Inland Empire Brine Line Master Plan

David Ruhl, Executive Manager of Engineering and Operations

Project Agreement 24 Committee

November 1, 2022| Item No. 5.A

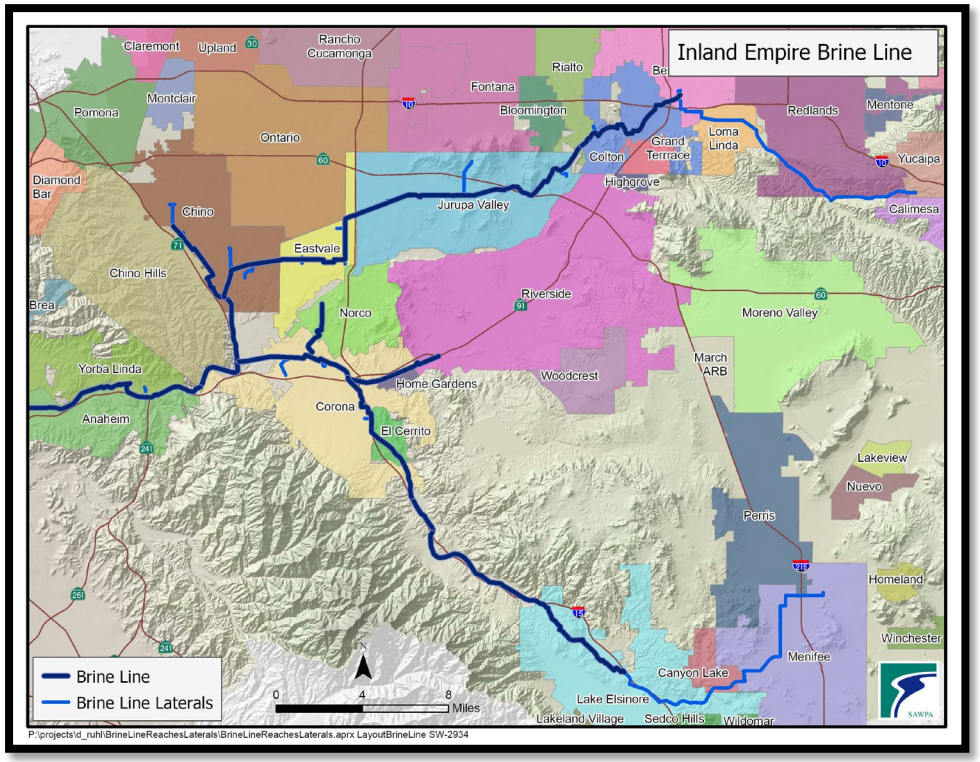
Brine Line Master Plan

Recommendation:

- That the PA 24 Committee authorize the General Manager to execute Task Order DUDK240-07 with Dudek in an amount not to exceed $399,980 to provide Professional Services for the Preparation of the Inland Empire Brine Line Master Plan.

Brine Line Master Plan

- Long-term planning document that addresses facility needs
- manage and implement the growth and expansion of the Brine Line to best serve the watershed, our Member Agencies and current and future dischargers
- Benefits
  - Consistency in decision making
  - Ability to make informed decisions
  - Focus resources and prioritize projects
  - Promote economic development
  - Maintain System Reliability
  - Accommodate future growth
  - Meet future regulatory requirements



Master Plan Scope of Work

- Coordination with Member Agencies, City and County Planning Departments
- Update and calibrate existing hydraulic model
- Identify new customer opportunities
  - Existing customers
  - County and City Planning/Development Departments
  - Land use analysis
  - Publicly owned treatment works
  - Commercial realtors
- Identify future growth areas

Industries that disposal of salty wastewater:

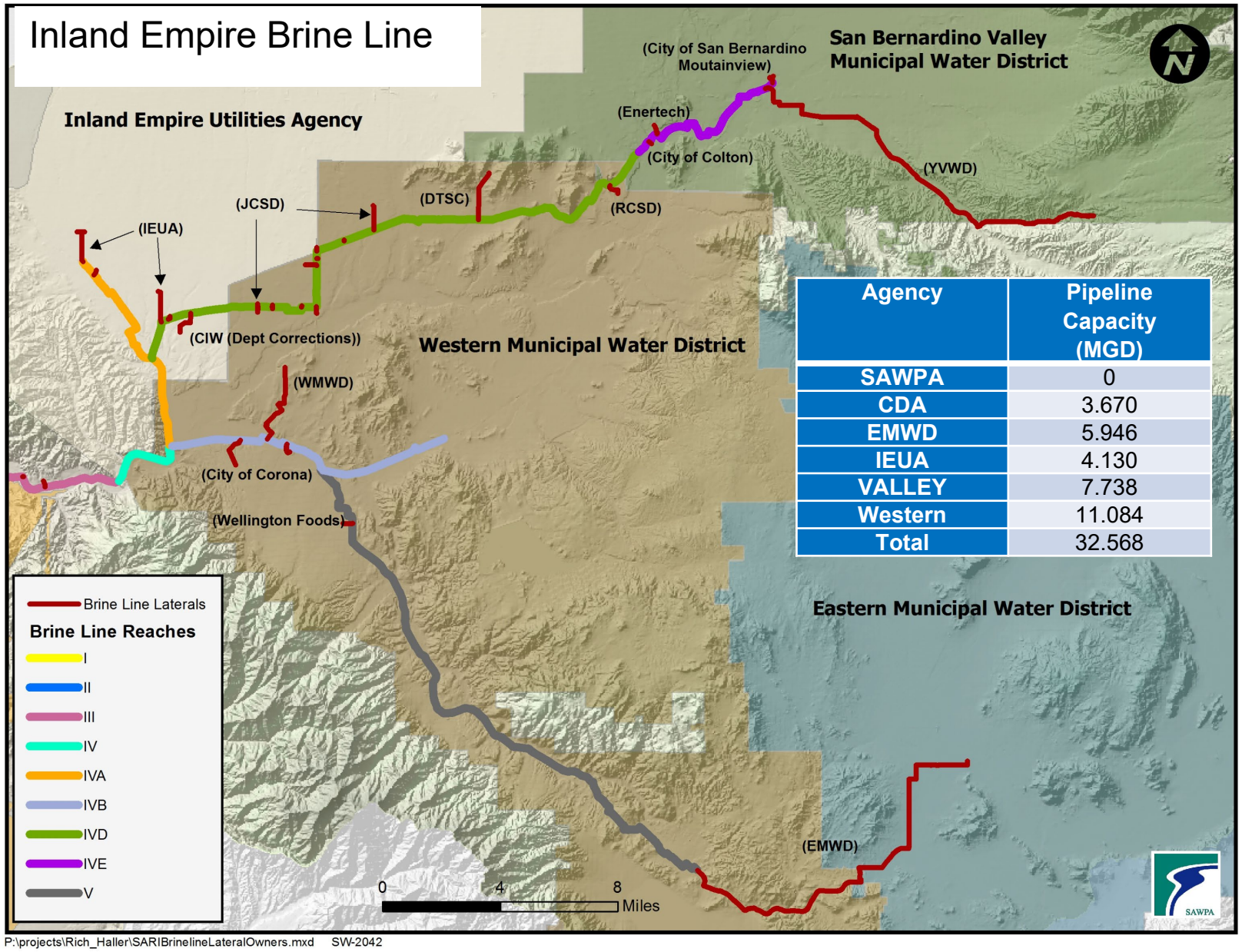
- Biotech Manufacturing
- Electronic Parts Manufacturers
- Medical Supply Manufacturing
- Computer Chip Manufacturers
- Commercial Laundries
- Food and Beverage Processing
- Groundwater desalters
- Ion Exchange Plants
- Power Plants
- Water Reclamation Facilities

