NATIONAL CENTER FOR WATER QUALITY RESEARCH

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**Testimony to the Finance Subcommittee on Agriculture, Development, and Natural Resources**

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Chairman Hoops and members of this subcommittee, thank you for allowing me to testify before you today. I am Laura Johnson, Director of the National Center for Water Quality Research at Heidelberg University.

We are best known for our long-term water quality monitoring program that was started in 1974 on the Maumee and Sandusky Rivers. To date, we have expanded to 25 locations, most of which are in Ohio, and cover a wide range of land uses and watershed sizes. Our program is entirely funded with short-term grants and contracts, which are renewed on a 1-2 year basis. This includes our state line item in the budget, under the ODA Soil and Water Program. We also have received grant funding from ODHE HABRI for 5 of our newest monitoring stations. We have no secure long-term funding even though the reductions we are monitoring are expected to take years to achieve.

We have a vast number of results, too many to review here, but we are best known for this figure showing that the increase in dissolved phosphorus from the Maumee River since the mid-1990s corresponds to the return of harmful algal blooms in western Lake Erie that started in the early-2000s. Our results are shared and used in a multitude of ways, including the ErieStat website, whose goal is to assess progress towards the Annex 4 phosphorus reduction targets; the Lake Erie HAB forecast and bulletin, which relies on our data linking spring phosphorus loads from the Maumee River to bloom size in Lake Erie; the Ohio Lake Erie Commission Water Monitoring summary that summarizes our data with data from USGS and OEPA; and OEPA's mass balance report which assesses watershed nutrient sources relying heavily on our data. Our data has also played a key role in calibrating watershed models presented earlier this afternoon.

For solutions, I would like to highlight the research of Dr. Rem Confesor from our lab. He has been using watershed and field-scale models to assess best management practice (BMP) effectiveness. One major finding is that BMP implementation will have to be tackled on a field by field basis, and in doing so, field-scale models indicate we can reach needed reductions but only when using multiple BMPs, such as subsurface and reduced phosphorus fertilizer application, cover crops, and no-till agriculture. Another finding is that climate change will increase the chance of a severe bloom like the one seen in 2015, but that BMPs are predicted to mediate those effects. However, this also means we'll need even more BMP implementation to maintain reductions achieved under current climate conditions.