

**Pend Oreille River TMDL  
Watershed Advisory Group:  
Box Canyon Dam  
Temperature Modeling**



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Environmental Assessment Program  
Washington State Dept. of Ecology**

**May 10, 2007**



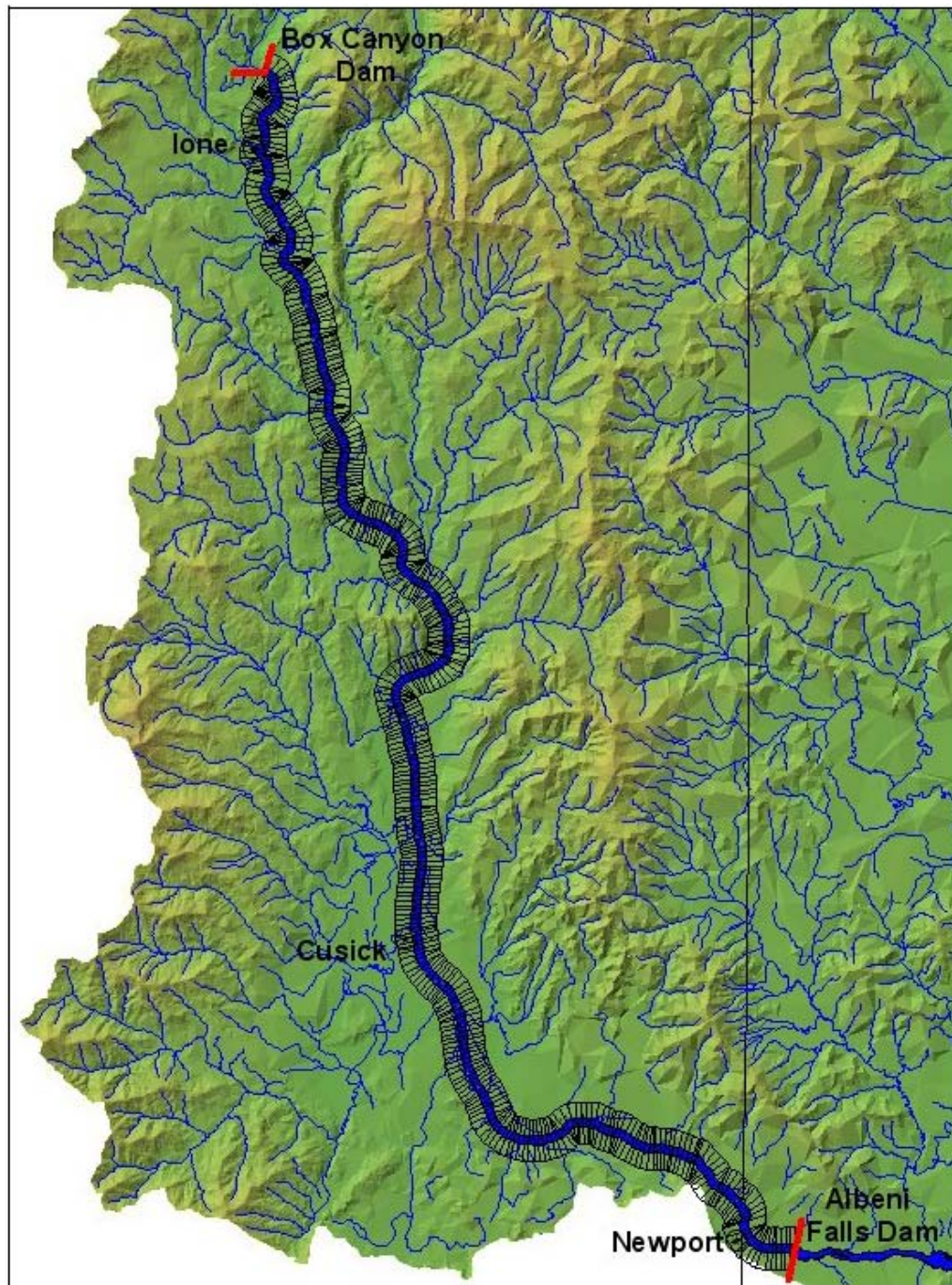
## ***Pend Oreille River Temperature TMDL: Box Canyon Dam Modeling***



### ➤ Introduction

#### ▪ *How we got here...*

- Model developed by Pend Oreille PUD for relicensing
  - ✧ 1997-98 conditions
- Ecology collected water temperatures 2004
- Portland State University calibrated a model
  - ✧ Presented at January WAG
- Eight scenarios provided to Ecology
  - ✧ 2004-05 conditions
  - ✧ Draft report just completed





## ***Pend Oreille River Temperature TMDL: Box Canyon Dam Modeling***



### ➤ Introduction

- *What you will see today...*
  - Preliminary results from 8 TMDL scenarios
  - Daily maximum at key locations over time
  - Length of reservoir on August 24, 2004
    - ✧ Summer day with large differences between runs
    - ✧ Daily maximum and daily average
- *What you will not see today...*
  - Final Results of modeling (more review needed)
  - Analysis of compliance with standards
  - TMDL and allocations



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### ➤ Introduction

#### ▪ *Maximums and averages*

- Standards based on the one-day maximum temperature
- Model has 357 segments, upstream to downstream
- Each segment has multiple layers in water column
- Daily maximum is:
  - ✧ The maximum per segment (over the water column)
  - ✧ The maximum per day (midnight to midnight)
- Daily average provided for comparison
  - ✧ Volume-weighted over the water column
  - ✧ Average over each day



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## ➤ Summary of scenarios

**Summary of Box Canyon and Boundary Canyon Modeling Scenarios**

No.	Name	Upstream	Downstream Dam	NPDES	Tributaries	Mainstem shade
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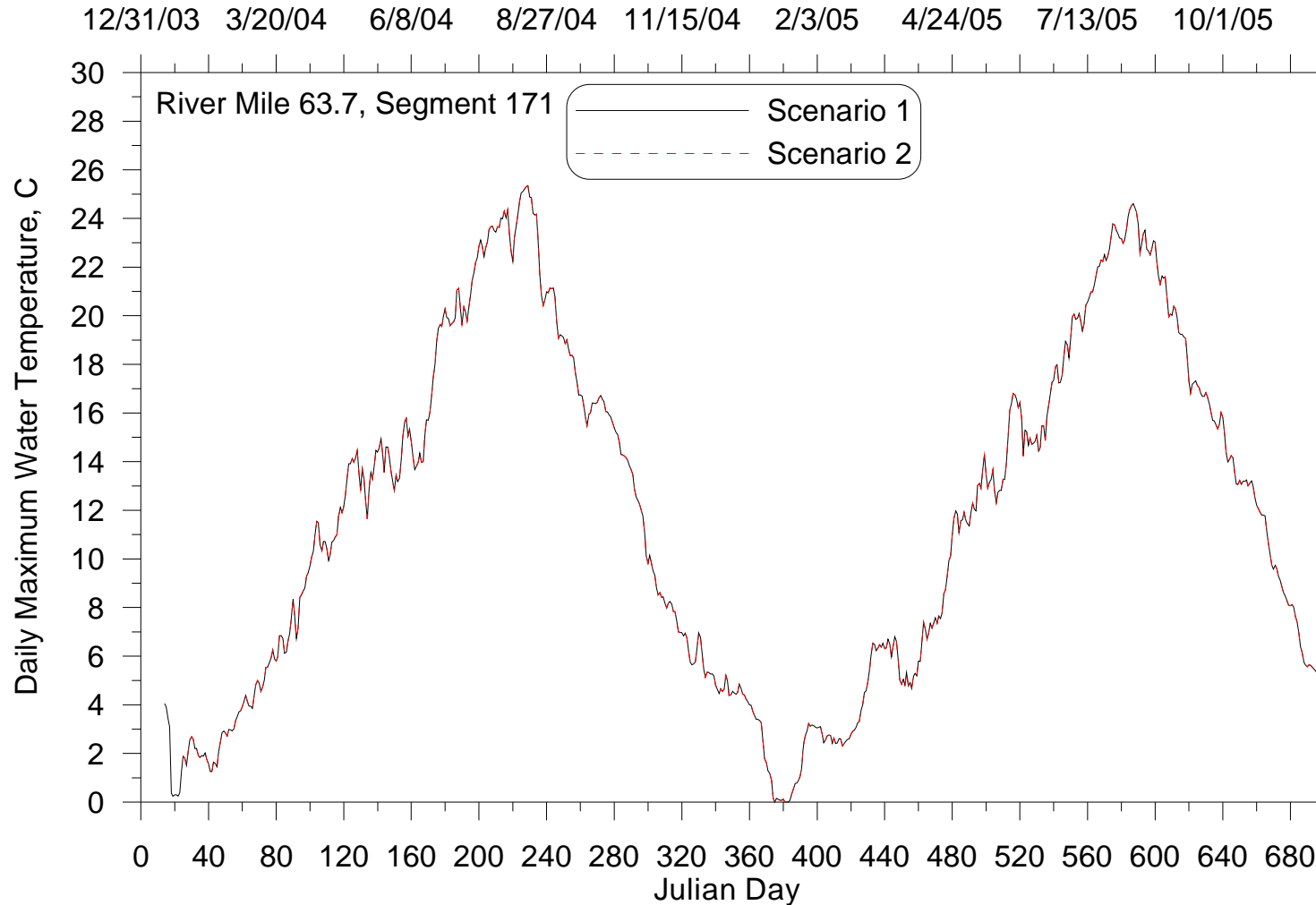
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Three NPDES point sources removed: Newport, PNP, & Ione



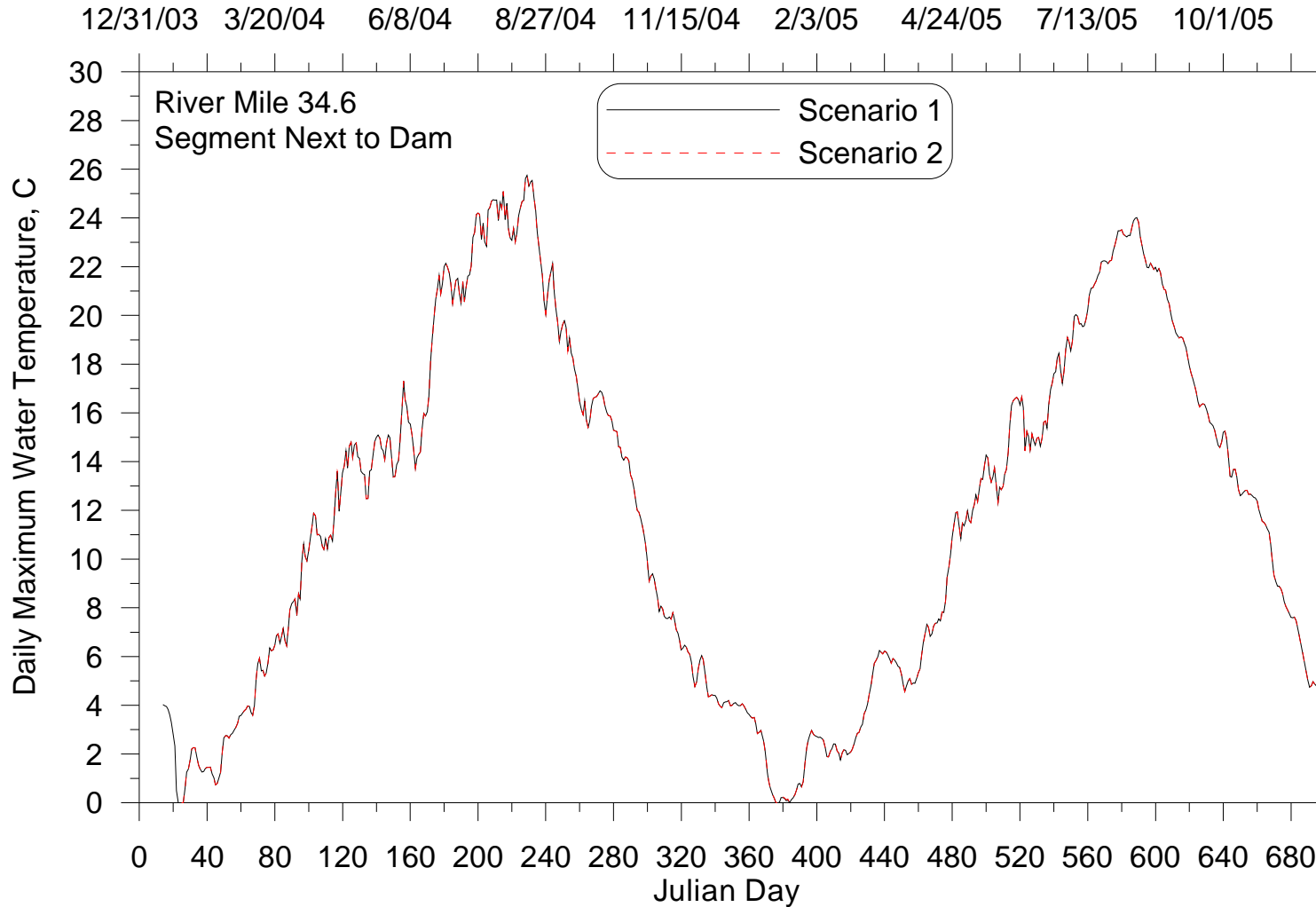
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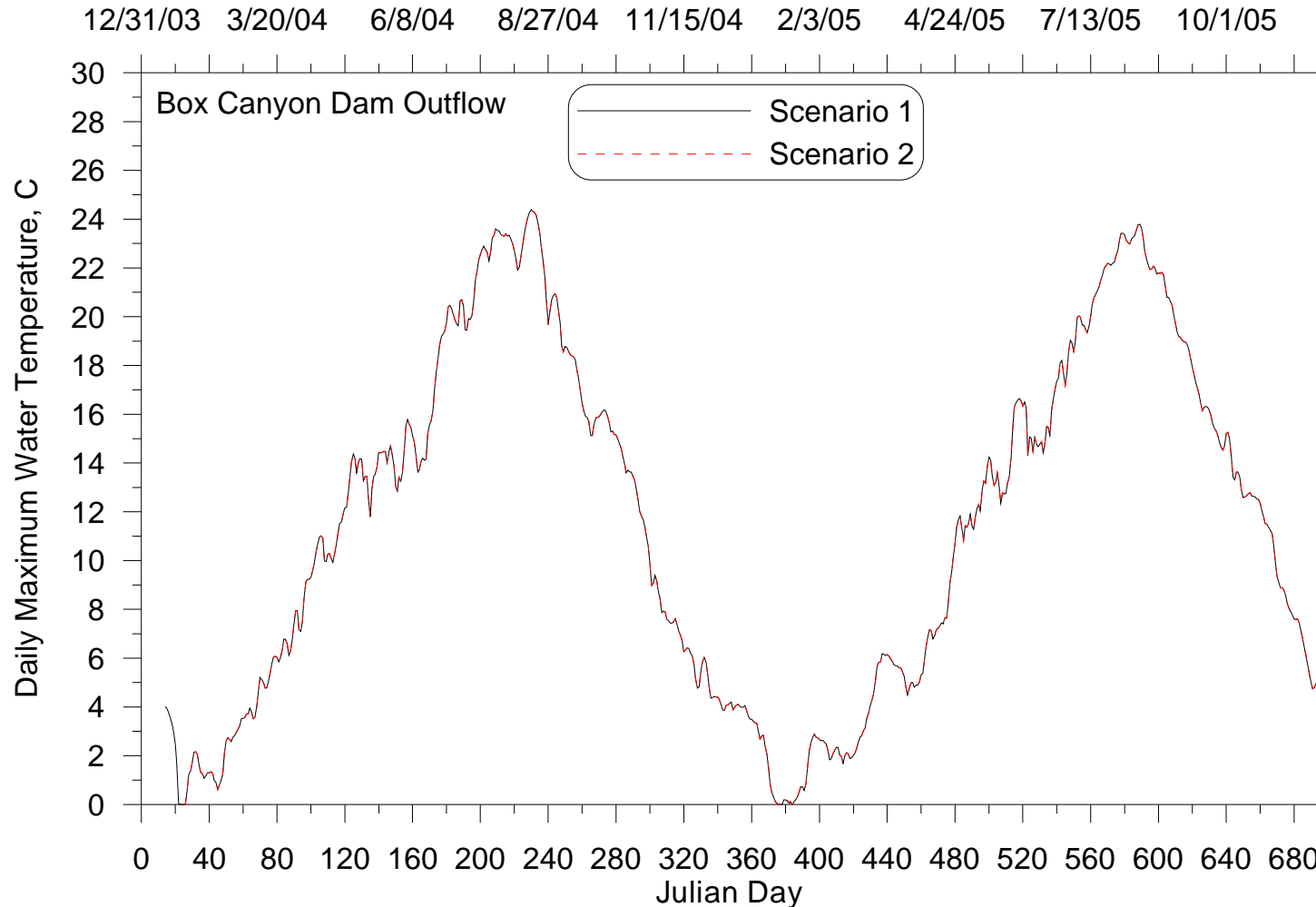


