



Update on State Water Project Groundwater Banking Programs

Water Planning and Stewardship Committee

Item 6b

August 20, 2018



San Francisco

Los Angeles

Semitropic WSD

Kern Delta WD

Arvin-Edison WSD

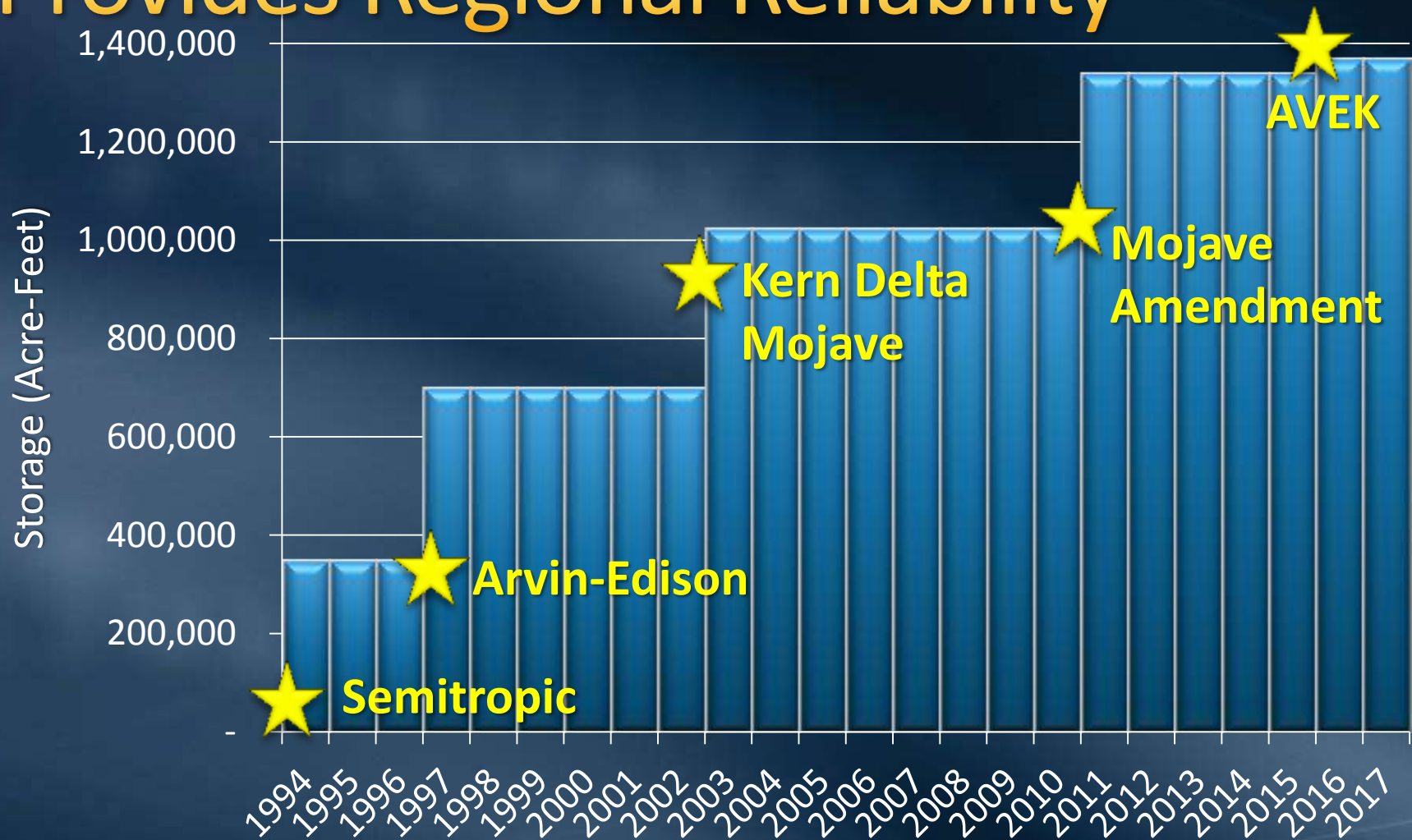
**Antelope Valley-East
Kern Water Agency**

