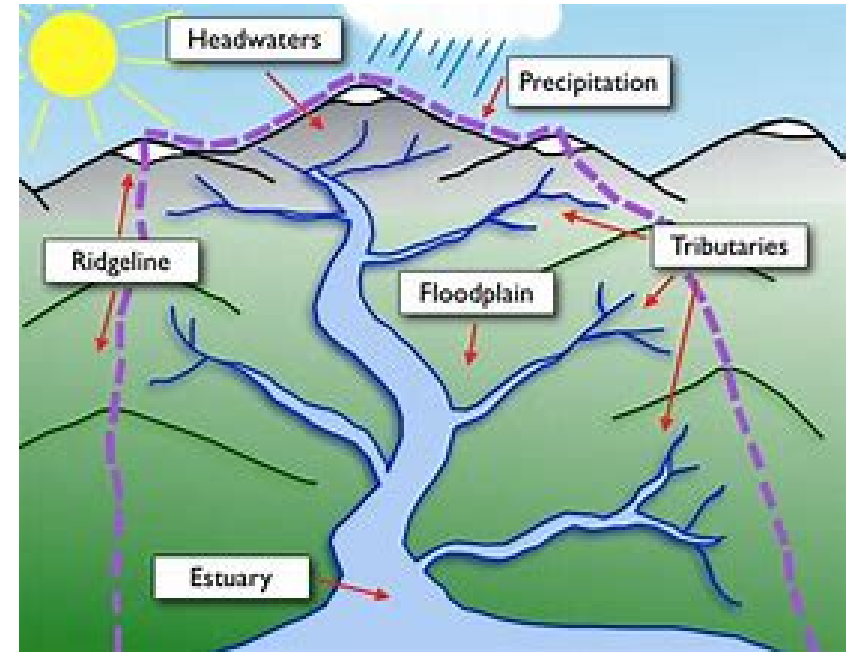


The Evolution of Watershed Management– Ontario’s Experience and Where is it leading?

Presentation to:
A. D. Latornell Symposium (T1E)

Mark Peacock, P. Eng.
C.A.O., Secretary-Treasurer
Lower Thames Valley Conservation Authority
Nov. 19, 2019



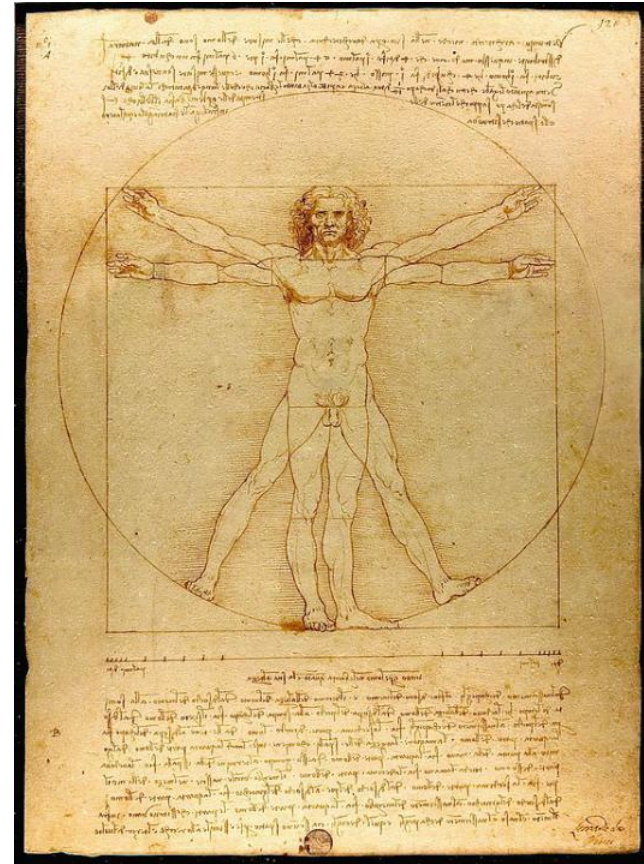
The Vitruvian Man

was created by Leonardo da Vinci around the year 1487. It is based on the work of the famed Roman architect, Vitruvius Pollio.

The proportional relationship of the human parts reflects universal design. This picture represents a cornerstone of Leonardo's attempts to relate man to nature.

Encyclopaedia Britannica online states, "Leonardo envisaged the great picture chart of the human body he had produced through his anatomical drawings and Vitruvian Man as a cosmografia del minor mondo (cosmography of the microcosm). He believed the workings of the human body to be an analogy for the workings of the universe." and of nature.

Leonardo da Vinci's drawing of Vitruvian Man is one of the most popular world icons.



THE GUELPH CONFERENCE

This stone was erected by the
CONSERVATION AUTHORITIES IN ONTARIO

September 27, 1968

to mark more than a quarter century of
Conservation Achievement in Ontario
begun by

THE GUELPH CONFERENCE

under the chairmanship of Mr. J. D. Thomas
April 25, 1941

composed of representatives from
Ontario Conservation and Reforestation Association
Canadian Society of Forest Engineers
Federation of Ontario Naturalists
Royal Canadian Institute
Canadian Society of Technical Agriculturists
Canadian Conservation Association
Ontario Federation of Anglers and Hunters
Royal Canadian Legion
Men of the Trees
which promoted the

GANARASKA SURVEY AND REPORT 1942

the pattern for
Conservation Authorities in Ontario

May 7th / 1951 Portypool, Ont.

