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**Western Lake Erie Basin Water Quality  
Michigan Agriculture's Collaborative Effort**

**History / Background**

Although the total acres of farmland in Michigan's portion of the Western Lake Erie Basin (WLEB) is about 15% of the farmland in the basin (2007 Ag Census data), Michigan agriculture is committed to continuing to be a full partner in improving water quality in Lake Erie.

Michigan agriculture launched a concerted effort in the WLEB more than 15 years ago with a Conservation Reserve Enhancement Program (CREP) initiative on the River Raisin and the statewide launch of the Michigan Agriculture Environmental Assurance Program (MAEAP). In addition, rapid enhancements have occurred in fertilizer product and application technology with a focus on grid soil sampling so that fertilizer is applied at variable rates according to the needs of the soil for the crop planted. Michigan's agribusinesses helped develop and are now implementing an innovative approach for fertilizer best management practices – 4R Nutrient Stewardship – incorporating technological advances compatible with farmer goals of working toward MAEAP verification.

Michigan agriculture's approach includes education, risk assessments and practice implementation, and verification that installed conservation practices are adequately addressing the risks and stay in place over multiple years. Michigan's collaborative effort includes voluntary programs for farmers (MAEAP) and crop consultants (4R Nutrient Stewardship Program), and regulation for those violating water quality standards. Michigan's concentrated animal feeding operations (CAFOs), which number 14 in the WLEB, all operate under a National Pollutant Discharge Elimination System (NPDES) permit and associated phosphorus management plans, based on the number of livestock rather than discharge history. Michigan's efforts going forward will continue to revolve around these principles.

**Efforts on the Ground**

MAEAP Technical Assistance through Conservation Districts. From FY 2011 through FY 2013, 136 risk assessments (ASys) were completed in the WLEB. As a result, over 100 nutrient management plans were developed by conservation district technicians. The MAEAP environmental impacts in the WLEB during this period include 39,752 tons of sediment reduction, 65,478 pounds phosphorus reduction and 145,040 pounds of nitrogen reduction. In the current fiscal year (FY 2014) the total risk assessments planned and underway in the WLEB is over 325.

Conservation Reserve Enhancement Program (CREP). Nearly 23,000 acres have been enrolled in CREP practices since the mid-1990's with the impacts from these practices extending the number of acres significantly. Practices include permanent grasses and legumes, permanent native grasses, field windbreaks, filter strips and riparian buffers, wetland restoration and sediment retention control structures. Approximately a 65-75% reduction in phosphorus delivery and sedimentation has been realized, based on soil loss calculations with and without the practices, dependent on crop rotation and tillage practices.

4R Nutrient Stewardship. The program revolves around the concepts of:

- Right Source – matching fertilizer type to crop needs;
- Right Rate – matching the amount of fertilizer to crop needs;
- Right Time – making nutrients available when the crop needs them;
- Right Place – keeping nutrients where crops can use them.

Michigan agribusinesses and the certified crop consultants (CCAs) they employ are working toward using the 4R model with their customers. Approximately 50% of the acres in southeast Michigan are serviced by CCAs. On CCA serviced acres, site specific agriculture is applied (grid sampling, variable rate, etc.) on about 75-80% of the acreage.

Agrichemical Bulk Storage. MDARD has worked diligently to protect the environment, residents and natural resources of Michigan by creating uniform standards for bulk storage containment for agribusiness and farmers. The bulk storage program helps ensure that fertilizer and pesticide facilities are constructed, installed and properly maintained to provide safe product storage and environmental protection. Bulk facilities are required to have secondary containment, a mixing/loading pad and an emergency response plan. Regulations have been in place since 1992 for pesticide facilities, 1999 for fertilizer facilities and 2003 for liquid fertilizer storage on farms. These requirements are all part of MAEAP standards.

