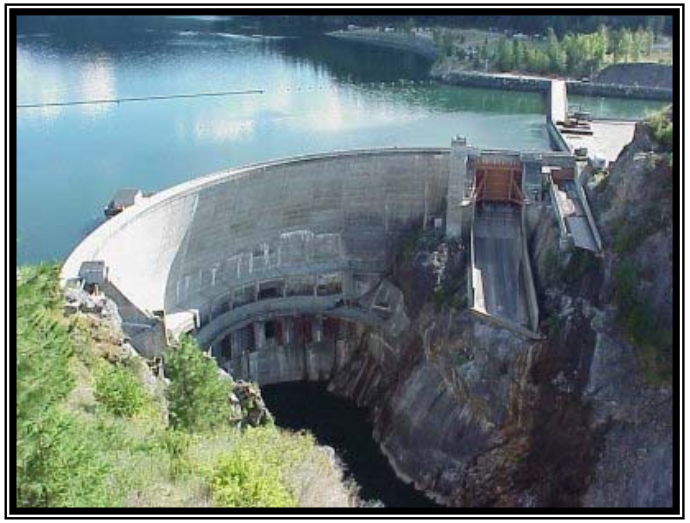
Pend Oreille River TMDL Watershed Advisory Group: Boundary Dam Temperature Modeling



Paul J. Pickett, P.E.
Environmental Assessment Program
Washington State Dept. of Ecology

May 10, 2007

Pend Oreille River Temperature TMDL: Boundary Dam Modeling

- Introduction
  - *How we got here…*
    - Seattle City Light is conducting studies for relicensing
    - SCL collected temperature and weather data 2004-05
    - SCL's consultant Battelle PNL calibrated a model
      - Presented at January WAG
    - Two scenarios provided to Ecology
      - Calibrated, or "Existing"
      - Existing without Boundary Dam

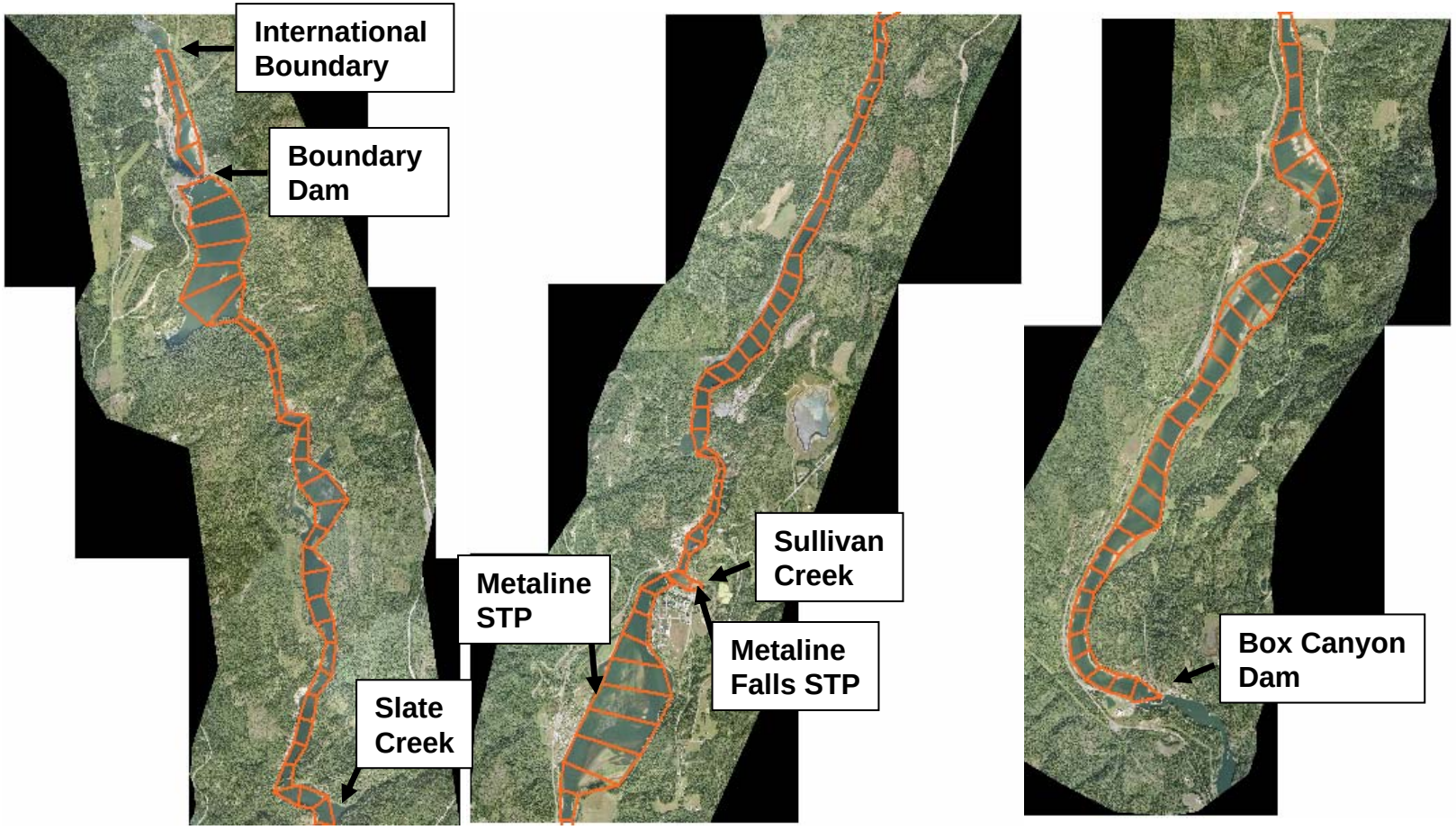
Pend Oreille River Temperature TMDL: Boundary Dam Modeling

- Introduction
  - *What you will see today…*
    - Preliminary results from 6 TMDL scenarios
      - Two other scenarios are being finalized
    - Daily maximum at two locations over time
    - Length of reservoir on August 25, 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

Pend Oreille River Temperature TMDL: Boundary Dam Modeling

- Introduction
  - *Maximums and averages (reprise)*
    - Standards based on the one-day maximum temperature
    - Model has 109 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
      - Flow-weighted over the water column
      - Average over each day

Model Segmentation



Pend Oreille River Temperature TMDL: Boundary Dam Modeling

➢ Summary of scenarios

Summary of Box Canyon and Boundary Canyon Modeling Scenarios

No.	Name	Upstream	Downstream Dam	NPDES	Tributaries	Mainstem shade
1	Existing	Current	Impounded	present	current	current
2	Existing-NPDES	Current	Impounded	removed	current	current
2.5	Existing - Tribs PNV	Current	Impounded	present	PNV temps	current
3	Natural - Impounded	Natural	Impounded	removed	PNV temps	PNV shade
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Four NPDES point sources removed: Metaline, Metaline Falls, PO Mine, Selkirk School

