

# UPDATE TO THE SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

## RECYCLED WATER AND POTABLE REUSE

City of Escondido, Utilities Department

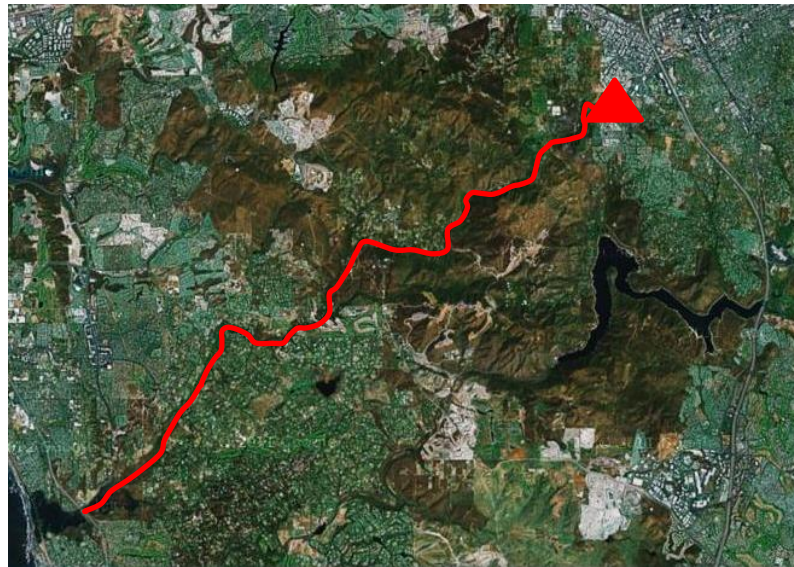
Christopher McKinney, Director

February 11, 2015



# CHALLENGES THAT LED TO PROGRAM DEVELOPMENT

- **Flow Capacity Limitation of Existing Outfall**
  - Conveys treated wastewater from Hale Avenue Resource Recovery Facility (HARRF) to the ocean
  - Nearing capacity
  - Aging and will require replacement if water is not redirected via reuse

