



Mitigating PFAS Impacts to EMWD's Brackish Desalination Operations

Lanaya Voelz Alexander, P.E.

February 24, 2022

EMWD By the Numbers

ESTABLISHED IN

1950



SERVES:

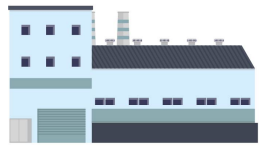


WATER / WASTEWATER / RECYCLED



558

SQUARE MILE
SERVICE AREA



WHOLESALE



RETAIL



APPROXIMATELY

38%

CURRENTLY
BUILT OUT

POPULATION NEARLY:

1,000,000



26

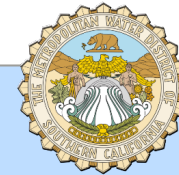
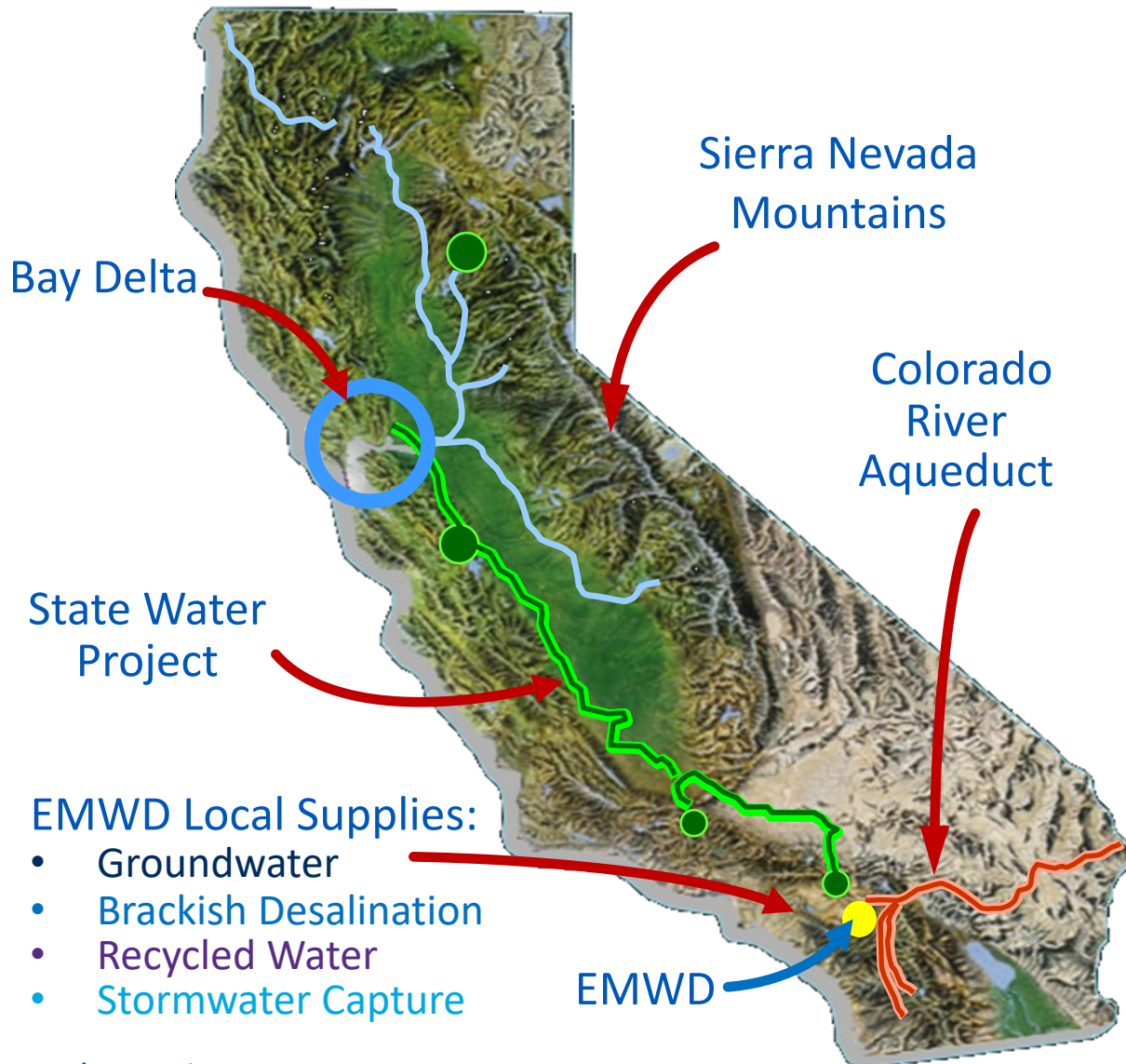
member agencies
of The Metropolitan
Water District of
Southern California