Scope of Work – cont.

- Brine Line existing and future facilities
  - Determine critical infrastructure
  - Evaluate potential system improvements to sustain temporary outages of the Brine Line
  - System improvement for growth
  - Capacity deficiencies
  - Resiliency
  - Potential growth areas
  - Planning level cost estimates
  - Develop criteria to evaluate further, add to CIP

Scope of Work – cont.

- Future System Evaluation
  - Ultimate capacity
  - Resiliency
  - Member Agency pipeline capacity
  - Growth areas
- Manage capacity (30 MGD)
  - Storage
  - Brine concentration facilities (centralized or regional)
  - Investigate treatment opportunities
    - BOD/TSS



Agency	Pipeline Capacity (MGD)
SAWPA	0
CDA	3.670
EMWD	5.946
IEUA	4.130
VALLEY	7.738
Western	11.084
Total	32.568

Scope of Work – cont.

- Multi-use benefits for the future
  - Identify and evaluate potential multi-use benefits
    - In-line hydroelectric system as source of renewable energy
- Policy Considerations
  - Lateral ownership
  - Capacity buy-back
  - How to pay for laterals, projects, and system expansion
- Draft and Final Master Plan

Selection Process

- 2 Proposals received
  - Atkins
  - Dudek
- Member Agency staff on selection committee
- Both firms selected for interview
- Selection based on scoring of the proposals, interviews, and fee proposal

Selection Process

Firm	Fee Proposal	Score
Atkins	$360,096	80.2
Dudek	$399,980	92.5

- Dudek selected as most qualified
- Additional meeting to discuss scope, allocation of billing hours, no changes necessary

Brine Line Master Plan

Recommendation:

- That the PA 24 Committee authorize the General Manager to execute Task Order DUDK240-07 with Dudek in an amount not to exceed $399,980 to provide Professional Services for the Preparation of the Inland Empire Brine Line Master Plan.

Questions?

Inland Empire Brine Line Reserve Policy

David Ruhl, Executive Manager of Engineering and Operations

Project Agreement 24 Committee

November 1, 2022 | Item No. 5.B

Brine Line Reserve Policy

Recommendation:

That the Project Agreement 24 Committee:

1. Receive the Draft Brine Line Reserves and Capacity Lease Memorandum and direct staff to finalize the report.
2. Approve the updated SAWPA Reserve Policy effective contingent on approval of the Reserve Policy by the SAWPA Commission
3. Approve the transfer of the balance of the Self-Insurance Reserve, Rate Stabilization Reserve and the Flow Imbalance Reserve to the Pipeline Replacement and Capital Investment Reserve (formerly the Pipeline Replacement Reserve), upon approval of the Reserve Policy by the SAWPA Commission.

Brine Line Current Reserve Categories

NO.	RESERVE	PURPOSE
R-08	Flow Imbalance Reserve	Established to set aside funds in the event that a meter error occurs, and the discharger is over-billed.
R-09	Self-Insurance Reserve	Used to cover out-of-pocket insurance losses arising from property, general liability, and worker's compensation claims
R-01	Brine Line Operating Reserve	Established to cover temporary cash flow deficiencies as a result of timing differences between receipt of operating revenues and expenditure requirements
R-02	Debt Retirement Reserve	Used for debt service payments for State Revolving Fund loans required to build and rehabilitate the Brine Line
R-03	Rate Stabilization Reserve	Established to mitigate the effects of occasional shortfalls in revenue from such events as weather, water conservation, poor economic conditions, and unplanned rate adjustments/increases

Brine Line Current Reserve Categories (cont.)

NO.	RESERVE	PURPOSE
R-04	Capacity Management Reserve	Established to set aside 100% of the funding derived from pipeline capacity sales to provide funds for future capacity needs within the Brine Line.
R-05	OC San Future Capacity Reserve	Used to purchase additional OC San wastewater treatment plant and outfall disposal capacity rights
R-06	OC San Rehabilitation Reserve	Established to fund SAWPA's share of capital costs associated with its proportionate share of capacity in the OC San SARI
R-07	Pipeline Replacement Reserve	Established to provide capital replacement funding as the Brine Line System's infrastructure deteriorates over its expected useful life. Manages risk associated with emergency reserves as well.

