

The background of the slide features a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance.

# REVIEW POTENTIAL WATER MANAGEMENT OPTIONS

WATER RESOURCES AND WATERSHED COMMITTEE MEETING  
JUNE 10, 2020  
ITEM 3.2

# OUTLINE

## Current Reliability

- 2017 Water Reliability Report
- Updates

## Review Potential Water Management Actions

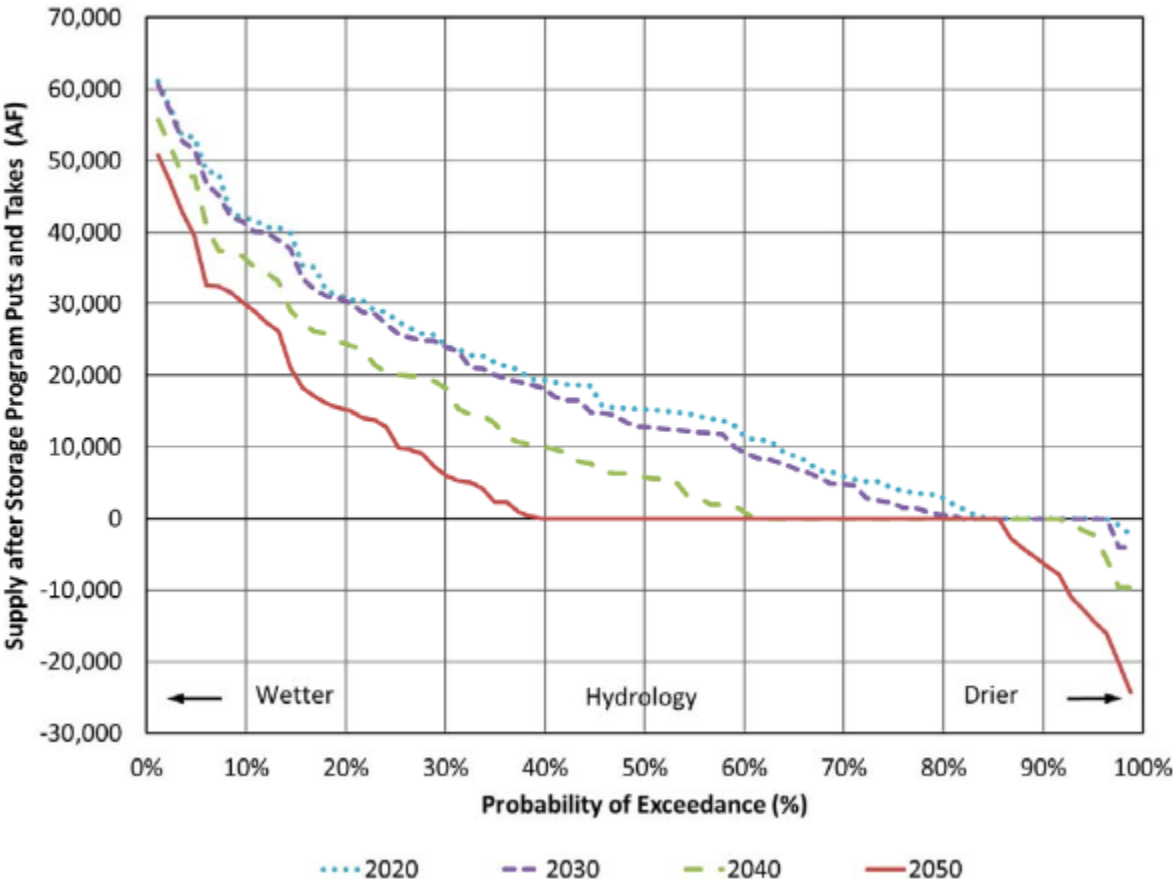
- Sites Reservoir
- Semitropic (NLF)
- Supplemental Rosedale Banking Program Recovery
- AVEK Groundwater Banking Program
- Recycled Water
- Others not analyzed (Devils' Den Surface Storage, Modesto Bank)

