Application of SANMAN:
A San Joaquin River Salinity Management Spreadsheet Model

CWEMF Annual Meeting

March 2005

Presentation Content

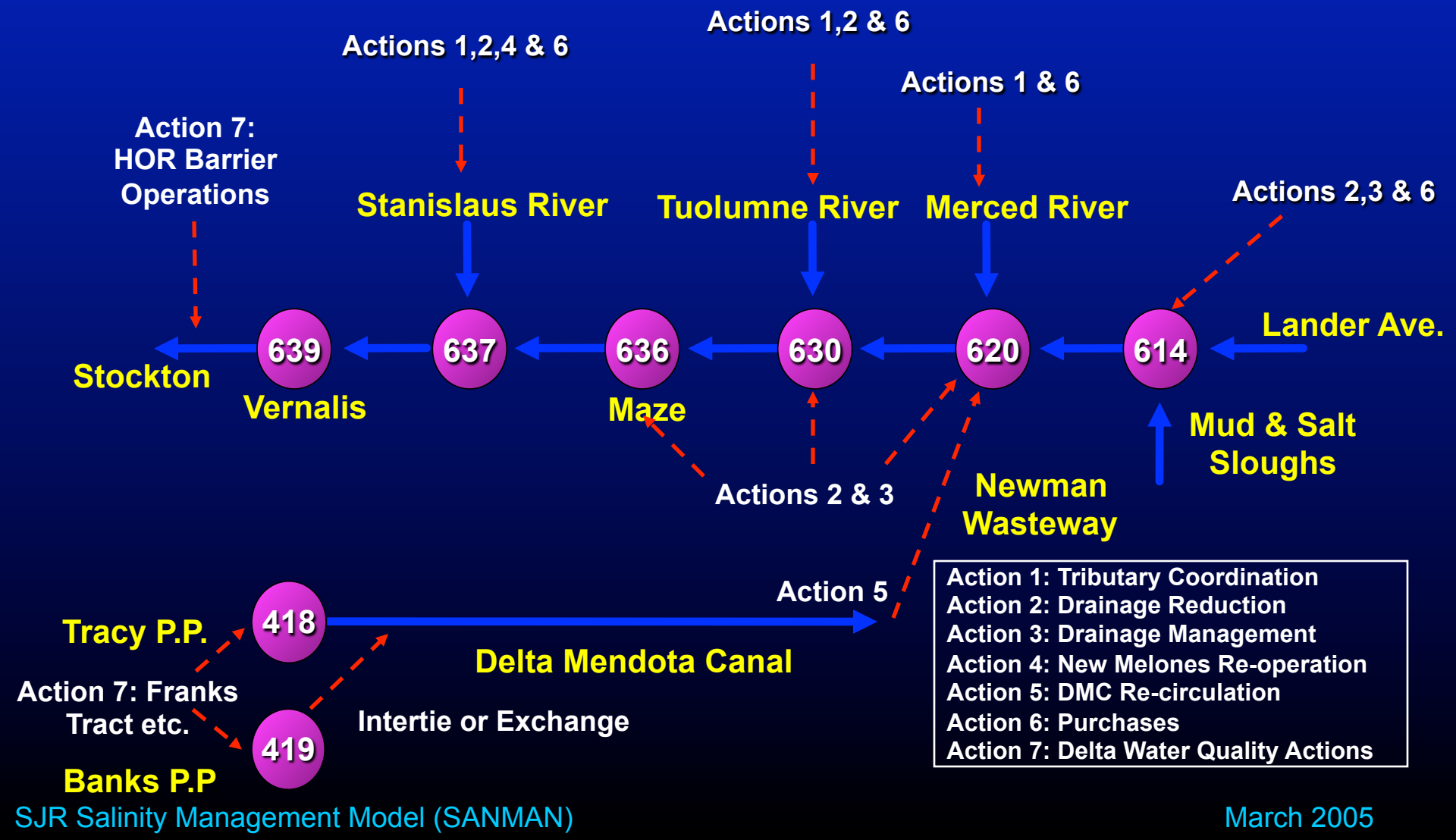
- **Model Description**
- **Study Objective & Assumptions**
- **Study Results & Conclusions**

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

SANMAN Version 2.0 Schematic



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Study Objective

- Explore the potential benefits of redistributing winter and early spring drainage releases from managed wetlands on the west side of the San Joaquin River basin
  - Assist in meeting Vernalis salinity objective
  - Reduce burden on New Melones Reservoir

