Applicability of Water Stewardship Tools to Large Industries: Great Lakes Case Studies

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Overview

- Background on project
- Drivers for water stewardship initiatives
- Study approach
- Key findings

Collaborators: Council of Great Lakes Industries (CGLI); Great Lakes Protection Fund (GLPF); National Council for Air and Stream Improvement (NCASI); Electric Power Research Institute (EPRI)

Background

- Heightened focus on water
  - Greater attention on water use performance
  - Greater international dialogue
- Many water tools
  - Need for industry to understand emerging tools
  - Expectation for industry participation
- Tools might become de facto regulation for industries
  - Concerns of water availability and access
- Project objective
  - Evaluate potential relevance and utility of various tools to large withdrawal volume industries in the Great Lakes

Drivers for Water Stewardship Initiatives

- Why businesses and investors are interested

- <u>Physical Risk</u>
  - Scarcity, quality
- <u>Regulatory Risk</u>
  - Change in rules of the game, less availability, loss of license to operate
- <u>Reputational Risk</u>
  - Loss of market share

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- <u>Financial Risk</u>
  - Costs
  - Revenues

- Why NGOs are interested
  - Biodiversity, health and water access

Selected Global Water Stewardship Tools

- Water Footprint Network (WFN)
- ISO Water Footprint Standard
- Alliance for Water Stewardship (AWS)
- European Water Stewardship (EWS) Standard
- Global Reporting Initiative (GRI)
- World Resources Institute (WRI) Aqueduct Project
- WBCSD Global Water Tool
- WWF-DEG Water Risk Filter
- Carbon Disclosure Project (CDP) Water Disclosure Project
- CERES Aqua Gauge
- Global Environmental Management Initiative (GEMI) Local Water Tool
- UNEP/SETAC Life Cycle Initiative
- Strategic Water Management Framework (Australia minerals)
- UN CEO Water Mandate
- Veolia Water Impact Index
- Federation House Commitment to Water Efficiency
- Water Brief for Business
- Water Neutral Offset Calculator
- WaterSense Certification Scheme
- Water Stewardship Initiative

Four Categories of Tools

- Water use accounting
- Business risk assessment frameworks
- Reporting and disclosure protocols
- Standards and certification frameworks

Ceres

CDP Water Disclosure

Water Footprint NETWORK

AQUEDUCT
Measuring and Mapping Water Risk

Global Reporting Initiative™

GEMI®
Global Environmental Management Initiative
Business helping business improve environmental, health and safety performance, shareholder value and corporate citizenship.

Global Water tool

Life Cycle Initiative

ISO International Organization for Standardization

ALLIANCE FOR WATER STEWARDSHIP

The CEO Water Mandate

Study Approach

- Reviewed key water stewardship initiatives and underlying “metrics”
- Selected metrics for evaluation
- Applied metrics to four industrial facilities
- Developed key findings & recommendations

22 Metrics Evaluated

Indicator	Metrics
Withdrawal Amounts	total volume abstracted by source
	total volume consumed by source
	water transfers (interbasin and ground/surface)
	peak/average/seasonal use by source
Withdrawal Source Characterization	sources under stress
	amount of renewable water
Withdrawal Impact & Available Supply	relative to total available supply
	effect on ecosystem services
	effect on human services
Discharge Amounts	total volume discharged to receiving body
Discharge Quality	regulated pollutant load
	non-regulated pollutant load
Discharge Impact	eutrophication potential
	effect on downstream human uses
	effect on ecosystem (generally)
Recycling/Reuse	internal recycling and reuse
	external recycling and reuse
Equitable & Transparent Governance	water consumption per unit product
	water resource management strategy (use & disclosure)
	permits and other consents (withdrawals)
	permits and other consents (discharges)
Benefits	economic and social benefits