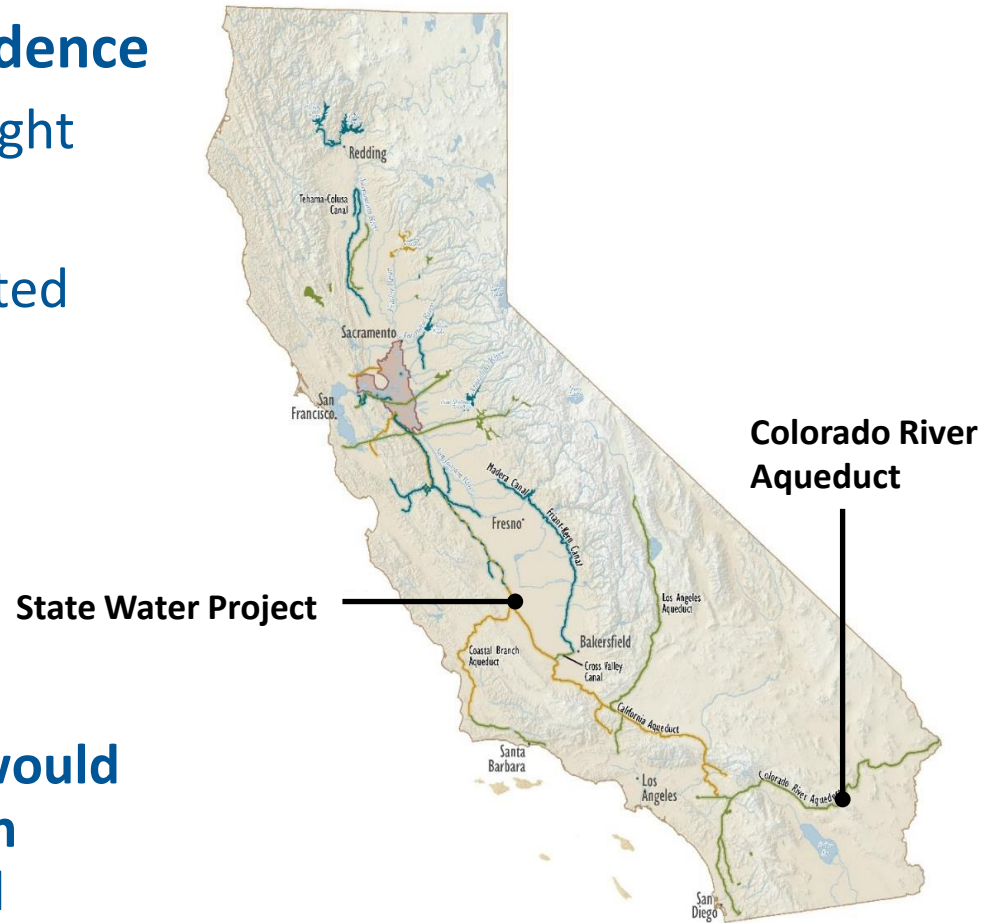


# CHALLENGES THAT LED TO PROGRAM DEVELOPMENT (CONT.)

## Imported Water Dependence

- Water scarcity / drought
- Local water system
  - Beneficial but limited

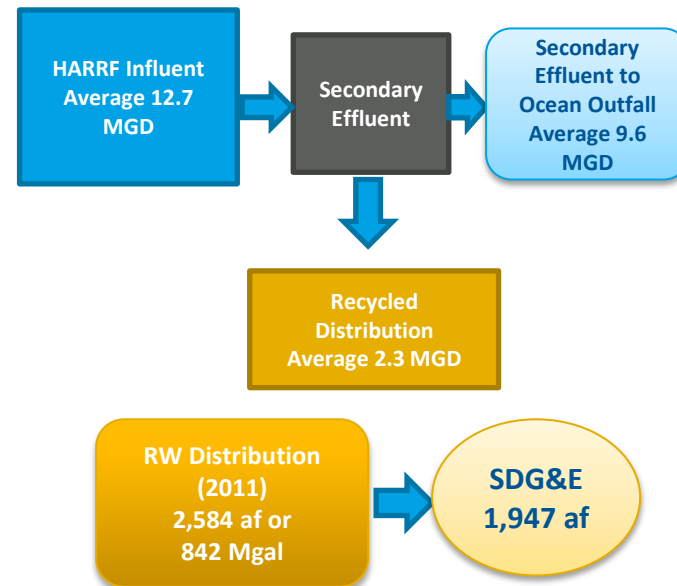
More water reuse would decrease reliance on imported water and mitigate outfall capacity limitation



Reference: **Anthony Artusa**  
NOAA/NWS/NCEP/CPC, January 28, 2014

# CHALLENGES THAT LED TO PROGRAM DEVELOPMENT

- **Treatment Capacity of existing HARRF facility**
  - Limited BOD removal
    - Already beginning to impact business community
      - Impacts will spread as capacity becomes more scarce
    - Recycled water (RW) capacity is limited



# CHALLENGES THAT LED TO PROGRAM DEVELOPMENT (CONT.)

## Limited RW Distribution

- Limited existing recycled water system for irrigation and other non-potable uses (NPR)