The first of the Ganaraska Watershed meetings was held in the Orange Hall @ Portypool, this date, before an audience of 300 enthusiastic people.

As a result of the Guelph Conference of 1941 and the "Ganaraska Report" by A.H. Richardson in 1944 - local people, through their municipalities, requested the formation of Conservation Authorities.

Introduction of Dr. Carruthers & Art. Pannelli
Third film "The Scout in the forest," dealt with reforestation & preservation of our valuable

Recommended planting of 20,000 acre forest and other watershed initiatives



Common Elements of Original Watershed Plans

- Community and its history
(Verschoyle Benson Blake)
- Forest
- Water
- Land
- Recreation
(Arthur Herbert Richardson)
- Recommendations

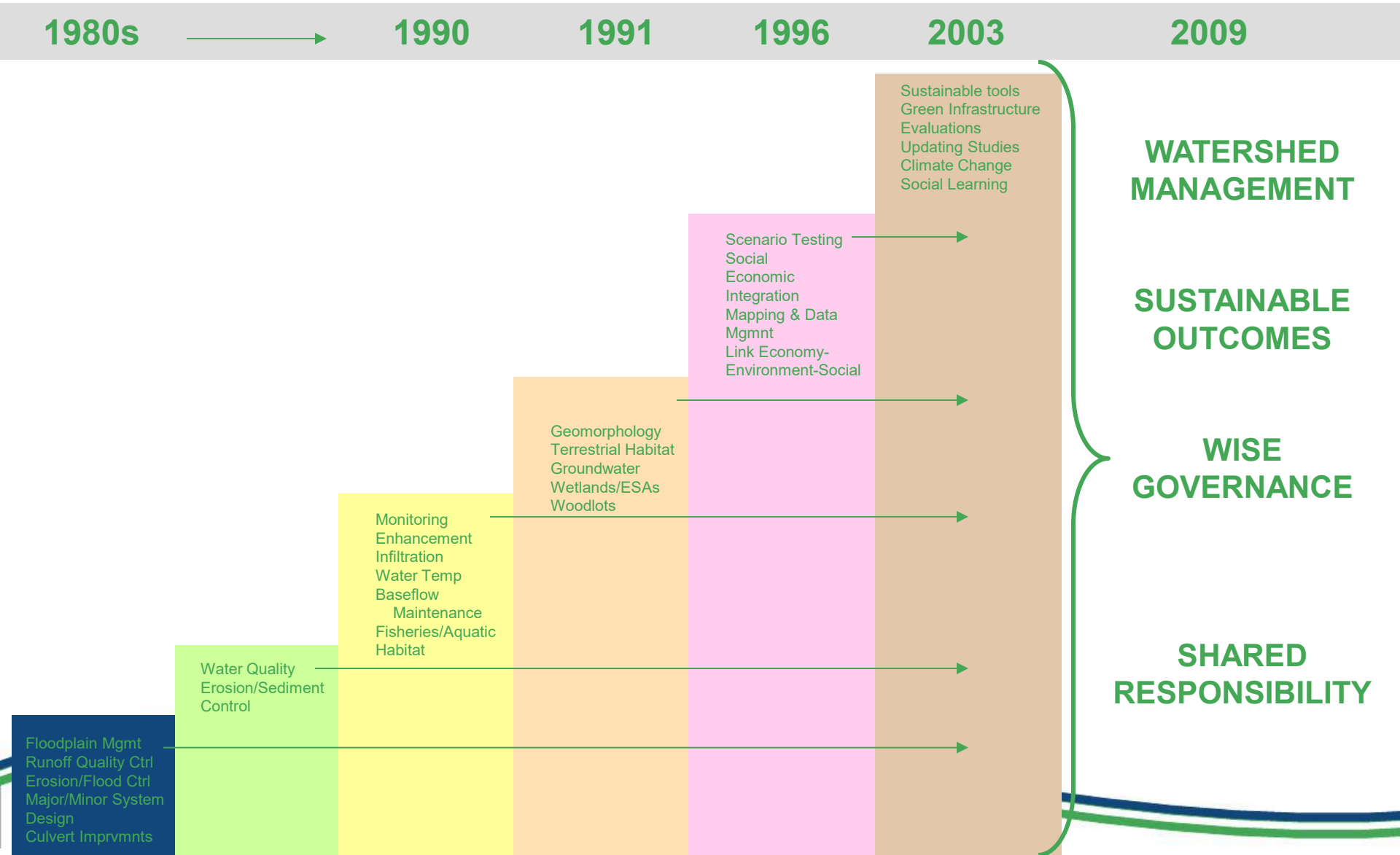
3 Principles of Conservation Authorities

- ▶ Watershed Based
 - ▶ Locally Initiated Actions
 - ▶ Partnerships
-
- ▶ Principles of Watershed Management

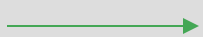
Why did they do it?

