A supplemental indicator for reporting wastewater sector progress toward Chesapeake Bay targets

WWTWG Conference Call
September 10, 2013

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Measuring Annual Progress

ANNUAL PROGRESS REPORTING → good estimate of actual WWTP loads

Sector	Are annual loads estimated using average weather conditions?	Are BMP reductions credited based on implementation?
All sectors except wastewater	Yes	Yes
Wastewater sector	No, influenced by annual weather conditions	No, reductions based on performance

PROPOSED SUPPLEMENTAL INDICATOR (SI) → better internal consistency
→ better measurement of the benefits of wastewater management actions

Sector	Are annual loads estimated using average weather conditions?	Are BMP reductions credited based on implementation?
All sectors except wastewater	Yes	Yes
Wastewater sector	Yes	Yes

Three components of the proposed supplemental indicator

- Flow normalization (to control for weather)
- Credit WWTP process upgrades as a BMP
- Credit flow reduction programs as a BMP

Besides these three changes, the proposed SI will be identical to the reported annual progress

Flow Normalization

- **10-year average flow for municipal sources**

  Adjusted for population changes using county estimates from the US census

$$\text{Adjusted 2010 Flow} = \text{Average flow from 2001 to 2010} \times \text{Population adjustment factor}$$

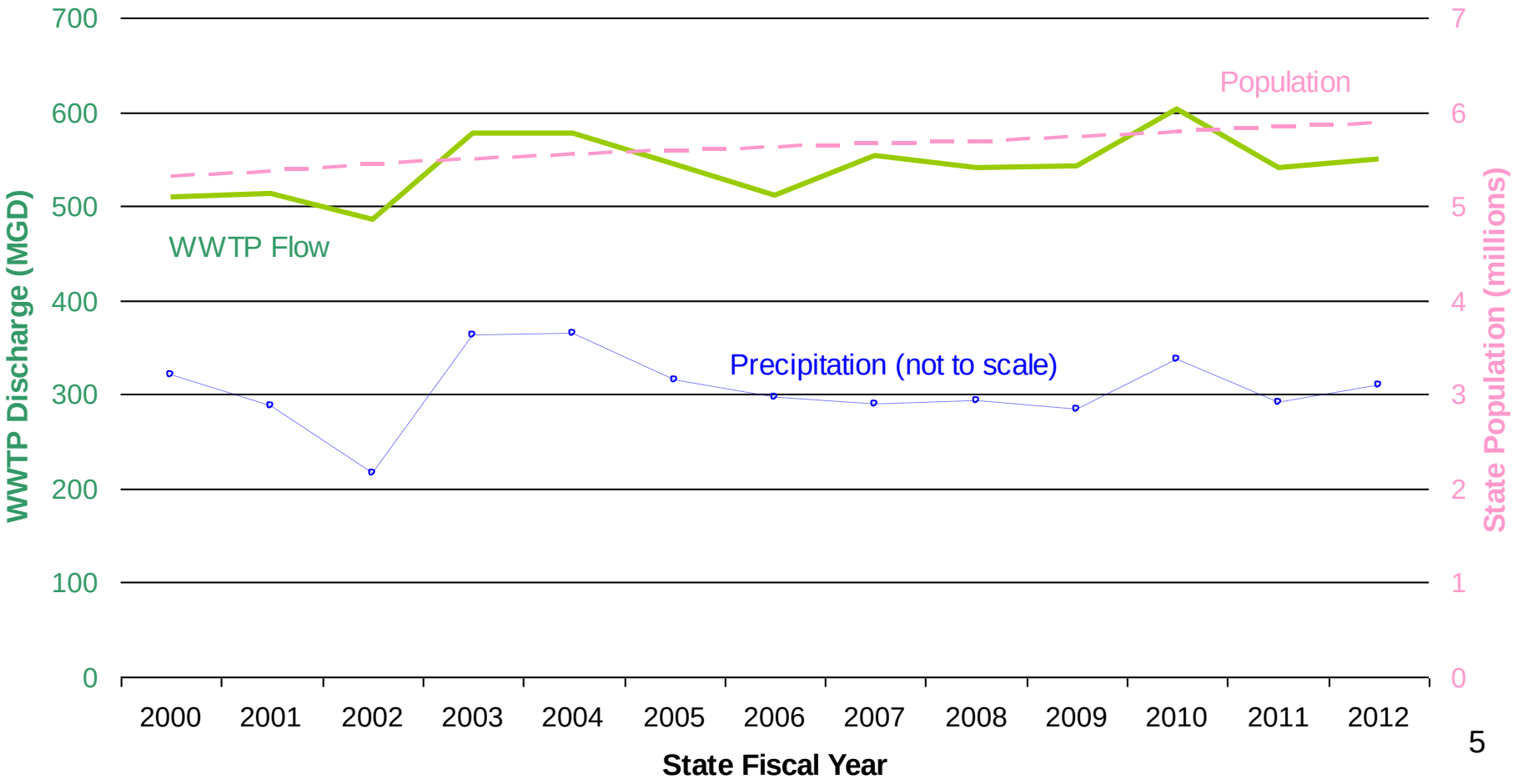
$$\text{Population adjustment factor} = \frac{\text{Current County Population } \textit{(US Census)}}{\text{County population at midpoint of averaging period } \textit{(US Census)}}$$

