Issues with Phase 6 Land Use (v2)

Peter Claggett, Fred Irani, Quentin Stubbs, and Renee Thompson
U.S. Geological Survey

December 7, 2015
Land Use Workgroup Meeting

Fitting the Ag Census into Mapped P6 Land Uses

Current Approach: reduce other land use acreages sequentially

1. open space
2. non-regulated tree canopy scrub shrub
3. forest(not harvested)
4. non-regulated impervious + turf
5. ms4 impervious + turf
6. agriculture

Problem: can result in substantial reductions or elimination of the above listed land uses.

Proposed Approach:

Reduce all land uses simultaneously in proportion to their error.

Fitting the Ag Census into Mapped P6 Land Uses

Example: Berger County

County Area: 32,500 acres
P6 Land Use + Ag Census Acres: 33,000
Adjustment required= -500 acres

P6 land use area and % errors (e.g., accuracy of each land use)
Forest = 10,000 acres +/- 5% (500 acres)
Impervious = 500 acres +/- 5%
Turf grass = 1500 acres +/- 20%
Open space = 1000 acres +/- 25%
Ag Census = 20,000 acres +/- 5%

Fitting the Ag Census into Mapped P6 Land Uses

Maximum acreage that can be added or deducted from each land use and % of total adjustable acres

Forest = 500 acres (500/2075 = 24.1%)
Impervious = 25 acres (1.2%)
Turf grass = 300 acres (14.5%)
Open space = 250 acres (12.0%)
Ag Census = 1,000 acres (48.2%)

Max adjustment acres: 2,075

Solution

Multiply the required adjustment (-500) by each land use's % of total adjustable acres:
Forest = 9,879 acres (10,000 – (500 * 24.1%))
Impervious = 494 acres
Turf grass = 1,428 acres
Open space = 940
Agriculture = 19,759 acres

Total acres = 32,500 acres

If the Ag Census adjustment > Max adjustment acres, question the errors, double cropping estimates, accommodation of non-reported values… the "D's" in the Census.

Fitting Construction into Mapped P6 Land Uses

Current Approach:

1. Estimate annual construction acres by using annual Erosion & Sediment Control Permit “permitted acres”; or

   Multiply 7.9 by estimated annual change in impervious surfaces.

2. Subtract construction acres from impervious surface acres.

Problem: can result in substantial reductions in impervious surfaces.

Proposed Approach: TBD

- Re-examine multiplier and accuracy of E&S permit acreages as representing actual disturbed acres in any given year.

- Subtract construction acres from impervious surfaces + turf, or from all developed land uses (including tree canopy classes).

Wetlands, Buffers, and Erosion (updates)

- Wetlands Workgroup and Wetlands Expert Panel have lead overseeing the accuracy of wetlands data informing Phase 6 model.

- Pennsylvania intends to map potential wetlands to supplement the NWI.
  ~ using LiDAR, high-res imagery, and modeling to identify potential wetlands, i.e., “hydrologically active areas”.

- Wetlands attenuate nutrients and sediment from upslope land uses through retention, transformation, and plant uptake of overland runoff and groundwater discharge.

- Riparian forest buffers attenuate nutrients and sediment through slowing floodwaters and plant uptake.

- CBPO will attempt to account for both Wetland and Riparian Forest Buffer processes in Phase 6 through modeling overland flow and adding these variables to SPARROW.