BMP Auction Project. From FY 2010-2013, MDARD provided funds from the Great Lakes Commission for a Best Management Practice (BMP) auction project. Farmers bid on the amount they would take in cost share to install specific BMPs in the River Raisin. Environmental outcomes associated with WLEB from BMP Auction grant include reduced sediment by 1,854 pounds and phosphorus by 9,017 pounds, enough to grow 4.5 million pounds of algae.

River Raisin GLRI/319 Funding Partnership. The Department of Environmental Quality is funding a Great Lakes Restoration Initiative (GLRI) and 319 project focused on tile line control structures in the River Raisin to reduce nutrient runoff. To date, the Lenawee Conservation District has installed 181 tile line control structures, which allow the farms to manage their tile line flows on 5,275 acres of cropland. With funds still remaining on these projects, another 300 tile line control structures will be installed.

MAEAP Verification. 91 MAEAP verifications have taken place in the WLEB from October 2011 through September 30, 2013 on 43 farms. 125 verifications are planned for this current fiscal year in the WLEB. MAEAP verification provides a third party audit through MDARD that all site specific and appropriate practices are in place and are managed as planned. This addresses the concern that farmers accept cost share dollars but do not maintain practices. Additionally, all environmental resource concerns are addressed through verification including nutrient management, conservation practices, pesticide management, irrigation management, drinking water well location and associated risk, and more. MAEAP standards can be found at [www.michigan.gov/maeap](http://www.michigan.gov/maeap).

Additional Technical Assistance Resources. A GLRI project -- Michigan's Targeted Response to Repair WLEB Health -- was funded in FY 2013 and FY 2014 and provides two additional conservation district technicians, added to the 7 existing technicians in the WLEB. Several of the project goals have already been exceeded including the number of acres covered in nutrient management plans, feet of filter strips and feet of livestock exclusion. Funding is needed to

continue the work of these GLRI technicians and leverage the estimated \$3.49 million in cost share practices that could be implemented through a proposed NRCS RCPP tri-state WLEB grant.

NRCS/MAEAP Partnership. Currently, farmers who have completed a risk assessment (ASyst) and are continuing toward MAEAP verification receive additional ranking points when applying for NRCS EQIP cost share funds. Also, for the last two fiscal years, a special \$500,000 EQIP funding pot has been available for the last two practices needed to reach MAEAP verification. Unfunded contracts have been over \$1 million each year. In FY 2013, \$2.7 million was requested, leaving \$2.2 million in unfunded contracts. A Farm Bill Regional Conservation Partnership Program (RCPP) pre-proposal has been accepted to submit a full proposal to fund these practices through RCPP. Additionally, a tri-state RCPP pre-proposal has been accepted for NRCS financial assistance for practices installed in the WLEB such as cover crops, nutrient management plans, filter strips, drainage water management and restoration of wetlands. When funded, this project will assist farmers with implementing \$19.86 million of NRCS cost shared practices across the three states. Michigan's portion is \$3.49 million in cost share to implement practices like those listed above.

### **Future Efforts**

The Snyder Administration is committed to continuing to be a full partner in improving water quality in Lake Erie. Going forward, MDARD will:

- Seek the elimination of the sunset on state MAEAP/groundwater funding.
- Work with Michigan agribusiness to build a close linkage between MAEAP and the 4R Nutrient Stewardship Program to enhance agriculture's capacity to reduce nutrient loss to our waterways.
- Continue to aggressively seek out opportunities to expand technical assistance in the WLEB through conservation districts and other organizations to assist farmers in implementing conservation practices.
- Continue work with Ohio and Indiana to complete the full nutrient reduction proposal under the Farm Bill Regional Conservation Partnership Program (RCPP) to bring additional funding resources in the WLEB to reduce nutrient loss.
- Continue our science-based approach to the application of manure on snow covered or frozen ground, limiting application to only those locations with a low to very low MARI index rating only when necessary and on no slopes greater than 3% for liquid manure nor 6% for solid manure.

