Savannah River Basin Comprehensive Study

HEC-ResSim Drought Management

Results Summary

Stan Simpson - Water Manager
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Study Approach

Establish Existing Condition (Base) in HEC-ResSim

1. **Current Operational Rules**
2. **Water Supply Needs (2003)**
3. **Hydropower Requirements**

Water Allocations and Operational Scenarios

- Drought Plan Operations
- Storage Changes
- Flow Changes
- Operational Rules

Drought Plan Operations

- Objective- To access the impacts of different drought rules, triggers, and their timing
- New Drought of Record (1998-2002) was used for analysis

SRB Comp Study

- 1A. During drought recovery increase flows when return elevations are X feet above setting elevation
  - 1) X = 1 ft
  - 2) X = 2 ft
- 2A. Increase the number of drought triggers for drought management and return from drought to provide a more gradual transition to 3600cfs.
- 3A. Lower the minimum drought-trigger 3 JST releases to 3300 cfs (3A1) and 3000 cfs (3A2) with a rule to maintain 3600 cfs at the lock and dam. Similar to EA proposed during recent drought.
- 4A. Raise minimum level 3 JST releases to 3800 cfs to determine or illustrate pool elevation differences.

SRB Comp Study

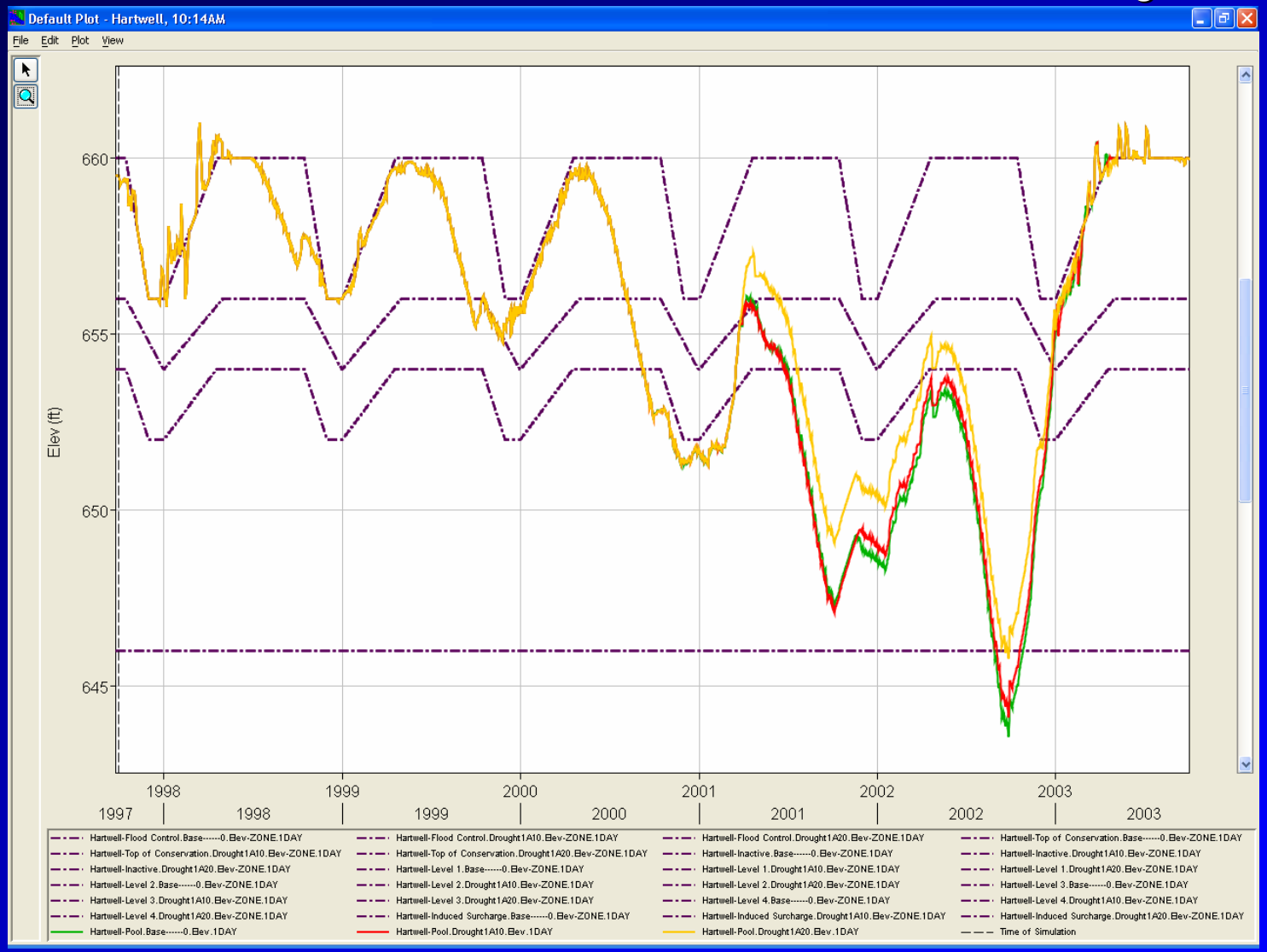
- 5A. Maximize RBR pumping during drought within current environmental operational limits.
  - 1. Two pump units June thru Sept.
    (w/o JST O2 system; same as Base)
  - 2. Four pump units available June thru Sept.
- 6A. Add flow restrictions at JST for drought trigger 1 condition. (eg 5200 cfs)
- 7A. Adjust Level 3 elevations at Hartwell and JST from 646 and 316 to

  1) 648 and 318

  2) 649 and 319

1A1. During drought recovery increase flows when return elevations are 1 foot above setting elevation

1A2. During drought recovery increase flows when return elevations are 2 feet above setting elevation



Hartwell

Base

1A1

1A2

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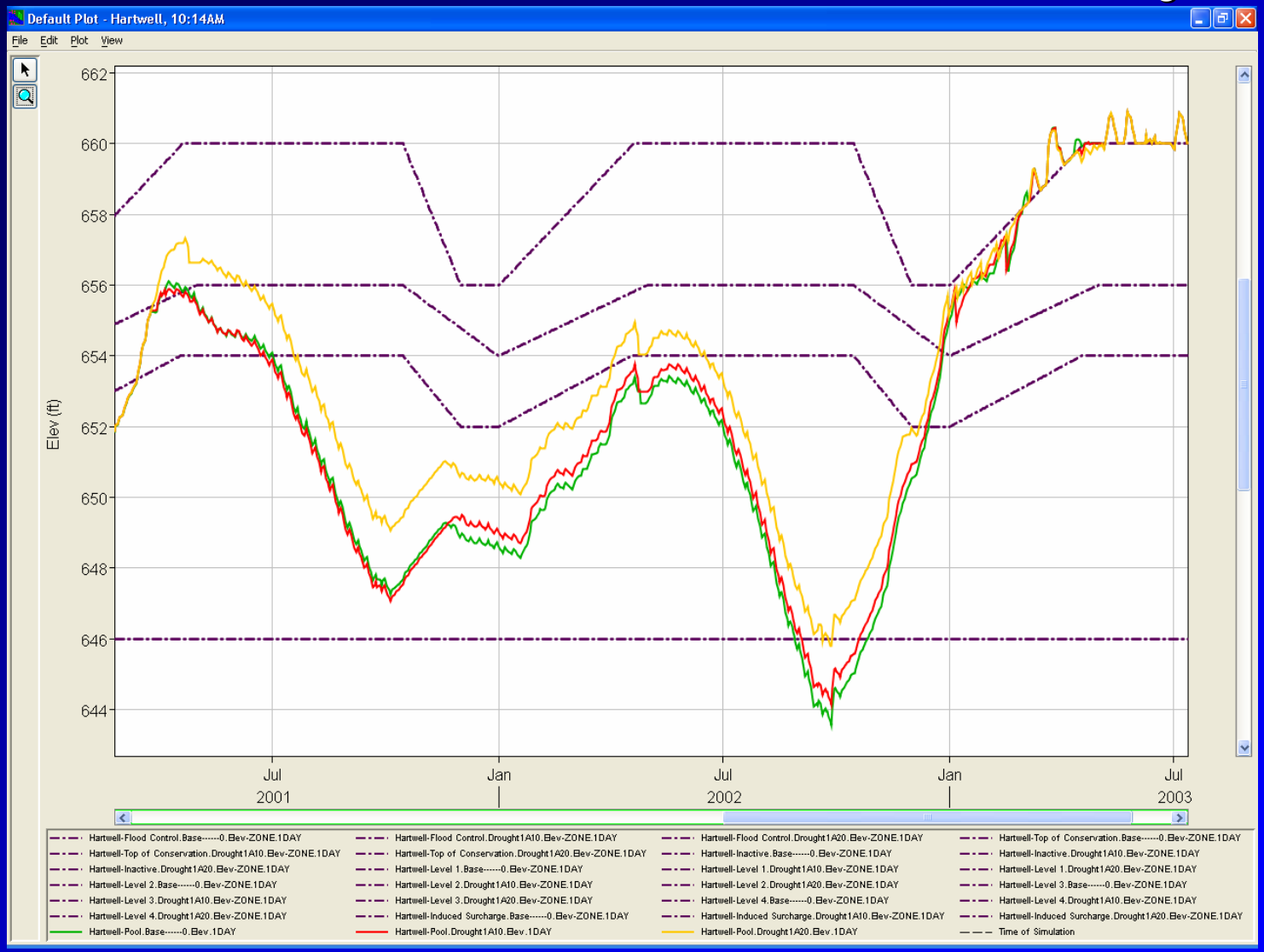