Reserve Policy Scope of Work

Contracted with Raftelis to review Reserve Policy (Nov 2021):

- Review reserve policies and fund balance requirements for each reserve
- Recommend minimum, maximum, and target reserve levels
- Recommend methodology to determine reserve levels and provide basis for recommendation
- Review lease rate for Brine Line capacity

Member Agency Coordination

Date	Stakeholders	Topics
1-25-2022	CFOs	Overview of Reserves and Recommendations
2-8-22	GMs	Overview of Reserves and Recommendations
3-1-2022	CFOs	Eliminate, Combine, or Keep each of the various reserves. Who manages OC San Rehabilitation reserve. Review of OC San Agreements
3-31-2022	CFOs	Suggested funding levels: Pipeline Replacement, Operating, Debt, Capacity Management
5-2-2022	CFOs	Brine Line Rate Setting Process
5-12-2022	CFOs	OC San Rehabilitation, Pipeline Replacement
7-11-2022	CFOs	OC San Rehabilitation, Pipeline, OC San Future Capacity, Capacity Management
9-1-2022	CFOs	Review Draft Memo with Recommendations
10-11-2022	GMs	Review Draft Memo and Reserve Policy with Recommendations
11-1-2022	PA-24	Present Draft Memo and Reserve Policy Update
11-1-2022	PA-24	Approve Reserve Policy
11-15-2022	Commission	Approve Reserve Policy

Methodology

- Benchmarking surveys
  - 21 water / wastewater agencies
- Industry standards, GFOA
- Historical information (pipeline failures)
- Engineering and Financial Reports and documents
  - Budget (FY 23)
  - Updated Rate Model (2017)
  - Loan agreements
  - Criticality Analysis (2021)
  - 10-Year CIP (2021)
  - OC San Agreements (1972 and 1996)
  - Brine Line Planning Study (2010)
  - Value Assessment (2019)

Summary of Recommendations (1 of 2)
Draft Brine Line Reserve Memorandum

- Maintain 6 reserves, rename 4 to provide greater clarity, and add ID numbers
  - Brine Line Operating (R-01)
  - Debt Retirement (R-02)
  - Pipeline Capacity Management (R-04), formerly Capacity Management
  - OC San Future Treatment and Disposal Capacity (R-05), formerly OCSD Future Capacity
  - OC San Pipeline Rehabilitation (R-06), formerly OCSD Rehabilitation
  - Pipeline Replacement and Capital Investment (R-07), formerly Pipeline Replacement
- Establish minimum and target levels for each reserve
  - Establish methodology
- Eliminate maximum level for each reserve

Summary of Recommendations (2 of 2)
Draft Brine Line Reserve Memorandum

- Eliminate 3 reserves that were either duplicative or low-risk and can be covered by other reserves
  - Rate Stabilization (R-03)
  - Flow Imbalance (R-08)
  - Self-Insurance (R-09)
- Combine the functions of the 3 eliminated reserves with other reserves and transfer the reserve funds to Pipeline Replacement and Capital Investment Reserve (R-07)
- Capacity lease calculation is typical and appropriate
  - Carry cost (interest rate) is recommended as a % annual depreciation plus the average cost of existing debt (6.4% for 2022)

Reserve Methodology Summary

Reserve	Eliminate/ Retain	Minimum	Target	Methodology
R-01 Brine Line Operating	Retain	90 days of Brine Line operating expenses, exclusive of debt and contributions to reserves	Same as minimum.	Benchmark survey
R-02 Debt Retirement (restricted)	Retain	Minimum as stipulated by loan agreements / bond covenants	Same as minimum	Benchmark survey
R-04 Pipeline Capacity Management (formerly Capacity Management Reserve)	Retain	25% of the average annual project cost	2.5x 25% of the average annual project cost	Benchmark survey for capital projects
R-05 OC San Future Treatment and Disposal Capacity (formerly OC San Future Capacity Reserve)	Retain	Sum of contributions from member agencies not yet spent to purchase capacity from OC San	Same as minimum.	Historical Information
R-06 OC San Pipeline Rehabilitation (formerly OC San Rehabilitation Reserve)	Retain	2% of estimated value of SAWPA's share of the SARI	[Percent certainty on project cost] × [SAWPA's percent share in project] × [percent of cash financing]	Benchmark survey for capital projects / Engineering Reports
R-07 Pipeline Replacement and Capital Investment (formerly Pipeline Replacement Reserve)	See next slides.			

R-07 Pipeline Replacement and Capital Investment Reserve

Reserve has 3 separate components to address risks associated with the pipeline:

1. **Resiliency (emergency)** – assets could be damaged, revenues likely delayed, and it takes a long time to get federal funding. Funds projects related to enhancing the resiliency of the system
2. **CIP** – cover anticipated capital costs in the 10-year CIP
3. **R&R** – cover long-term renewal and replacement costs

System Resilience

- Resilience is the ability to plan, prepare for, mitigate, and adapt to changing conditions from hazards to enable rapid recovery of physical, social, economic and ecological infrastructure, improving resilience before or following a hazard event should engage physical infrastructure and social systems with adaptive capacity to ensure rapid return to functionality, accounting for interdependencies within and across all sectors.

Source SWRCB, Proposed Sanitary Sewer System General Order Requirements

Resiliency Example 1

Brine Line Reach V

Catastrophic Failure – Oct 2011

Rehabilitation – Dec 2017

- Capital Expenditure: $30 Million
- Project: Rehabilitate 5 miles of Brine Line
- Implementation Period: 6 years
- Included in CIP: Unknown event
- Funding: Reserves (50%) / SRF (50%)

