



Inland Empire Brine Line Reserve Funds Review

Karen Williams, Deputy General Manager/ Chief Financial Officer
PA24 Committee Meeting
August 6, 2024

Recommendation:

It is recommended that the PA Committee:

1. For R-01 Brine Line Operating Reserve set target to \$2,291,108 based on 25% of total operating expenses of \$9,164,430 for FYE 2025 (increase of \$111,449) and continue to accrue interest, and
2. For R-07 Pipeline and Replacement and Capital Investment Reserve set the minimum and target limits to \$18,884,000 and \$46,364,000 based on the new CIP amount of \$69 million, based on Engineering's review, and
3. Approve the funding levels (as of June 30, 2024) above the target levels and continue to accrue interest in FYE 2025 for the following reserve funds:
 - a. R-02 Brine Line Debt Service Reserve
 - b. R-04 Pipeline Capacity Management Reserve
 - c. R-05 OC Future Treatment & Disposal Capacity Reserve

Brine Line Reserve Policy

- The updated Reserve Policy was approved by:
 - PA 24 on November 1, 2022
 - SAWPA Commission on December 20, 2022
- As per the approved Reserve Policy:
 - Funding above the target level in the reserve will be discussed and approved with the PA 24 and the Commission annually and during the biennial budget adoption process.
 - For those reserves under the target level, staff will involve member agencies in reviewing the timing for each reserve to achieve the target.
- Staff will bring the evaluation of reserves above the targets to PA 24 and the Commission in August each year.

Reserve Balances as of 06/30/2024 (including 4th Qtr. Interest)

Fund	06/30/2024 Ending Balance	Minimum (2025)	Target (2025)	Over or Under Target	Amount Over or (Under) Target	Comment
R-01 Brine Line Operating	\$2,288,059	\$2,291,108	\$2,291,108	Under	(\$3,049)	Interest through 06/30/2024
R-02 Debt Retirement	\$3,011,686	\$1,709,476	\$1,709,476	Over	\$1,302,210	Interest through 06/30/2024
R-04 Pipeline Capacity Management	\$12,808,111	\$3,894,181	\$9,735,454	Over	\$3,072,657	Funds from pipeline capacity sales
R-05 OC San Future Treatment and Disposal Capacity	\$1,960,963	\$1,842,396	\$1,842,396	Over	\$118,567	Target set at 06/30/22 balance Interest through 06/30/24
R-06 OC San Pipeline Rehabilitation	\$2,880,674	\$2,425,147	\$7,250,000	Under	(\$4,369,326)	Contributions for FYE 2024 and 2025 are \$325,309 and \$155,786
R-07 Pipeline Replacement and Capital Investment	\$34,346,201	\$18,884,000	\$46,364,000	Under	(\$12,017,799)	Contributions for FYE 2024 and 2025 are \$1.9 million each year
Resiliency Component		\$2,338,000	\$5,000,000	--	--	--
CIP Component		\$2,438,000	\$6,094,000	--	--	--
R&R Component		\$14,108,000	\$35,270,000	--	--	--
Total - Unrestricted	\$55,586,218	\$29,336,832	\$67,482,958	--	--	--
Total – Restricted (R-02)	\$1,709,476	\$1,709,476	\$1,709,476	--	--	--
Total	\$57,295,694	\$31,046,308	\$69,192,434	--	--	--

R-01 Brine Line Operating

- Target: \$2,179,659 (25% of FYE 2024 budgeted operating costs).
- Interest earned in 2024: \$108,400
- Balance at 06/30/2024: \$2,288,059

Recommendation:

- Set Target at: \$2,291,108 (25% of FYE 2025 budgeted operating costs)
- Continue to accrue interest in 2025, which will bring balance to target level.

R-02 Debt Retirement

- Target: \$1,709,476 (1x annual debt service payment)
- Interest earned in FYE 2024: \$112,257
- Balance at 06/30/2024: \$3,011,686

Recommendation:

- Keep Target: \$1,709,476 (1x annual debt service payment)
- Keep the \$3,011,686 balance in this reserve and continue to accrue interest.
- 10-year CIP of \$69 million that qualifies for SRF Loans:
 - Reach IV-D Corrosion Repair SRF Loan of \$22.8 million
 - Estimated annual loan payment of \$1,278,798
 - \$2,988,274 is 1x annual debt service payment reserve requirement

R-04 Pipeline Capacity Management

- Target: \$9,735,454
- Interest earned in FYE 2024: \$477,406
- Balance at 06/30/2024: \$12,808,111

Recommendation:

- Keep Target: \$9,735,454
- Keep the \$12,808,111 balance in this reserve and continue to accrue interest until more information is known on the future costs of this project.
- Funds in this account are from pipeline capacity sales to EMWD and WMWD, and interest earned.

R-05 OC San Future Treatment and Disposal Capacity

- Target: \$1,842,396
- Interest earned in 2024: \$73,092
- Balance at 06/30/2024: \$1,960,963

Recommendation:

- Keep Target: \$1,842,396
- Keep the \$1,960,963 in this reserve and continue to accrue interest.
- The current price for 1 MG of treatment & disposal capacity is \$7.4 million. Funds in this reserve will be used to purchase additional treatment capacity.
- Funds in this reserve are from SBVMWD treatment capacity purchases and interest earned.

R-06 OC San Pipeline Rehabilitation

- Target: \$7,250,000
- Interest earned in 2024: \$106,725
- Contributions in 2024: \$325,309
- Balance at 06/30/2024: \$2,880,674

Recommendation:

- Keep Target: \$7,250,000
- Continue to contribute to this fund
 - FYE 2025 contribution = \$155,786.

