

Ohio Lake Erie Phosphorus Task Force Meeting Minutes
December 20, 2007
ODNR, Building H-2, Columbus, OH

Meeting Objectives: *Work through revised list of observations and issues and make recommendations related to next steps for agricultural activities. View a presentation on phosphorus removal at Cleveland WWTPs.*

Chair Gail Hesse opened the meeting and welcomed members and observers. The new meeting venue at ODNR and outside of downtown Columbus was much appreciated by members.

Dave Baker provided an update on Heidelberg's Great Lakes Protection Fund grant. An introductory meeting was held of the grant's Advisory Committee on December 18 and 19 in Tiffin. The Advisory Committee membership includes researchers, producers, public and private sector, state and federal agencies. The project will focus on the Sandusky River watershed, develop a dissolved phosphorus soil test metric, and attempt to reduce loads of DRP to the Sandusky River by 20-30% over the next five years, with a long term goal of 50% reduction by 2018. Outreach will be done through the Sandusky River Watershed Coalition. They will look at how to develop a P soil test index specifically for Ohio. The current 150ppm limit will be evaluated along with the science and politics of developing and implementing a new index. An index process that is doable is needed.

Discussion then moved into the draft table/matrix of topics/issues and recommendations as related to agriculture. Some of the main points were that:

- ***The P index needs to be defined as a risk assessment tool*** (measuring the risk for P transport offsite). Start with clarifying goals and not management methods
- ***Soil test collection and analytical methods need to be standardized by certifying labs for running soil tests.*** Industry certification could be coordinated with the American Soil Scientists Organization. It would provide consistency. ODOA would like to see one lab test all the labs in the state (OSU could potentially do that).
- The existing P index does not need to be reinvented, but it does need to be reviewed and validated for Ohio and be more quantifiable to risk. A DRP component needs to be incorporated.
- The soil loss equation does not measure the release of P or soil to water, just the movement from one spot to another.
- ***The P soil index must be used much more frequently than the current use.*** It is not used now because it is cumbersome, there is no regulatory emphasis and there is a lack of technical support. There are many acres that are not tested. In some counties, retailers control how much P is applied, and since they make their money on how much P fertilizer is sold, methods must be found to work better with them.

- There are agricultural practice standards and agronomic rates for application to get the best yield. However, not everyone follows these standards. If everyone did, we might not be having the P problem. The high cost of fertilizer may help to endorse the use of the standardized practices.
- There is currently a BMP challenge demonstration project sponsored by the American Farmland Trust to encourage use of agronomic index. Also projects underway under Env. Defense Fund, State CIG and GLPF in the Tiffin and Blanchard River watersheds to better comply with the agronomic index. The agronomic index is 30. P in soil must be maintained at 30 for best yield. Add P only to achieve this goal.
- **Research is needed to determine where the solubility of P changes.** If it doesn't dissolve, it won't move into tiles and streams. DRP and nitrogen delivery rates are very similar regardless of soil types.
- **Incentives must be found to discourage the fall application of phosphorus fertilizer/manure.** Typically, farmers have some time in the fall to fertilize and fertilizer is cheaper then. In the spring, they want to spend their time planting and soils are usually more compact due to winter freezing and spring rains.
- **More work is needed to encourage soil testing of the top 2 inches.**
- **A screening tool should be developed that can determine if the P index should be used at a site.** Such a tool could include season (high risk of runoff in winter), weather, distance to stream or tile system, acreage, etc.
- The current connection of phosphorus delivery from a watershed to Lake Erie is kind of a black box, but the box is less black for DRP.
- **Establishing some Discovery Farms** (WI example) could provide the "Labs" for testing how to best make P application decisions. Could show all the decisions a farmer needs to make and how difficult it is to make those decisions. Discovery Farms cannot show or translate into actual improvements in water quality, but a **Discovery Watershed** may translate into being able to measure an improvement in water quality. NRCS has a proposal in to test this in the Upper Auglaize.
- Should education be focused only on farmers or should there also be a general public component? Certain areas could be identified as high risk watersheds or high risk districts. DRP status would be checked in these areas. The concept of "**certified green**" could explore the potential acceptance of products that have been grown/raised following all recommended nutrient based practices.

For the next meeting, the table of topic/issue/recommendation will be revised for further discussion.

Robert Bonnett, Asst. Supt. of the Westerly WWTP of the Northeast Ohio Regional Sewer District (NEORS) in Cleveland provided an overview of P

removal at NEORSD's WWTPs. Primary treatment removes solids. Secondary treatment removes soluble organic materials typically in a concentration of C:N:P = 100:5:1. Treatment process includes sedimentation, coagulation and flocculation. Coagulation is used to precipitate P. Ferrous and ferric sulfate, ferrous and ferric chloride, alum and lime are used. At a pH of 5.5 iron is not soluble. Cost of treatment chemicals increased from 8 cents to 16 cents. A comparison of 2006 average TP concentrations measured as mg/l among the three Cleveland plants:

| | Raw | Primary | Secondary | Final |
|--------------------|-----|---------|-----------|-------|
| Easterly (100MGD) | 2.6 | 1.5 | - | 0.5 |
| Westerly (25MGD) | 2.5 | 2.0 | - | 0.7 |
| Southerly (100MGD) | 3.0 | 2.1 | 0.6 | 0.5 |

Annual chemical cost for P removal is ~ \$300,000/year. Consistent P removal of <1 mg/l is achieved at widely ranging flowrates. Conventional settling and biological process designs are not adequate to remove phosphorus. NEORSD uses ferric chloride in addition to primary and secondary clarifiers to meet the 1 mg/l TP limits.

Other statistics: 76% of phosphorus in effluent is DRP. 80% of wet weather flow is treated before being discharged. 100% of dry weather flow is treated. NO₂ + NO₃ is monitored at all three plants, although monitoring is only required at Southerly. Overall, the amount of P released from the Cleveland plants would be enough to fertilize about 40,000 acres of corn.

Attendance: Heidelberg NCWQR – Pete Richards, John Crumrine, Jack Kramer, John Kessler, Julie Weatherington-Rice, Dave Culver, Robert Mullen, Steve Davis, Todd Hesterman, Gail Hesse, Seth Hothem, Robert Bonnett (guest), Jeff Reutter, Paul Bertram, Rick Wilson, Norm Fausey, Kevin Elder, Julie Letterhos, Libbey Dayton, Nick Basta, Larry Antosch, Eric Partee (observer)