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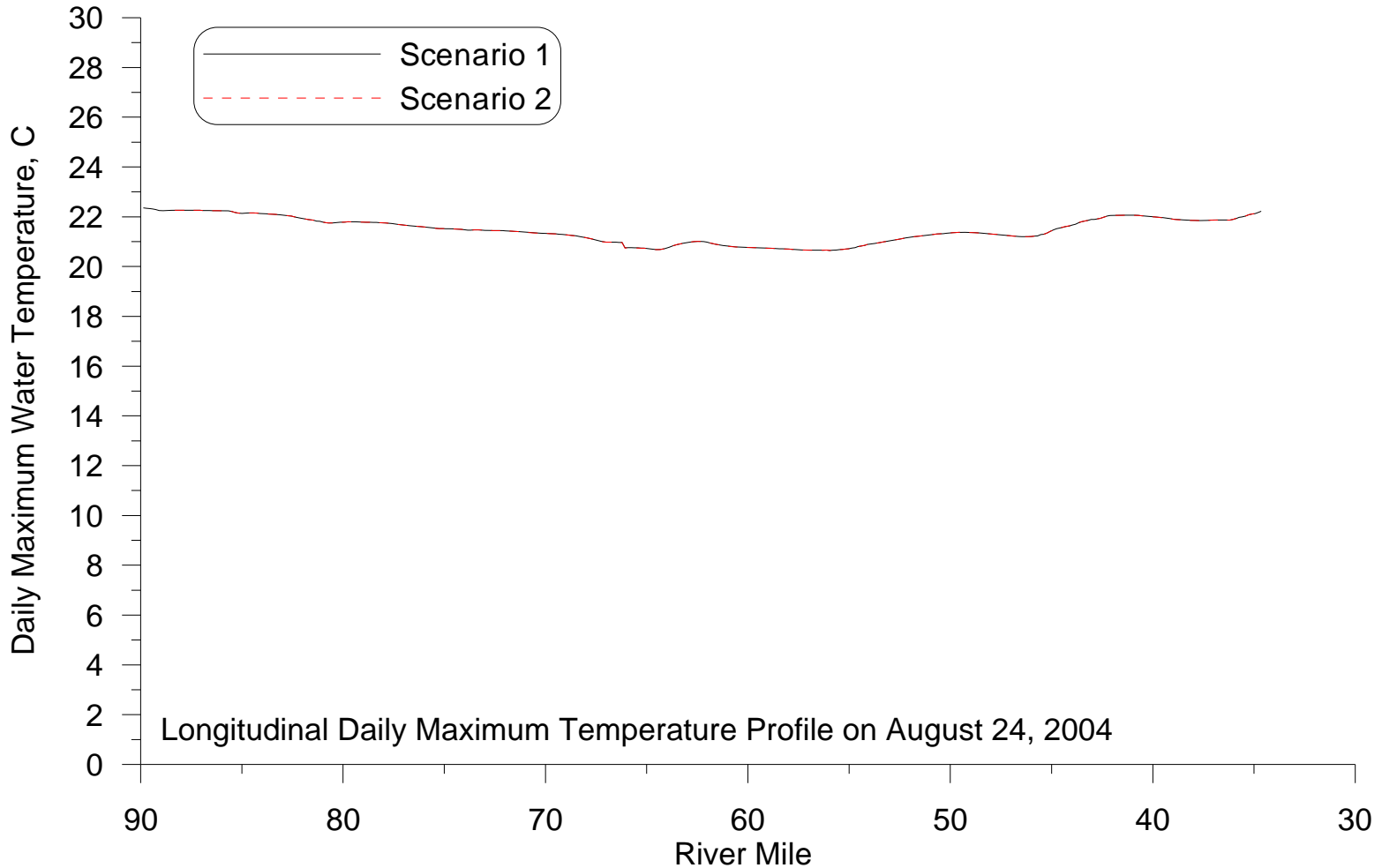


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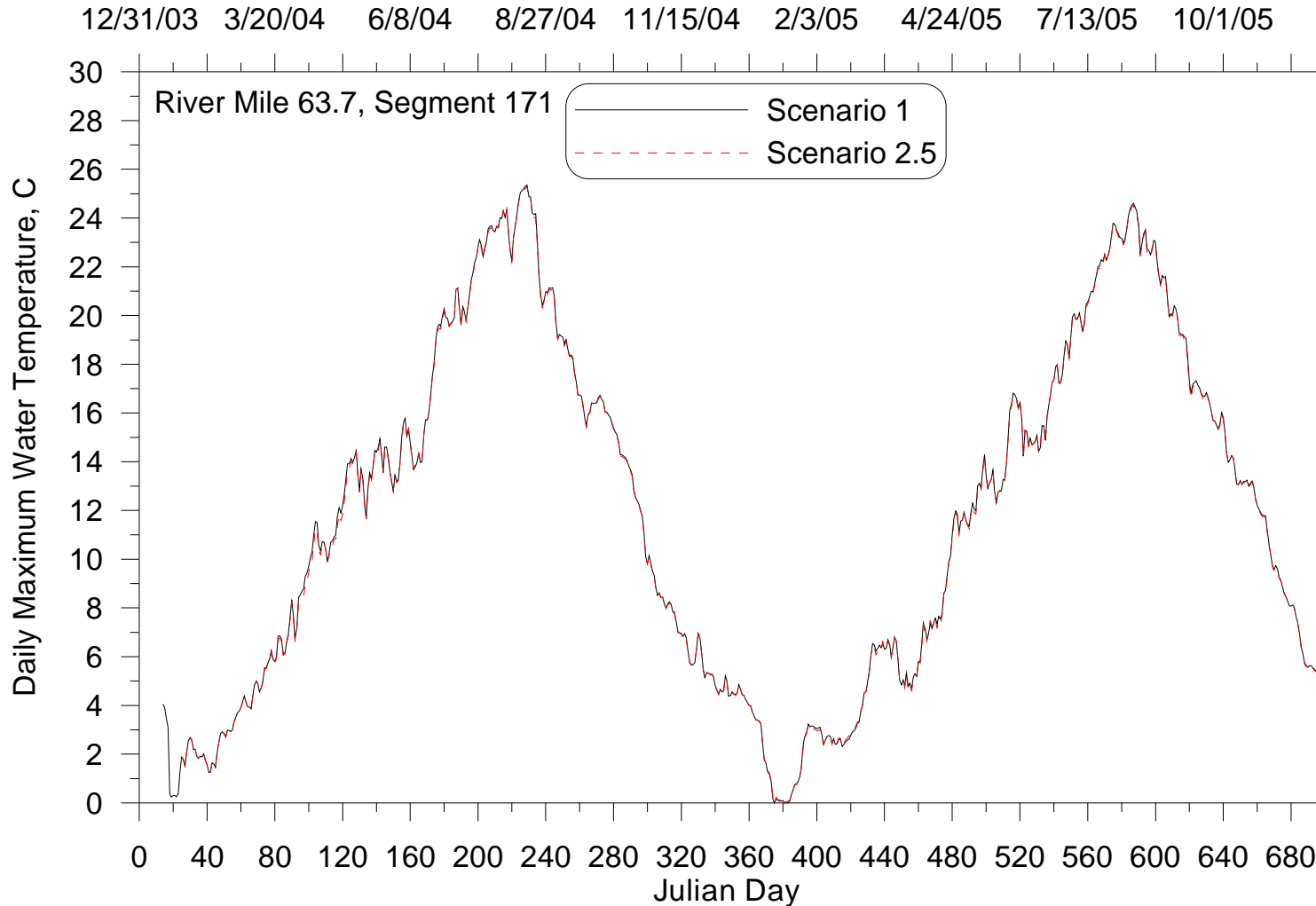
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Fifteen tributaries set to “natural” water temperatures (Potential Natural Vegetation)

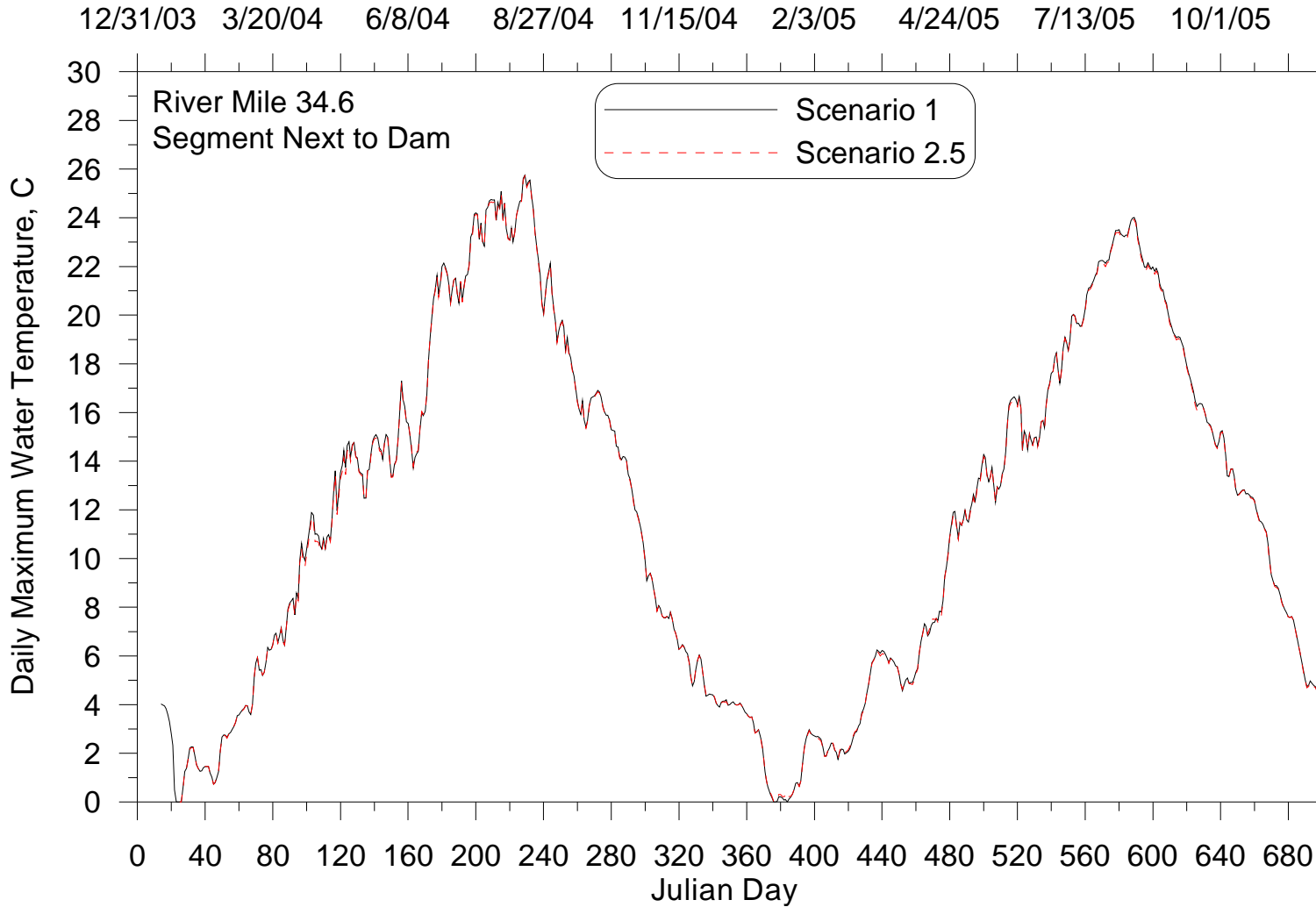


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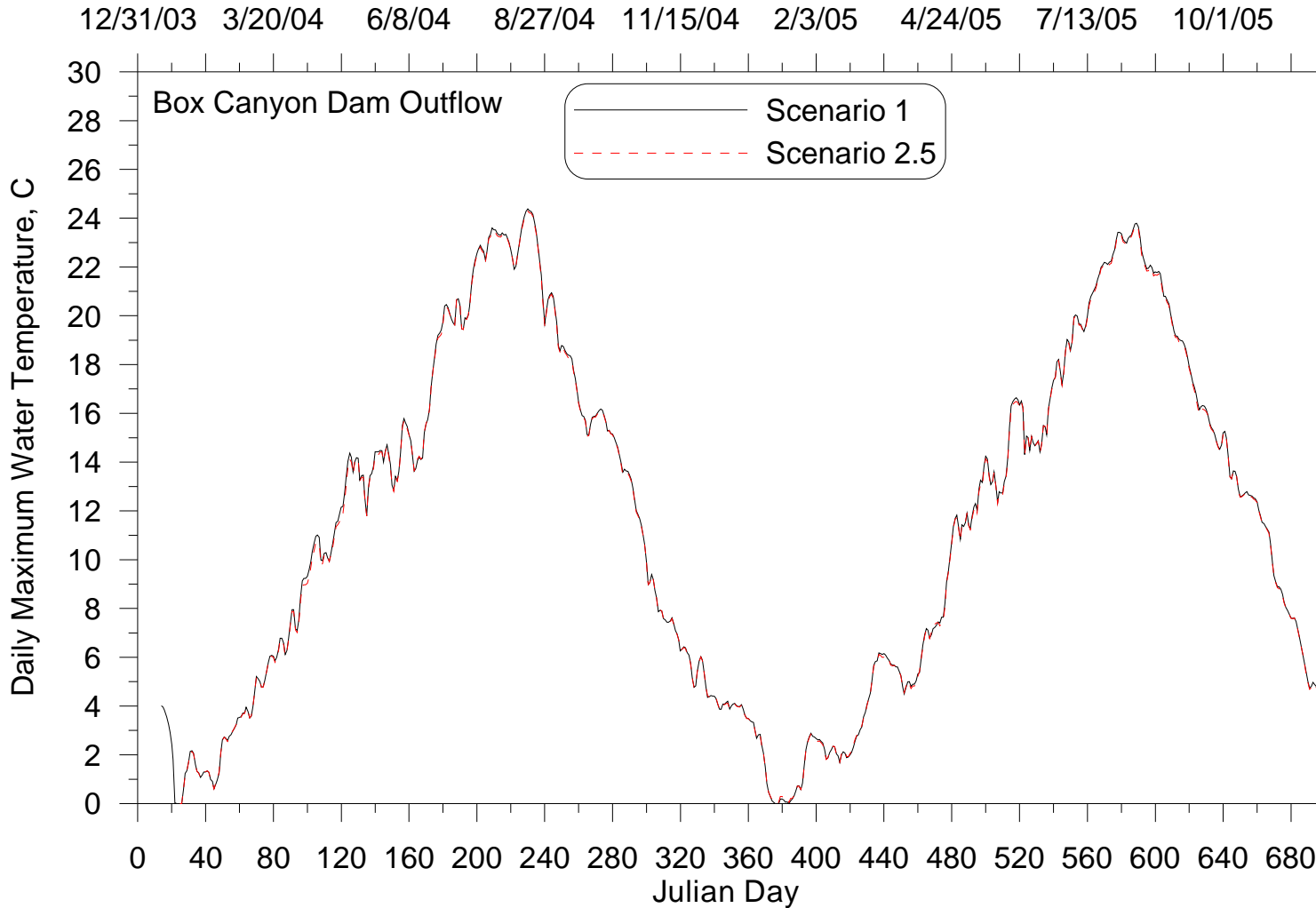