R-07 Pipeline Replacement and Capital Investment

• Target (Resiliency, CIP, and Renew and Replacement):	\$46,364,000
• Interest earned in 2024:	\$1,306,175
• Transfers from excess Operating Reserve:	\$141,358
• Contributions in 2024:	\$1,900,000
• RBF loan payment:	\$1,443,906
• SBVMWD Capital Contributions – Agua Mansa:	\$214,649
• Use of reserves in 2024	(\$3,108,842)
• Balance at 06/30/2024	\$34,346,201

Recommendation:

• Keep Target:	\$46,364,000
• Continue to contribute to this fund. <ul style="list-style-type: none">▪ FYE 2025 contribution = \$1,900,000	
• Use of \$1,870,013 in FYE 2025 budget	
• Additional SBVMWD Capital Contributions – Agua Mansa	\$562,152

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Questions?



Inland Empire Brine Line Master Plan Update

David Ruhl, Executive Manager of Engineering and Operations

PA 24 Committee Meeting

August 6, 2024



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Purpose and Objectives

Master Plan Purpose and Objectives

Purpose

- Management and implementation of needed improvements to support ongoing growth and expansion of the Brine Line, that best serves SAWPA, it's member agencies, and Brine Line dischargers
- Address infrastructure needs to convey and manage increasingly higher salinity discharges, as well as address increasingly regulatory requirements

Objectives

- Identify the regional market for brine management needs
- Evaluate the capacity of the Brine Line system
- Develop system improvements to address identified deficiencies
- Identify potential capacity management activities that may be implemented to maximize regional use of the Brine Line



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Report Organization

Master Plan Report Organization

- **Market Assessment & Future Flow Projections**
 - Summarizes ownership capacities, anticipated growth in the Brine Line service area, and discharger loadings used to develop existing and future capacity analysis scenarios.
- **Hydraulic Model Update & Calibration**
 - Describes updates to and calibration of the existing Brine Line hydraulic model to recent (June 2023) flow monitoring data
- **Brine Line System Capacity Analysis**
 - Presents the results of the capacity analyses performed on the Brine Line system under existing, near-term, long-term, buildout, and ownership discharge conditions
- **Capacity Management & Long-Term Planning Efforts**
 - Summarizes potential long-term initiatives to improve management and performance of the Brine Line system, including reliability and redundancy analyses, real-time data collection, and brine minimization. Also addresses current and anticipated PFAS regulations and PFAS treatment options for the Brine Line system.
- **Brine Line Multi-Use Benefits**
 - Describes how the Brine Line system is a multi-use benefit to the entire Santa Ana Watershed, enabling groundwater desalination, advanced recycled water treatment, industrial non-reclaimable water disposal, and a variety of other community-wide benefits
- **Future Facilities, Improvements & Expansion**
 - Presents a prioritized list of recommended Brine Line improvement projects and their estimated costs, organized into a 10-year CIP



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Market Analysis and Future Flow Projections

Market Analysis and Future Flow Projections

Member Agency / Stakeholder Meetings

Date	Agency
February 23, 2023	San Bernardino Valley Municipal Water District
February 23, 2023	San Bernardino Municipal Water Department
February 23, 2023	City of Redlands
February 23, 2023	East Valley Water District
March 8, 2023	Eastern Municipal Water District
March 16, 2023	Western Municipal Water District
March 30, 2023	Inland Empire Utilities Agency
March 19, 2023	Chino Basin Desalter Authority
May 4, 2023	City of Corona
June 12, 2023	Elsinore Valley Municipal Water District
June 15, 2023	Jurupa Community Services District
June 15, 2023	Yucaipa Valley Water District
June 21, 2023	City of Colton
June 22, 2023	Riverside County Flood Control District
July 13, 2023	City of Beaumont
August 16, 2023	City of Chino
August 17, 2023	Temescal Valley Water District
August 17, 2023	City of Riverside
August 24, 2023	Rubidoux Community Services District
February 28, 2024	Rancho California Water District

Market Analysis and Future Flow Projections

Discharge Scenarios

- Existing Discharge Analysis June 2023
- Near-Term Discharge Analysis (2024 – 2033)
- Long-Term Discharge Analysis (2034 – 2048)
- Build-Out Discharge Analysis (beyond 2048)

Market Analysis and Future Flow Projections

Discharge Projections by Flow Type

Flow Type	Current June 2023		Near – Term 2024 - 2033		Long – Term 2034 - 2048		Build – Out >2048	
Potable Water Production	10.1	74%	11.6	62%	16.9	63%	19.1	59%
Wastewater Desalting	1.0	7%	4.5	24%	5.9	22%	7.2	22%
Industrial	1.7	12%	1.9	10%	2.3	9%	2.9	9%
Power Generation	0.5	4%	0.6	3%	.6	2%	0.7	2%
Stormwater (Dry Weather Flow)	0.0	0%	0.0	0%	1.0	4%	2.0	7%
Domestic	0.3	2%	0.3	2%	0.3	1%	0.4	1%
Total	13.5 MGD		18.8 MGD		27.0 MGD		32.3 MGD	

Market Analysis and Future Flow Projections

Potential Projects and Discharge Amount by Agency

Future Brine Line Discharger / Project	Discharge Amount (gpd)
EMWD	
Perris II Desalter Expansion	900,000
Ranch California Water District	2,000,000
Industrial	125,000
IEUA	
Chino Basin Program / New Industrial	150,000
Intertie with NRS	Undefined
SBVMWD	
YVWD	
YVWD	1,161,000
Regional Recycled Water Facilities Project	1,550,000
Industrial	100,000
WMWD	
Rubidoux CSD Desalter Facility	2,000,000
Riverside County Flood Control District DWF	2,000,000
Elsinore Valley MWD IPR	1,200,000
Temescal Valley Water District IPR	225,000
Temescal Desalter	250,000
JCSD Desalter	4,000,000
City of Riverside Recycled Water Desalination Plant	1,000,000
Industrial	160,000