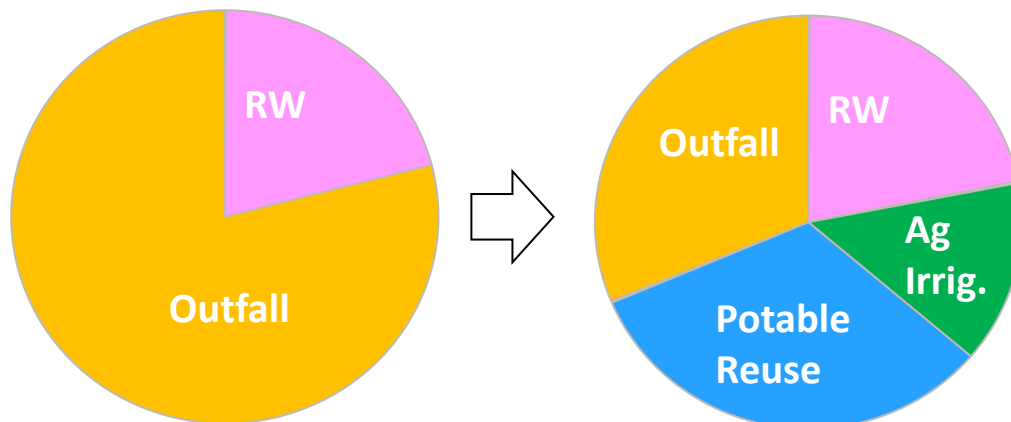
## Expansion of RW treatment and distribution would:

- Generate revenue
- Reduce ocean discharge
  - Mitigate outfall capacity
- Benefit local economy