# 2017 WATER SUPPLY RELIABILITY REPORT

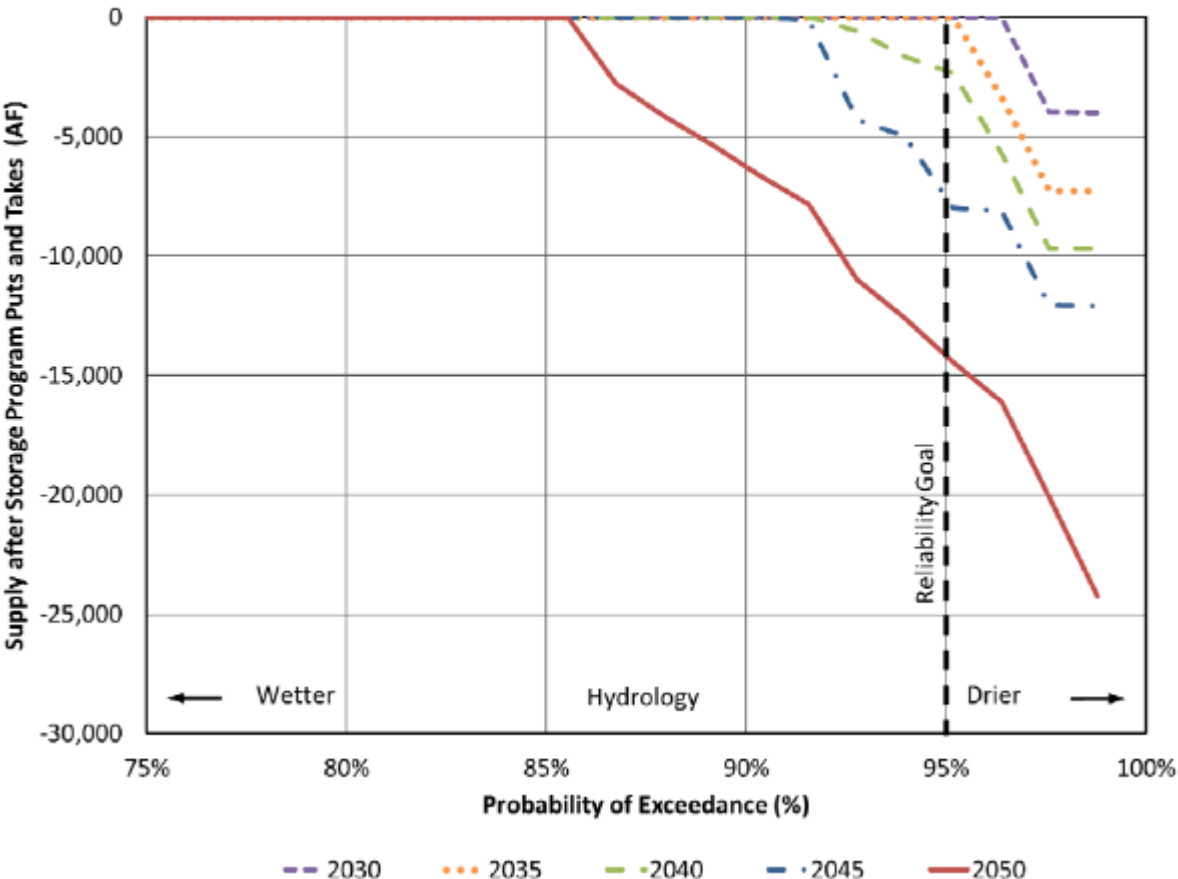
- ALTERNATIVES ANALYZED
  - BASE CASE - 2015 UWMP
  - SCENARIO A – UWMP WITH CA WATERFIX
  - SCENARIO B – MODEST REDUCTION IN EXISTING AND ANTICIPATED SUPPLIES
  - SCENARIO C – GREATER REDUCTION IN EXISTING AND ANTICIPATED SUPPLIES
    - DOES NOT INCLUDE:
      - SAUGUS DRY-YEAR WELLS
      - SUPPLEMENTAL ROSEDALE EXTRACTION CAPACITY
      - RW CAPPED AT EXISTING AND NEWHALL RANCH

# SCENARIO C RELIABILITY

**FIGURE 3-8**  
SCENARIO C INITIAL RELIABILITY



**FIGURE 3-9**  
SCENARIO C INITIAL RELIABILITY: DETAIL OF SUPPLY SHORTFALL



# REVIEW OF RELIABILITY LANDSCAPE

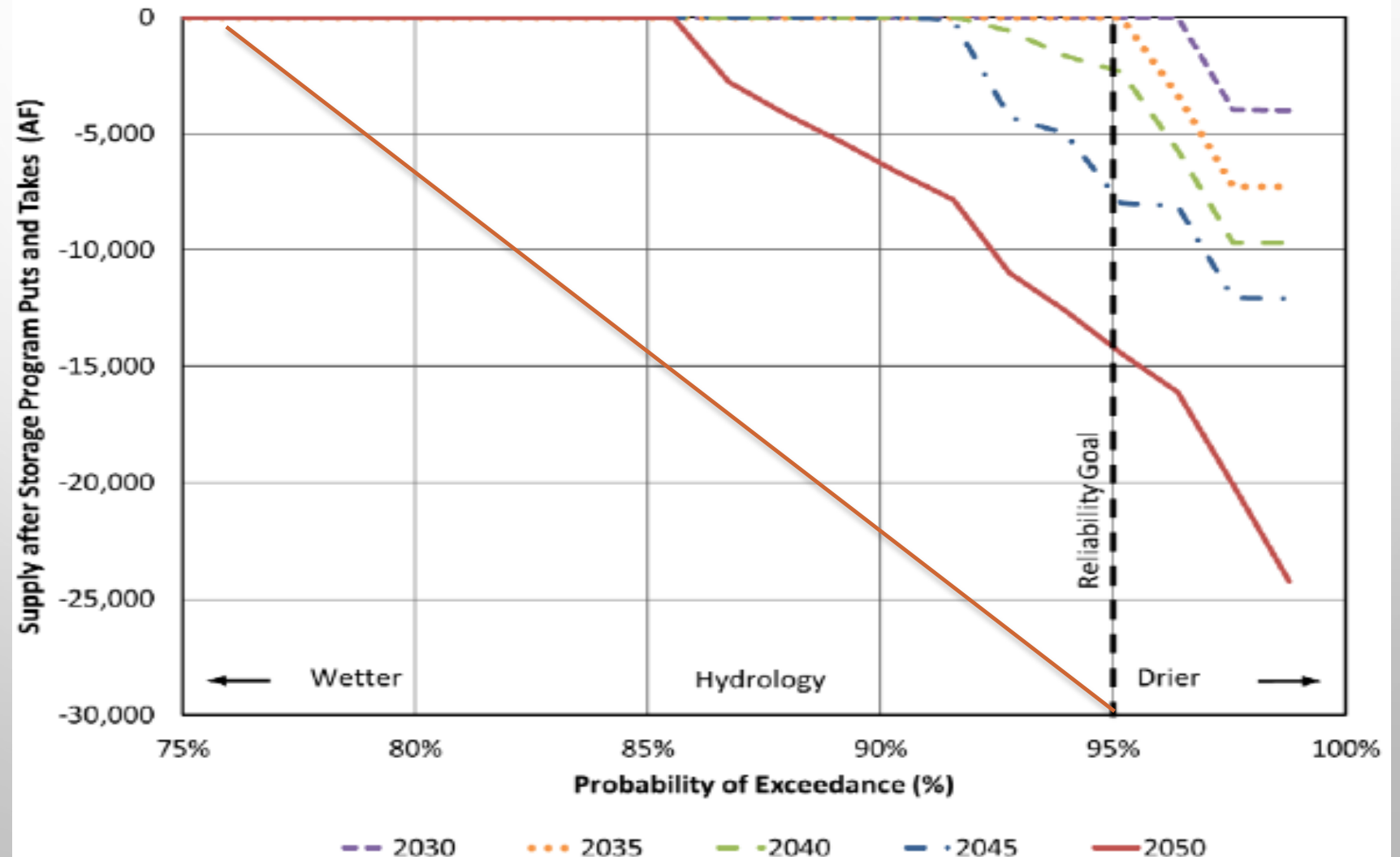
- LANDSCAPE POST 2017
  - CONTINUED PRESSURES ON SWP AND NORTH OF DELTA SUPPLIES
    - DELTA CONVEYANCE RESTART/SWP OPERATING PERMIT (ITP)
    - DELTA STEWARDSHIP COUNCIL'S DELTA PLAN ENFORCEABILITY
  - VULNERABILITY OF LOCAL GROUNDWATER SUPPLIES
    - CONSTITUENTS OF EMERGING CONCERN (I.E., PFAS THAT IMPACTED ALLUVIAL SUPPLIES BY ABOUT 15 TAF)
    - GROUNDWATER DEPENDENT ECOSYSTEMS IN GSP
  - RECYCLED WATER DEVELOPMENT
    - INSTREAM USES MAY LIMIT APPLICABILITY TO NEW DROP
    - SEASONAL STORAGE
    - LIMITED POTENTIAL FOR GROUNDWATER RECHARGE
    - DELTA STEWARDSHIP COUNCIL'S DELTA PLAN MAY BE A FORCING FUNCTION

