



UPDATE ON REFINERY RECYCLED WATER EXCHANGE PROJECT

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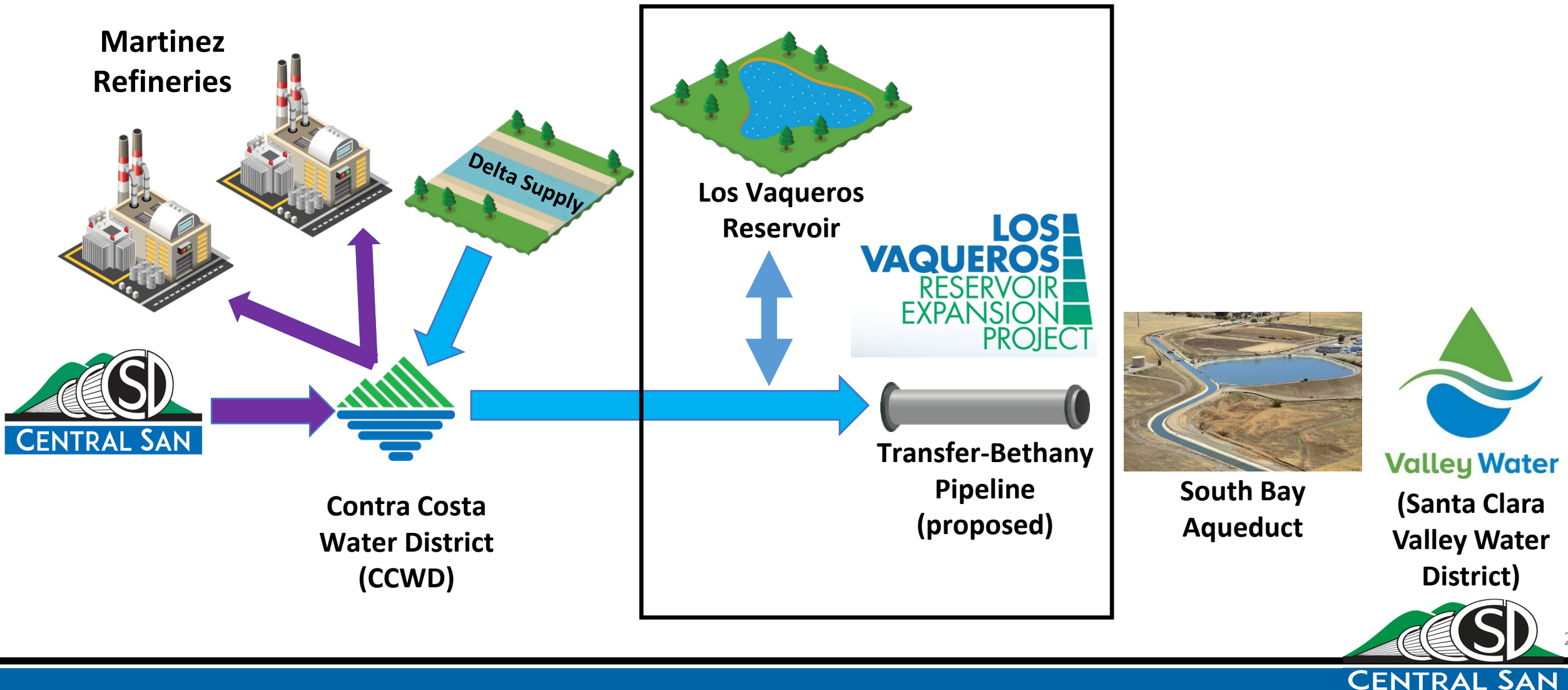
Valley Water Recycled Water Committee Meeting
July 28, 2021