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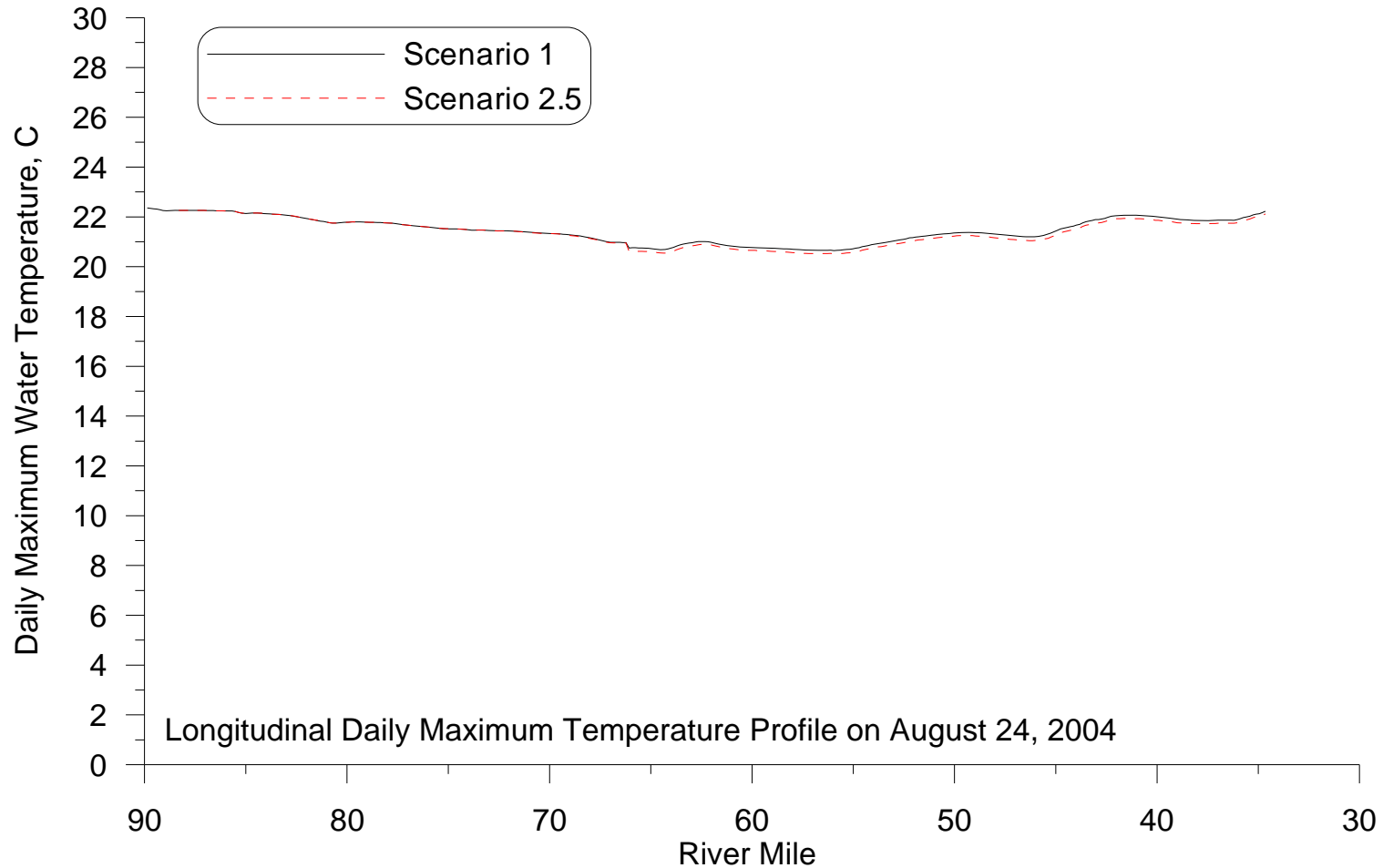


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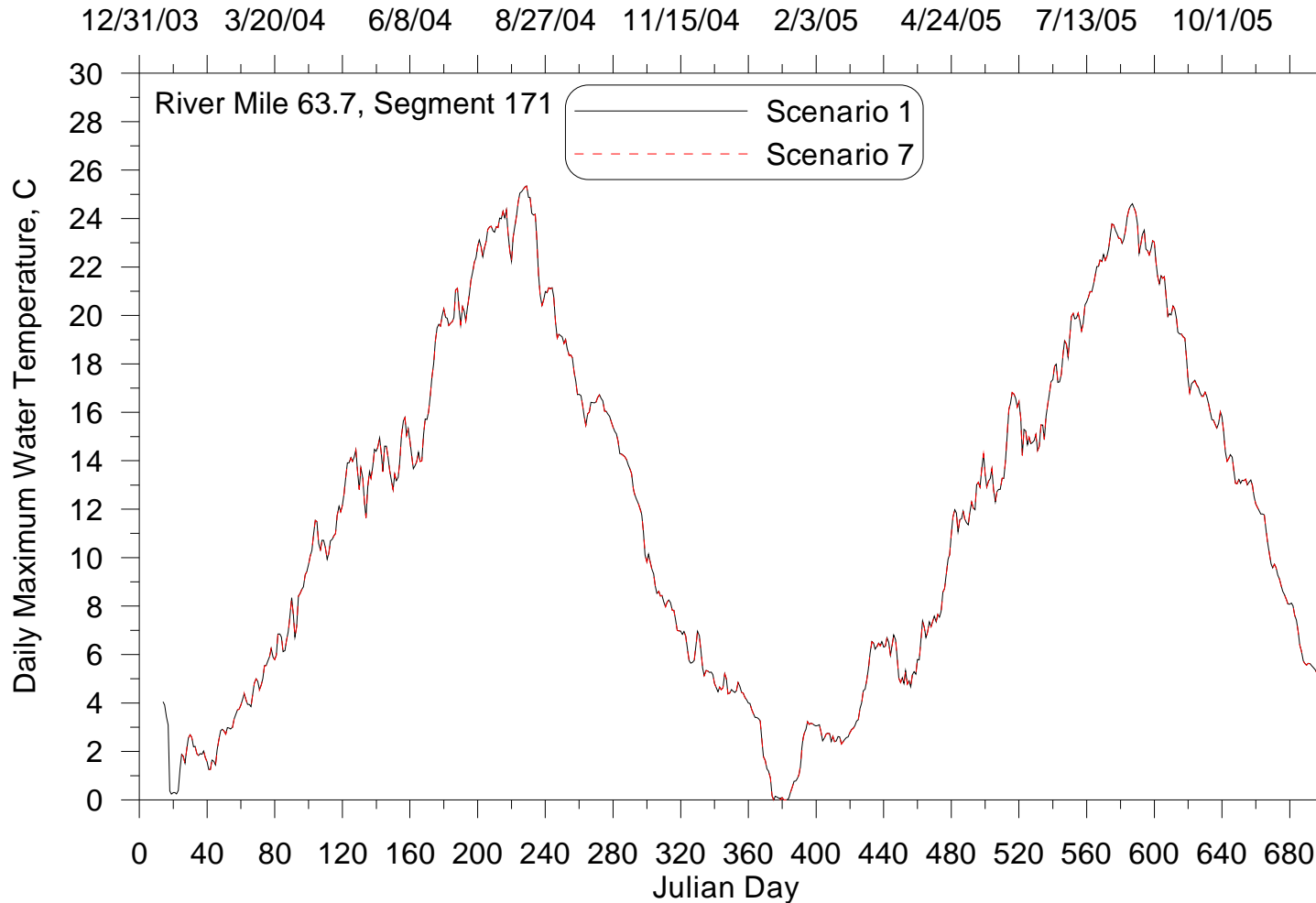
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Mainstem shade changed to Potential Natural Vegetation

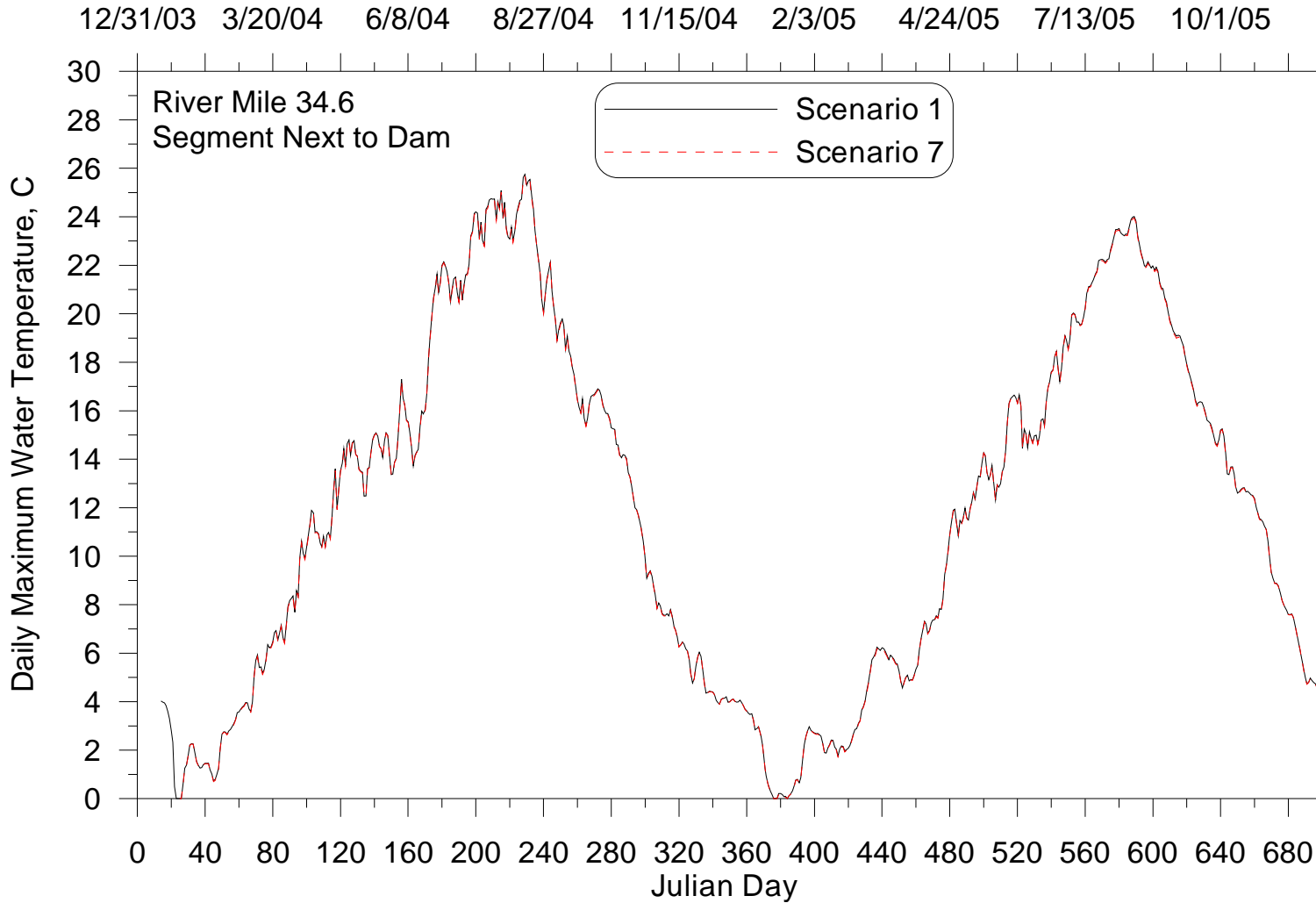


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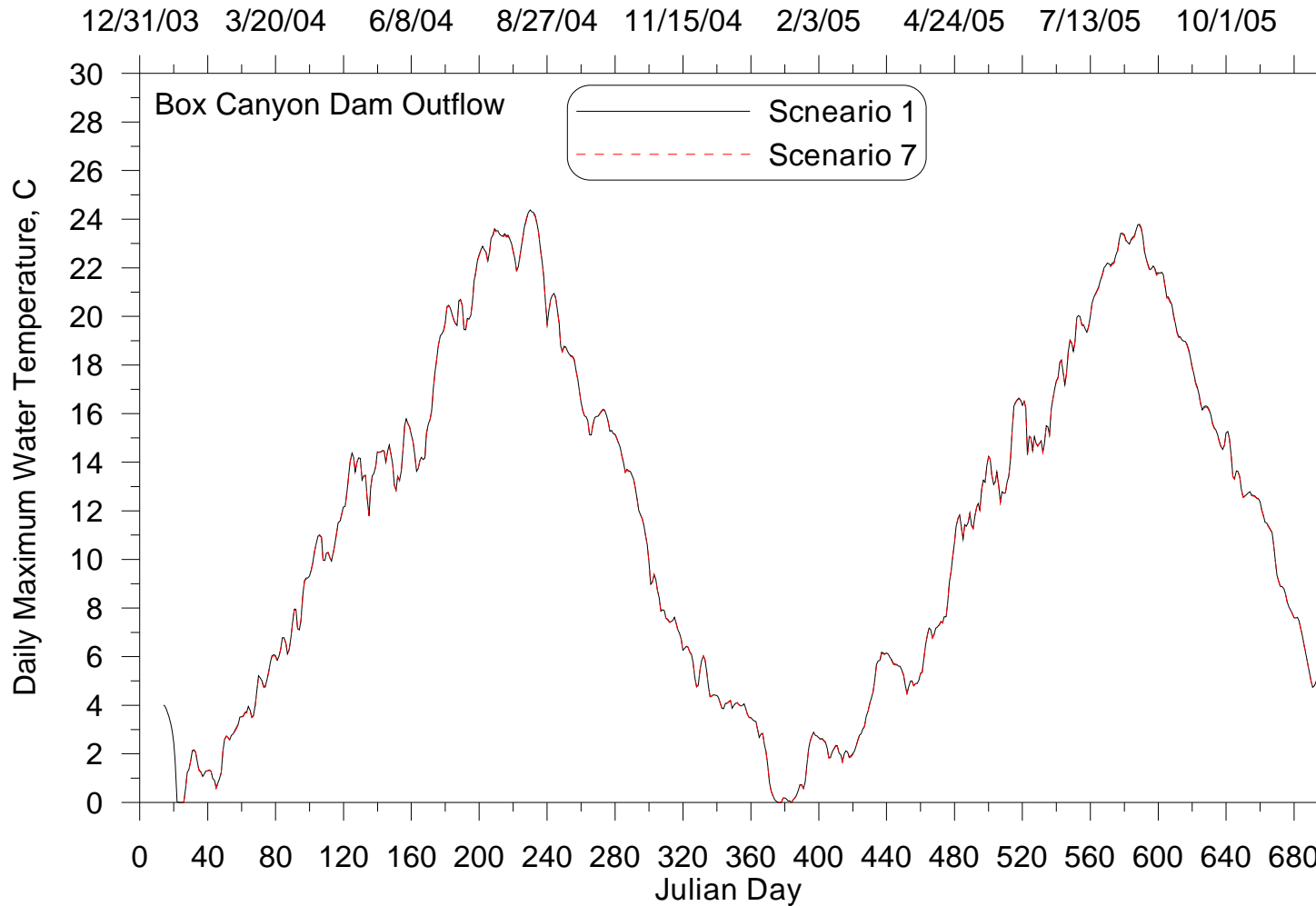


