

One Water and Stewardship Committee

Information on the High Desert Water Bank Program status, updated costs, and water quality

Item 9-2 March 14, 2023

## Program Parameters



**Board authorized in April 2019** 

Capital costs up to \$131 million

• Estimated project unit cost: \$320/AF

> Program size:

- Storage capacity of 280,000 AF
- Put/take capability of 70,000 AFY
- Would more than double existing direct pump-back



- Agreement term: 2019 2037
  - 20-year no cost option to extend

Initial Project Design

- Pumped and gravity-fed recharge basins
- 23 recovery wells
- Two turnouts
- Off-site power needed to operate not included





Gravity Recharge

Pumped Recharge Item # 9-2 Slide 3 Where We Are Today

- Provided about \$50 million to date
- Completed construction of 10 recovery wells
- Turnout and stage 1 recharge basins under construction
- Could begin recharging in Summer 2023
- Project is on schedule to commence full operation in 2025



## HDWB – Phase II

- AVEK plans for future phase of HDWB
  - Storage capacity of up to 440 TAF
  - Put/Take capability of up to 110 TAFY
  - Connection to West Branch
- Several interested parties
- AVEK may prioritize Metropolitan's participation, if interested





- Power distribution costs are defined
- Design evolved to meet program parameters
  - Increased depth and number of wells
  - Optimized recharge basin design
- Changes in water quality
  - Arsenic (naturally occurring)
  - Nitrate
- Inflation has driven up costs
- 题.
- Cost increases of \$79 million
  - Total cost of \$210 million

Power Distribution Costs Are Now Defined



- Off-site power costs not included in 2018 construction estimate
  - Unknown power needs
- SCE completed Method of Service study in 2022
  - Off-site
    - Transmission Line
    - Substation
  - On-site
    - Power lines
- Capital cost estimate: \$11M





Design Evolved to Meet Program Parameters



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- AVEK drilled and tested five monitoring wells
  - Depth of approximately 500 ft
  - Testing indicated that water quality met all drinking water standards
- Updated monitoring well data and groundwater modeling showed need for deeper well design
- Updated recovery well data and modeling showed potential need for additional four wells
  - Total number of wells increases from 23 to 27
- Increased capital cost estimate: \$29 M



Design Evolved to Meet Program Parameters



### Recharge Basins

- Removed pumped basins and pumping
  - Gravity recharge basins only
  - Increased berms
- Avoided an additional cost of about \$27 M





Changes in Water Quality



Arsenic

- Initial field investigation and testing
  - All water quality samples met Title 22 Drinking Water Standards
- Water quality sampling from recovery wells shows levels of arsenic from 8 – 20 µg/L (MCL is 10 µg/L)
  - Naturally occurring
  - Modeling shows arsenic is widespread throughout the basin, more concentrated in the deeper aquifer
  - Treatment is required
- Recommended treatment process is coagulation and sedimentation
- Capital cost estimate: \$29 M

Changes in Water Quality



Nitrate

 Nitrate levels in recovery wells from 2.7 – 5.9 mg/L-N (MCL is 10 mg/L-N)

- Higher than ambient levels in CA Aqueduct
- Looking into impacts to our source water and treated water
- Nitrate concentrations for remaining recovery wells are unknown
- AVEK's consultant working on model to evaluate trends in nitrate concentrations as water cycled through basin

### SWP Banking Program Considerations

Banking Program	Constituents of Concern	Termination Date
Arvin-Edison	1,2,3 TCP	2035
Semitropic	Arsenic	2035
Kern-Delta		2029

- Agreements require renegotiation soon
- Some programs impacted by water quality regulations
- More treatment likely to be required in the future

### Inflation Has Driven Costs Up



#### Unprecedented challenges

- Increased material and construction costs
- Supply chain issues affecting ability to acquire materials/equipment
- 2018 Capital Cost Calculation
  - Assumed an annual 3% cost increase
- 2022 Consumer Cost Index
  - Cost increase between 2018 and 2022 of 30%
- Estimated additional cost: \$37 M

### Changes in Cost

Factors Contributing to Changes in Co	ost Estimate	<b>Estimated Capital Cost</b>	
Off-site Power		\$11 M	
Design Changes Wells Recharge Basins	\$29 M (\$27 M)	\$2 M	
Inflation		\$37 M	
Water Quality (Arsenic Treatment)		\$29 M	
Tot	tal:	\$79 M	

 Updated O&M cost estimate to be 3% of capital and included \$4.2M/yr for treatment facility

### Future Cost Recovery Opportunities

- Oversized facilities
  - Turnout
  - Power distribution
  - Conveyance pipelines
- Acquired land
  - Originally planned for pumped recharge
- Number of wells
  - Remain within 70 TAF recovery target

Feedback on Options

- Build project with revised design and cost for \$210 M
  - Negotiate extension of term by 20 years through 2077
    - Estimated project unit cost: \$565/AF
- Limit participation in project and stay within approved budget of \$131 M
  - Negotiate project participation of 60-70% of all program facilities
- Limit participation in project to stay within approved budget plus additional cost for treatment for \$160 M
  - Consistent with agreement terms
  - Negotiate project participation of 70-80% of all program facilities

Cost Competitive to Other Storage Investments



- Metropolitan groundwater storage program full cycle costs (not including capital costs)
  - Arvin-Edison \$441/AF
  - Kern-Delta \$323/AF
  - Semitropic \$493/AF
- Evaluating additional project costs within and outside of Metropolitan
  - Diamond Valley Lake
  - Sites Reservoir
  - Los Vaqueros Expansion
- Will provide cost information for action item

## Consideration

- Move forward with revised design including additional wells and treatment
- Amend agreement
  - Additional project costs
  - Add element of treatment
  - Extend term
  - Allow yield above 70 TAF
  - Ability to recover costs
    - Land
    - Oversized facilities
    - Treatment

# Next Steps

- Incorporate Committee feedback
- Return to the Board for action in a future month
- Continue to meet with AVEK and monitor progress and potential changes
  - Cost
  - Schedule
  - Water quality