Hartwell

Base

1A1

1A2

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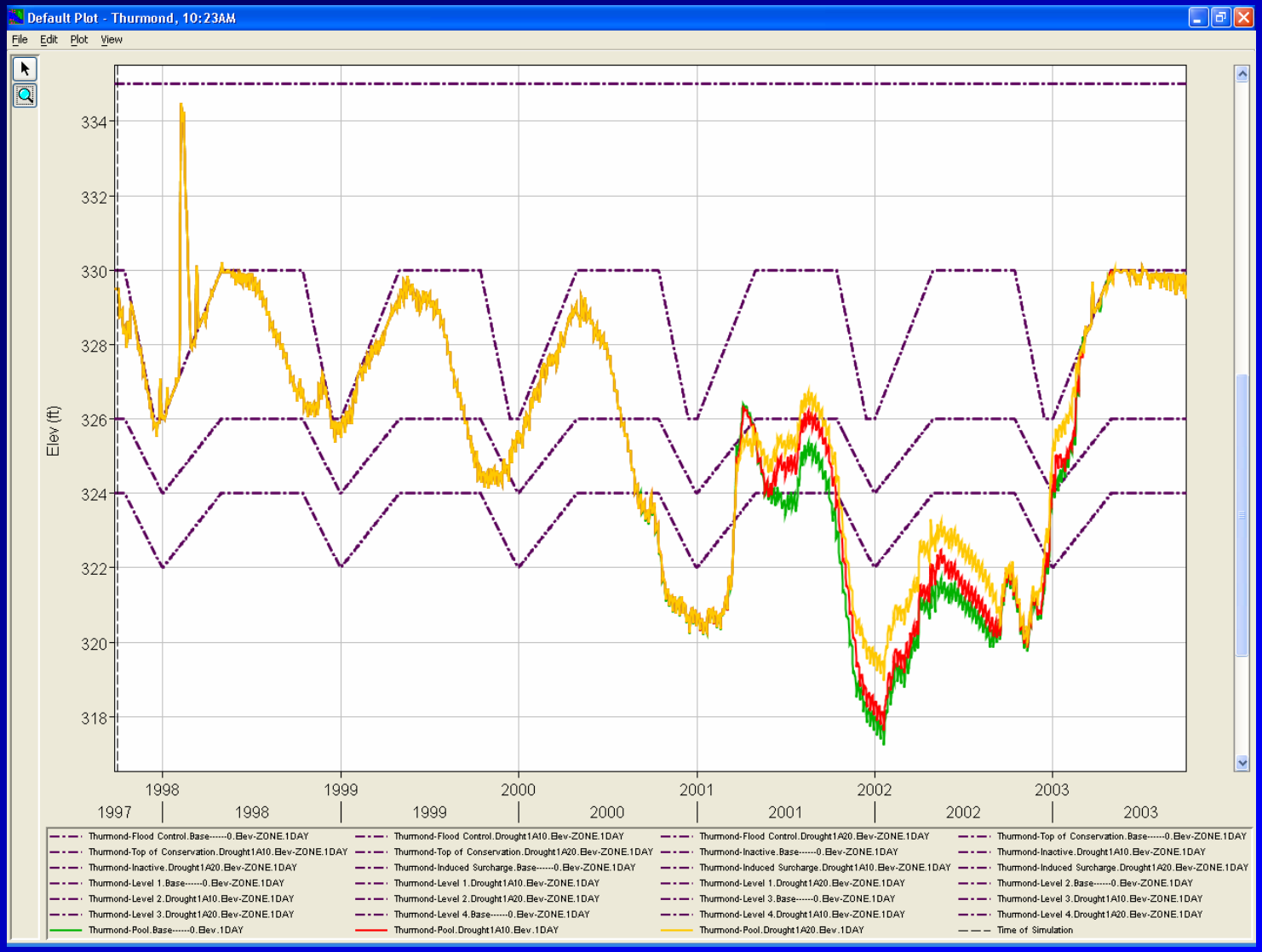

Thurmond

Base

1A1

1A2

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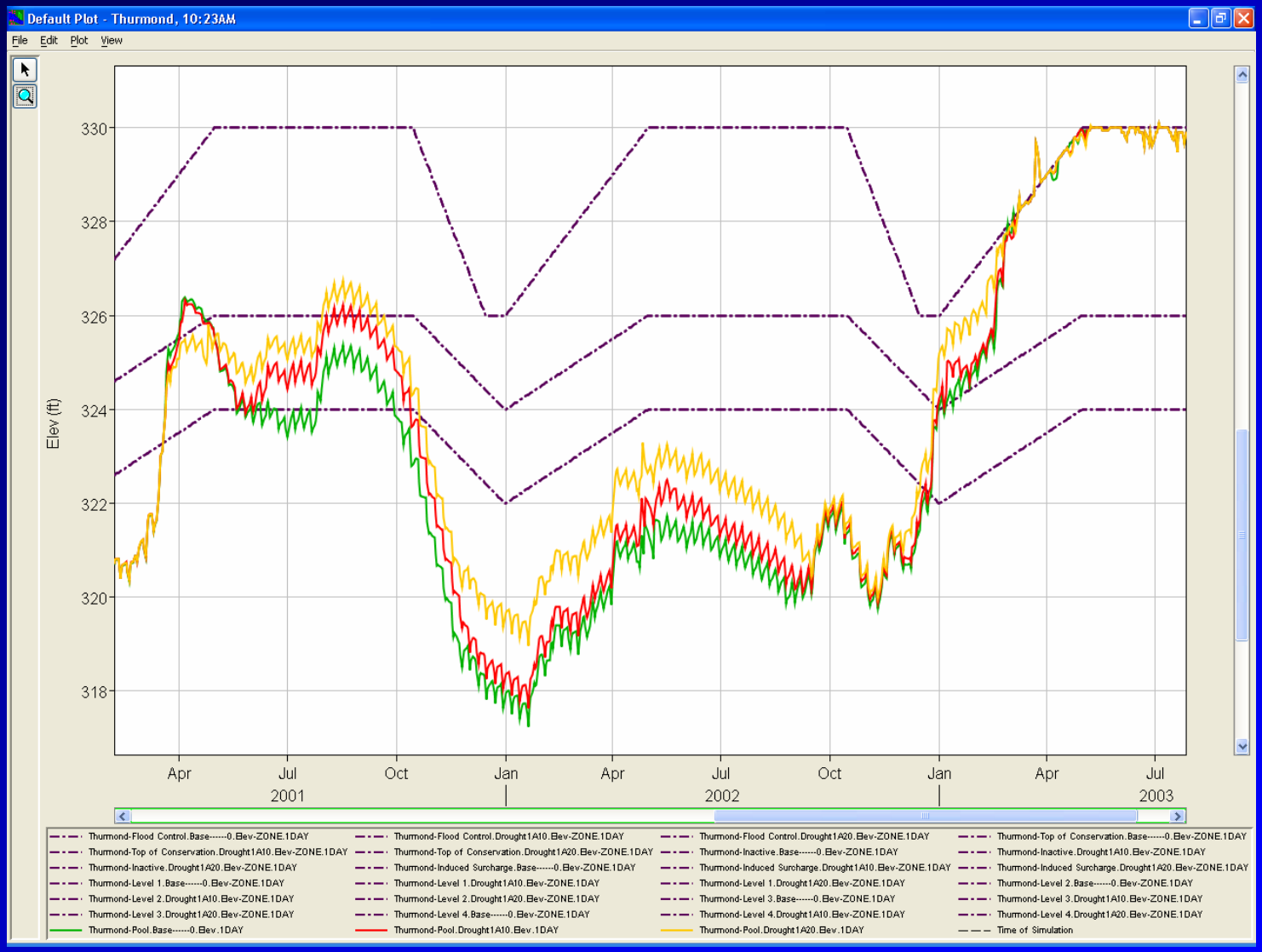


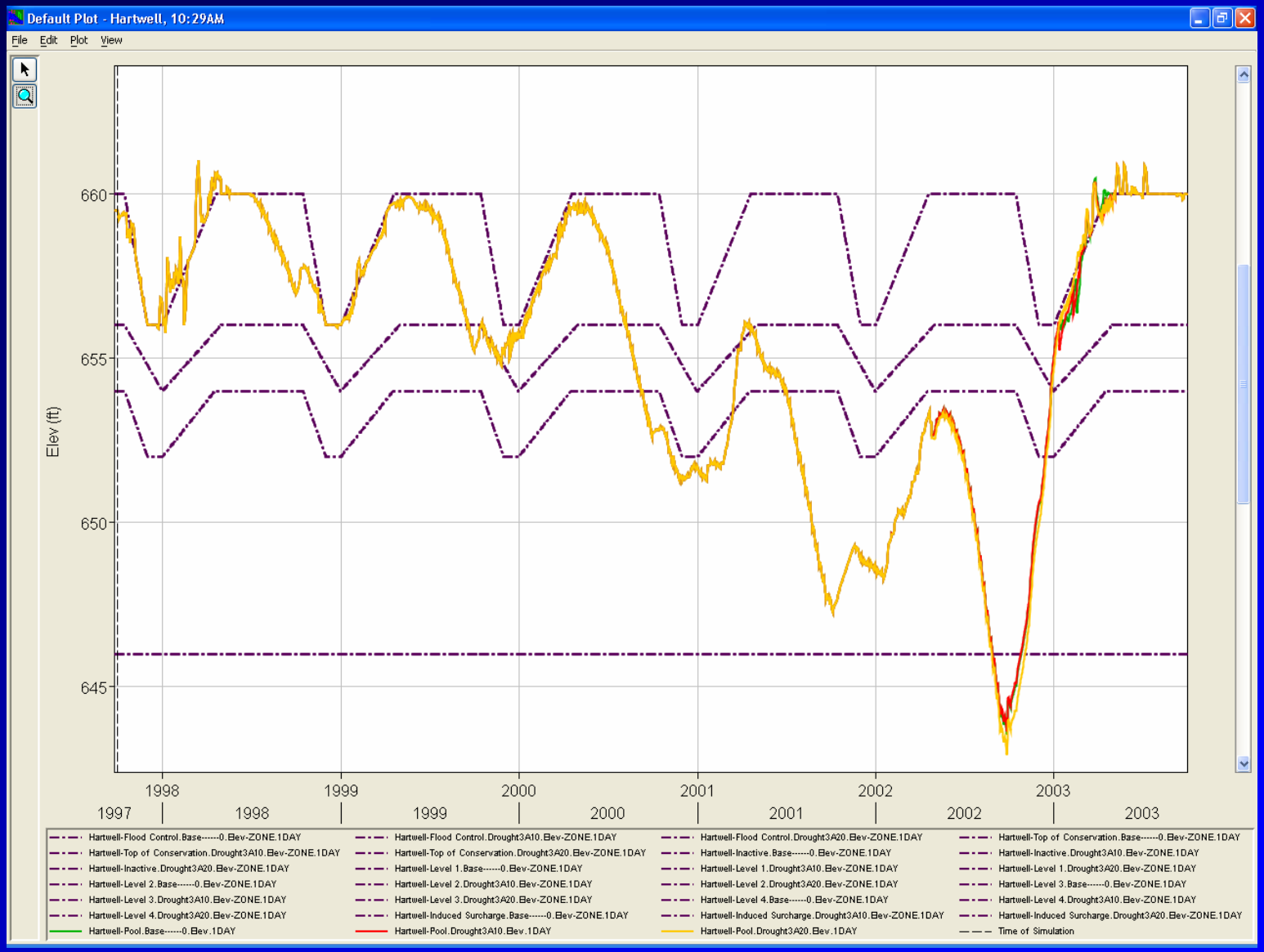
Thurmond

Base

1A1

1A2

3A. Lower the minimum drought-trigger 3 JST releases to 3300 cfs (3A1) and 3000 cfs (3A2) with a rule to maintain 3600 cfs at the lock and dam