**Mojave Water
Agency**

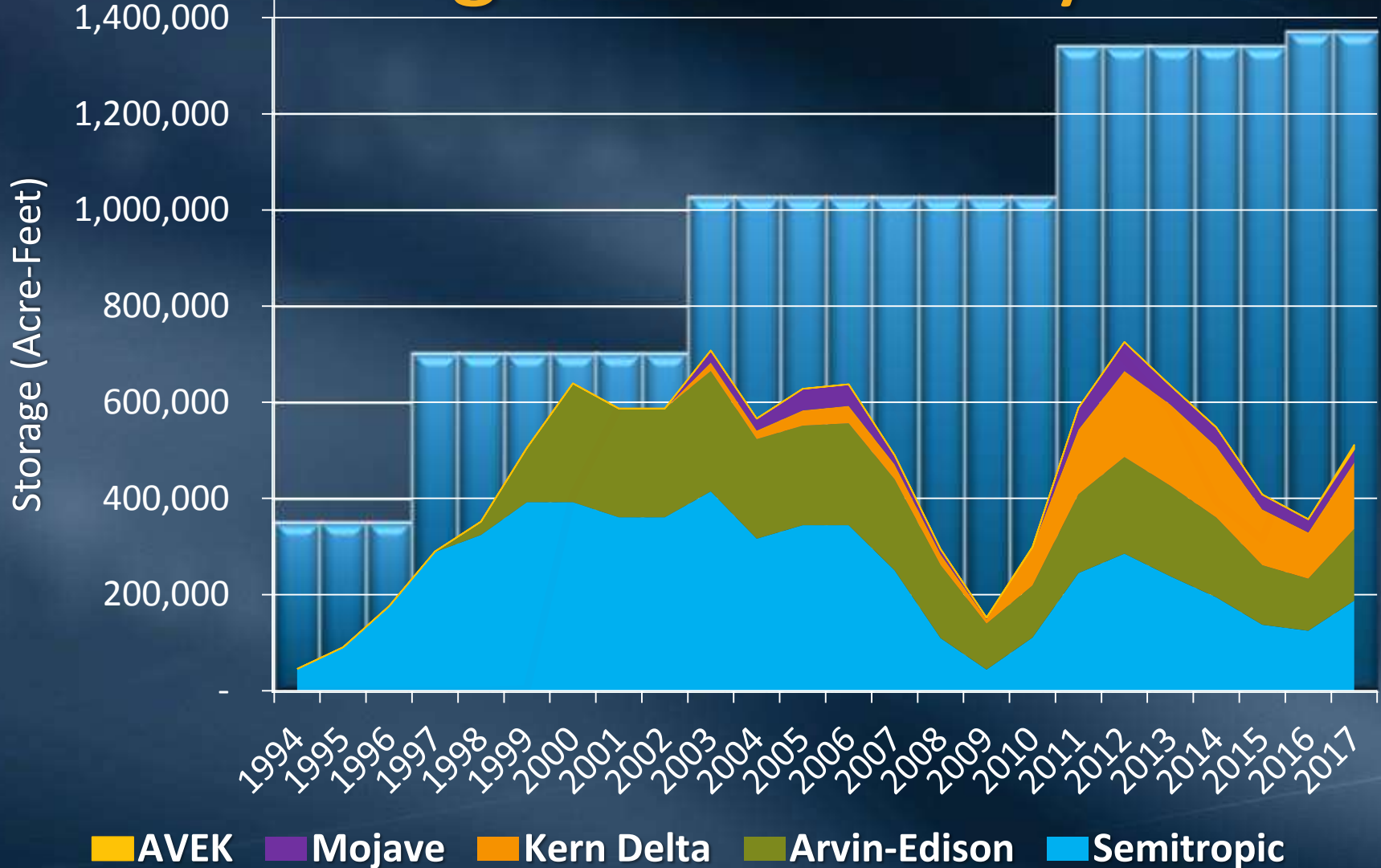
SWP Groundwater Program Benefits

- Manages surplus supplies and provides dry year regional reliability
- Provides emergency reliability
- Cost competitive to alternatives