- ▶ There was a sense of urgency;
- ▶ People realized at a local level that things had to change;
- ▶ Quote from Ganaraska Report, A. H. Richardson 1944

Evolution of Water Management In Ontario



1980s



1990

1991

1996

2003

2009

Sustainable tools
Green Infrastructure
Evaluations
Updating Studies
Climate Change
Social Learning

**WATERSHED
MANAGEMENT**

Scenario Testing
Social
Economic
Integration
Mapping & Data
Mgmt
Link Economy-
Environment-Social

**SUSTAINABLE
OUTCOMES**

Geomorphology
Terrestrial Habitat
Groundwater
Wetlands/ESAs
Woodlots

**WISE
GOVERNANCE**

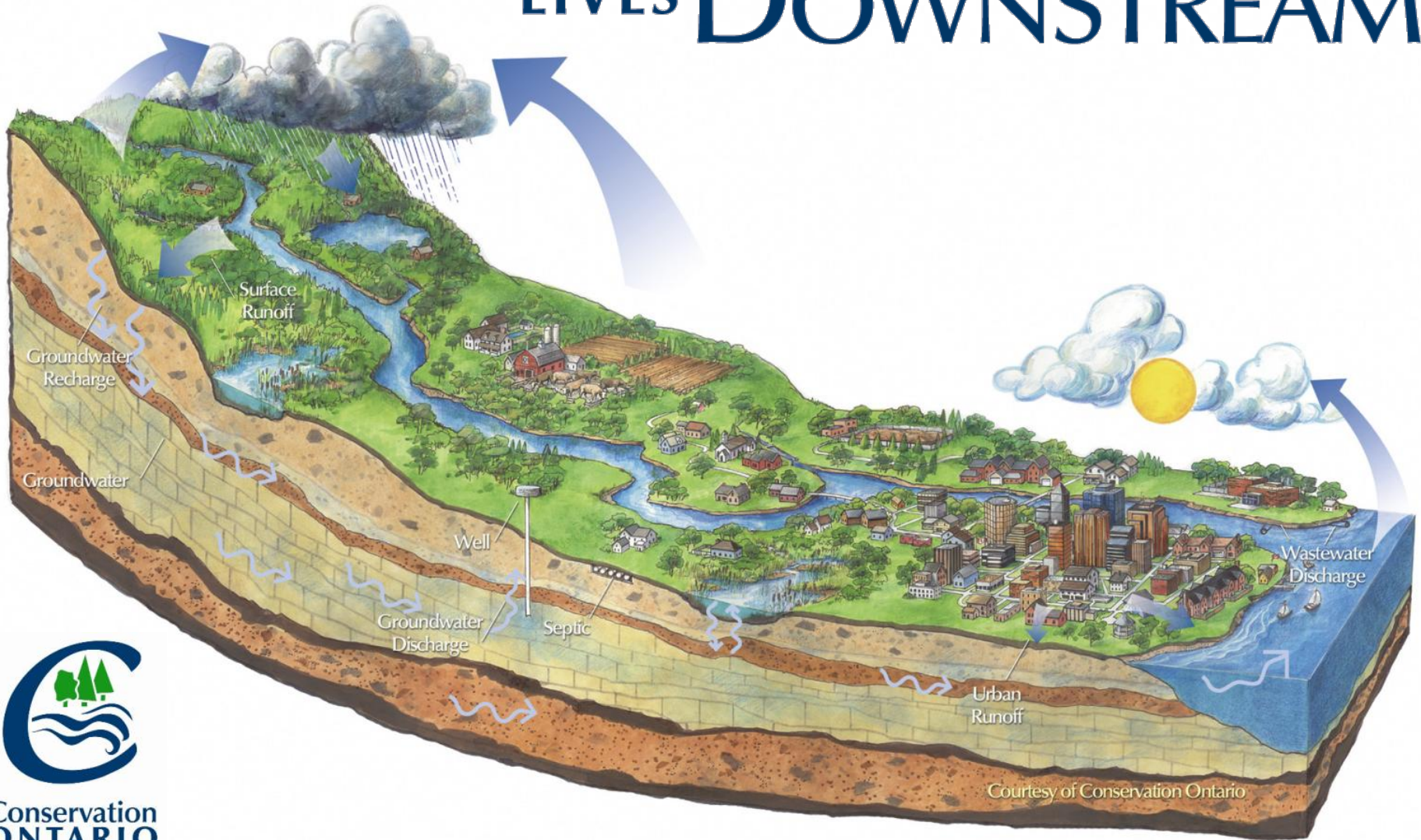
Monitoring
Enhancement
Infiltration
Water Temp
Baseflow
Maintenance
Fisheries/Aquatic
Habitat

**SHARED
RESPONSIBILITY**

Water Quality
Erosion/Sediment
Control

Floodplain Mgmt
Runoff Quality Ctrl
Erosion/Flood Ctrl
Major/Minor System
Design
Culvert Imprvmnts