- **1-year flow for industrial sources**

  Same as in annual progress

WWTP Flows from 2000 to 2010

(for significant municipal facilities in Maryland)



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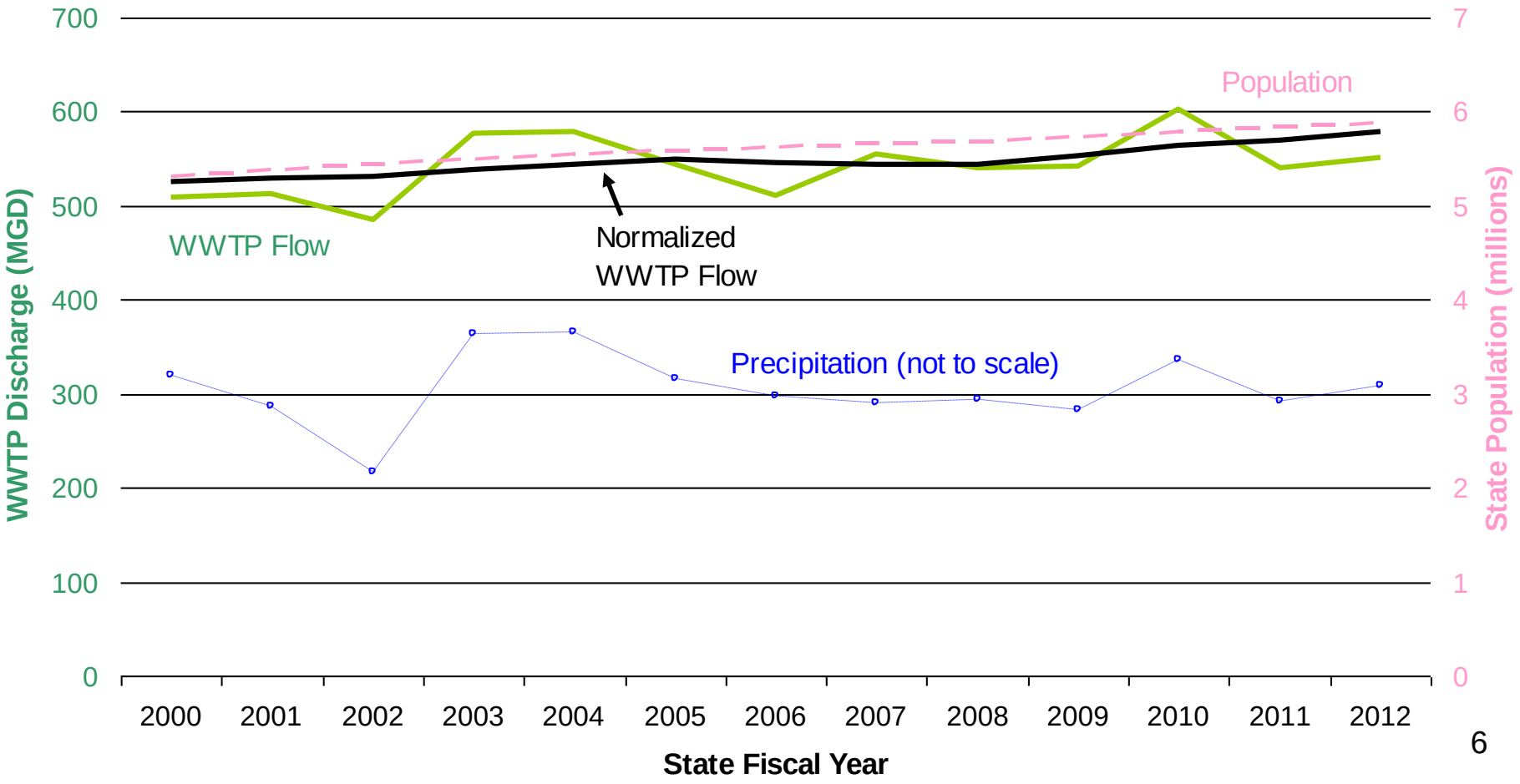
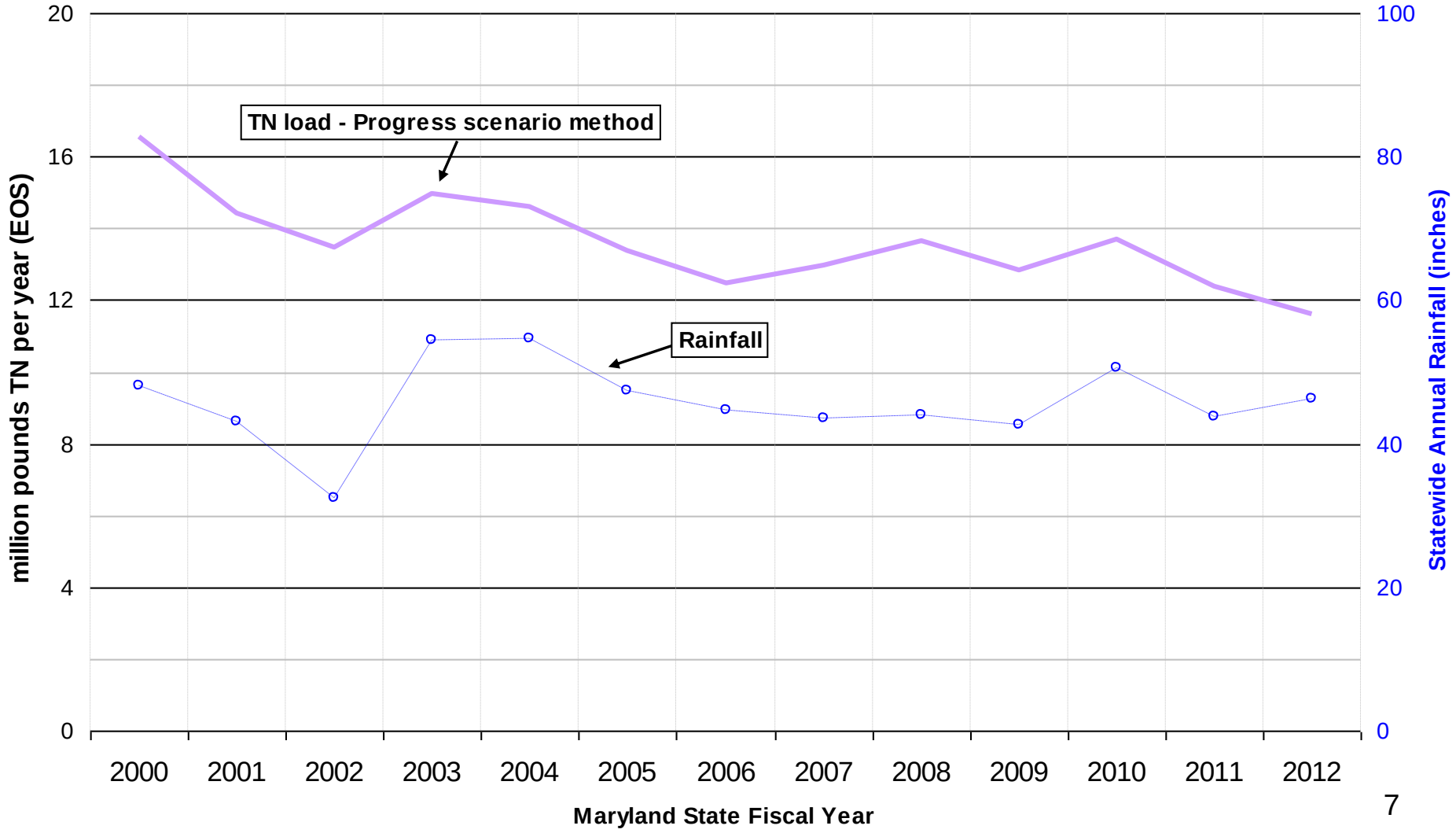


