
TDS/TIN Mitigation Plan

**San Jacinto River Watershed Groundwater Management Zones:
Complying with Total Dissolved Solids & Total Inorganic
Nitrogen Water Quality Objectives**

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TDS/TIN Mitigation Plan

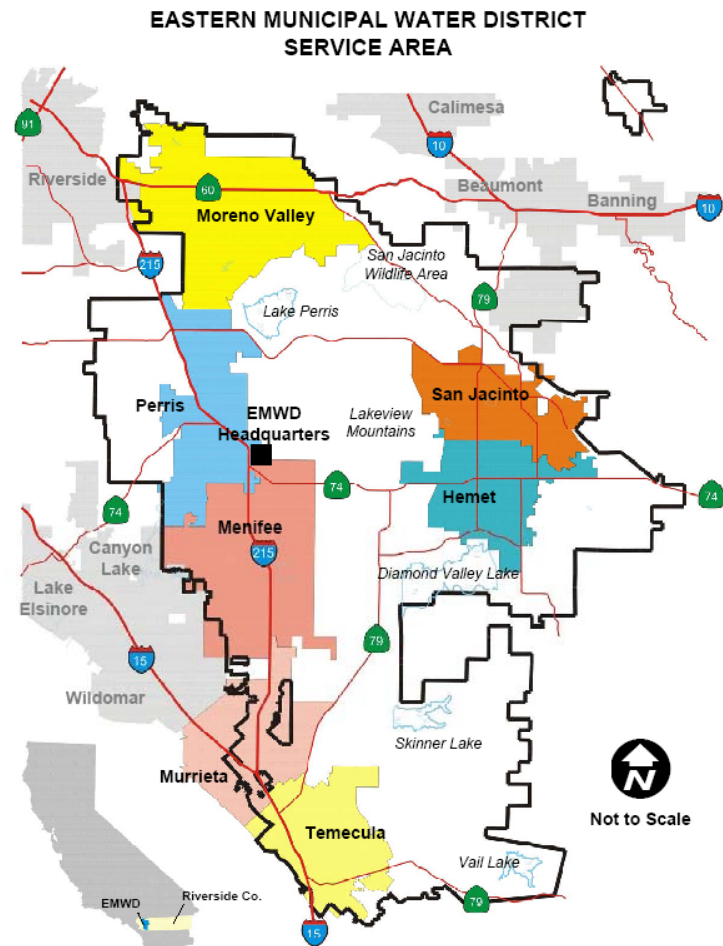
Overview – Parts and Parcels

- Who is EMWD?
 - What's a TDS/TIN Mitigation Plan (this Plan)?
 - When did EMWD need this Plan?
 - Why did EMWD need this Plan?
 - How did EMWD develop this Plan?
 - Where is this Plan taking EMWD?
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Who is EMWD?

