SANMAN:
Decision Support for the Delta Improvement Package San Joaquin River Salinity Management Plan

CWEMF Annual Meeting

March 2005

Presentation Content

- SJRWQMG
- Model Description
- Salinity Management Actions
- Draft Preferred Alternative

SJRWQMG
List of Participants

- U.S. Bureau of Reclamation
- Department of Water Resources
- USFWS
- California Dept. Fish and Game
- Central California Irrigation District
- Friant Water Users Authority
- Grassland Water District
- James Irrigation District
- Merced Irrigation District
- Modesto Irrigation District
- Oakdale Irrigation District
- San Luis Canal Company
- San Joaquin County and Delta Water Quality Coalition
- San Joaquin County RCD
- San Joaquin River Exchange Contractors Water Authority
- San Joaquin Valley Drainage Authority
- San Joaquin River Group
- San Luis and Delta Mendota Water Authority
- South San Joaquin Irrigation District
- State Water Contractors
- South Delta Water Agency
- Stockton East Water District
- Tranquility Irrigation District
- Turlock Irrigation District
- Venice Island RD 2023
- California Farm Bureau
- Western Growers

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Model Description

The purpose of the San Joaquin River Salinity Management Model (SANMAN) is to provide reconnaissance-level decision support in the development of a San Joaquin River Salinity Management Plan by:

- Identifying coordinated management strategies that meet the Vernalis salinity objective
- Estimating water costs of strategies

Model Description (cont'd)

- Microsoft EXCEL
- Post-analysis of CALSIM Sequential Hydrology and CVP-SWP Operations
  - March 1922 thru September 1994
  - April - May: Half month time step
- Prescribes Action Levels (e.g. re-circulation volume) Necessary to Meet Vernalis Salinity Objective Given Pre-defined Action Priorities

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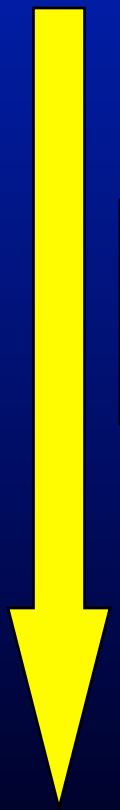
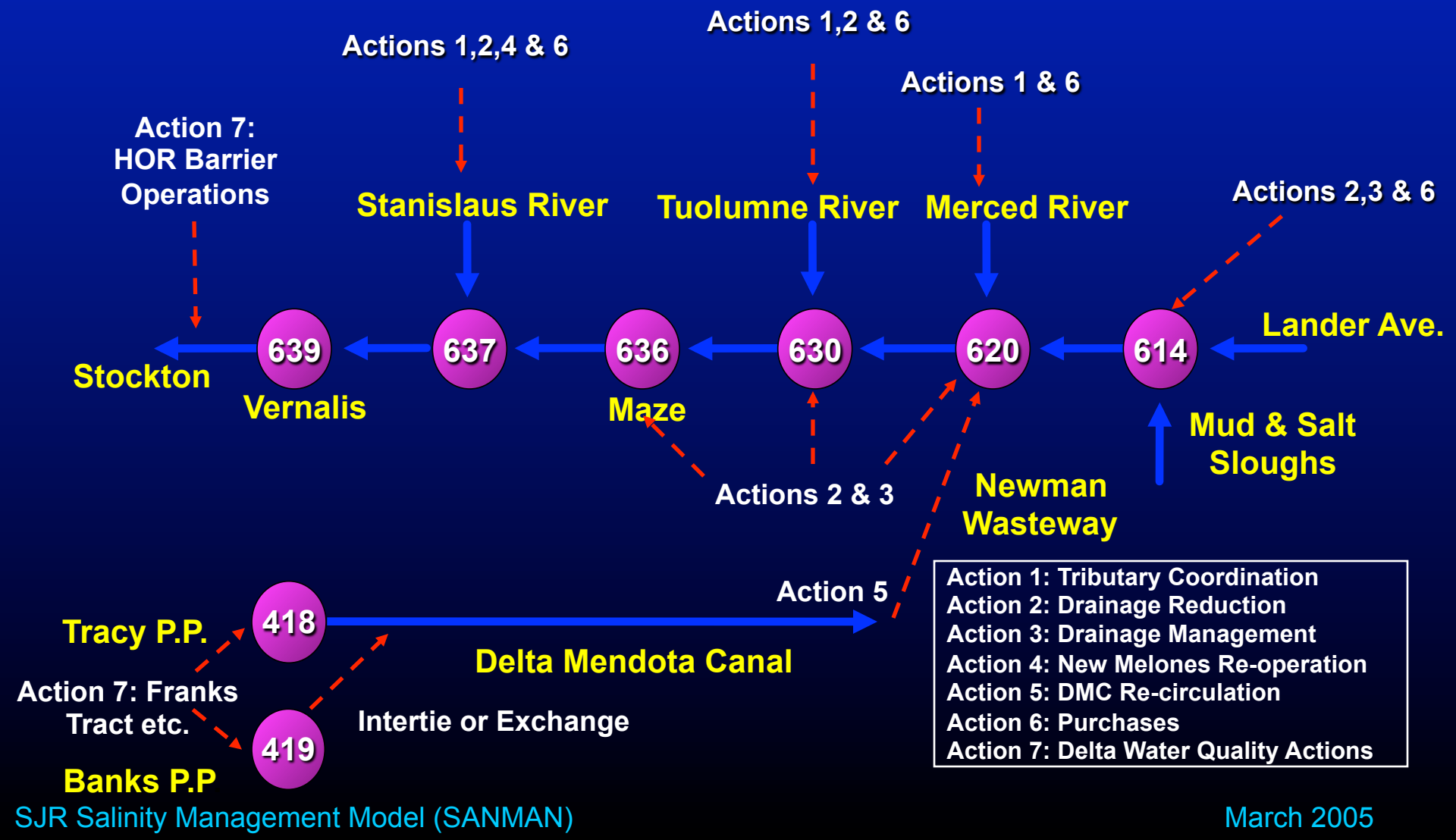
Salinity Management Actions

