

# Phase 6 Watershed Model Review

MWG Presentation to WQGIT

February 8, 2016

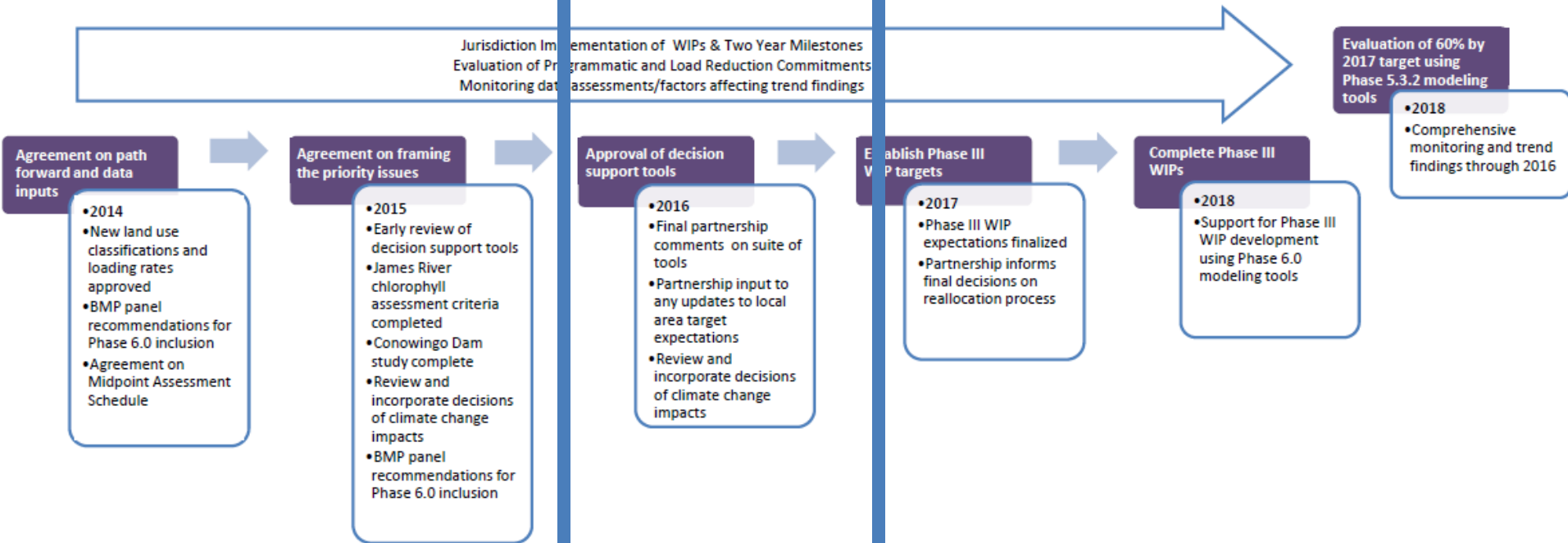
# January 2016 MWG Quarterly (1)

- Phase 6 Modeling Update (Gary)
  - Similar to today's presentation
- Phase 6 Modeling Update (Gopal)
- Conowingo
  - STAC Workshop Summary
  - Reservoir Simulation in Phase 6
  - Enhanced sediment transport model - HEC RAS
  - New Conowingo Pool Mass Balance Model
- MWG Governance

# January 2016 MWG Quarterly (2)

- Shallow Water Multiple Models Project (3)
- More Conowingo (WQSTM implications)
- WQSTM (Cerco)
  - Calibration w/ P6 WSM loads
  - Conowingo considerations
  - Tidal Marsh Attenuation
  - Shallow water improved simulation

# Midpoint Assessment Timeline



**CREATE  
The Models**

**REVIEW  
The Models**

**USE  
The Models**

# We did it!!!

Members

Meetings

Workgroups & Task Groups

Projects & Resources

Publications

## Phase 6 Beta 1 - January 2016

---

The Phase 6 Beta 1 Watershed Model is available for partnership review. Draft documentation will be available in early February 2016. Calibration plots are available on the [CBP FTP site](#) by constituent, or in a single file. Information and data regarding Scenario Builder inputs can also be accessed from another linked [FTP site](#).

