

**Engineering Committee Meeting Minutes**  
**San Juan Water District**  
**March 13, 2023**  
**10:00 a.m.**

**Committee Members:** Dan Rich, Chair  
Ken Miller, Member

**District Staff:** Paul Helliker, General Manager  
Tony Barela, Operations Manager  
Andrew Pierson, Engineering Services Manager  
Greg Zlotnick, Water Resources Manager  
Teri Grant, Board Secretary/Administrative Assistant

**Members of the Public:** Jeff Lawrence, Water Systems Consulting  
Robert Mowat, HDR  
Dan York, Sacramento Suburban Water District  
BH

**Topics:** CARB – Advanced Clean Fleets Regulation (W & R)  
Groundwater Banking (W & R)  
Wholesale Master Plan Update (W)  
Other Engineering Matters  
Public Comment

At the request of GM Helliker, the Chair moved agenda items 2 and 3 before agenda item 1; however, the meeting minutes will remain in the original order.

**1. CARB – Advanced Clean Fleets Regulation (W & R)**

Mr. Barela conducted a presentation that will be attached to the meeting minutes. He explained that to meet the California Air Resources Board (CARB) Advanced Clean Fleets Regulation, after 2024, 50% of new vehicle purchases will need to be zero emission vehicles and after 2027, 100% of new purchases will have to be zero emission vehicles. He reviewed the Project Purpose, Existing Conditions, Industry Review, Energy Modeling, Financial Requirements, Implementation Strategies, and Site Improvements.

Mr. Barela informed the committee that there are a few implementation options that are being considered. He explained that the options will need to be coordinated with the planning of the new Administration Building so that the charging stations are located appropriately. In addition, he explained that staff is recommending replacing three vehicles sooner than planned (FY 23/24) in order to have them prior to the regulation implementation date. This allows the District time to delay implementation of the fleet electrification until 2030. Delaying the implementation allows the industry to advance and for costs to stabilize.

**2. Groundwater Banking (W & R)**

GM Helliker provided a written staff report which will be attached to the meeting minutes. He explained that staff has been meeting with multiple agencies to discuss groundwater banking and possible partnerships. He informed the committee that the most promising

partnership is probably with Sacramento Suburban Water District (SSWD). He explained that there are three different preliminary scenarios:

1. Invest directly in a well and be a joint owner
2. Invest in a facility(ies) with an agreement with the owner for capacity
3. No specific capacity at any wells, but pay for water supply to be delivered

GM Helliker commented that each scenario would have to be looked at closer and more details would need to be worked out. Mr. Dan York, SSWD General Manager, informed the committee that the concept was presented to their Facility & Operations Committee and was well received. In addition, Mr. York commented that SSWD is working under contract with Kirby Pumps for the next five years to repair and maintain their existing wells and there is a clause in the contract for SSWD to purchase Kirby Pumps after three years.

GM Helliker reported that SJWD has conducted surface water transfers to SSWD in the past. By investing in groundwater production facilities, it will provide SJWD with backup supplies in severe droughts and will help establish capacity for groundwater substitution transfers, both for the Voluntary Agreement and at market rates. In response to Director Rich's question, GM Helliker and Mr. York explained that SSWD's is planning production capacity adequate to meet a level of demand of 15% above maximum peak, with San Juan's investment adding capacity beyond this level.

GM Helliker informed the committee that the RWA Subscription Program has been working to augment existing banking operations, to allow CVP water to be banked outside of the District's service area. He explained that the wholesale area will need to establish a groundwater banking protocol. In addition, he explained that RWA is completing the environmental work necessary for Reclamation to be able to federally acknowledge the groundwater bank, to allow this augmentation of banking CVP water. Mr. York informed the committee that 4 new wells are planned to be constructed in the next 2-3 years, some existing wells will get back online and more new wells are planned to be completed in 6-7 years. GM Helliker informed the committee that the Board will be updated at the March Board meeting.

### **3. Wholesale Master Plan Update (W)**

Mr. Pierson informed the committee that the last Wholesale Master Plan update was completed in 2001 with a minor update in 2007. He introduced Mr. Jeff Lawrence who conducted a presentation that will be attached to the meeting minutes. Mr. Lawrence reviewed the Master Plan Objectives, Supply & Demand data, Supply Reliability Options, Cost Summaries, Groundwater Supply Well Options, Water Treatment Plan Assessment and a Capital Improvement Program (CIP) Summary.

The committee discussed the options for reservoir storage and groundwater wells, drought issues with regard to pumping water from Folsom Dam, and some of the projects in the CIP. Mr. Pierson informed the committee that he will be presenting the information to the full Board at the March meeting.

**4. Other Engineering Matters**

There were no other matters discussed.

**5. Public Comment**

There were no public comments.

The meeting was adjourned at 12:02 p.m.