Study Assumptions

- Consider an isolated action and an action coordinated with the SJRWQMG Draft Preferred Alternative (Scenario HP-20)
  - Partial implementation (20%) of SJRIP
  - "High priority" re-circulation
  - Relocation of Stanislaus R. dissolved oxygen compliance location
  - Strategic water transfers

Study Assumptions (cont'd)

- **March 1 – April 14 drainage is retained for release April 1 – May 15 when:**
  - **New Melones dilution flow is required to meet March Vernalis salinity objective**
  - **San Joaquin River assimilative capacity is available**

Study Assumptions (cont'd)

- March drainage is pre-released in February when:
  - New Melones dilution flow is required to meet March Vernalis salinity objective
  - San Joaquin River assimilative capacity is available and/or New Melones water is available for dilution

Study Assumptions (cont'd)

- **Redistribution Priority for March Drainage:**
  - April 1-14
  - April 15-30
  - May 1-15
  - February
- **Redistribution Priority for April 1-14 Drainage:**
  - April 15-30
  - May 1-15

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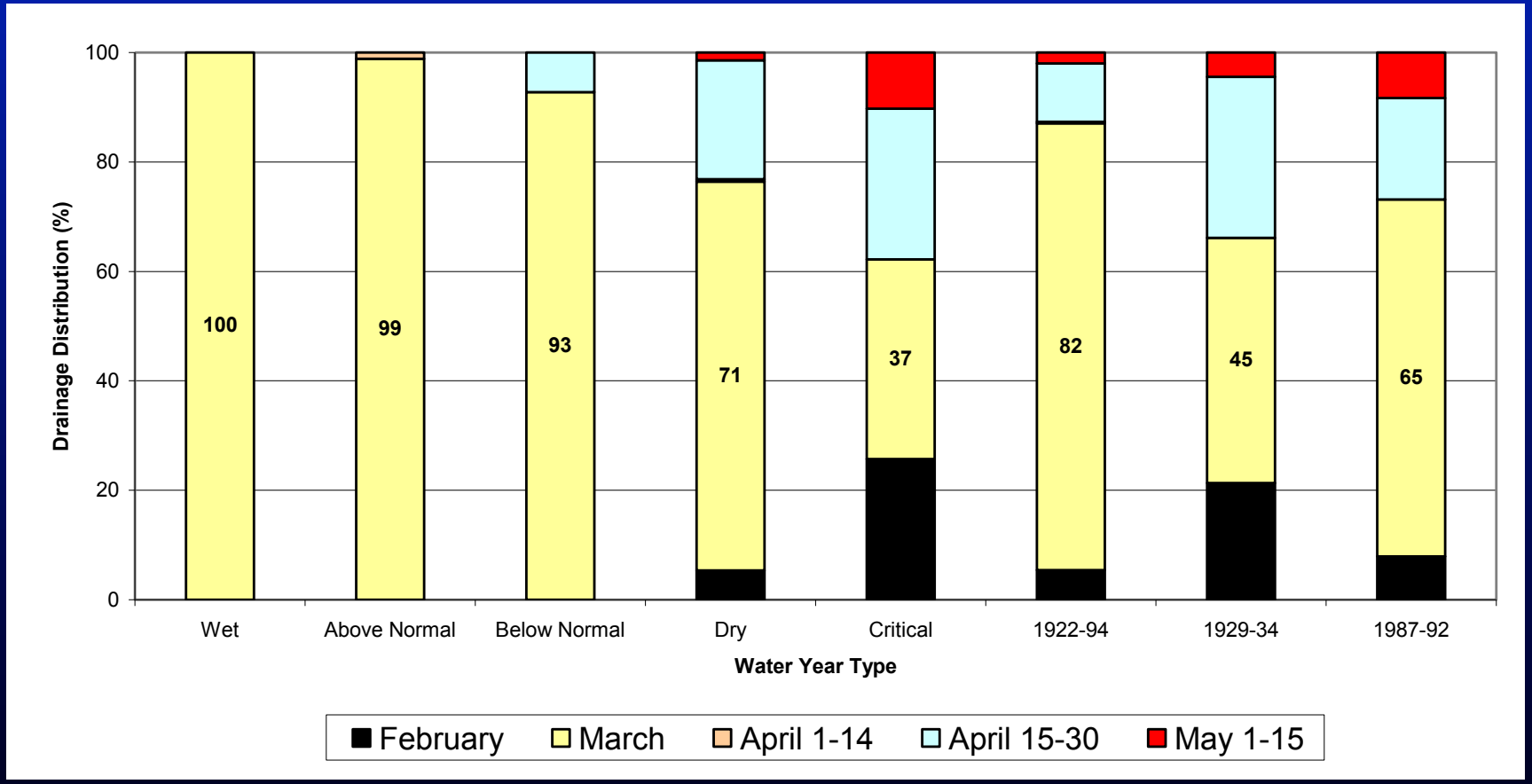
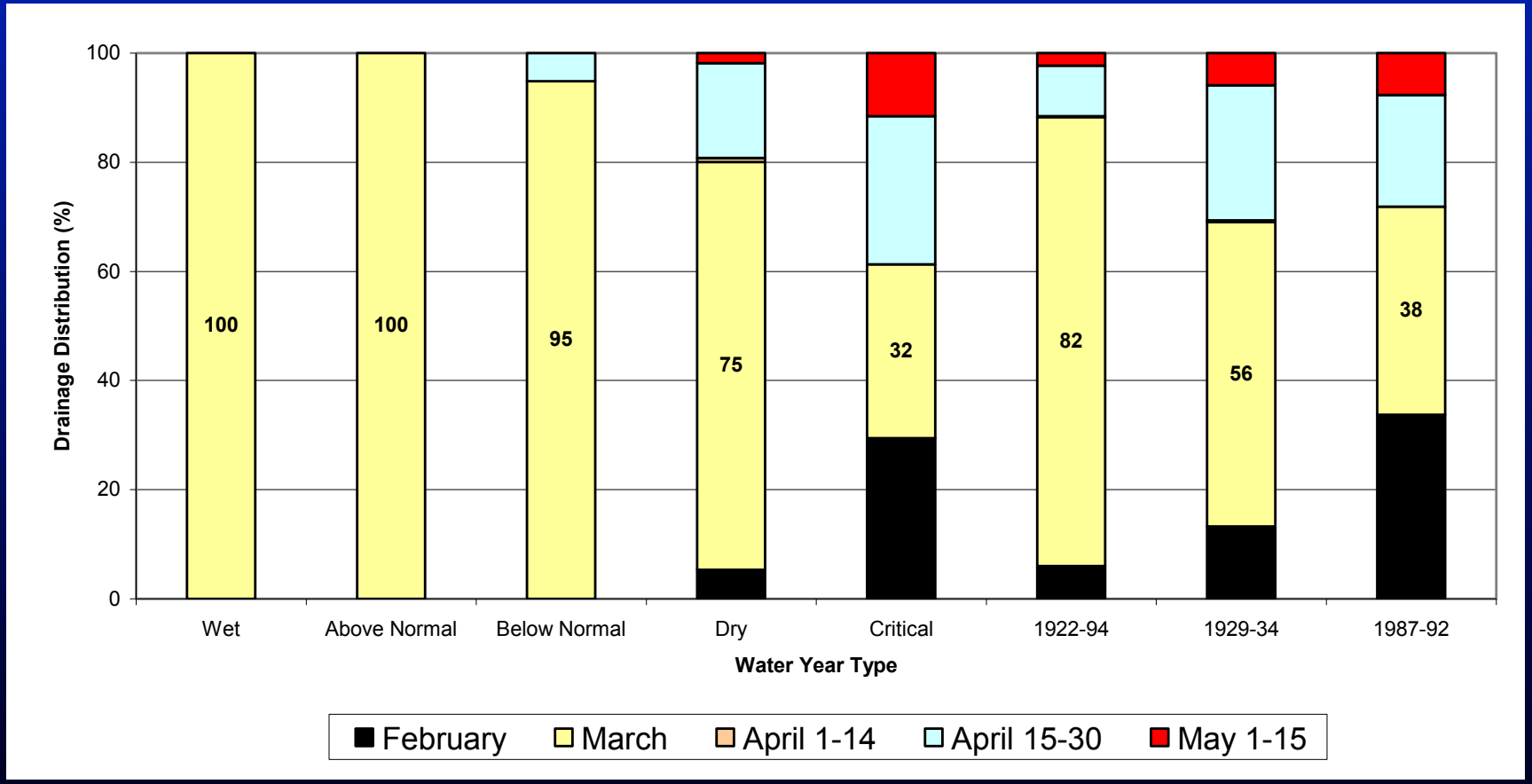
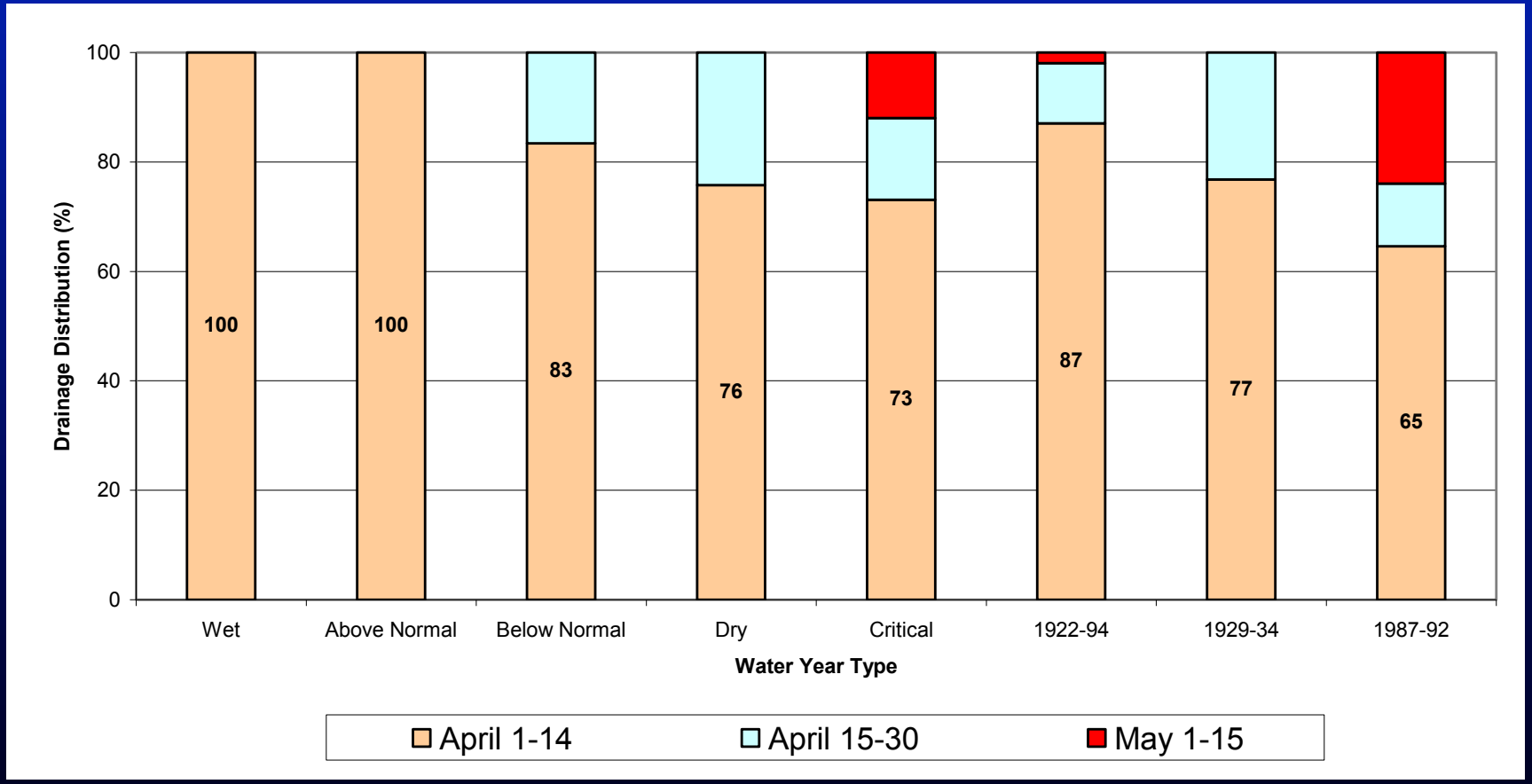
Redistribution of March Drainage: Refuge Drainage Management