The files represent the annual average loads from the calibration run. The time period for calibration is 1985 through 2014. The loads are provided as annual averages of 1985-2014 and 1991-2000. Inputs change annually during the calibration run, so these are not meant to represent any particular year, but rather the average of the years indicated. The loads are for information only and cannot be used to analyze the effect of model changes on any policies. These effects can only be understood when the final versions of the entire modeling system including the estuarine model is run together.

The 'Loads Acres' excel files are the annual average loads in a format familiar to CBP partners.

The 'AllLoads' text files are the annual average loads in raw format.

The 'Export Loads Comparison' excel file is a comparison with USGS-estimated loads at monitoring stations.

Any questions should be directed to Lewis Linker or Kyle Hinson.

[Export Loads Comparison: Phase 6 Beta 1 vs WRTDS \(106.43 KB\)](#)

# We did it!!!

Members

Meetings

Workgroups & Task Groups

Projects & Resources

Publications

## Phase 6 Beta 1 - January 2016

The Phase 6 Beta 1 Watershed Model is available for partnership review. Draft documentation will be available by early February 2016. Calibration Plots are available on the CBP FTP site by constituent, or in a single file. Information and data regarding Scenario Builder inputs can also be accessed from another linked FTP site. Documentation posted 2/1/16

The files represent the annual average loads from the calibration run. The time period for calibration is 1985 through 2014. The loads are provided as annual averages of 1985-2014 and 1991-2000. Inputs change annually during the calibration run, so these are not meant to represent the average of the years indicated. The loads are for information only and cannot be used to analyze the effect of model changes on any policies. These effects can only be understood when the final versions of the entire modeling system including the estuarine model is run together. Calibration Loads

The 'Loads Acres' excel files are the annual average loads in a format familiar to CBP partners.

The 'AllLoads' text files are the annual average loads in a text format.

The 'Export Loads Comparison' excel file is a comparison with USGS-estimated loads at monitoring stations. Calibration vs WRTDS

Any questions should be directed to Lewis Linker or Kyle Hinson.

Export Loads Comparison: Phase 6 Beta 1 vs WRTDS (106.43 KB)

# Phase 6 Model Structure

Average Load +  $\Delta$  Inputs \* Sensitivity

\*

Land Use Acres

\*

BMPs

\*

Land to Water

\*

Stream Delivery

\*

River Delivery

Direct Loads



# Phase 6 Model Structure

Average Load +  $\Delta$  Inputs \* Sensitivity

\*

Land Use Acres

\*

BMPs

\*

Land to Water

\*

Stream Delivery

\*

River Delivery

Direct Loads

"Scenario Builder"

