

Overview and Findings of The Ohio Lake Erie Phosphorus Task Force

Gail Hesse, Ohio EPA

April 28, 2010

The Ohio Lake Erie Phosphorus Task Force

- Convened by Ohio EPA
- Purpose is to review data in relationship to current conditions in Lake Erie
- Analyze the correlations in increases in soluble reactive phosphorus levels and corresponding increases in algal blooms
- Both trends began to appear in the mid-1990s

Ohio Phosphorus Task Force Members

■ Composition

- State program personnel from OEPA, ODNR and ODA
- Academia
- Agricultural agencies and organizations at the federal, state and local level
- USEPA-Great Lakes National Program Office
- USGS
- Wastewater Treatment Plant

Microcystis bloom August 2003





SEP 19 2008

Lyngbya Wollei

Benthic mats become buoyant and float to surface
(Maumee Bay State Park)



P Task Force Approach

- Identify all possible sources of DRP
- Quantify what we can with existing data sources
- Consult with topical experts
- Consult peer-reviewed publications
- Compare *relative contributions* from possible sources
- Develop recommendations

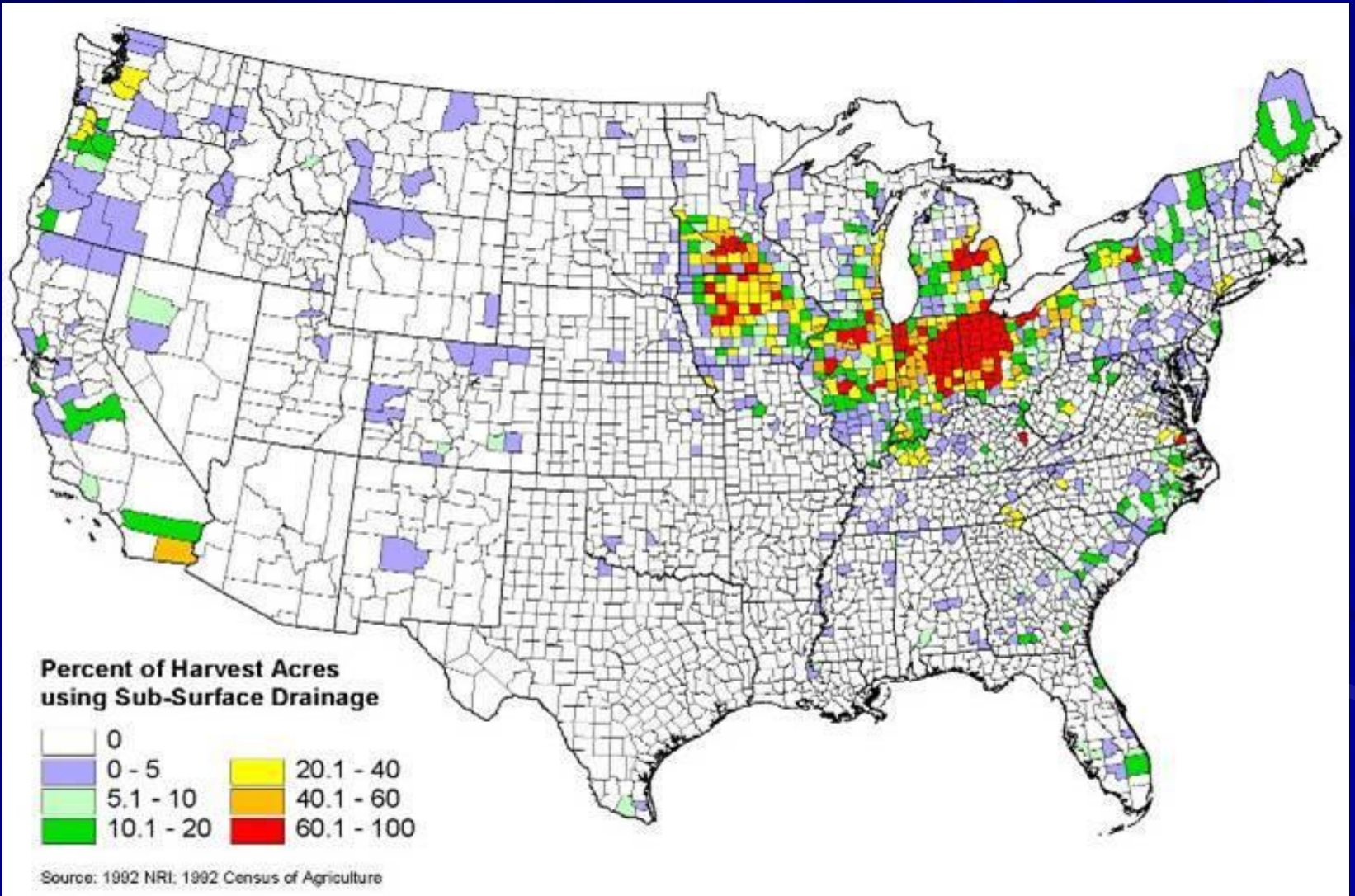
List of Possible Sources

- Point sources
 - POTWs, Industrial, CSOs, HSTS
- Agriculture
- Urban/residential
 - Lawn care fertilizers, storm water, orthophosphate in treated water, dishwasher detergent
- Other
 - In lake loads/recycling
 - Streambank erosion
 - Detroit River/upper lake loads
- Transport mechanisms
 - Subsurface drainage, surface runoff

