

Appendix 4 — Criteria

SOLEC 98 Indicator Project Goals, Objectives and Criteria

Project Goals: The aim of the SOLEC 98 indicators project is to gather together a list of indicators that will be used by the Parties (to the GLWQA) to report on the health of the Great Lakes basin ecosystem on a regular basis (ie. yearly, biennially, every five years...). In most cases, these indicators have already been developed by various groups, commissions, or agencies. The goal of this project is to gather the indicators that will be most useful basin-wide and understandable to the interested public (including educators, media, and decision-makers) while remaining scientifically valid.

Project Objectives: To present indicators that represent portions of the Great Lakes ecosystem but show the state of and trends (improving, deteriorating or neutral trends) of a larger ecosystem component so that, used all together, the health of the system can be assessed.

Criteria: The following criteria have been adapted from a recent EPA document, *Process for Selecting Environmental Indicators and Supporting Data*, modified slightly to better fit this project. The three main criteria discussed at length with the SOLEC 98 Steering Committee and the Indicator Group are: 1) are the indicators **necessary** to determine the overall health of the Great Lakes; 2) are the indicators **sufficient** to determine the overall health of the Great Lakes; and 3) are the indicators **feasible** (economically and in terms of human resources) to use in determining the health of the Great Lakes ecosystem? Additional criteria useful for selecting SOLEC indicators are also included.

Criterion	Explanation	Rating*
Validity		
Relevance	Does the indicator present information relevant to Great Lakes ecosystem integrity?	
Appropriate Scale	Does the indicator respond to changes on appropriate geographic (ie. lakewide, basin-wide) and temporal (ie. monthly or yearly) scales for SOLEC reporting?	
Accurate	Does the indicator accurately reflect the ecosystem component it is intended to represent?	
Sensitive	Is the indicator appropriately sensitive, i.e., are changes in the indicator highly correlated with changing trends in the information it is selected to represent?	
Discriminating	Can the indicator distinguish natural variability from human-induced changes?	
Understandability		
Understandable	Is the indicator appropriate for decision-makers and the general public? Is the level of information from the indicator appropriate for environmental managers to use in decision making?	
Simplicity	Is the indicator simple and direct?	

Criterion	Explanation	Rating*
Presentation	Can the indicator be presented in a format tailored to environmental managers?	
Documented	Is the methodology used to create the indicator well-documented and understandable so that it can be easily communicated and reproduced?	
Interpretability		
Interpretable	Is there a reference condition or benchmark for the indicator against which current status and trends can be compared?	
Trend Evaluation	Will data that have been collected over a sufficient period of time allow analysis of trends?	
Information Richness		
Richness	Does the indicator represent multiple ecosystem components or stressors?	
Broad Application	Is the indicator broadly applicable to many geographic areas?	
Data Availability		
Currently existing	Are adequate data available for immediate indicator use?	
Easily Available	Are data easily available? Can they be retrieved with a minimum of fuss?	
Long term record	Do data currently exist to allow for analysis of environmental trends?	
Timeliness		
Timely	Are changes in the environment reflected quickly by the indicator?	
Anticipatory	Does the indicator provide early warning of changes?	
Cost Considerations (Feasibility)		
Ease of Quantification	Does the indicator reflect a feature of the environment that can be quantified simply, using standard methodologies with a known degree of accuracy and precision?	
Data collection	Can data supporting the indicator be obtained with reasonable cost and effort by some Great Lakes organization?	
Calculation and Interpretation	Can calculations and interpretations for the indicator be obtained with reasonable cost and effort?	

* The rating system used during the development of the Indicator List presented at SOLEC 98 (Version 2) was left to the discretion of the Core Groups: some opted to use a simple Yes or No system while a few used a more complex number rating system.

Criteria for the whole SOLEC Indicator List:

Are each of these indicators in combination **necessary** to assess the overall health of the Great Lakes ecosystem?

Are these indicators in combination **sufficient** to assess the overall health of the Great Lakes ecosystem?