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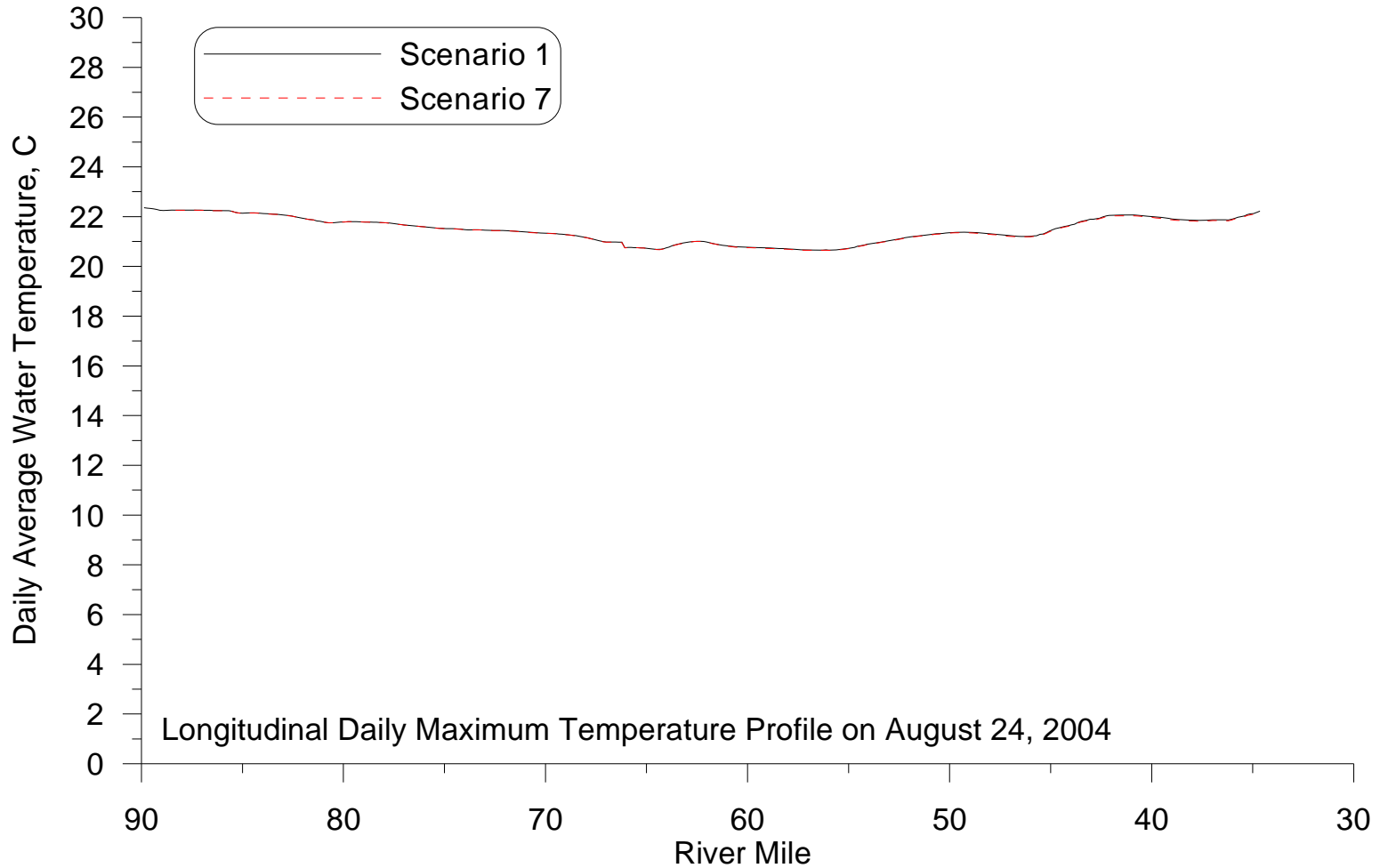


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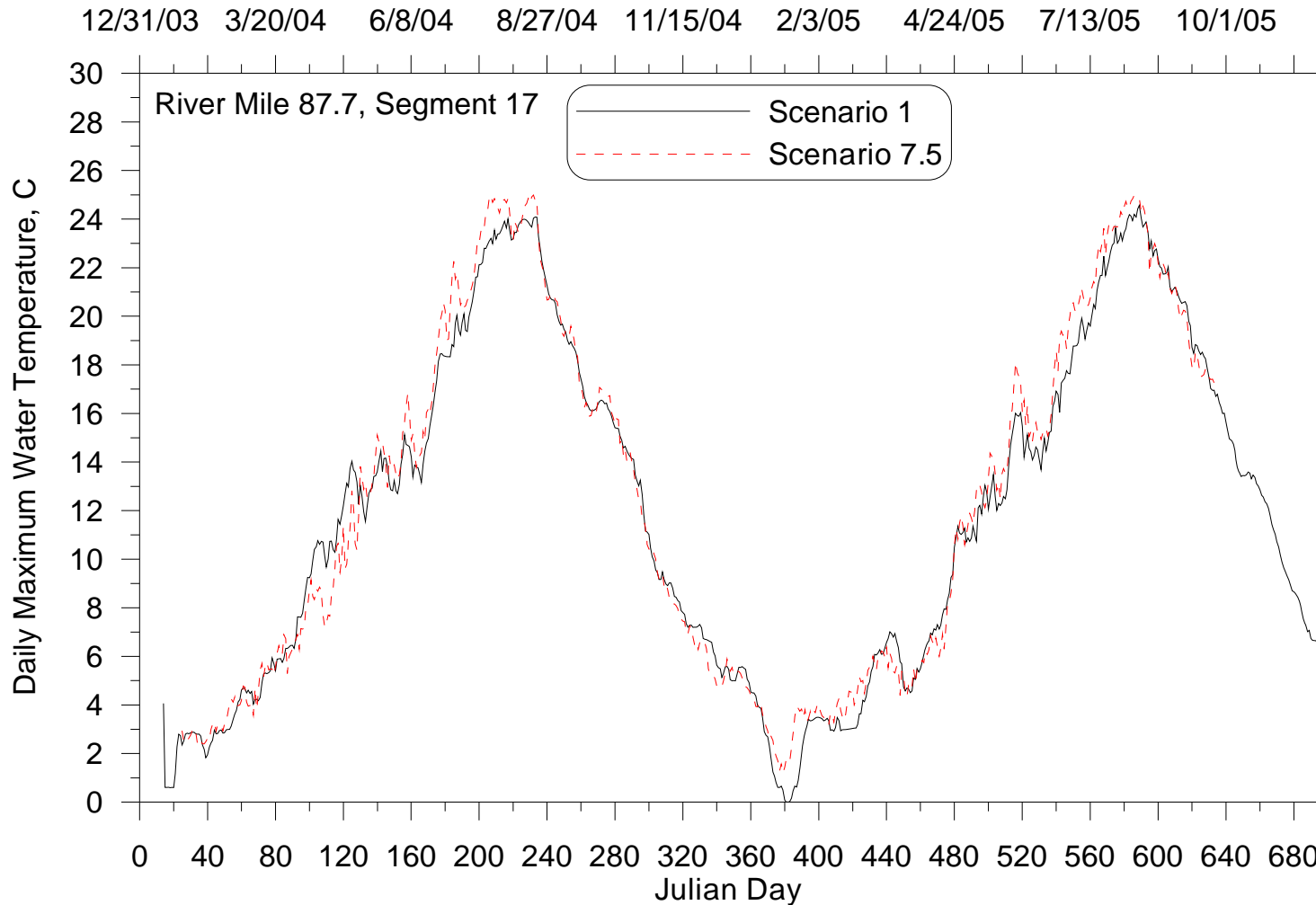
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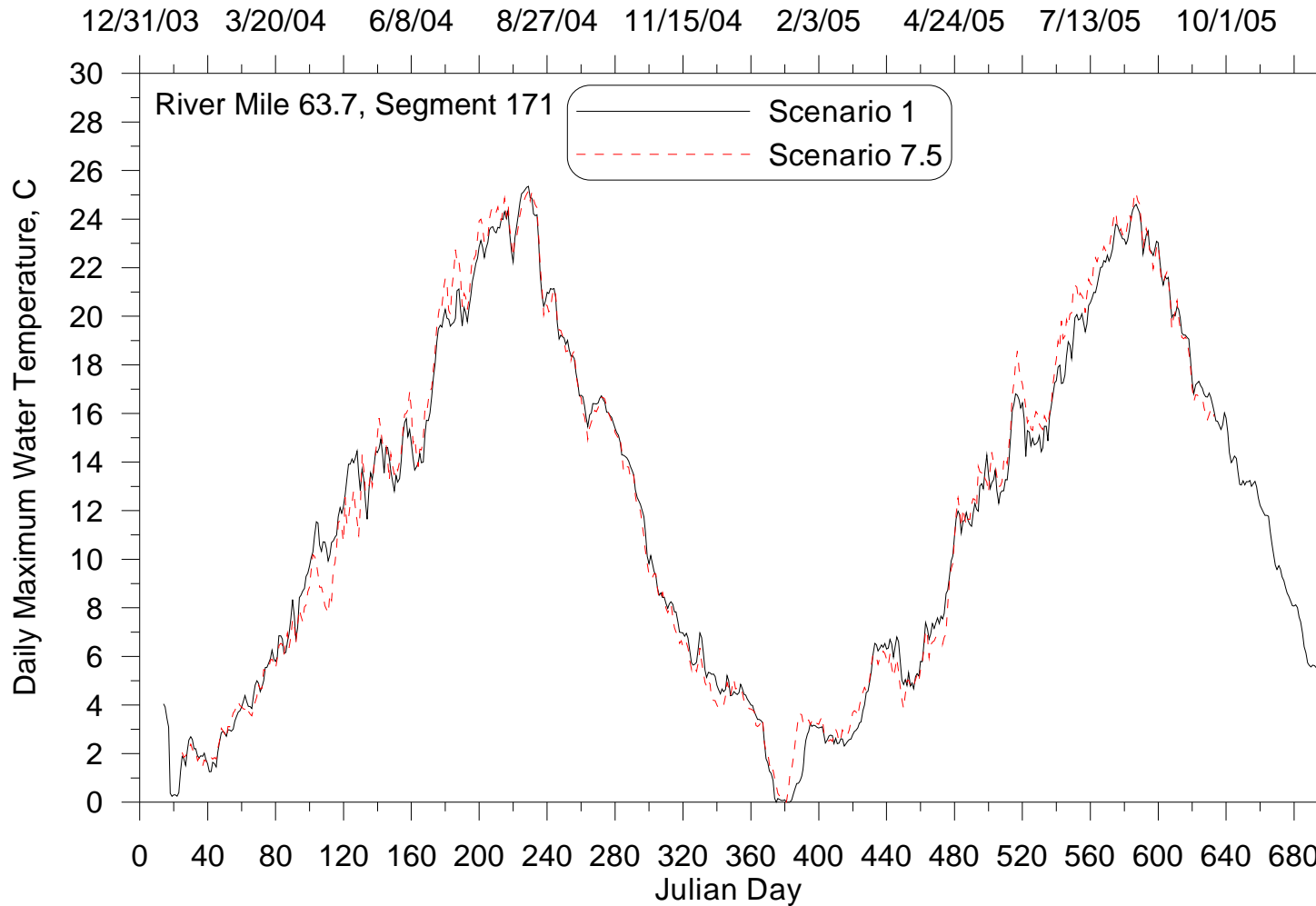