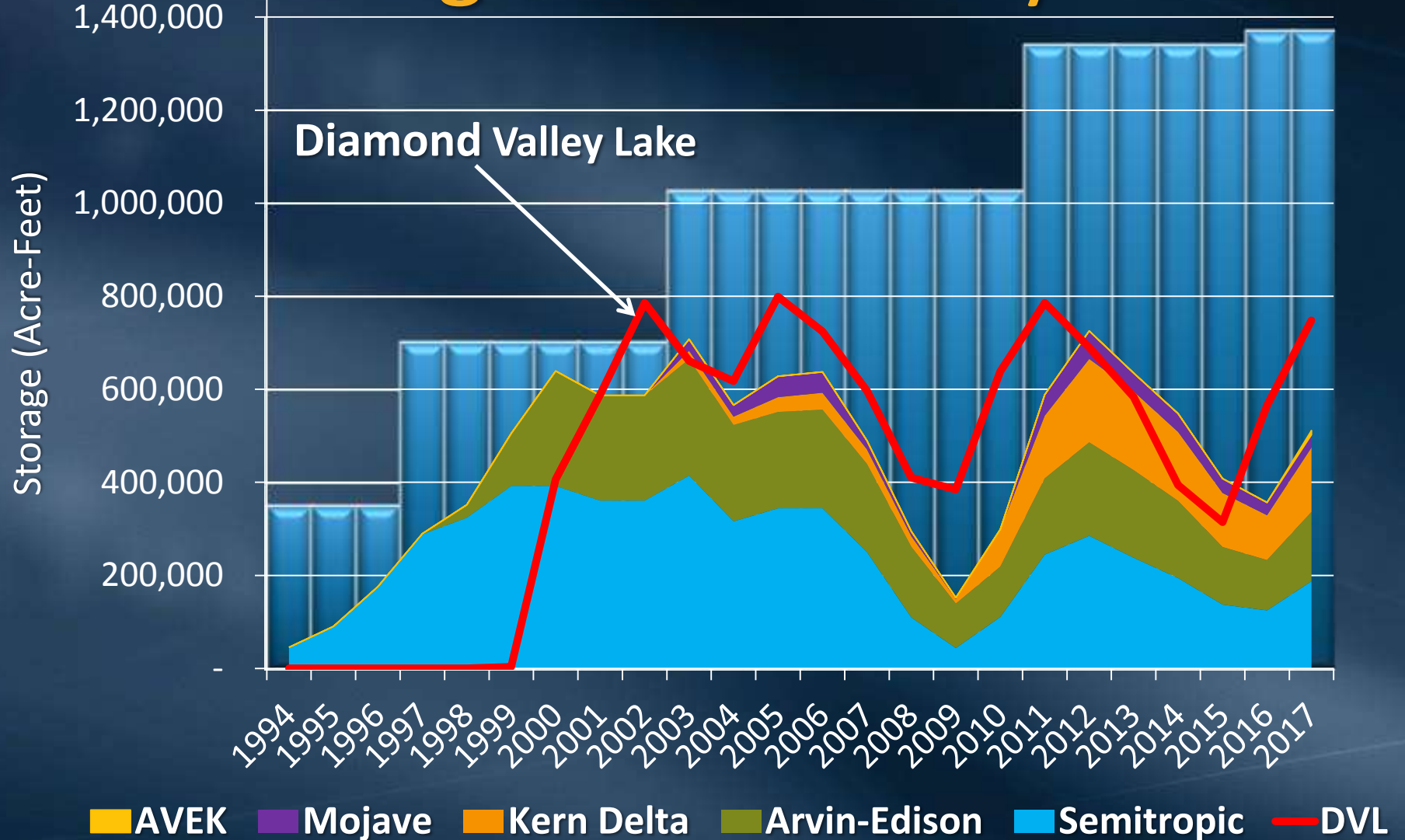
Manages Surplus Supplies and Provides Regional Reliability