- Coordinated Tributary Operations
- Drainage Reduction
- Drainage Management
- New Melones Releases
- DMC Re-circulation & Delta Actions
- Purchases



Decreasing Action Priority

SANMAN Version 2.0 Schematic



Salinity Management Action: Priority 1 Actions

- Coordinated Tributary Operations - Actions Applied to East Side Tributaries
- Drainage Reduction – Actions Applied to 9 Regions
  - East Side (3 regions)
  - Upper DMC (3 regions)
  - Mud & Salt Sloughs (3 regions)
- Action Levels Defined by Time Series Input

Salinity Management Action: Drainage Management (Priority 2)

- **Actions Applied to 6 Regions:**
  - Upper DMC (3 regions)
  - Mud & Salt Sloughs (3 regions)
- **Model-Prescribed Action Level**
- **User Specifications**
  - Storage diversion period
  - Maximum storage volume
  - Maximum residence time

Salinity Management Action: New Melones Releases (Priority 3)

- **Model-Prescribed Action Level**
  - Baseline Water Quality Operation Removed
- **User Specifications**
  - Period of operation
  - Maximum annual release
  - Water quality

Salinity Management Action: DMC Re-circulation (Priority 4)

- Model-Prescribed Action Level
- Accomplished With Available Delta Pumping Capacity
  - Tracy first, Banks second
  - Available summer capacity “lumped”
  - Available capacity limited by E/I ratio, B2-EWA restrictions and higher pumping priorities

Salinity Management Action: DMC Re-circulation (cont'd)

- **User Specifications**
  - Period of operation
  - Conveyance losses by month and water year type
  - Water quality changes by month and water year type resulting from Delta actions (e.g. Frank's Tract)
- **Options**
  - Upgrade priority
  - Increase availability by "paying" E/I cost
  - Address Stockton dissolved oxygen targets

Salinity Management Action: Purchases (Priority 5)

- Actions Applied to East Side Tributaries and Region Upstream of Merced River
- User Specifications
  - Period of operation
  - Maximum annual purchase
  - Water quality