EVERYONE LIVES DOWNSTREAM



Courtesy of Conservation Ontario

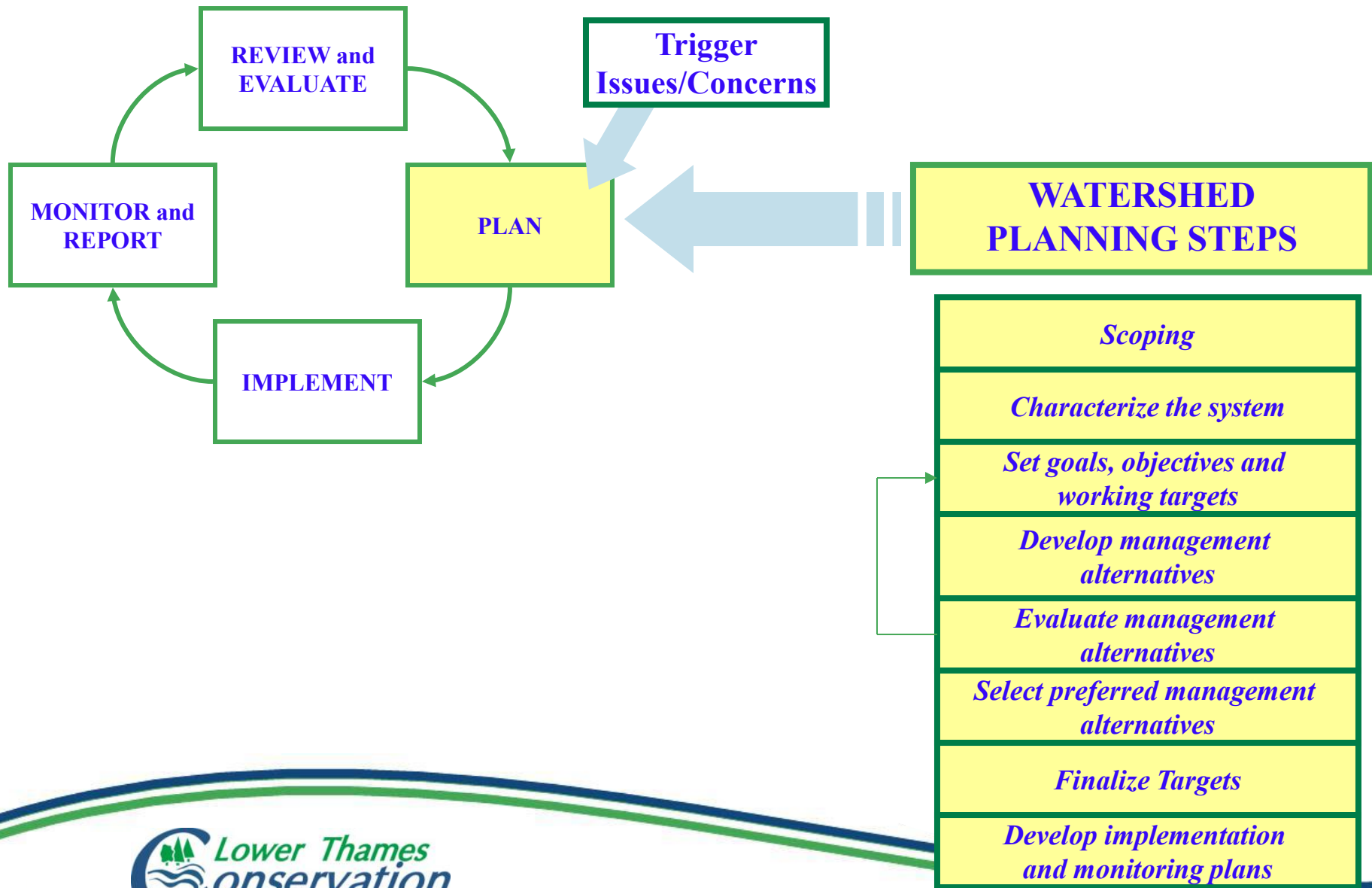


**Conservation
ONTARIO**
Natural Champions

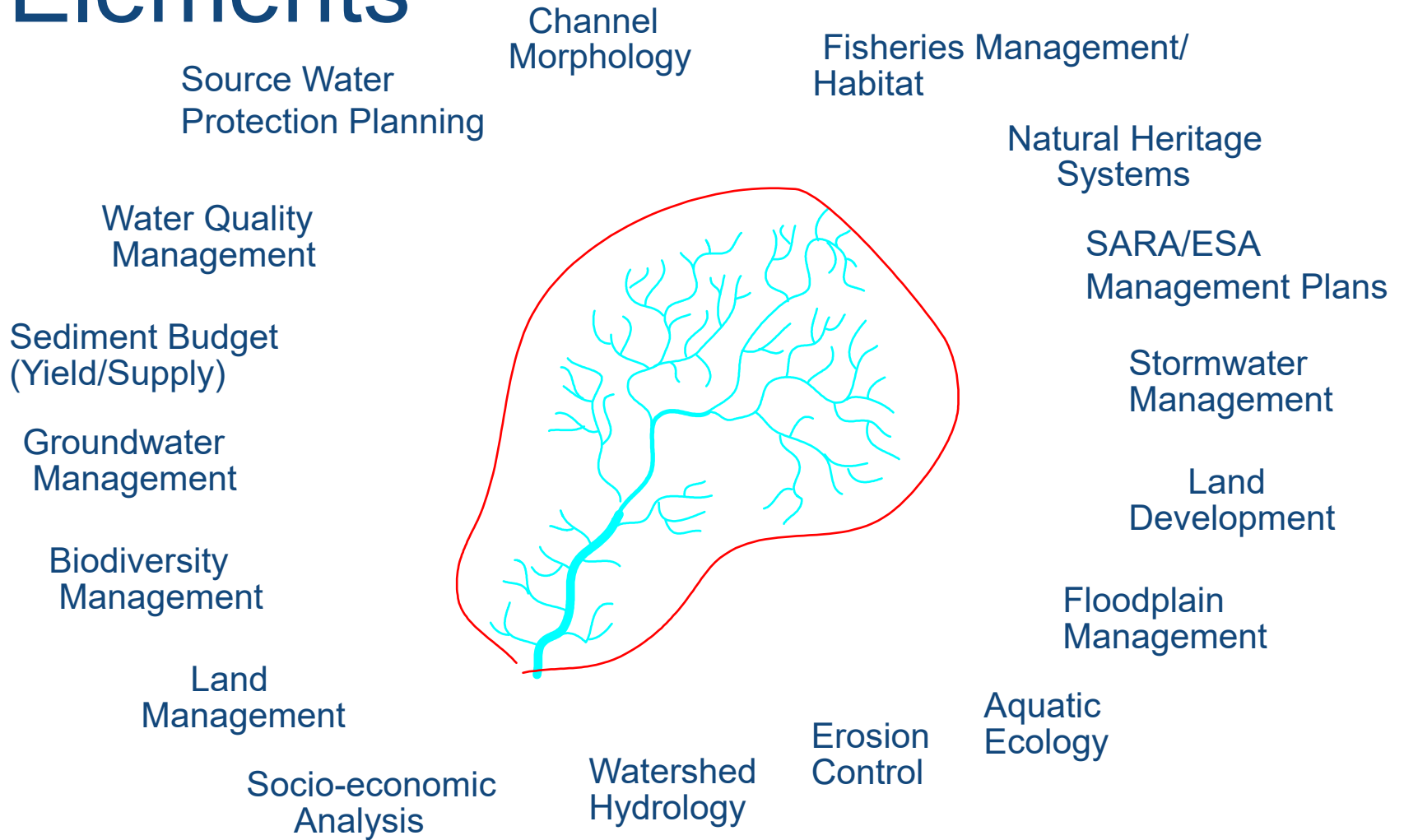
Adaptive Environmental Management



WATERSHED MANAGEMENT PROCESS

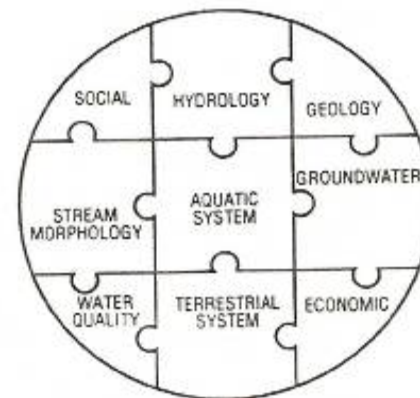


Elements

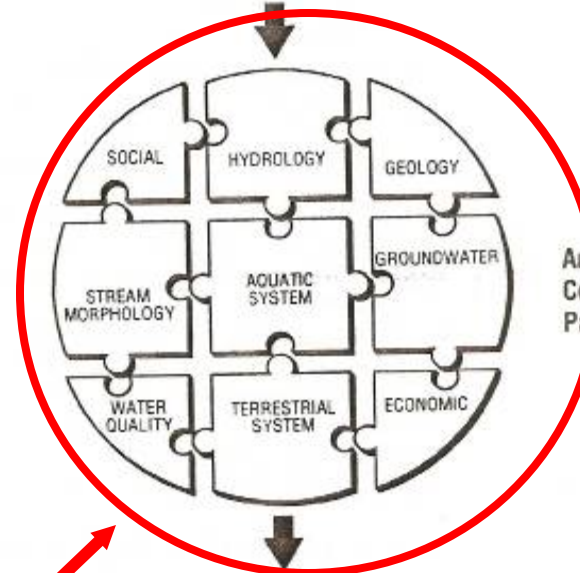


Analytical Approach

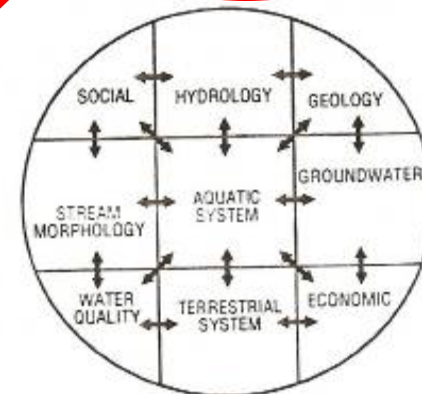
- ▶ Need to determine / use available information to characterize and then postulate the “functioning of the system”.
- ▶ Then reduce to the key areas/disciplines (reductionist) for collection and initial analysis...BUT
- ▶ Remember to integrate the information and understanding of how each element relates to the others
- ▶ We fail in our integrative approach if we start here.