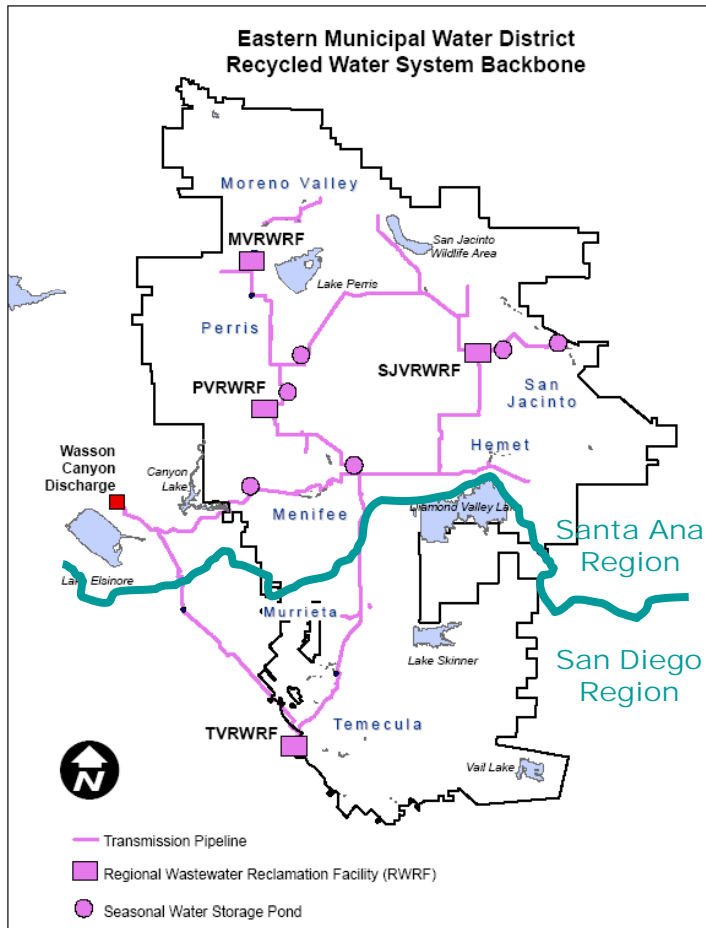
Eastern Municipal Water District

- West Riverside County since 1950
- 555 sq. mi. service area
- Population about 630,000
- Seven cities & unincorporated areas
- Property lies in two watersheds
 - San Jacinto River Watershed
 - Santa Margarita River Watershed
- District Services:
 - Water
 - Wastewater Collection and Treatment
 - Recycled Water



Who is EMWD?

Recycled Water Program

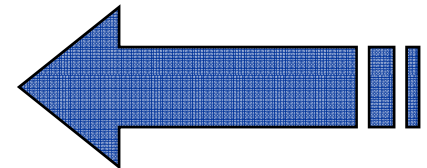


- **Regional Water Reclamation Facilities (Four Plants, Total flow: 46 MGD)**
 - 180 miles transmission pipeline
 - 18 Pumping Facilities
 - 1,820 MG (5,600 AF) in 6 ponds
 - Converting above grade storage tanks
 - Interconnected Recycled Water System
 - Wasson Canyon Discharge
- **Santa Ana Region Permits:**
 - Master Permit for all Reclamation Facilities
 - NPDES Permit for Wasson Canyon discharge
- **San Diego Region Permit:**
 - TVRWRF located in the San Diego Region

What's a TDS/TIN Mitigation Plan?

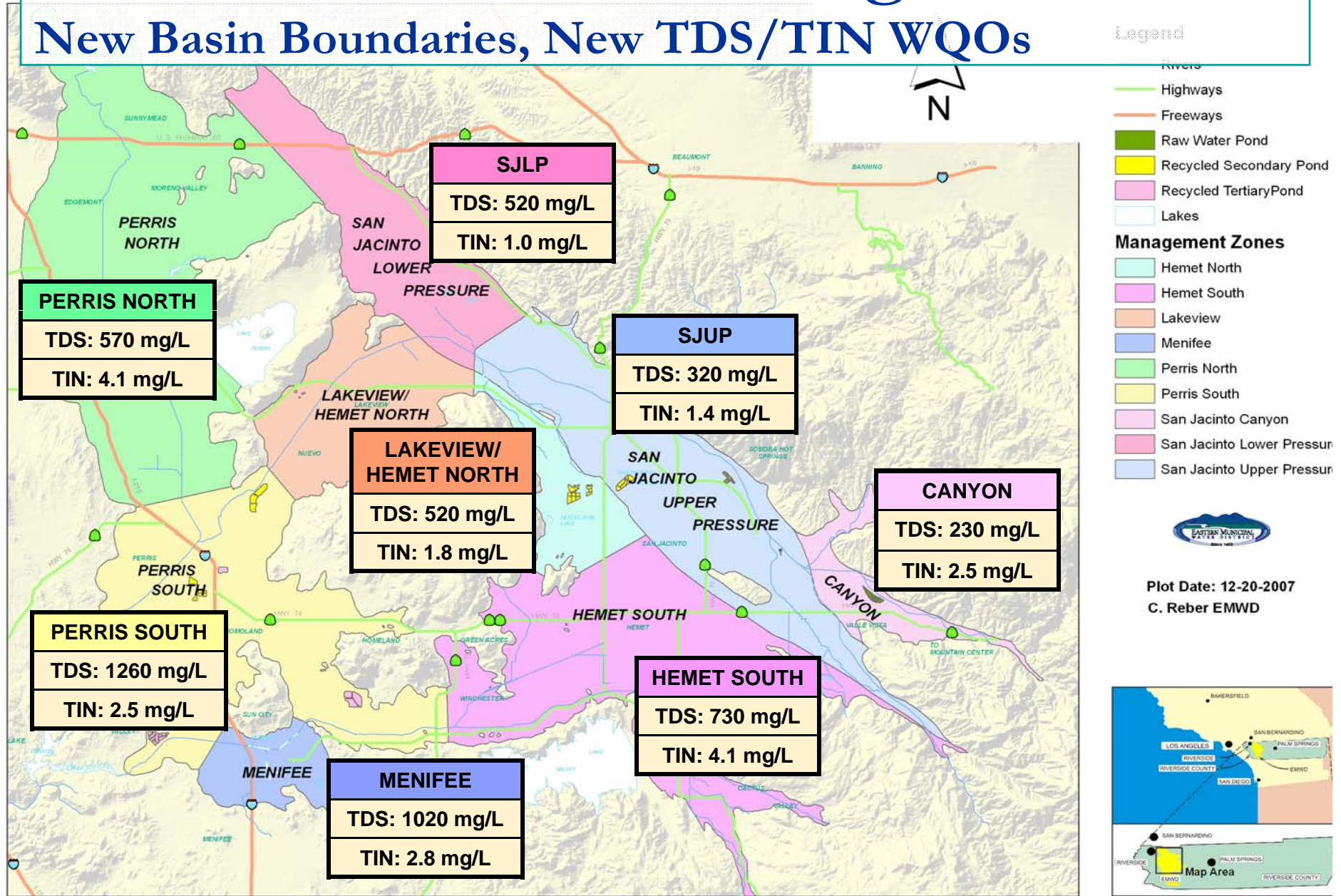
TDS: total dissolved salts TIN: total inorganic nitrogen