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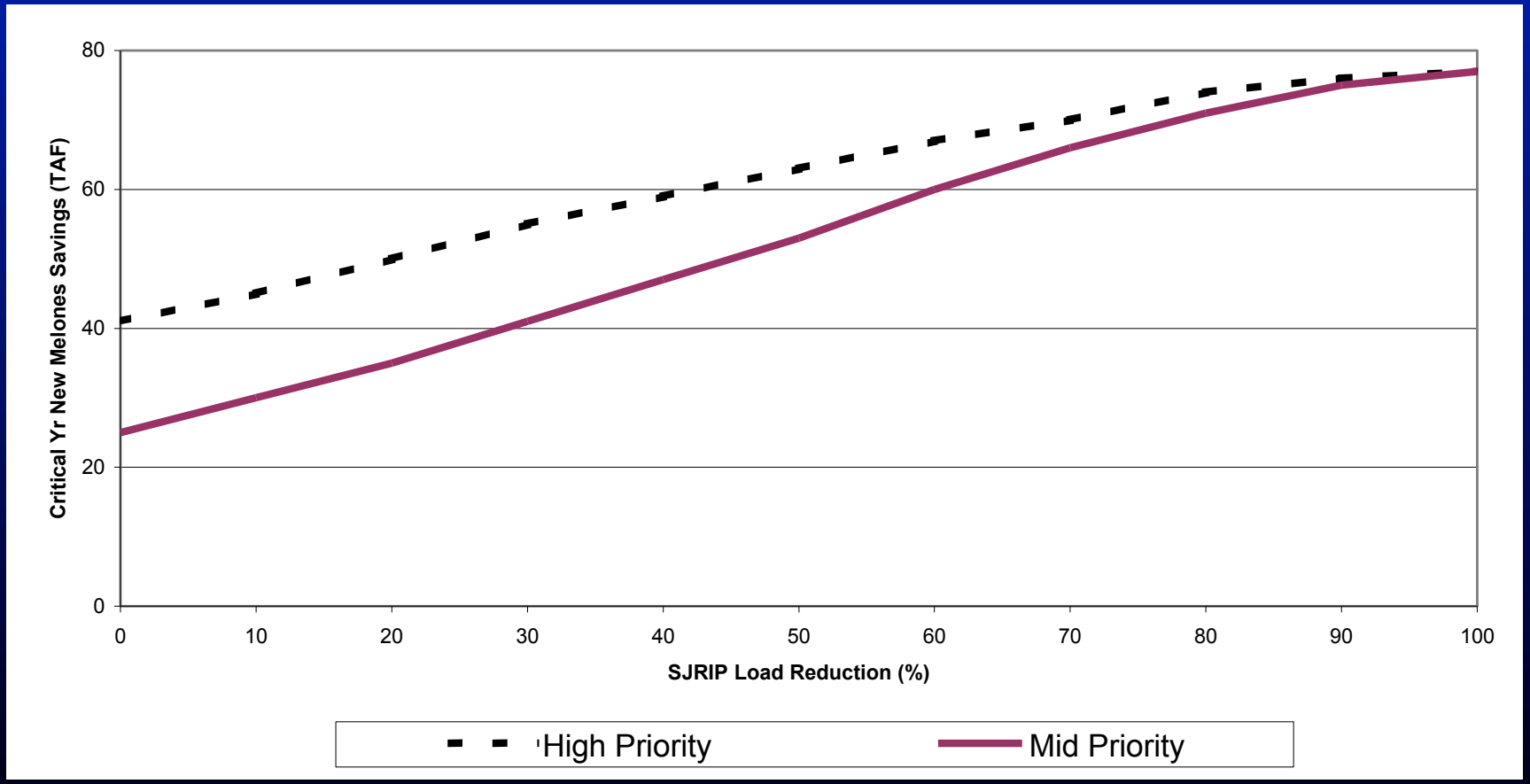