Manages Surplus Supplies and Provides Regional Reliability



Manages Surplus Supplies and Provides Regional Reliability



Manages Surplus Supplies and Provides Regional Reliability

Program	Total Takes (AF)	Current Storage (AF)	Maximum Storage (AF)
Semitropic	601,000	188,000	350,000
Arvin-Edison	345,000	149,000	350,000
Kern Delta	92,000	139,000	250,000
Mojave	78,000	27,000	330,000
AVEK	-	9,000	30,000
Total:	1,116,000	512,000	1,310,000

Emergency Reliability

- Location is important
 - South of Delta Reliability
- Direct pump-in programs can provide water when needed

Emergency Reliability



**California Aqueduct
2016 Aqueduct Failure**

Emergency Reliability



**California Aqueduct
Zero Flow**



**California Aqueduct
2016 Aqueduct Repair**

Cost Competitive

- Full Cycle Cost: ~ \$300/AF
- Lower than many dry year transfers
- Lower capital cost than building surface reservoirs
- Captures surplus supplies that could have been lost to the region

Groundwater Storage Risk Factors

- Return Capability
- Water Quality
- Termination

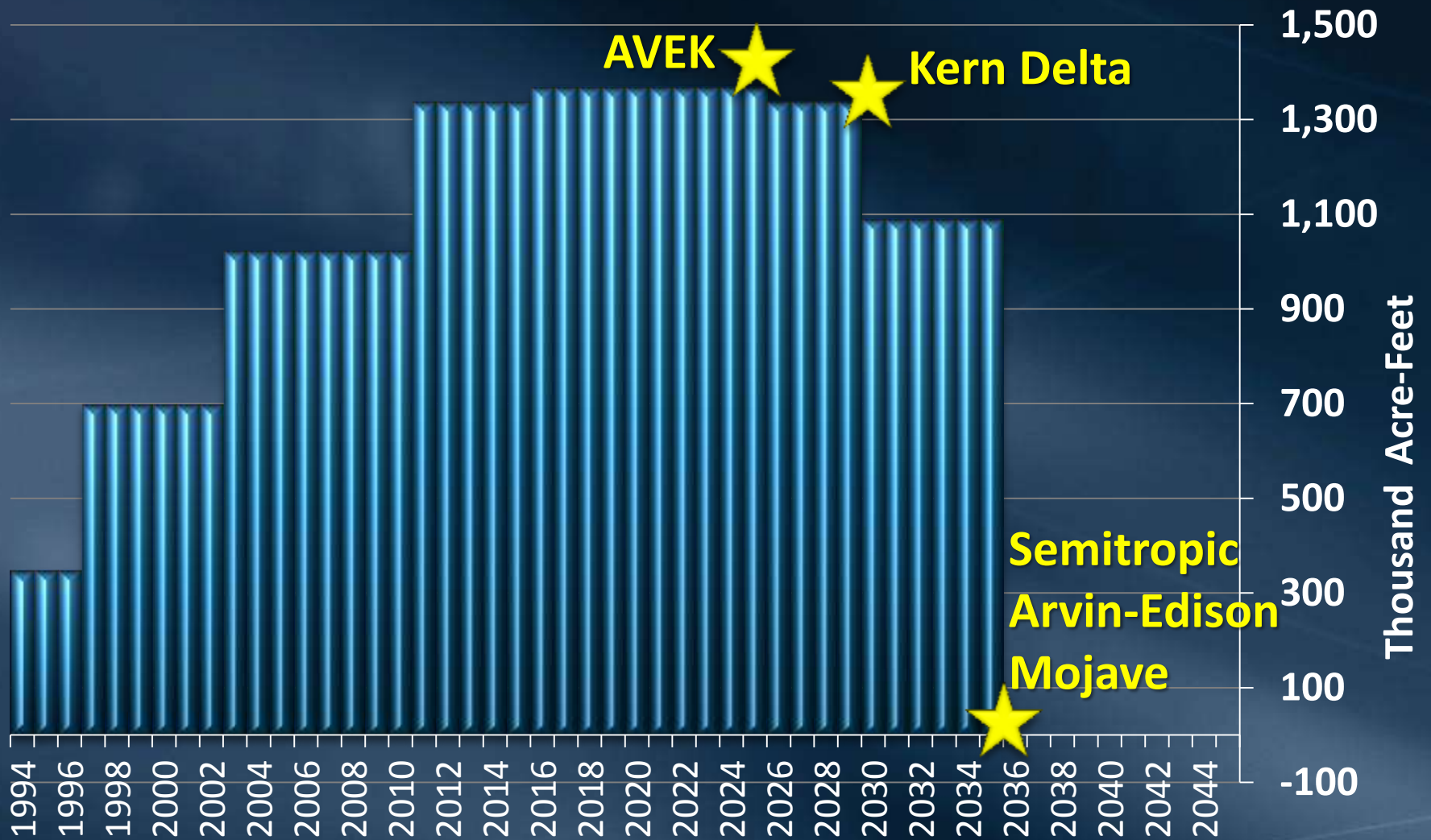
Return Capability

- Exchange capability reduced in low supply scenarios
- Banking partners compete for return capability
- Uncertainty in water supply conditions limit return capability
- Pump-in water quality can reduce return capability

Water Quality

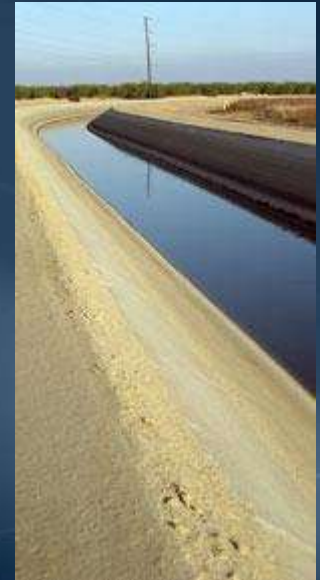
- California Aqueduct water quality pump-in requirements must consider downstream impacts
- Water quality may degrade in storage
- Water quality standards may change

Termination Dates



Semitropic Program

- Return Capability: Exchange and Direct Pump back capacity
- Competition with other banking partners
