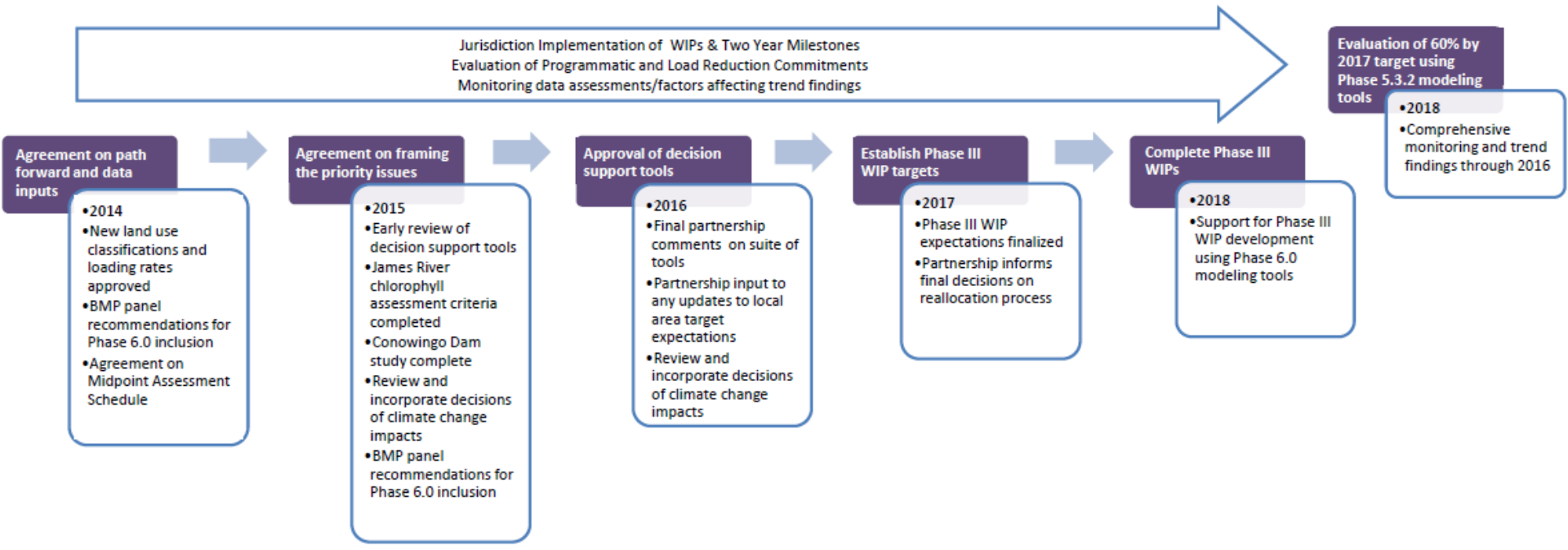
# Midpoint Assessment Timeline



# Draft Modeling Schedule for MPA

Dec 20, 2016 - All models are final. The partnership decision-making process begins to discuss how these new models will be used in the WIP3 process

September 2016 – Final comments on the draft Phase 6 model

Dec 20, 2015 - Phase 6 draft model is complete. Evaluation followed by fine tuning during this year

Oct 20, 2015 – All inputs are final and delivered to the WSM by the scenario builder team for the final calibration run