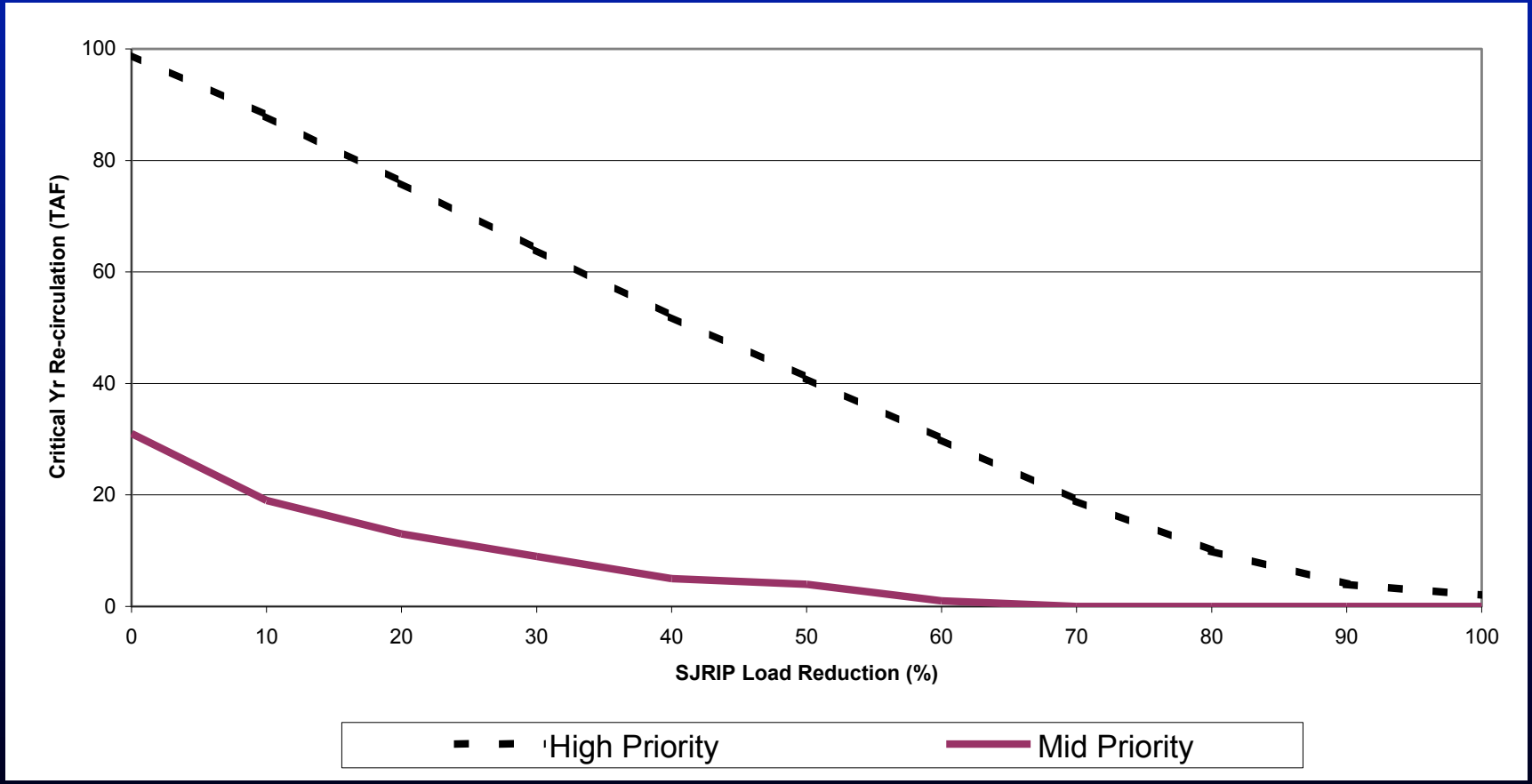
Critical Year Observations as SJRIP is Phased In

