Developing an environmental report card for Western Lake Erie
The most polluted and contentious portion of the Great Lakes

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I was invited to speak at IAGLR Great Lakes conference in 2016
Developing a Great Lakes Health Index

Water quality indicators
- Nutrient conc.
- Toxicants
- Fish contamination
- Bird contamination

Aquatic-dependent life indicators
- Diporeia crustaceans
- Walleye fish
- Lake sturgeon
- Lake trout
- Benthic diversity
- Prey fish
- Wetland amphipods
- Wetland plants
Great Lakes report card example

The Great Lakes report card example shows the health index of each lake from Superior to Erie. Superior has the highest index with an A, followed by Michigan and Huron with a B each. Ontario has a C, and Erie has a D+. The graph visually represents the relative health status of each lake in the Great Lakes region.
Correlation of Lake Health Index with watershed features

\[ y = 0.0158x + 1.1943 \]

\[ R^2 = 0.82061 \]
Three years later, Lucas County and two cities are funding a Western Lake Erie report.
Lake Erie: Shallow, productive, polluted
Lake Erie watershed: Agriculture and urban land use
Lake Erie drinking water crisis
Maumee River watershed includes intensive agricultural land
The report card process in 3 distinct phases

**PHASE I: PLANNING**
1. CONCEPTUALIZE
2. CHOOSE INDICATORS

**PHASE II: THE REPORT CARD PROCESS**
3. DETERMINE THRESHOLDS
4. CALCULATE GRADES

**PHASE III: RAISE THE GRADE**
5. COMMUNICATE
Key values and threats
Western Lake Erie reporting regions (draft)
Indicator choice criteria

- **Specific** (to what is being measured)
- **Measurable** (also reliable, comparable, contextually appropriate and unambiguous)
- **Attainable** (also achievable, feasible, cost-effective)
- **Relevant**
- **Time-bound** (also sensitive, i.e. the change in values can be tracked over time)
Lake Erie indicators

Water Quality
- Total Phosphorus
- Soluble Reactive Phosphorus
- Total Nitrogen
- Nitrate+Nitrate
- Chlorophyll a
- Dissolved Oxygen
- Secchi

Fish
- Yellow perch
- Walleye
- Emerald shiner

Bloom
- Bloom index
- Microsystis
Lake Erie watershed reporting regions (draft)
Lake Erie watershed indicators

**Water Quality**
- Total Phosphorus
- Dissolved Phosphorus
- Total Nitrogen
- Turbidity

**Biology**
- Fish
- Invertebrates
- Habitat

**Toxics**
- Pesticides
- Harmful Algal Blooms
- Mercury in fish

**Landscapes**
- Impervious Surface Area
- Best Management Practices
- Livestock
Timeline

- **2018**
  - Data collection and analysis
  - Creation of draft report card

- **2019**
  - Project initiation
  - First stakeholder workshop
  - Webinar
  - Creation of draft report card
  - Second stakeholder workshop

- **2020**
  - Revisions
  - Finalize report card
  - Public release event

- **JUN**
- **JUL**
- **AUG**
- **SEP**
- **OCT**
- **NOV**
- **DEC**
Community resilience in response to Miami River flood in 1913
“Remember the promises you made in the attic”
Questions?

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