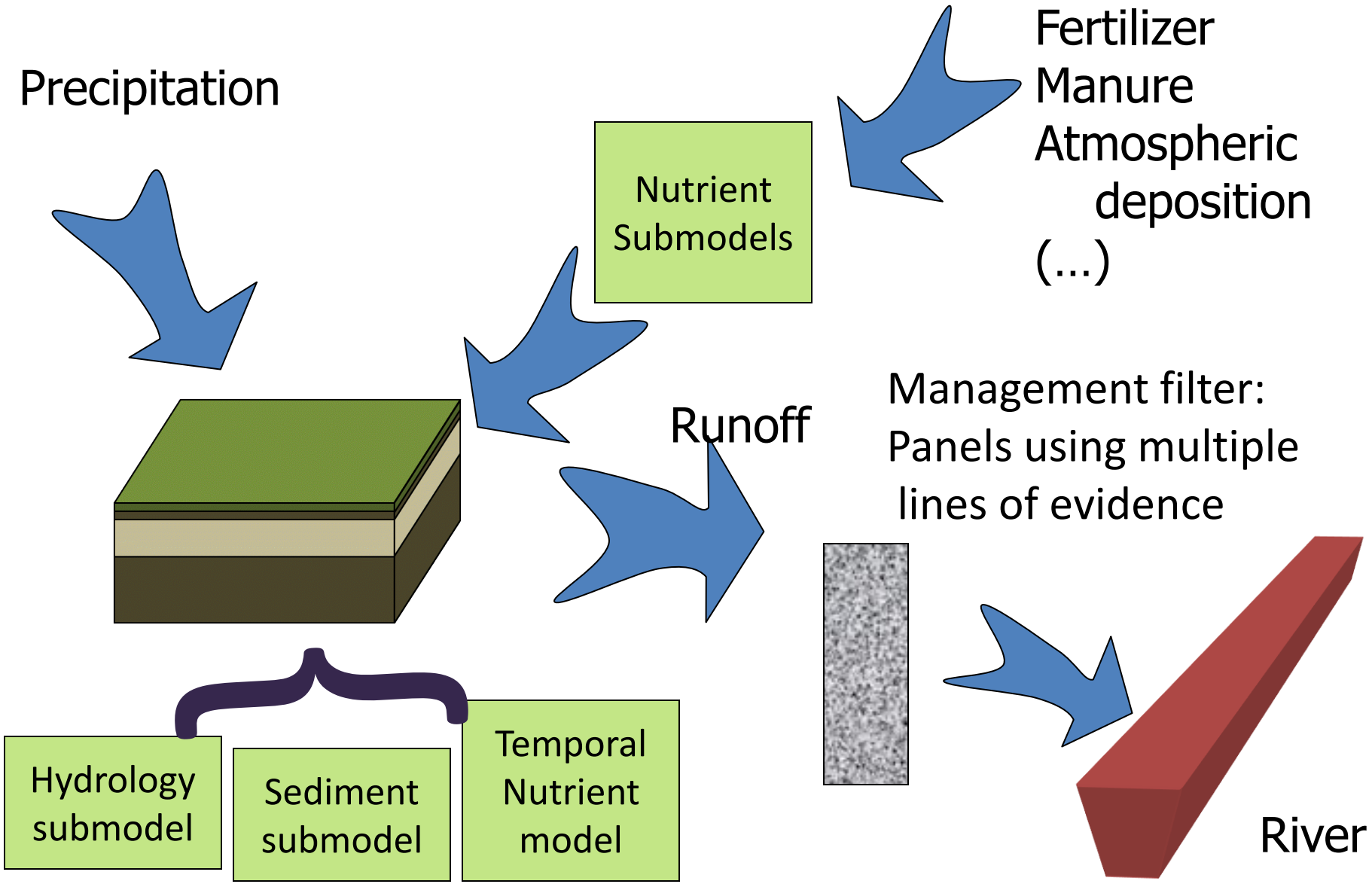
March 20, 2015 – All major partnership decisions are made on changes to scenario builder processing and data. Scenario builder final modifications begin.

Oct 20, 2014 – Rough Draft of major changes to nutrient processing in Scenario Builder will need to be complete. (Examples: land use types and manure application rules)