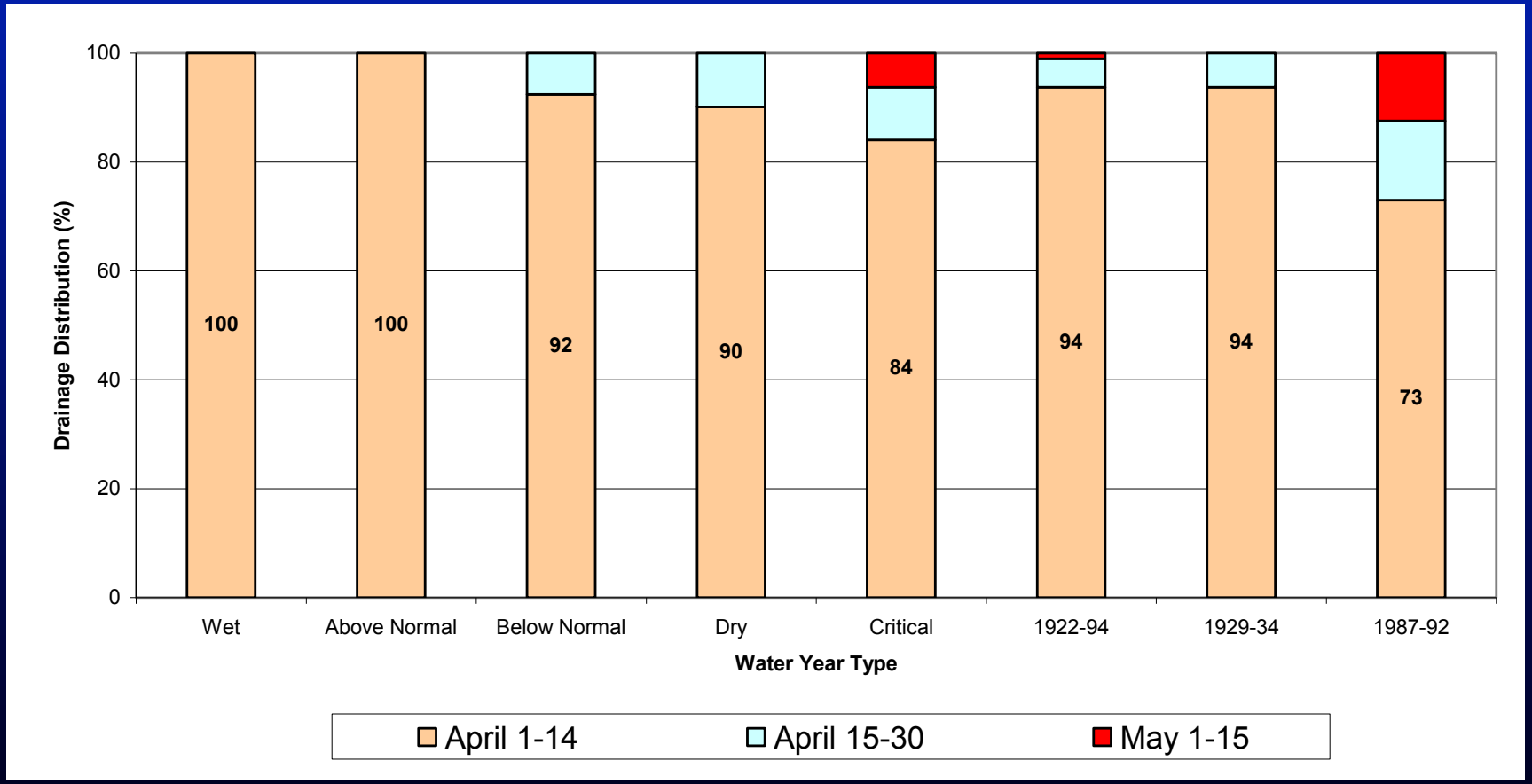
Redistribution of March Drainage: Refuge Mgt + Draft PA (HP-20)