Hartwell

Base

3A1

3A2

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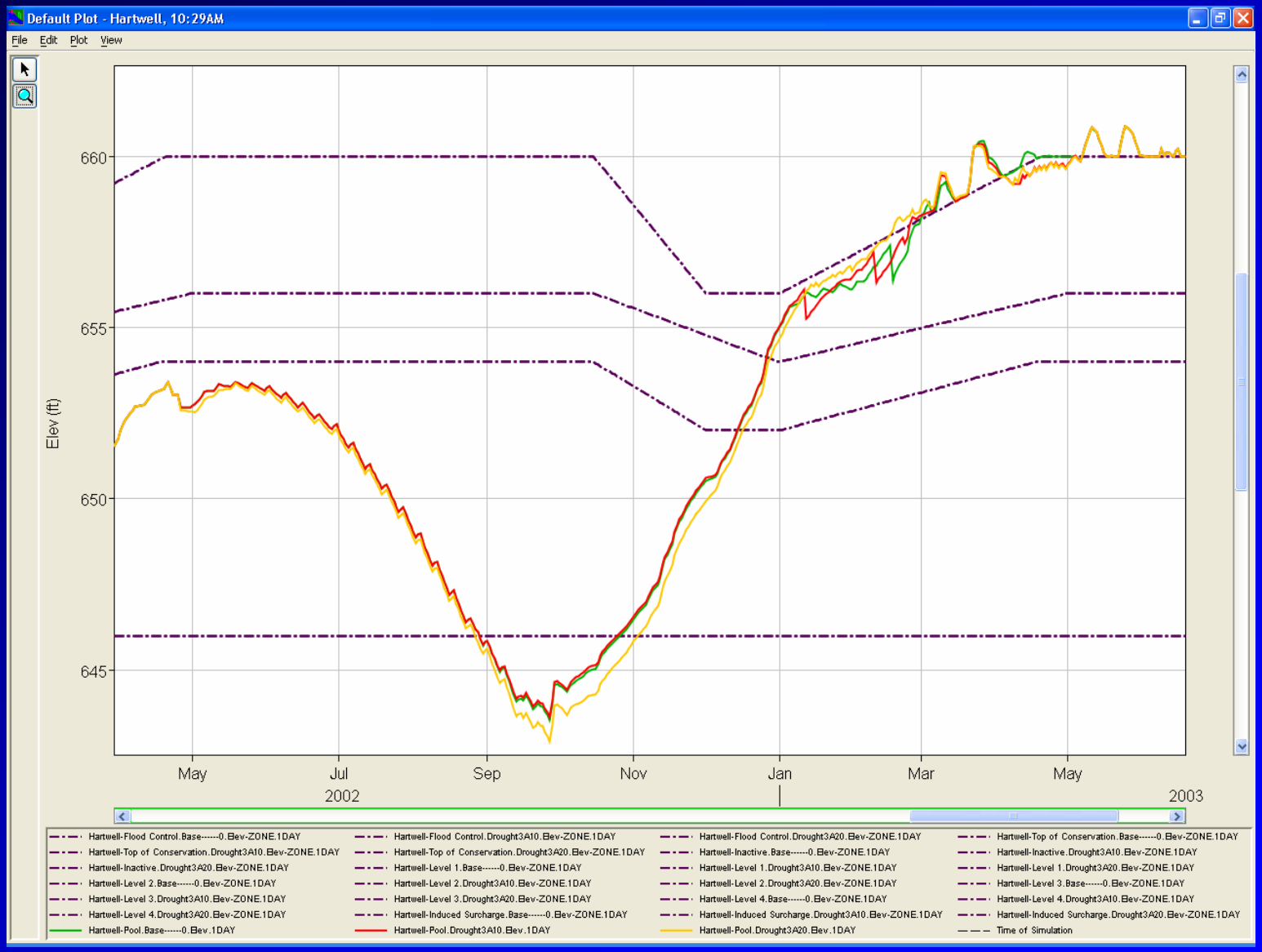

Hartwell

Base

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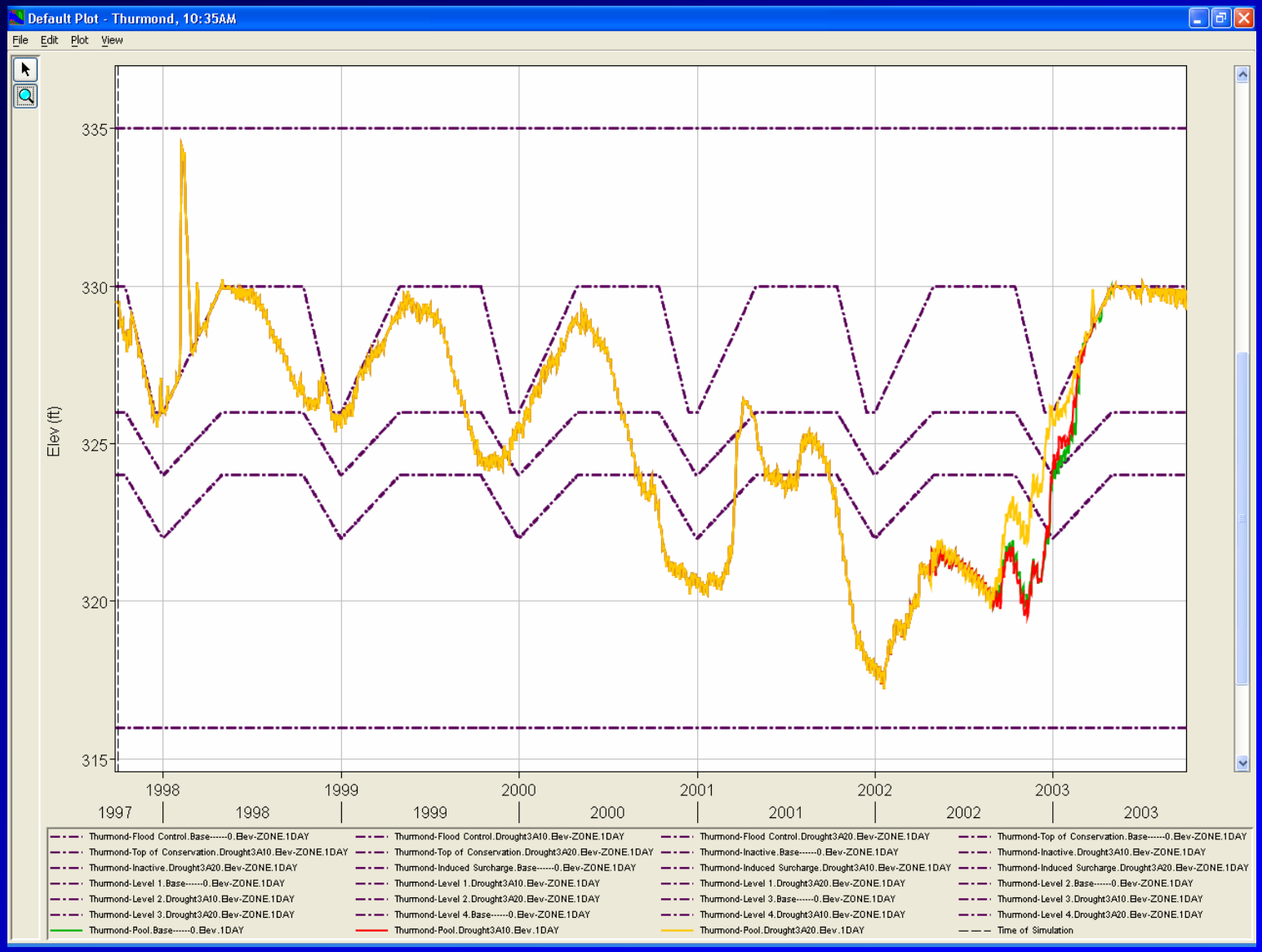

Thurmond

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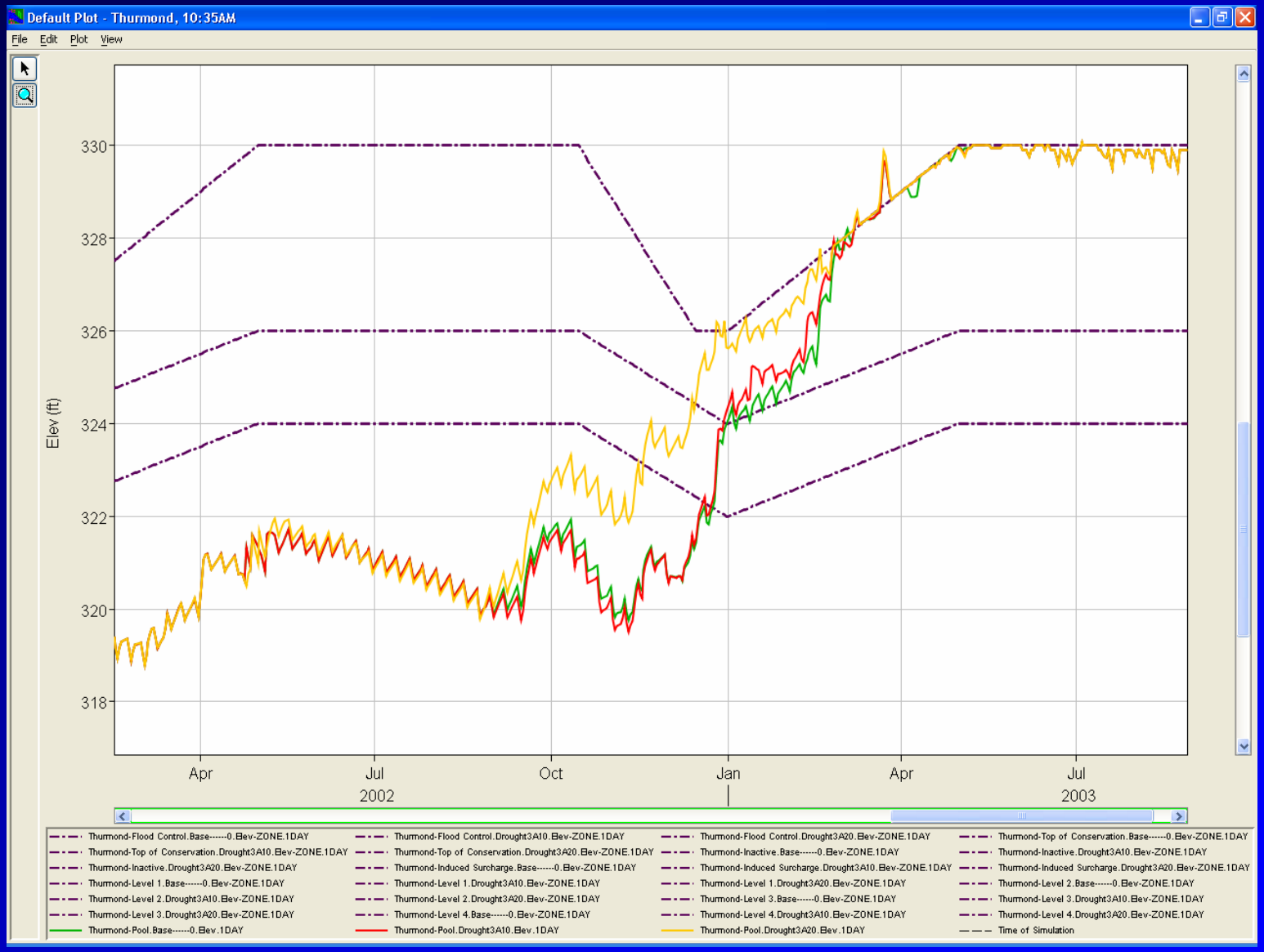