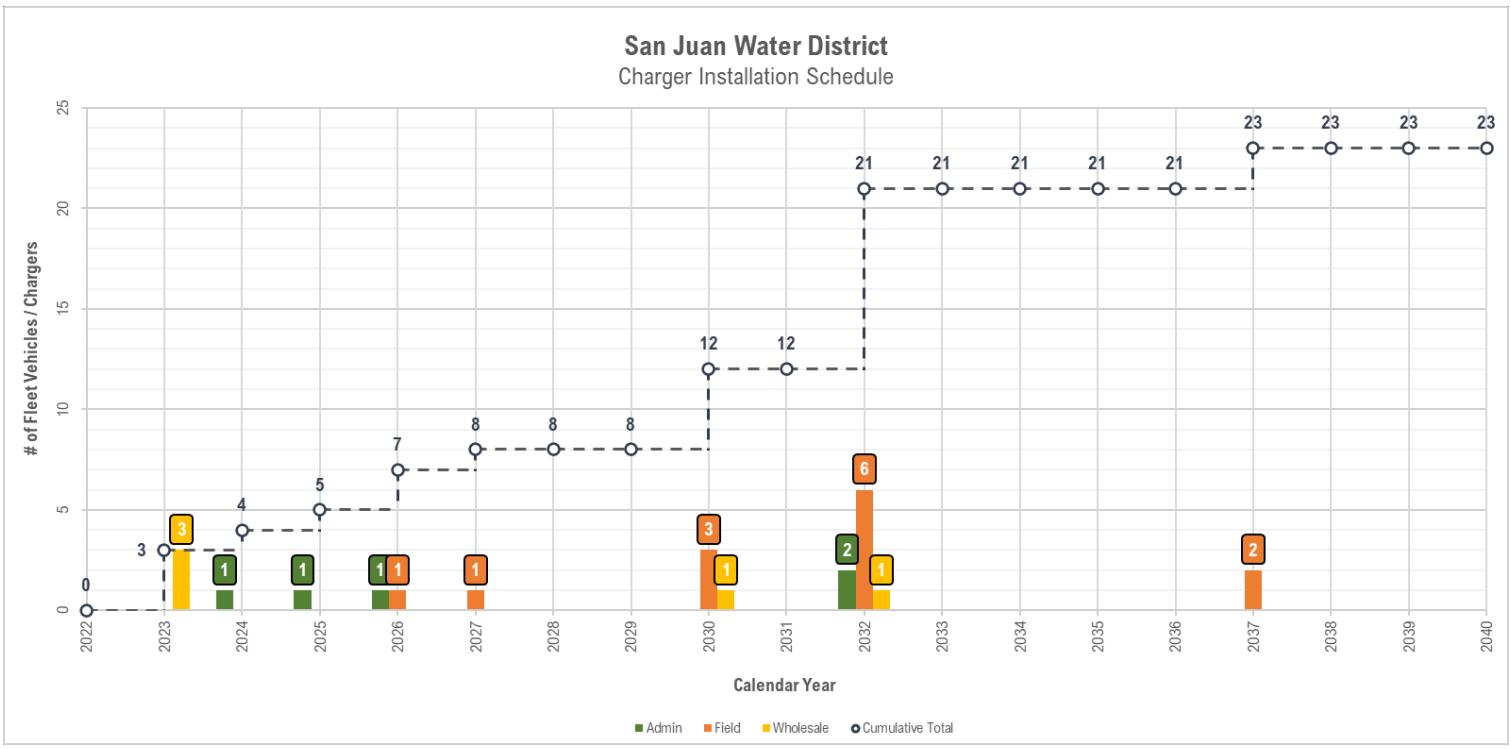






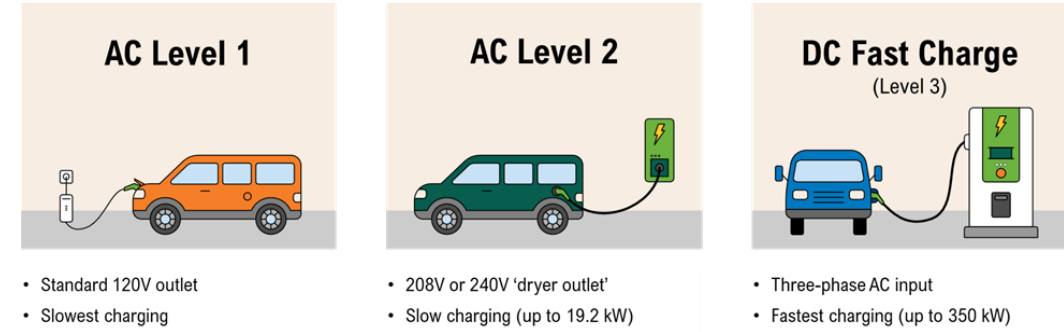


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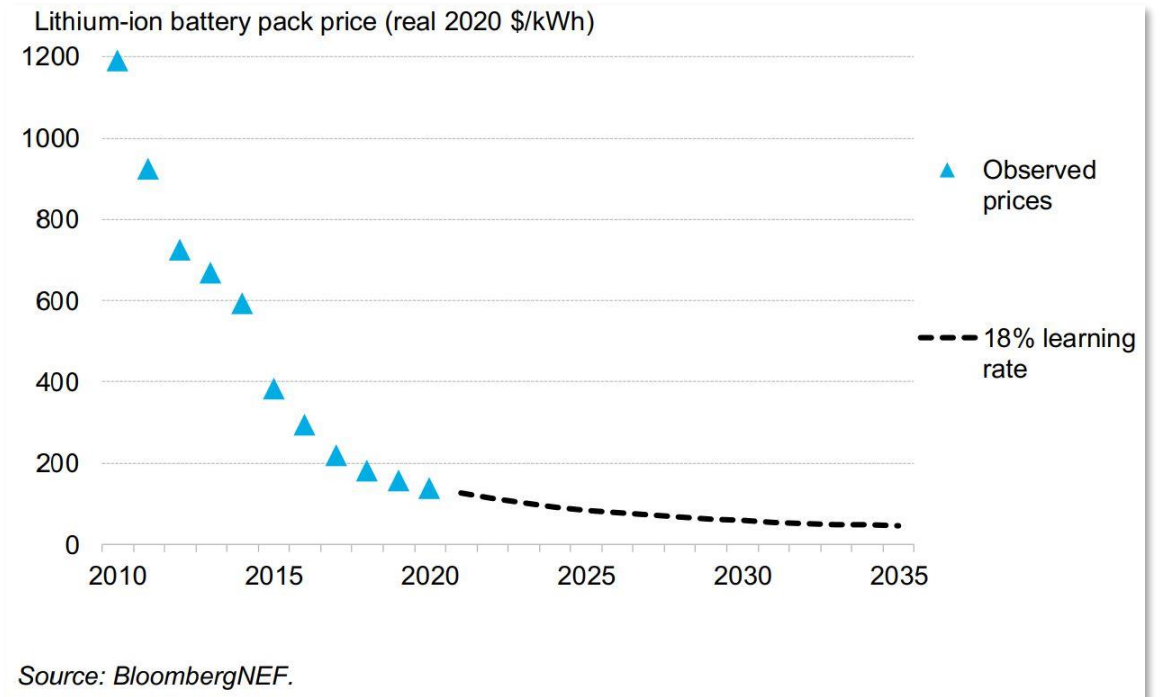
# 3. INDUSTRY REVIEW

- All but one fleet vehicle has a battery electric equivalent or can be 'repowered'
- Many new electric pickups are entering the market in 2023/24
- BEV tow and cargo capacities are largely the same as their ICE counterparts
- Routine maintenance costs are significantly lower for BEVs
- Electricity costs are low compared to the high cost of fuel in CA
- Level 2 chargers are most commonly used when supporting light/medium duty fleets



# 3. INDUSTRY REVIEW

- **General trend is lower purchase prices for BEVs as battery pack prices drop**
  - Temporary increase due to supply chain issues and material shortages
  - 'Price parity', where ICE/BEVs cost the same, is expected in the U.S. by 2029
- Denser battery packs are already enabling ranges over 300 miles
- Future battery technologies will increase range and extend BEV lifespans



# 4. ENERGY MODELING

Facility	Charger Type	#	Total Power Output (kW)	Total Daily Energy Consumption (kWh)
Administration	Level 2 (15A)	5	18.0	101.6
Field Services	Level 2 (30A)	13	99.8	435.9
Water Treatment	Level 2 (15A)	7	18.0	144.3
<b>Overall Site Total</b> (by charger output)	<b>Level 2</b> (15A/30A)	<b>25</b> (12/13)	<b>135.8</b> (36.0/99.8)	<b>681.8</b> (245.9/435.9)

- **All BEVs can satisfy daily service patterns on a single charge, including worst-case days**
  - Includes towing demand multiplier for all trucks
- **Level 2 chargers can bring vehicles to a full charge overnight**
  - 15A chargers may be sufficient at Administration and Water Treatment facilities
  - Field Services fleet requires one dedicated 30A charger per vehicle

# 5. FINANCIAL REQUIREMENTS

- **Three scenarios were evaluated through 2040:**
  - Maintain ICE Fleet ('Baseline')
  - Start BEV Transition in 2023
  - Start BEV Transition in 2029
- It will cost more to purchase BEVs than ICE vehicles
- Charging infrastructure costs only incurred with BEV fleet
- **Savings on fuel and routine maintenance outweigh higher purchase prices and infrastructure costs**
  - Utility and fuel costs are \$637,500-\$770,000 less with BEVs
  - Routine maintenance costs are \$145,000-\$185,000 less with BEVs
- **Cumulative savings are estimated at \$120,000 to \$135,000 with BEVs compared to maintaining an ICE fleet**
  - Starting now or waiting until 2029 has little impact on cumulative cost