- Basin Plan Amendment 2004-0001
 - TDS/TIN Task Force facilitated by Santa Ana Watershed Project Authority (1995-2004)
 - Santa Ana Regional Board Action
 - TDS and Nitrogen Regulations covers:
 - Assimilative Capacity
 - Maximum Benefit Analysis
 - **TDS/TIN Offset/Mitigation Programs**
 - Nitrogen Loss Rate Coefficient
 - TDS/TIN waste load allocations



What's a TDS/TIN Mitigation Plan?

New Basin Boundaries, New TDS/TIN WQOs



When did EMWD need this Plan?

Time to Plan is before permit adoption

- **Developing EMWD's Master Permit revealed that:**
 - An Antidegradation Analysis was needed to due increased flows of recycled water into the region
 - The Antidegradation Analysis identified four (4) management zones where an offset/mitigation program
 - The TDS/TIN Mitigation Plan was required prior to the Regional Board permit adoption.
 - **EMWD's Mitigation Plan is an attachment to the Master Permit**
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Why did EMWD need this Plan?

Current and Future Plans with new WQOs

EMWD's Master Permit (R8-2008-0008)

- ❑ New Permit included new TDS/TIN Objectives

With an Option:

- ❑ Offset/Mitigation of TIN/TDS in basins with limits less than the recycled water quality.
 - ❑ Based on Antidegradation Analysis, four of the groundwater basins required further analysis.
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Why did EMWD need this Plan?

Current and Future Plans with new WQOs

San Jacinto Watershed Management Zones	TOTAL DISSOLVED SOLIDS			TOTAL INORGANIC NITROGEN		
	Water Quality Objective	Recycled Water Quality	Mitigation Required	Water Quality Objective	Recycled Water Quality***	Mitigation Required
Hemet South	730	679	NO	5.47*	No Recharge	NO
Lakeview/Hemet North	520	583	YES	2.4*	10	YES
Menifee	1020	675	NO	3.73*	No Recharge	NO
Perris North	570	500	NO	13**	10	NO
Perris South	1260	619	NO	3.33*	10	YES
San Jacinto Lower Pressure	520	575	YES	1.33**	No Recharge	NO
San Jacinto Upper Pressure	320	600	YES	3.5*	10	YES