Market Analysis and Future Flow Projections

Key information / concerns (1 of 2)

- Ownership capacity:

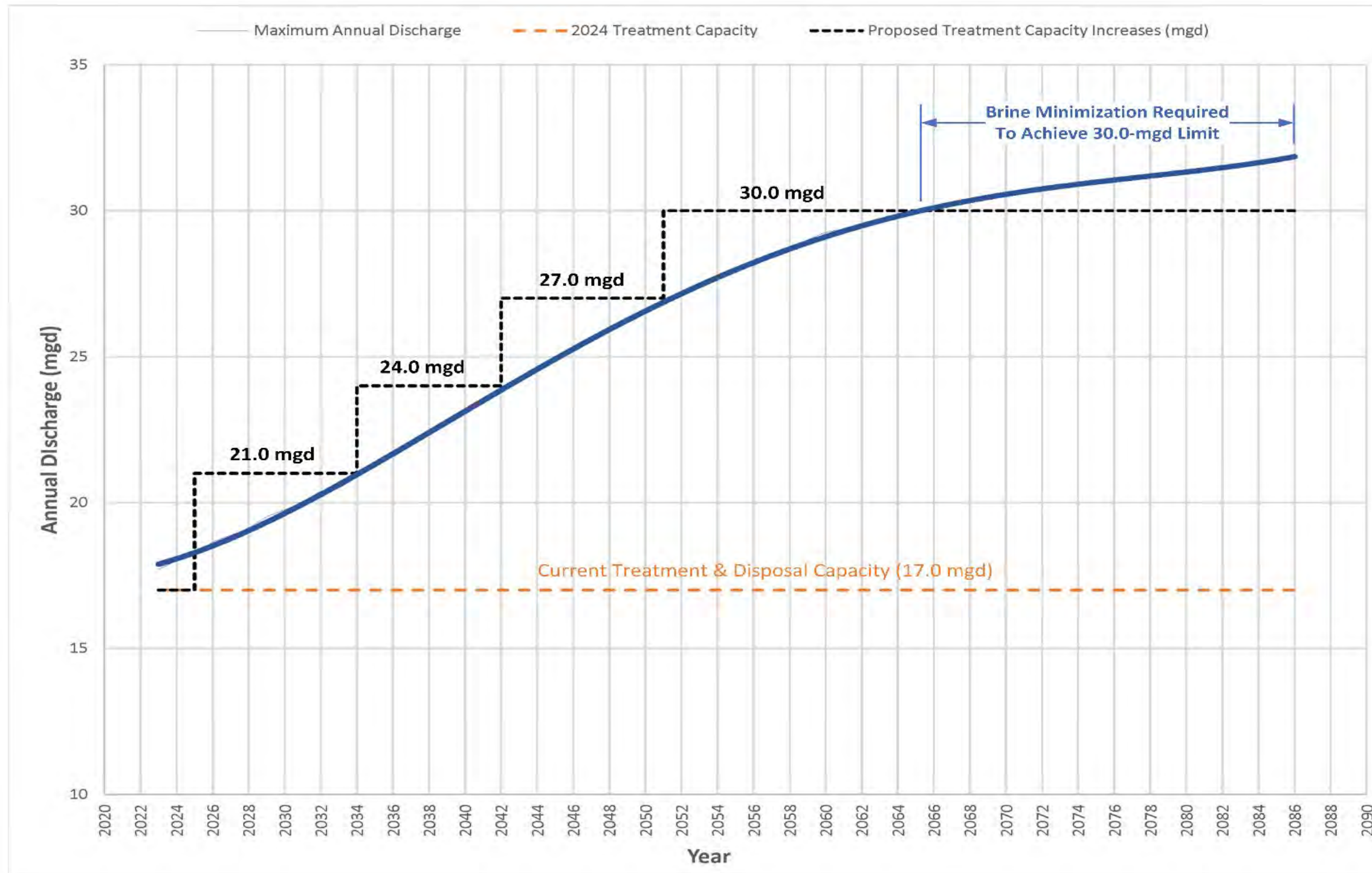
Agency	Current Ave / Max Flows (mgd)	Treatment and Disposal Capacity (mgd)	Pipeline Capacity (mgd)	Projected Future Need (mgd)
CDA	3.35 / 3.67	3.35	3.670	3.67
EMWD	3.53 / 4.04	3.548*	5.946	7.0
IEUA	0.48 / 1.61	2.25	4.130	1.1
SBVMWD	1.56 / 2.02	1.639	7.738	4.8
WMWD	4.60 / 6.42	6.213	11.084	15.7
Total	13.52 / 17.76	17.0	32.568	32.27

* EMWD leases 0.5 MGD of T&D capacity for a total T&D Capacity of 4.048 mgd

- Capacity Management: **Dischargers will need to reduce maximum flows and manage discharges more consistently**
 - Average Flow 13.5 mgd / Maximum Flow 17.7 mgd
 - Available Treatment and Disposal Capacity 17 mgd

Market Research and Future Flow Projections

Key information / concerns (2 of 2)