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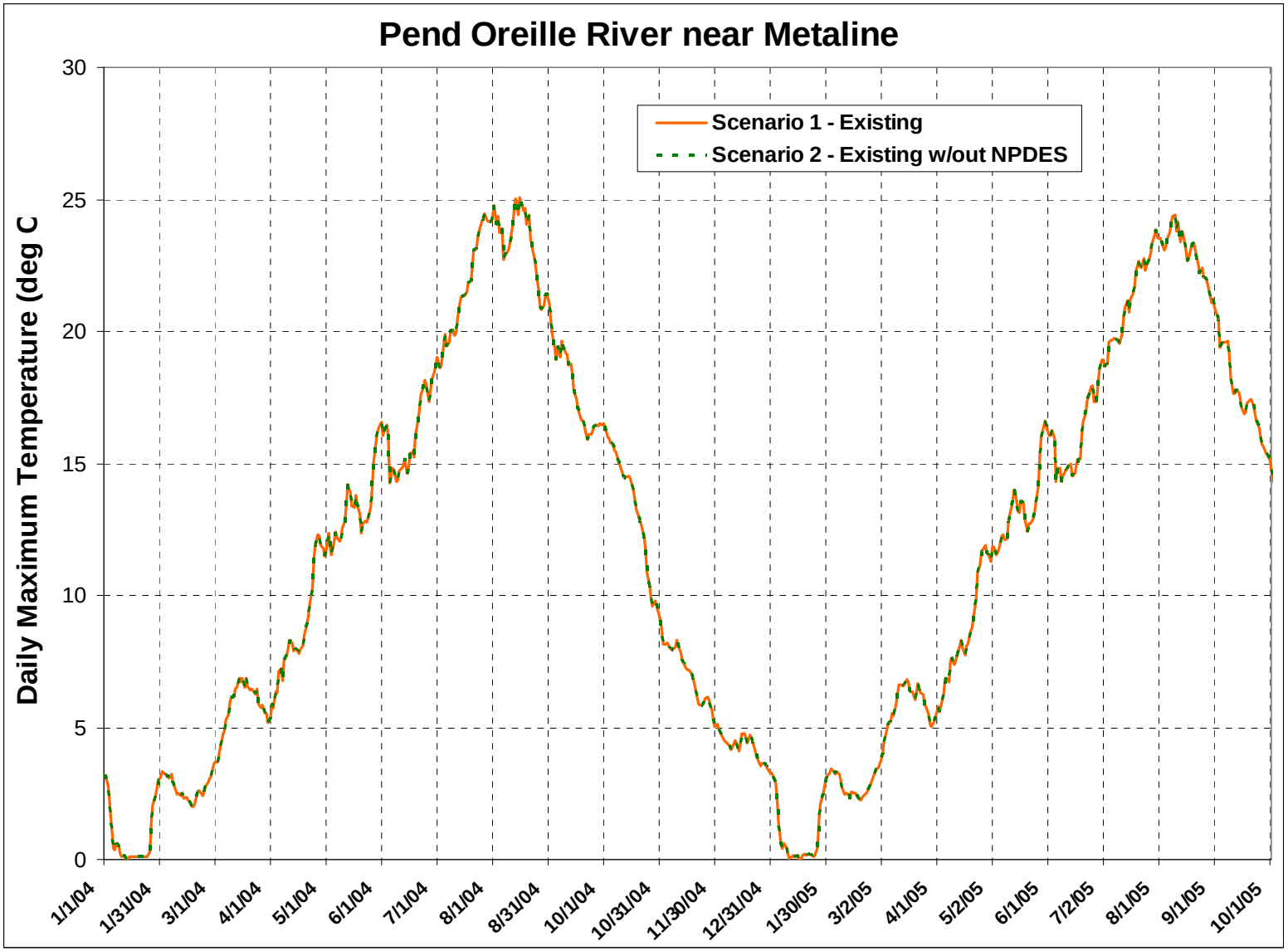

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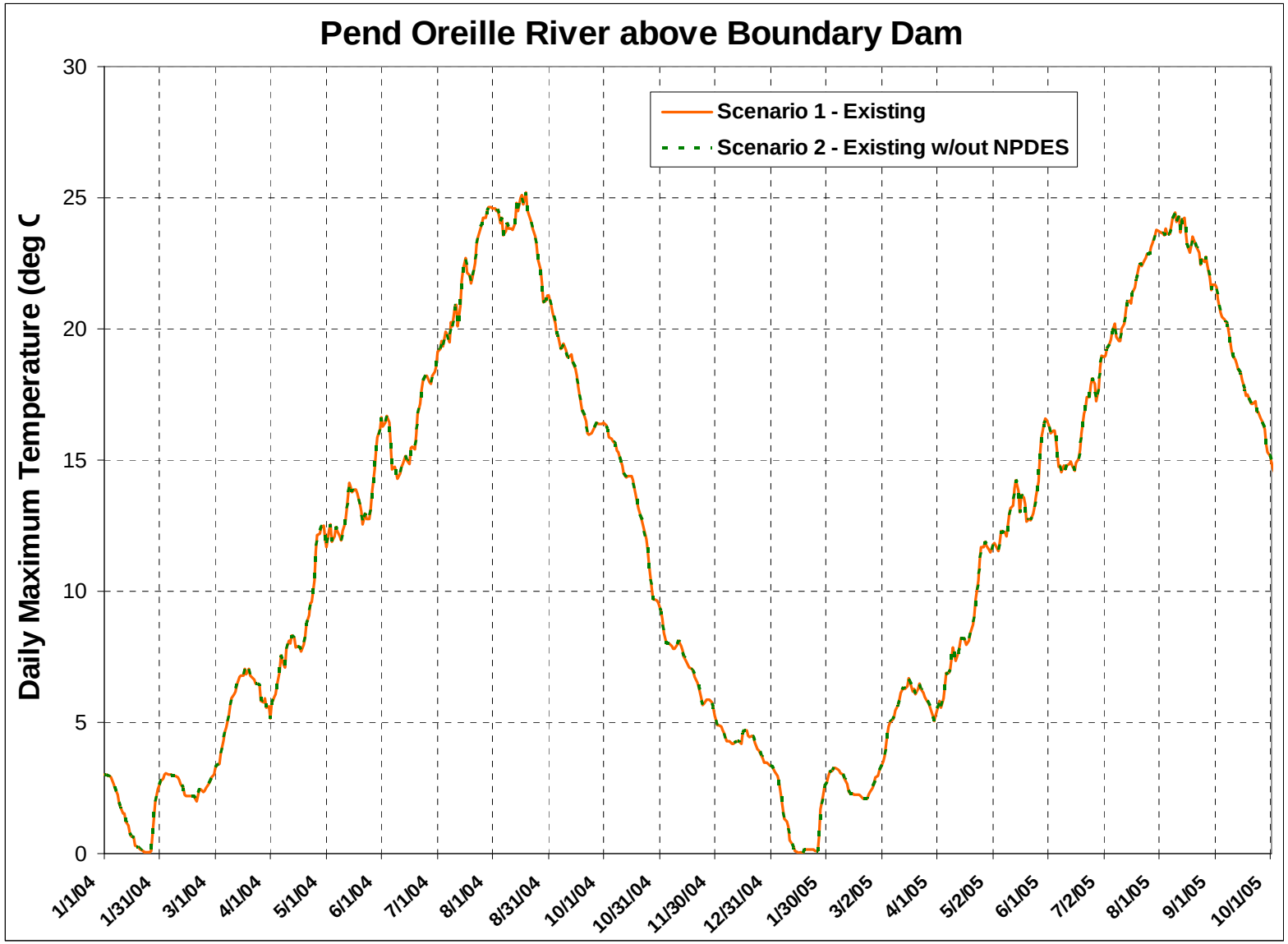