ONE
OF THE



Sources of Water



- 26 member agencies
- Owns Colorado River Aqueduct
- State Water Project Contractor
- Imports water to meet half of Southern California retail demands
- Typical demands: 2.1 MAF
- Demand forecast in FY 21/22: 1.77 MAF

Best Practices
in Water Use Efficiency
(Conservation)

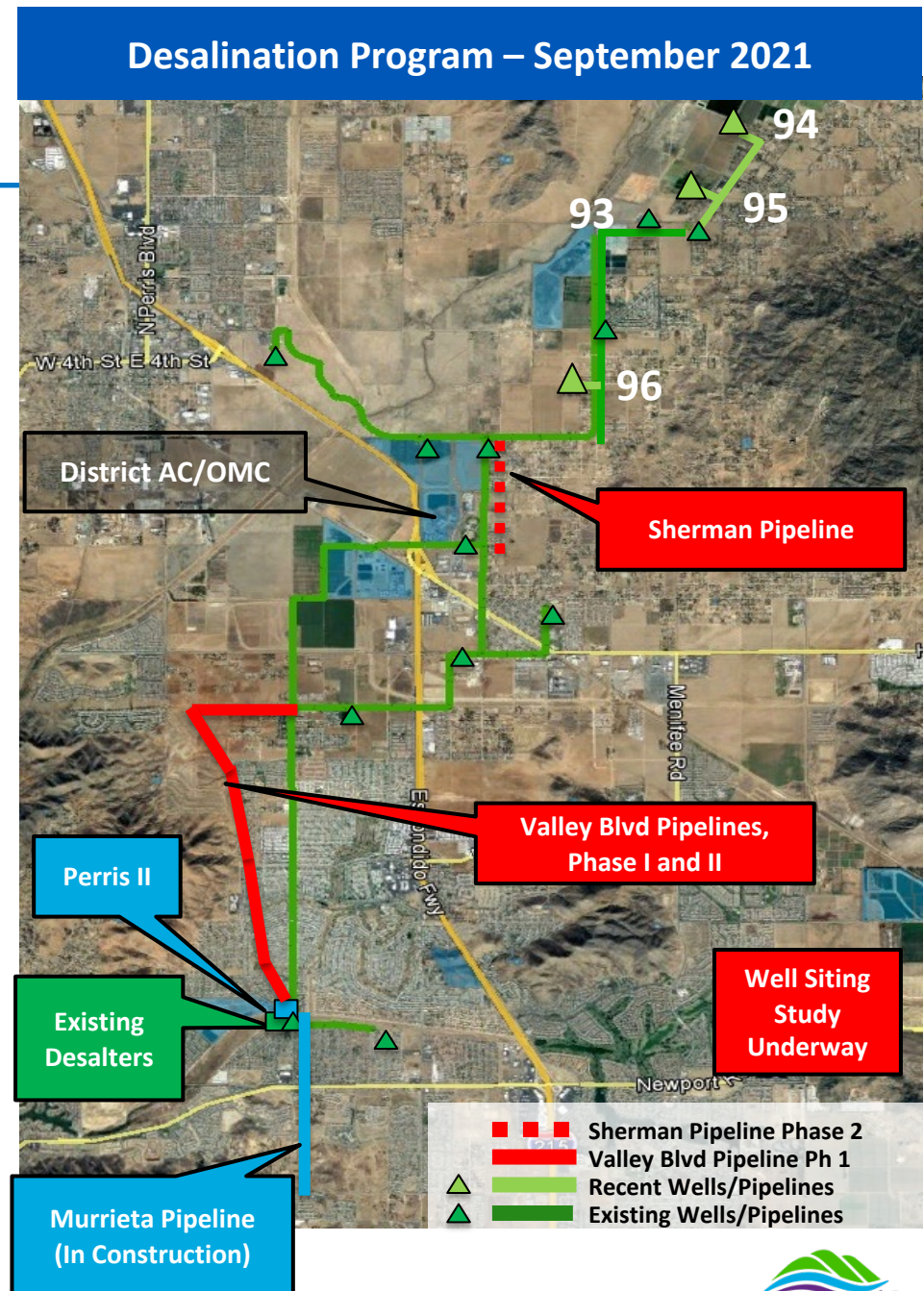


EMWD Desalination Program

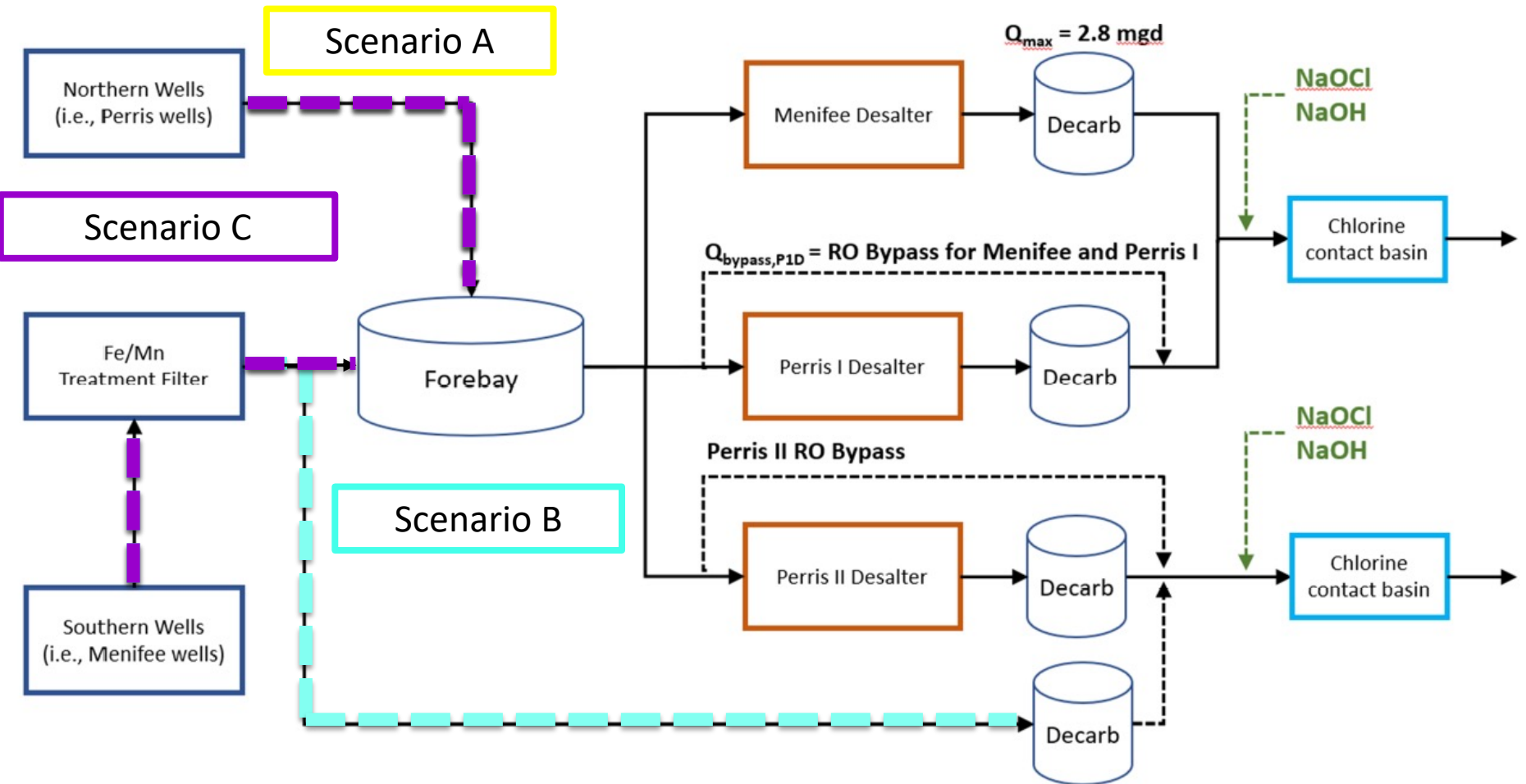
Strategic Goal - Expand brackish desalination to:

- Provide over 21,050 AF of water per year to serve 42,000 households
- Prevent migration of brackish water to adjacent high quality groundwater basins
- Export 65,000 tons of salt annually

Desalination creates drought-resilient supplies



Bypass Scenarios Evaluated

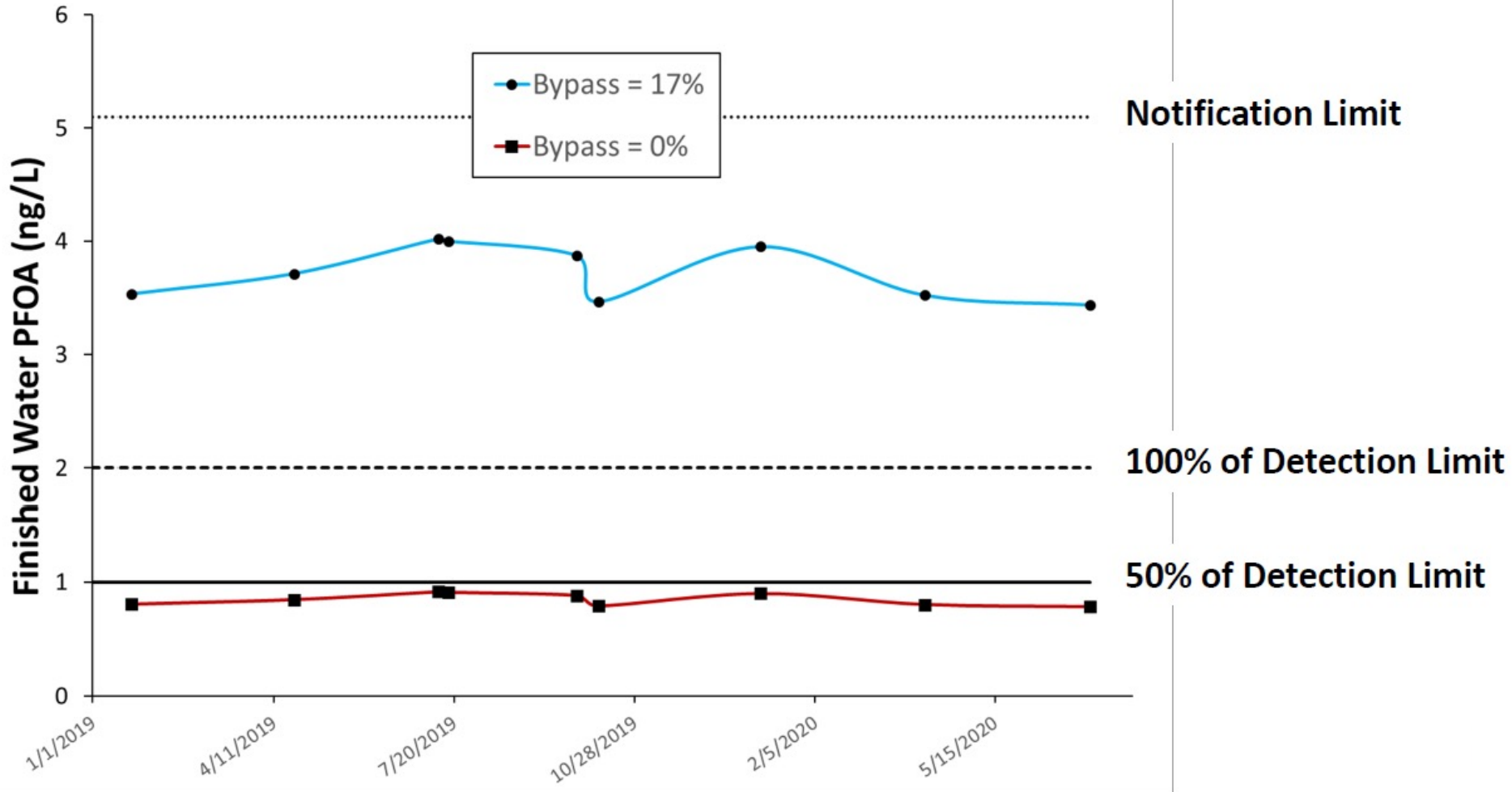


Modeled Impacts to Post-Treatment

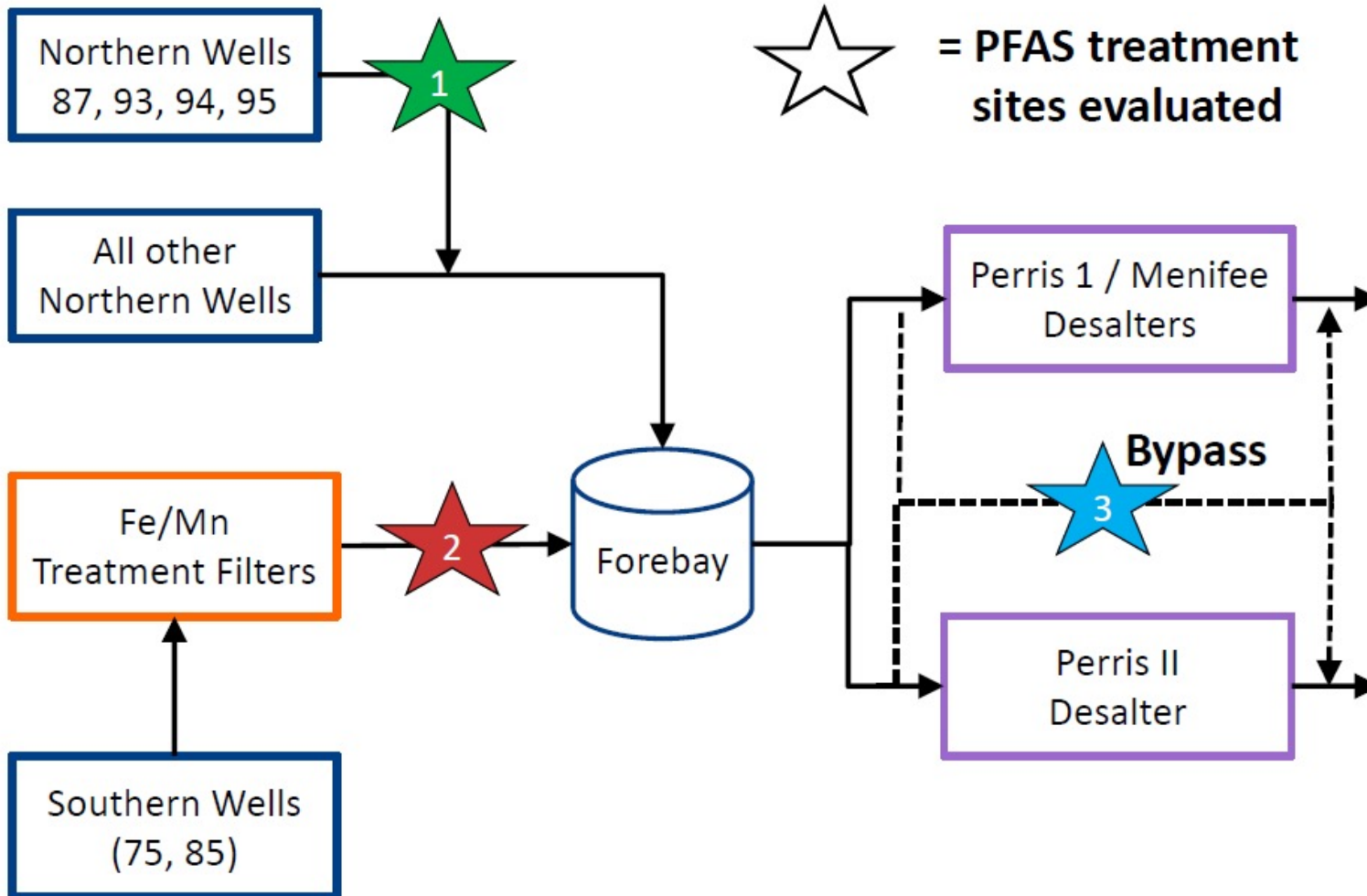
Parent Operating Scenario	Desalter flows	Feed source	Bypass source	Permeate	Bypass	Bypass %	Finished	RO feed water quality (* & **)			Finished water quality						Caustic (NaOH)	
								Fe	Mn	Fe + Mn	pH	Alkalinity	TDS	Hardness	PFOA	PFOS	Dose	Daily Usage
				mgd	mgd	%	mgd	µg/L	µg/L	µg/L	units	mg/L CaCO3	mg/L	mg/L as CaCO3	ng/L	ng/L	mg/L	gpd
Scenario 1	Meniffee/Perris 1	NW	NW	7.4	0.8	11%	8.2	34	6	40	8.8	25	221	82	2.55	2.71	3.6	39
	Perris 2	NW	NW	4.5	0.5	11%	5.0	34	6	40	8.6	32	219	80	2.55	2.71	3.5	23
Scenario 2	Meniffee/Perris 1	NW	NW	7.4	0.8	11%	8.2	34	6	40	8.8	25	221	82	2.55	2.71	3.6	39
	Perris 2	NW	SW	4.5	0.1	2%	4.6	34	6	40	9.4	19	83	27	1.85	3.25	3.0	18
Scenario 3	Meniffee/Perris 1	NW + SW	NW + SW	7.4	0.8	11%	8.1	46	11	57	8.6	34	203	80	2.55	2.77	2.5	27
	Perris 2	NW + SW	NW + SW	4.5	0.4	11%	5.0	46	11	57	9.3	33	191	76	2.55	3.07	4.0	26