# ALTERNATIVE RELIABILITY PLANNING OBJECTIVE

A more conservative approach of considering potential supply disruptions would shift the reliability curves down and to the left as illustrated for the repositioned 2050 curve

Currently Dry and Critically Dry years on SWP comprise 35% of the record hydrology

FIGURE 3-9  
SCENARIO C INITIAL RELIABILITY: DETAIL OF SUPPLY SHORTFALL



# EVALUATION APPROACH

Scenario C serves as a basis for evaluating future reliability investments

- Doesn't include 2015 planned supplies
- Except for Westside Communities and those are relatively neutral

Consider investing in additional programs as a buffer to:

- Supply disruption such as Constituents of Emerging Concern
- Mid and longer-term climate change

Criteria for reviewing cost effectiveness of additional supplies

- Potential exist for need in Dry and Critically Dry years
- If a project produces water in other years it could be marketed

# LOCATION MAP

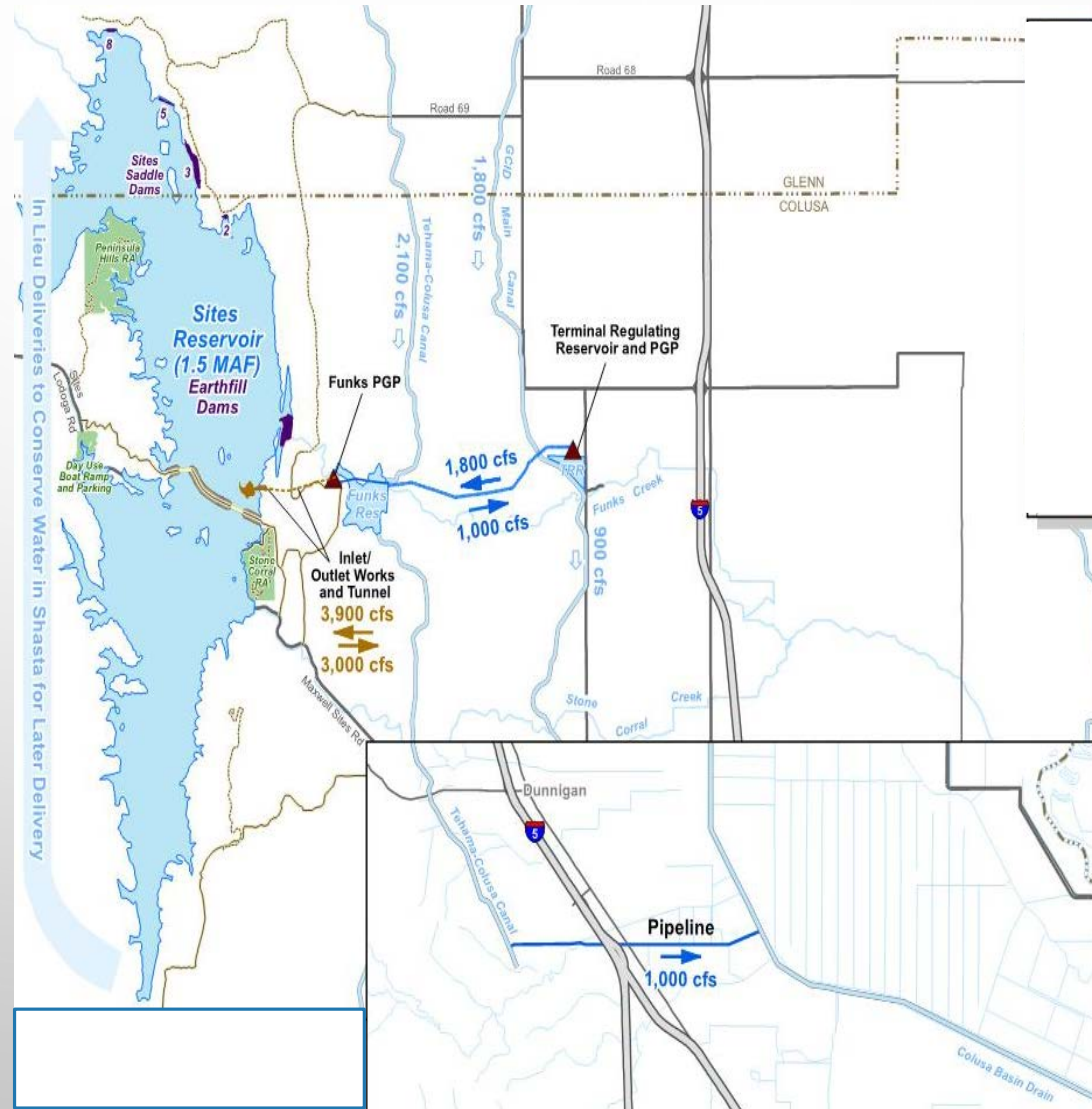
-  SITES RESERVOIR
-  DEVIL'S DEN
-  SEMITROPIC BANK
-  ROSEDALE BANK
-  AVEK BANK