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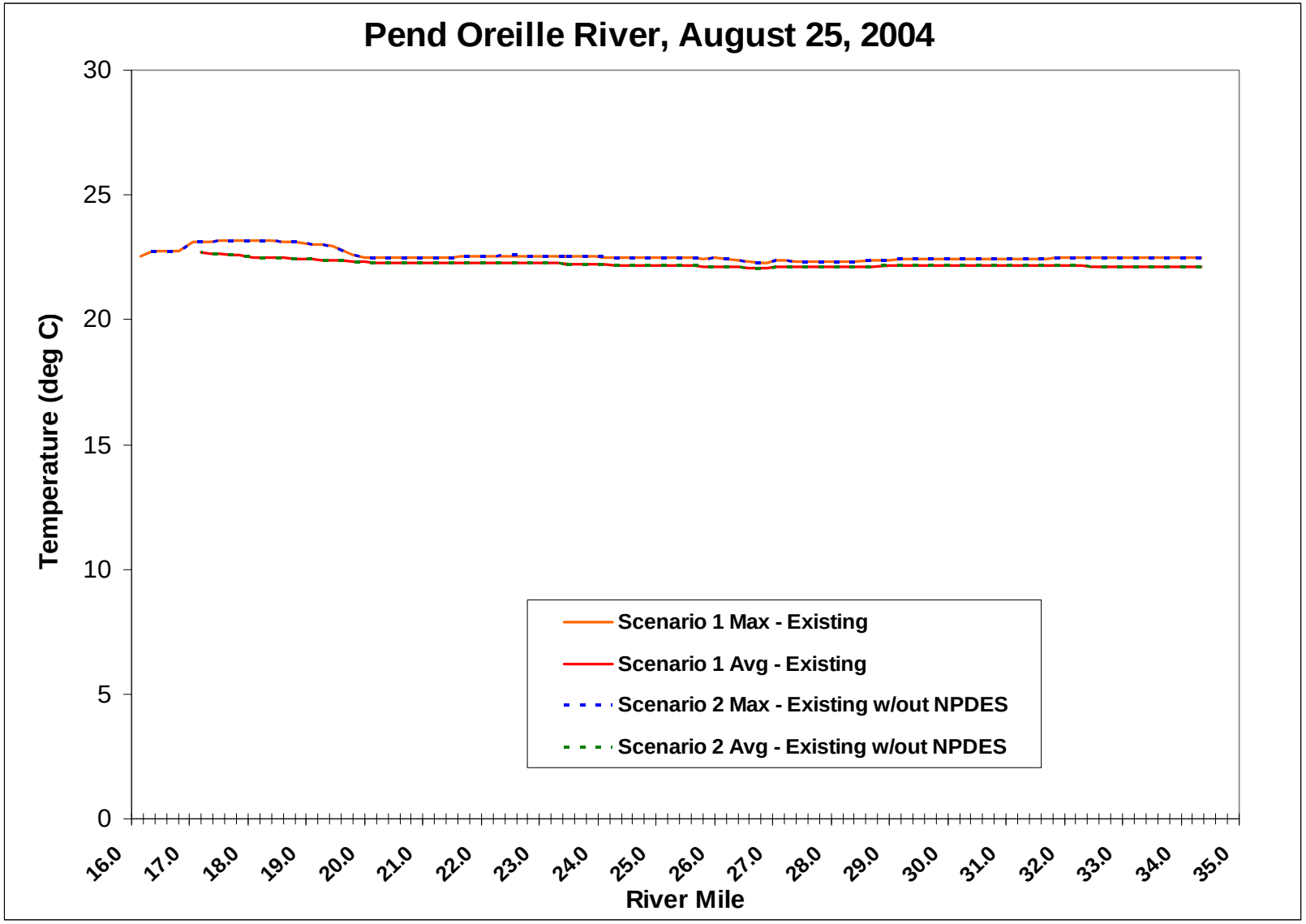

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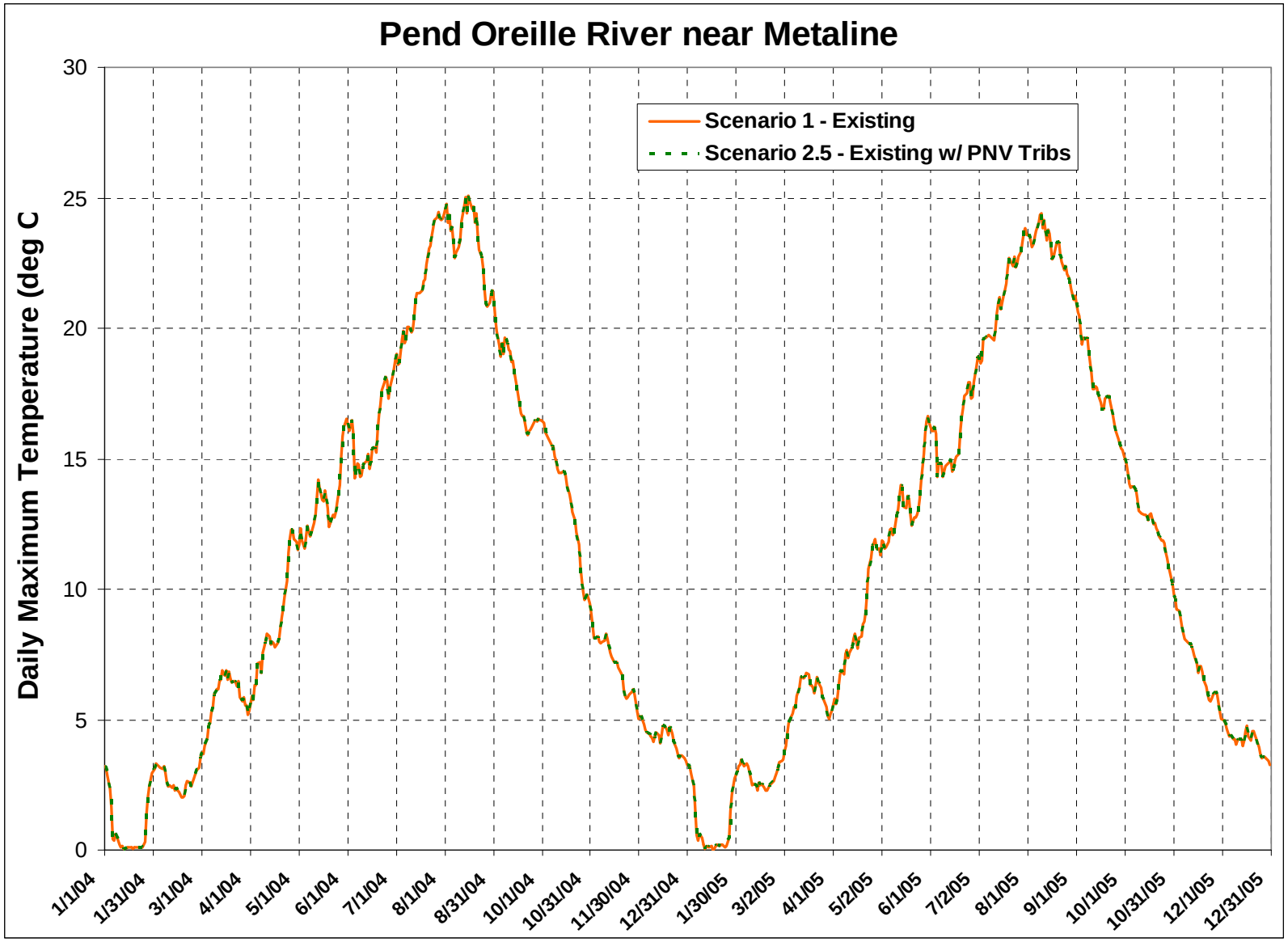
Four tributaries set to TMDL water temperatures (Colville National Forest TMDL)

Pend Oreille River Temperature TMDL: Boundary Dam Modeling



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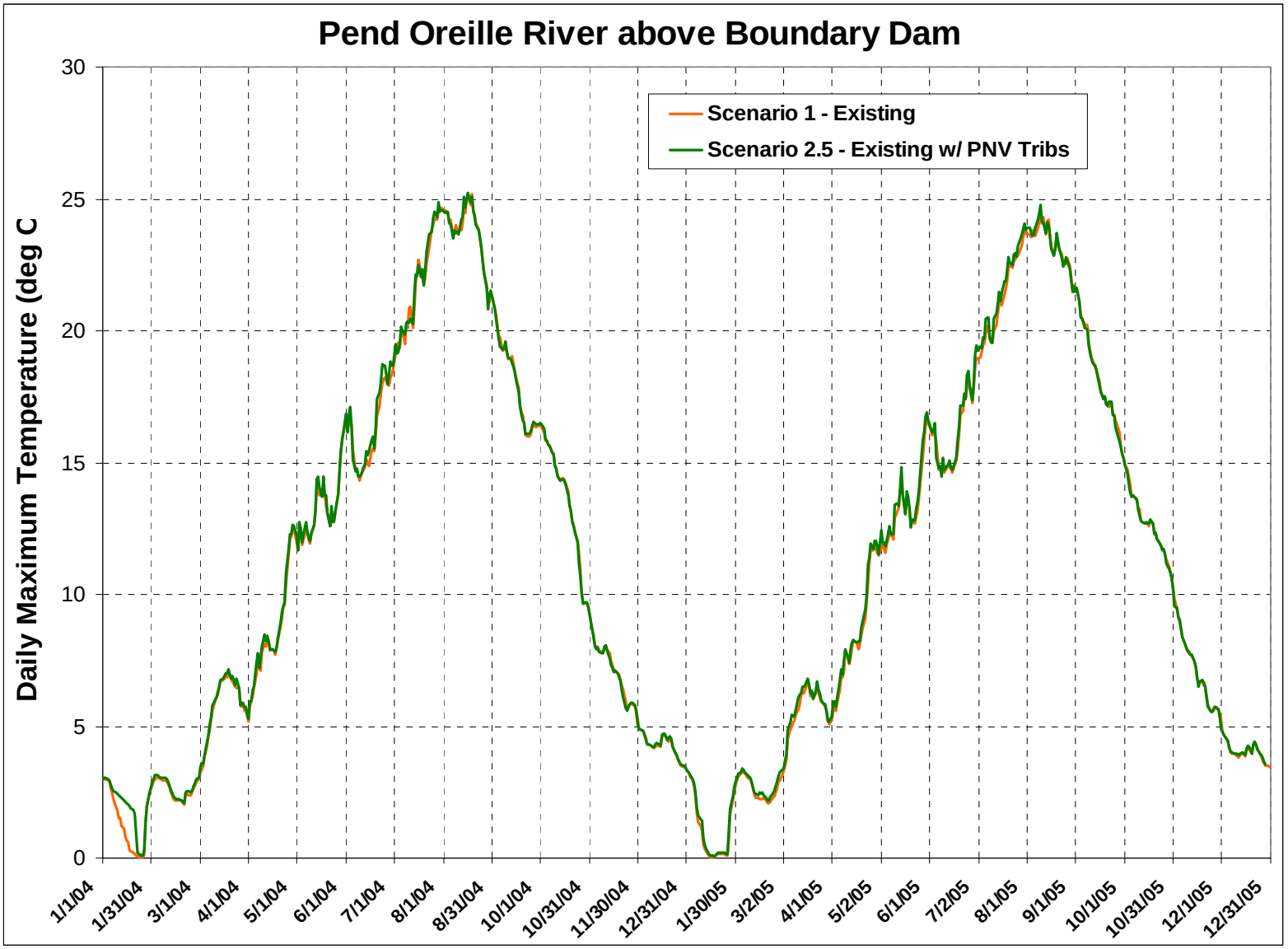