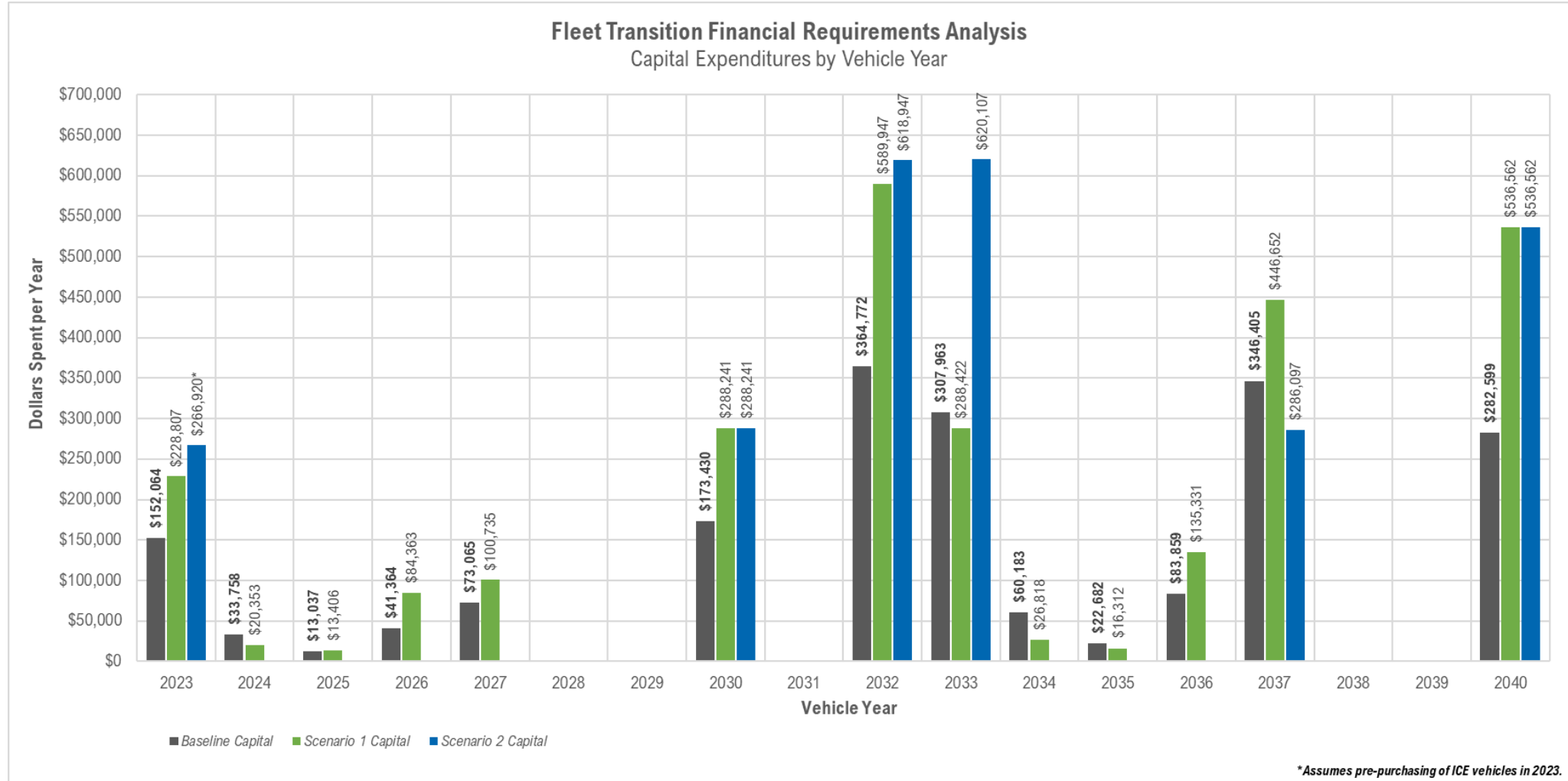
Scenario	Metric	Total
<b>Baseline:</b> Maintain ICE Fleet	Total Capital \$ Spent	\$1,955,182
	Total O&M \$ Spent	\$2,456,148
	<b>Sitewide Total \$ Spent</b>	<b>\$4,411,329</b>
<b>Scenario 1:</b> Start BEV Transition in 2023	Total Capital \$ Spent	\$2,775,950
	Total O&M \$ Spent	\$1,501,614
	<b>Sitewide Total \$ Spent</b>	<b>\$4,277,564</b>
<b>Scenario 2:</b> Start BEV Transition in 2029	Total Capital \$ Spent	\$2,616,873
	Total O&M \$ Spent	\$1,674,379
	<b>Sitewide Total \$ Spent</b>	<b>\$4,291,252</b>

# 5. FINANCIAL REQUIREMENTS

## Scenario 2. Alter Replacement of Vehicles Prior to 2029

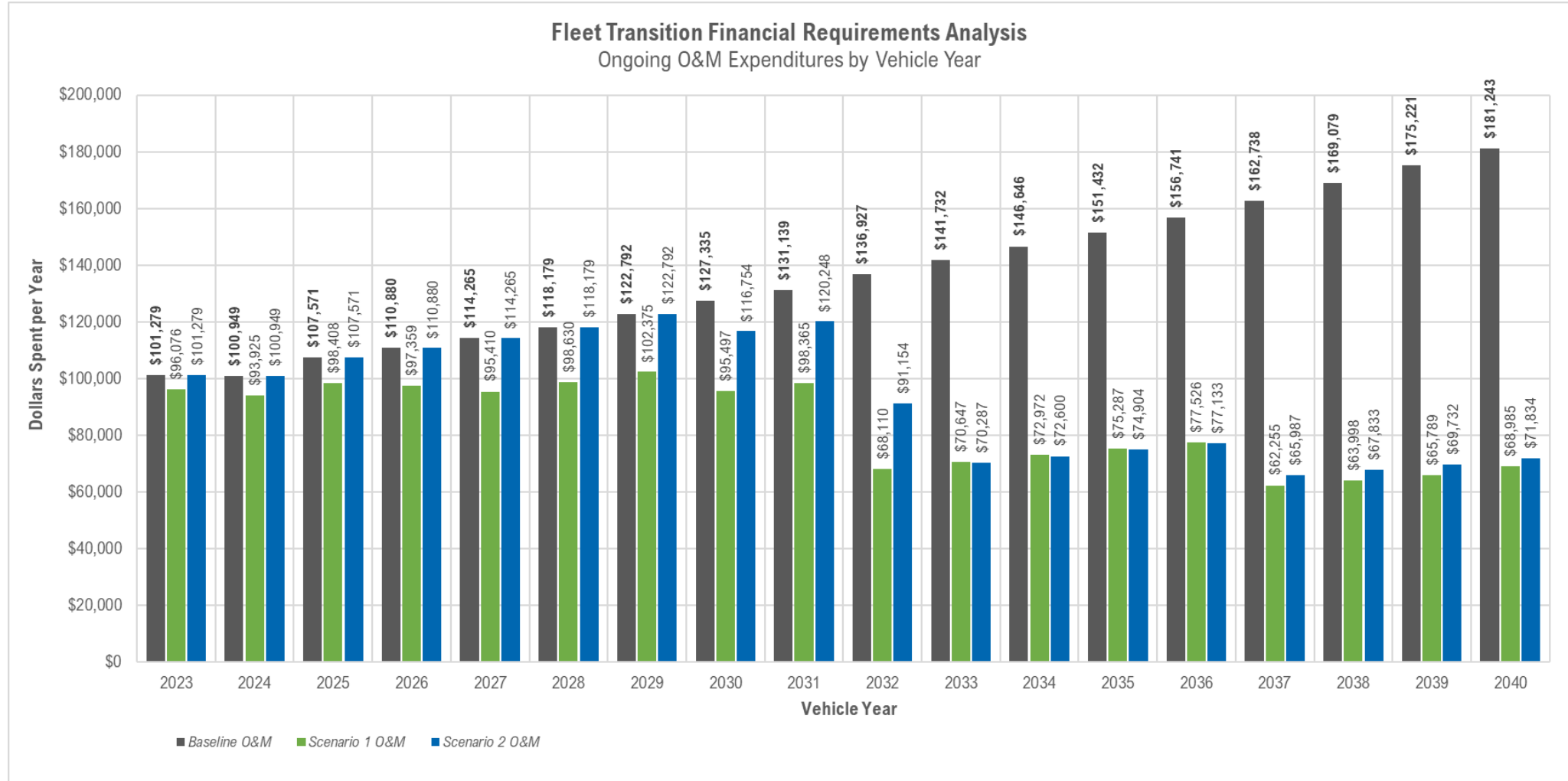
Vehicle	Altered Replacement Date	FY23/24 (overdue)	FY24/25	FY25/26	FY26/27	FY27/28	FY28/29
Executive - Vehicle #32 (2014 Ford Edge)	FY29/30		X				
Conservation - Vehicle #34 (2016 Chevy Colorado)	FY29/30				X		
Engineering - Vehicle #33 (2016 F-150 Super Cab)	FY23/24				X		
Field Ops - Vehicle #35 (2017 F-450)	FY23/24					X	
WTP - Vehicle #3 (1991 Ford F-800 Dump Truck)		X					
WTP - Vehicle #7 (2010 Ford F-150)		X					
WTP - Vehicle #25 (2009 Ford F-650 Dump Truck)		X					
Customer Service – Polaris GEM ( <i>utility</i> )	FY23/24			X			