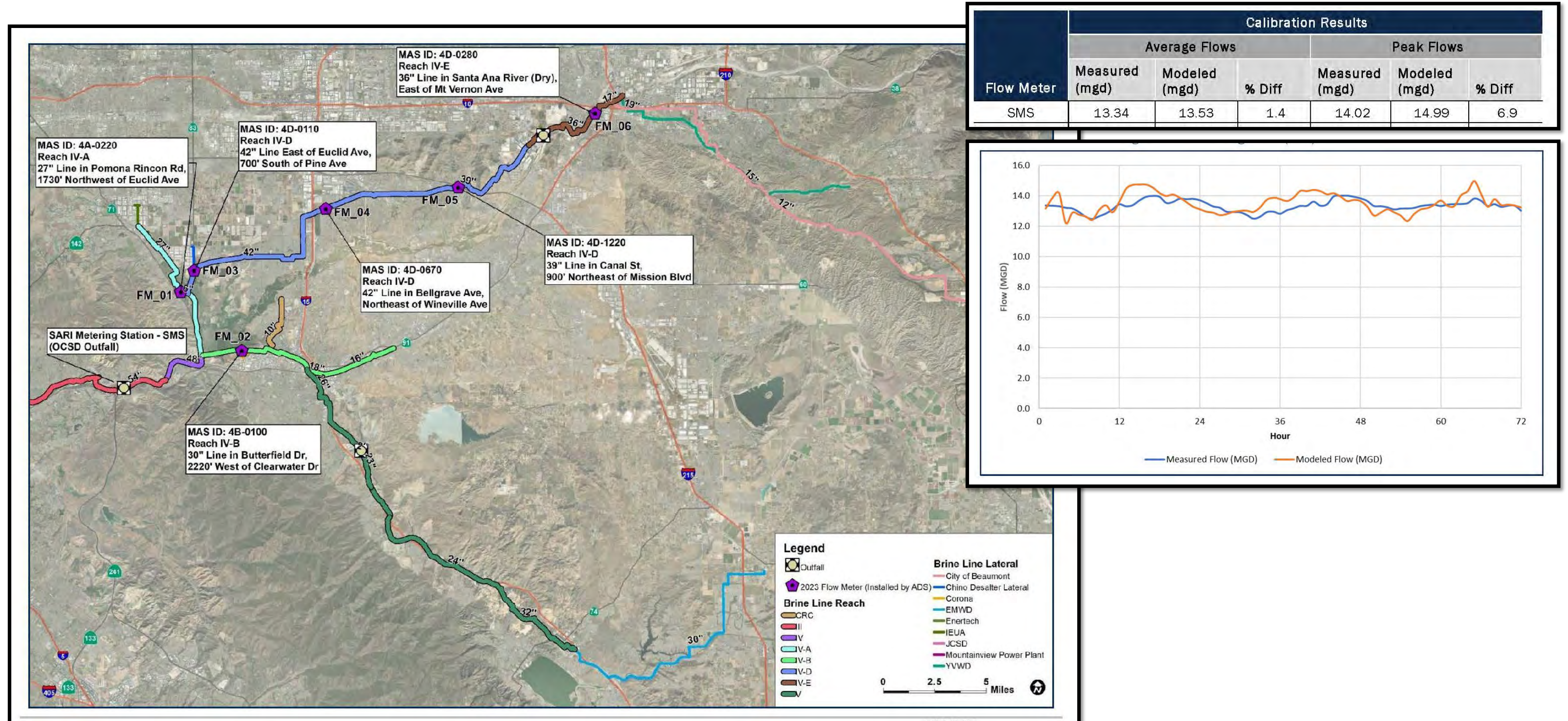
Future investments:
Treatment and disposal capacity purchases will be needed in 2026, 2034, 2042, and 2051



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Hydraulic Model Development and Calibration

Hydraulic Model Development and Calibration





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Brine Line System Capacity Analysis

Brine Line System Capacity Analysis

Key findings

Existing Discharge Capacity (June 2023)

- All gravity flow pipelines maintained a d/D below 0.75
- Pressures and velocities remain within design limits

Near-Term Discharge Capacity (2023-2033)

- Same as existing discharge capacity.

Long-Term Discharge Capacity (2034-2058)

- Portions of Reaches IV-D, IV-A, and IV are projected to exceed d/D criteria
- Maximum pressures and velocities remain within design limits, though closer to thresholds.

Buildout Discharge Capacity (Beyond 2058)