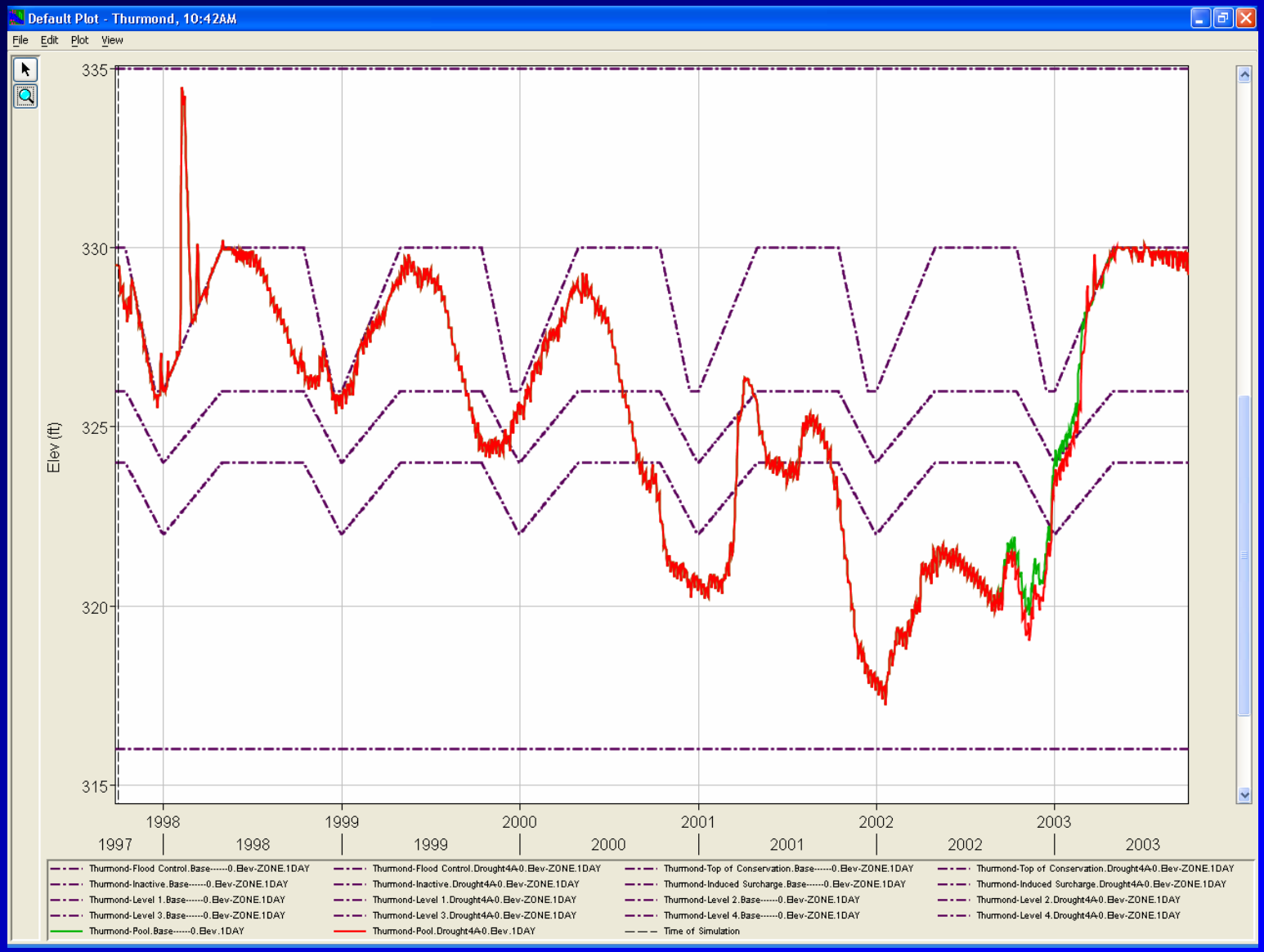
Thurmond

Base

3A1

3A2

4A. Raise minimum level 3 JST releases to 3800 cfs to determine pool elevation differences

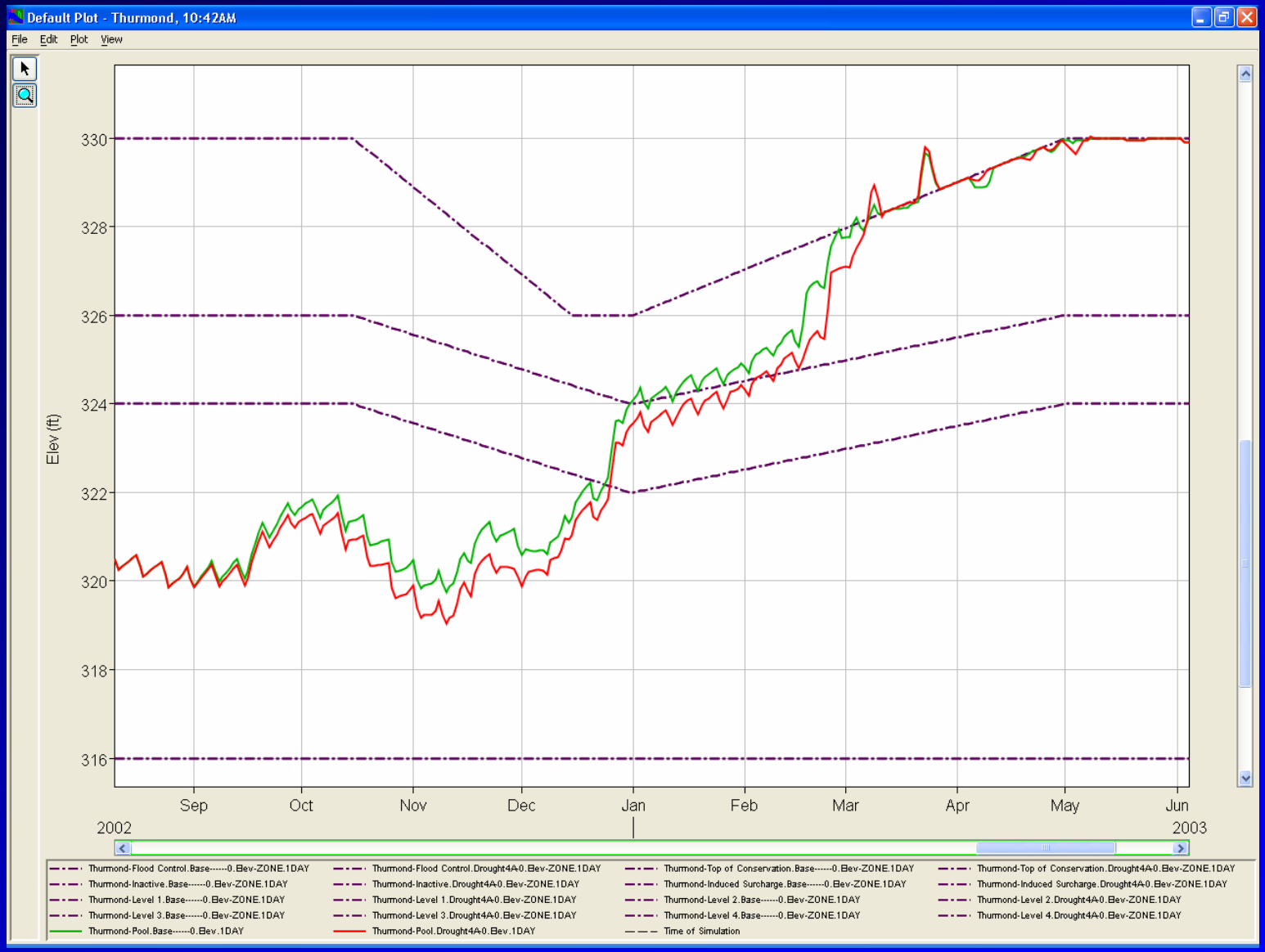


Thurmond

Base

4A

4A. Raise minimum level 3 JST releases to 3800 cfs to determine pool elevation differences