# 5. FINANCIAL REQUIREMENTS



Includes resale value of existing fleet vehicles

# 5. FINANCIAL REQUIREMENTS



Includes fuel and maintenance costs

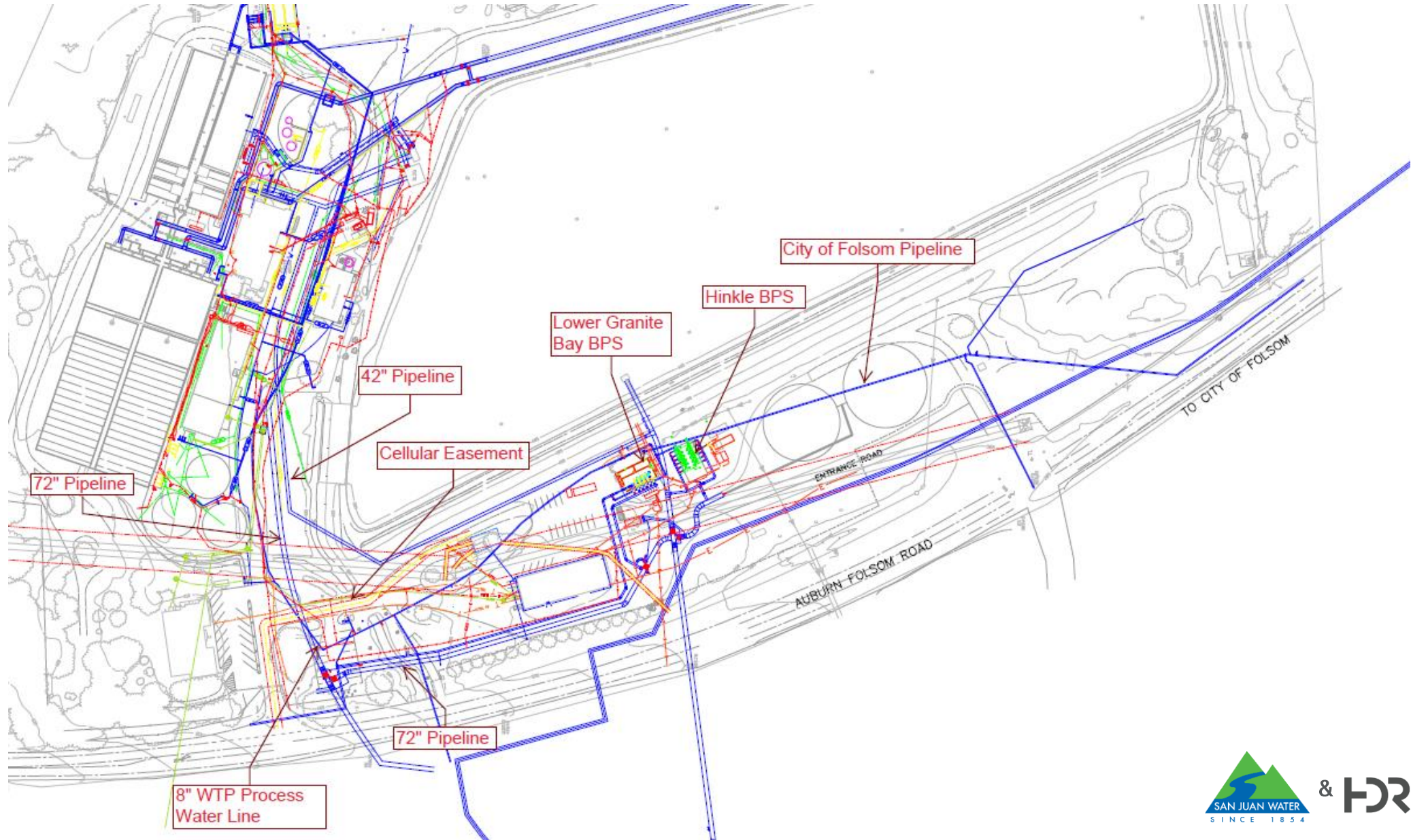
# 6. IMPLEMENTATION STRATEGIES

- **Maintain ICE Fleet**
  - Saves up-front capital costs but requires more funding for O&M
  - More expensive overall than transitioning due to high cost of fuel and routine maintenance for ICE vehicles
- **Start BEV Transition Now**
  - Requires eight BEVs and charger installations between now and 2029
  - Incurs capital costs for potential 'throwaway' infrastructure
  - Impacted by final decisions on site configuration
- **Delay BEV Transition to 2029**
  - Does not incur large additional cost compared to starting now
  - Avoids 'throwaway' infrastructure at the current Administration facility
  - Allows SJWD to finish site planning to better inform transition process