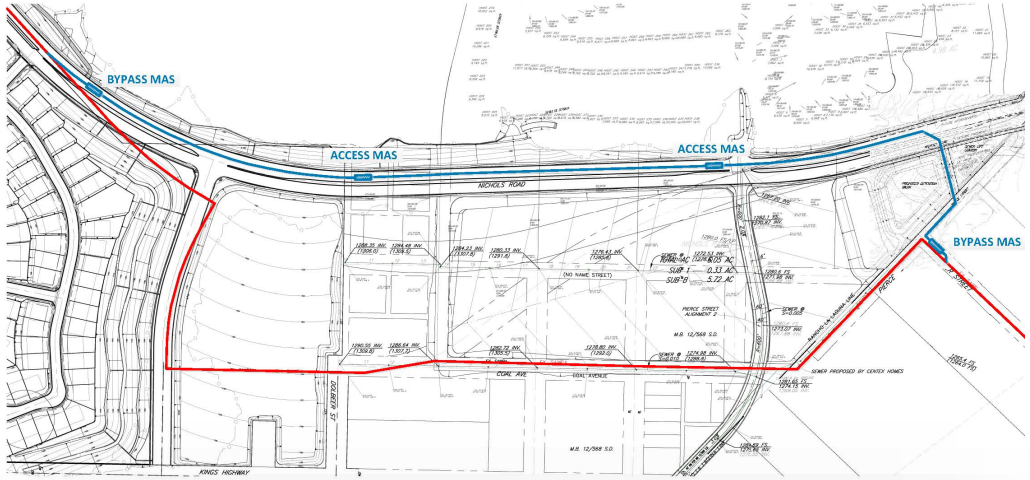
Resiliency Example 2

Brine Line Reach V

Settlement Agreement

Relocate 1 Mile of Pipe

- Capital Expenditure: $2.1 Million
- Project: Resolve right-of-way issue and operational issues
- Implementation Period: 2 years
- Included in CIP – Unknow Event
- Funding: Reserves (50%) / SRF (50%)



R-07 – "Resiliency Component Methodology"
(using Criticality Assessment Report)

	CoF – High	CoF – Very High
PoF – Very High	3.9%	0%
PoF – High	6.4%	0.6%
Derived from Criticality Assessment Report, Table 7		

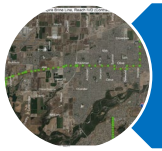
PoF = Probability of Failure

CoF = Consequence of Failure

- Set resiliency component based upon CoF and PoF
- Use the high and very high categories of probability of failure and consequence of failure:
  - Minimum = lowest, non-zero percentage
  - Target = half of the highest percentage but capped at $5 Million*

* SAWPA's historical spending on emergency repairs/replacement is $2 Million. SAWPA staff prefers a cap on resiliency due to a lack of standard methodology and potential redundancy with R&R. Therefore, the target is capped at $5 million.

CIP Example

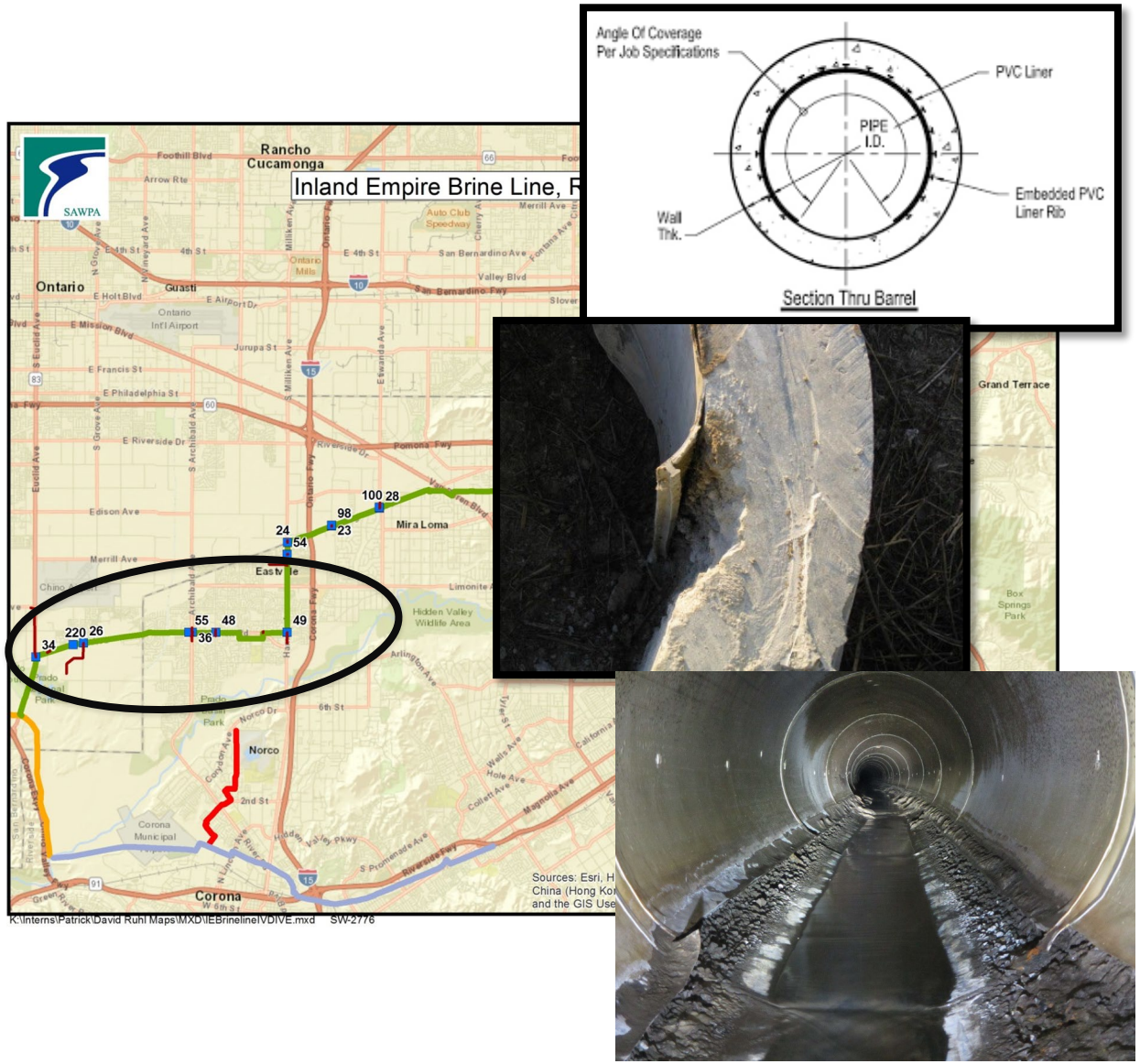


Reach IV-D

CCTV Inspection

Condition Assessment

- Capital Expenditure: Estimated $20 – $30 Million
- Project: Rehabilitate 7 miles of Reach IV-D due to pipeline corrosion
- Include in CIP: Added to 10 – year CIP
- Funding: Reserves and SRF