Attachment 1



CENTRAL SAN

REFINERY RECYCLED WATER EXCHANGE PROJECT CONCEPT



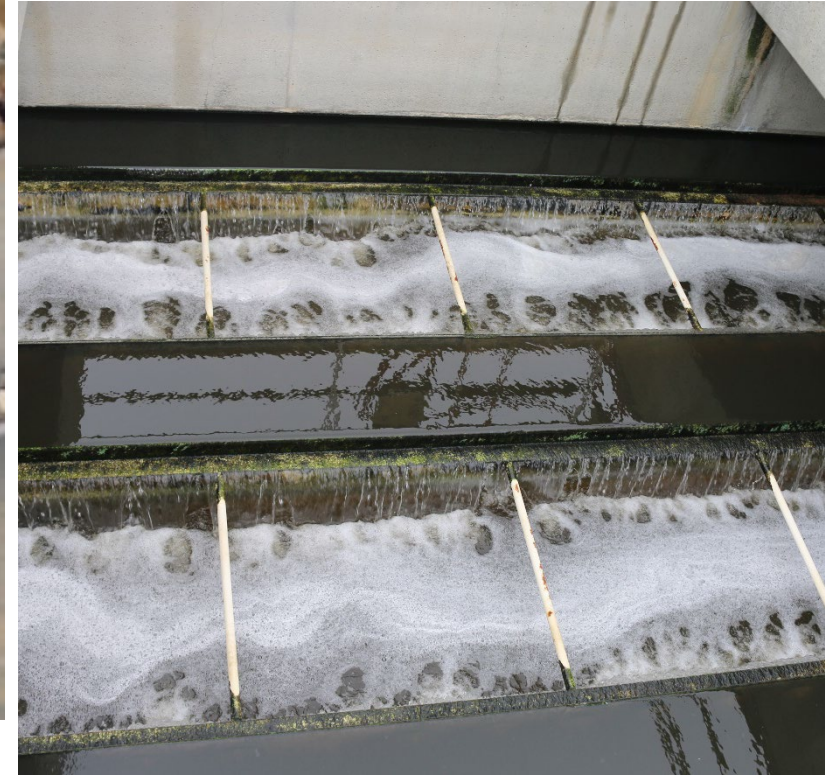
MEMORANDUM OF UNDERSTANDING (MOU)

- On April 30, 2018, a three-way MOU was executed between Central San, CCWD, and Valley Water to conduct a Preliminary Feasibility Evaluation of the Refinery Recycled Water Exchange Project
- On July 3, 2019, Amendment 1 was executed, extending the termination date to June 30, 2020
- On June 22, 2020, Amendment 2 was executed, extending the termination date to June 30, 2021

WORK PLAN DEVELOPED JUNE 2018

- Central San, CCWD, and Valley Water staff collaborated to develop a Work Plan called for in the MOU
- Tasks included:
 - A. Review and update costs Central San previously developed to provide recycled water for refinery use
 - B. Review refinery water quality requirements
 - C. Evaluate/estimate the project's yield
 - D. Develop updated cost estimates
 - E. Allocate costs, based on beneficiary pays
 - F. Final report