# SITES RESERVOIR

<b>RESERVOIR SIZE (MAF)</b>	<b>1.5</b>
<b>PROJECT COST (2019\$, BILLIONS)</b>	<b>\$2.4 – \$2.7</b>
<b>CONTINGENCY COST (2019\$, BILLIONS)</b>	<b>\$0.6</b>
<b>TOTAL PROJECT COST (2019\$, BILLIONS)</b>	<b>\$3.0 - \$3.3</b>
<b>ANNUALIZED AF/YEAR RELEASE (AFY)</b>	<b>240,000</b>
<b>RANGE OF ANNUAL COSTS DURING REPAYMENT WITHOUT WIFIA LOANS (2020\$, \$/AF)</b>	<b>\$650 - \$710</b>
<b>RANGE OF ANNUAL COSTS DURING REPAYMENT WITH WIFIA LOANS (2020\$, \$/AF)</b>	<b>\$600 - \$660</b>

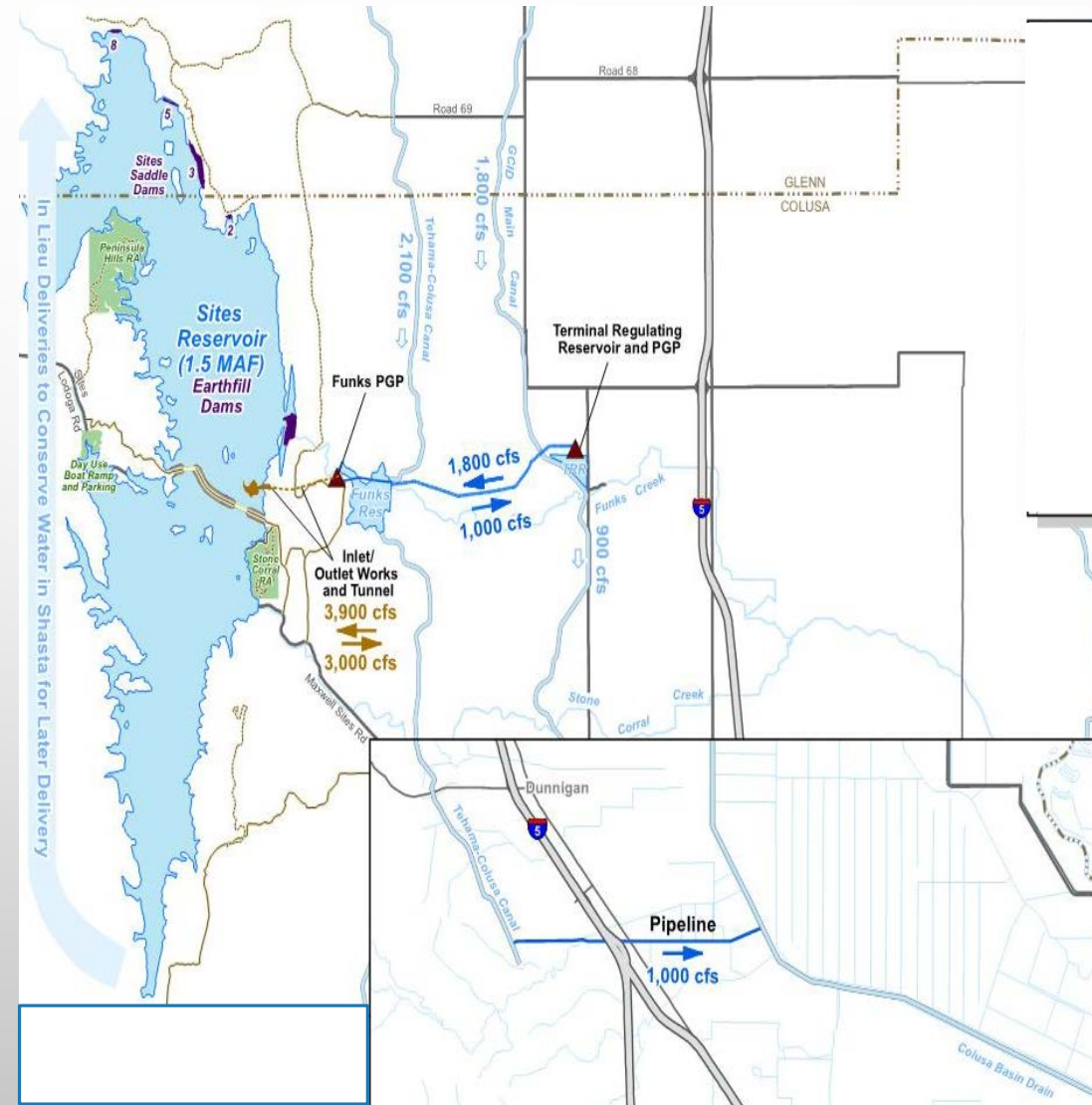


# SITES RESERVOIR YIELD AND EFFECTIVE UNIT COST

YEAR TYPE	1,000 cfs RELEASE CAPACITY (AFY) TO THE COLUSA BASIN DRAIN
WET	90 – 120
ABOVE NORMAL	260 – 290
BELOW NORMAL	245 – 275
DRY	355 - 385
CRITICALLY DRY	210 - 240
AVG ANNUAL YIELD	240

RESERVOIR SIZE (MAF)	1.5
ASSUMED SCVWA PARTICIPATION	5,000 AF
WEIGHTED AVG DRY AND CRITICALLY DRY YEAR YIELD	5,900 AF
OTHER YEAR AVG YIELD (FOR POTENTIAL WATER SALES)	3,900 AF
EFFECTIVE UNIT COSTS (NORTH OF DELTA)	\$1,280 / AF

Action needed to continue with planning level participation.