- Water transfer needs diminish
- Vernalis water quality improves (typically)
- Vernalis summer flows decrease (typically)
- New Melones savings increase
- Re-circulation needs (and water costs) diminish
- Delta water costs increase
- High- and mid-priority scenarios converge

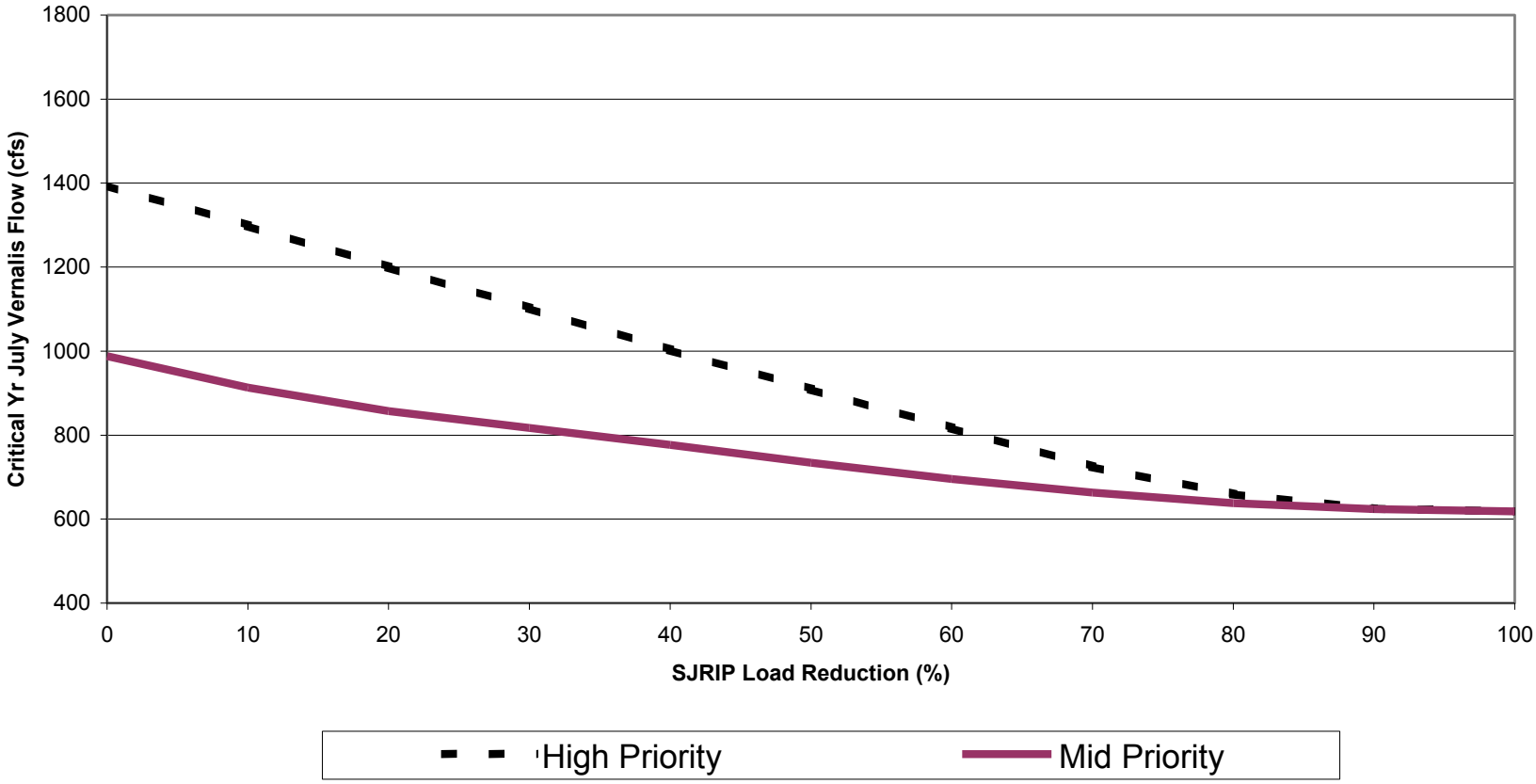
New Melones Storage Savings with Phased SJRIP Implementation: Critical Year Average



DMC Re-circulation with Phased SJRIP Implementation: Critical Year Average



Vernalis Flow with Phased SJRIP Implementation: Critical Year Average (July)



Acknowledgements

Dan Steiner, Consultant

Armin Munevar, CH2M-Hill

Toshio Kyosai, CH2M-Hill

SJRWQMG (Byron Buck, Chair)

Water Users Technical Group (Dennis Majors, Chair)