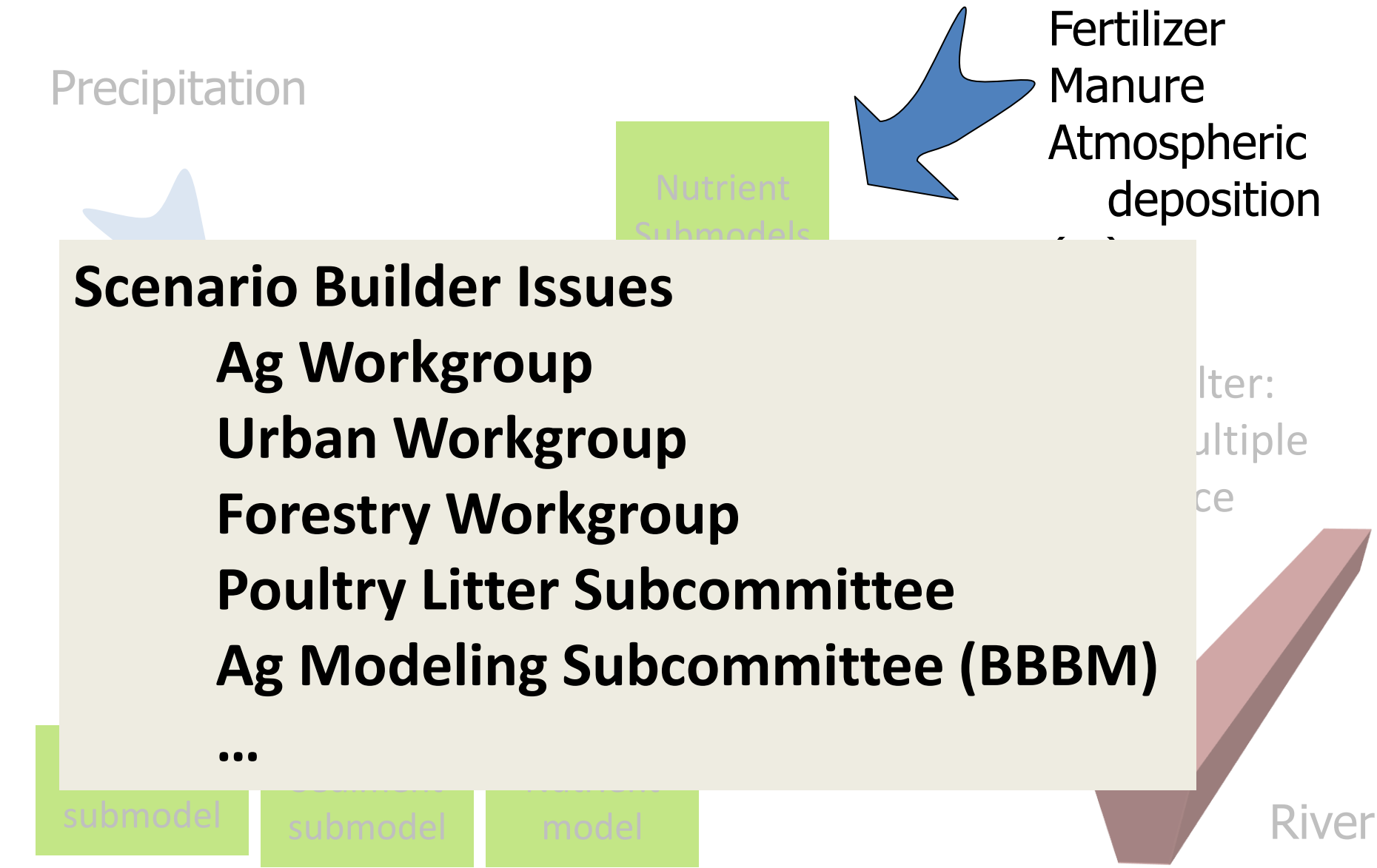
# Phase 6 model development

| | |
|---|---|
| • Land Use | LUWG |
| • BMP Panels | WQGIT |
| • Nutrient Applications / SB | Ag Modeling SC |
| • Calibration Methodology | ModWG |
| • Software Development | ModWG |
| • Targets | ModWG ++ |
| • Sensitivities | ModWG |
| • Other Issues | ModWG |

# Phase 6


Precipitation
Fertilizer
Manure
Atmospheric deposition
(…)
Nutrient Submodels
Runoff
Management filter:
Panels using multiple lines of evidence
Hydrology submodel
Sediment submodel
Temporal Nutrient model
River

# Phase 6 – Multiple Tracks




**Scenario Builder Issues**

- **Ag Workgroup**
- **Urban Workgroup**
- **Forestry Workgroup**
- **Poultry Litter Subcommittee**
- **Ag Modeling Subcommittee (BBBM)**
- **…**

# Phase 6 – Multiple Tracks

Precipitation

Fertilizer
Manure
Atmospheric deposition
(…)

Nutrient Submodels

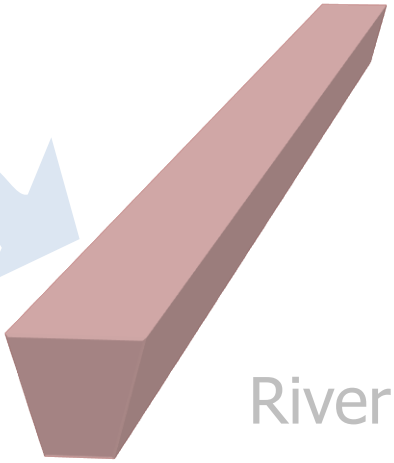
**Nutrient Submodels (targets, sensitivity, code)**
**Modeling Workgroup**