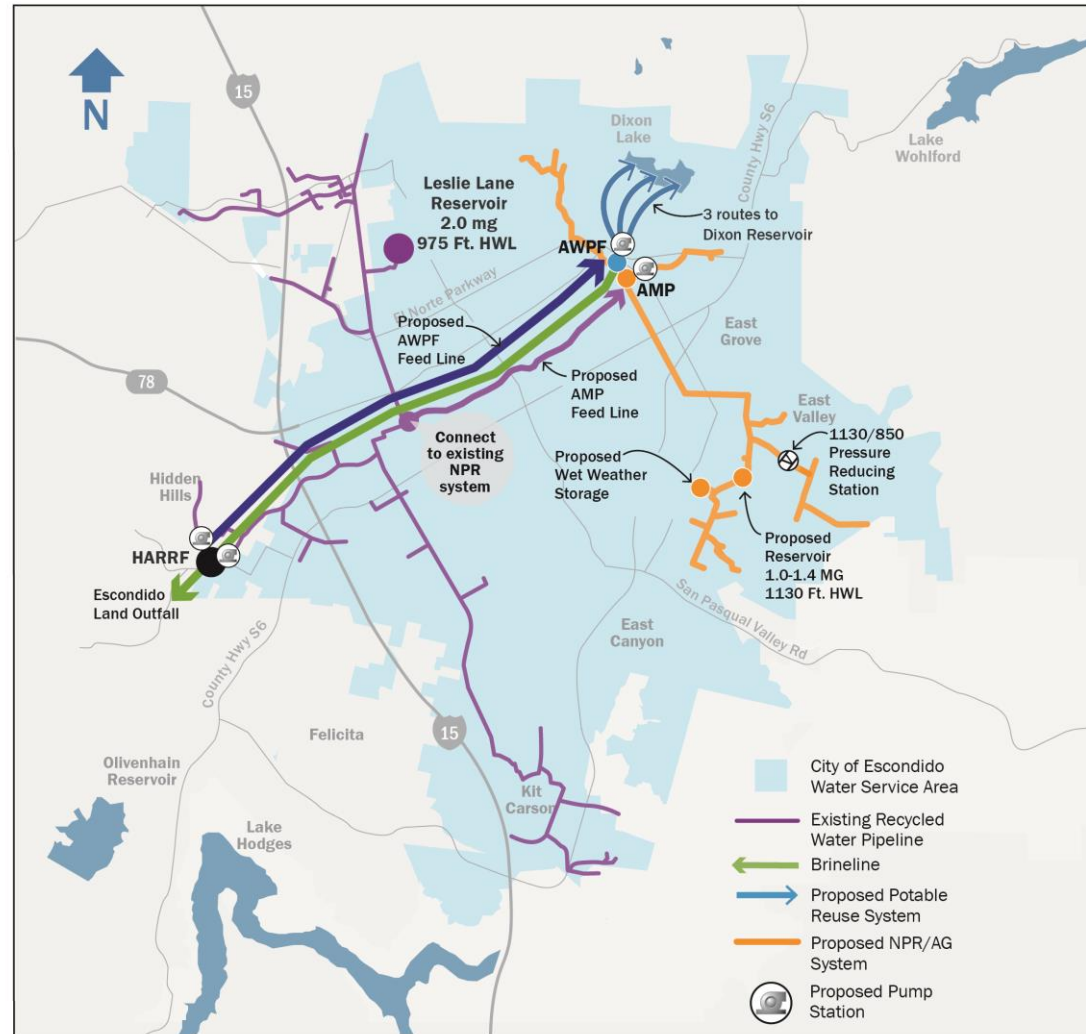


## Expand Recycled Water System and Develop Potable Reuse

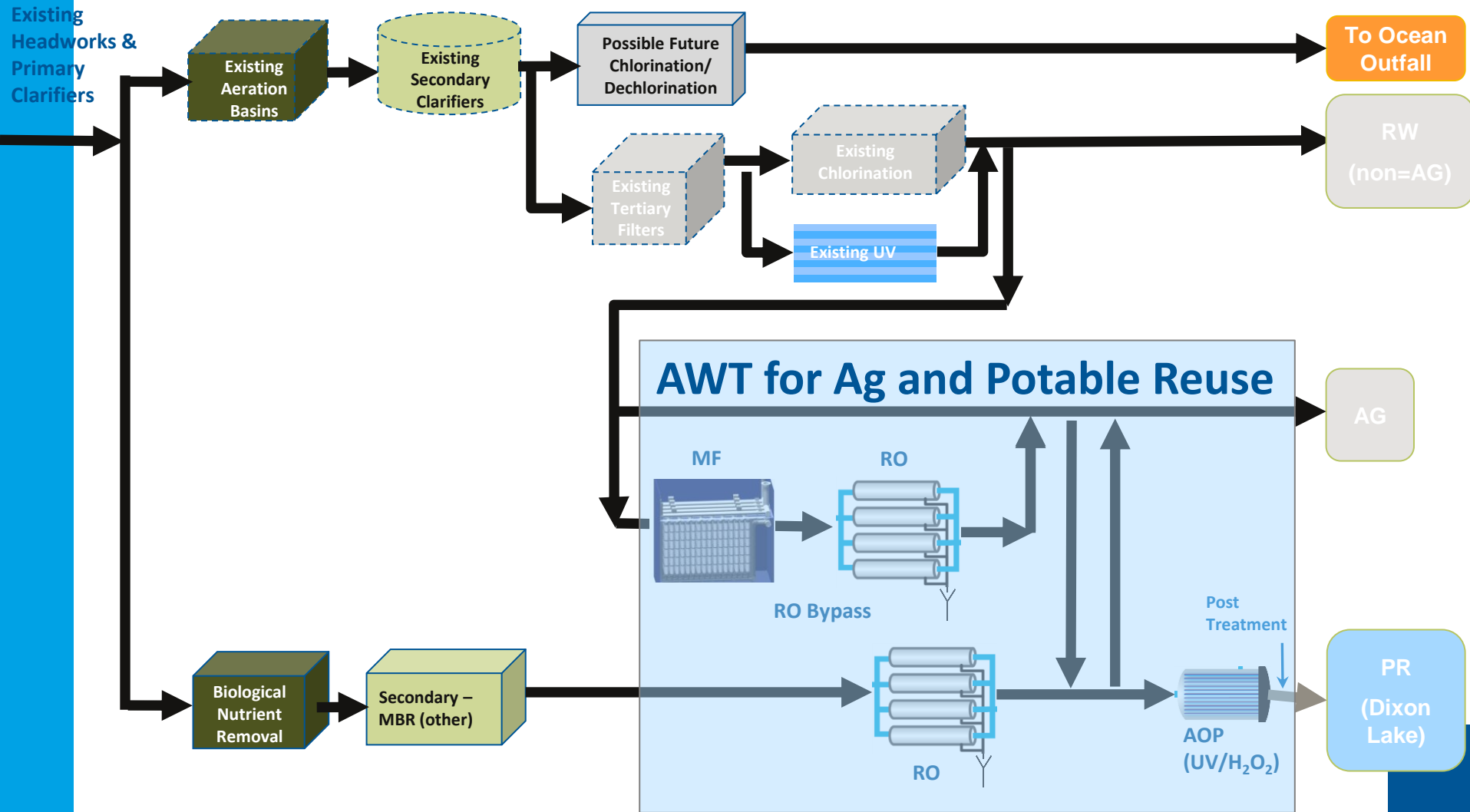
- **Total CIP cost = \$285 million**
  - Additional \$21 million after 2030 (outfall lining)
- **Large CIP cost, but...**
  - **Generates revenue (> \$20 million annually in 2030)**
  - **Reduces imported water cost (Water Fund benefit)**
  - **Lower environmental and regulatory risk**
- **Creates new, reliable, drought-proof water supply**
- **Stabilizes rates – less reliance on imported water**
- **Improved water quality (less salt)**