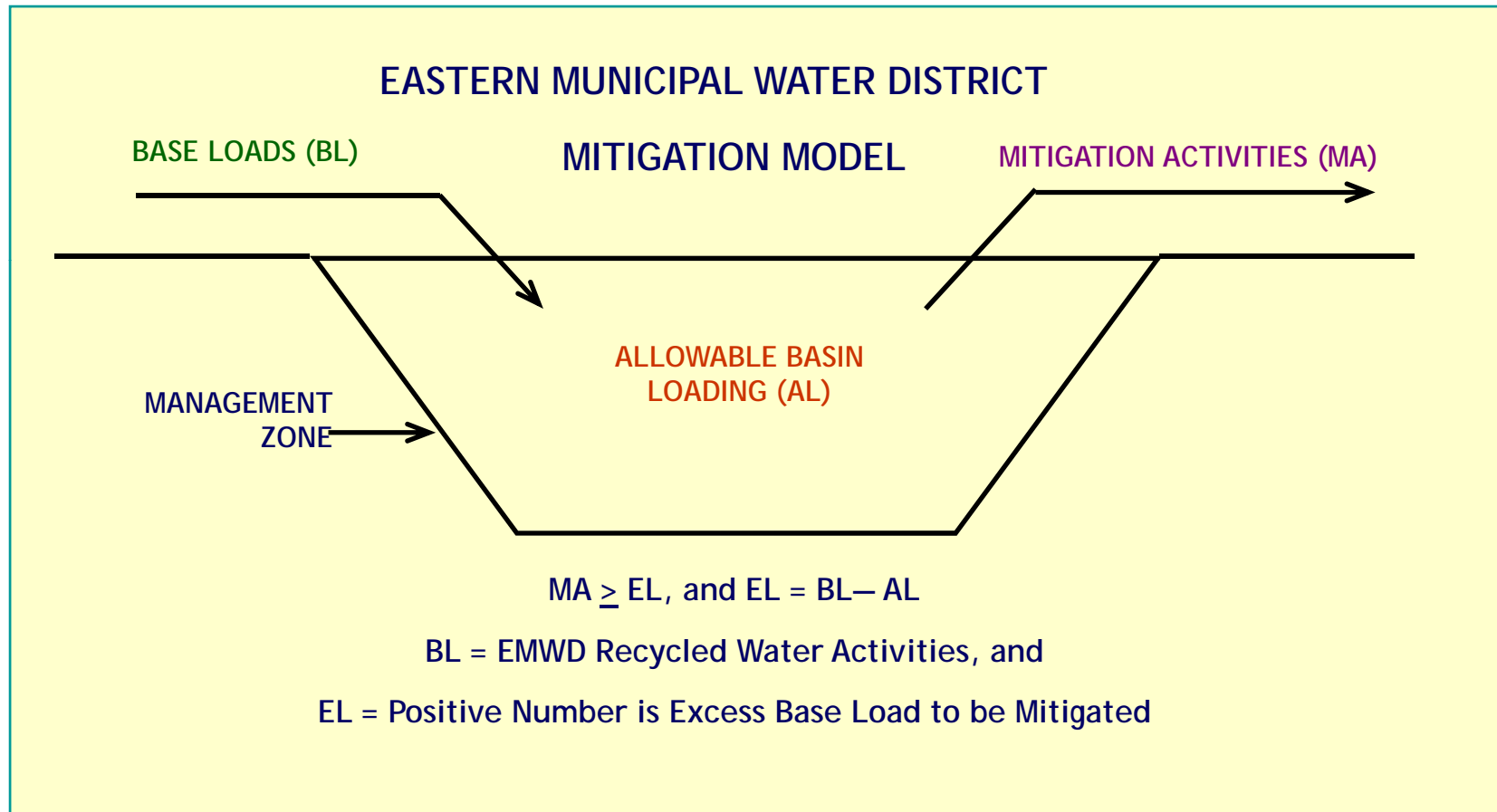
*Nitrogen loss coefficient of 25%

**Nitrogen loss coefficient of 60%

***Only EMWD incidental recharge activities require mitigation.

How did EMWD develop this Plan?

Mass Balance, Mass Balance, Mass Balance...



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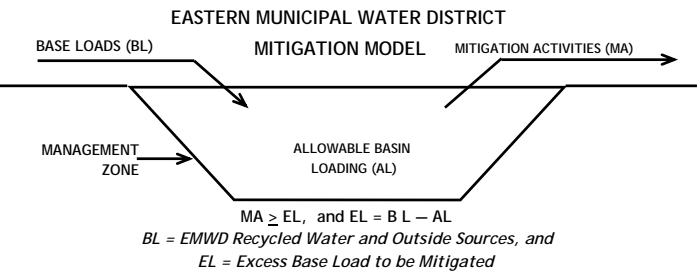
Figure 4d1. Mitigation Model Results for the Lakeview/Hemet North Management Zone
EASTERN MUNICIPAL WATER DISTRICT MITIGATION MODEL