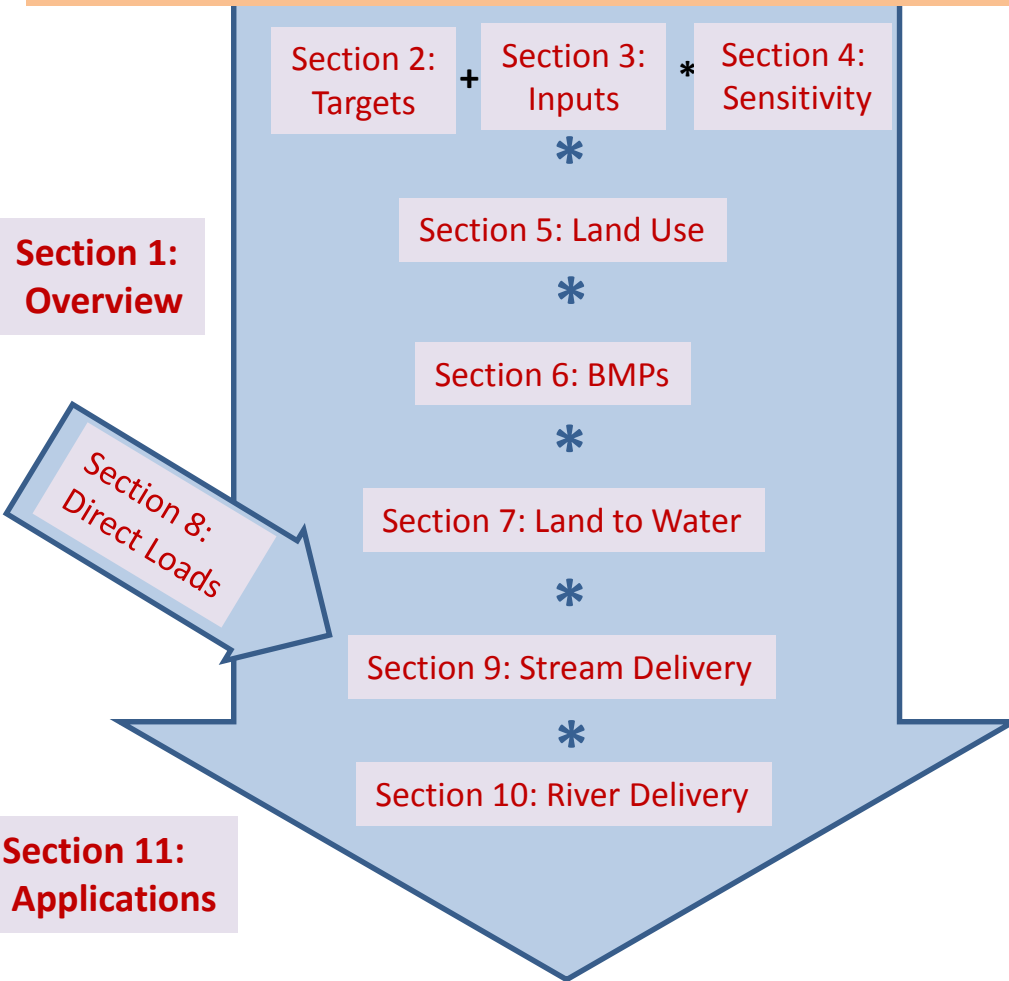
"Watershed Model"