# NEWHALL LAND AND FARMING SEMITROPIC BANK



50,000 AF of storage capacity



4,950 AF of dry-year recovery



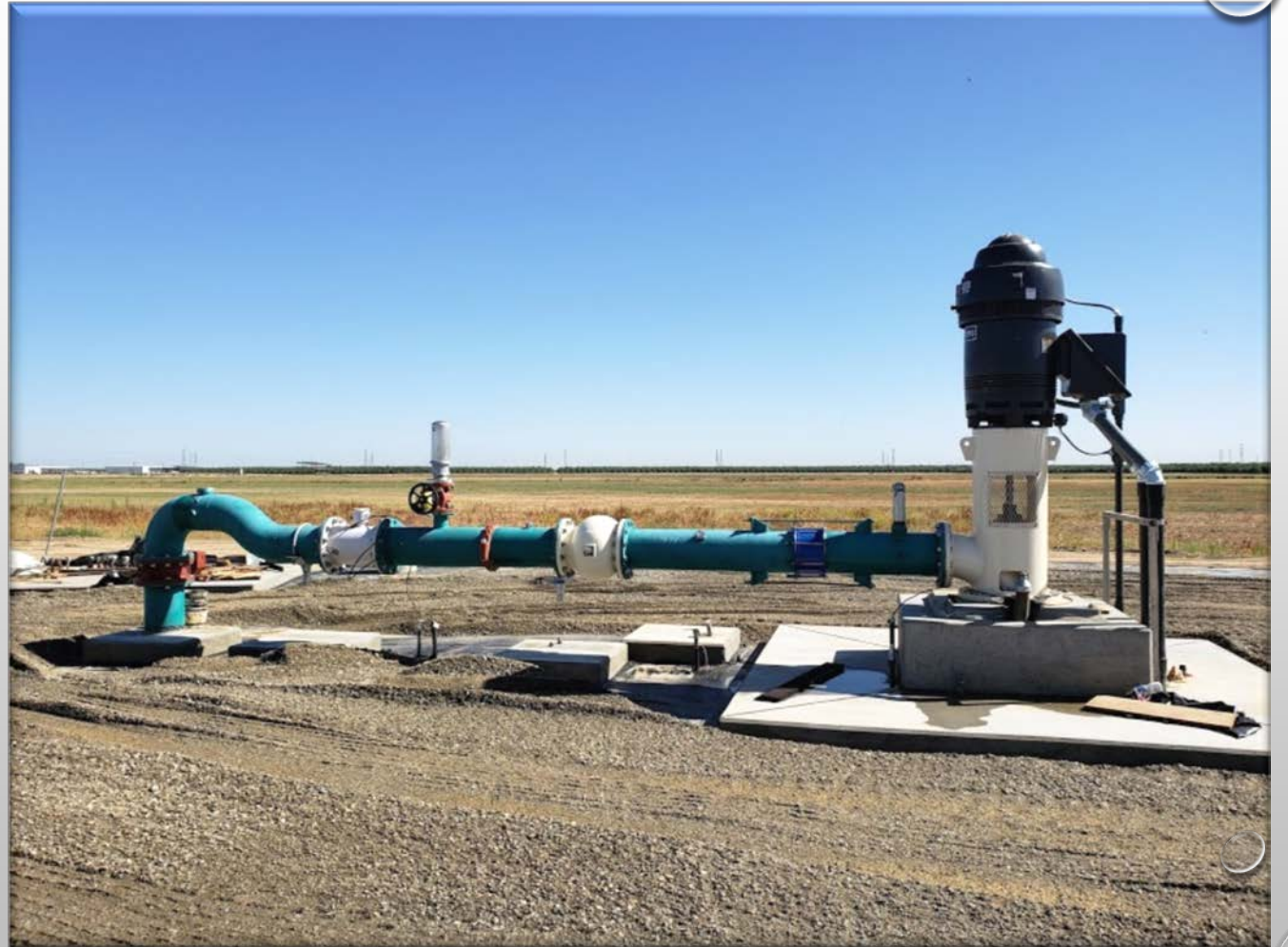
Potential Costs TBD –

Historic Cost \$563/AF (2020)

Includes value of exchange water (\$300/AF)