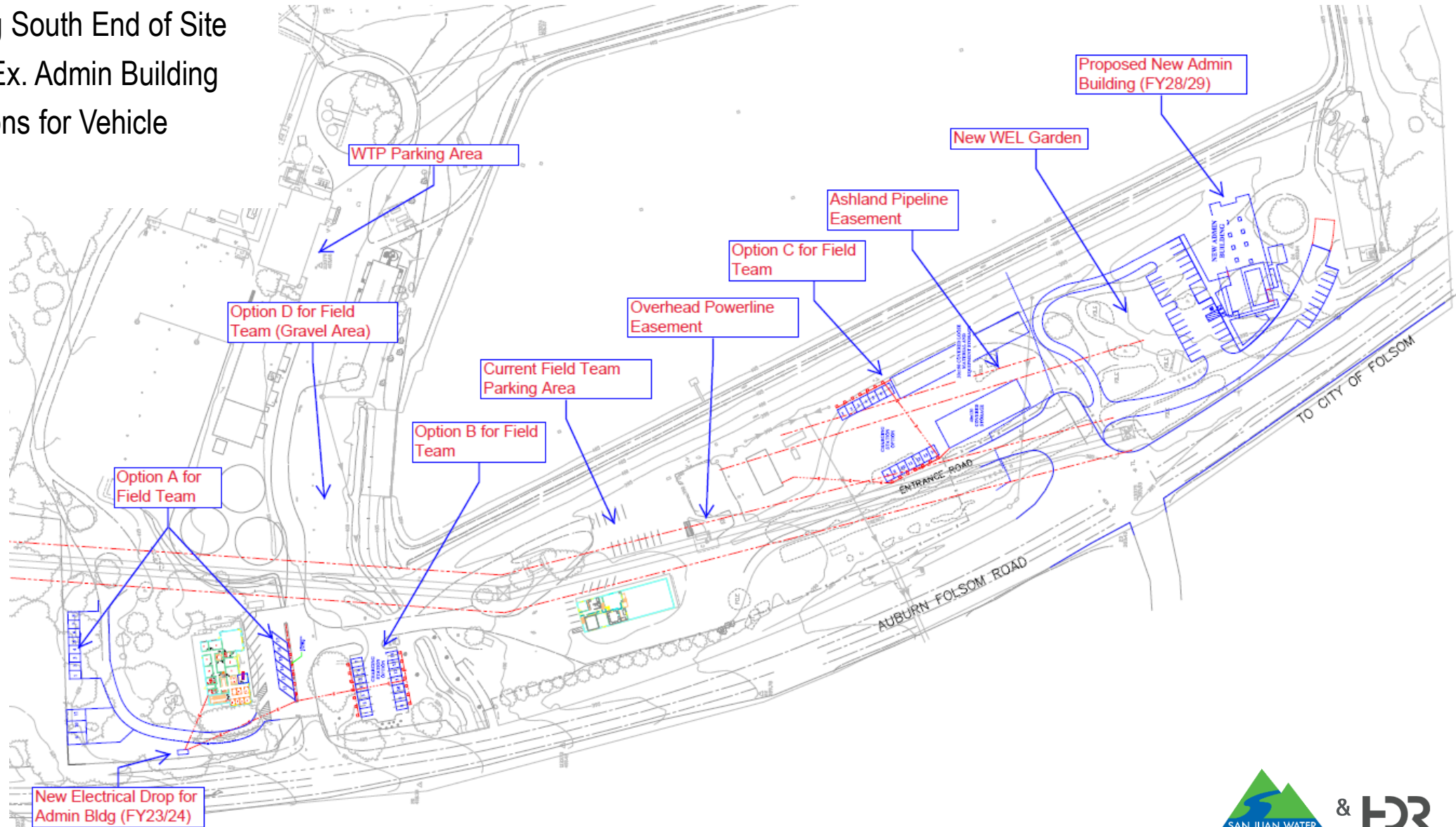
# 7. Site Improvements

- Utility and Easements Conflicts



# 7. Site Improvements

- New Admin Building South End of Site
- Field Relocated to Ex. Admin Building
- Two Plausible Options for Vehicle Stationing



**THANK YOU!**



# STAFF REPORT

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To: Engineering Committee  
From: Paul Helliker, General Manager  
Date: March 13, 2023  
Subject: Groundwater Partnership Between SSWD and SJWD

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## RECOMMENDED ACTION

Information Only

## BACKGROUND

Sacramento Suburban Water District (SSWD) and San Juan Water District (SJWD) conduct a variety of business activities together, including those focused on ensuring reliable water supplies under various hydrologic conditions. SSWD and SJWD jointly operate the Cooperative Transmission Pipeline (CTP), which provides the capability of delivering surface water from Folsom Reservoir to SJWD's wholesale service area and to SSWD's service area, and they jointly operate the Antelope Pump Station, which can deliver groundwater from the SSWD service area into SJWD's wholesale area. The two agencies are now exploring additional partnerships to increase their ability to conjunctively use surface and groundwater supplies, thereby increasing water supply reliability and their joint ability to transfer water supplies to other parties, to meet various needs.

SSWD and SJWD have collaborated for decades to manage their surface and groundwater supplies, to benefit their customers and to improve conditions in the Sacramento Groundwater Authority (SGA) region of the North American Subbasin. SSWD has been purchasing surface water supplies from the Placer County Water Agency (PCWA) in certain normal or wet years, which SJWD treats and wheels to SSWD, pursuant to a longstanding agreement. PCWA supplies are not available in drier years, so for the past four years, SSWD has purchased surface water supplies from SJWD, via transfers of SJWD's water right water. This new collaboration has allowed SSWD to continue to increase its store of banked groundwater supplies, which can also benefit SJWD by those supplies serving as supplemental source of water via the Antelope Pump Station, when surface water supplies are limited.

Perhaps more importantly, this collaboration has established the foundation for a partnership between SSWD and SJWD to conduct groundwater substitution transfers, both at market rates, and as part of the regional Voluntary Agreement (VA) proposal. The VA is designed to provide better environmental results and far better water supply security than would the unimpaired flows proposal that has been developed by staff at the State Water Resources Control Board, for the purpose of updating the Bay-Delta Water Quality Control Plan. As of the last update of the exchangeable water balance of SGA's water accounting framework (which tallied supplies through 2020), SSWD had banked more than 285,000 acre-feet of groundwater supplies within its service area.

This banked water has provided and can continue to provide water supplies for use by SSWD customers under normal conditions, as well as for their use and for delivery to SJWD during drought emergencies. The banked water can also provide the resources for groundwater substitution transfers.

When the SJWD Board of Directors adopted its latest retail financial plan in June of 2022, \$5 million was included in the plan, to fund groundwater partnerships. Since that time, SSWD and SJWD managers have been meeting to define the details of a potential partnership. As described in the attached document, three alternatives are being evaluated, ranging from joint ownership of groundwater facilities to an arrangement under which SJWD pays for supplies produced by SSWD.

The purpose of this item for Board discussion is to provide a status report, and to share the alternatives document, for the Board's review and input.

**Attachment**

Collaboration Scenarios: Conjunctive Use and Groundwater Banking

**Collaboration Scenarios**  
**Conjunctive Use and Groundwater Banking**  
Sacramento Suburban Water District and San Juan Water District  
11-22-2022 Draft

## **1.0 Summary**

Sacramento Suburban Water District (SSWD) and San Juan Water District (SJWD) conduct a variety of business activities together, including those focused on ensuring reliable water supplies under various hydrologic conditions. SSWD and SJWD jointly operate the Cooperative Transmission Pipeline (CTP), which provides the capability of delivering surface water from Folsom Reservoir to SJWD's wholesale service area and to SSWD's service area, and they jointly operate the Antelope Pump Station, which can deliver groundwater from the SSWD service area into SJWD's wholesale area. The two agencies are now exploring additional partnerships to increase their ability to conjunctively use surface and groundwater supplies, thereby increasing water supply reliability and their joint ability to transfer water supplies to other parties, to meet various needs.

## **2.0 Partnership Opportunities**

Currently, SJWD has adequate surface water diversion, treatment and transmission capacity to meet projected surface water supply needs for its Wholesale Customer Agencies, including its own retail service area. SJWD's 120 MGD (150 maximum MGD) surface water treatment plant, its 62 MG Hinkle Reservoir for treated water storage, and the various transmission pipelines (CTP – 72", Fair Oaks – 40" and Citrus Heights – 42") have reliably delivered more than 73,000 acre-feet of treated surface water from Folsom Reservoir to both its wholesale service area and to SSWD and California American Water Company (Cal-Am), at rates of up to 139 MGD. SJWD has various water rights and entitlements totaling up to 82,200 AF/yr when hydrology permits, of which 58,000 AF/yr is available as a relatively firm supply.

When SJWD's wholesale demands do not require the use of all of its available supplies, it can transfer unused water to SSWD for its use in lieu of groundwater, resulting in the banking of water in the aquifer underlying SSWD's service area, pursuant to the banking protocol defined by the Sacramento Groundwater Authority. SJWD's agreements to transfer water right water to SSWD since 2019 have contributed to the more than 285,000 AF of groundwater that SSWD has banked in the North American subbasin aquifer.

In the future, SJWD's water right water could also be banked by SSWD via direct injection, if and when SSWD installs aquifer storage and recovery technology. Also, once the Bureau of Reclamation acknowledges that the North American subbasin aquifer is a groundwater bank, SJWD will be authorized to bank SJWD's CVP water and the water of other CVP contractors in SSWD's service area,, either via in-lieu use or direct injection.

While SJWD has never failed to have adequate surface water supplies to meet wholesale customer demands, its ability to receive deliveries from Folsom Reservoir could be reduced, should reservoir levels fall below 110,000 AF. Below that level, SJWD and the City of Roseville would be forced to rely on, and share, the maximum 60 cubic feet per second (cfs) capacity of an emergency pump operated by the Bureau of Reclamation. SJWD's water rights allow for diversion of up to 75 cfs during the peak summer months, and its diversions of supplies from the Placer County Water Agency and its CVP water add to this total amount, thus indicating the inadequacies of 60 cfs of shared capacity.

The threat of this reduced pumping capacity under low reservoir conditions - which almost occurred in 2015 – led SJWD and SSWD to build the Antelope Pump Station to be able to provide backup groundwater supplies to SJWD and its wholesale customer agencies if necessary. To ensure reliability and adequate production capacity for the Antelope Pump Station to deliver groundwater to SJWD, SJWD and SSWD are evaluating the alternatives described below.

