risk and Uncertainty: 20%
- Environmental Impacts: 10%
- Distribution System Impacts: 10%
- Operational Complexity: 15%
- Pipeline Construction Impacts: 10%
- Public Acceptance: 10%
Non-Economic Analysis

- Inj Well: Bridge
- Inj Well: Under Channel
- SWA: Hwy 74
- SWA: Summerhill Dr
- SWA: Railroad Canyon Rd

Weighted Score

1 - Inj Well: Bridge: 3.55
2 - Inj Well: Under Channel: 3.40
3 - SWA: Hwy 74: 3.50
4 - SWA: Summerhill Dr: 3.60
5 - SWA: Railroad Canyon Rd: 3.25
Recommended Project

Kennedy/Jenks Consultants

RWRF
Phase 1 = 2,100 gpm
Phase 2 = 4,200 gpm
75 HP (2 duty + 1)
TDH = 57 ft

Total Pipeline Length
Phase 1 = 4.8 miles
Phase 2 = 1.0 miles

SARCCUP 2

Lake Elsinore

20" diameter

North Island
Middle Island
South Island

IPR 1
Phase 1 = 700 gpm
Phase 2 = 840 gpm

IPR 2
Phase 1 = 700 gpm
Phase 2 = 840 gpm

IPR 3
Phase 1 = 840 gpm
Phase 2 = 840 gpm

IPR 4
Phase 1 = 700 gpm
Phase 2 = 840 gpm

IPR 5
Phase 1 = 840 gpm
Phase 2 = 840 gpm

Cereal 1

Diamond

Summerly

MW4

MW1

MW3

Corydon St

Grove St

Oliver St

Elsinoe Flats Park

Lake Elsinore Civic Center

Lake Elsinore Civic Center

20" diameter

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand). MapmyIndia/NGCC. © OpenStreetMap

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**Recommended Project**

**Phase 1**  
2030

- 3 mgd Advanced Water Treatment Facility
- 3 injection wells
- Pipelines
- Pump stations

**Phase 2**  
2036

- 3 mgd expansion of AWTF
- 2 injection wells
- Pipeline extensions
- Expand pump stations
Thank You
Environmental Impact Review

Groundwater Modeling

Technical Writing Support

Regulations & Advanced Water Treatment