R- 07 “CIP Component Methodology”

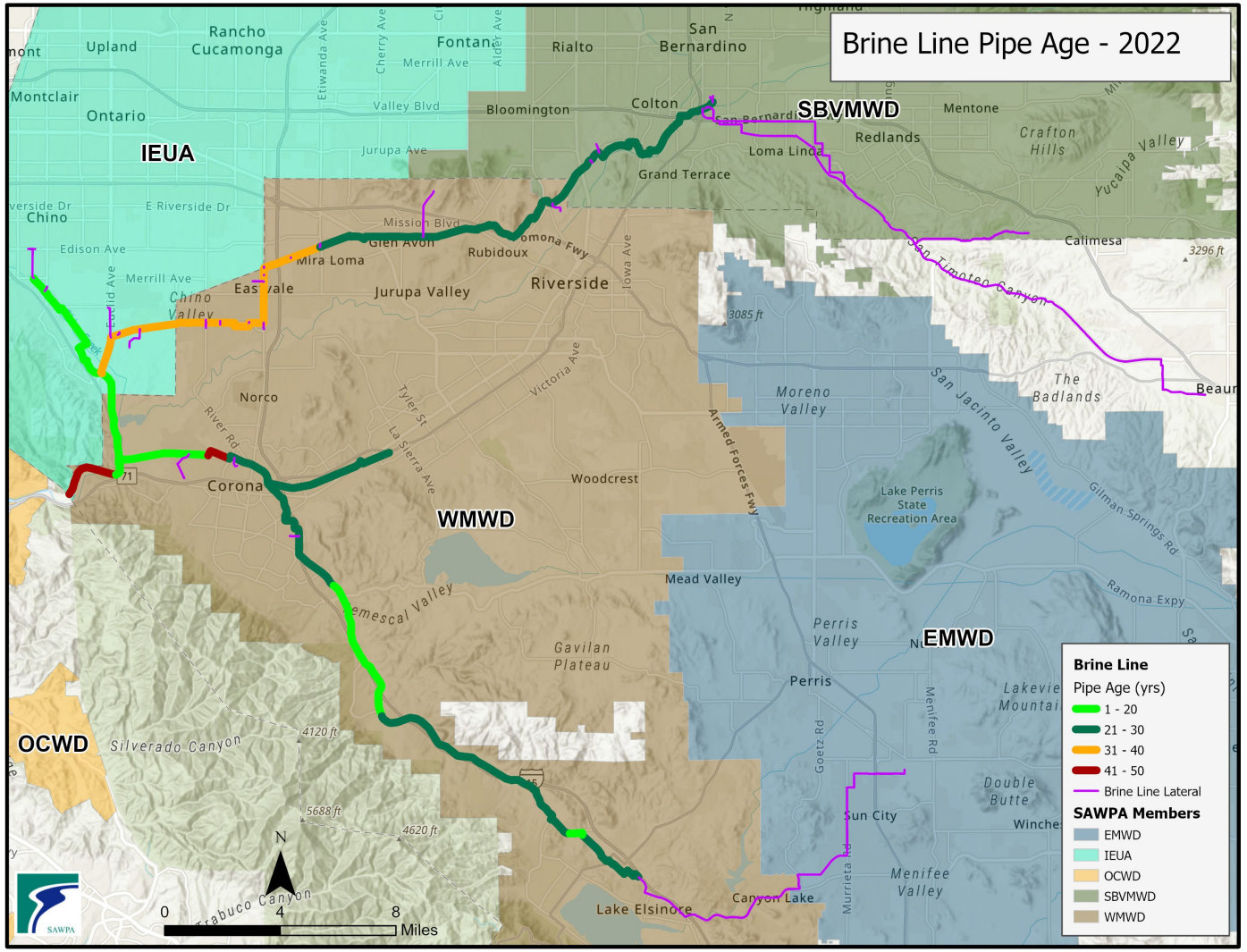
MINIMUM	TARGET
The annual average of the cash-financed projects in the 10-yr CIP	2.5 times the annual average of the cash-financed projects in the 10-yr inflated CIP

- The dollar values of the minimum and target will be updated every time the 10-year CIP is updated.
- The CIP component will exclude projects covered by other reserves.

R&R Component

Percent Asset Value	Number of Years to Replace All Assets
1%	100
1.3%	**75**
2%	50
5%	20

- Pipeline useful life varies based on soil conditions, pipe material, etc.
- Typically considered a long-life asset: 50-75 years or even longer.
- SAWPA has some pipeline assets with remaining useful lives < 30 years.



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R-07 – “R&R Component Methodology”

- “Reserve basis” calculated by summing the following formula for each reach:

  Asset Value ÷ 75-year replacement period × Age

- Minimum = 10% of “reserve basis” to reflect 10% assumed equity financing
- Target = 25% of “reserve basis” to reflect 25% assumed equity financing

[A]	[B]	[C = B × 0.013]	[D]	[E = C × D]	[F = E × 10%]	[F = E × 25%]
Pipeline Reach	**Asset Value**	**Asset Value ÷ 75-Year Replacement Period**	**Age (Years)**	**Reserve Basis**	**Reserve Minimum (10% Equity Financing)**	**Reserve Target (25% Equity Financing)**
Reach 4	$9,207,807	$119,701	46	$5,506,269	$550,627	$1,376,567
Reach 4	$2,170,814	$28,221	9	$253,985	$25,399	$63,496
Table is Abridged for Display Purposes						
Reach 5 (TVRI Reach 5)	$3,182,186	$41,368	21	$868,737	$86,874	$217,184
Reach 5 (TVRI Reach 5)	$9,046,499	$117,604	21	$2,469,694	$246,969	$617,424
Reach 5 (TVRI Reach 5)	$2,945,213	$38,288	6	$229,727	$22,973	$57,432
Total	**$389,708,421**	**$5,066,209**		**$112,434,113**	**$11,243,411**	**$28,108,528**