WWTP TN loads from 2000 to 2010

(for significant municipal facilities in Maryland)



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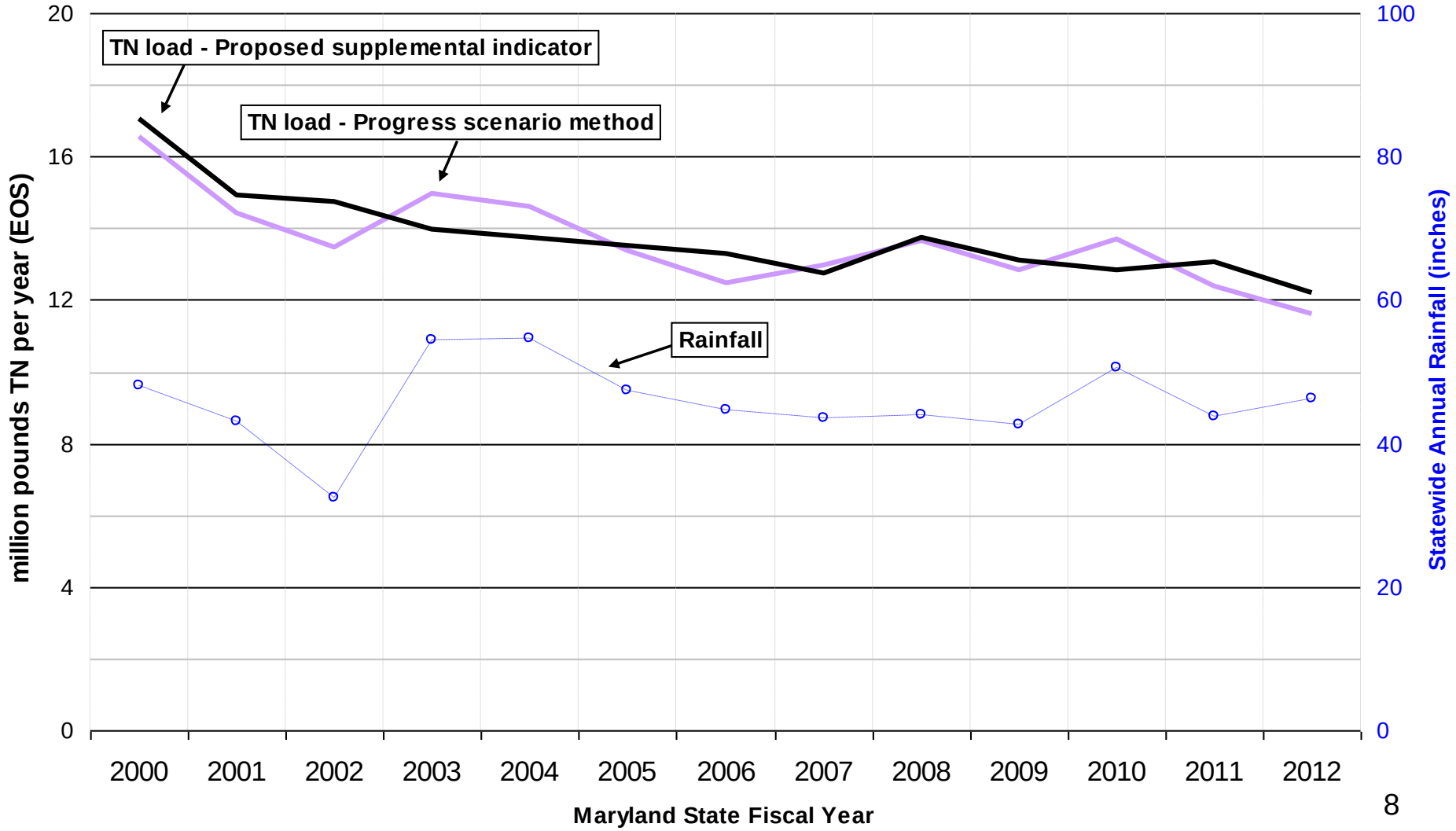