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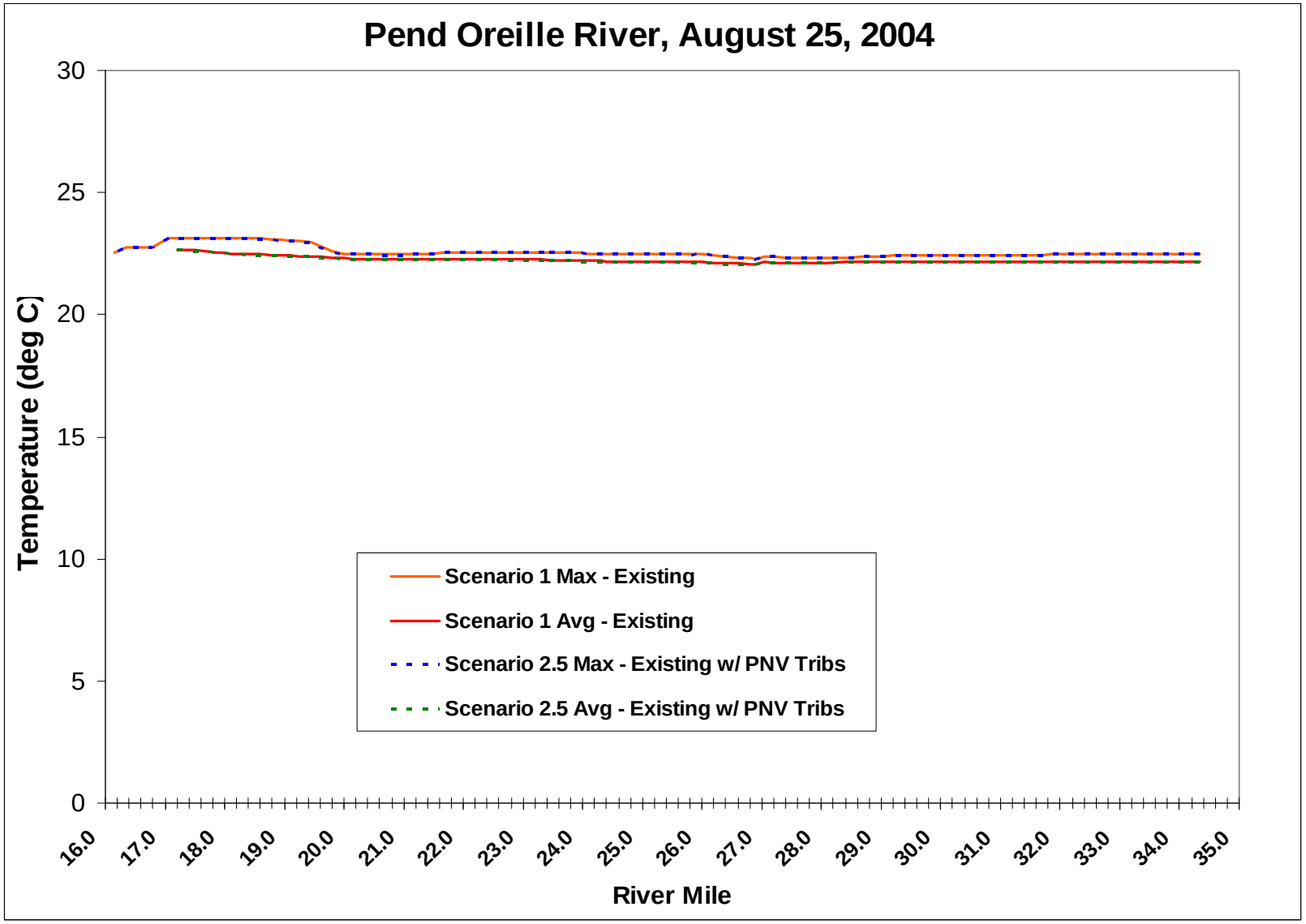

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<u>Mainstem shade changed to Potential Natural Vegetation</u>

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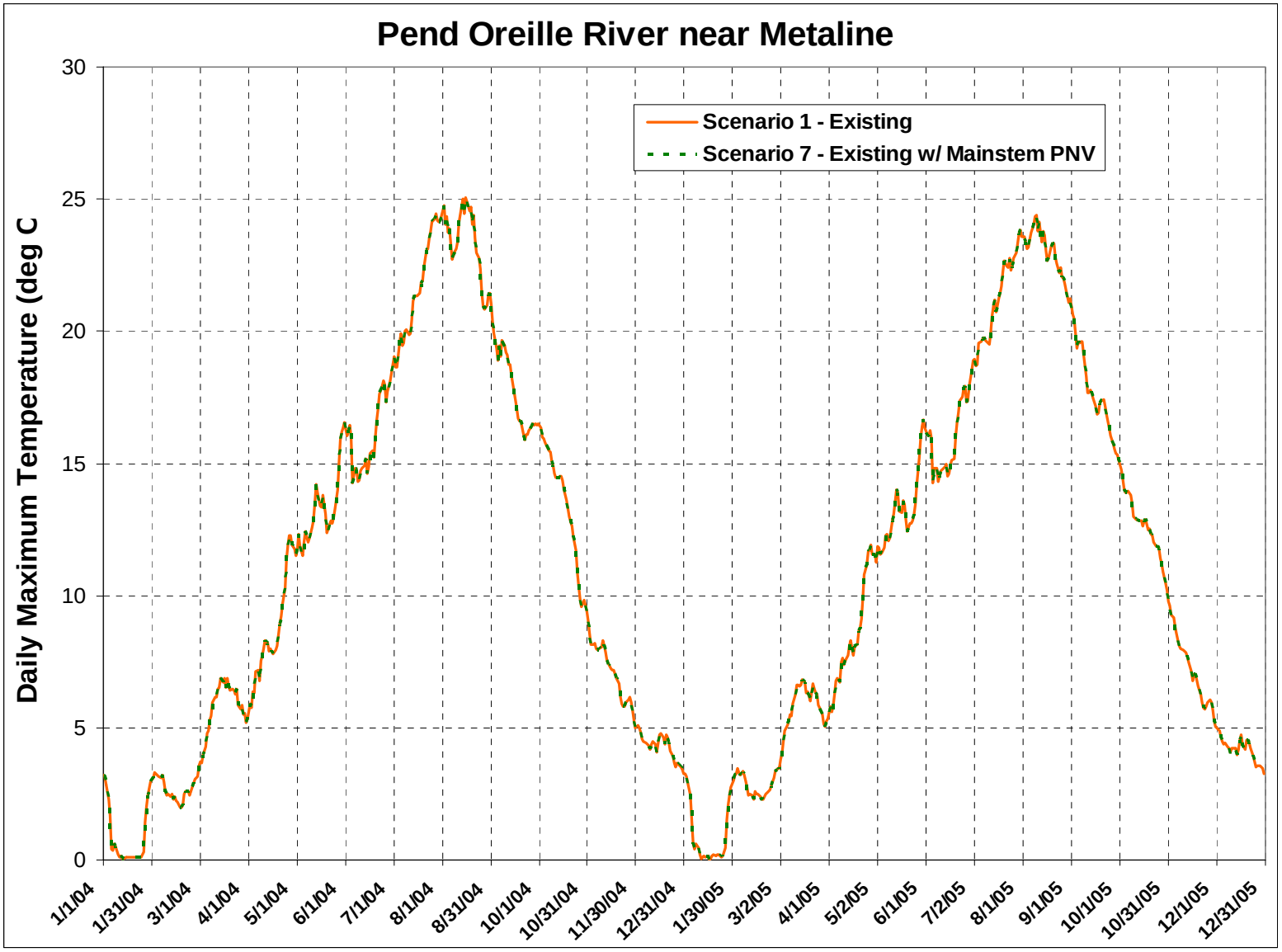