These alternatives would also provide benefits to SSWD by increasing groundwater production capacity generally and for conducting groundwater substitution transfers, either as part of a market rate transfer, or for the purpose of contributing to flow augmentations pursuant to the Voluntary Agreement process. As noted above, once the Sacramento Regional Groundwater Bank receives federal acknowledgement from the Bureau of Reclamation, SJWD's CVP water that is subsequently banked in collaboration with SSWD can be delivered later from SSWD's wells to recipients downstream, either via substitution transfers or via direct delivery to the American River.

## **2.1 SSWD Wells and Facilities – Partial Ownership by SJWD**

In this scenario, SSWD and SJWD would jointly own the groundwater wells and associated facilities. Operational responsibilities would need to be defined, but given SSWD's expertise in owning and operating groundwater facilities, their taking on that responsibility for the jointly-owned wells would likely be the optimal approach. SJWD would contribute to the operational costs, as well as to the repair and replacement costs. Allocation of the proportional share of the pumping capacity of the well(s) to each agency would also need to be defined.

### **2.1.1 Issues to Address via Agreements between SSWD and SJWD**

Analysis and Design of Facilities

Capital Cost, Financing and Financial Participation

Operations Responsibilities and Cost Sharing

Quantities of Produced Groundwater Available to Each Party and Timing of Deliveries

## **2.2 SSWD Wells and Facilities – SJWD Pays for Production Capacity**

In this scenario, SSWD would own and operate the groundwater wells and associated facilities, and SJWD would purchase production capacity in those facilities by contributing funds toward installation or rehabilitation, etc. SJWD would also contribute to the operational costs, as well as to the repair and replacement costs. As part of the financial and operational agreements between SSWD and SJWD, SJWD would be provided a guaranteed quantity of water produced and transmitted into the CTP, for use by SJWD and its Wholesale Customer Agencies under defined conditions.

### **2.2.1 Issues to Address via Agreements between SSWD and SJWD**

Analysis and Design of Facilities

Capital Cost, Financing and Financial Participation

Operations Responsibilities and Cost Sharing

Quantities of Produced Groundwater Available to Each Party and Timing of Deliveries

## **2.3 SSWD Wells and Facilities – SJWD Pays for Groundwater Produced**

In this scenario, SSWD would own and operate the groundwater wells and associated facilities, and SJWD would purchase water supplies from those facilities. SJWD would be provided a guaranteed quantity of water produced and transmitted into the CTP, for use by SJWD and its Wholesale Customer Agencies. Under this option, would pay solely for the water produced, with no upfront financial contribution to SSWD for the cost of facilities or capacity in them.

### **2.3.1 Issues to Address via Agreements between SSWD and SJWD**

Analysis and Design of Facilities

Capital Cost, Financing and Financial Participation

Operations Responsibilities and Cost Sharing

Quantities of Produced Groundwater Available to Each Party and Timing of Deliveries

# Wholesale Master Plan

## *Summary*



# Master Plan Objectives

Evaluate  
Supply and  
Demand  
Capacity

Assess Supply  
Reliability  
Alternatives

Additional Storage

Groundwater Supply  
Wells

Evaluate WTP  
  
Assess  
Infrastructure

Prepare  
20-Year CIP

# Supply



## Multiple Water Rights:

- *Pre-1914 American River*
- *USBR*
- *CVP*
- *PCWA*



## Water Rights Capacity Exceeds Demands



## Single Source of Supply – Folsom Lake



## Limited Supply Redundancy



# Wholesale System Demands *(Tully and Young)*

SERVICE AREA	DEMAND AFY					
	CURRENT	2025	2030	2035	2040	2045
<b>SJWD RETAIL AREA</b>						
Existing <sup>(1)</sup>	11,300	11,300	11,300	11,000	11,000	11,000
Future <sup>(2)</sup>	---	31	131	254	386	522
Subtotal	11,300	11,331	11,431	11,254	11,386	11,522
<b>CHWD</b>						
Existing <sup>(1)</sup>	11,700	11,700	11,700	11,500	11,500	11,500
Future <sup>(2)</sup>	---	186	466	843	1,228	1,589
Subtotal	11,700	11,886	12,166	12,343	12,728	13,089
<b>FOLSOM</b>						
Existing <sup>(1)</sup>	1,100	1,100	1,100	1,100	1,100	1,100
Future <sup>(2)</sup>	---	5	9	13	17	21
Subtotal	1,100	1,105	1,109	1,113	1,117	1,121
<b>FOWD</b>						
Existing <sup>(1)</sup>	9,600	9,600	9,600	9,400	9,400	9,400
Future <sup>(2)</sup>	---	33	67	126	211	211
Subtotal	9,600	9,633	9,667	9,526	9,611	9,611
<b>OVWC</b>						
Existing <sup>(1)</sup>	3,700	3,700	3,700	3,600	3,600	3,600
Future <sup>(2)</sup>	---	35	91	167	248	327
Subtotal	3,700	3,735	3,791	3,767	3,848	3,927
Total Existing	37,400	37,400	37,400	36,500	36,500	36,500
Total Future	0	290	764	1,403	2,090	2,670
<b>GRAND TOTAL</b>	<b>37,400</b>	<b>37,700</b>	<b>38,200</b>	<b>37,900</b>	<b>38,600</b>	<b>39,200</b>

# Supply Reliability Options

## *Additional Storage*



Used County GIS data to identify vacant parcels large enough for new storage reservoir