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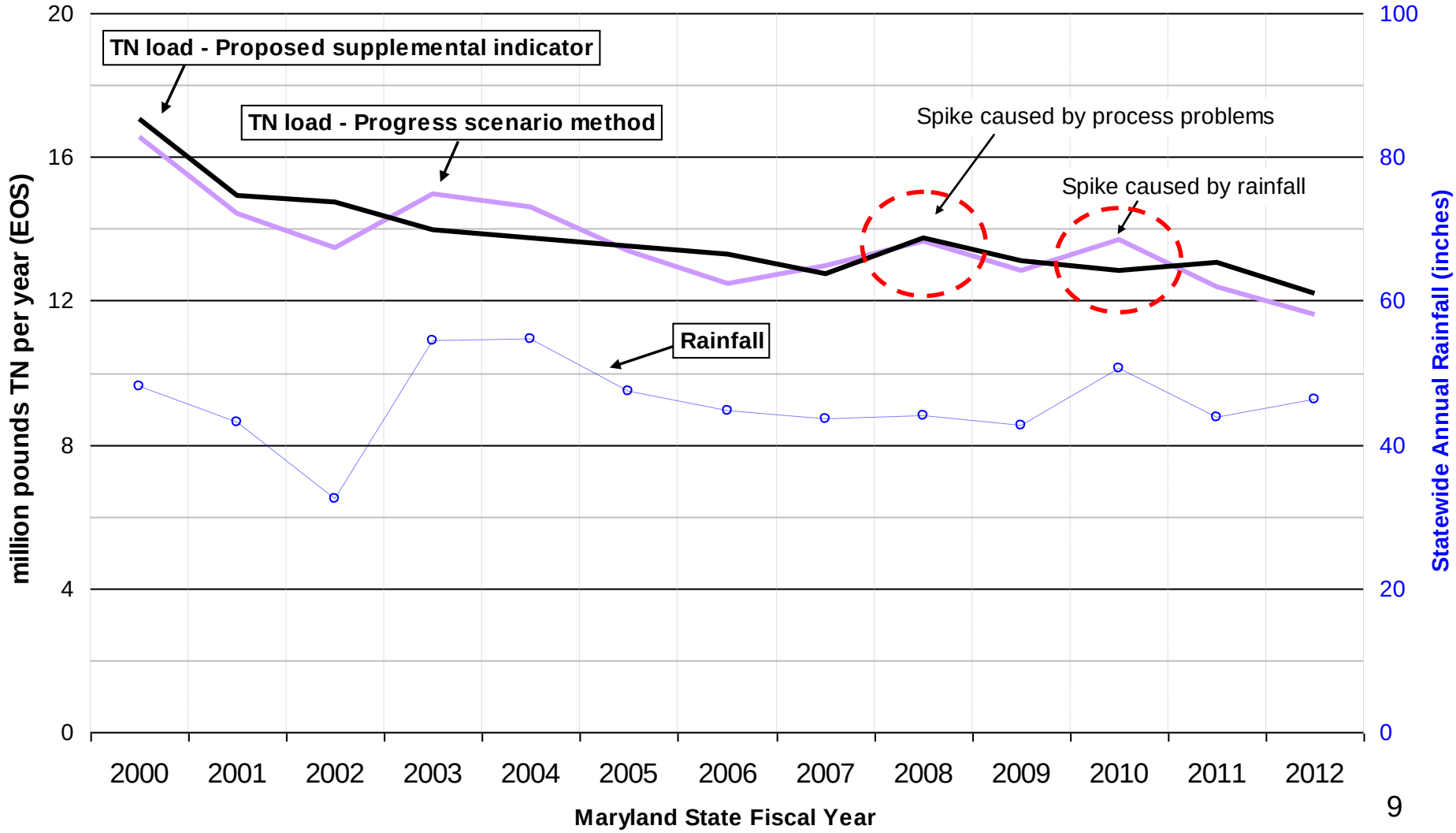