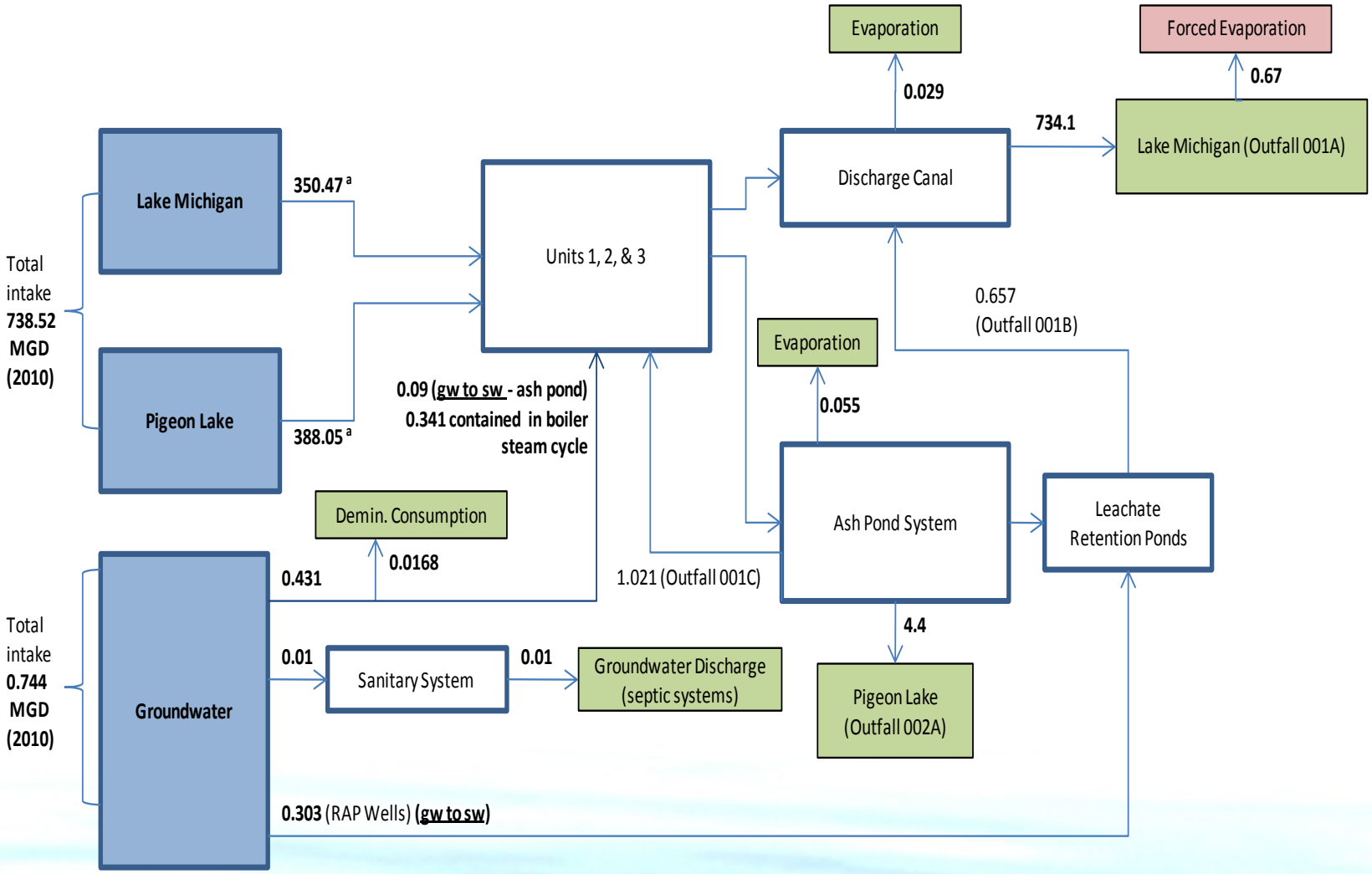
Summary of Five Initiatives

Initiative	Developer	Main Driver	What does it do?
Global Water Tool (GWT)	World Business Council for Sustainable Development (WBCSD) CEO-led global organization	Managing business risk	Maps corporate water use against scarcity data
Water Footprint (WFN)	Water Footprint Network Network of corporations, NGOs, academics and governments	Water use accounting	Measures total volume of freshwater consumed and assesses sustainability
Global Reporting Initiative (GRI)	Global Reporting Initiative (GRI) International multi-stakeholder network of experts	Reporting and disclosure	Produces a comprehensive sustainability reporting framework
CDP Water Disclosure Project	Carbon Disclosure Project Water Disclosure Non-profit organization holding corporate climate change database and acting on behalf of investors	Reporting and disclosure	Provides critical water-related data from corporations to inform global market place on investment risk and commercial opportunity
European Water Stewardship (EWS) Standard	European Water Partnership (EWP) Regional initiative of Alliance for Water Stewardship (AWS) which is developing an international standards and certification program	Standards and certification	Defines sustainable water management principles and creates basis for objective reporting, certification and communication