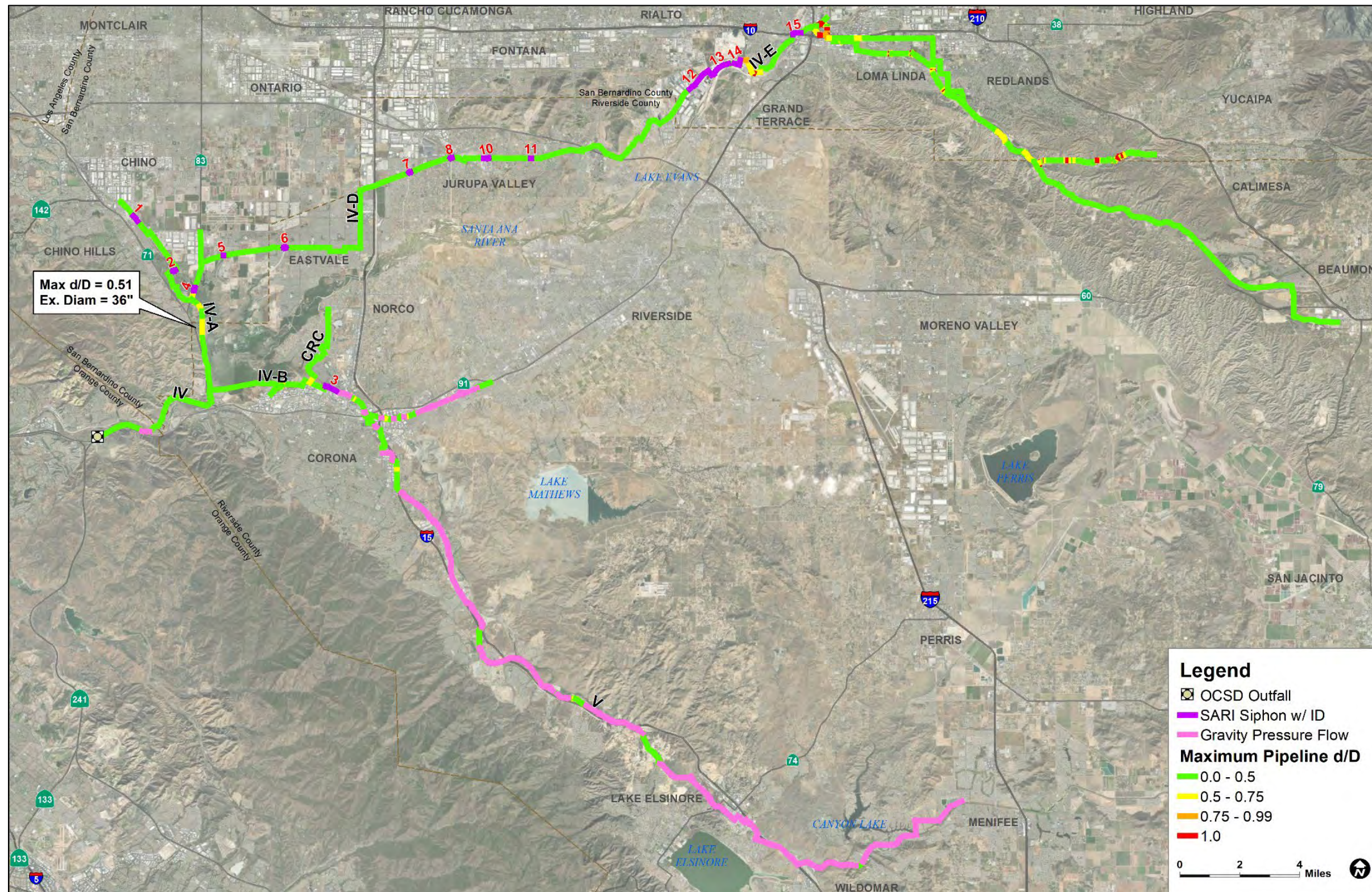
- Additional segments are expected to exceed d/D criteria, with increased risks of surcharging and overflows.
- Higher flows necessitate potential infrastructure improvements to prevent system deficiencies.

Ownership Discharge Capacity

- Similar to Long-Term and Buildout scenarios, specific segments are projected to exceed the d/D criterion, requiring monitoring and potential upgrades.
- Maximum pressures and velocities remain within acceptable ranges but approach critical limits.

Brine Line System Capacity Analysis

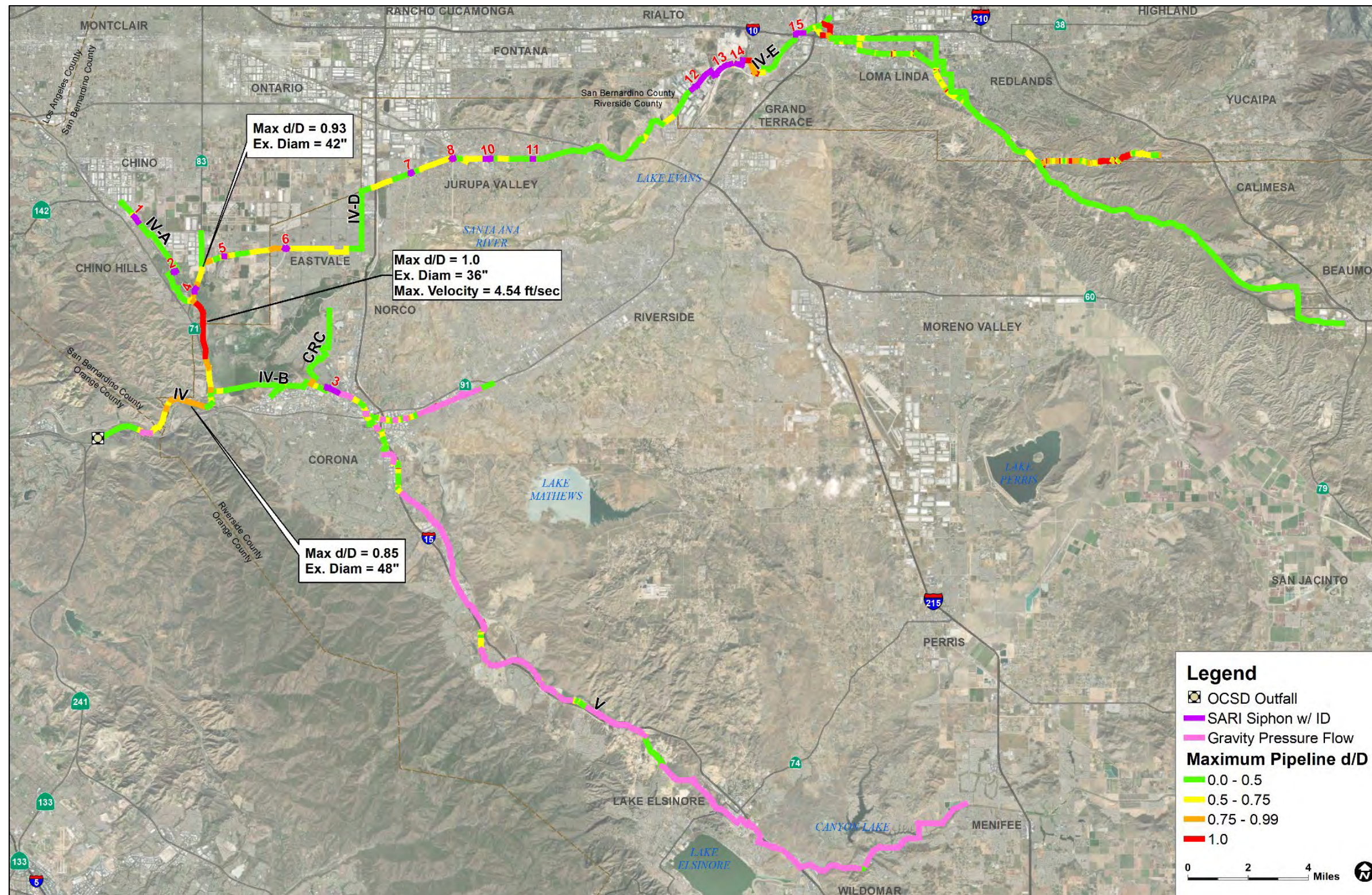
Existing Maximum Discharge Scenario – Max Pipeline d/D