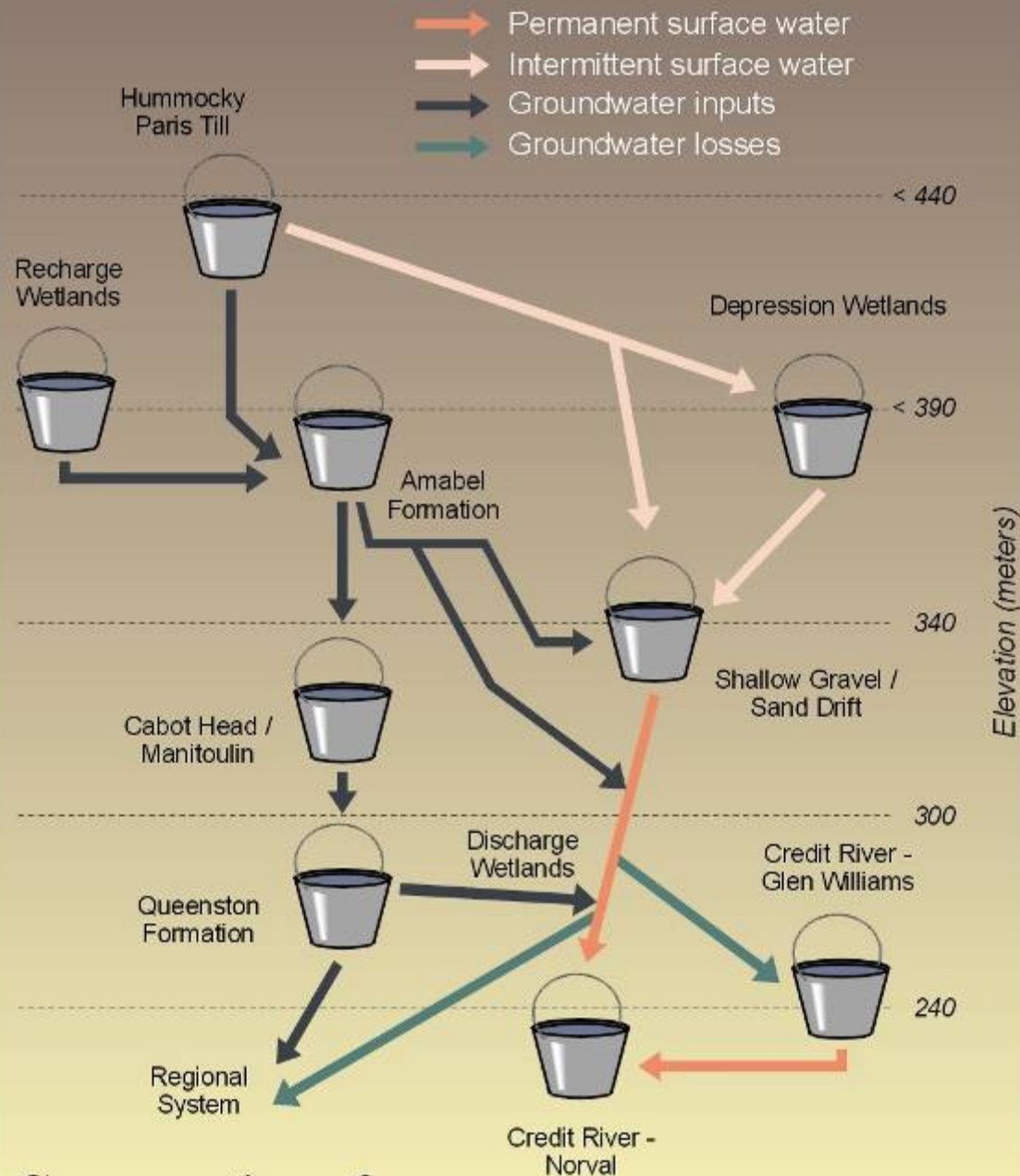
Overview of the System:
Define the Structure,
Effective Linkages
and Key Components



Analysis of
Constituent
Parts



Integration
(re-aggregation
and re-evaluation)



Cross-section of Water Linkages

Using a Bucket and Pipe model to integrate gw:sw interactions on Silver Creek, ON

Using Geology, Hydrogeology, Hydrology and Landscape Features to show relationships