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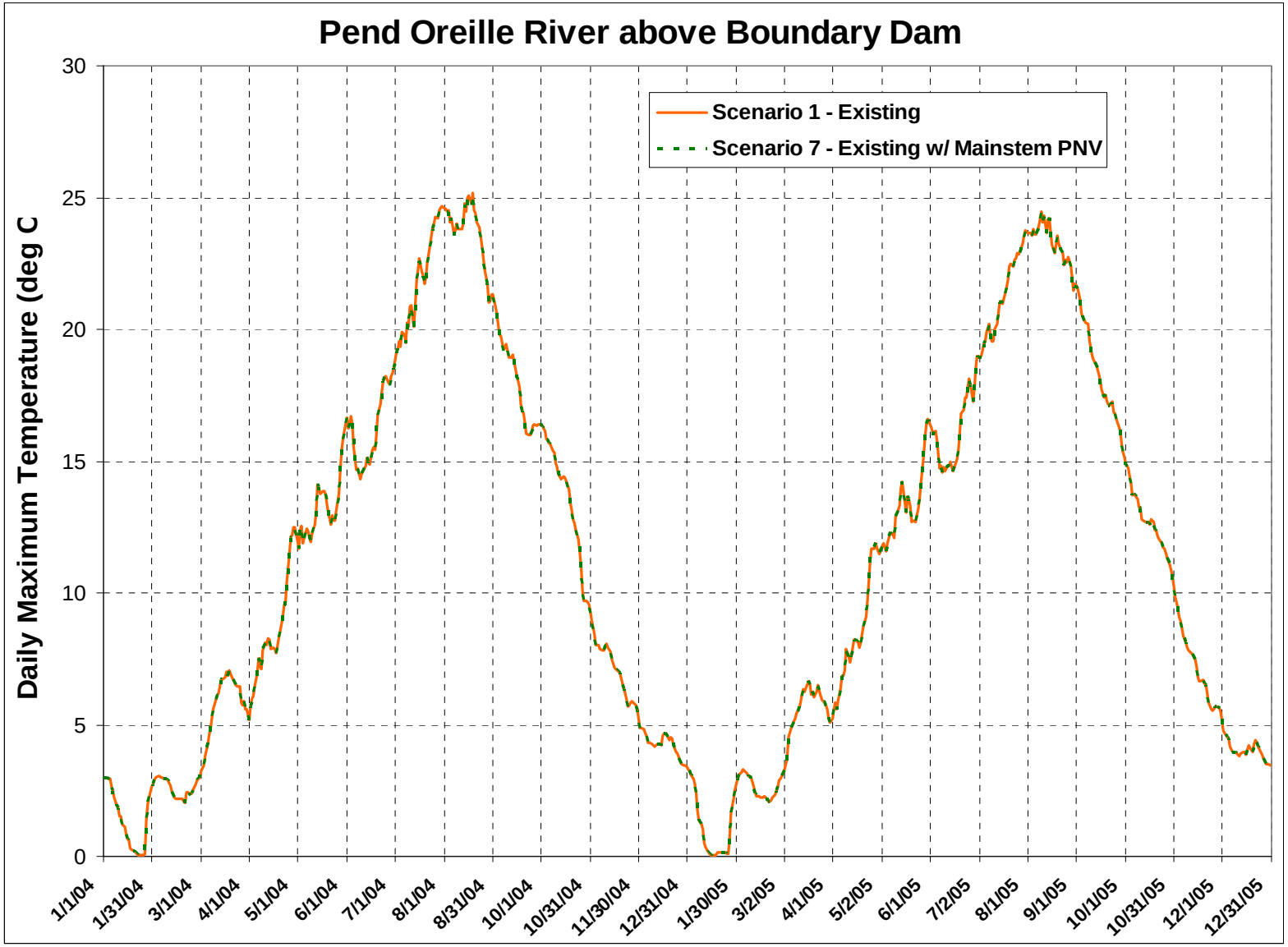

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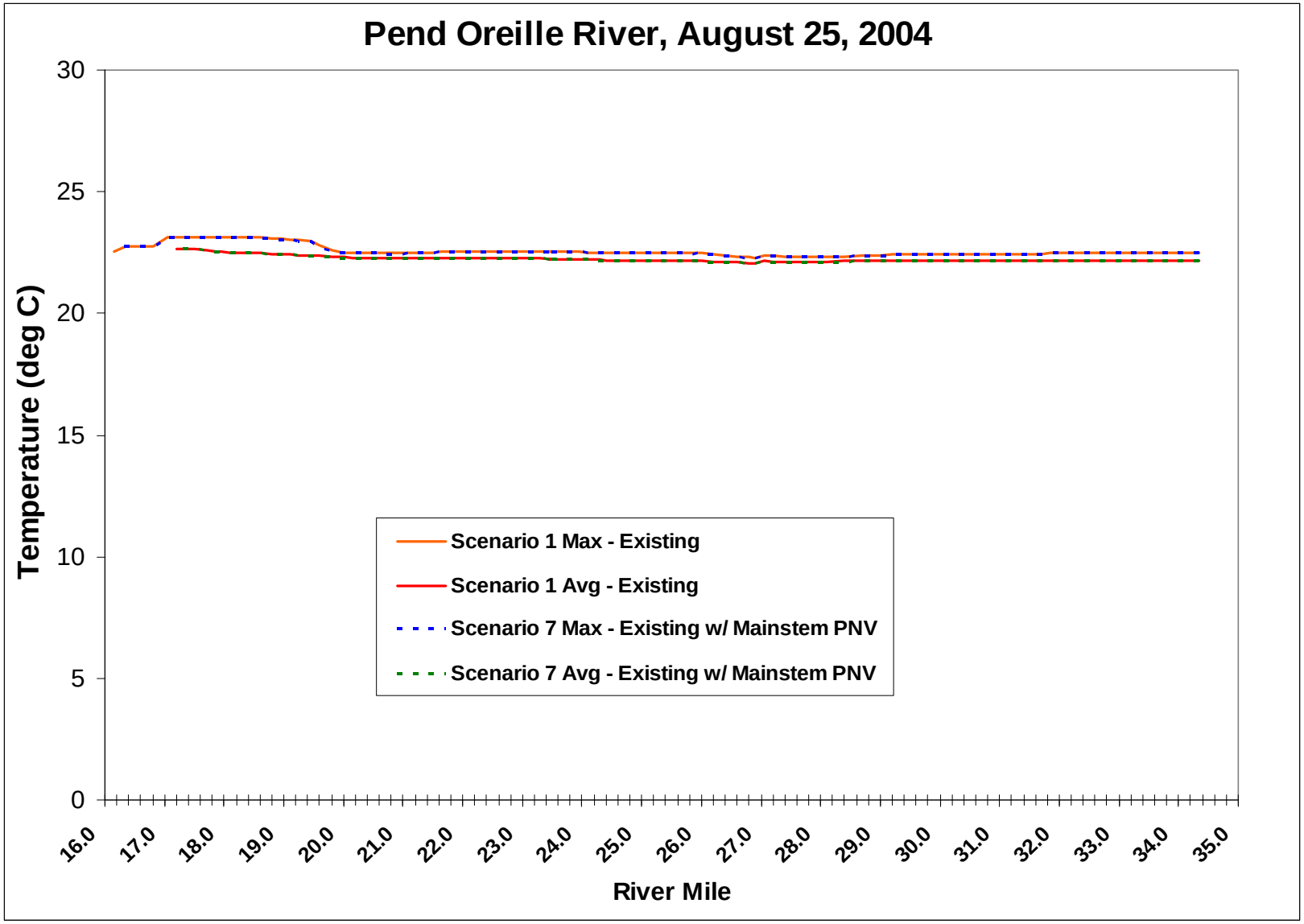