Water Exchange Cost Sharing

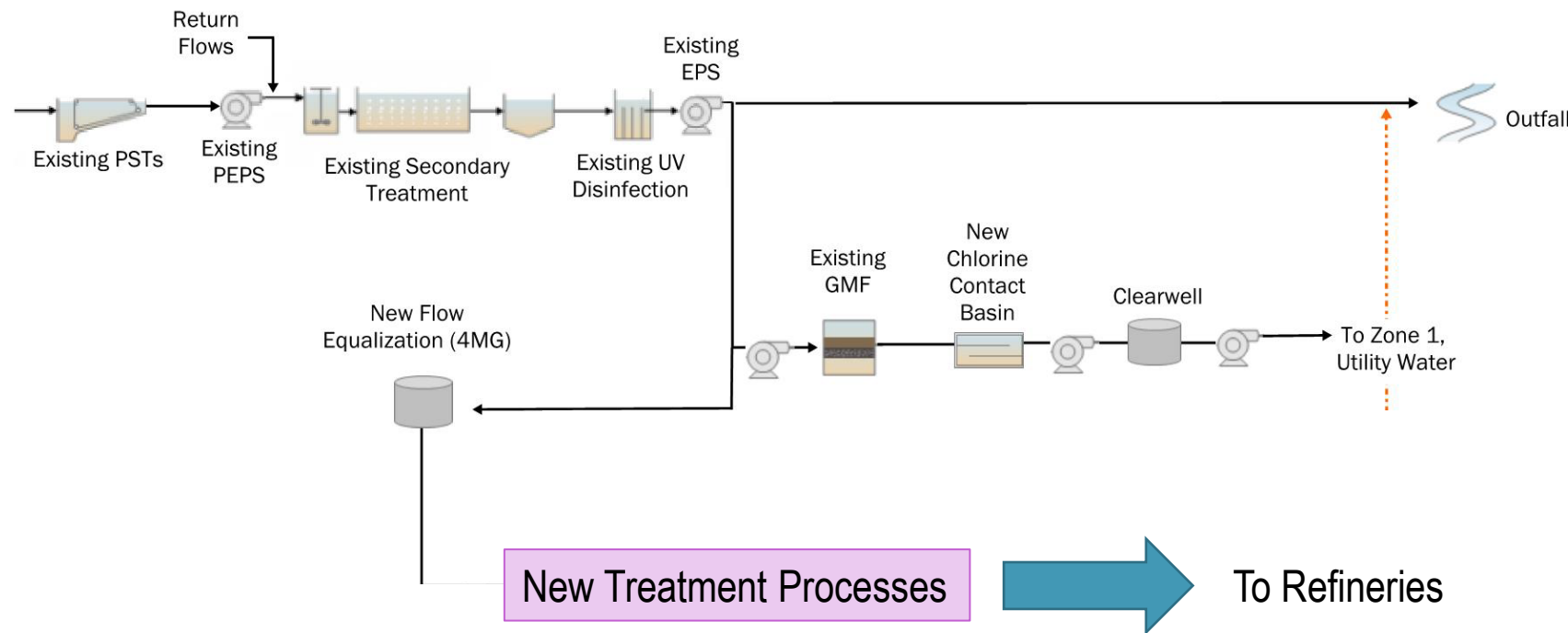


May 2021



Overview of Water Exchange Alternatives

Alternative 1 – Targeted Nitrogen Removal



Costs for 21,600 AFY Recycled Water Delivery

Capital Costs

Treatment	\$ 444 M
Conveyance	\$ 49 M
Total Capital	\$ 493 M

O&M (\$/yr) \$ 12 M

Unit Cost \$1,500/AF*

Costs for 18,500 AFY Recycled Water Delivery: (16.5 MGD)**

Capital Costs