- Solves outfall capacity issue
- Diversifies Recycled Water Portfolio
- Reduces imported water cost
- Generates revenue
- Helps stabilize rates



# PROPOSED TREATMENT AND DISTRIBUTION SCHEMATIC





# AGRICULTURAL RW SYSTEM EXPANSION (PH. 1 AND 2)

## TOTAL EST. COST = \$27.8 M (2014-2018)

NPR/Agriculture System			
RW Easterly Main Extension			
Pipeline - Brine, B1B	A	16"; 14,000 ft; Citrus to Broadway along channel	\$3,000,000
Pipeline - RW Transmission, T1A	A	24"; 14,000 ft; Broadway to Citrus along channel	\$4,300,000
RW Easterly Main Tank & PS			
Pipeline - Brine, B1A	A	16"; ~1,600 ft; from Citrus to MFRO	\$500,000
Pipeline - RW Transmission, T1B	A	24"; ~1,600 ft; from Citrus to MFRO	\$650,000
Pipeline - RW Transmission, T2A	A	24"; ~1,600 ft; from MFRO to Citrus	\$650,000
Pipeline - RW Transmission, T2B	A	24"; 15,600 ft; from MFRO to 1.2 mg RW tank	\$4,700,000
Reservoir - RW	A	Convert existing 1.2 mg Hogback tank to RW; construct new 400k gal steel PW tank; new piping	\$2,500,000
Pump Station - NPR @ MFRO Facility	A	New ~10.5 mgd	\$3,800,000
RW Easterly Ag Distribution, Phase 1			
Pipeline - RW, D1A	A	16"; 2,600 ft; just south of 1.2 mg RW tank	\$500,000
Pipeline - RW, D1B	A	12"; 9,700 ft; just south of D1A	\$1,500,000
Pipeline - RW, D1C	A	6" to 8"; 2,100 ft; east of T2 north of 1.2 mg RW tank	\$300,000
Ponds (+ Simple Pump Back)	A	Hillebrecht, A2 & Granetto, B1 (~7 mg + ~3 mg)	\$3,500,000
RW Easterly Ag Distribution, Phase 2			
Pipeline - RW, D2	A	8" to 12"; 10,300 ft; east of 1.2 mg RW tank towards Eagle Crest	\$1,500,000
1130/850 Pressure Reducing Station	A		\$400,000