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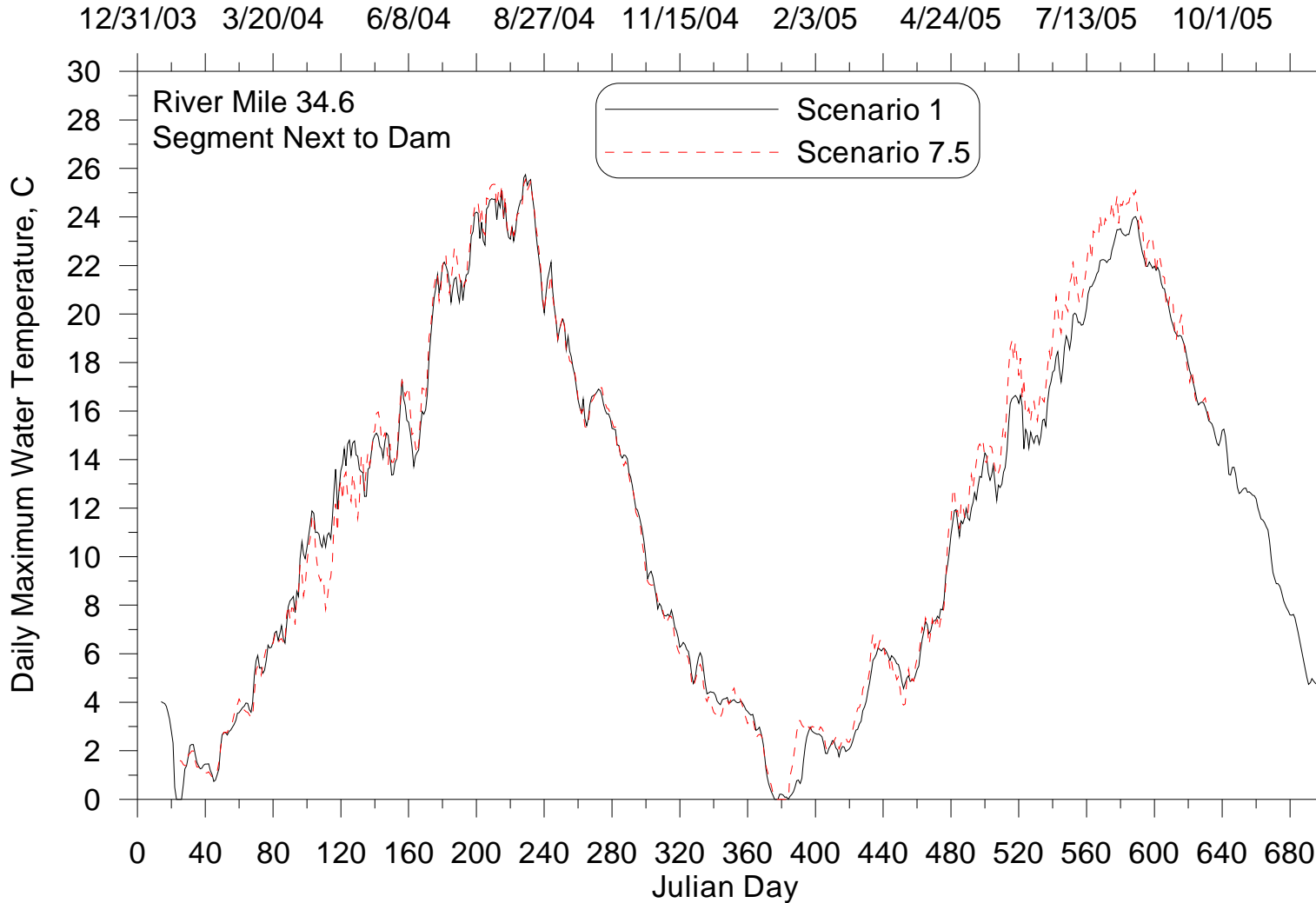
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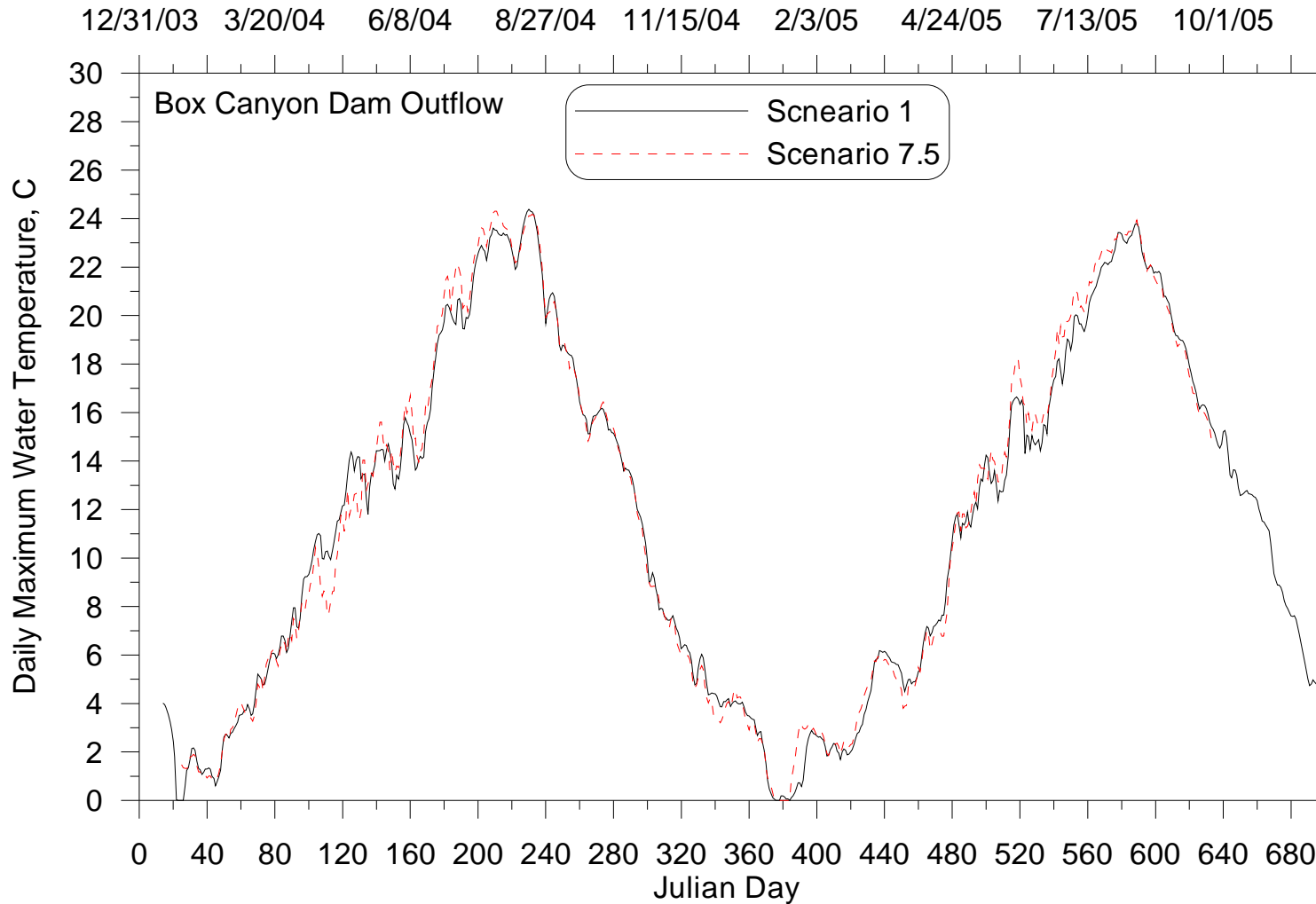


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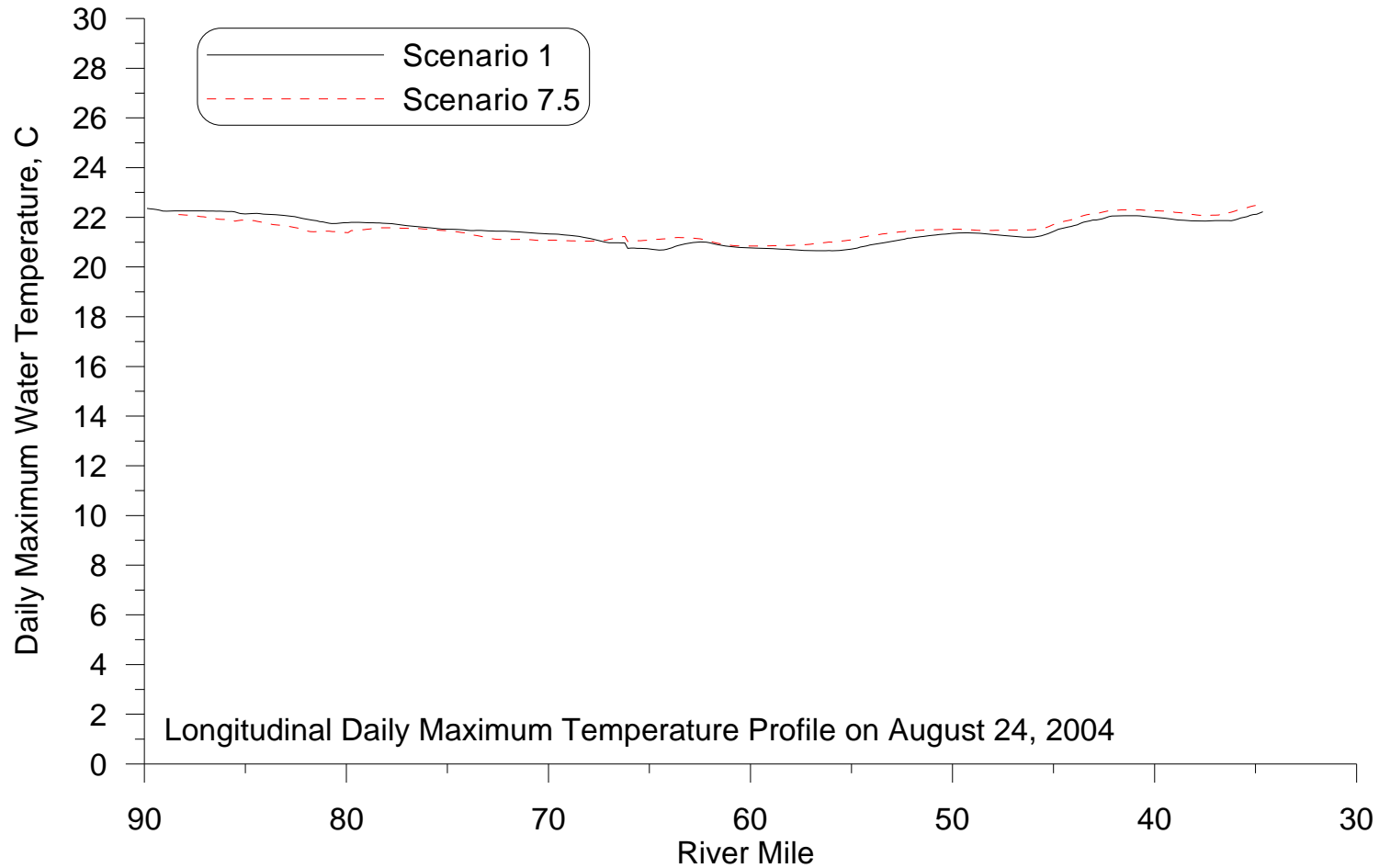


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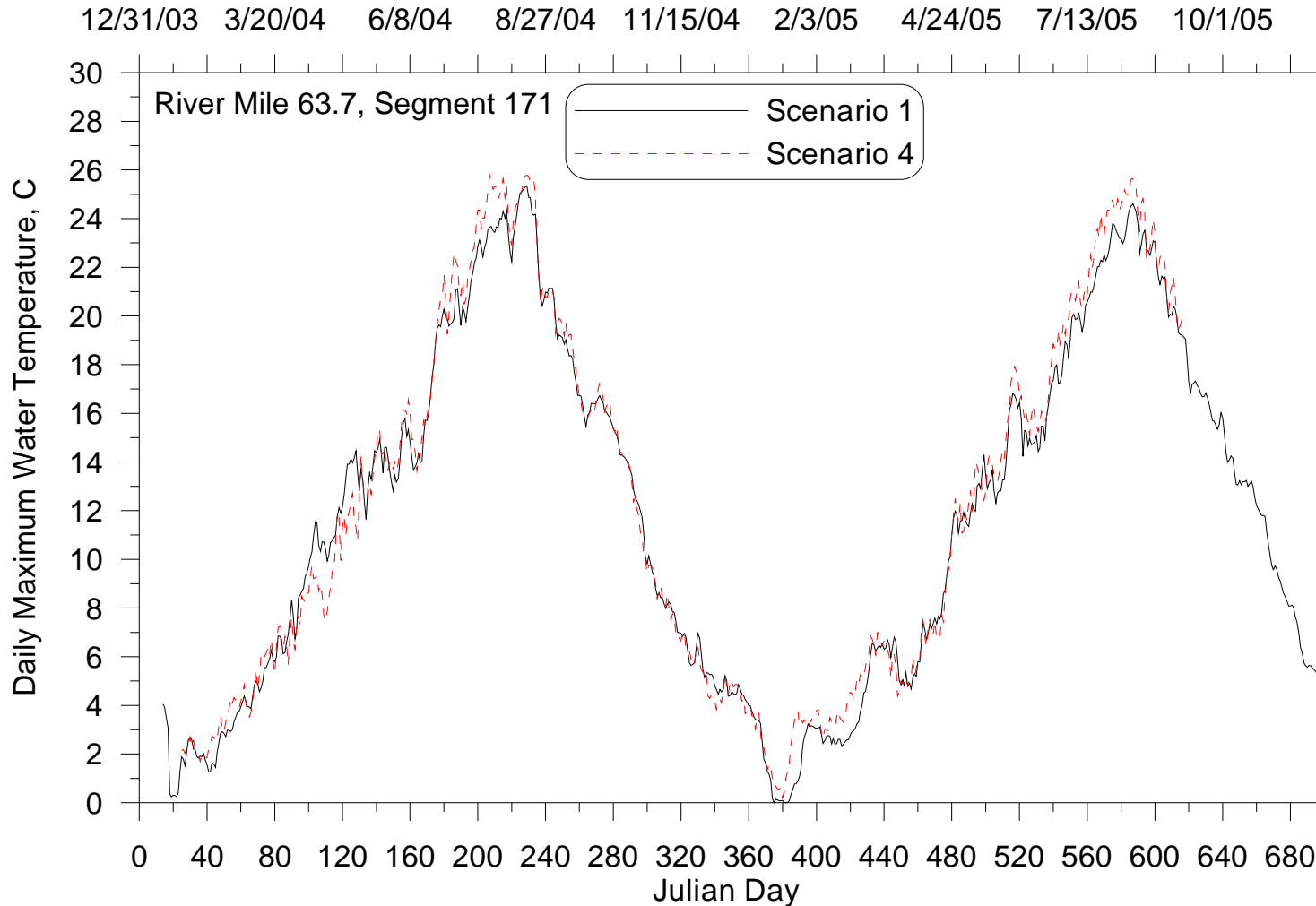
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All inputs at existing levels except downstream dam absent