Point Sources	Recycle Usage & Recharge			Recharge		
	Flow (AF/Year)	TDS Avg (mg/L)	TDS (tons/yr)	Flow (AF/Year)	TIN Avg (mg/L)	TIN (tons/yr)
EMWD						
SJVRWRF	1,941	600	1,582	218	9.5	2.1
MVRWRF	1,950	500	1,324	0	10.0	0.0
PVRWRF	3,450	650	3,046	0		0.0
SubTotal	7,341		5,952	218		2.1
Outside Source	Flow (AF/Year)	TDS Avg (mg/L)	TDS (tons/yr)	Flow (AF/Year)	TDS Avg (mg/L)	TIN (tons/yr)
SubTotal	0		0	0		0.0
EMWD + Outside Sources	Flow (AF/Year)		TDS (tons/yr)	Flow (AF/Year)		TIN (tons/yr)
Total Basin Load (BL)	7341		5,952	218		2.1

Basin Objective	Flow (AF/Year)	TDS Avg (mg/L)	TDS (tons/yr)	Flow (AF/Year)	TDS Avg (mg/L)	TIN (tons/yr)
Allowable Basin Load (AL)	7341	520	5,185	218	1.0	0.5

Excess Basin Load	TDS (tons/yr)
Excess Load Calculation (EL)	BL - AL = 767

Mitigation Activities (MA)	Flow (AF/Year)	TDS Avg (mg/L)	TDS (tons/yr)	Flow (AF/Year)	TDS Avg (mg/L)	TIN (tons/yr)
Desalter Well Production (WP)	2,415	2,000	6,561	2,415		
Desalter Removal Efficiency (EF)	0.85	0.87				
Mitigation Activity (MA)		WP x EF =	5,577		WP x EF =	21.4



TDS (tons/year)	TIN (tons/year)
BASE LOAD	
Basin Load (BL): 5,952	Basin Load (BL): 2.1
ALLOWABLE LOADING	
Allowable Basin Load (AL): 5,185	Allowable Basin Load (AL): 0.5
EXCESS BASIN LOAD	
Excess Basin Load (EL): 767	Excess Basin Load (EL): 1.6
MITIGATION ACTIVITIES	
Mitigation Activities (MA): 5,577	Mitigation Activities (MA): 21.4
Excess TDS removed: 4,809	Excess TIN removed: 19.8
Is the mitigation acceptable where MA ≥ EL? YES	YES

Notes: TIN from Point Sources only includes RW recharged, not irrigated.
Lakeview Desalter Well Production = 2.5 x 750 gpm wells operating 80% of the time.
SJVRWRF includes wetland TIN mitigation.

COMPLIANCE? YES or NO

How did EMWD develop this Plan?

Planning creatively to reduce TDS and TIN

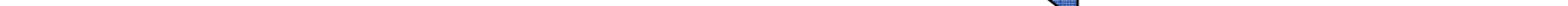
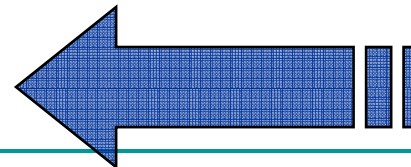
- **EMWD List of TDS/TIN Reduction Activities**

- Desalinization Program
- Wetlands
- Conjunctive Use (Recharge of Imported Water)
- Management Plans
- Storm Water Recharge

- **Studies to support Compliance Determination**

- Nitrogen Loss Rate Coefficient
- Geologic Barriers

- **Maximum Benefit Analysis**



How did EMWD develop this Plan?

Maximum Benefit starts with Resource Management Plans

- **Hemet/San Jacinto Groundwater Management Plan, includes:**

- Hemet/San Jacinto Integrated Recharge & Recovery Program
- Recycled Water In-Lieu Project
- Hemet Water Filtration Plant (10 MGD)
- Formation of a Watermaster

- **Benefits include:**

- Maximize use of water available in the area
 - Eliminate overdraft of the groundwater basin
 - Protect prior rights of the Soboba Tribe
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How did EMWD develop this Plan?