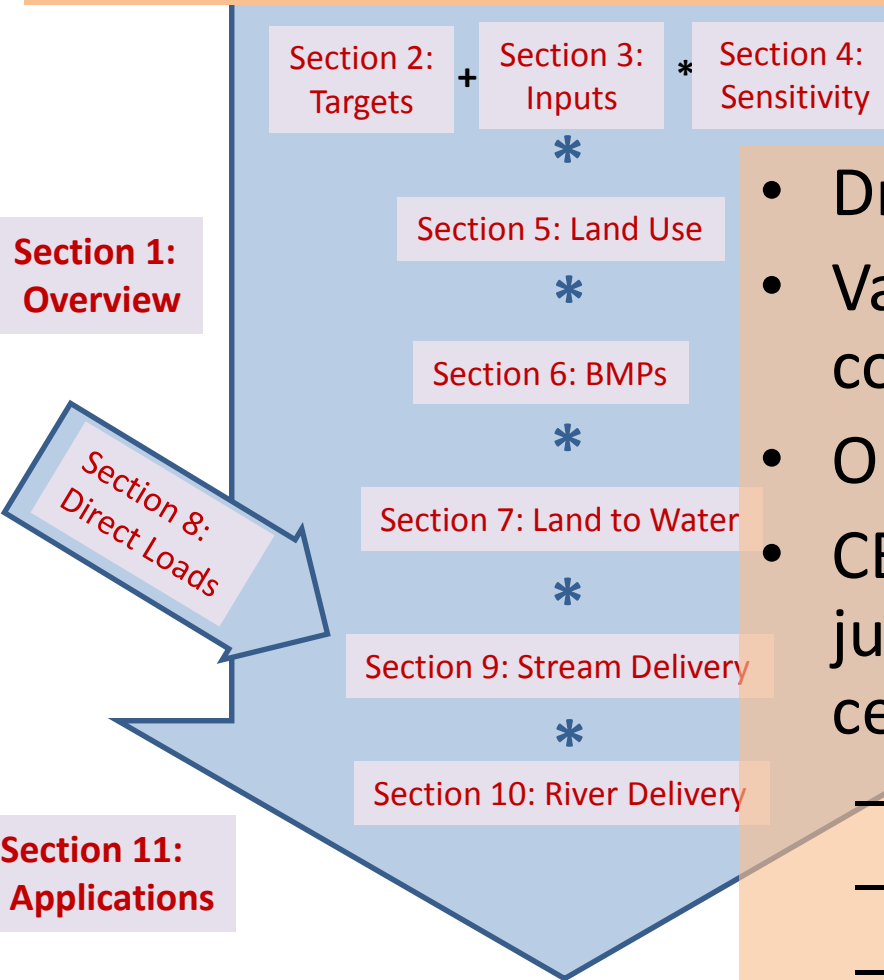
# Documentation is similarly organized

## Phase 6 Model Documentation



# Documentation

## Phase 6 Model Documentation



- Draft
- Varying completeness
- Open to comments
- CBP groups have jurisdiction over certain parts
  - Section 5: LUWG
  - Section 9: MWG
  - Section 3: AMS
  - Etc.