RO Bypass Limited by PFAS

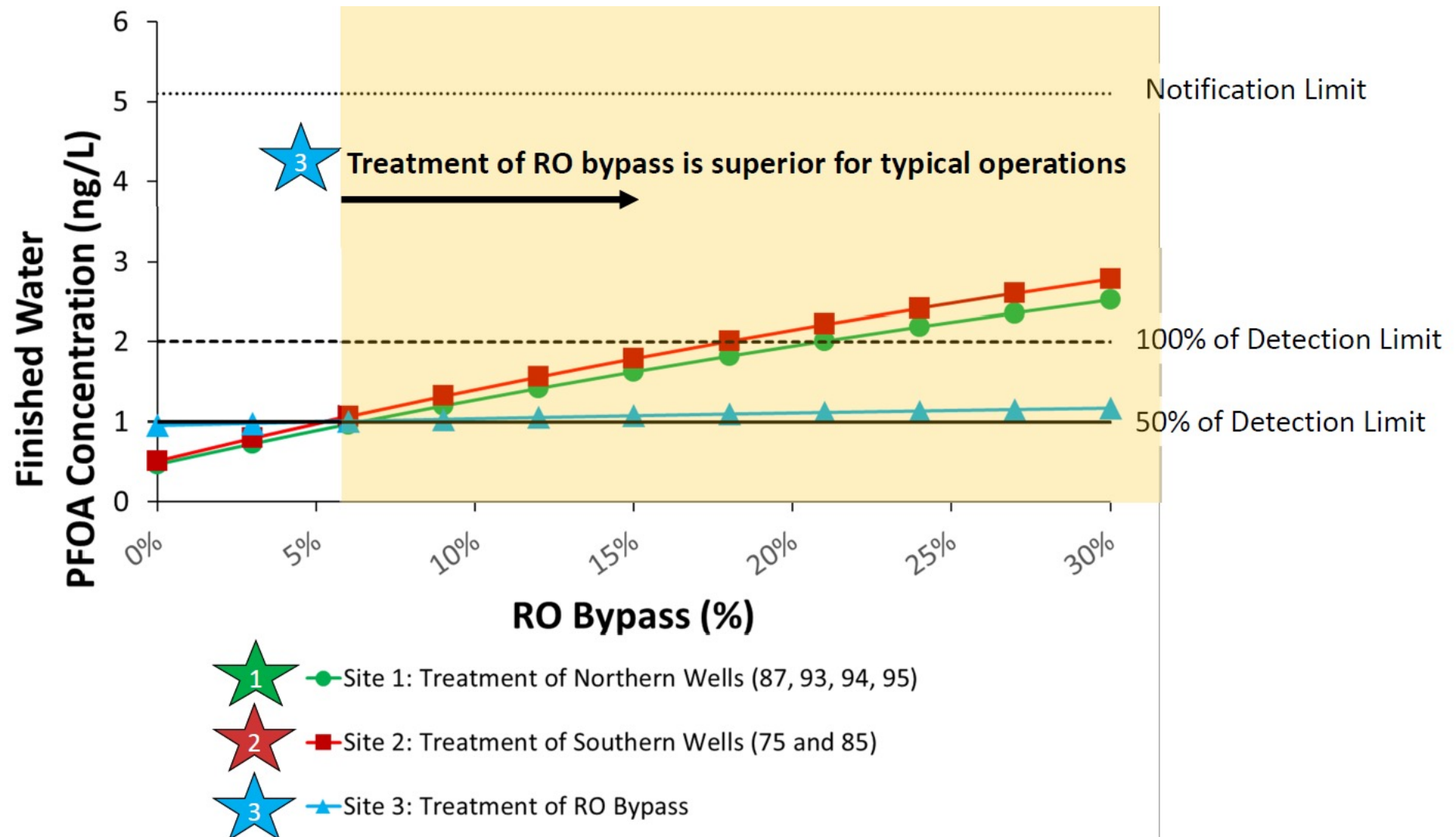
Blend: Northern + Southern Wells



Sites Evaluated for Potential PFAS Treatment

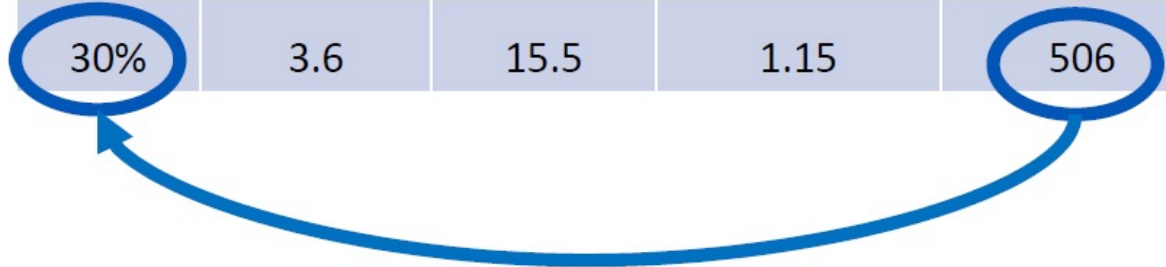


Treatment of RO Bypass Most Favorable



Up to 30% RO Bypass is achievable with PFAS Treatment of RO Bypass

RO Bypass	Desalter Flows		Finished Water Quality		Well Utilization
	%	Bypass (mgd)	Finished (mgd)	PFOA (ng/L)	TDS (mg/L)
0%	0	11.9	0.94	46	65%
10%	1.2	13.1	1.02	227	70%
20%	2.4	14.3	1.09	378	75%
30%	3.6	15.5	1.15	506	80%



Acknowledgements

EMWD Team

- David Garcia – Director Water Operations
- Phil Lancaster – Water Operations Manager, Desalination Program
- Michelle Karras – Senior Environmental Compliance Analyst
- Greg Kowalski – Engineering Manager – Perris II Desalter PM

Consultant Team

- Dave Cover – Project Manager
Coverda@bv.com
- Lee Portillo – Membrane Technical Expert
Portillolm@bv.com



BLACK & VEATCH



Contact Information

Lanaya Voelz Alexander, P.E.
Assistant General Manager of Planning, Engineering & Construction
(951) 928-3777 Ext. 4561

Email: alexandl@emwd.org