# AGRICULTURAL RW SYSTEM EXPANSION (PH. 3)

## TOTAL EST. COST = \$35.5 M (2016-2020)

RW Easterly Ag Distribution, Phase 3			
Pipeline - RW, D3A	A	16"; 5,800 ft; east of Citrus along channel	\$1,200,000
Pipeline - RW, D3B	A	8" to 16"; 10,900 ft; north of channel along Citrus and El Norte	\$2,100,000
HARRF Step 1 Improvements			
HARRF Step 1 - RW Pump Station	A	Allowance for increasing capacity of existing RW pump station	\$2,500,000
HARRF Step 1 - Tertiary Improvements, Phase 1	A	New 12 mgd filters with clearwell and mudwell; FIPS expansion; no demo of exist filters (part of Step 2)	\$7,900,000
HARRF Step 1 - Tertiary Improvements, Phase 2	A	New CCB and dechlor; no demo of exist CCB and UV facility (part of Step 2)	\$3,700,000
HARRF Step 1 - Standby Power	A	Expand existing standby power capacity	\$1,500,000
HARRF Step 1 - Drainage Channel Undergrounding	A		\$500,000
MFRO Facility for Agriculture	A	2 mgd baseloaded	\$12,600,000
AWPF Demo @ HARRF and MFRO	A		\$2,500,000
Unidentified Projects for NPR/Ag	A	TBD - allowance	\$1,000,000

# HARRF SOLIDS PROCESSING IMPROVEMENTS

## TOTAL EST. COST = \$24.3 M (2018-2023)

Digesters A and B	A	1.3 MG each	\$10,400,000
Sludge Thickening Building	A	Gravity Belt Thickeners	\$5,310,000
Demolition: DAFTs, Digested Sludge Holding Tank, Digester No. 1, Energy Recover Building, and Emergency Storage Pond	A	Demolition	\$3,380,000
Digester C	B	1.3 MG	\$5,200,000

# POTABLE REUSE TREATMENT AND HARRF UPGRADES

## TOTAL EST. COST = \$154.4 M (2022-2026)

Potable Reuse, Phase 1			
Pump Station - IPR @ HARRF	B	New 12 mgd	\$4,200,000
Pipeline - IPR, HARRF to AWPf	B	24"; 29,000 ft	\$8,700,000
Pump Station - IPR @ AWPf	B	New 8 mgd	\$2,800,000
Pipeline - IPR, AWPf to Dixon	B	20"; 10,700 ft	\$2,700,000
HARRF Step 2 - Secondary Improvements - IPR, Phase 1	B	6 mgd BNR-MBR upgrade (one new BNR-MBR, one basin converted to BNR-MBR, new fine screens, new CIP area, new MBR RAS PS, new blower building, and demo exist CCB and filter/UV facility)	\$34,100,000
AWPF (IPR), Phase 1	B	4 mgd (operating 3 mgd average); incl. aesthetic allowance	\$26,300,000
Unidentified Projects for IPR	B	TBD - allowance	\$2,000,000
Potable Reuse, Phase 2			
HARRF Step 3 - Secondary Improvements - IPR, Phase 2	C	6 mgd BNR-MBR upgrade (three basins converted to BNR-MBR, 2 duty / 1 standby; 8 mgd N-CAS upgrade (one new N-CAS basin and all remaining CAS basins converted to N-CAS); new blowers in Step 2 blower building	\$40,700,000
HARRF Step 3 - Primary Clarifier	C	Additional primary clarifier, match existing (uncovered)	\$1,200,000
HARRF Step 3 - Secondary Clarifier	C	New 110' dia circular secondary clarifier (possible future)	\$2,400,000
AWPF (IPR), Phase 2	C	4 mgd (operating 7 mgd average); incl. aesthetic allowance	\$26,300,000
Unidentified Projects for IPR	C	TBD - allowance	\$3,000,000