- Existing Discharge Capacity (June 2023)
 - All gravity flow pipelines maintained a d/D below 0.75
 - Pressures and velocities remain within design limits

Brine Line System Capacity Analysis

Build-out Maximum Discharge Scenario – Max Pipeline d/D



- Buildout Discharge Capacity (Beyond 2058)
 - Portions of Reaches IV-D, IV-A, and IV are projected to exceed d/D criteria
 - Increase in risks of surcharging and overflows.
 - Higher flows necessitate potential infrastructure improvements to prevent system deficiencies.

Brine Line Capacity Analysis

Anticipated improvements to address findings

- Critical infrastructure was identified on Reach IV, Reach IV – lower (Prado inundation area) and Reach IV-D
- Implement smart manhole covers for real-time monitoring of critical segments to proactively manage and mitigate potential overflows and system failures
- Continue to evaluate and monitor segments that flow 75% to 100% full



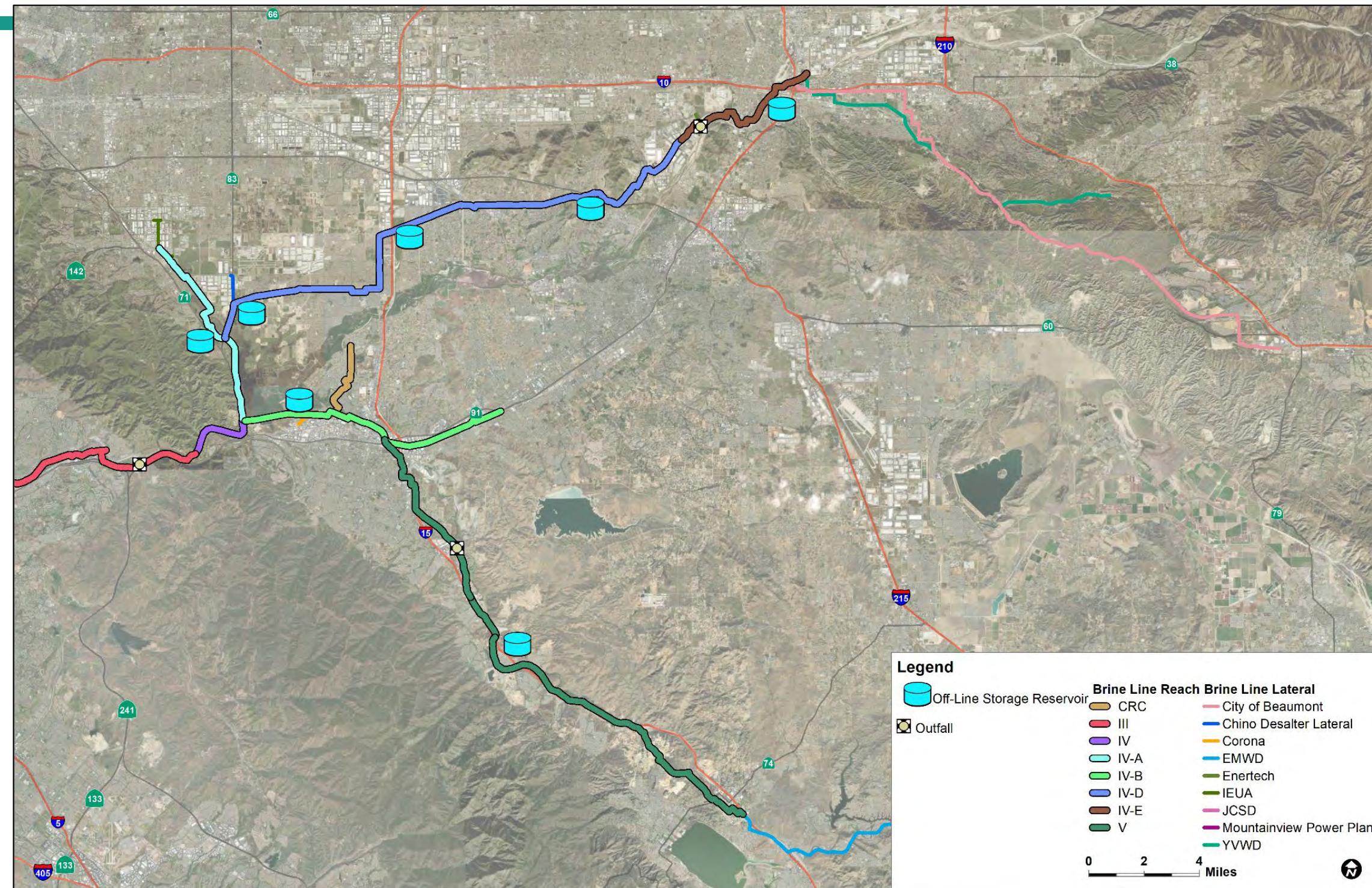
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Capacity Management and Long-Term Planning Efforts