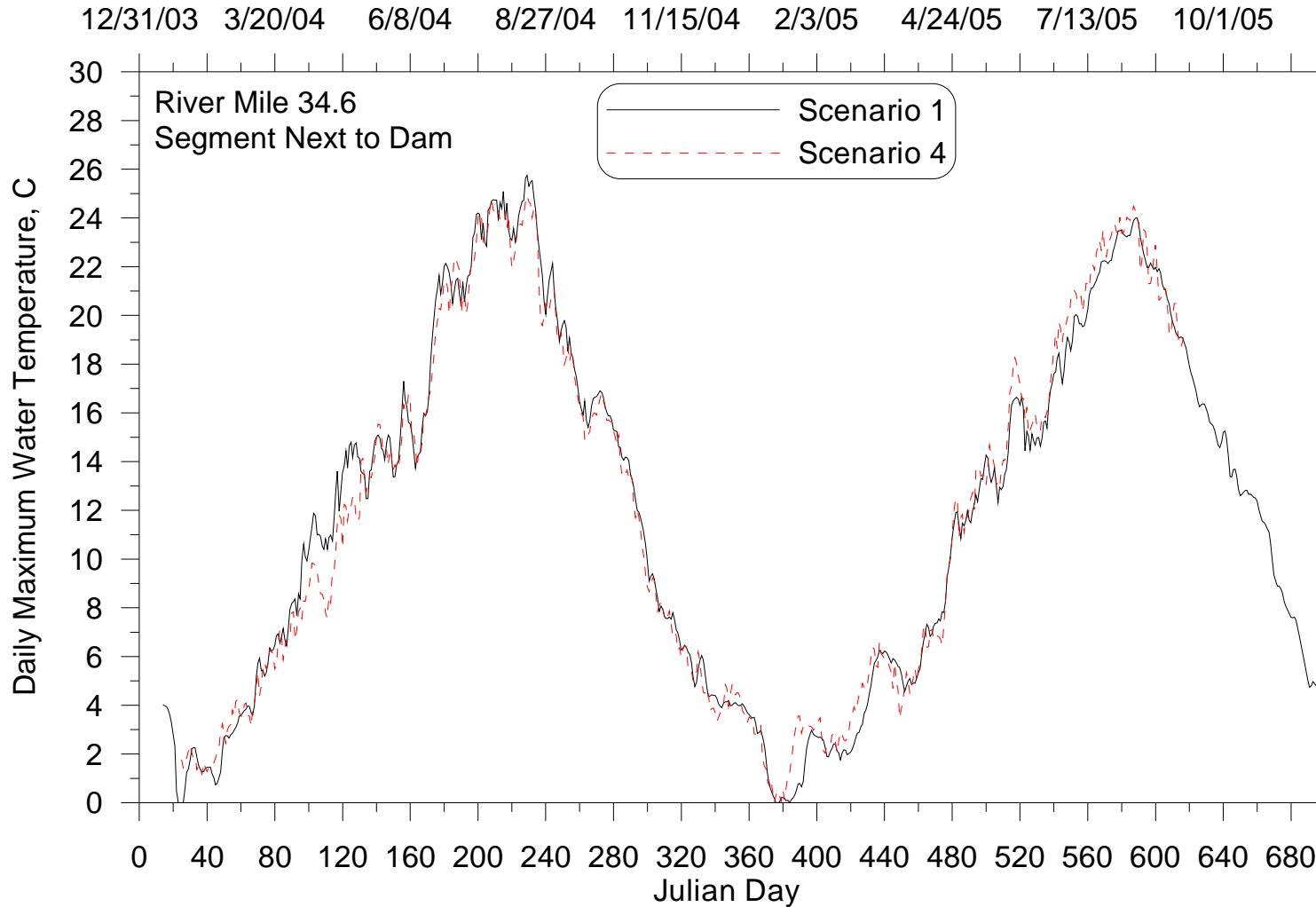


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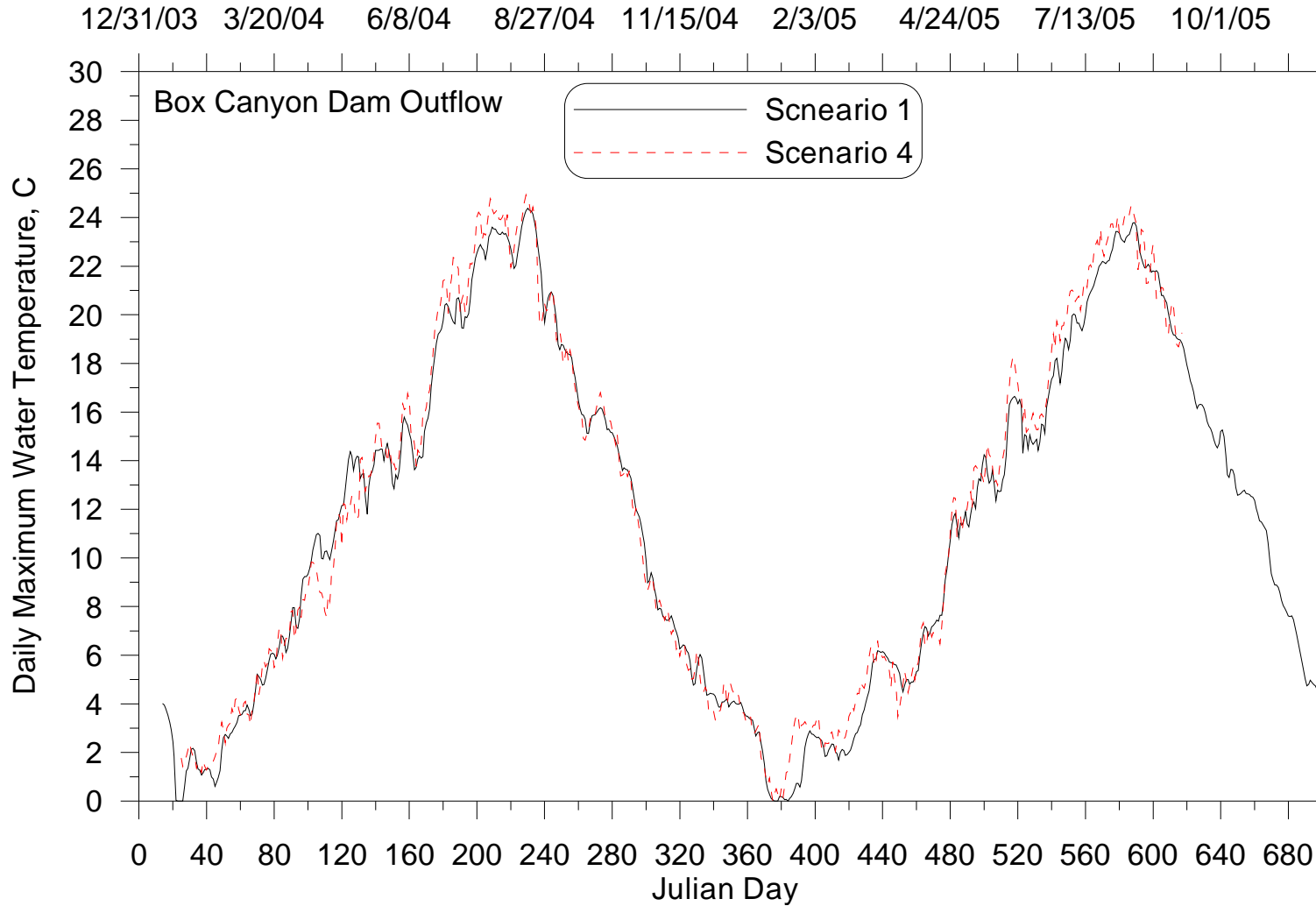


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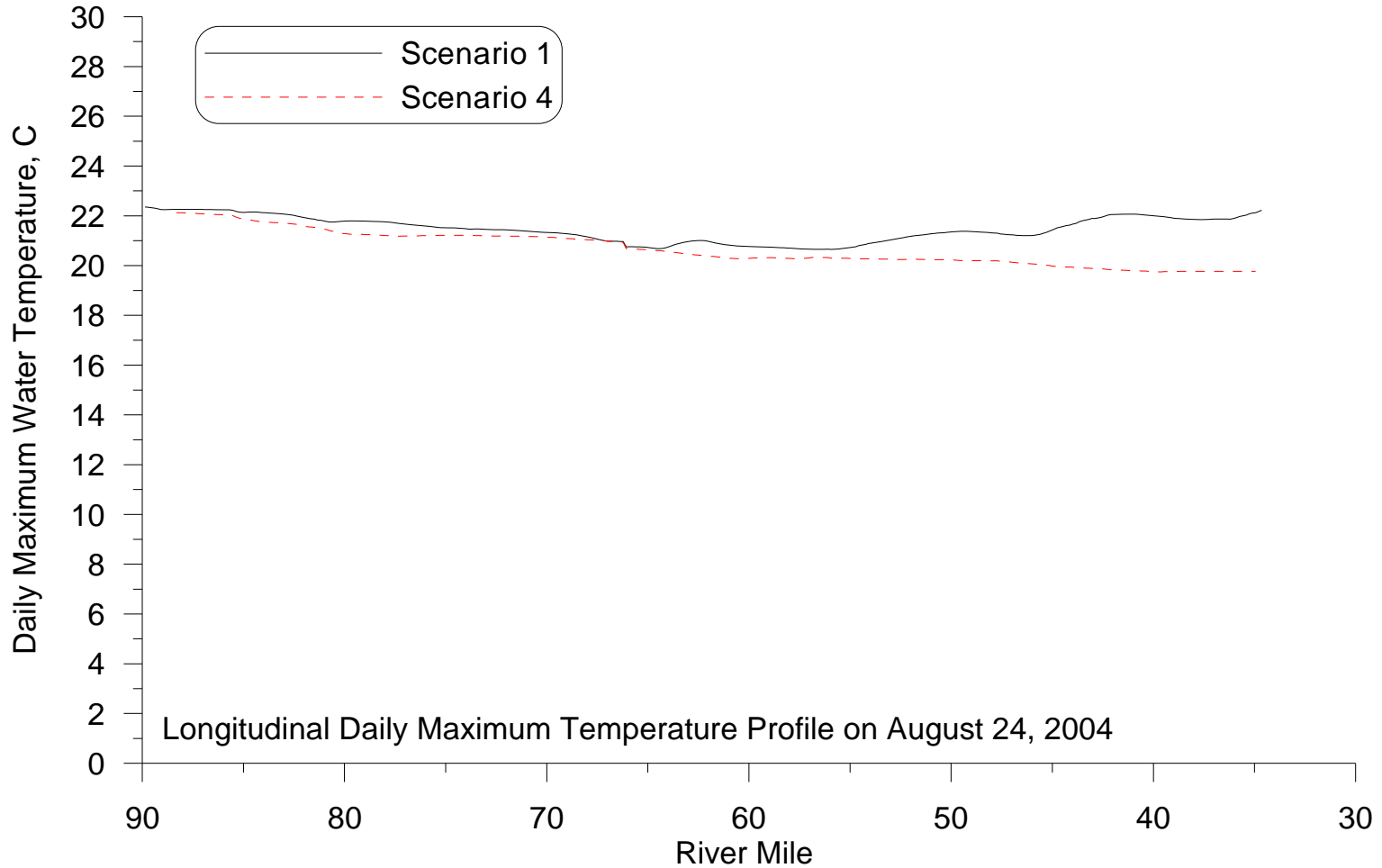


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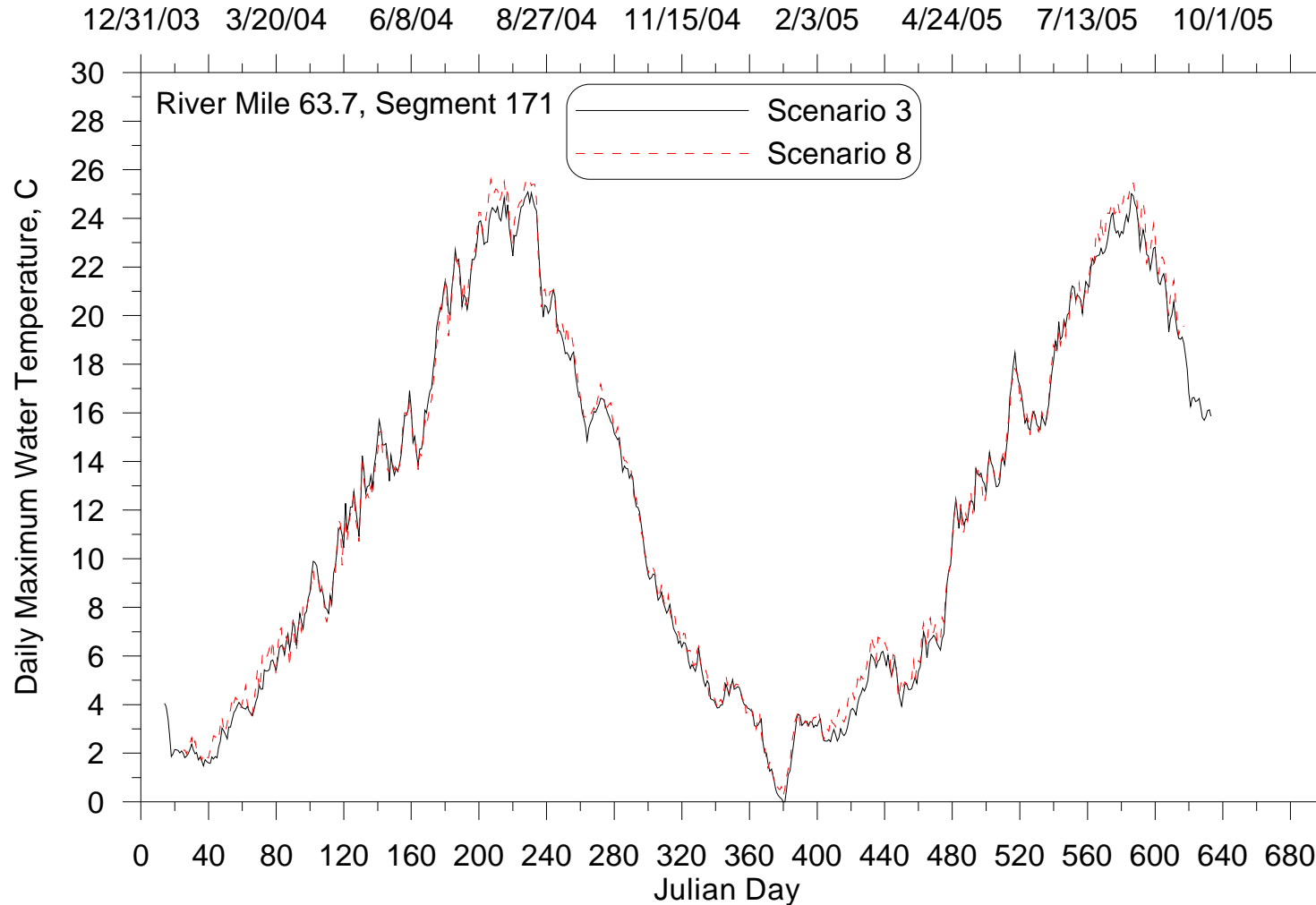
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All inputs natural except downstream dam present

