

Riverine Breakout Group

Room: Caucus I

Lead: Jason Hubbard

Staff: Rachel Dixon

Overall Question: To what extent do rivers control the timing and speciation of nutrients entering the tidal waters of the CB

- 1) What are the most important pieces of information/understanding that the river/lake processes group would like to get from the land management and processes group?
- 2) How long does the N&P species that is delivered to a stream exist in that form?
- 3) What fractions of the N&P species delivered to a first order stream get lost to the atmosphere (volatilization), stored (sediment and/or vegetation), and gets delivered to the tidal waters of the Bay?
- 4) What is the N&P residence (transit) time relative to the stream network water residence (transit) time?
- 5) What is the N&P residence (transit) time relative to the reservoir network water residence (transit) time?
- 6) What are the predominant N&P species entering the stream network via ...
 - a. Groundwater?
 - b. Wastewater treatment effluent?
 - c. Urban runoff?
 - d. Bottom sediments and floodplains after large storm events?
 - e. Agricultural landscapes receiving chemical fertilizer?
 - f. Agricultural landscapes receiving manure?
- 7) What fraction of N&P enters the tidal waters via...
 - a. Large, integrating rivers?
 - b. Smaller streams directly entering the Bay?
 - c. Point source discharges?
 - d. Groundwater directly entering the Bay?
 - e. Wetlands directly entering the Bay?
- 8) Is there a specific riverine environment (or location) in a large integrating river or small stream that determines the N&P speciation that is delivered to the tidal waters?
- 9) Is there a seasonal pattern(s) in the speciation of N&P that enters the tidal waters of the Bay?
- 10) As reservoirs lose their storage capacity (become like flow-through systems), how will the N&P speciation discharged by the reservoir change?
- 11) How does extended periods of drought and excess precipitation affect the speciation of N&P delivered from the stream network to the tidal waters?
- 12) What are the most important scientific uncertainties surrounding the fate and transport nutrient species in the riverine system?
- 13) Is there information on the importance of terrestrial/freshwater organic N and P in bay hypoxia formation? If so, what are the levels, quality, and seasonality?