R-07 Reserve Methodology Summary

Fund	Eliminate/ Retain	Minimum	Target	Methodology
R-07 Pipeline Replacement and Capital Investment (formerly Pipeline Replacement Reserve)	Retain			
Resiliency Component		Lowest, non-zero percentage of high and very high PoF and CoF	Minimum of 1) Half of the highest percentage of high and very high PoF and CoF portion of the risk matrix or 2) $5M	Engineering Reports
Capital Improvement Plan (CIP) Component		1 times the annual average cash financed projects in the 10-year inflated CIP	2.5 times the annual average cash financed 10-year inflated CIP	Benchmark survey for capacity projects / 10-year CIP
Renewal & Replacement (R&R) Component		The sum of the following formula calculated individually for each pipeline reach: [10% equity financing] × [asset value] ÷ [75-year replacement period] × [age of reach in years]	The sum of the following formula calculated individually for each pipeline reach: [25% equity financing] × [asset value] ÷ [75-year replacement period] × [age of reach in years]	Engineering Reports

Results and recommendations

Fund	Eliminate/ Retain	FY 2022 Ending Balance	Minimum	Target
R-01 Brine Line Operating	Retain	$5,806,508	$2,273,388	$2,273,388
R-02 Debt Retirement	Retain	$2,829,589	$1,709,476	$1,709,476
R-03 Rate Stabilization	Eliminate & Transfer to R-07	$1,032,428	--	--
R-04 Pipeline Capacity Management	Retain	$12,033,687	$3,894,181	$9,735,454
R-05 OC San Future Treatment and Disposal Capacity	Retain	$1,842,396	$1,842,396	$1,842,396
R-06 OC San Pipeline Rehabilitation	Retain	$2,389,658	$2,425,147	$7,250,000
R-07 Pipeline Replacement and Capital Investment	Retain	$22,758,505	$16,594,000	$40,640,000
Resiliency Component			$2,338,000	$5,000,000
CIP Component			$3,013,000	$7,531,000
R&R Component			$11,243,000	$28,109,000
R-08 Flow Imbalance	Eliminate & transfer to R-07	$84,572	--	--
R-09 Self-Insurance	Eliminate & transfer to R-07	$4,352,284	--	--
Total - Unrestricted		$51,420,153	$27,029,113	$61,741,236
Total – Restricted		$1,709,476	$1,709,477	$1,709,478
Total		$53,129,629	$28,738,590	$63,450,714

Summary of Recommendations (1of 2)
Draft Reserve Policy

- Eliminate 3 reserves
- Rename 4 reserves and add ID numbers
- Update the purpose and eliminate outdated language
- Add additional language
  - Identifying the funding source for each reserve
  - Describing minimum and target reserve levels
  - Include PA 24 as authority to amend and revise reserve policies pertaining to Brine Line

Summary of Recommendations (2 of 2)
Draft Reserve Policy

- Add additional language to involve member agencies in the review
  - Annual funding amounts for each reserve
  - Timing for each reserve to achieve its target levels
  - Funding above the target level for each reserve, if applicable
- SAWPA General Fund Reserves
  - Add language to maintain consistency with Brine Line reserves
  - Requires approval of SAWPA Commission

Next Steps

- Incorporate comments received from PA 24 and finalize Brine Line Reserve Memorandum
- Recommend approval of the updated SAWPA Reserve Policy to the SAWPA Commission
- Involve the member agencies during the biennial budget process

Brine Line Reserve Policy

Recommendation:

That the Project Agreement 24 Committee:

1. Receive the Draft Brine Line Reserves and Capacity Lease Memorandum and direct staff to finalize the report.
2. Approve the updated SAWPA Reserve Policy effective contingent on approval of the Reserve Policy by the SAWPA Commission.
3. Approve the transfer of the balance of the Self-Insurance Reserve, Rate Stabilization Reserve and the Flow Imbalance Reserve to the Pipeline Replacement and Capital Investment Reserve (formerly the Pipeline Replacement Reserve), upon approval of the Reserve Policy by the SAWPA Commission.

Questions?

Reach IV and IV-B DIP Section Condition Assessment

Daniel Vasquez, Manager of Operations
Project Agreement 24 Committee
November 1, 2022 | Item No. 5.C

Reach IV and IV-B DIP Section Condition Assessment

Recommendation:

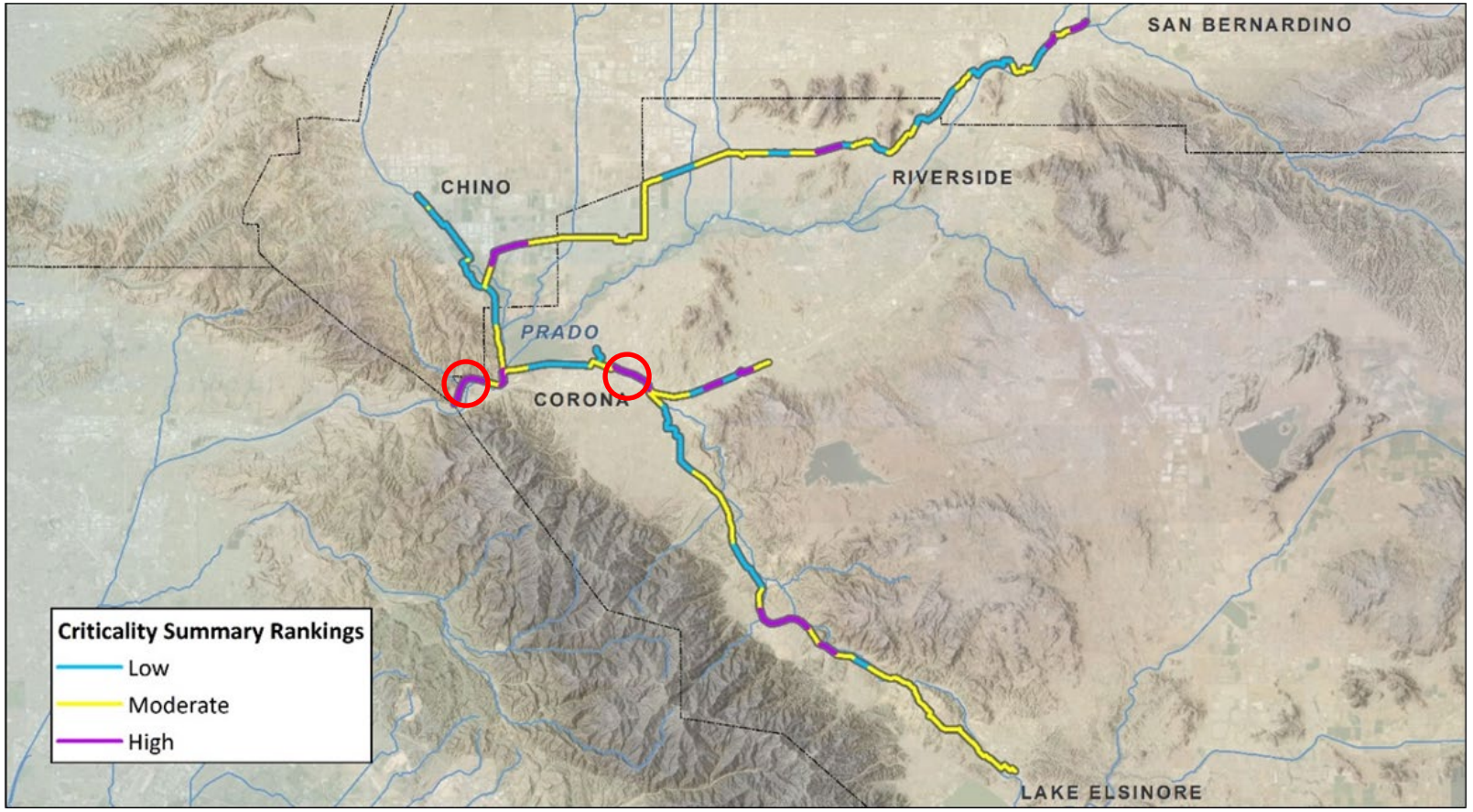
- Direct staff to release an RFP for Professional Engineering Services for the Reach IV and Reach IV-B Ductile Iron Pipe (DIP) Brine Line Condition Assessment.

Background

In 2021, the Criticality Assessment established Criticality Rankings for Brine Line Infrastructure using both probability of failure and consequence of failure analysis.

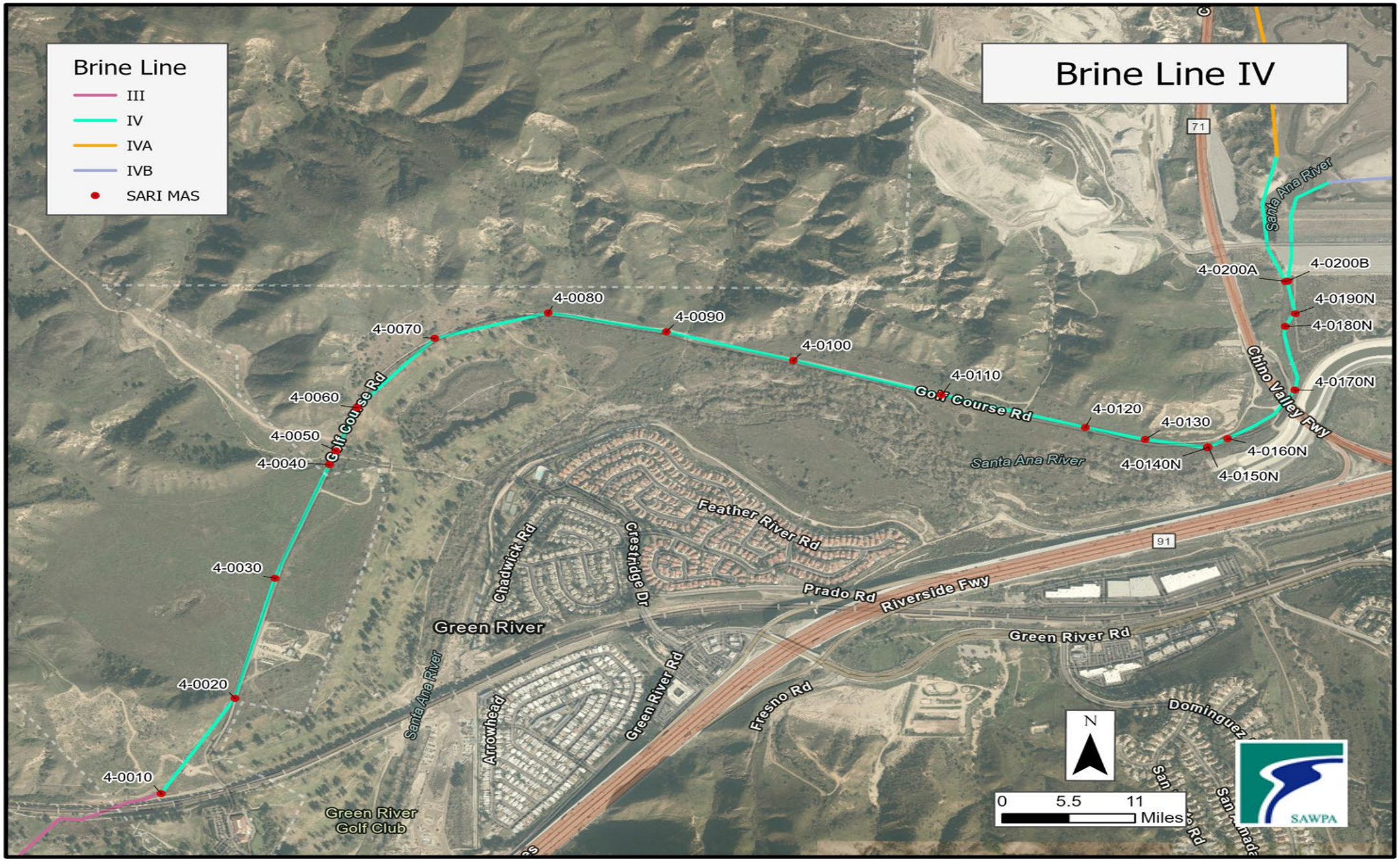
$$Criticality\ Value = \sqrt{Consequence\ of\ Failure\ Value^2 + Probability\ of\ Failure\ Value^2}$$

Criticality Map



These areas were Identified by 2021 Criticality Assessment for condition assessment.