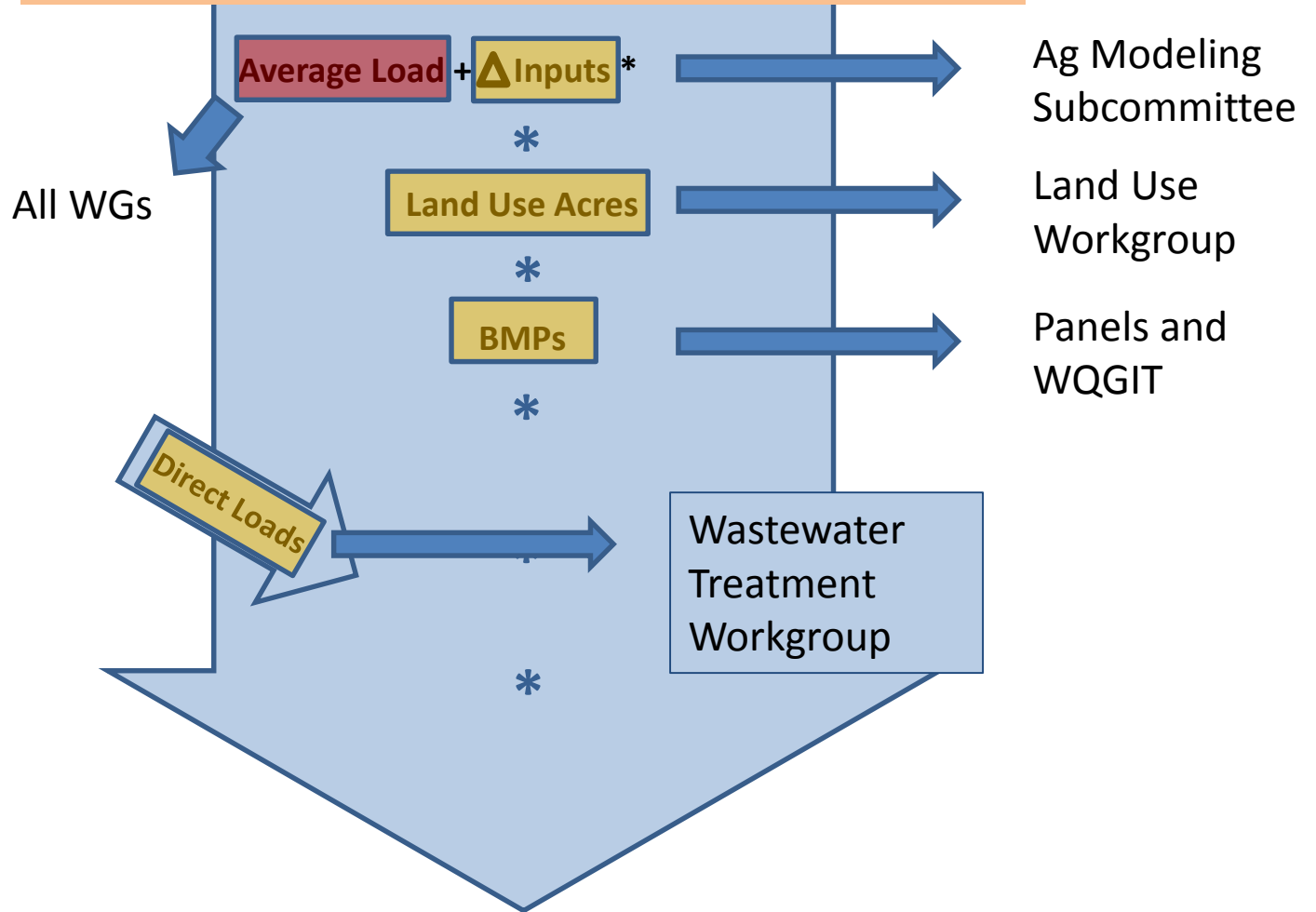


# 2016 comments

- Comments can be submitted at any time
  - Focus points around version revisions
- Comments should be submitted over email
- Earlier the Better
- Simpler the better
- Anyone can review anything
- Comments should be submitted to group with purview over that topic
  - CBPO staff can help direct
  - cc Gary/Matt J