- Historically best performing SWP Groundwater Storage Program
- Capital Costs: \$47 M (1994)
- Water Quality Issue - Arsenic



SWP Groundwater Programs



Arvin-Edison Program

- Return Capability: Exchange and direct pump back capacity
- Water Quality Sub-Account –improves water quality and reduces costs
 - Credits Earned to Date: ~ \$7 M
- Capital Cost: \$12 M (2003)
- Emerging Water Quality Issue



Kern Delta Program

- Return Capability: Mainly exchange with some limited direct pump back capacity
 - In low SWP allocations or low Kern River supplies return capability limited
- Capital Costs: \$36 M (2003)



Mojave Program

- Return Capability: Limited to exchange, no pump back capability
- No capital costs
- Mojave Water Agency not seeking to accept additional water



AVEK Program

- Return Capability: Mainly exchange capability with SWP supplies, some pump back capability, but very expensive because of pumping lift
- No capital costs
- Current program is limited to 30,000 AF storage capacity and terminates in 2026
- AVEK wants to improve existing program to provide additional benefits and more direct pump back to the California Aqueduct

Observations

- Improves regional water supply reliability
- Provides water in SWP exclusive areas
- Develops partnerships with other State Water Contractors and agricultural water districts
- Direct pump back to the California Aqueduct more valuable than exchange capability
- Water quality can become an issue
- SWP Groundwater Storage Programs have termination dates that need to be addressed

Next Steps

- Continue to evaluate storage programs for vulnerabilities and improvements
- Evaluate new groundwater programs that reduce risks and increase regional reliability