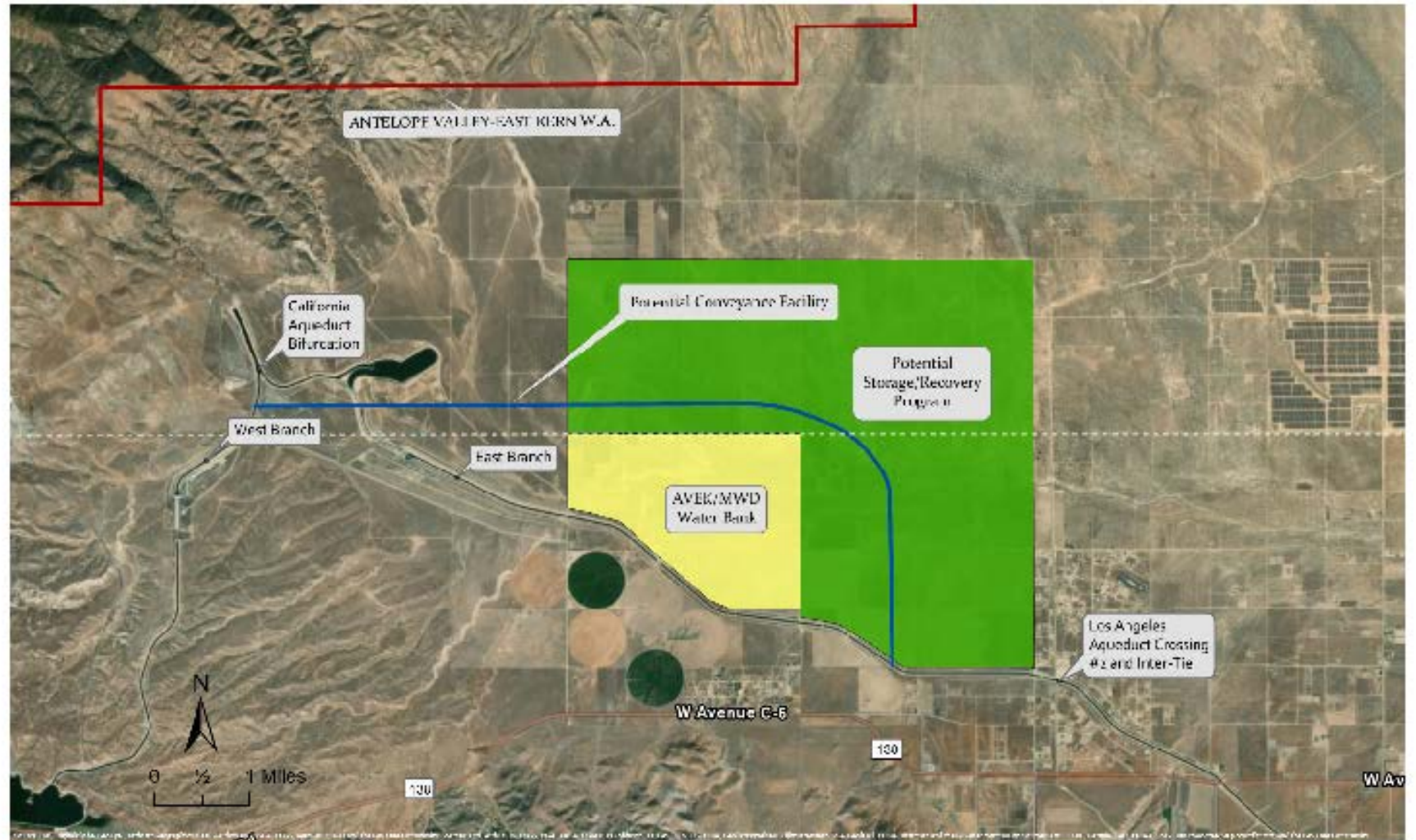
## ROSEDALE BANKING – SUPPLEMENTAL EXTRACTION CAPACITY

- CONSTRUCT 4 NEW WELLS AND CONVEYANCE AS PROVIDED IN BANKING AGREEMENT
- ANTICIPATED UNIT COST - \$500/AF (ROUGH ESTIMATE BASED ON DRY-YEAR RECOVERY PROGRAM)
- POTENTIAL FOR MORE COST-EFFECTIVE ALTERNATIVES WITH PARTNERS





# AVEK – PHASE 2 WATER BANK



## Conceptual Storage/Recovery Program

Legend		
Aqueduct	AVEK/MWD Water Bank	AVEK Service Area Boundary
Potential Conveyance Facility	Potential Storage/Recovery Program	



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# AVEK – HIGH DESERT BANK PHASE 2