Integrated Watershed Management

WATERSHED MANAGEMENT PROCESS

Watershed Plans



Subwatershed Studies



Tributary Studies



SWM Plans

MUNICIPAL PLANNING PROCESSES

Official Plans

Growth Strategies

Servicing Master Plans



Secondary Plans

Servicing Master Plans

Open Space Studies

Transportation Studies



Plans of Subdivision



Plan of Subdivision



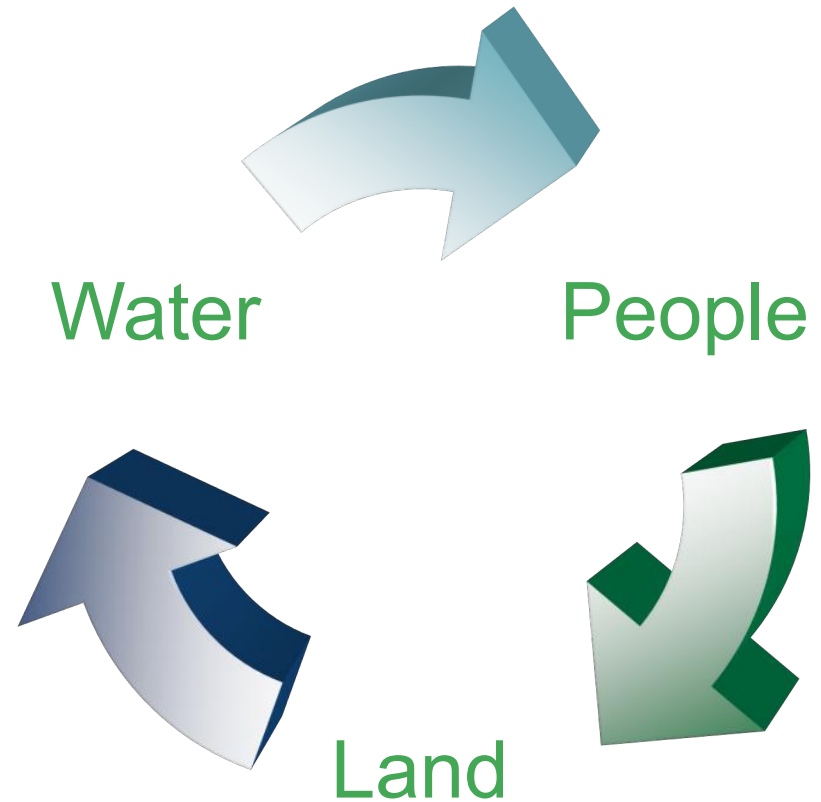
Site Plan



BRINGING IN THE SCIENCE

Incorporate the principles of Integrated Watershed Management:

- Recognize the uncertainties due to complexities associated with ecosystem features & functions
- Plan for long term outcomes & account for existing & future stressors in analyses
- Recognize the importance of scale
- Integrate science components & identify municipal & stakeholder responsibilities



Integrated Watershed Management Initiative

2008 Questionnaire Results for **Integrate Watershed Management**

- ▶ 33 CAs were interviewed
- ▶ Purpose was to update understanding of IWM state of the practice in Ontario

2008 - Where did we need to go from here?

We need to take a look at governance – we had good studies that achieved great things but did they get renewed and move forward ?

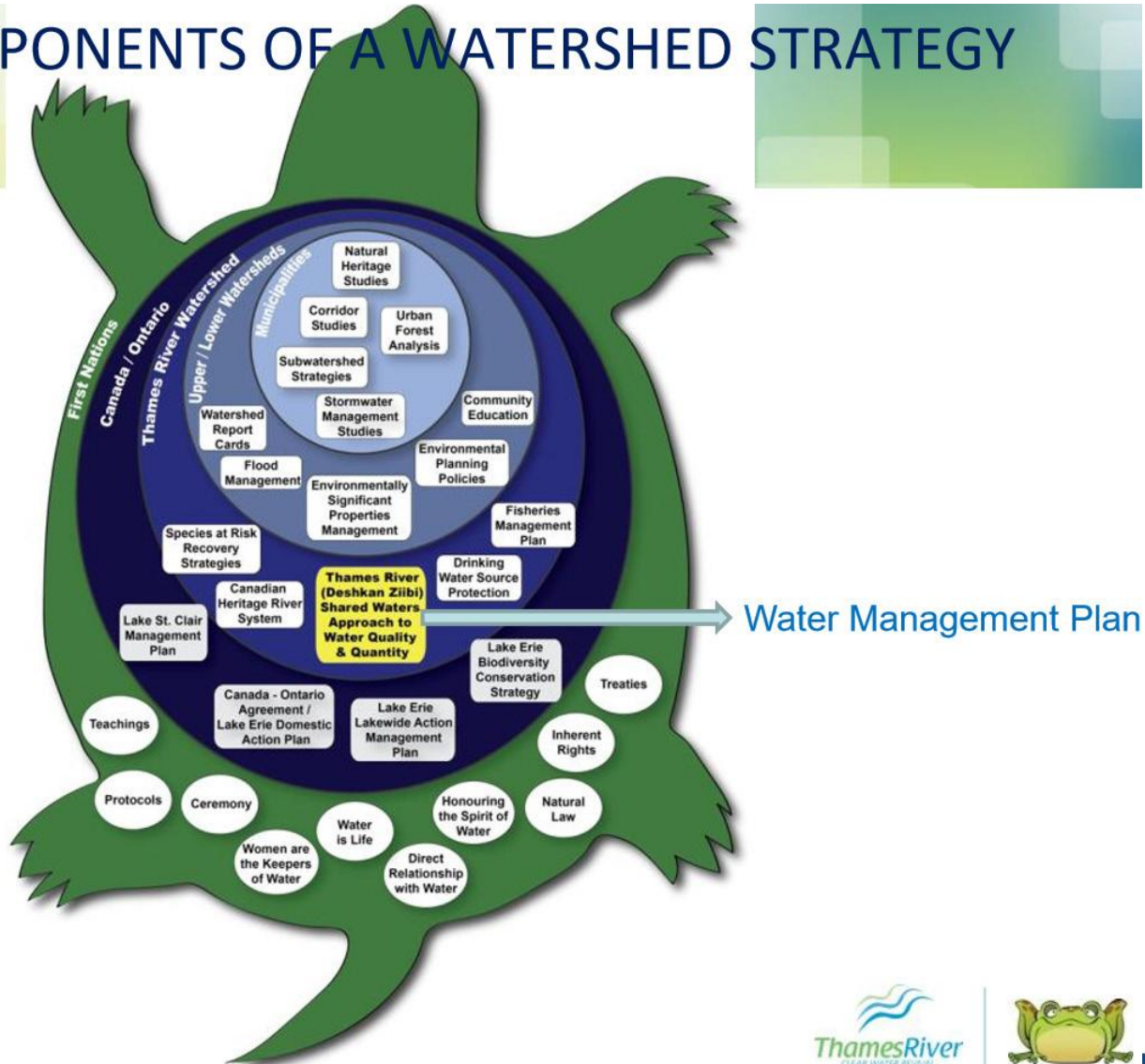
Need new tools to implement, adapt and continue improving watersheds