The 10-Year CIP was refined in 2021 to include these condition assessments for the long-term future sustainability and reliability of the Inland Empire Brine Line.



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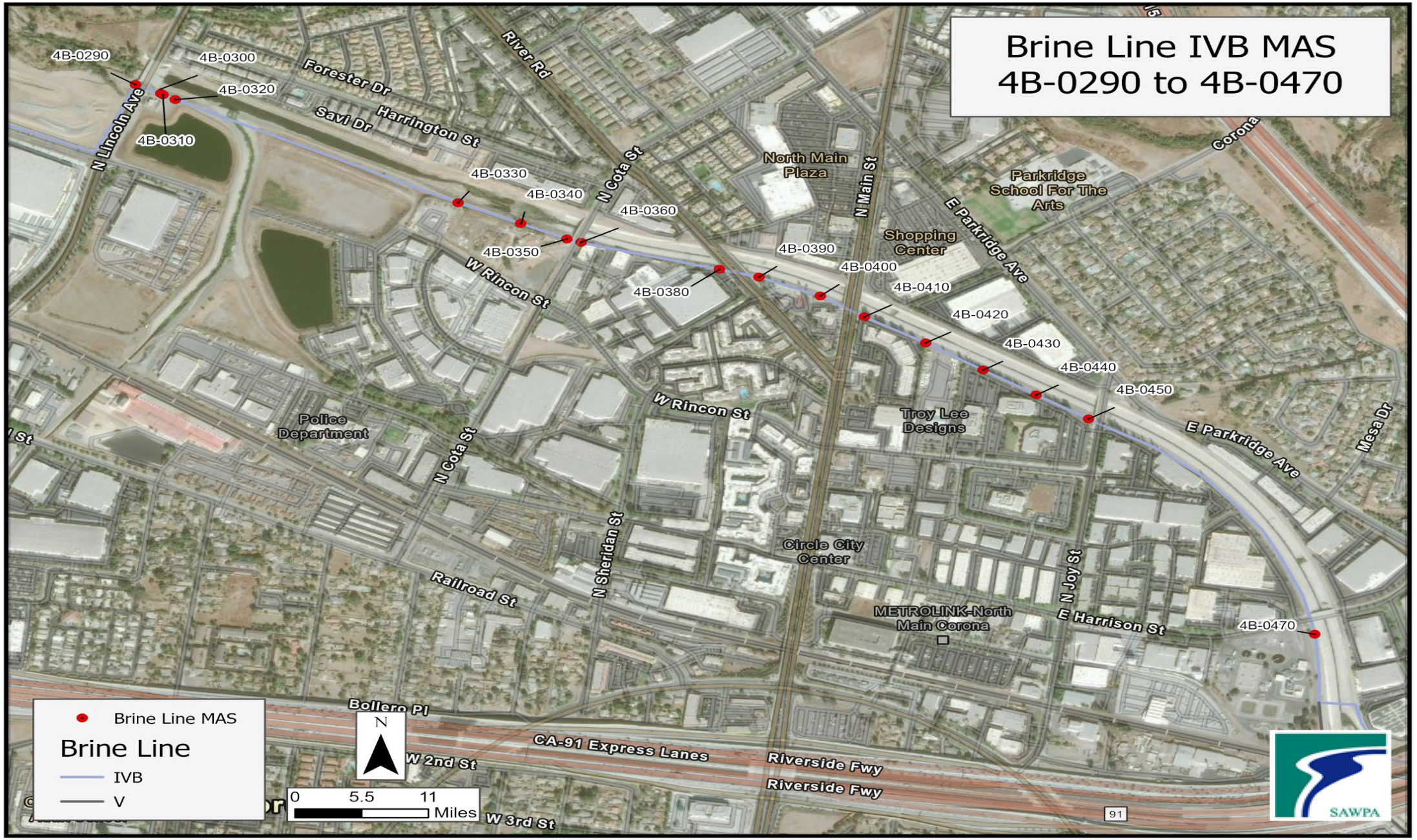
Reach IV Considerations

- Reach IV was constructed in 1975 and is the oldest portion of the Inland Empire Brine Line
- 42”-48” Reinforced Concrete Pipe with T-Lock 360º
- Point of combined flow from every reach.
- Nesting Season work impediments and Biological Surveys
- Necessity of bypass plan and spill prevention plan.
- Coordinating work with Green River Golf Course and Army Corps of Engineers.
- Storm season may impact the use of vehicles/heavy machinery or general access.



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Reach IV-B DIP Section Considerations

- Approximately 1.6 miles of 36” Ductile Iron Pipe
- Requires coordination with Riverside County Flood Control
- Traffic Control for street cross sections if bypass is required.
- Necessity of Spill Prevention Plan.
- Possible coordination of Month-Long Shutdown of EMWD Desalter.
- Possible coordination of additional member agency planned shutdowns.

Reach IV and IV-B DIP Condition Assessment– Scope of Work

The Project Scope will include 4 Phases:

Phase 1: Project preparation and planning.

Phase 2: Develop Field Inspection Plan (FIP) for staff approval.

Phase 3: Implement the Field Inspection Plan (FIP).

Phase 4: Prepare the Draft and Final Report.

Schedule

Issue Request for Proposals	**November 1, 2022**
Pre-Proposal Meeting	November 15, 2022
Proposals Due	December 15, 2022 3:00 PM PST
Interview panel	January 11, 2023
Recommend Award	February 7, 2023
Issue Notice to Proceed	February 2023

Questions?