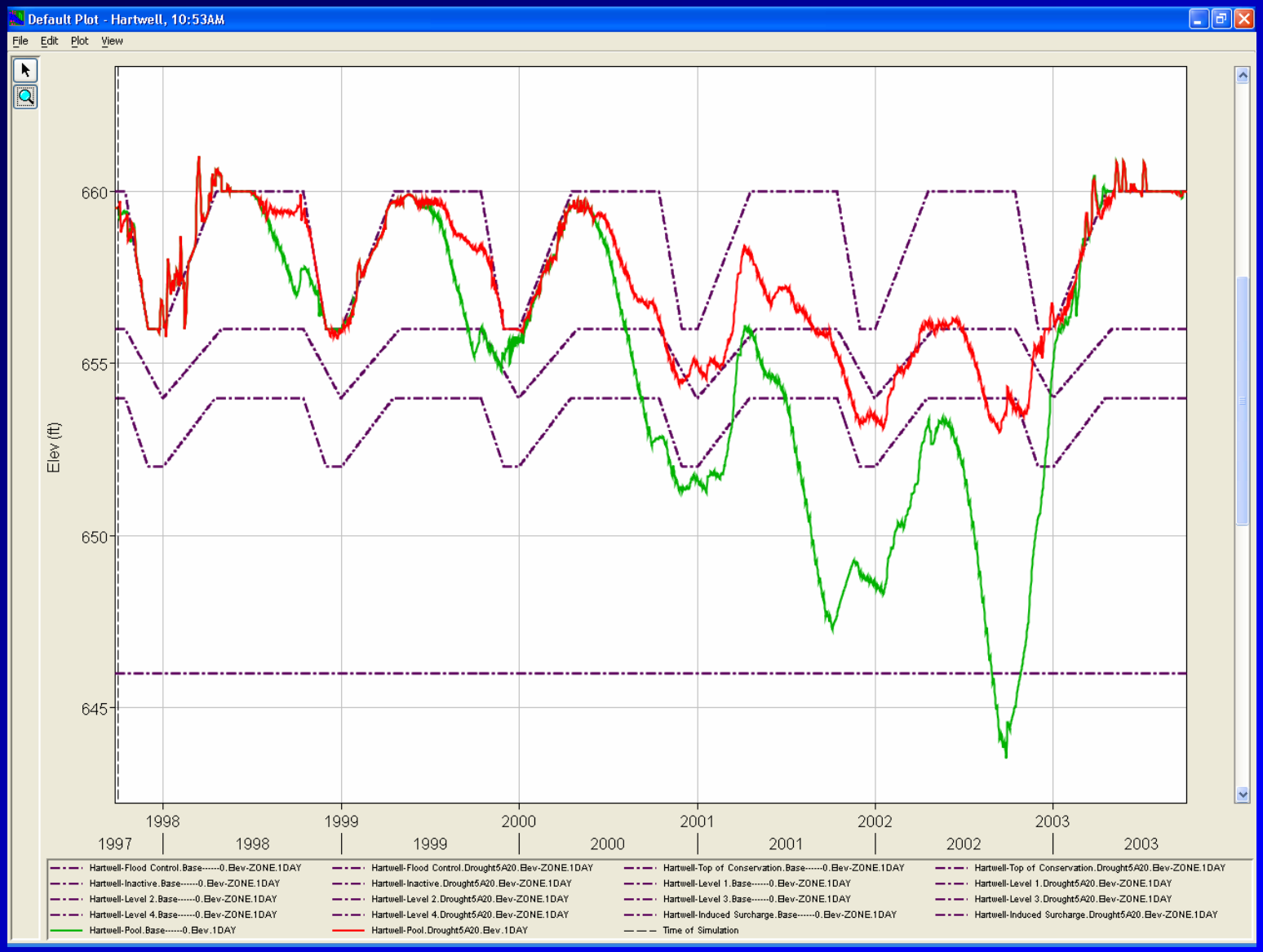


Thurmond

Base

4A

5A2. Maximize RBR pumping during drought 4 units Jun- Sept

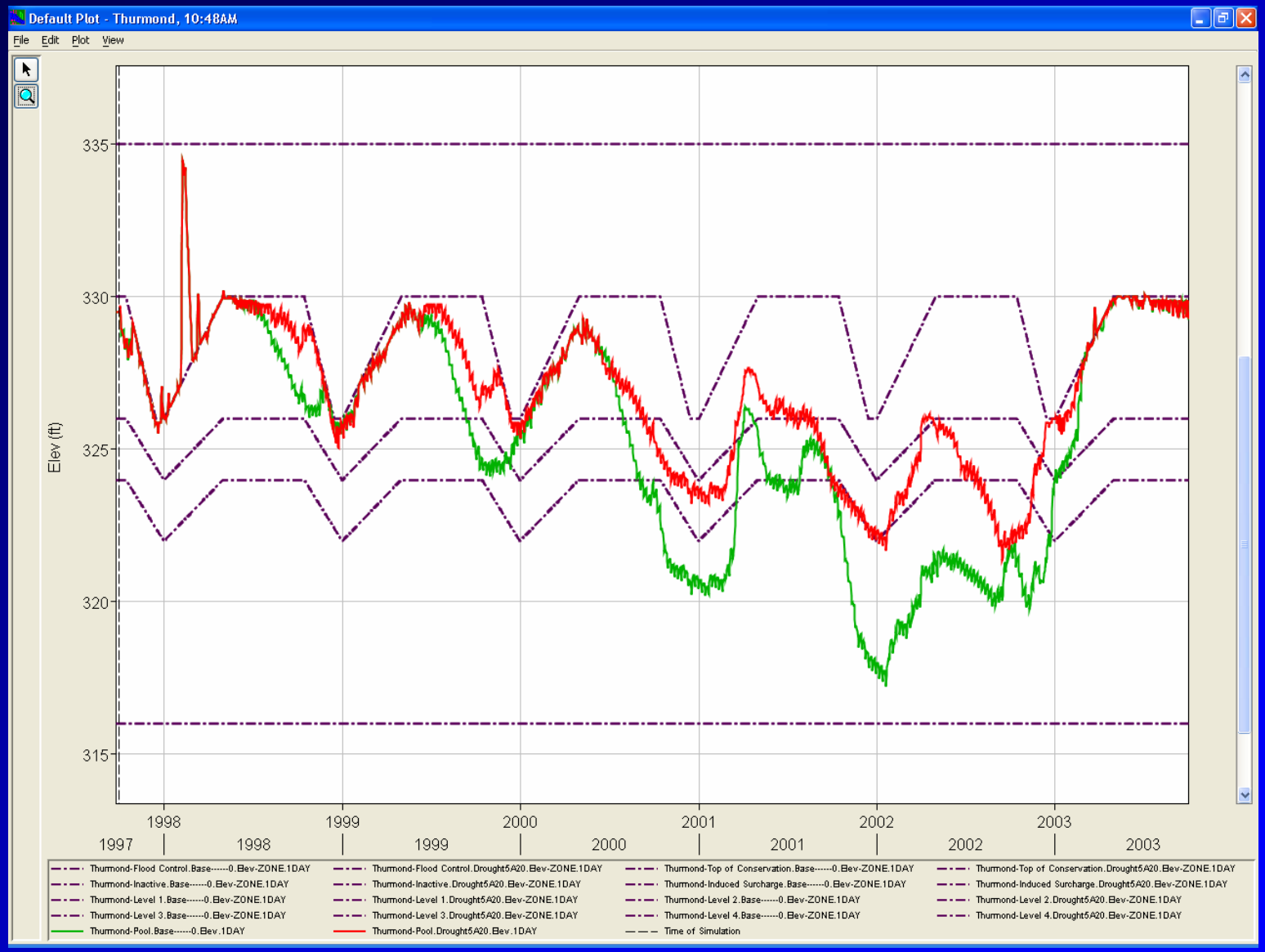


Hartwell

Base

5A2

5A2. Maximize RBR pumping during drought 4 units Jun- Sept

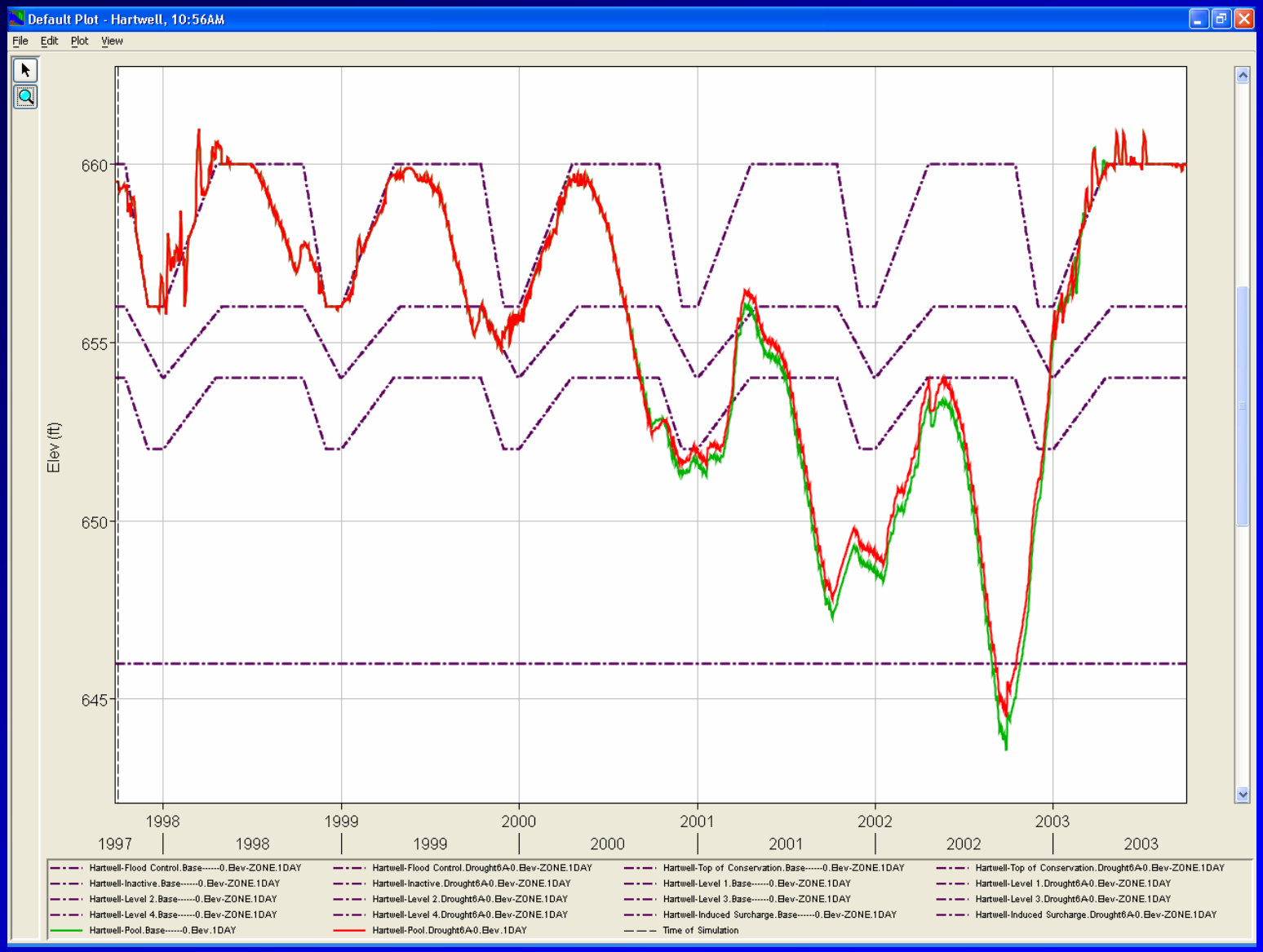


Thurmond

Base

5A2

6A. Add flow restrictions at JST for drought trigger 1 condition. (eg 5200 cfs)



Hartwell

Base

6A

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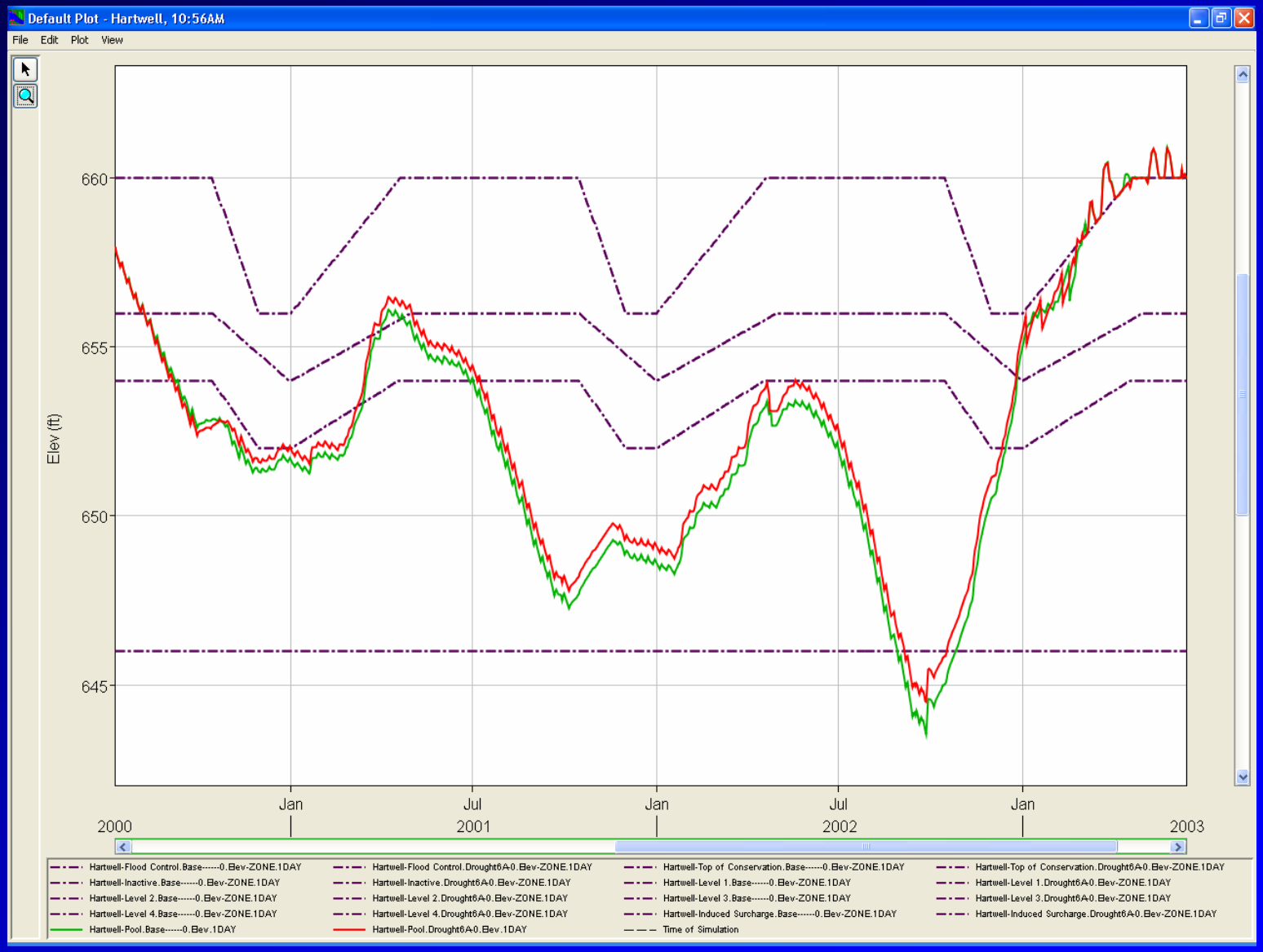