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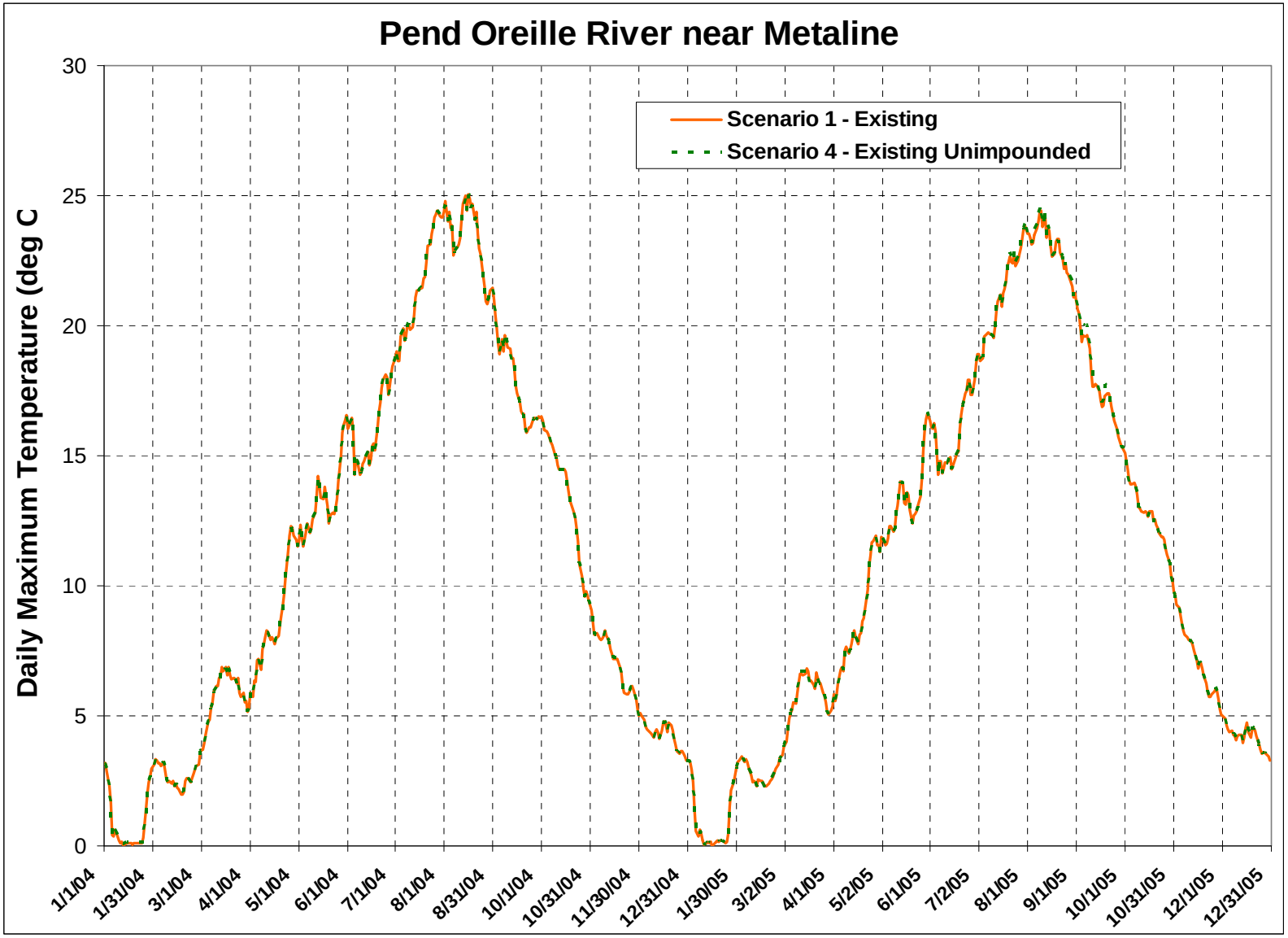

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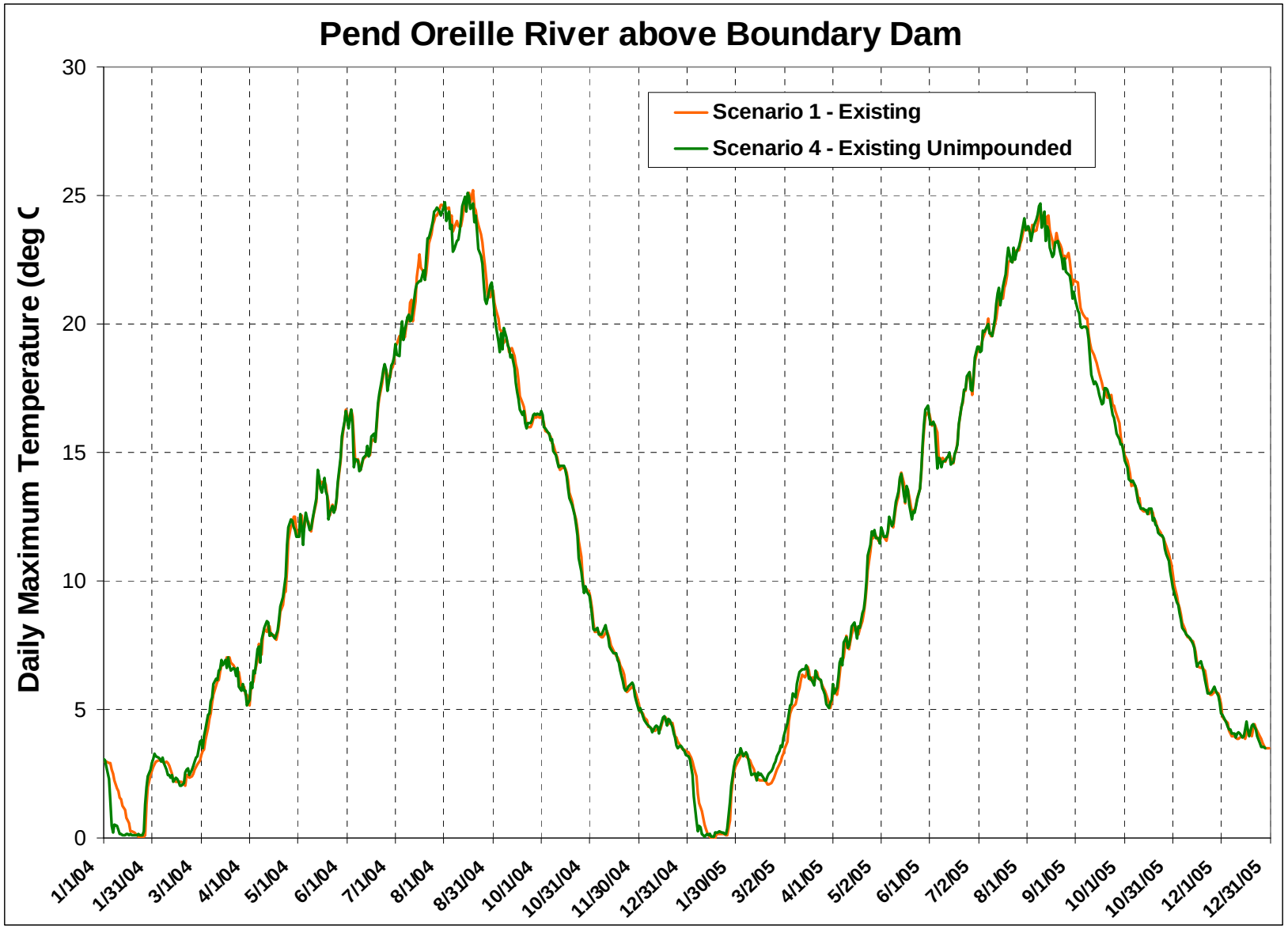