SJUPGMZ Maximum Benefit Proposal (Key Component)

■ **Proposed Maximum Benefit Proposal**

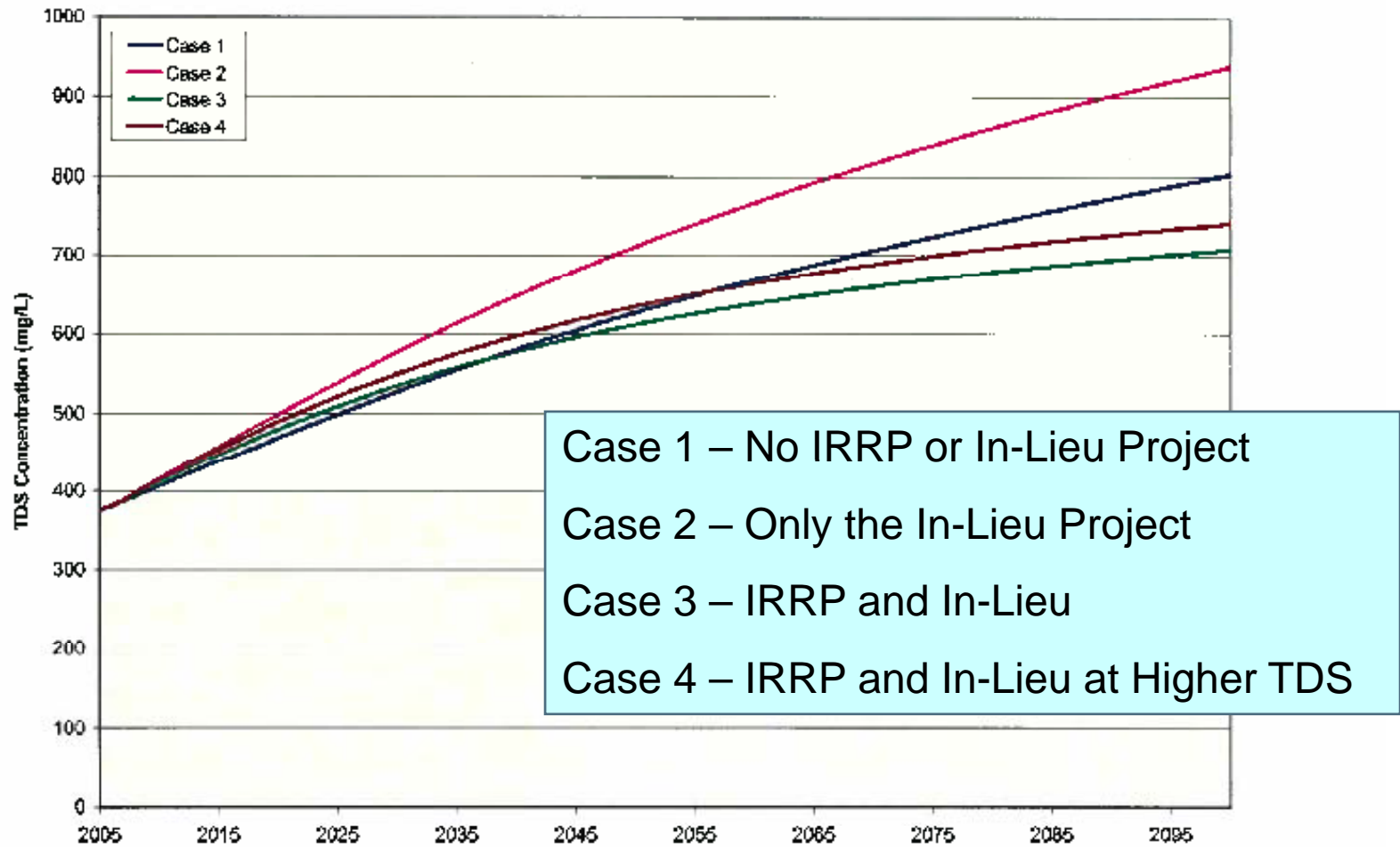
- ❑ Change the TDS/TIN Water Quality Objectives to enable efficient implementation of the Plan
- ❑ Model Results
- ❑ EMWD/Stakeholder Commitment

■ **Basin Plan Amendment**

- ❑ Environmental Document is required
 - ❑ Regional Board Public Review and Approval Process
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How did EMWD develop this Plan?

TDS Model Results over a Hundred Years



Where is this Plan taking EMWD?