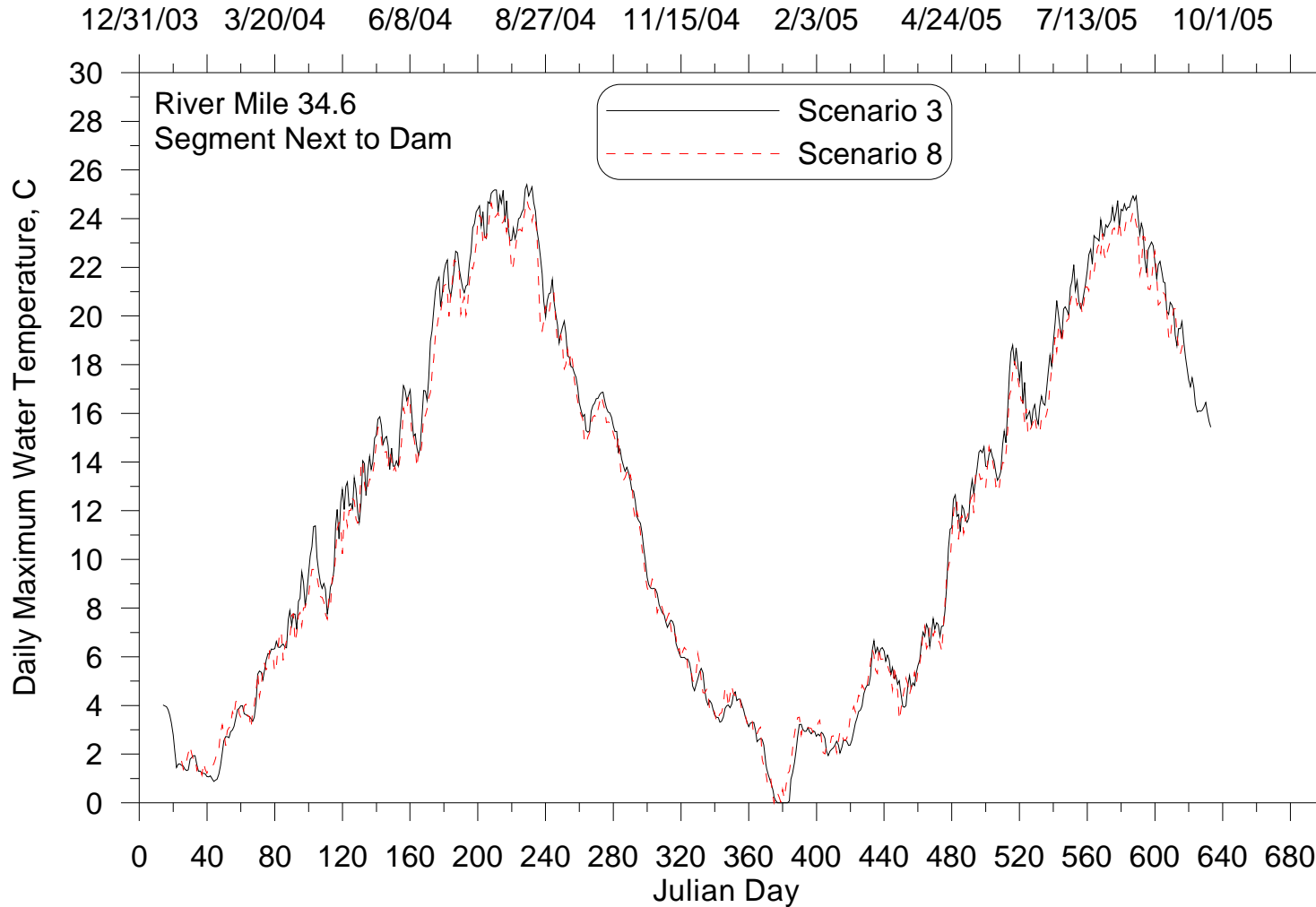


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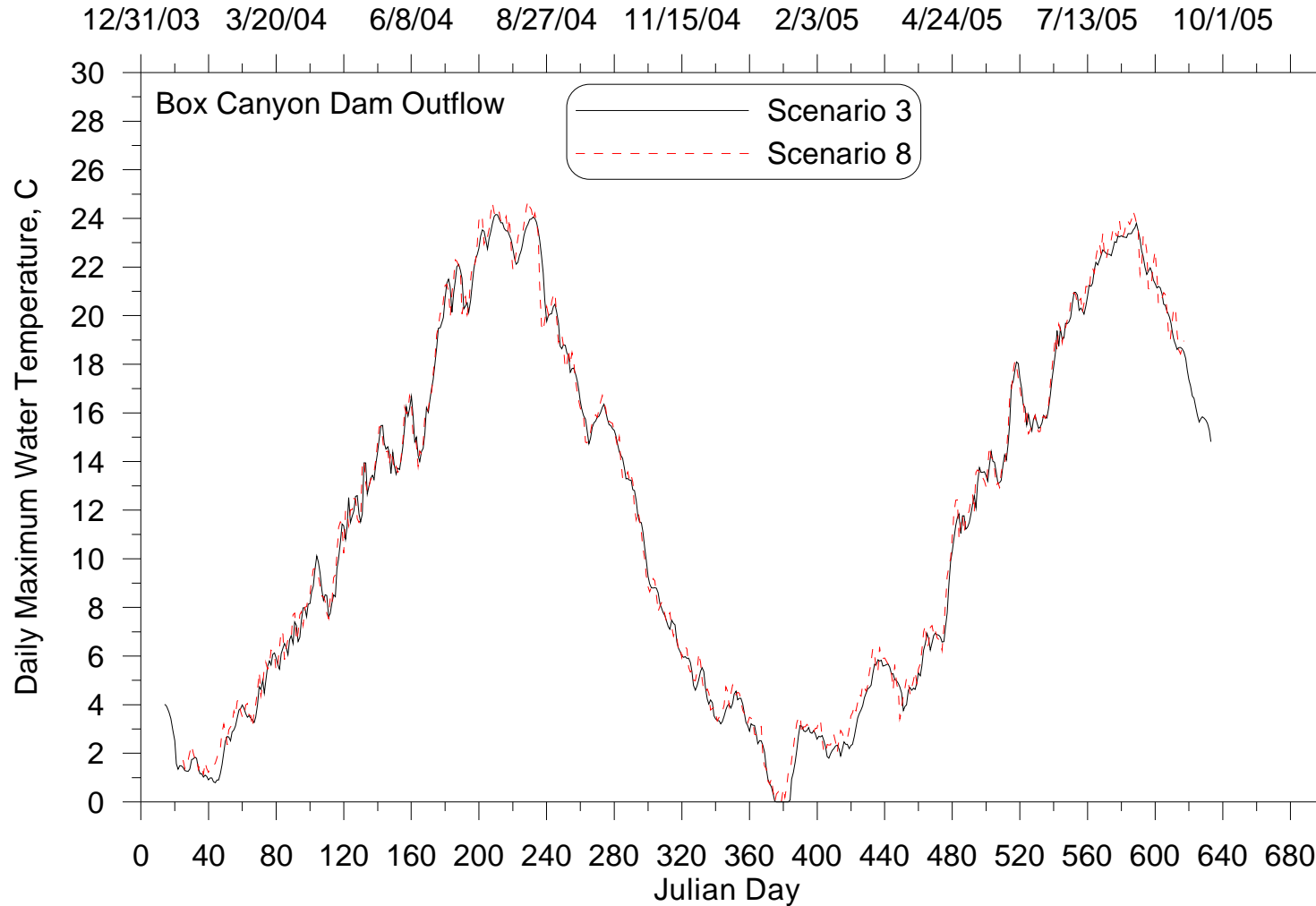


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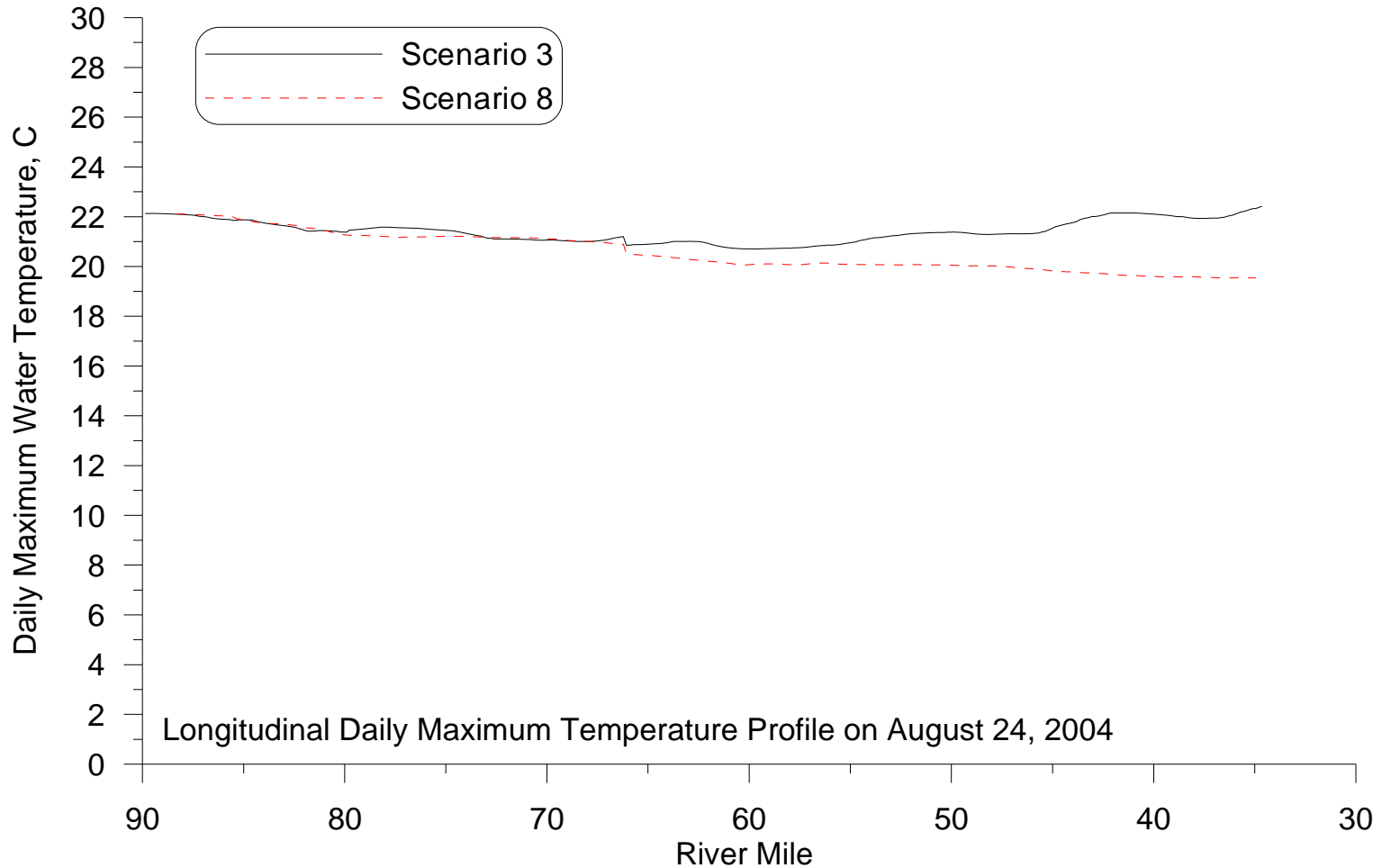


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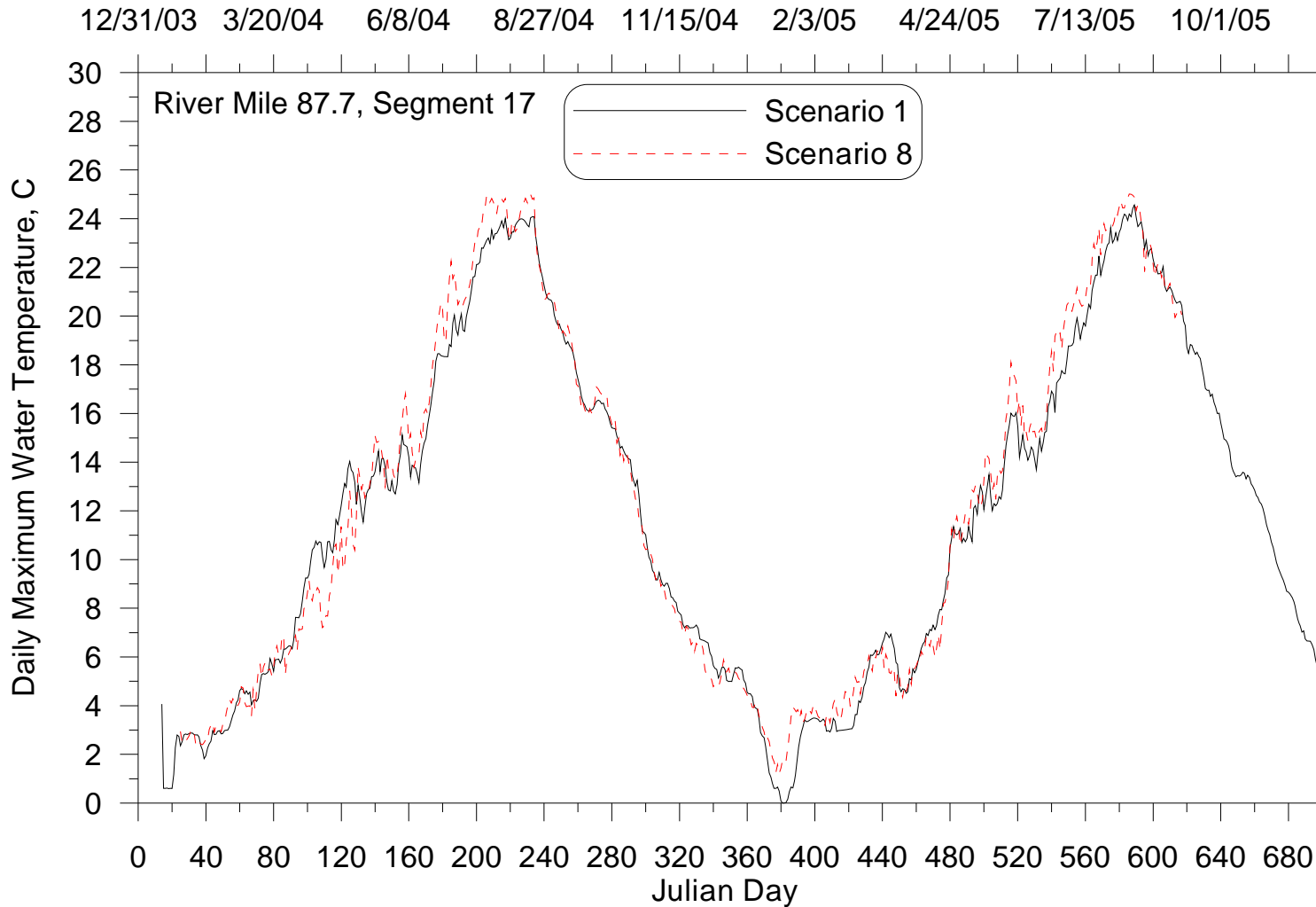
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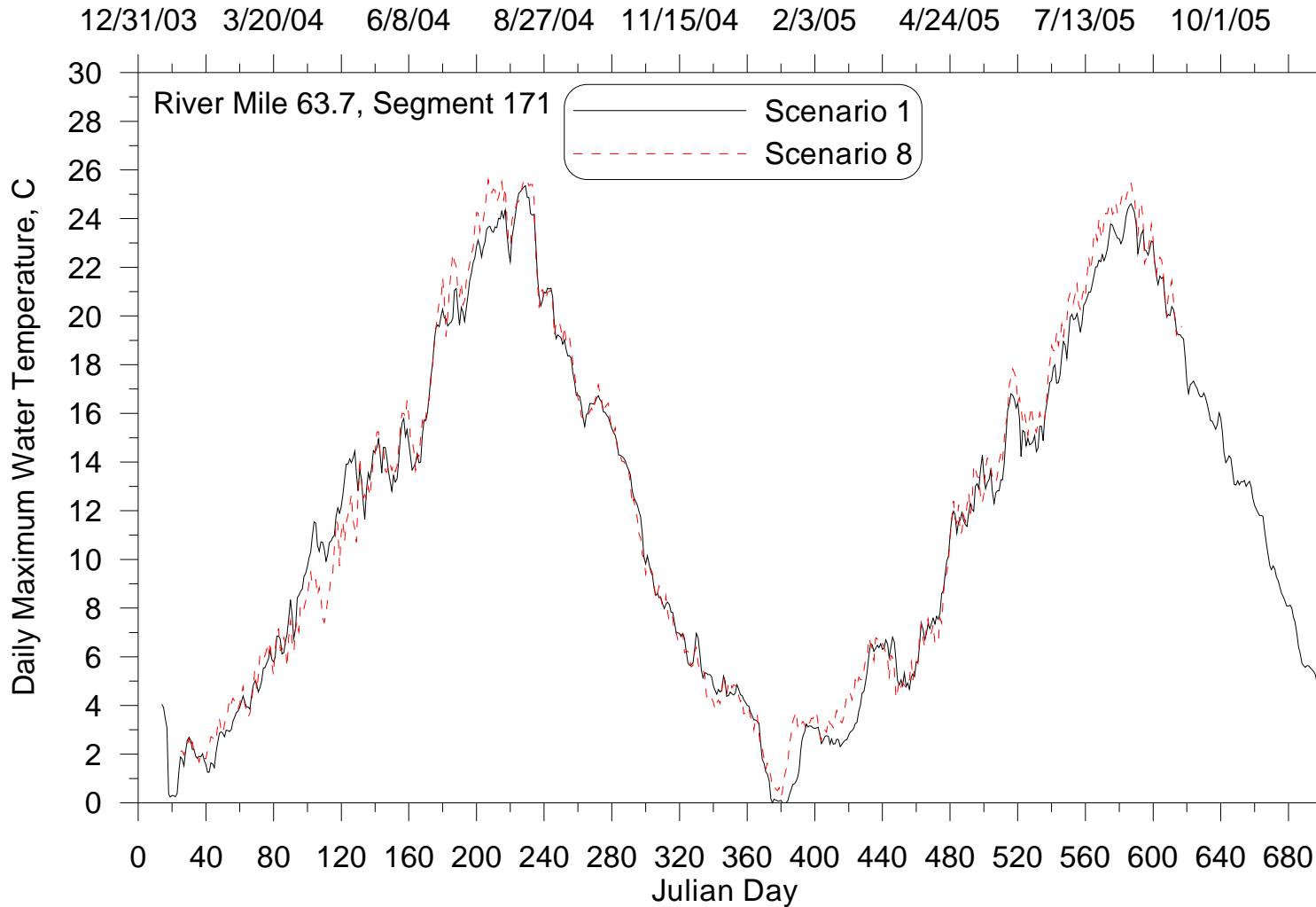