Minimum storage volume 10 MG

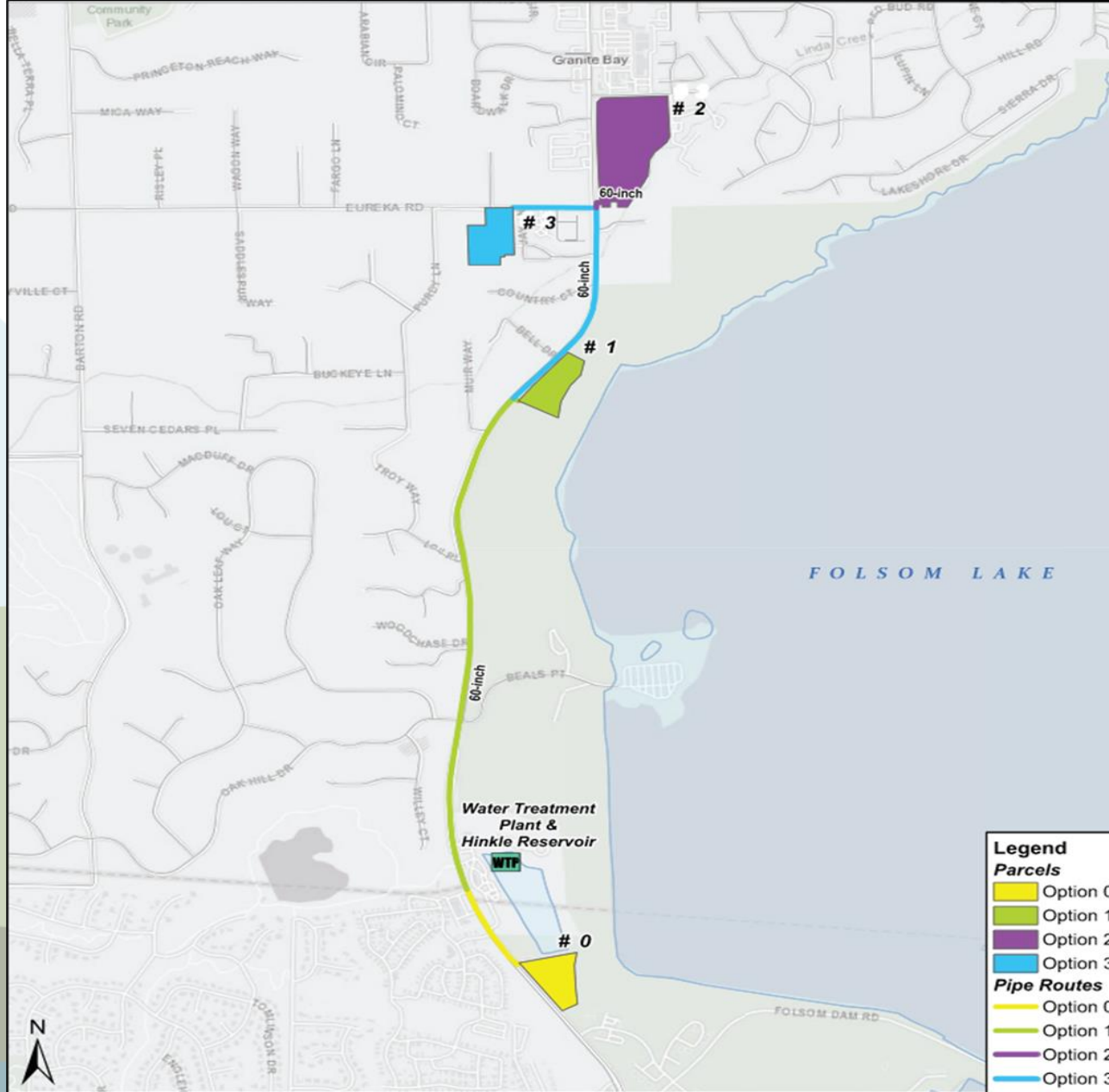


Alternatives include construction of storage and large diameter T-main to connect to Hinkle outlet piping



Considered concrete tanks and earthen, Hypalon lined, reservoir at each site

# Multiple Sites Evaluated for Feasibility



**Legend**

**Parcels**

- Option 0
- Option 1
- Option 2
- Option 3

**Pipe Routes**

- Option 0
- Option 1
- Option 2
- Option 3



San Juan Water District  
 2023 Wholesale Master Plan  
 Figure 5-3. Vacant Parcels Identified for Potential Storage





# Preferred Site

15 MG Reservoir  
BLM Owned Land

## Reservoir

Site	Volume	Reservoir	Reservoir Site	Reservoir Piping	Total Reservoir
#0	10 MG	\$1.99M	\$5.8M	\$1.9M	\$19M
#1	10 MG	\$1.09M	\$1.9M	\$7.4M	\$23M
#2	10 MG	\$1.03M	\$7.4M	\$10.5M	\$37M
#3	Parcel Developed				

*\*total reservoir cost includes contingencies*

## Tank

Site	Volume	Tank Cost	Tank Site Costs	Tank Piping Costs	Total Tank Cost
#0	10 MG	\$13.1M	\$4.3M	\$1.6M	\$32M
#1	No Tank				
#2	10 MG	\$13.1M	\$7.9M	\$10.5M	\$51M
#3	Parcel Developed				

*\*total tank cost includes contingencies*

# Groundwater Supply Wells, Potentially with ASR

## 1 SJWD owned parcels adjacent to Wholesale Pipeline

- Increased operational needs for SJWD

## 2 WCA owned wells with Wholesale agreements

- Citrus Heights Water District
- Orangevale Water Company
- Fair Oaks Water District
- Use existing Infrastructure and WCA operations










## 3 SSWD Partnership to install new wells and use CTP/Pump Back Station for supply and injection

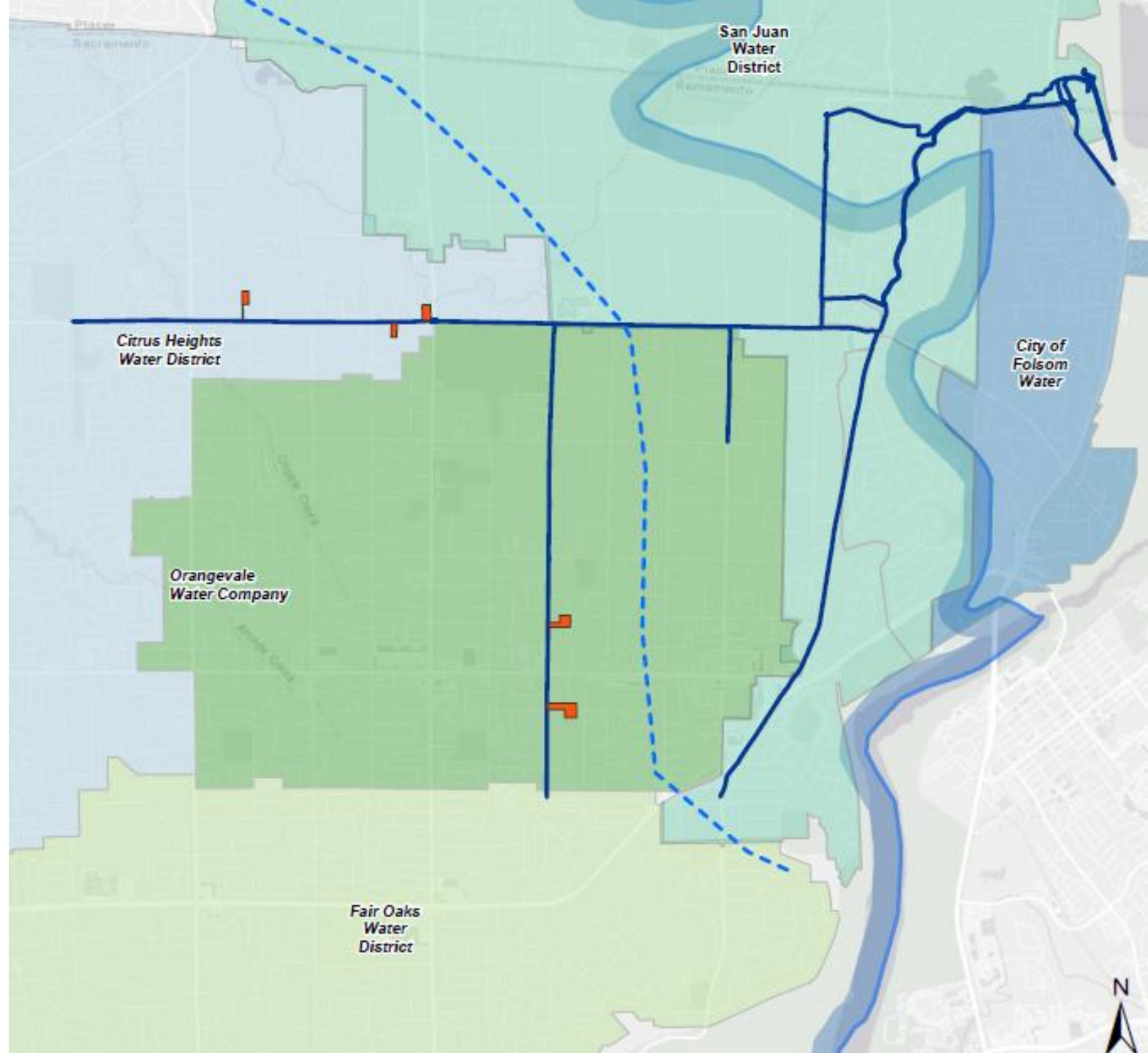
- May be limited due to SSWD system need for new wells and scarce well sites

# SJWD Owned Sites

- Min 1/2 acre
- Located adjacent to wholesale pipelines
- 5 sites identified

## Legend

 Potential SJWD Well Sites	<b>WCA and Retail Service Area</b>
 Wholesale System Pipelines	 Citrus Heights Water District
 Sacramento Valley North American Subbasin	 City of Folsom Water
 Eastern Groundwater Boundary for New Wells	 Fair Oaks Water District
	 Orangevale Water Company
	 SJWD Retail Service Area