Hydrology submodel

Sediment submodel

Temporal Nutrient model





River

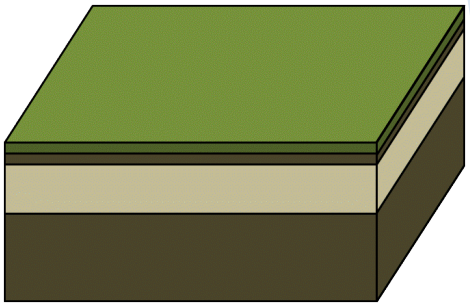
# Phase 6 – Multiple Tracks

Precipitation

Fertilizer
Manure
Atmospheric deposition
(…)

**Land Use**

**Land Use Workgroup**



Runoff

Management filter:
Panels using multiple lines of evidence

Hydrology submodel

Sediment submodel

Temporal Nutrient model

River

# Phase 6 – Multiple Tracks

Precipitation

Fertilizer
Manure
Atmospheric deposition
(…)

Nutrient Submodels

Runoff

**BMP Effectiveness**
**BMP panels**

Hydrology submodel

Sediment submodel

Temporal Nutrient model

Management filter:
Panels using multiple lines of evidence

River

# Phase 6 – Multiple Tracks

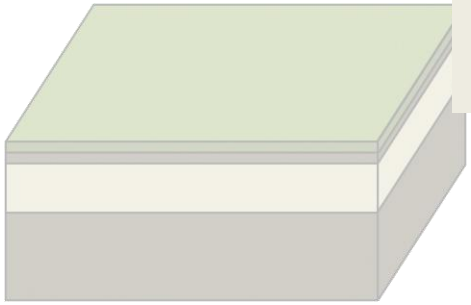
Precipitation

Fertilizer
Manure
Atmospheric deposition
(…)