Extra Slides

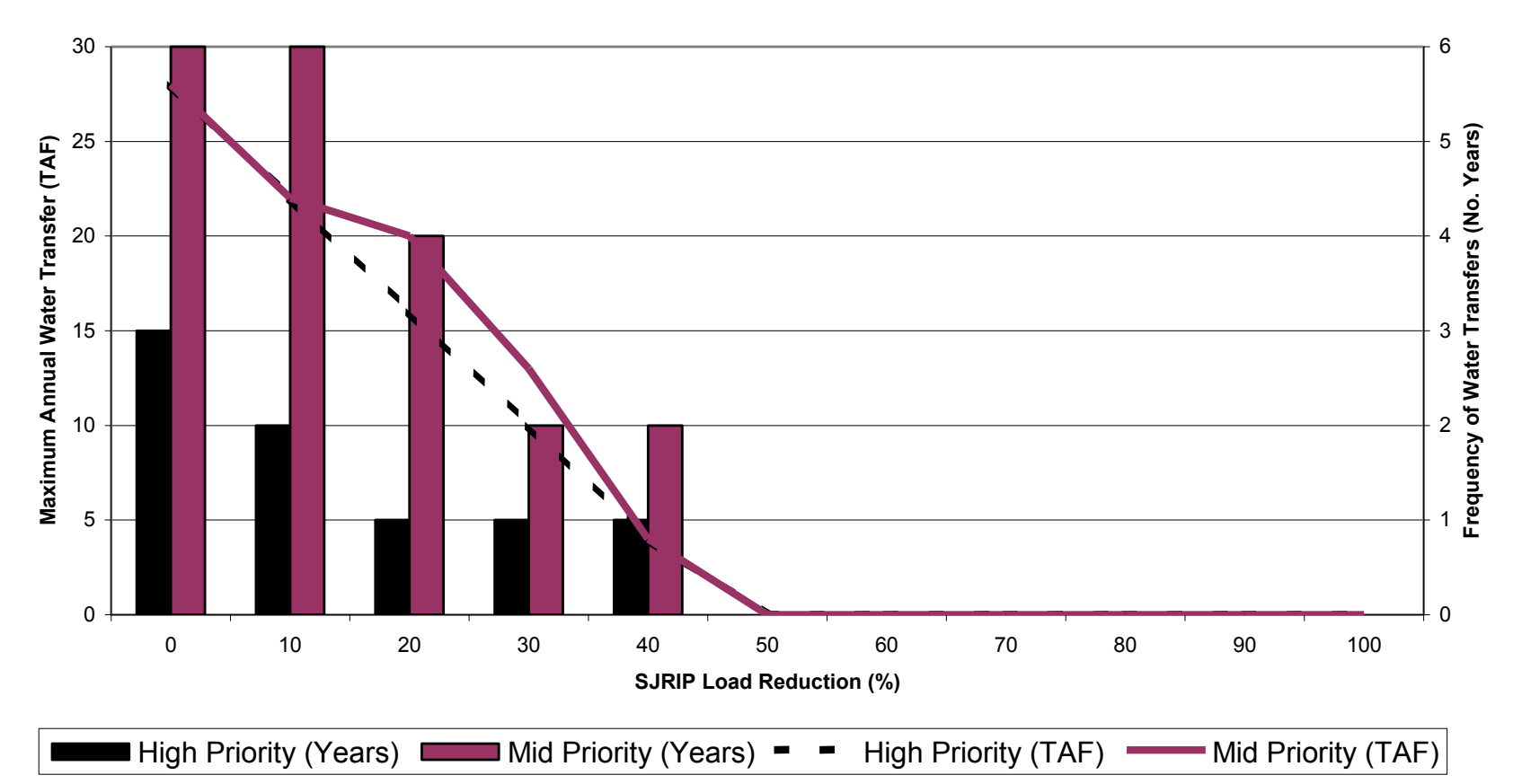
Salinity Management Action: DMC Re-circulation (cont'd)

- **Tracy Pumping Priorities**
  - CVP contract deliveries
  - Export of additional CVP stored water
  - CVP water transfers
  - SWP exports through JPOD
  - DMC re-circulation