Findings

- Point sources have remained relatively consistent
- Lawn care – can have localized impact
- Mussels have altered P cycling
 - Extent unknown
 - Processing external sources
- Transport mechanisms – surface and subsurface drainage
 - Relative contribution unknown

Sub-Surface Drainage



Findings

- Soil nutrient interactions are key to understanding nutrient movement
- Soil P naturally fluctuates between dissolved and solid forms
- Soil mineralogy influences solubility
- Other factors, including nitrogen, may be affecting algal blooms

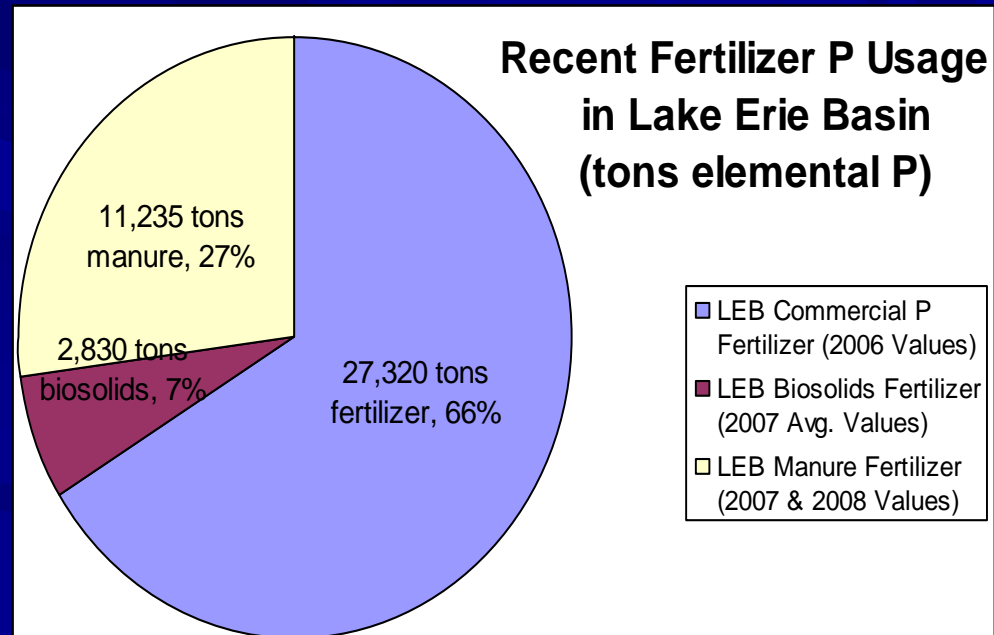
Findings

- DRP loadings are driven by runoff events
- Weather trend changes: higher intensity storms, less snowfall, high winter runoff events
- Multiple contributors; agriculture is key
- Need to look at how we manage our P inputs



Phosphorus Inputs Agriculture

- Biosolids
- Animal manure
- Commercial fertilizer



Trends in Agriculture

- Overall, nutrient inputs are down
 - Biosolids, animal manure, commercial fertilizer
- Larger farms, larger fields and larger equipment
 - Larger equipment has multiple functions, more year-round operations
 - Larger, heavier equipment may be leading to soil compaction
- More year-round operations

Trends in Agriculture, cont.

- More fall preparation of seed beds, *more fall and winter application*
- Changing methods: more broadcast application without incorporation
- Unknown and uncertain use of soil tests and adherence with recommendations
- Changes in soil quality
- Changes in drainage



Recommendations

- Amount
- Timing
- Incorporation
- Management of field runoff

No single practice will result in lower nutrient runoff

Recommendations

- Ensure consistent, reliable soil tests
and increase the frequency of testing
- Update screening tools that account for agronomic need and environmental risk
- Link soil test results to fertilizer recommendations
- Link recommendations to applications
- Link nutrient management practices to highly variable conditions

Recommendations

- Push for “Priority Practices” for nutrient management
- Use innovative approaches to sell these practices
- Pursue the Research Agenda: field to stream to nearshore to in-lake
- Review new information, monitor progress, course correct as necessary

Ongoing Efforts

- Research projects currently funded by the Ohio Lake Erie Commission and USEPA and other projects of the Millennium Network
- NRCS work group evaluating the P Index
- Lakewide Management Plan (LaMP)
 - Proposing ecological endpoints (nutrient concentrations)

www.epa.state.oh.us/dsw

Click: Phosphorus Task Force