# QUESTIONS AND DISCUSSION

# FINANCIAL EVALUATION

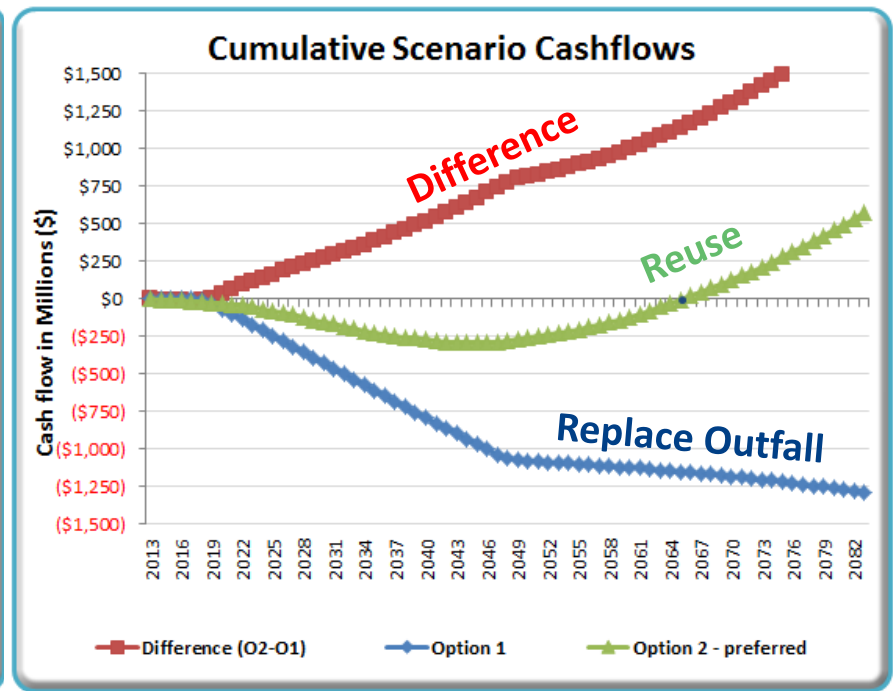
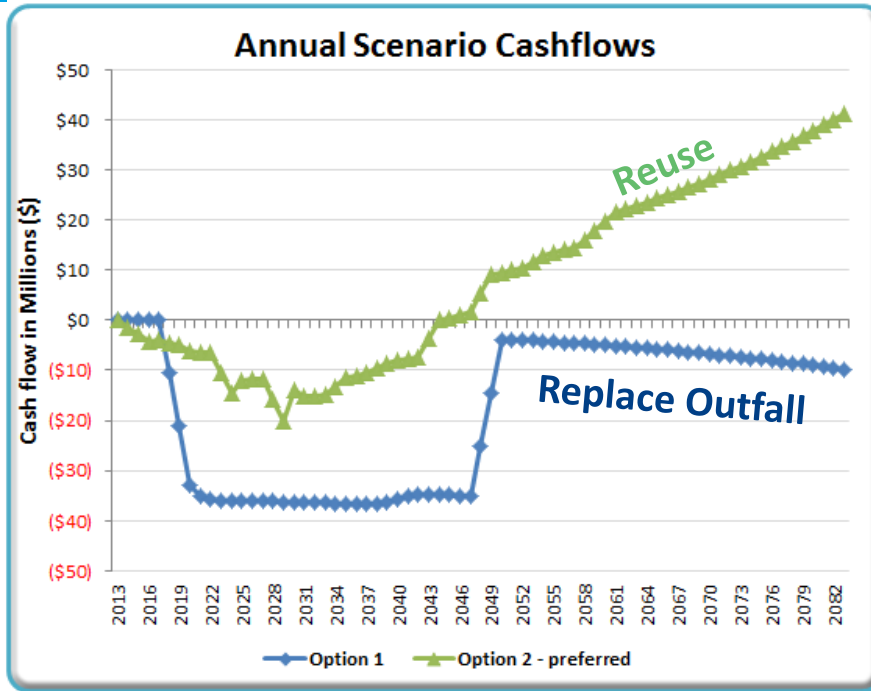
# ESTIMATED COSTS AND REVENUES

## Reuse System Expansion

Construction Cost Estimate - \$285 M

Revenue – \$24 M annually in 2030

Phased over next 20 years; Funded via rates, borrowing (SRF), and grants



# COMPARISON OF ESTIMATED COSTS AND REVENUES (CONT.)

# Timeline of Capital Expenditures – Reuse Program