Credit WWTP process upgrades as a BMP

- **In annual progress, all sectors but wastewater receive credit for BMPs based on implementation**

  If it's installed in 2014 you get full credit in 2014

- **The wastewater sector receives credit based on performance**

  Load for 2014 is based on the average nutrient concentration for the entire year regardless of process upgrades

- **To achieve internal consistency, both sectors should receive full credit for BMPs in their installation year**

  A snapshot of what has been installed by June 30th at 11:59:59 PM

Credit WWTP process upgrades as a BMP

How the BMP is calculated:

- States submit the dates when facilities received process upgrades that resulted in permit load reductions
- During the progress year of the upgrade startup, WWTP progress loads will be calculated using the lesser of

  – For states that have nutrient concentration limits:
    (a) The new permit concentration limit
    (b) The reported concentration for that Progress year

  – For states that have no nutrient concentration limits:
    (a) The new permit load limit
    (b) The calculated supplemental indicator load for that year

Credit flow reduction programs as a BMP

- **CSS separation projects** and **I/I reduction programs** can reduce loads by reducing flows
- The benefits of these improvements can be masked when a 10-year average flow is applied

Credit flow reduction programs as a BMP

How the BMP is calculated:

- Under the proposed SI, facilities that have shown significant flow reductions can report a flow reduction BMP
- The flow reduction BMP would work by shifting the facility's reported flow from a 10-year to a 3-year average
- The 3-year average would be much more responsive to recent flow decreases

Summary

- The proposed SI was developed to help in estimating the benefit of WWTP upgrades – *in pounds reduced per year* – toward meeting Chesapeake Bay targets
- The proposed SI will not replace annual progress, but will instead provide an additional tool to assist watershed managers in making management decisions
- The proposed SI differs from the annual progress in three ways:
  - **Municipal flows are averaged over time to control for weather**
  - **WWTP process upgrades are credited as a BMP**
  - **Flow reduction programs are credited as a BMP**
- All calculations will be done by the Bay Program.
  - Required submissions from Bay Partnership members: ***none***
  - Optional submissions:
    (1) List of WWTP process upgrades completed during progress year
    (2) List of CSS separation & I/I reduction projects completed during progress year
- For detailed information about the methodology for calculating the proposed SI, please refer to MDE's September 2013 Technical Memorandum, "Proposed supplemental indicator for reporting point source progress"