Questions

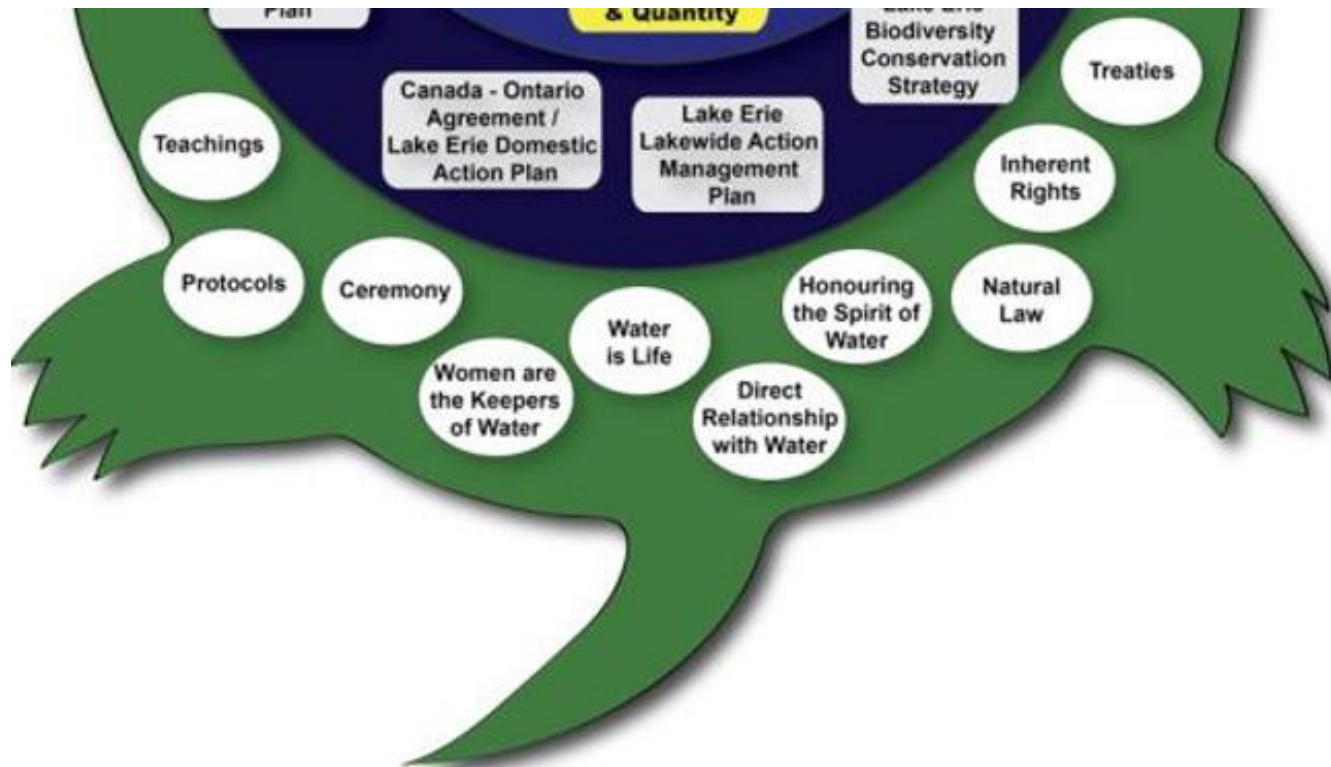
- ▶ Has science got in the road of community engagement?
- ▶ 75 years after the first watershed report in Ontario, is watershed management still relevant?
- ▶ Is there enough urgency to make meaningful difference in our watersheds?
- ▶ “Connection must come before protection”

New Approaches – shared Waters Approach - the Thames River

COMPONENTS OF A WATERSHED STRATEGY



Creating a Relationship with the Watershed – Can we create this relationship in our communities?



Climate Action - Urgency

Youth know the truth

- ▶ That the climate crisis will threaten the lives of hundreds of millions of people.
- ▶ That we are at a crossroads in the history of humanity, and the action we do or don't take will determine the future of civilization.
- ▶ That we need widespread, systemic change, and that we need it now.
 - From Climate Strike Canada Web Site

Reconnecting Our Culture to the Watershed – the new opportunity

- ▶ First Nations examples;
- ▶ Climate Change is a life changing situation for many of our residents;
- ▶ Creates a new connection to the earth and its relationship to humans
- ▶ Is there a new “old” way of creating the feeling / deeper attachment to the watershed?
- ▶ Creating a shared responsibility for a watershed
- ▶ Adapting and Mitigating Climate Change through “community based integrated watershed management”
- ▶ We need to re-relate humans to nature.



Community Based Integrated Climate Change Watershed Management



Conservation
ONTARIO
Natural Champions



PEOPLE

WATER



LAND



Thank - you