Hartwell

Base

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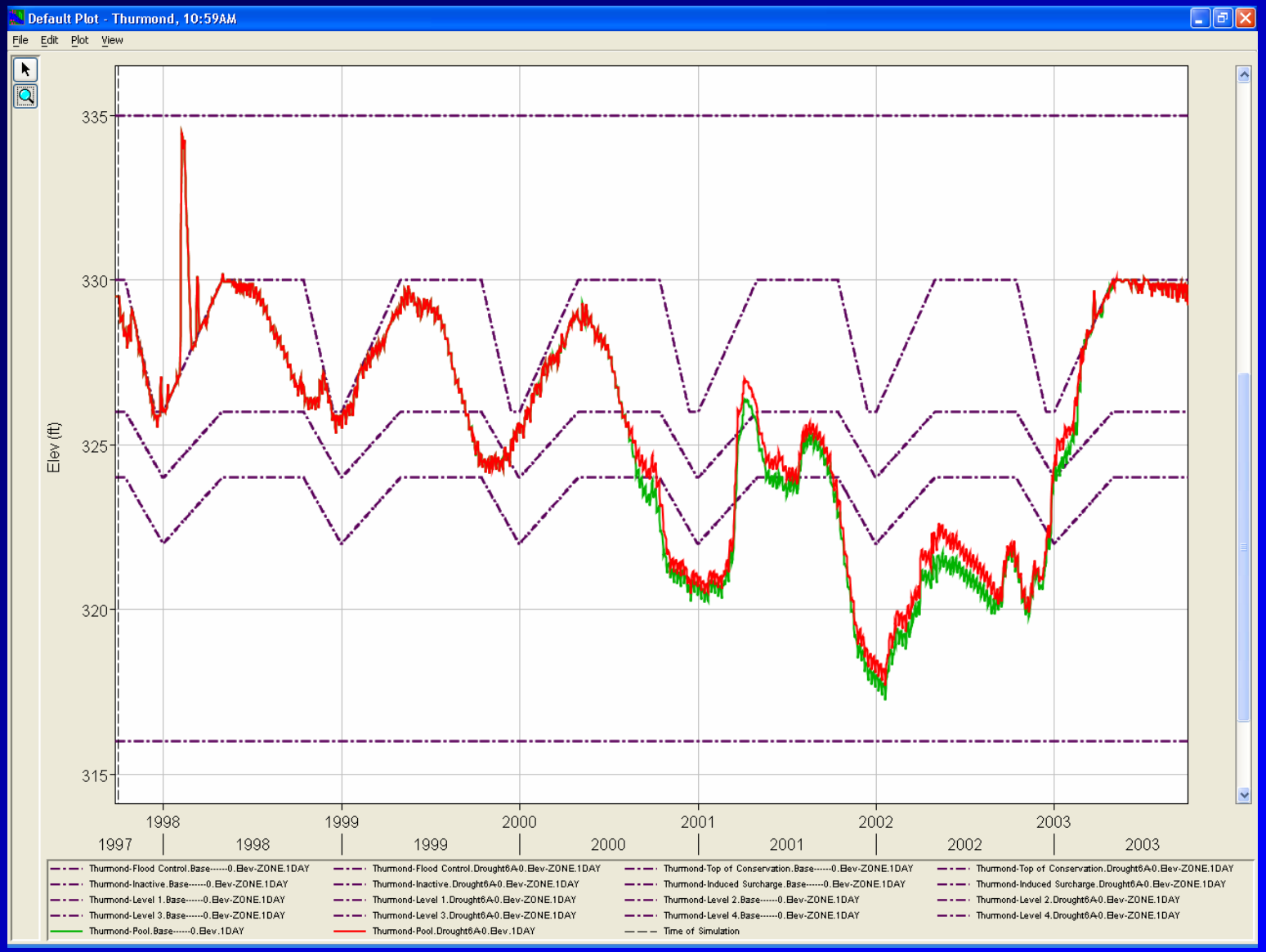

Thurmond

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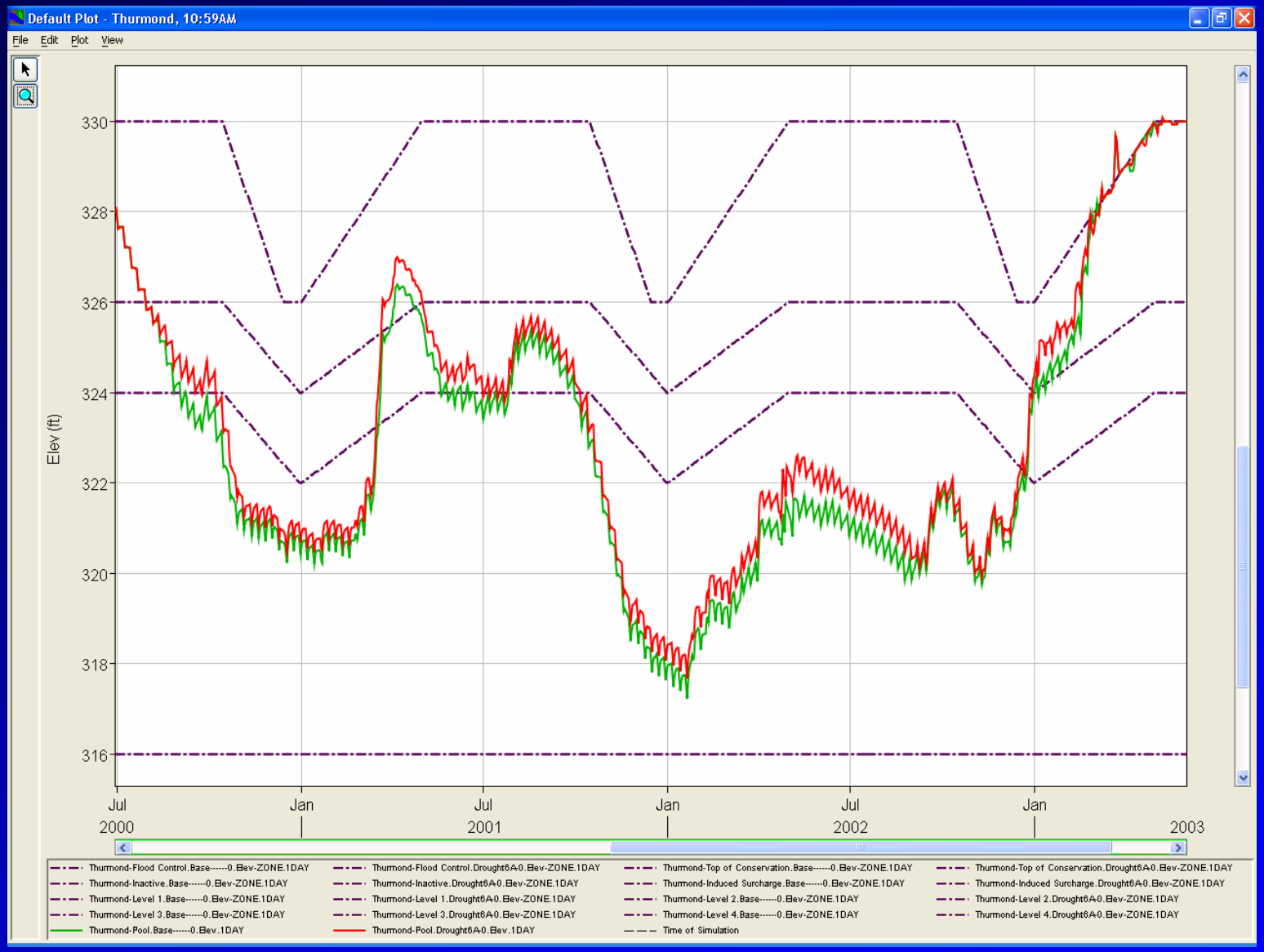