Ensure Compliance towards the Mission

EMWD's Mission

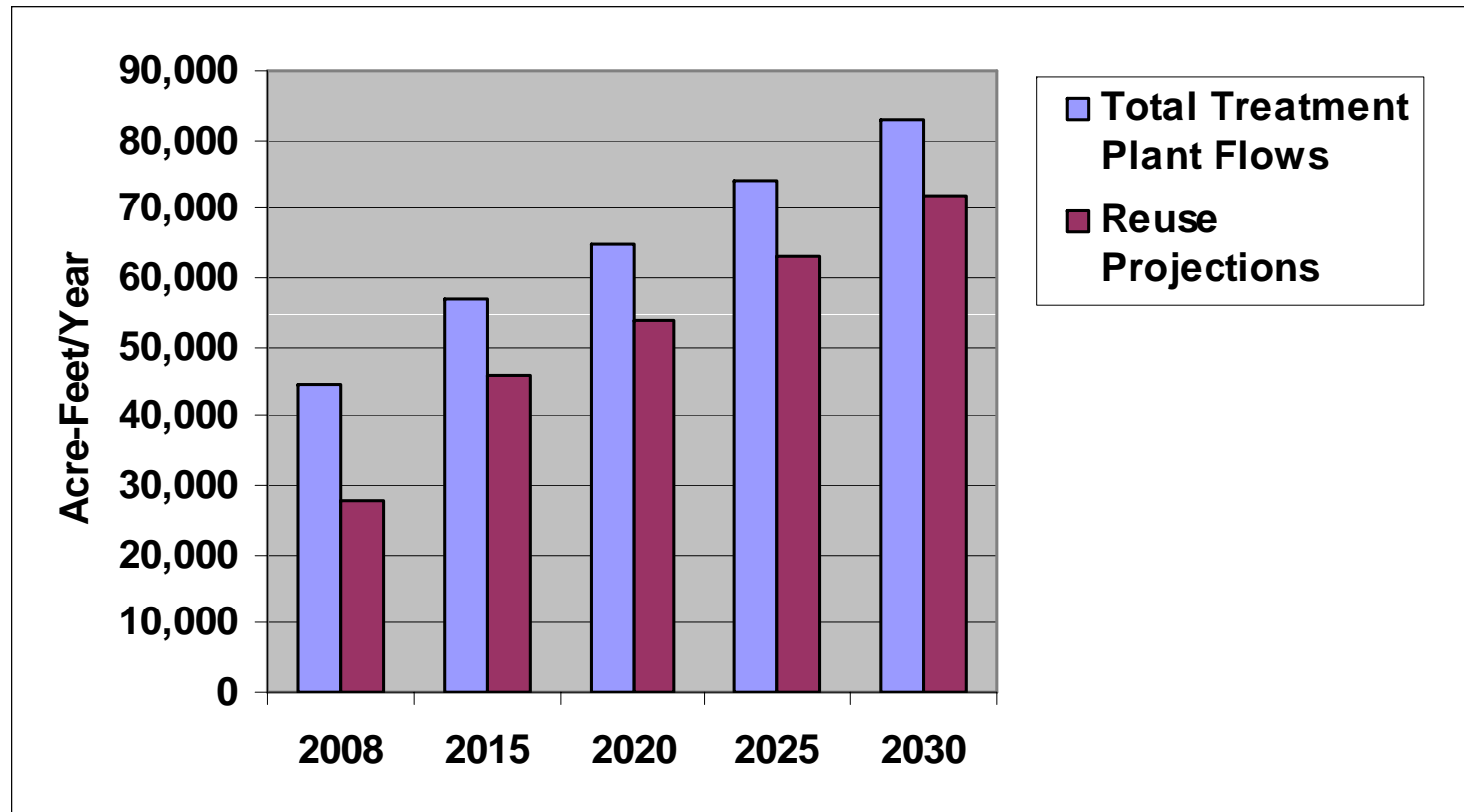
To provide safe and reliable water and wastewater management services to our community in an economical, efficient, and responsible manner, now and in the future.

EMWD's Compliance Ethic

Through shared responsibility, the District is dedicated to go beyond full compliance with all health, safety, and environmental regulations.

Where is this Plan taking EMWD?

Recycled Water to be a Reliable Resource



Year	2008	2015	2020	2025	2030
Growth (AF/Yr)	Current	18,100	7,900	8,900	9,000
% Reuse	63%	81%	83%	85%	87%