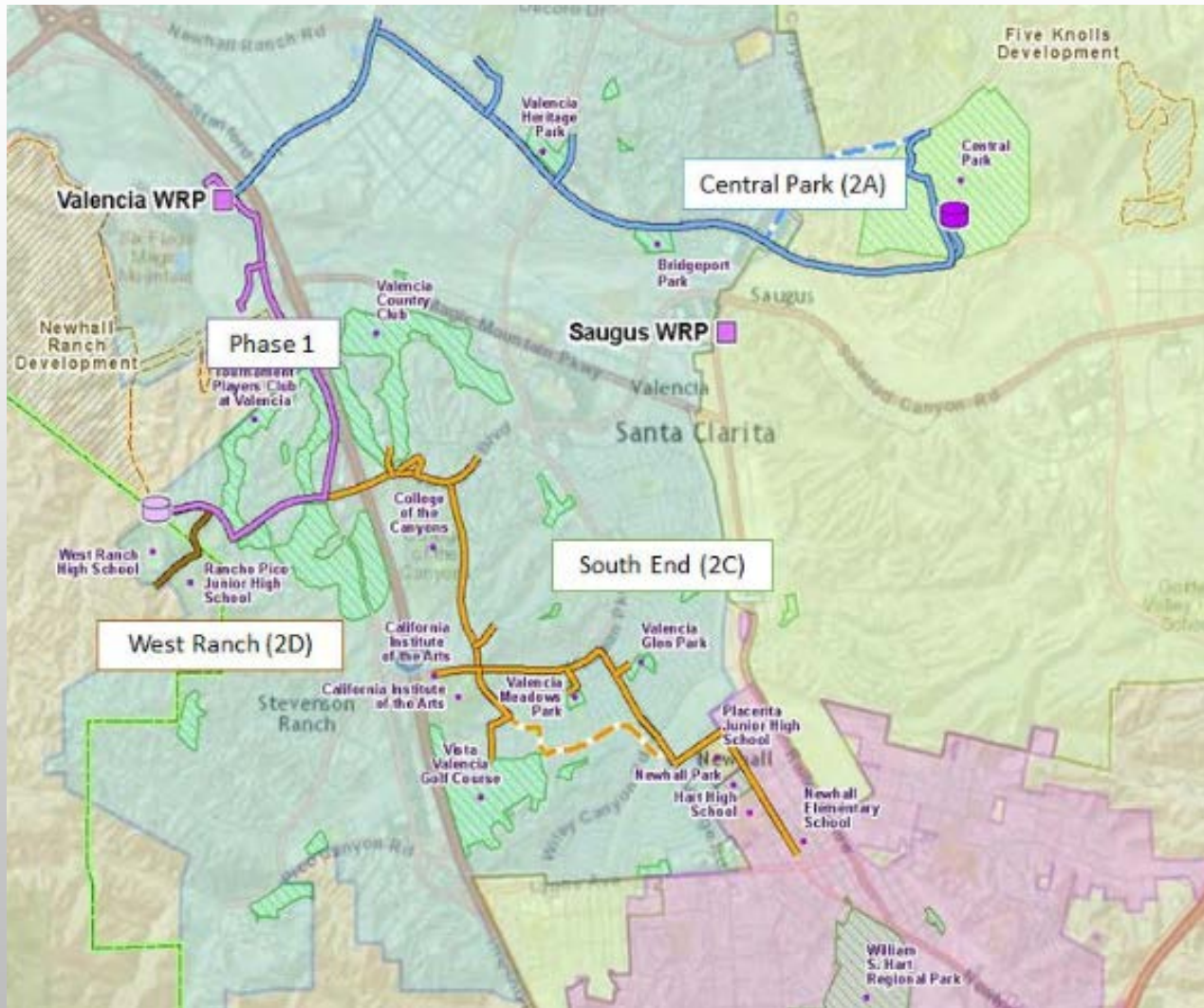
- 20 TAF RECOVERY AND 80 TAF STORAGE CAPACITY
- DIRECT DELIVERY TO WEST BRANCH
- SECOND PRIORITY TO MWD/AVEK PHASE 1
- \$38M CAPITAL OR \$117/AF (DISCOUNTED) \$334/AF OF RECOVERED WATER
- ACTUAL PUT AND TAKE COSTS
- ANNUAL O&M FEE
- \$100/AF FOR RECOVERY TO AVEK
- EFFECTIVE UNIT COST - \$550/AF
- SPONSOR READY TO INITIATE PLANNING FOR NEXT PHASE SHOULD SCV WATER PROCEED WITH DISCUSSIONS?



# SAUGUS FORMATION DRY YEAR WELLS (SAUGUS WELLS 5 AND 6)

- PART OF 2015 UWMP
- POTENTIAL TO BE MODIFIED TO ASR
- 4,000 - 5000 GPM TOTAL OR ABOUT 5,000 – 6000 AFY (AT 75% CAPACITY)
- TAKES IN CRITICALLY DRY YEARS (PER GW OPERATING PLAN)
- COST – \$10.19M CAPITAL OR \$625,580/YR (DISCOUNTED)
- \$160/AF OPERATING COSTS
- UNIT COSTS W/O ASR - \$790/AF (OPERATIONS IN CRITICAL YEARS ONLY)
  - (\$520/AF IF OPERATED IN DRY AND CRITICALLY DRY YEARS)
  - UNIT COSTS W/ASR - TBD





# PHASE 2-A RECYCLED WATER

- APPROXIMATELY \$18.7M IN CAPITAL
- YIELD – 560 AFY
- ADJUSTED UNIT COST OF \$3,800/AF FOR RECYCLED WATER





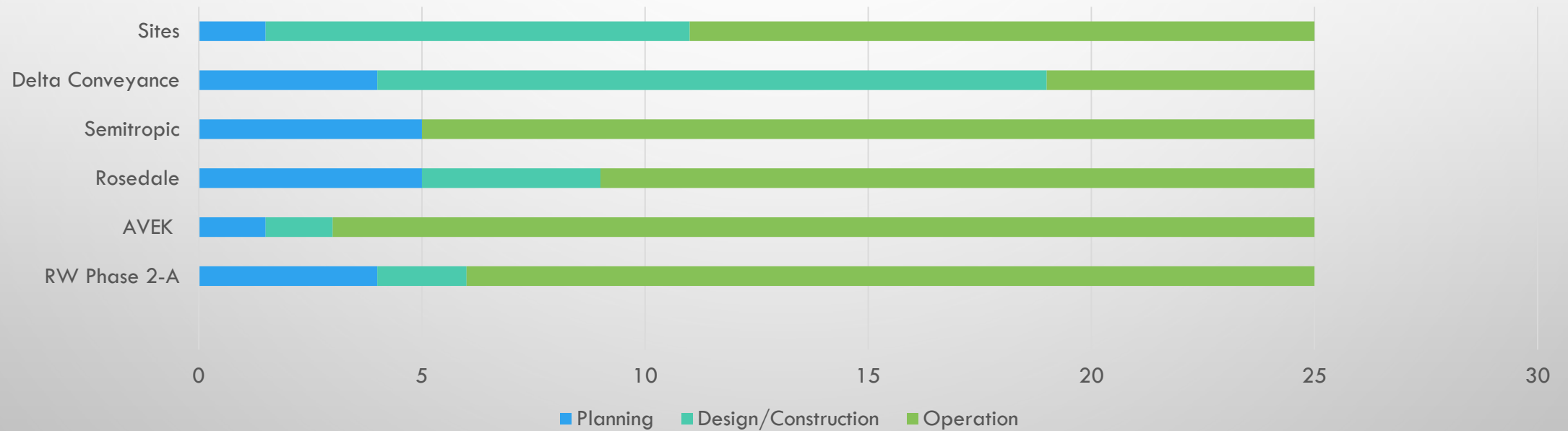
# RELATIVE COSTS

(LISTED HIGHER TO LOWER RISK)