Thurmond

Base

6A

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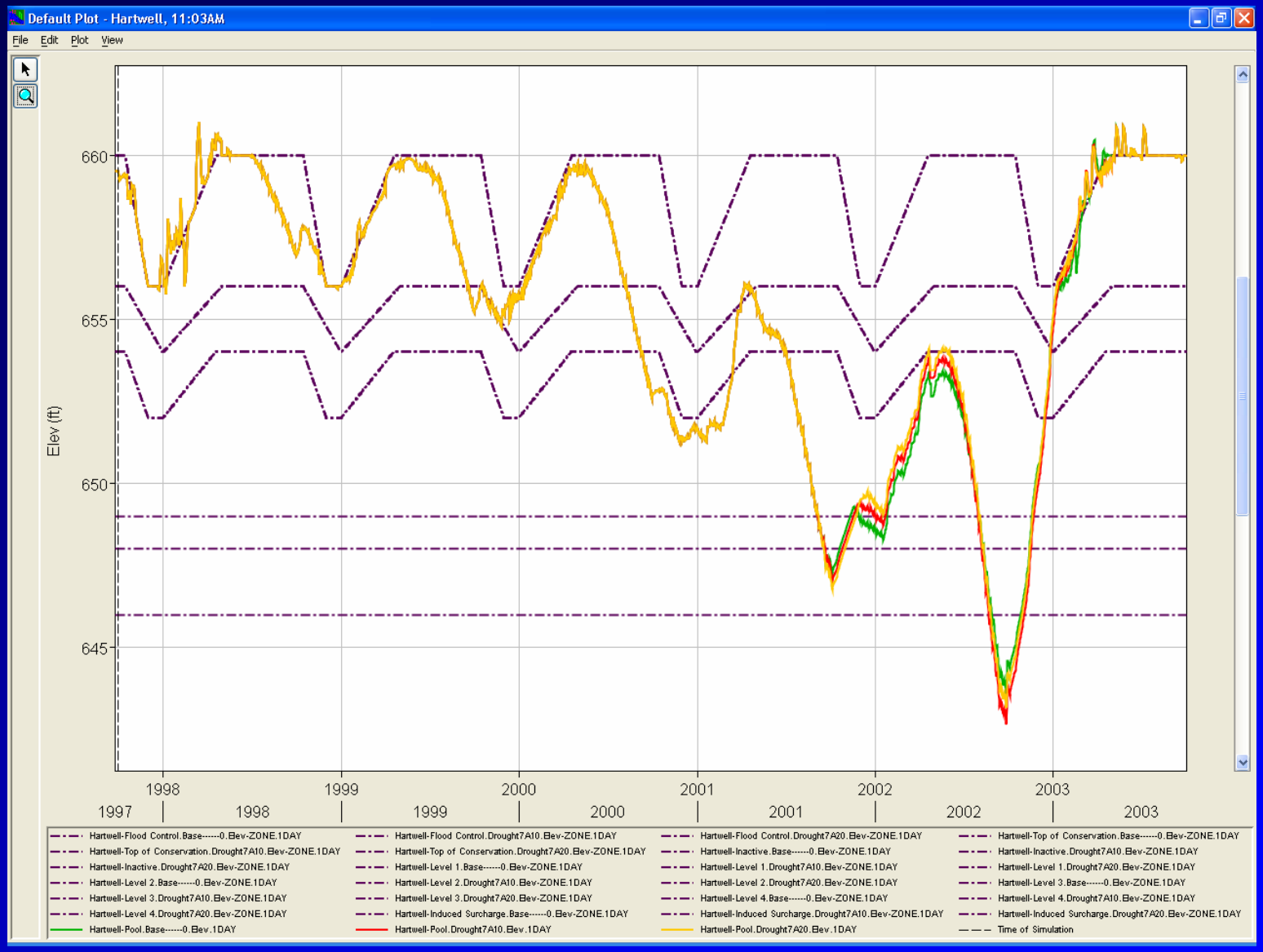

Hartwell

Base

7A1

7A2

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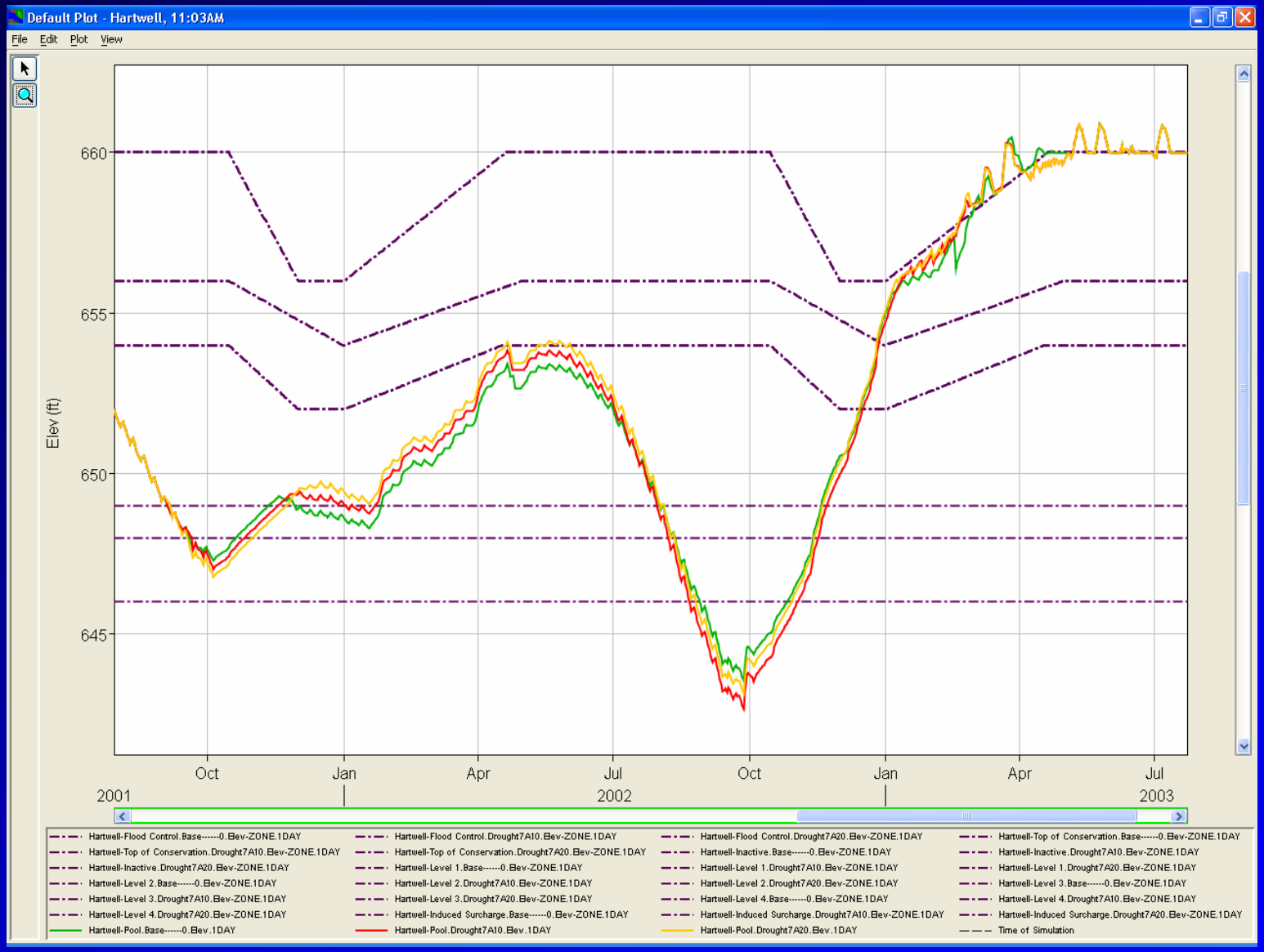

Hartwell

Base

7A1

7A2

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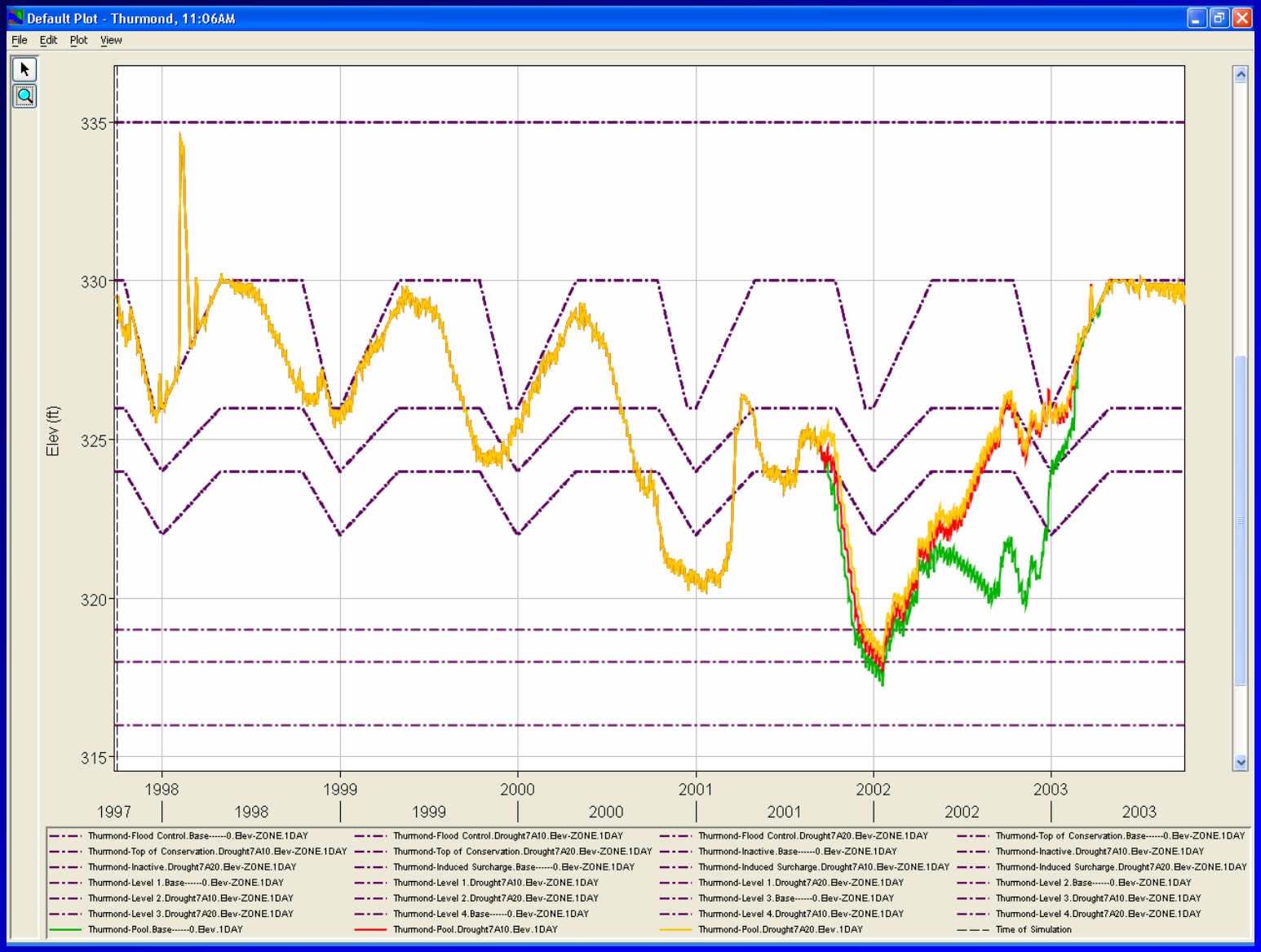