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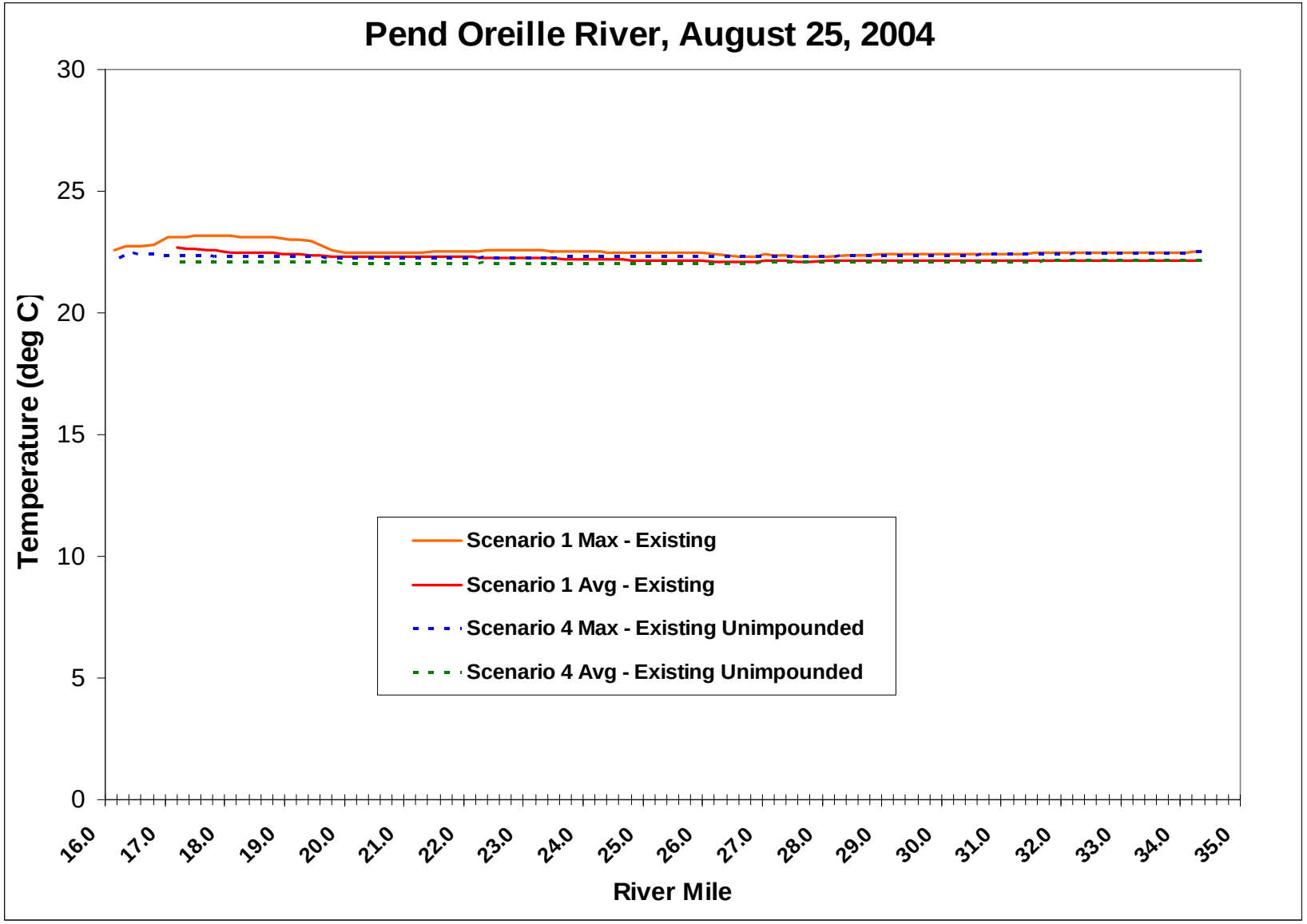

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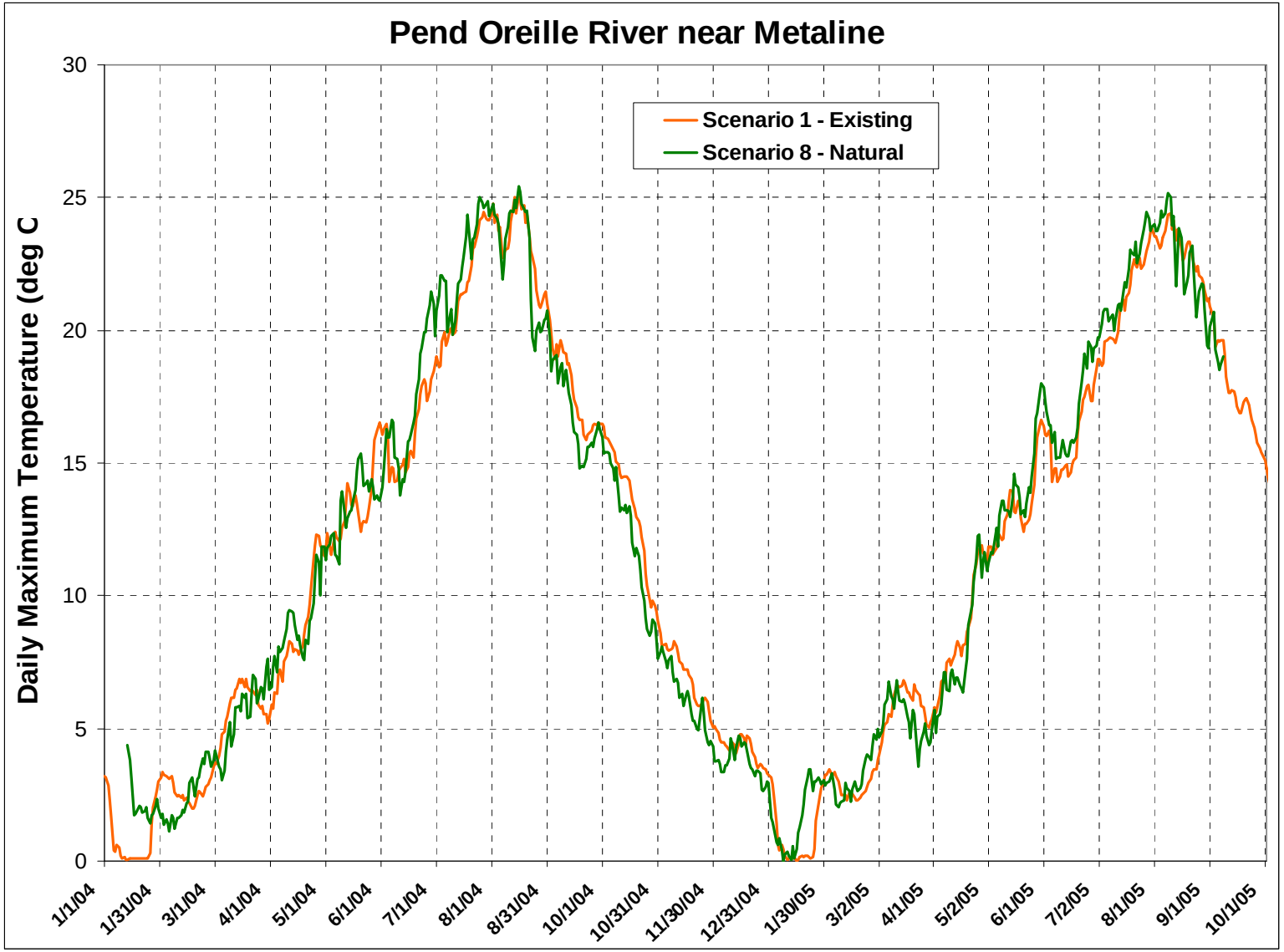