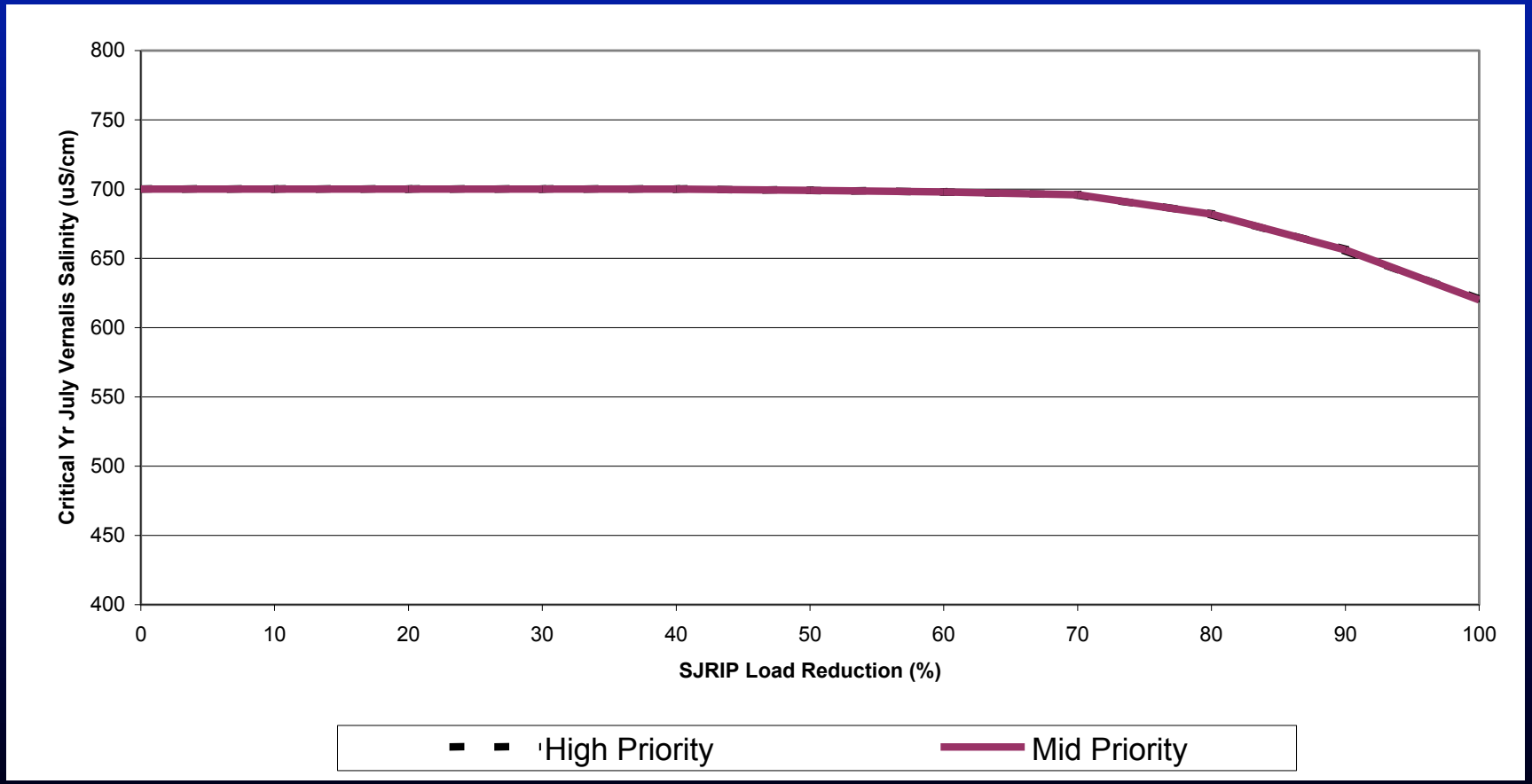
Salinity Management Action: DMC Re-circulation (cont'd)

- **Banks Pumping Priorities**
  - SWP contract deliveries (including 500 cfs Jul-Sep EWA reservation & 100 TAF CVP refuges)
  - SWP water transfers
  - Additional EWA reservation
  - CVP exports through JPOD
  - DMC re-circulation

Water Transfer Needs with Phased SJRIP Implementation



Vernalis Water Quality with Phased SJRIP Implementation: Critical Year Average (July)



Water Cost with Phased SJRIP Implementation: Critical Year Average