PRE-PROPOSAL COVER PAGE

Project Title:
Creating a Strategic Vision for Sustainable Agriculture in the Chesapeake Bay Watershed

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Topic Area of Focus:
1

Date:
August 19, 2013

Key words
agriculture, sustainability, future scenarios, Chesapeake Bay, water quality

Project Hypothesis and Objectives

The goals of productive farmland and improved water quality are not mutually exclusive. Rather, well managed farmland is a preferred land use in the Chesapeake Bay Watershed and is critical in meeting the goals of the Bay TMDL. The project proposed by American Farmland Trust (AFT) will help stakeholders and policymakers to achieve both of these goals. Its objectives are: 1) To develop the capacity of the Bay Partnership to forecast how agriculture, urban growth, and land preservation policies may impact water quality and nutrient offset capacity under various market and climate conditions; and, 2) To create a vision that sustains agriculture through urban growth management, land protection, and future technology dissemination and adoption.

Literature Review

Many factors inform decisions on how best to forecast land use change, including the goal(s), audience, scale, scenarios, and data availability (Sohl et al., 2010). Because these factors vary across applications, the approaches to agricultural forecasting also vary. But given the influence of markets and policies on farmer decisions, the models used to forecast agricultural conditions in the United States typically rely on econometric approaches (Lubowski et al., 2008; Irwin, 2010; Brady and Irwin, 2011). For land use models to inform policies, however, policy and decision makers need to be involved in the model development process and heavily engaged in the development of scenarios (Sohl and Claggett, 2013). Therefore, the AFT team proposes a participatory modeling approach that will involve an aggressive outreach component to engage agricultural industry and business representatives and agricultural economists. To ensure credibility, consistency with regional forecasts will be achieved by downscaling the USDA's commodity production projections to constrain county-level forecasts.

Materials, Methods and Timeline

<u>Convene agricultural industry representatives, agencies and economists in an Ag Futures Group. Collect input from structured interviews and roundtable discussions to:</u>

1) obtain data on production trends that will affect nutrient loads to the Bay (e.g., crop genetics, animal nutrition, new technologies);

2) identify linkages within production systems (e.g., increase in dairy cows -> demand for silage -> increased precision -> less demand for fertilizer); and,

3) identify coherent sets of logical assumptions (i.e., future scenarios) that will describe and bound the plausible future of agriculture and drive robust discussions about the sustainability of agriculture.

<u>Downscale USDA regional agricultural projections to the states and counties in the watershed</u>. The USDA-ERS projections, based on national yield distributions and marketing conditions, cover farm commodities, trade, and aggregate indicators of the sector, such as land use for crops, farm income and food prices. The projections are policy-neutral and assume that no policy change will occur during the 10-year projection period. The AFT team will:

1) perform a statistical disaggregation of projections for 9 major crop commodities and 6 animal products;

2) translate regional commodity projections into estimates of state-level crop composition/ acres/rotations and animal numbers, based on input from industry and economists; and,

3) allocate the state-level demand projections for crop acres and animals to counties within each state through enhancements to the Chesapeake Bay Land Change Model.

Develop alternative future scenarios.

Host two workshops with the Ag Futures Group to identify policies, regulations, and technologies that may impact industry and farmer decisions. The Ag Futures Group will use this information to develop alternative future scenarios and explore the sustainability of agriculture. The scenarios, combined with USDA's downscaled data, will be used for county-level agricultural forecasts.

Evaluate alternative future scenarios. With input from USGS and EPA, estimate the nutrient and sediment loads and regional offset capacity associated with each scenario. Review findings with the Futures Group and Ag Workgroup.

Watershed Stakeholder review of scenarios and impacts. Host third workshop with stakeholders representing diverse interests (e.g., land use, habitat, open space, forestry, water quality) to review the scenarios and potential impacts of policies, markets, and investments. Gain insights into common interests and concerns across sectors and identify the components of a vision for sustainable agriculture in the watershed.

Compile input and write the final report reflecting the final scenarios.

Proposed Timeline. *Fall 2013*: (This work will begin before the official start date (due to timing of Mid-Point Model Assessment) and be supported by project matching funds.) Preliminary discussions of the project team. Form Ag Futures Group and Advisory Committee. Begin to work with USDA-ERS to downscale national and regional-level forecasts. *Spring/Summer/Fall 2014*: Downscaling. Convene initial and follow-up Futures Group workshops to develop alternative future scenarios. Convene stakeholders for scenario input. *Winter 2014/ Spring 2015*: Downscaling continued. Finalize scenarios and ERS downscaling. Complete needed enhancements to Chesapeake Bay Land Change Model. Work with Bay modelers to estimate nutrient and sediment loads and regional offset capacity. *Summer 2015*: Visioning. Convene watershed stakeholders for visioning. Prepare for integration of scenarios into Mid-Point assessment. *Fall/Winter 2015*: Compile and publish final report.

Benefits

- Accurate, well informed and scientifically unassailable data on future agricultural trends are supported by a broad spectrum of the scientific, agricultural and environmental communities.
- A documented and replicable process/protocol for deriving county-scale agricultural trend data from national and regional projections is available to Bay Partnership and jurisdictions.
- A set of feasible policy and program options that public and private decision-makers may use to promote the sustainability of agriculture while meeting the TMDL requirements.
- A shared vision and commitment to policy options that restore the Bay and foster a vibrant agricultural economy.

Beneficiaries

Farmers and the non-farming public, the Chesapeake Bay Program Partnership including its federal, state, and local agricultural and environmental resource agencies, and policy-makers.

References

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