Redistribution of April 1-14 Drainage: Refuge Drainage Management



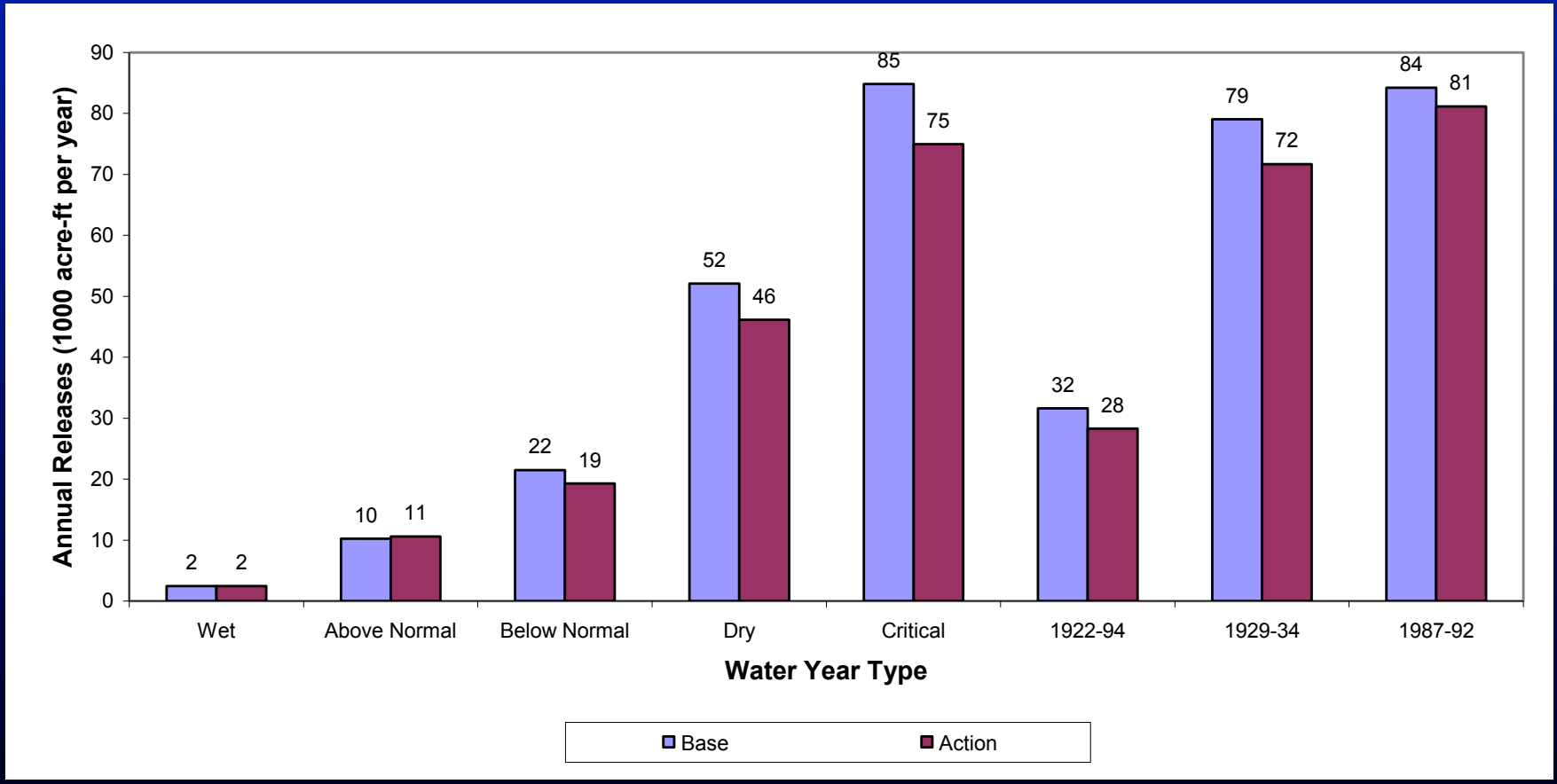
Redistribution of April 1-14 Drainage: Refuge Mgt + Draft PA (HP-20)