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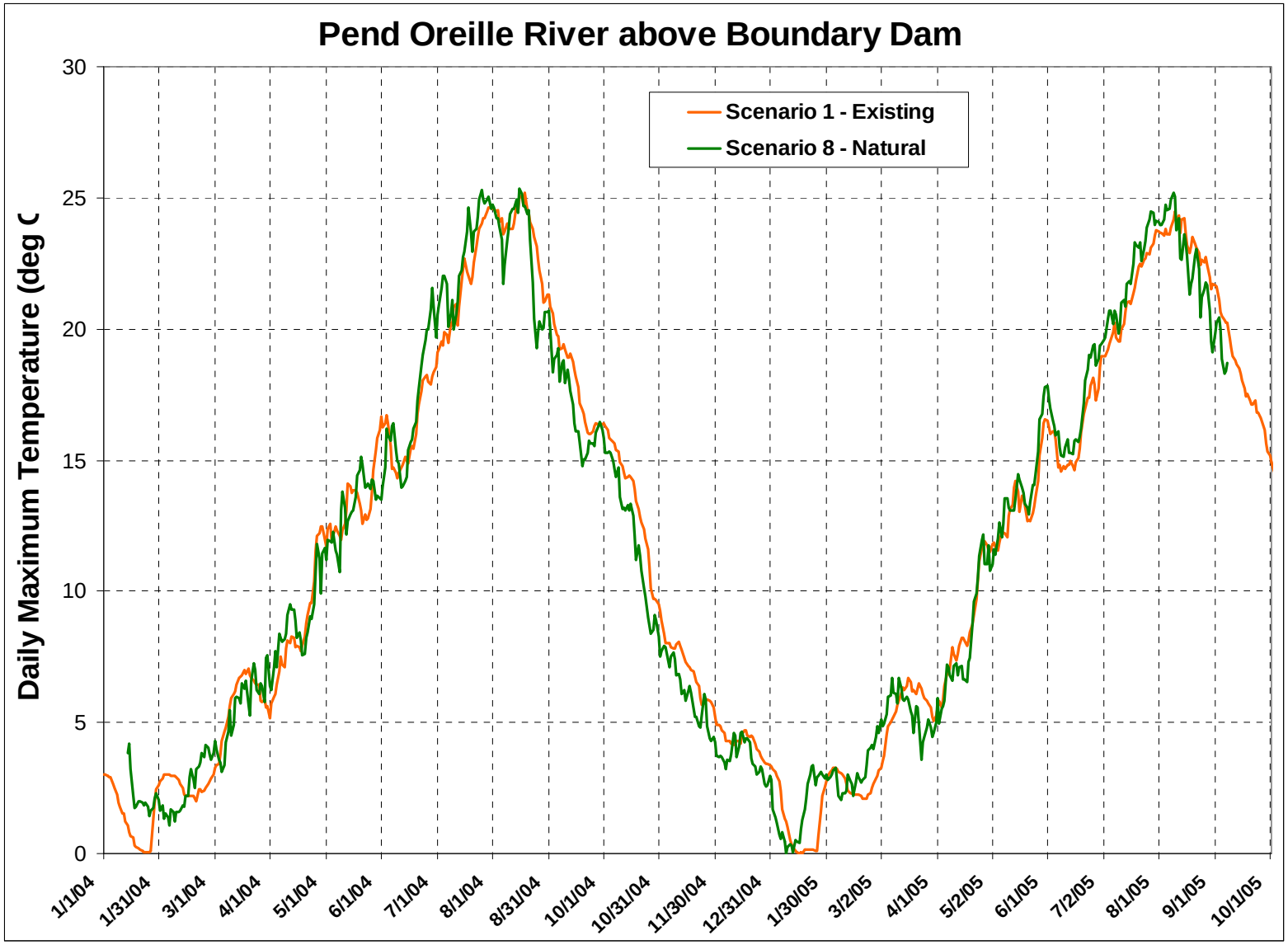

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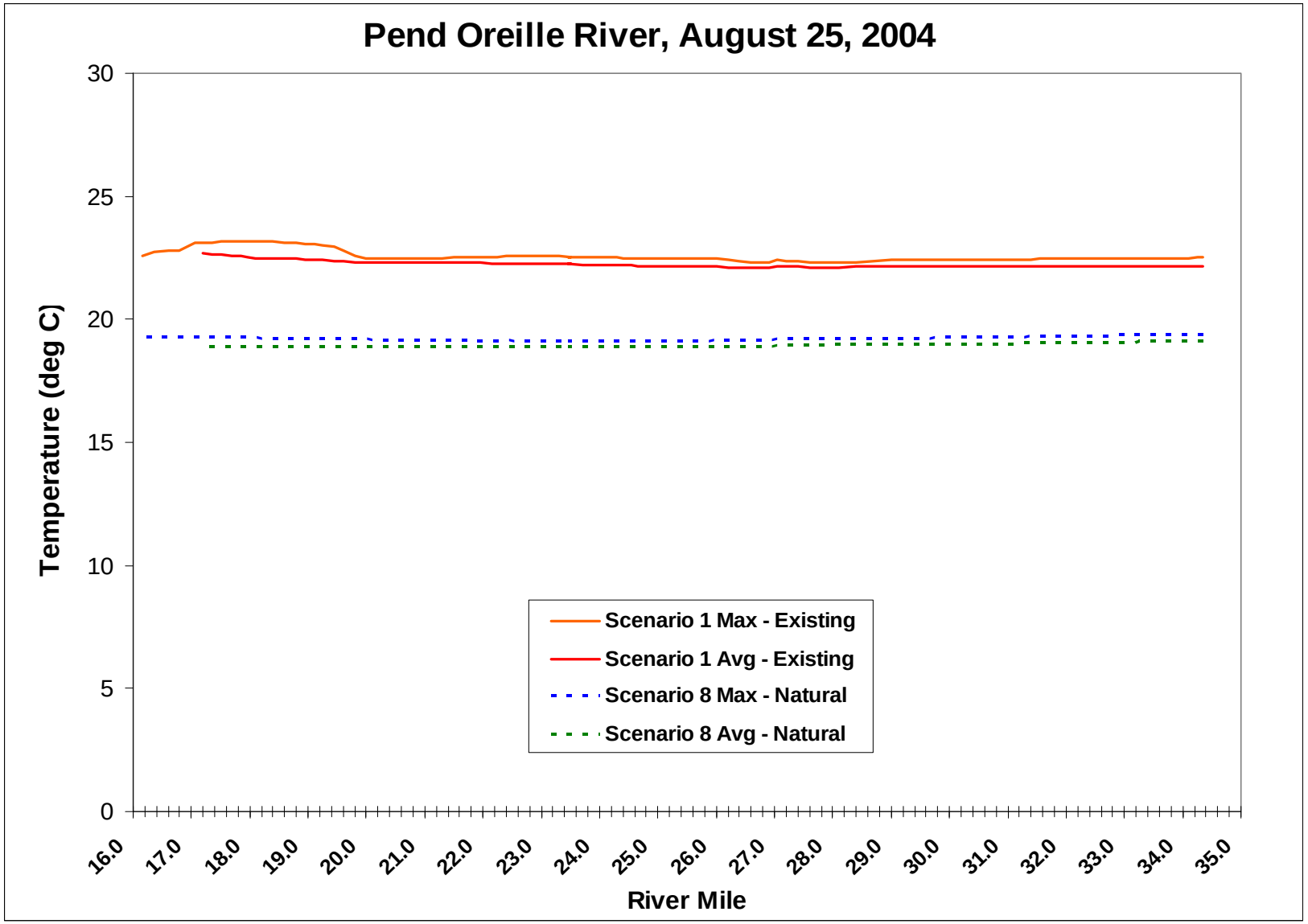

Pend Oreille River Temperature TMDL: Boundary Dam Modeling

- 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

Questions?