Treatment	\$ 391 M
Conveyance	\$ 48 M
Total Capital	\$ 439 M

O&M (\$/yr) \$ 10 M

Unit Cost \$1,500/AF*

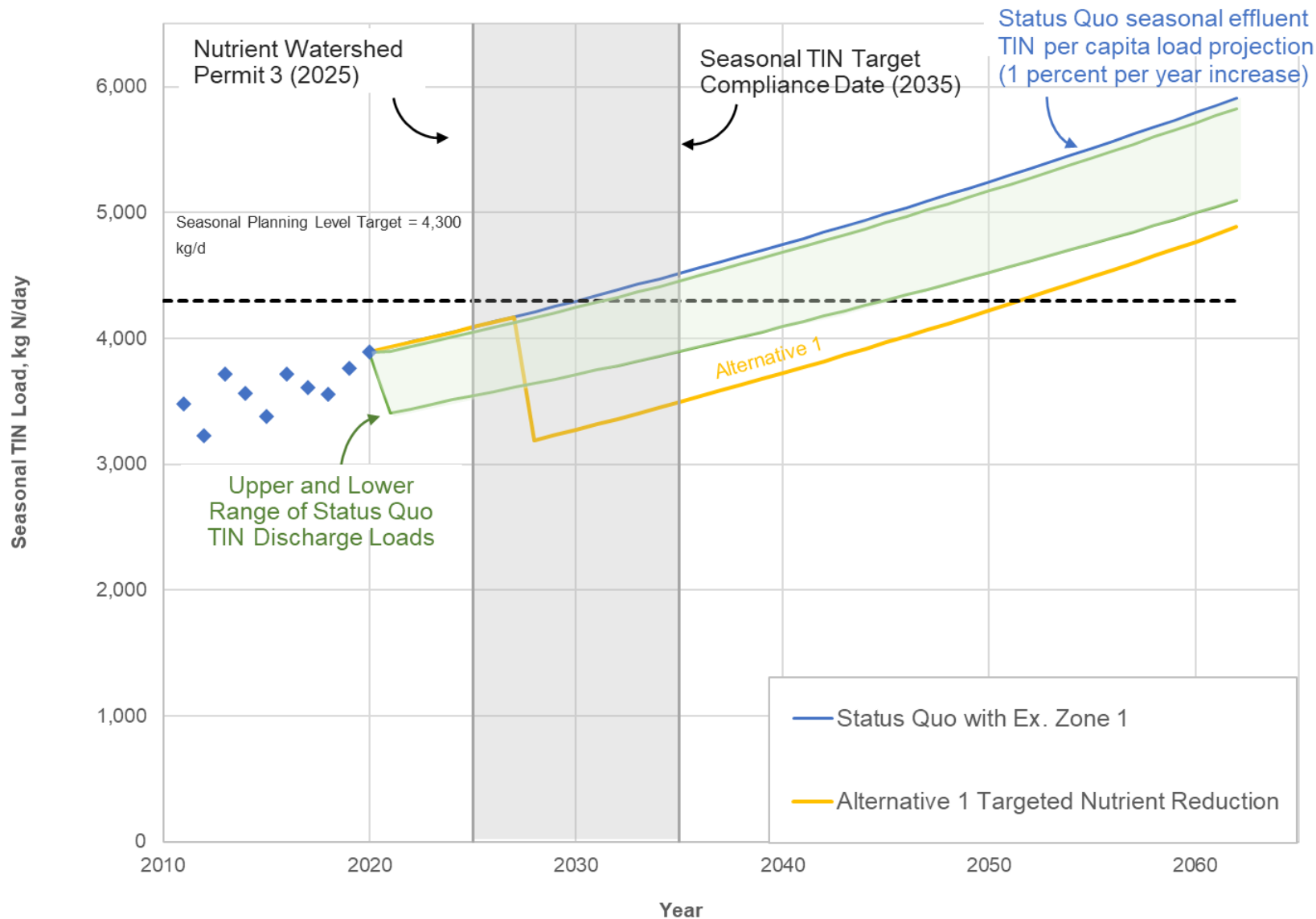
* Labor costs not included

** Lower flows required due to changes in refinery operations

MGD = million gallons per day

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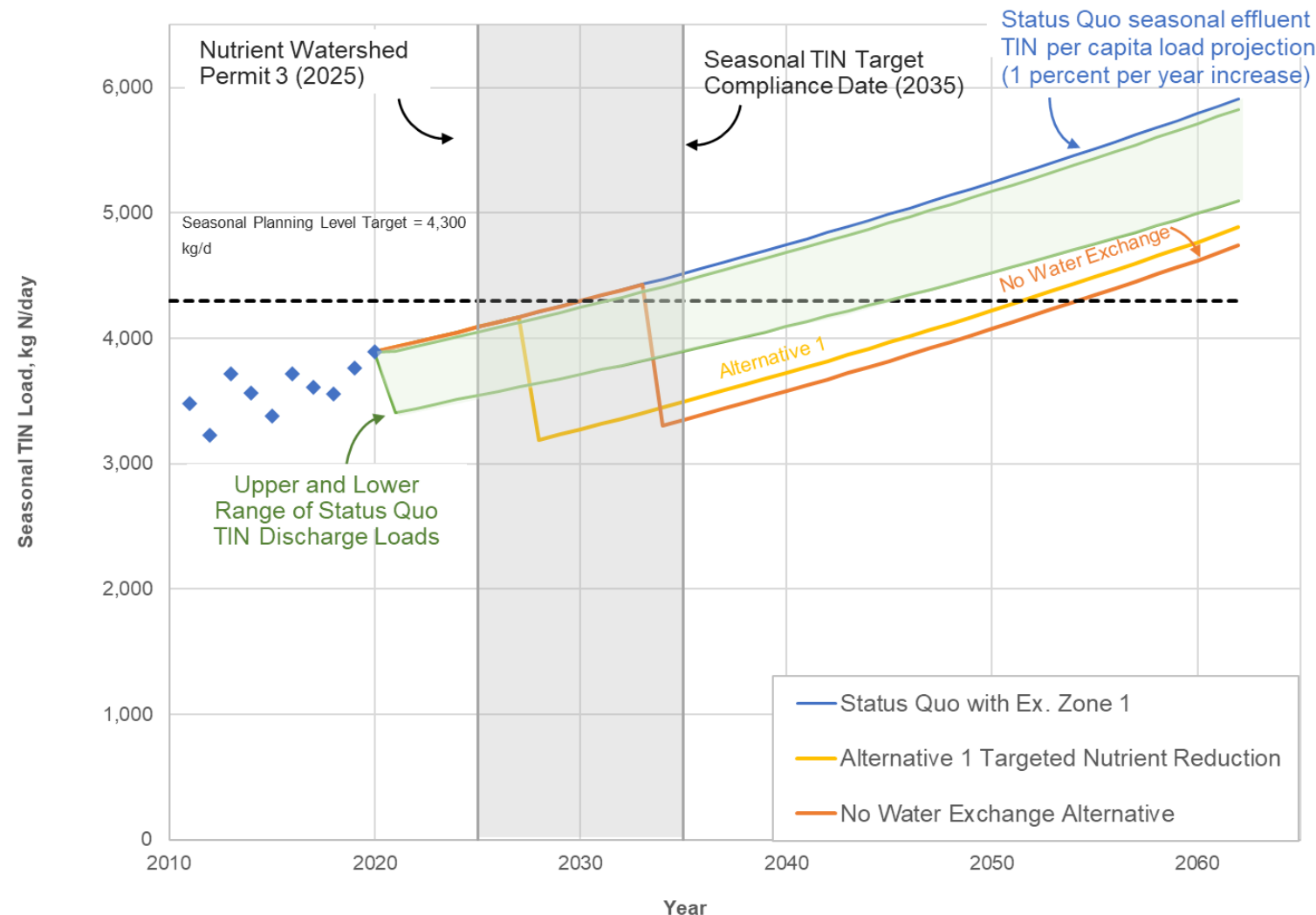
Cost Sharing Basis at 16.5 mgd delivery



