

# **Historical Overview of PLUARG and Progress to Date: U.S. Perspective**

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## **Outline**

- Background on the PLUARG process
- Major findings of PLUARG
- Successes and failures of PLUARG
- Where we stand today
- The future of Great Lakes water quality

## **Background on the PLUARG Process**

- Pollution From Land Use Activities Reference Group (PLUARG).
- The Canada-U.S. Agreement on Great Lakes Water Quality (April, 1972) requested the IJC to conduct a study of pollution of the boundary waters of the Great Lakes System from agricultural, forestry and other land use activities.
- The process involved integration of: 1) existing knowledge, 2) public views, 3) monitored pollutant loads, 4) evaluation of remedial measures, 5) evaluation of water quality impacts, 6) pilot watershed studies, and 7) an inventory of the Basin

## **Background on the PLUARG Process**

- The working groups consisted of universities and state and federal agencies.
- Focus was divided between in-lake and terrestrial watershed processes.
- Key outcomes of the process were a better understanding of large lake function, the dynamics of non-point source loadings to lakes, a clear set of conclusions, recommendations, and most importantly, specific load reduction goals for phosphorus.
- The importance of the load reduction goals is significant today in light of the TMDL process in the U.S.

## **Major Findings of PLUARG**

- The Great Lakes are being polluted from land drainage sources of phosphorus, sediments, some industrial organic compounds, previously used pesticides, and potentially some heavy metals.

- Lake Erie and Lake Ontario are most affected, as are specific embayments.
- Intensive agriculture is the major source of phosphorus, while urbanization is the major source of sediment.
- Toxic substances are contributed by urban runoff and atmospheric deposition.
- Remedial measures should be targeted, particularly in hydrologically active areas.

### **Successes and Failures of PLUARG**

- Greatly advanced our knowledge of large-scale watershed and in-lake processes.
- Stimulated development of a generation of scientists and policy makers.
- No clear political will to advance and fund recommendations.
- Focus was lost as other environmental issues took prominence - Chesapeake Bay, Superfund, acid rain, global change.
- Too much dependence on state and local resources.
- Resources were not adequately focused on the most pressing problems.
- Phosphorus removal at STPs took heat off of non-point source reduction.

### **Where We Stand Today**

- Dramatic reductions in WTP phosphorus were achieved in the early 1980s with chemical P removal to 1 mg/L
- Significant reductions in sediment and total P loads with extensive use of conservation tillage.
- Institution of the P Index and P management requirements for manure and biosolids in most Great Lakes states.
- Impact of zebra mussel invasion on turbidity & in-lake P processing
- Status quo on pesticide loadings to the Lakes - few new herbicides, reliance on old products like atrazine, alachlor, metolochlor and metribuzin.
- Implementation of storm water controls should reduce urban P loads
- Uncertain impacts of global climate change on in-lake and watershed processes, lake levels and water demand

### **Where We Stand Today**

- Increasing impact of CAFOs in the Basin - poultry, dairies (particularly the Dutch dairies)
- Dairies are changing cropping patterns, nutrient loadings to land, opportunities for liquid discharge to streams
- Vertical integration of agriculture based on animal agriculture and food processing will continue
- Population growth is stagnant but increasingly suburban - impact is uncertain
- High cost of energy will provide incentives for nutrient recycling and biomass energy production - both should have positive water quality impacts
- Pathogen contamination of drinking water supplies is of public concern but not a

Great Lakes problem

## **The Future of Great Lakes Water Quality**

- The States will increasingly value the Lakes for the great economic resource they are.
- Point source controls on industry and municipalities will be strengthened, thereby providing protection against industrial chemicals and pathogens.
- The continued trend for growth of CAFOs could result in increased P loadings, even with P management.
- Future pesticide impacts should be as today or better - newer chemicals are better screened, are used at lower rates, and are more biodegradable.

### **Some Final Thoughts**

- PLUARG was the first of only a handful of large watershed studies - Great Lakes, Chesapeake Bay, Everglades.
- Only the Everglades Restoration Project has been adequately funded at the federal level.
- PLUARG and post-PLUARG are akin to the war in Iraq and the post-war insurgency- the study proved to be easier than implementation of its recommendations.
- We will not see another bi-national focus on the Great Lakes in the absence of significant new environmental problems