# Documentation

## Phase 6 Model Structure



**Section 1:  
Overview**

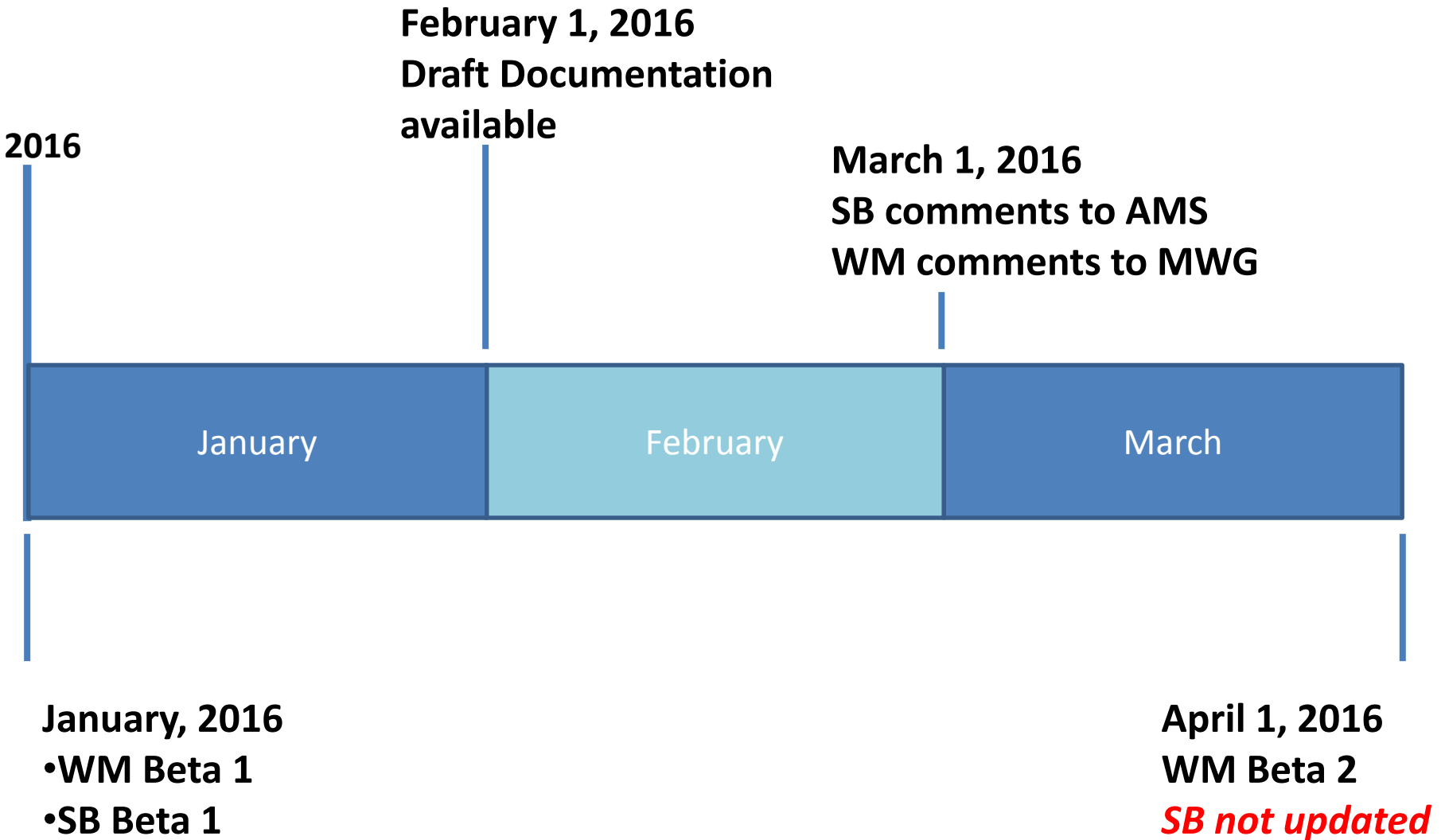
**All WGs and WQGIT**



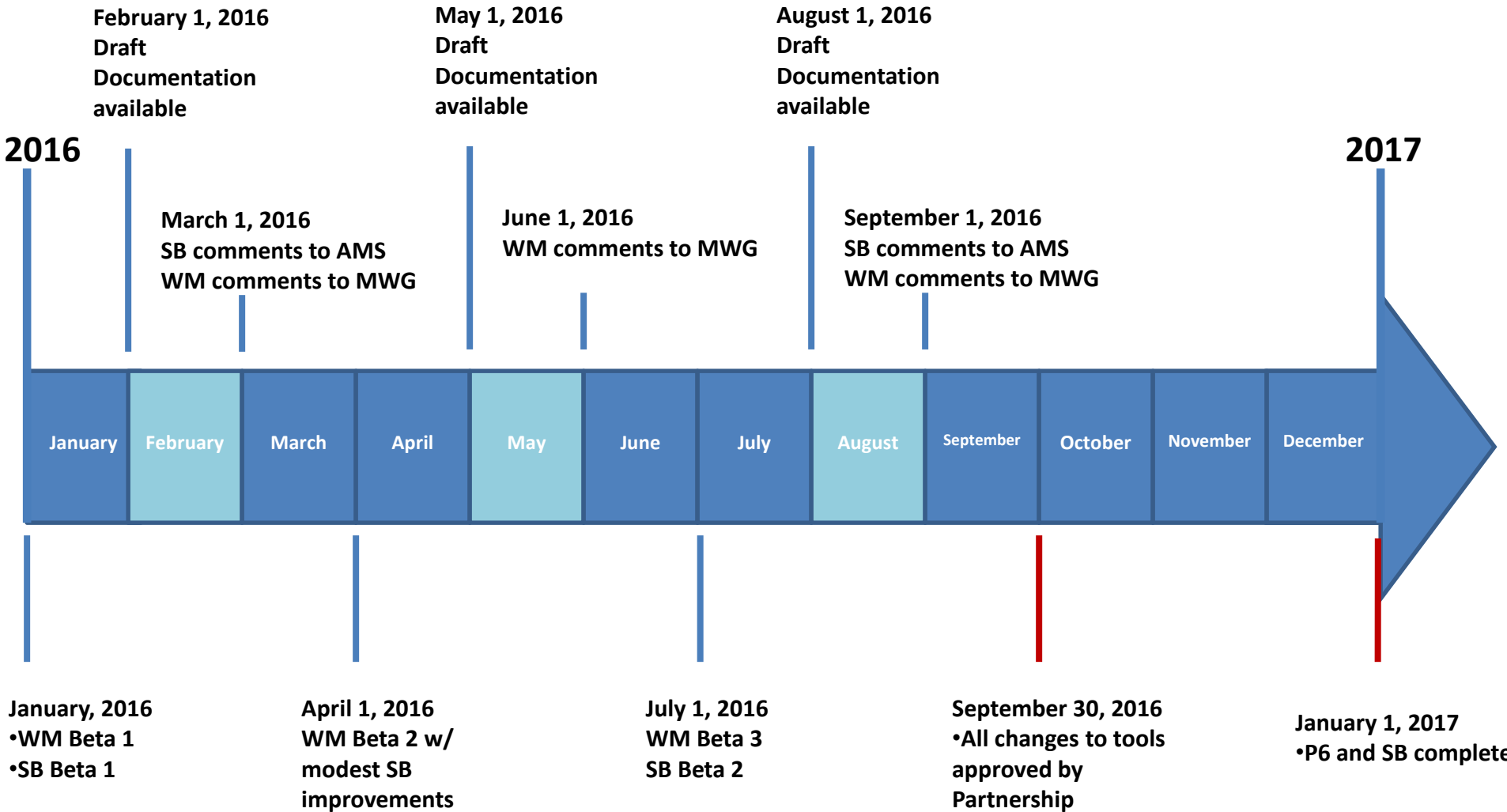
# Documentation Comments

- Wanted, but recognize it's very draft now and will be undergoing continuous refinement
- Before devoting a lot of writing time, call Gary or Matt to see if major updates are in progress
- Is documentation accurate?
- How to improve to better communicate?

# 2016 Phase 6 Model and SB Review Timeline



# 2016 Phase 6 Model and SB Review Timeline



# What Comes w/ New Versions?

- Partnership directed improvements that can be accomplished
- Documentation updates for process-related changes approx. one month after version release



# Prioritizing Changes - How

- Issues identified as “Fatal Flaws” by the WQGIT or the Modeling Workgroup will be the top priority. Other recommendations will be judged by their feasibility and the following three factors:
  - Complexity – Any change that is a simple update to a value in a table (BMP efficiency, land use load ratio, etc.) can be implemented in a few minutes and will not be subject to this constraint. A complex change to BMP reporting or the way that fertilizer and manure are calculated would take more time to implement.