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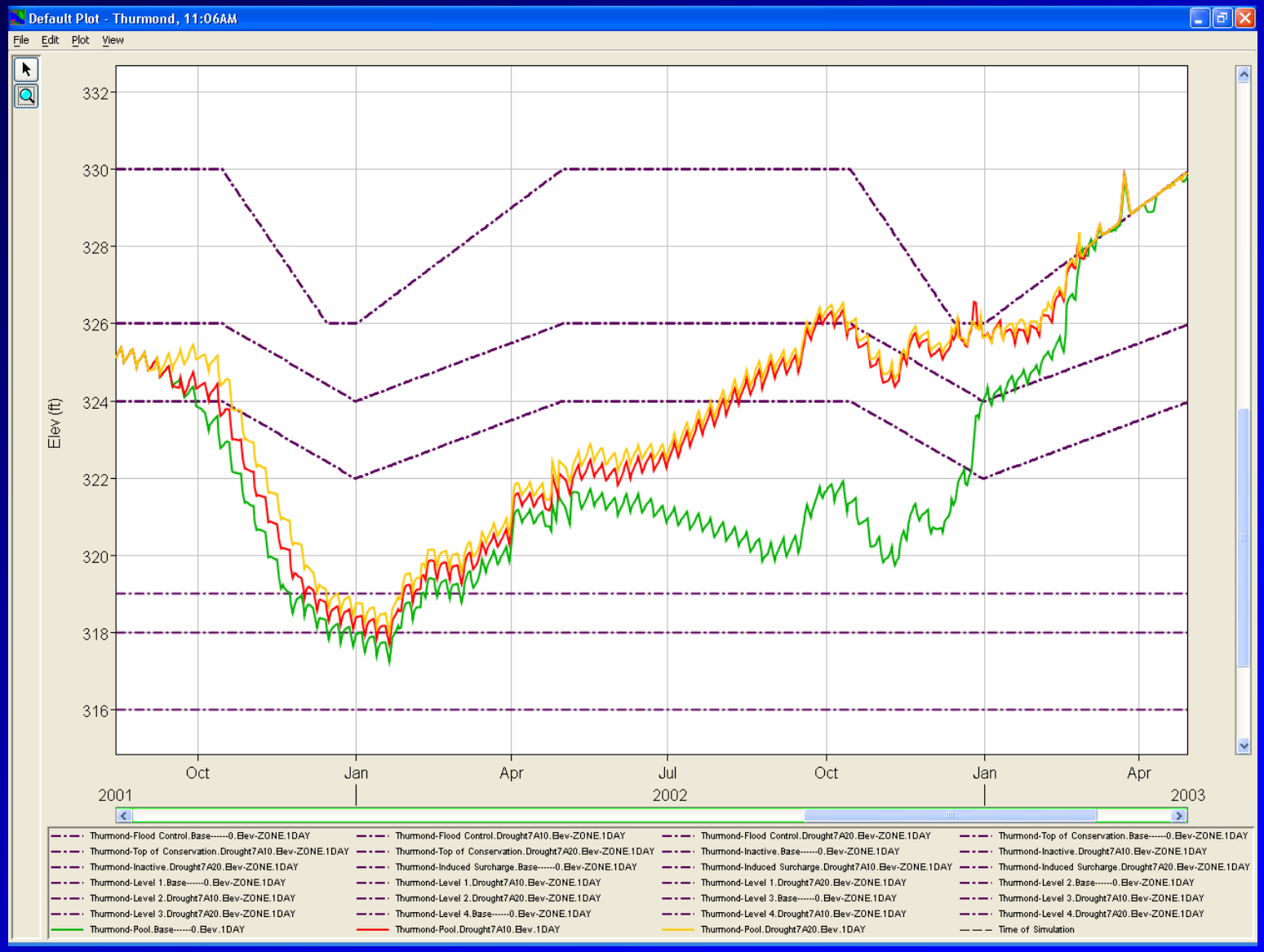


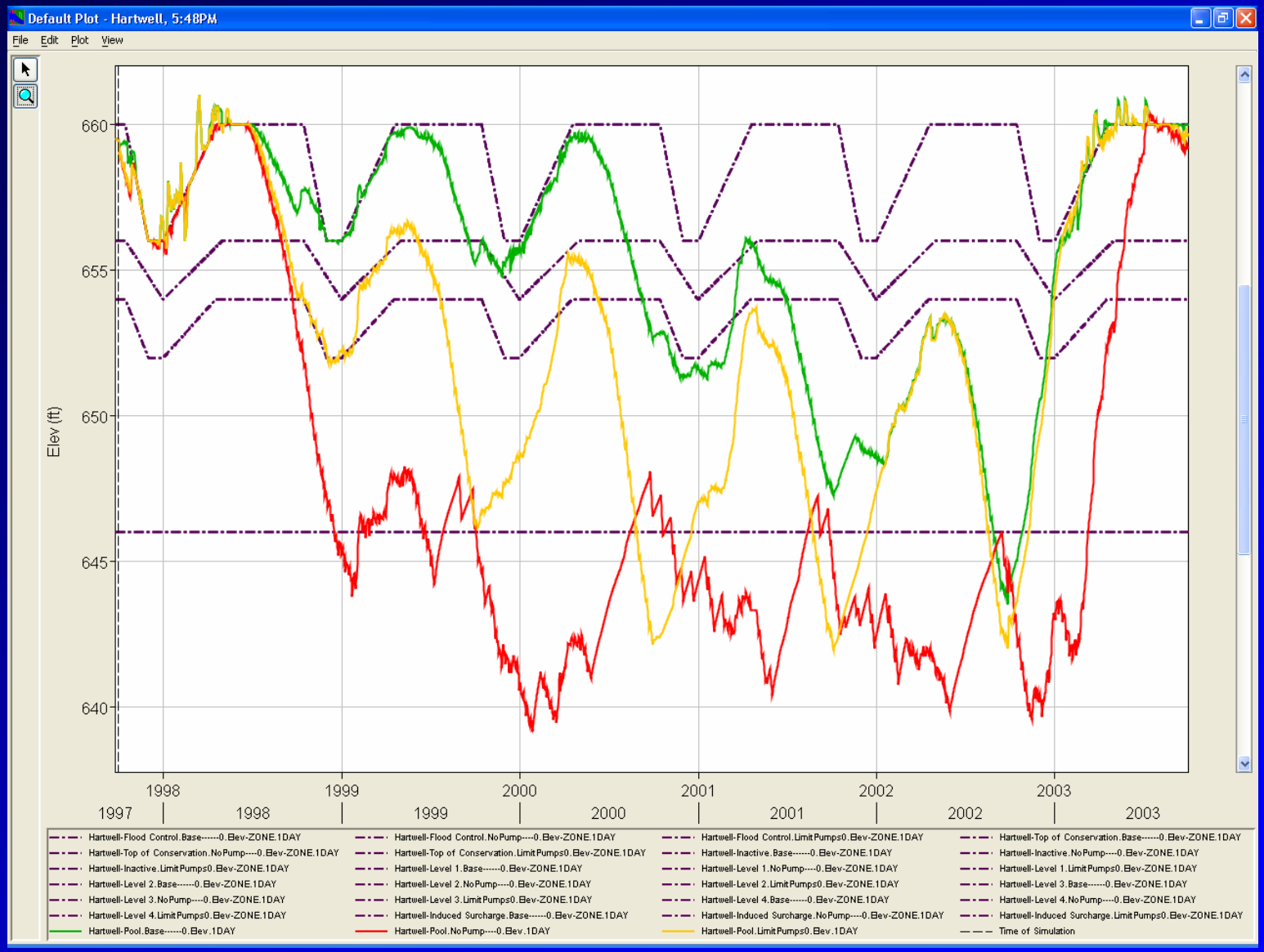
Thurmond

Base

7A1

7A2

RBR Pump Comparison (Hartwell)



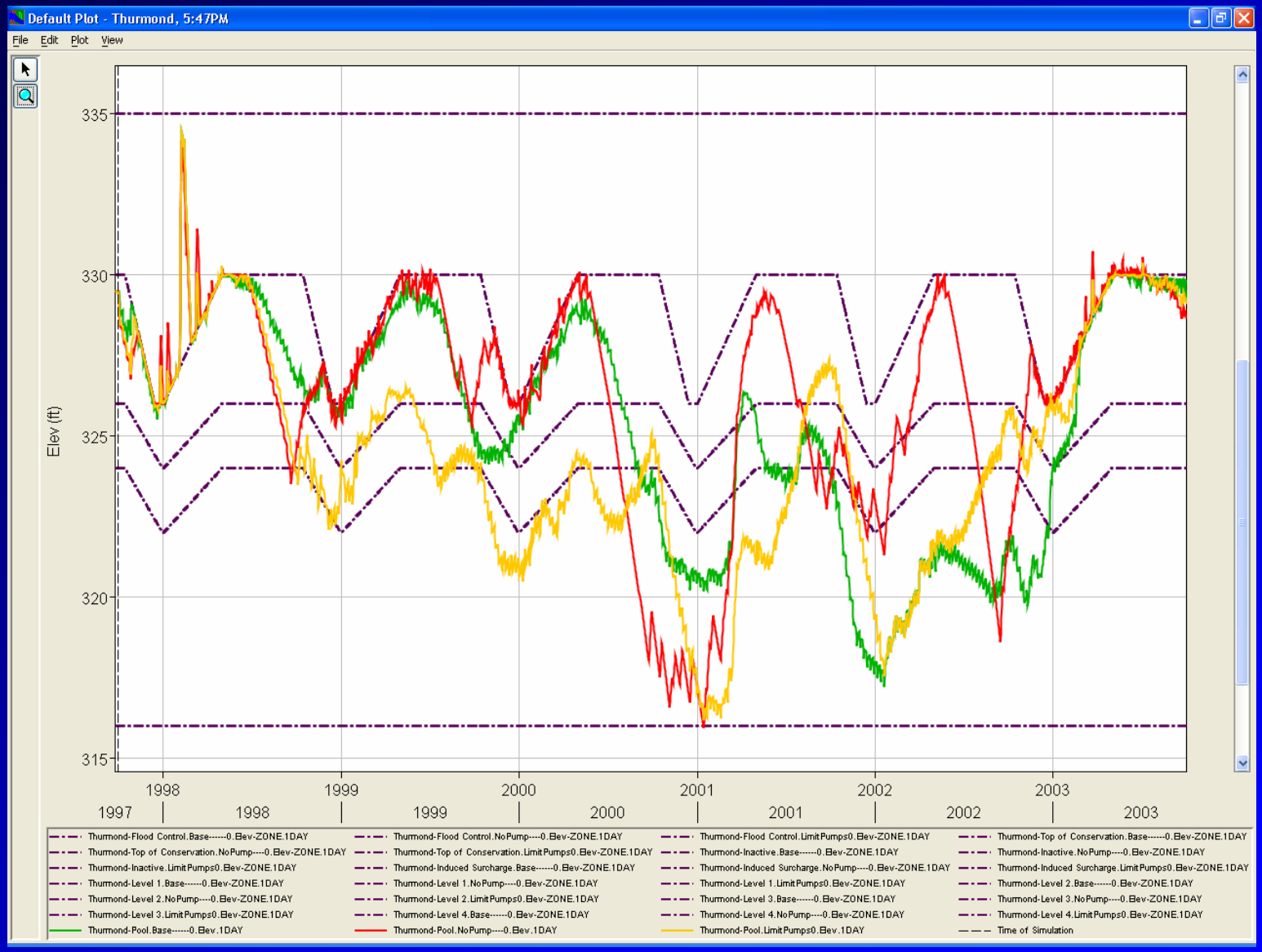
Hartwell

Base

No Pump

Limited Pump

RBR Pump Comparison (Thurmond)



Thurmond

Base

No Pump

Limited Pump

Analysis of Results

- % time in drought levels
- Summary Statistics (mean, min, max)
- Frequency Distributions (pool elevations, releases or downstream locations)