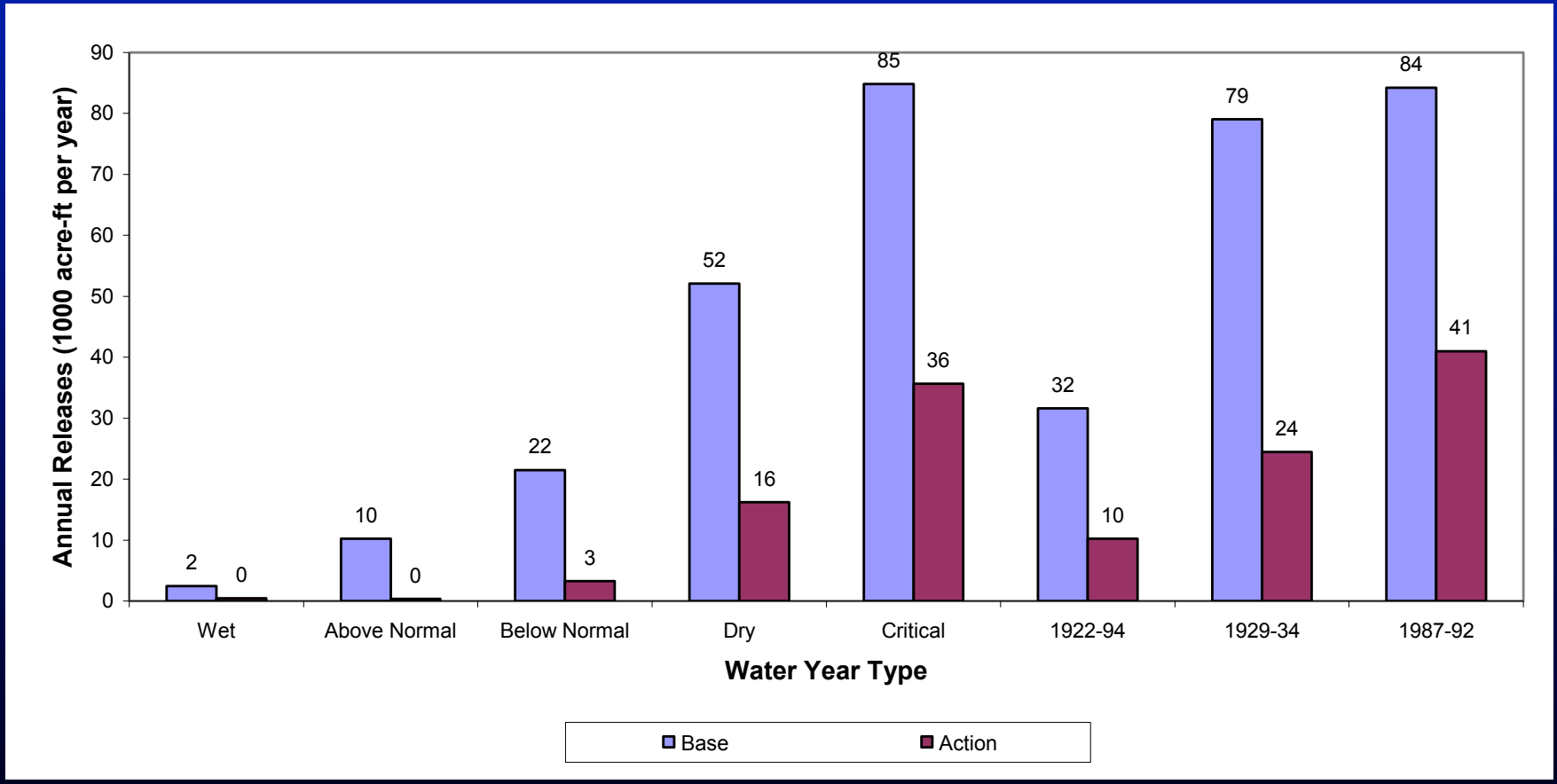
Vernalis Salinity Objective

- Refuge drainage management reduces Vernalis salinity objective violations from 13 to 5 over the 73-year simulation period
- When coordinated with the SJRWQMG Draft PA, refuge drainage management always meets the Vernalis salinity objective over the 73-year simulation period without strategic water transfers