Alternative 1:

- Compliance until 2051 (23 years)

Cost Sharing Basis at 16.5 mgd delivery



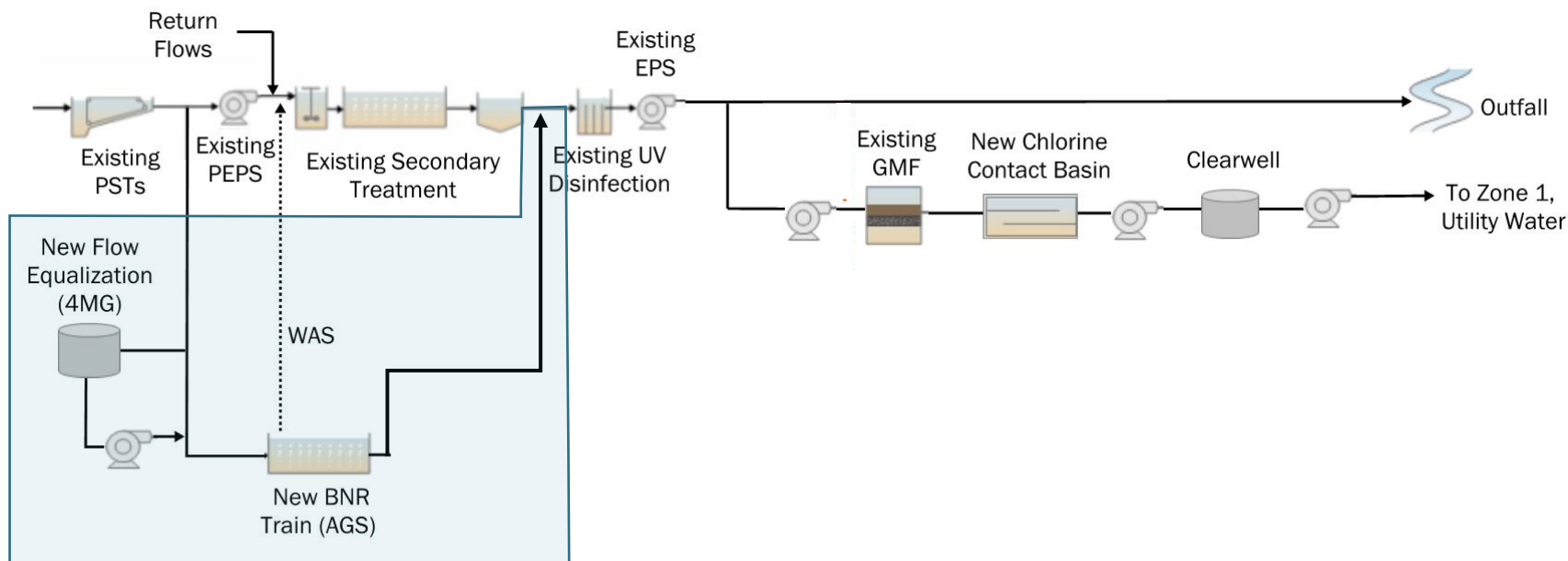
Alternative 1:

- Compliance until 2051 (23 years)

No Water Exchange:

- 24 mgd parallel treatment
- Compliance until 2054 (20 years)

No Water Exchange – Parallel Treatment



Constant-Flow Parallel Treatment

Costs for 24 MGD Parallel Treatment Train:

Capital Costs	
Treatment	\$ 225 M
Conveyance	\$ -- M
Total Capital	\$ 225 M
O&M (\$/yr)	\$ 5.0 M

Cost Sharing Approach

- Central San could contribute to the cost of providing the equivalent TIN load reduction as the Water Exchange Alternative 1 (i.e., Central San contributes the cost of the No Water Exchange Alternative)
 - Can be applied to any size delivery scenario

Cost Sharing Summary – 30-year PV

	16.5 mgd delivery	
	No Water Exchange (24 mgd)	WEX Alternative 1
Total Capital Cost	\$ 225.0 M	\$ 439.0 M
Total Operating Cost (PV)	\$ 115.0 M	\$ 299.7 M
Total Recycled Water Unit Cost (\$/AF)	NA	\$2,000
Valley Water Capital Cost	--	\$ 214.0 M
Central San Capital Cost	\$ 225.0 M	\$ 225.0 M
Valley Water Recycled Water Unit Cost (\$/AF)	--	\$1,000
Central San TIN Load Reduction Cost (\$/kg TIN)	\$110	\$120

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Cost Sharing Summary – 100-year PV

	16.5 mgd delivery	
	No Water Exchange (24 mgd)	WEX Alternative 1
Total Capital Cost	\$ 225.0 M	\$ 439.0 M
Total Operating Cost (PV)	\$ 230.0 M	\$ 522.0 M
Total Recycled Water Unit Cost (\$/AF)	NA	\$1,600
Valley Water Capital Cost	--	\$ 213.0 M
Central San Capital Cost	\$ 225.0 M	\$ 225.0 M
Valley Water Recycled Water Unit Cost (\$/AF)	--	\$800
Central San TIN Load Reduction Cost (\$/kg TIN)	\$80	\$100

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COST TABLE DEVELOPED BY CCWD (IN PROGRESS)

Line Item Description		30-YR PV Unit Cost (\$/AF)	100-YR PV Unit Cost (\$/AF)
Treatment Costs	Central San Commodity Charge (negotiable)	\$50	\$50
	Recycled Water Treatment and Conveyance - Alternative 1	\$2,000	\$1,600
	Recycled Water Cost Subtotal	\$2,050	\$1,650
	Central San Cost Allocation	-\$1,100	-\$800
	Net Recycled Water Cost with Central San Avoided Cost/Cost Benefit Allocation	\$950	\$850
	Transferable Recycled Water Cost <i>Assumes 50% Yield to Valley Water</i>	\$1,900	\$1,700
Conveyance Costs	USBR CVP Cost of Service for Exchange	\$41	\$41
	CCWD Conveyance	\$110	\$110
	CCWD Storage	\$0	\$0
	SBA Conveyance	\$40	\$40
	Transfer Bethany Pipeline Conveyance	TBD	TBD
	CCWD Avoided Costs (PRELIMINARY)	(\$101)	(\$101)
	Net Water Conveyance Cost Subtotal	\$90	\$90
Preliminary Net Water Cost Estimated Range		\$1,990	\$1,790

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NEXT STEPS

- Extend the termination date of the current MOU to June 30, 2022
- Finalize the cost allocation
- Complete the Preliminary Feasibility Evaluation Report
- Meet with the US Bureau of Reclamation?
- Determine if the project will proceed to a more-detailed Feasibility-level Evaluation

Refinery Recycled Water Exchange: Considerations for Further Study

Other uncertainties to explore

- Impact of low CVP allocations on project yield
- Potential for future reductions in refinery customer demands
- Physical capacity constraints:
 - CCWD conveyance system
 - Transfer-Bethany Pipeline
 - Valley Water's local system
- CCWD CVP contract and water transfer constraints

QUESTIONS?



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