Nutrient Submodels

**Calibration – other issues**
**Modeling Workgroup**

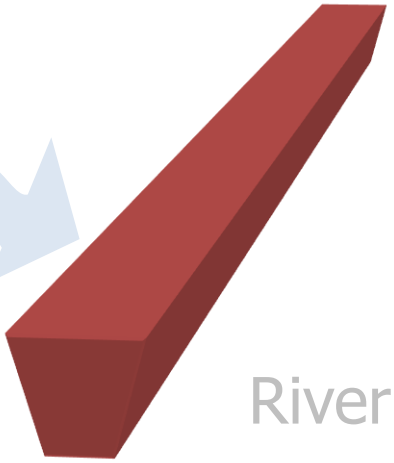
ter:
ltiple
lines of evidence



Hydrology submodel

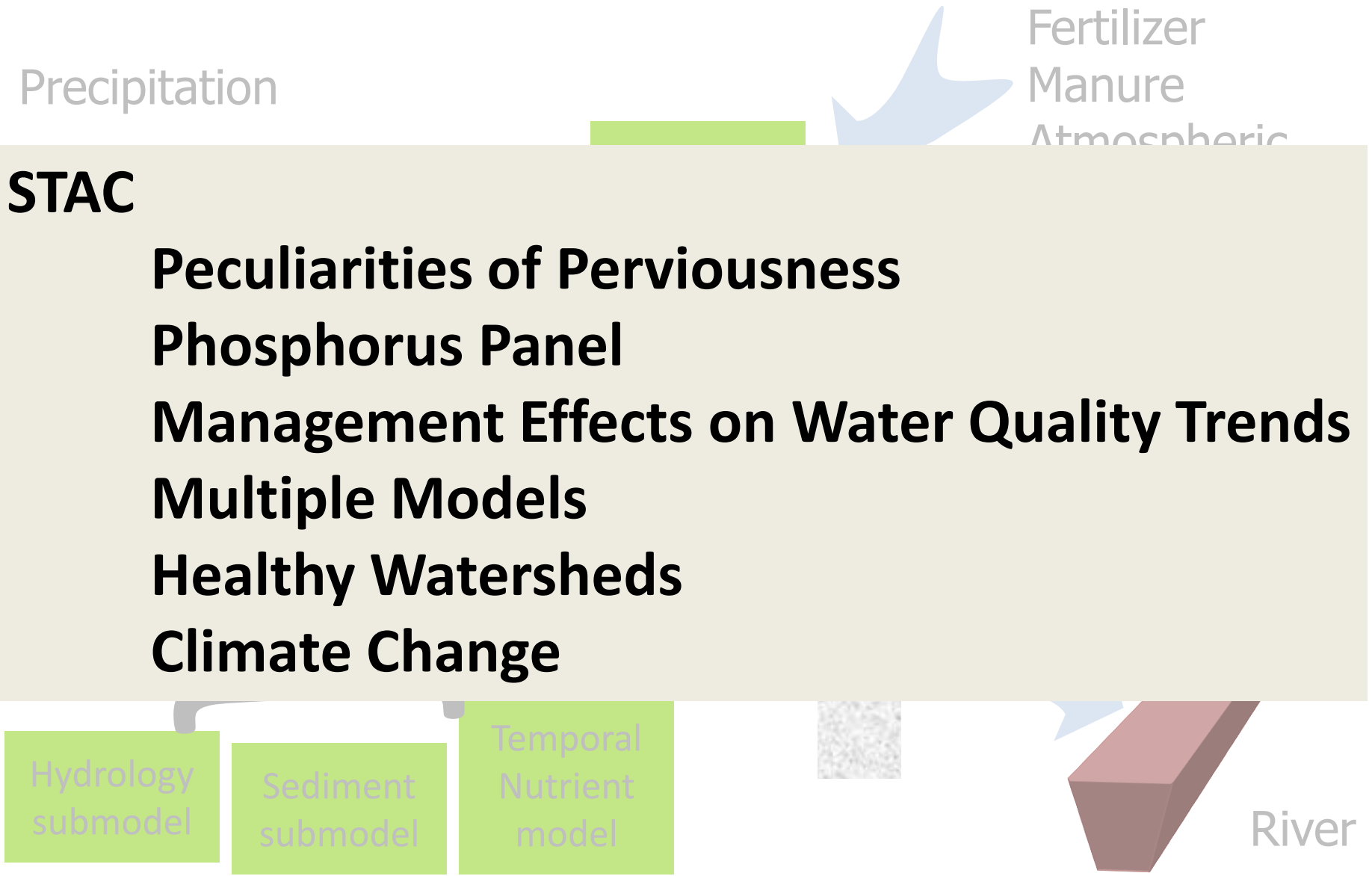
Sediment submodel

Temporal Nutrient model



River

# Phase 6 – Multiple Tracks




**STAC**

- **Peculiarities of Perviousness**
- **Phosphorus Panel**
- **Management Effects on Water Quality Trends**
- **Multiple Models**
- **Healthy Watersheds**
- **Climate Change**

# Phase 6 model development

| | |
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| • Software Development | ModWG |
| • Targets | ModWG ++ |
| • Sensitivities | ModWG |
| • Other Issues | ModWG |

# Phase 6 model development

| | |
|---|---|
| • Land Use | LUWG |
| • BMP Panels | WQGIT |
| • Nutrient Applications / SB | Ag Modeling SC |
| • Calibration Methodology | Bhatt/Mandel |
| • Software Development | Bhatt |
| • Targets | Yactayo |
| • Sensitivities | Yactayo/Kleinman |
| • Other Issues | Fraley-McNeal |

# Calibration

- Gopal: starting from the beginning
  - P5.3.2 + NLDAS rainfall
  - Worked on hydro calibration methods
  - Sediment improvement
  - Nutrients same as previous PQUAL for now
- Ross: starting from the end
  - Rethinking the river calibration method
  - Developing new methods for regional differences

# Phase 6 Sensitivities and Targets

- Gather Information
  - AGCHEM - CBPO
  - Sparrow - CBPO
  - CEAP – CBPO and BARC
  - Forest Disturbance model – Gutierrez-Magness, et al
  - APLE – Coale and Mulkey
  - Other Coefficient Models - TetraTech
  - Literature - TetraTech
- Synthesize and Discuss with Workgroup
- Next Step – Incorporate Sensitivity into PQUAL

# Other Modeling Issues (as time allows)

- Reservoirs
  - Susquehanna
  - Ponds
- Lag Times
- **Small Scale Effects – Fraley-McNeal**
- Uncertainty Analysis
- **Code Updates ( speed and clarity ) - Bhatt**
- …