Project	Relative Unit Costs for Dry and Critical Years (\$/AF)	Notes
Sites	1,280	Based on Value Planning Doc
Delta Conveyance	N/A	SWP dependability not yield drives need for project
NLF Semitropic	563	Alternative Stored Water Recovery Unit \$580/AF
Rosedale Bank	500	Rough cost estimate
AVEK Bank	550	Base on feasibility level planning Sponsor ready to proceed with negotiations for Phase 2
Saugus	790	Assumes dry and critical year operation only. Potential that GSP may require an ASR approach
Recycled Water	3,800	Delta Stewardship Council's Reduced Reliance may drive this investment

# DECISIONS WINDOW FOR SOME PROJECTS IS IN THE NEAR TERM

Comparative Project Schedules

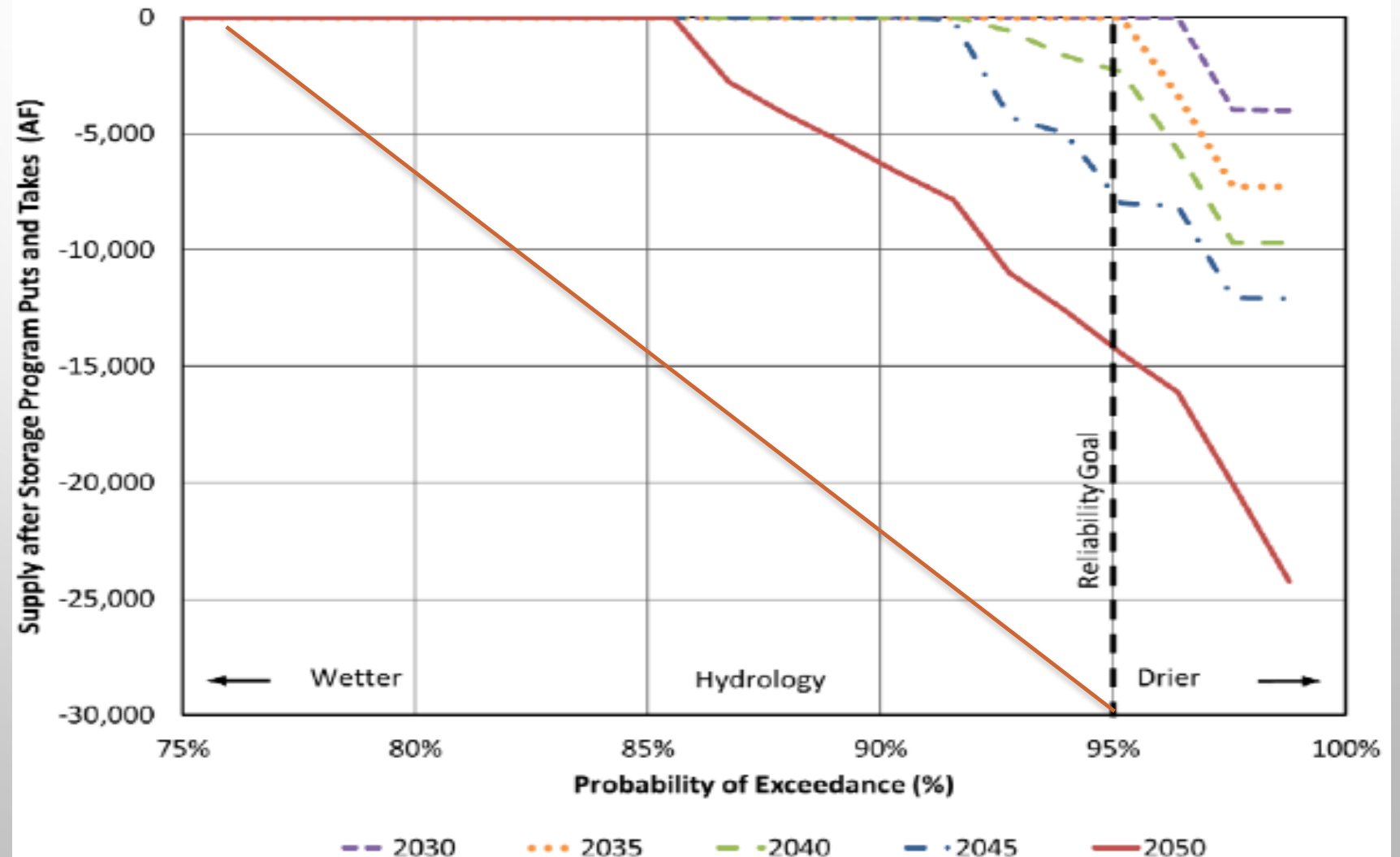


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# MOVING FORWARD

- **UNCERTAINTIES ABOUND**
  - REVISED DEMANDS AND SUPPLIES PENDING 2020 UWMP AND GSP
- **FOR NOW BASE POSITION AGENCY TO MEET SCENARIO C SUPPLEMENTAL SUPPLIES (15,000 AF)**
  - SAUGUS 5 AND 6 – STAY THE COURSE – 5,500 AF
  - INITIATE PLANNING AVEK OR ROSEDALE BANKS 10,000 AF
  - RECYCLED WATER FOR REDUCED RELIANCE ON IMPORTED SUPPLIES
  - MAINTAIN SITES AS AN OPTION AT 5,000 AF
- **CONSIDER ADDITIONAL INVESTMENTS TO COVER CEC AND LONGER-TERM CLIMATE CHANGE OF 10,000 TO 15,000 AFY OF ADDITIONAL DRY-SUPPLIES**
  - ADDITIONAL AVEK OR ROSEDALE BANKS (10 TAF)
  - SITES RESERVOIR (5-10 TAF)