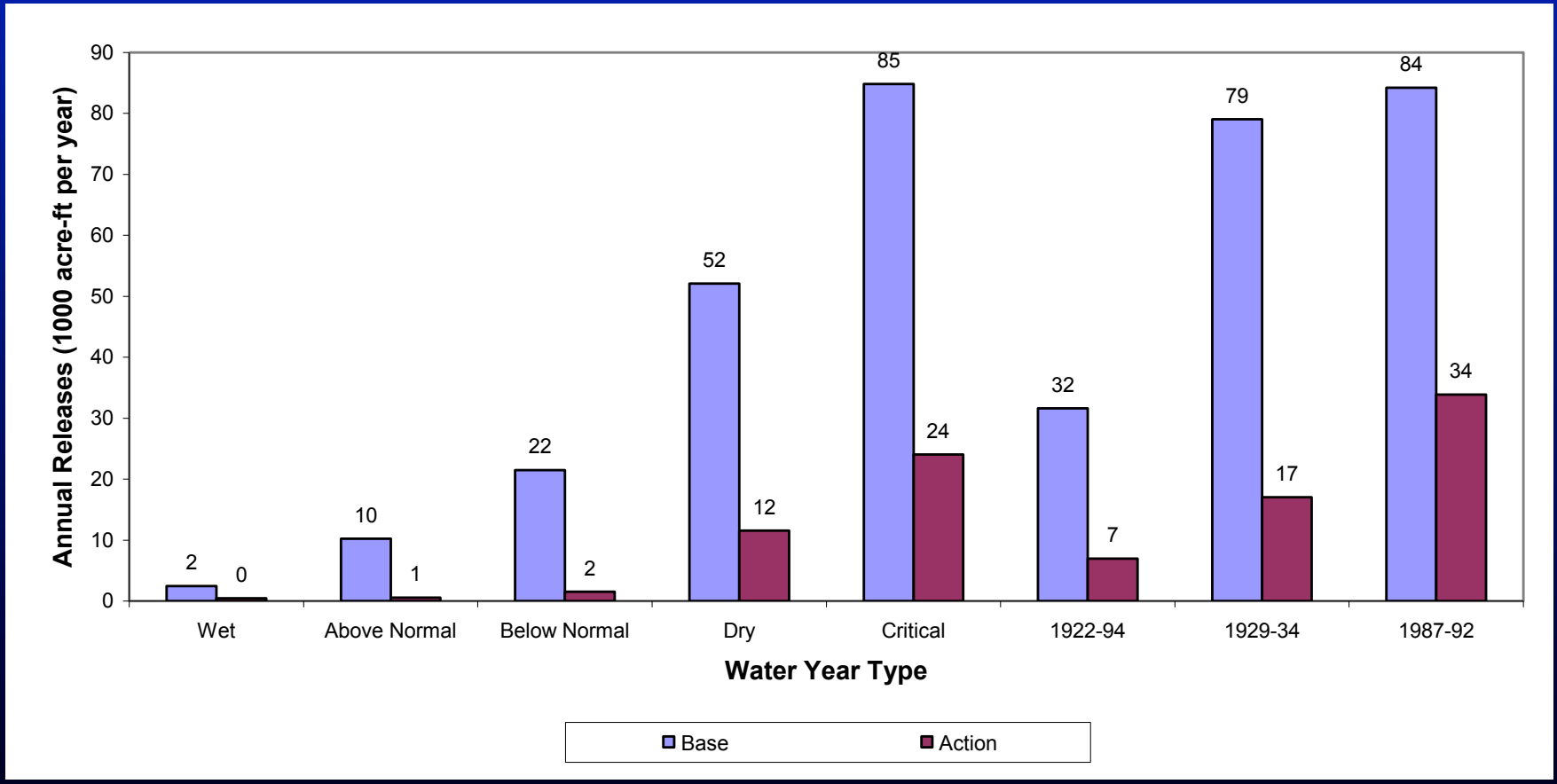
New Melones Releases: Refuge Drainage Management



New Melones Releases: SJRWQMG Draft PA (HP-20)



New Melones Releases: Refuge Mgt + Draft PA (HP-20)



Conclusions

- Isolated action results in the following redistribution of March refuge drainage:
  - 7% in below normal years
  - 29% in dry years
  - 63% in critical years
- Coordinated action results in a similar redistribution of March drainage

Conclusions (cont'd)

- Isolated action results in the following redistribution of April 1-14 refuge drainage:
  - 17% in below normal years
  - 24% in dry years
  - 27% in critical years
- Coordinated action results in less redistribution of April 1-14 drainage

Conclusions (cont'd)

- Isolated action reduces salinity violations from 13 to 5 over 73-year period
- Coordinated action eliminates need for strategic water transfers
- Isolated action provides 10 TAF critical year savings in New Melones. Savings is slightly higher (12 TAF) with coordinated action.
- Potential VAMP savings not quantified

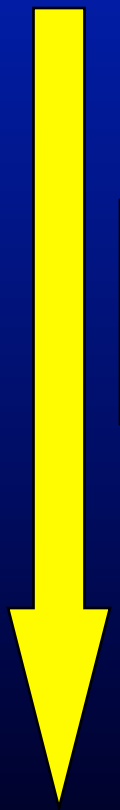
Extra Slides

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

Model Description (cont'd)
Salinity Management Actions

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



Decreasing Action Priority