# WCA Well Summary of Possible Future Capacity

WELL OWNER	CURRENT		PLANNED		FUTURE TOTAL	
	NO. OF WELLS	FIRM CAPACITY <sup>(1)</sup>	NO. OF WELLS	FIRM CAPACITY <sup>(1)</sup>	NO. OF WELLS	FIRM CAPACITY <sup>(1)</sup>
OVWC	2 inactive wells	---	2 active wells	850 gpm (1.2 MGD)	No change	850 gpm (1.2 MGD)
CHWD	4 wells + 2 standby	5,600 gpm (8.1 MGD)	2 new wells	6,700 gpm (9.6 MGD)	No change	6,700 gpm (9.6 MGD)
FOWD	4 wells	4,100 gpm (5.9 MGD)	2 new wells	8,400 gpm (12.1 MGD)	No change	8,400 gpm (12.1 MGD)
Wholesale					4 new wells <sup>(2)</sup>	4,500 gpm (6.5 MGD)
Total Wells	8 active wells (12 total)	9,700 gpm (14.0 MGD)	14 wells	15,950 gpm (23.0 MGD)	18 wells	20,450 gpm (29.4 MGD)

1. Firm capacity is the pumping capacity with the largest well offline.

2. Each new well is assumed to have a capacity of 1,500 gpm.

# SSWD Alternative



Develop Supply/ASR wells to be available for use in Wholesale system

- *3-4 wells likely maximum that could be constructed for this purpose*



Limited land available in SSWD



Utilize existing pump-back facility for supply

- *Designed for 10,000 gpm (14.4 MGD), expandable to 15,000 gpm*



SSWD indicates ASR only feasible with SJWD partnership



# New Well Needs to Meet Demand (firm capacity)

Folsom Lake Level	Folsom Lake Pump Operation	Available WTP Supply	CHWD Well Supply	FOWD Well Supply	PCWA Supply (ON/OFF)	SSWD PBS Supply	Maximum Demand Served	NEW WELL NEEDS TO MEET:		
								2015 MDD (43.6 MGD)	ADD (31.2 MGD)	Min demand (16 MGD)
<i>ft</i>	-	<i>(mgd)</i>	<i>(mgd)</i>	<i>(mgd)</i>	<i>(mgd)</i>	<i>(mgd)</i>	<i>(mgd)</i>	<i>(No. Wells)</i>	<i>(No. Wells)</i>	<i>(No. Wells)</i>
325 +	Main	100+	0	0	0	0	ALL	---	---	---
309 – 325	E-pump	23.6-27.1	6.1 (three wells)	4.5 (two wells)	2.9	0	37 – 41	3 – 5	---	---
309 – 325	E-pump	23.6-27.1	6.1 (three wells)	4.5 (two wells)	2.9	4.0	41 – 45	0 – 3	---	---
309 – 325	E-pump	23.6-27.1	0	0	0	0	24 – 28	9 - 11	3 – 5	---
309 – 280	Barge	9.7	6.1 (three wells)	4.5 (two wells)	2.9	0	23	11	5	---
309 – 280	Barge	9.7	6.1 (three wells)	4.5 (two wells)	2.9	8.2	31	7	---	---
<280	None	0	6.1 (three wells)	4.5 (two wells)	2.9	4.0	17	19	8	---
<280 Future		0	All WCA Wells = 22.3 (eleven wells)		2.9	4.0	29.2	13	2	---

# New Well Costs

ITEM	COST
Well Drilling and Construction (Assumes 500 ft borehole depth)	\$1,008,000
Well Equipping (Assumed 1,500 gpm pump and 200 Hp motor)	\$2,855,000
Construction Contingency (25%)	\$710,000
Land Purchase (0.5 acres)	\$130,000
Construction Subtotal	\$3,695,000
Project Development & Implementation Costs (25%)	\$920,000
<b>Project Total</b>	<b>\$4,485,000</b>

# New USBR Pump Station

New pump station at Dam with lower intake

Reliable pumping at lower lake levels

Increased pumping redundancy

USBR Project

Continue discussions with USBR to move project forward

# Water Treatment Plant Assessment

- Regulatory compliance and treatment process evaluation – no major issues
- Improvements identified to optimize process, improve resiliency, and update aging components

WATER TREATMENT PLANT PROJECTS	DESCRIPTION	COST
Powdered Activated Carbon System	Installation, plumbing retrofit, SCADA and controls, system testing and startup of PAC System for algae control and DBP reduction	\$1,556,000
Filter Effluent Pipe Thickness Testing	Pipe thickness testing on the filter effluent pipeline	\$75,000
Corrosion Control Bench Testing	Bench scale testing of corrosion control for the wholesale pipelines using (1) lime, (2) calcium chloride and caustic, and (3) phosphoric acid	\$50,000
North/South Venturi Meter Replacement	Replace the North/South Venturi Meters because they have reached end of useful life	\$316,000
Filter Channel Lining/Underdrain Inspection	Inspect, repair, and reline concrete channels in the filter, flocculation, and sedimentation basins	\$3,313,000
Dry Polymer Conversion	USGI Chemical Feed Dry Polymer System and installation	\$198,000
Solids Handling Improvements	Site work, construction, and installation of coated steel tank, piping retrofit, feed pumps, and electrical work	\$1,060,000
Emergency Generator	Replace the current emergency generator at the WTP at the end of its useful life	\$250,000
Drying Beds Improvements	Concrete drying bed flatwork, trench rehabilitation, asphalt paving, and CMU block wall	\$1,197,000
Main Electrical Panels Relocation	Move existing panels to the north side of WTP building	\$1,663,000

# *Aging Infrastructure Evaluation*

- Condition for the majority of existing infrastructure not known (mostly pipelines)
- Few known system issues exist – addressed in CIP projects
- Water delivery system redundancy assessed and found to be adequate
- Condition assessment of existing infrastructure needed
- Planning level roadmap for future condition assessment efforts developed

# Aging Infrastructure Projects

Project Name	CIP Year(s)	Annualized Cost	Total Cost
Transmission Main Detailed Condition Assessment Plan	1	\$100,000	\$100,000
72-inch HTBPL Pipeline Improvements	1	\$512,000	\$512,000
48-inch Hinkle Bypass Valves Rehabilitation	2	\$148,000	\$148,000
High Priority RCP Pipe Inspection	3	\$856,000	\$856,000
Filter Influent/Effluent Valve Replacement	4	\$640,000	\$640,000
Medium Priority RCP/CLMS/SP Pipe Inspection	6-10	\$475,000	\$2,375,000
54-inch and 72-inch RCP Joint Rehabilitation	8	\$299,000	\$299,000
Condition Assessment Plan Update	11	\$50,000	\$50,000
Low Priority RCP/CMLS/SP Pipe Inspection	11-20	\$408,000	\$4,080,000

# CIP Summary

SUPPLY RELIABILITY PROJECTS	BUDGET ESTIMATE
Folsom Lake Auxiliary Pump Station	Unknown at this time
Supply Reliability Improvements (TBD)	\$20,000,000
River Arc	Unknown at this time
WATER TREATMENT PLANT PROJECTS	
Powdered Activated Carbon System	\$1,556,000
Filter Effluent Pipe Thickness Testing	\$75,000
Corrosion Control Bench Testing	\$50,000
North/South Venturi Meter Replacement	\$200,000
Filter Channel Lining/Underdrain Inspection	\$3,313,000
Dry Polymer Conversion	\$198,000
Solids Handling Improvements	\$1,060,000
Replace Emergency Generator	\$250,000
Drying Beds Improvements	\$1,197,000
Main Electrical Panels Relocation	\$1,663,000
REPAIR PROJECTS AND CONDITION ASSESSMENT	
Transmission Main Detailed Condition Assessment Plan	\$100,000
72-inch HTBPL Improvements and CA for 54-inch	\$512,000
48-inch Hinkle Bypass Valves Rehabilitation	\$148,000
High Priority RCP Pipe Inspection	\$856,000
Filter Influent/Effluent Valve Replacement	\$640,000
Medium Priority RCP/CLMS/SP Pipe Inspection	\$2,375,000
54-inch and 72-inch RCP Joint Rehabilitation	\$299,000
Condition Assessment Plan Update	\$50,000
Low Priority RCP/CMLS/SP Pipe Inspection	\$4,080,000



**Questions?**

WASC