Capacity Management and Long-Term Planning Efforts

Reliability and Redundancy

- Improve system reliability and reduce impacts on dischargers during outages
- Facilitate Brine Line shutdowns for maintenance, system improvements, evaluation or potentially system failure
- Provide additional system capabilities, such as capturing DWF and supporting brine minimization efforts
- Off-line storage reservoirs
 - Seven (7) reservoirs, capable of storing a minimum 8 – hours of Brine Line flow
 - Future study to more thoroughly assess feasibility



Capacity Management and Long-Term Planning Efforts

Enhanced Monitoring and Control

- Provide remote, automated flow and water quality data collection
 - Data collection and transmittal devices installed at each discharger location and at each in-line flow monitoring location
 - Increase ability to monitor, operate and control the Brine Line system
 - Reducing staff time
 - Improving compliance efforts by recording potential discharge violations and facilitating future pretreatment enforcement
 - Understanding of each discharger's flow and strength characteristics will allow for a more equitable distribution of costs between dischargers
 - Allow for ability to resolve capacity exceedance issues
 - Allows for maintenance of the Brine Line hydraulic model
 - Identify potential Inflow and Infiltration

Phase	Description of Work
1	Construction and installation of Master Station, operator workstation, setup, integration of programming and automation
2	Construction and installation of first 12 discharger sites with the highest flow
3	Construction and installation of next 12 discharger sites with medium flow
4	Construction and installation of last 12 discharger sites with low flow
5	Construction and installation of up to five (5) in-line flow monitoring stations

Capacity Management and Long-Term Planning Efforts

Brine Minimization

- Manage maximum flows and oversold capacity
 - Brine Line projected total flow will exceed the 30 MGD Brine Line discharge limitation to OC San
 - SAWPA Member Agencies own 32.5 MGD of pipeline capacity
- Pursue implementation of a secondary brine concentration processes at desalination facilities
- In-line downstream centralized brine concentration approach was not considered to be feasible
 - Advancements in treatment technologies and treatment requirements for emerging constituents of concern could change this conclusion
- Emerging brine management technologies
- Future studies and pilot projects to evaluate brine management technologies

Capacity Management and Long-Term Planning Efforts

Address increasing regulatory requirements – PFAS (1 of 2)

- PFAS present in Brine Line

Parameter	Result	Ave	Units
Perfluorooctanoic Acid (PFOA)	89 – 130	106	ng/L
Perfluorooctanesulfonic Acid (PFOS)	97 – 170	136	ng/L

- Future regulation of OC San’s biosolids and ocean discharge?
- OC San has provided advanced notice of possible PFAS limits
- Investigate PFAS treatment options for brine flows
 - No specific regulations for PFAS in wastewater currently
 - Two scenarios for PFAS effluent limits (5x PFAS MCL and 10x PFAS MCL)
 - 15 MGD capacity

Item	Alternative 1: Novel Adsorbent Media	Alternative 2: EOX Systems	Alternative 3: Granular Activated Carbon
10 Year Capital Net Present Worth	\$70 – \$83 million	\$109 – \$129 million	\$39 – \$46 million
10 Year O&M Net Present Worth	\$674 – \$796 million	\$3.3 – \$3.9 billion	\$62 – \$73 million
Total 10 Year Net Present Worth	\$744 – \$879 million	\$3.4 – \$4 billion	\$100 – \$118 million

Capacity Management and Long-Term Planning Efforts

Address increasing regulatory requirements – PFAS (2 of 2)

Key findings and recommendations

- It may be more economical to remove PFAS from a few select dischargers rather than treating the entire Brine Line flow at a centralized treatment facility.
 - Assess dischargers that would be expected to have higher PFAS concentrations
- Evaluate the viability of point source PFAS treatment using a smaller scalable system, after performing PFAS sampling from individual dischargers.
- Future studies
 - Near-term: Continue to monitor PFAS regulations as they pertain to wastewater disposal and operations at OC San
 - Long-term: Conduct a pilot study to better inform estimates of PFAS treatment requirements and costs



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Multi-Use Benefits for the Future

Multi-Use Benefits for the Future

- Brine Line is a multi-use benefit system
 - Supports a variety of water recycling and desalination activities
- Improve system reliability and reduce impacts on dischargers during outages
- Integrating renewable energy technologies within the Brine Line system
 - In-pipe hydroelectric facilities
 - Green hydrogen production from brine flows
- Capture of dry weather runoff