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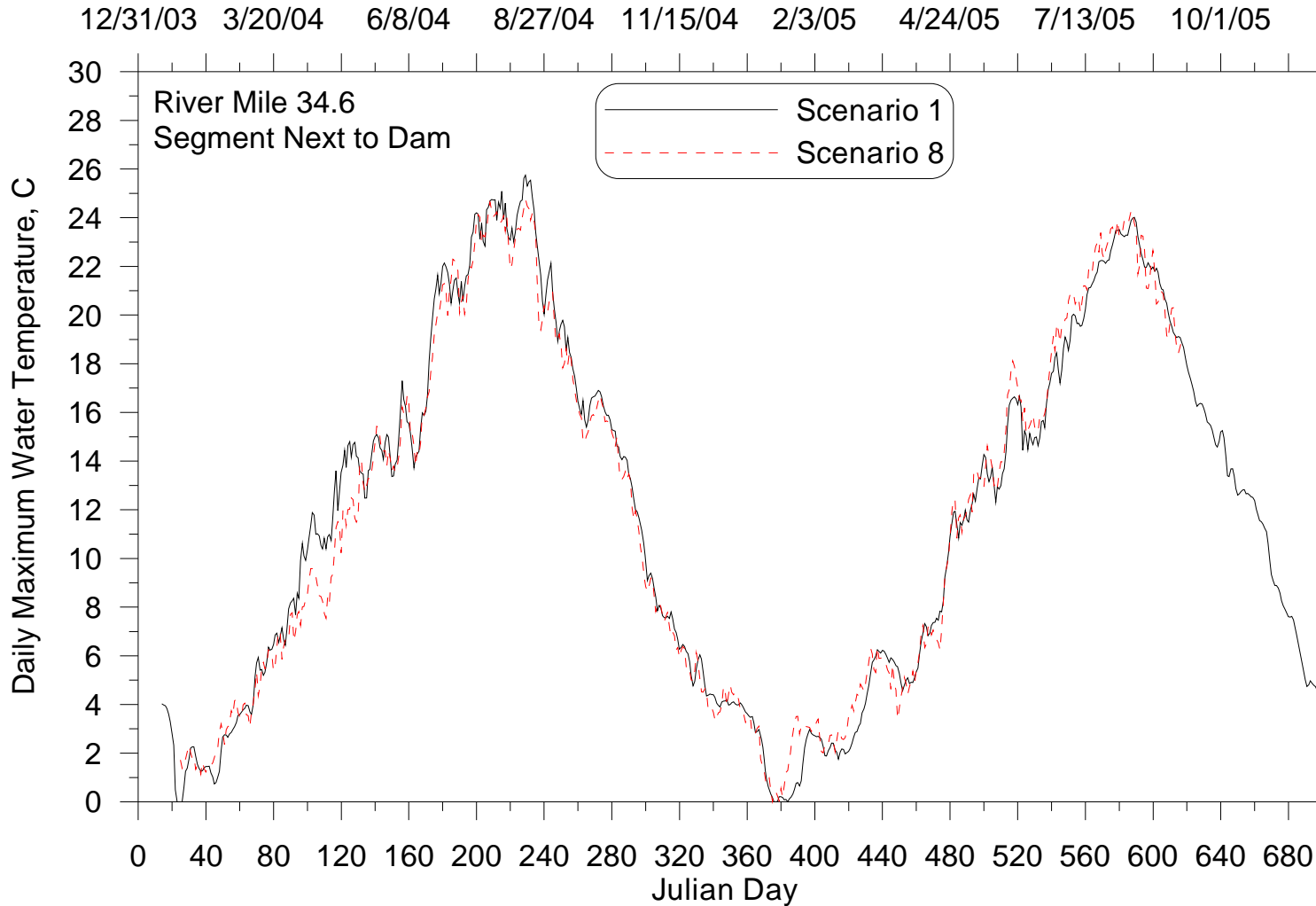
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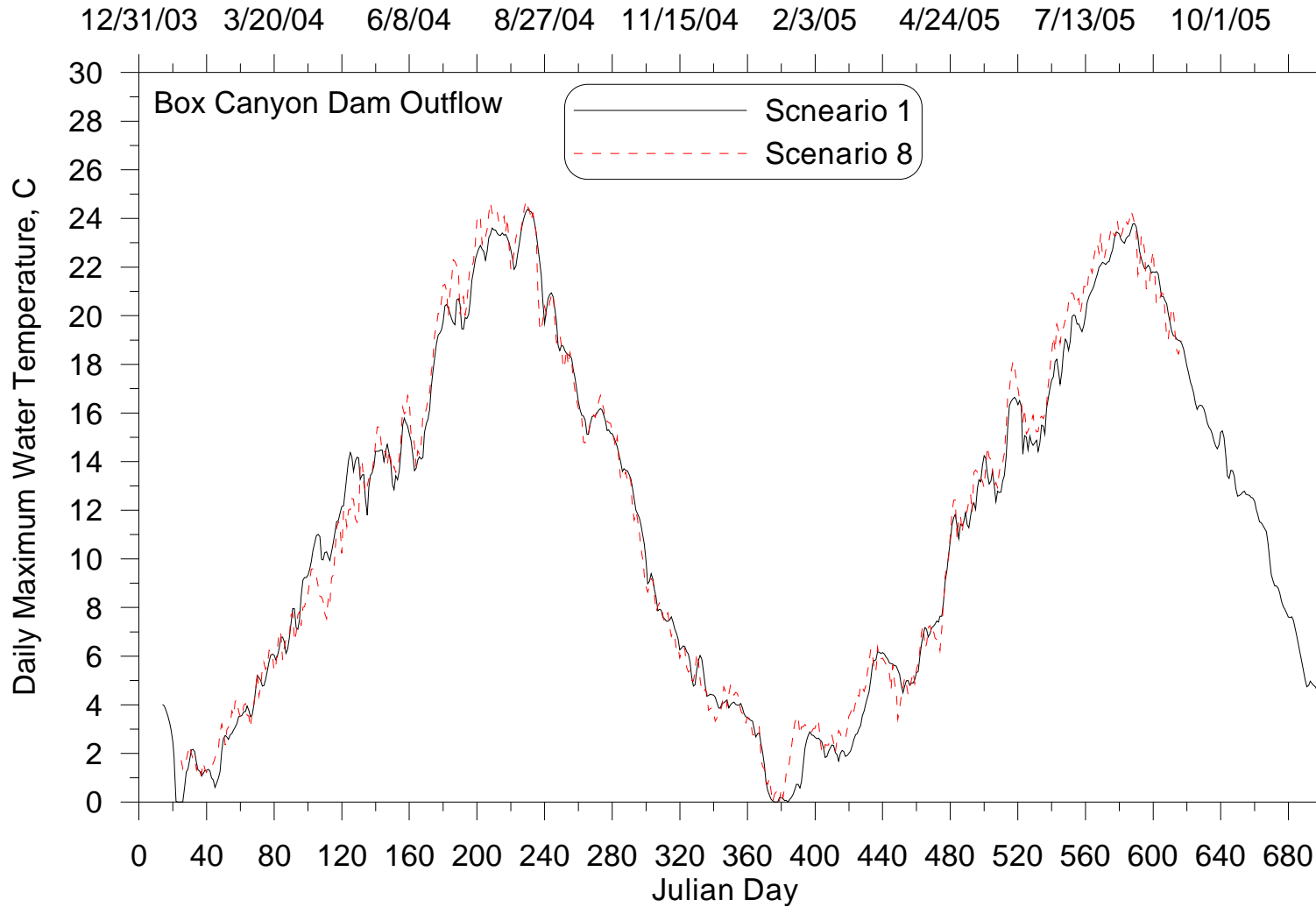


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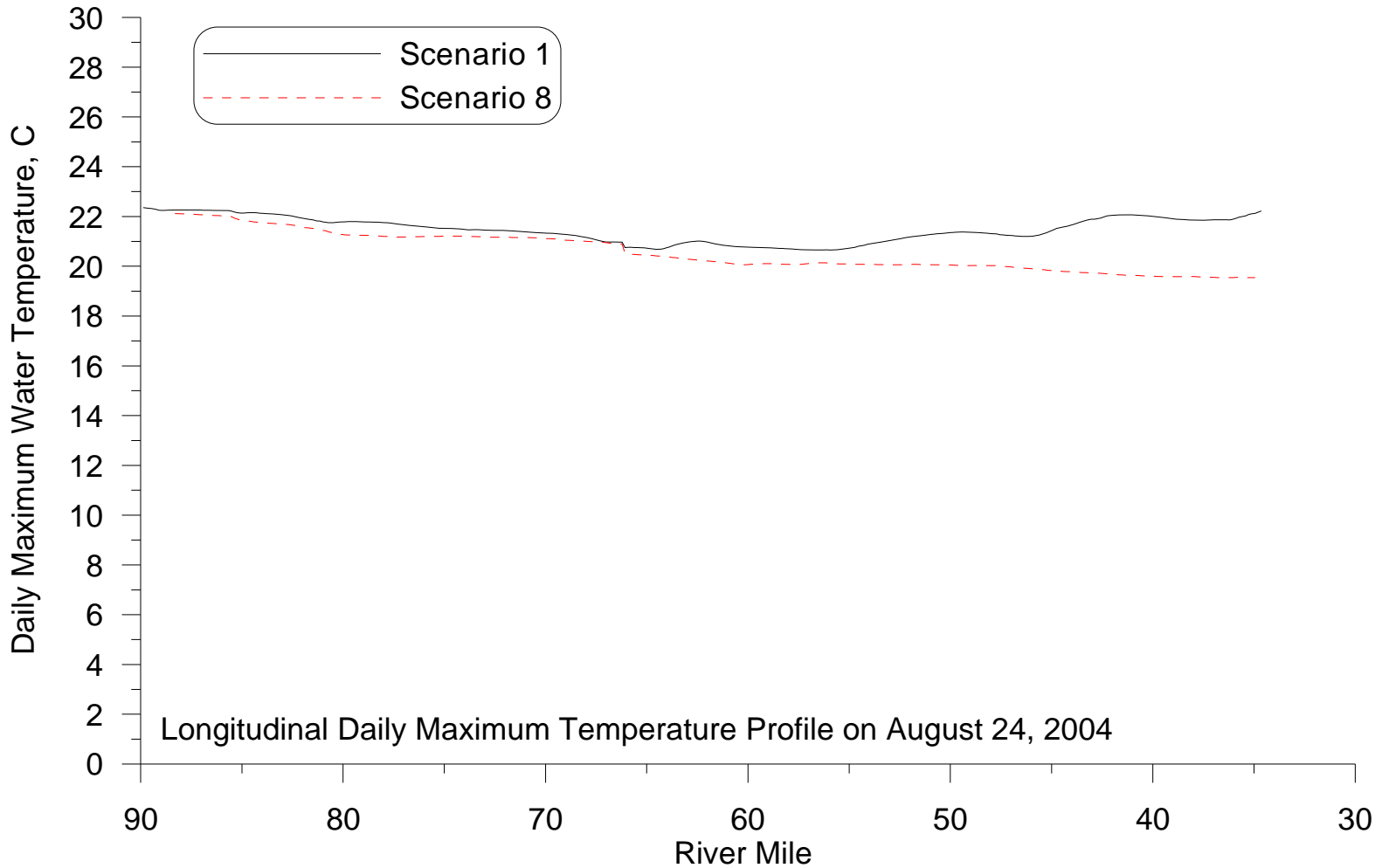


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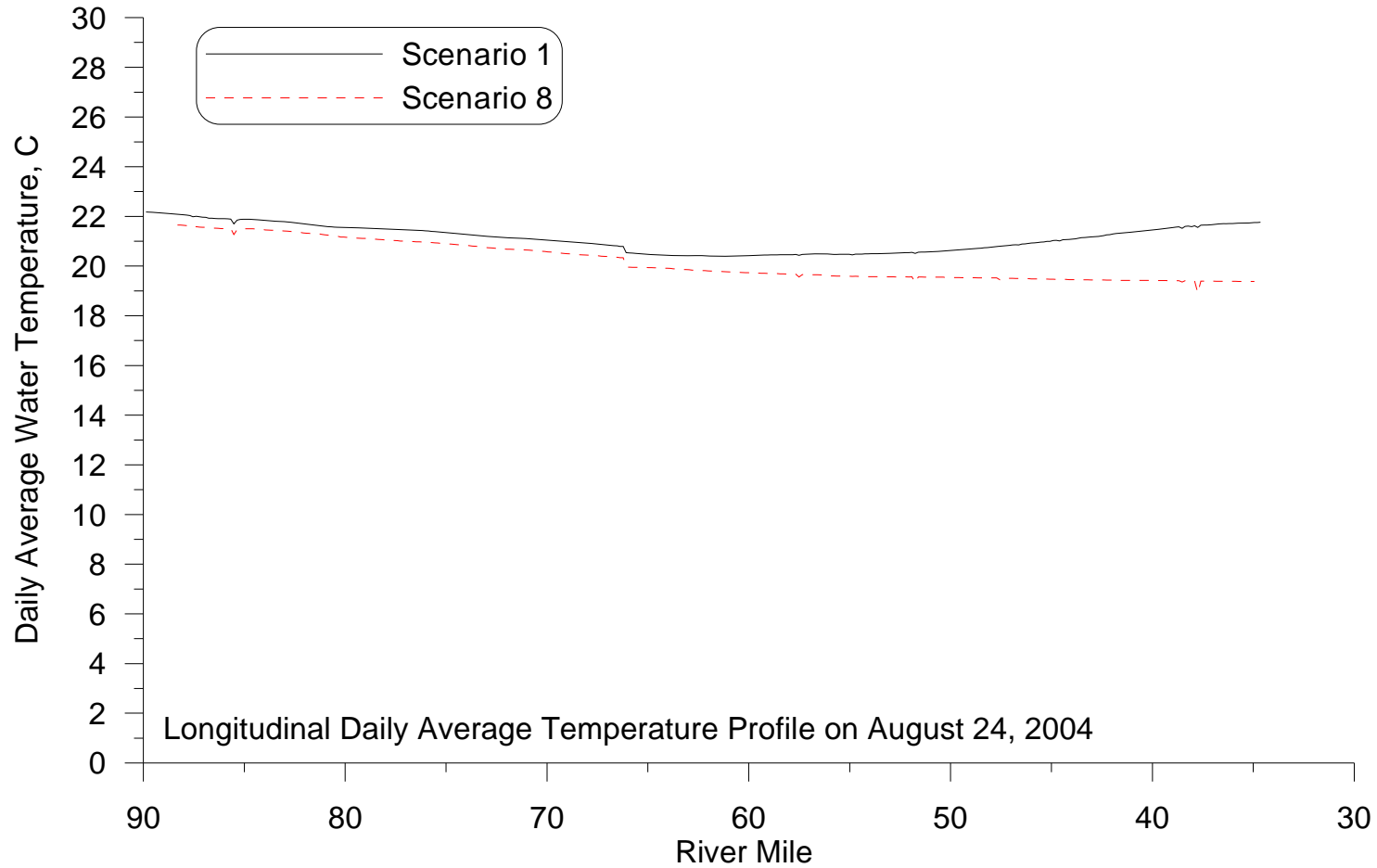


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### ➤ Introduction

#### ▪ *Next steps...*

- Finalize and quality check model runs (all 8 scenarios)
- Evaluate compliance with standards
- Compare to upstream runs and determine TMDL
- Results of analysis will be provided to TetraTech



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***Questions?***