  - Timing – a recommendation submitted in April, 2016 has a greater chance of being implemented than one submitted on September, 2016, all else being equal.
  - Competing priorities – Just about any change can be accommodated, but the partnership may have to choose between multiple priorities given the available time.

# Now – April 2016

- STAC Workshops – Conowingo, Model Uncertainty, Climate Change
- STAC Peer Review of Watershed Model begins
- SB input corrections
- WSM planned improvements
- Calibrated WSM Beta 2 linked w/ calibrated WQSTM at April Quarterly

# WSM Improvements for April

- Updated and refined atmospheric deposition data
- Diversions, and revised SB dataset
- Revised sediment targets and sediment delivery ratios
- Bank and floodplain sediment and nutrient loads
- Revised estimates of lag-times and rSAS
- Improvements to lower Susquehanna reservoirs
- Phosphate export simulation (dissolved vs. sorbed)

# April 2016 – July 2016

- Continued Conowingo assessment and Maryland led peer review of modeling
- Decisions on land uses, loading rates, BMP efficiencies, onsite system attenuation
- SB Beta 2, Calibrated WSM Beta 3, calibrated WQSTM at July Quarterly

# July 2016 – September 2016

- Continued Conowingo
- Continued SB - Deadline for all final data inputs September 30
- Final land use based on high resolution land cover incorporated
- MAYBE – WSM different from July at October Quarterly