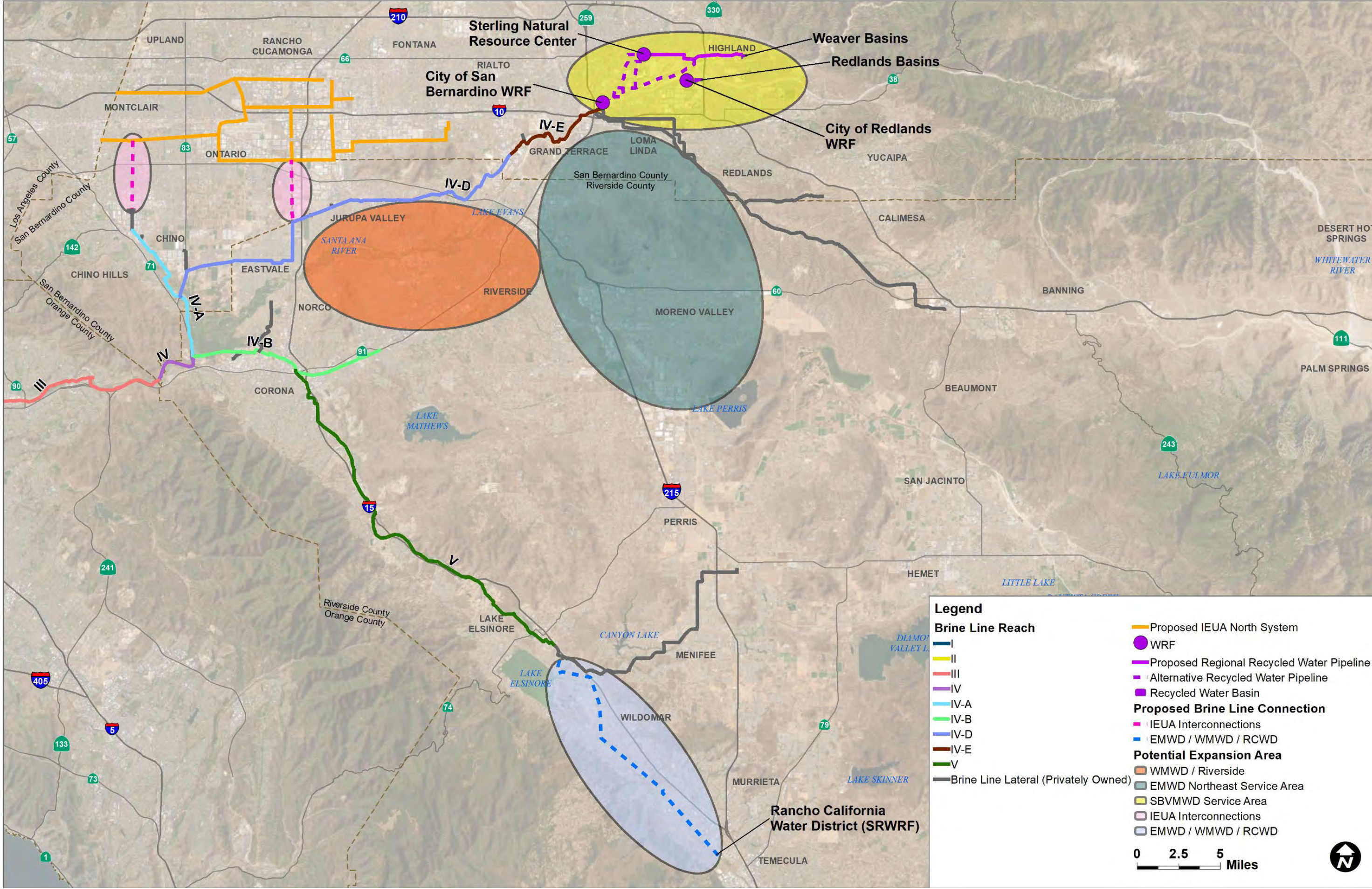
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Future Facilities, Improvements and Expansion

Future Facilities, Improvements and Expansion

- Pipeline Capacity Improvement Projects
- Operation and Maintenance Projects
- System Monitoring Projects
- Expansion Areas
 - EMWD / WMWD Service Area: Southern Riverside County Regional Brine Line
 - IEUA Service Area: Intertie with North System and Chino Basin Program
 - SBVMWD Service Area: Regional Recycled Water Facilities Project
 - WMWD Service Area: City of Riverside Recycled Water Desalination Plant
- On-going or Future Project Evaluations
 - Brine Minimization
 - PFAS Management
 - Green Hydrogen

Future Facilities, Improvements and Expansion



Legend

Brine Line Reach

- I
- II
- III
- IV
- IV-A
- IV-B
- IV-D
- IV-E
- V
- Brine Line Lateral (Privately Owned)

Proposed Recycled Water Pipeline

- Proposed Regional Recycled Water Pipeline
- Alternative Recycled Water Pipeline
- Recycled Water Basin

Proposed Brine Line Connection

- IEUA Interconnections
- EMWD / WMWD / RCWD

Potential Expansion Area

- WMWD / Riverside
- EMWD Northeast Service Area
- SBVMWD Service Area
- IEUA Interconnections
- EMWD / WMWD / RCWD

Other Symbols:

- Proposed IEUA North System
- WRF

0 2.5 5 Miles



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Policy Considerations

Policy Considerations

- **Environmental and Regulatory Policies**

- With increasing regulatory requirements and the potential for emerging constituents of concern, SAWPA may be faced with the need to establish stricter limits on concentration and/or constituents in brine discharges
- Enhancing interagency collaboration and establishing a regional work group to coordinate efforts and share best practices can improve compliance and enforcement.

- **Economic Policies**

- Many agencies and industries have expressed concerns that the construction of brine conveyance facilities can be cost prohibitive.
- SAWPA and its Member Agencies may consider future mechanisms for cost-sharing and or funding facilities that provide a regional benefit to the watershed

Master Plan Next Steps and Schedule

- Complete Draft Master Plan
 - Develop list of improvement projects and costs
 - Develop CIP
 - Member Agency and stakeholders review
 - Member Agency stakeholder workshop
 - Incorporate comments and recirculate revised draft
 - Final Draft Report to PA24 Committee
- August 2024
- August – September 2024
- September 2024
- October 2024
- November 2024

Questions?