Consumers Energy J.H. Campbell Generating Complex

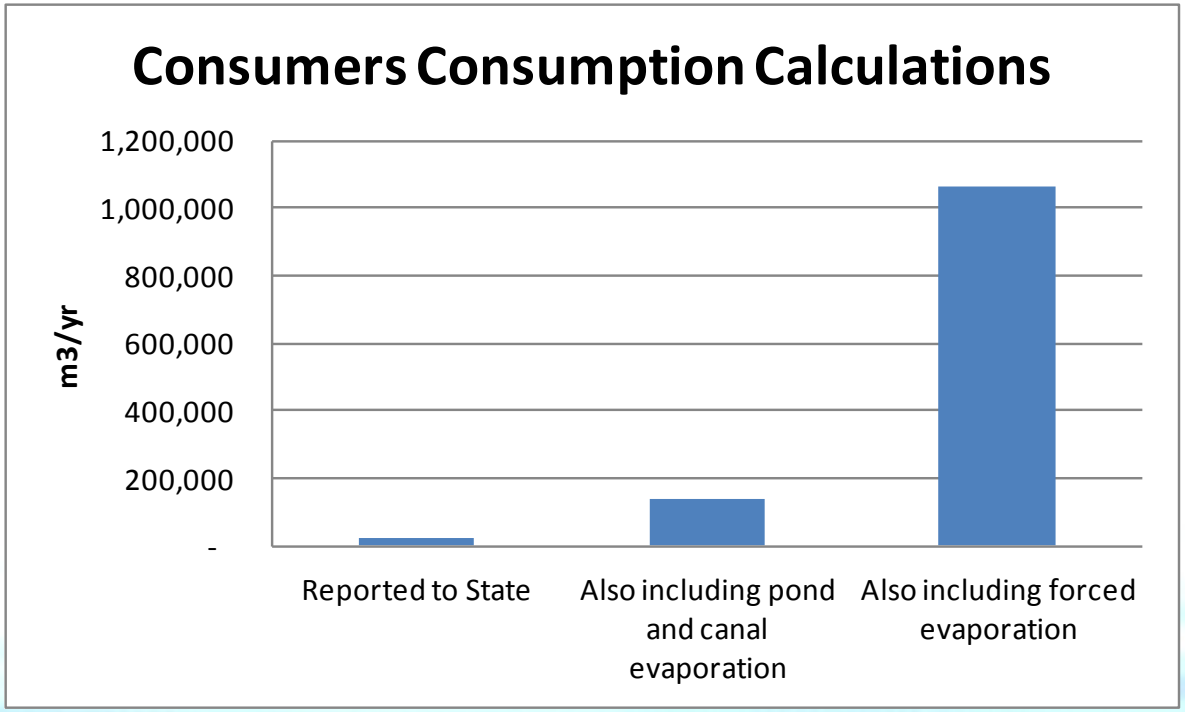
- 2,000-acre site
- 1450 MW Coal-fired power plant
  - Once-through cooling
- Surface Water Intakes (~738 MGD)
- Surface Water Discharge (~738 MGD)
- Groundwater (0.734 MGD)

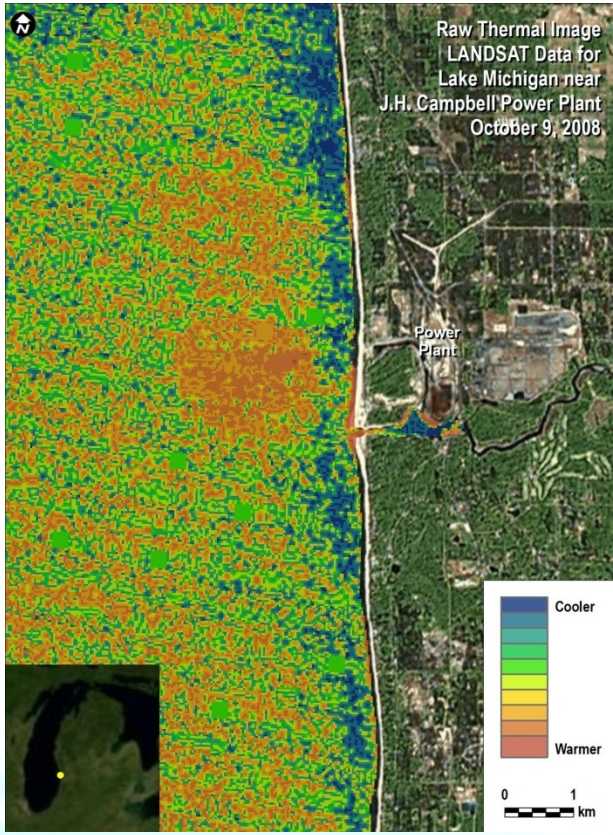
Water Flows at J.H. Campbell Plant



Site Boundary Delineation Can Affect Results

- Forced evaporation due to thermal discharge contributes to consumption





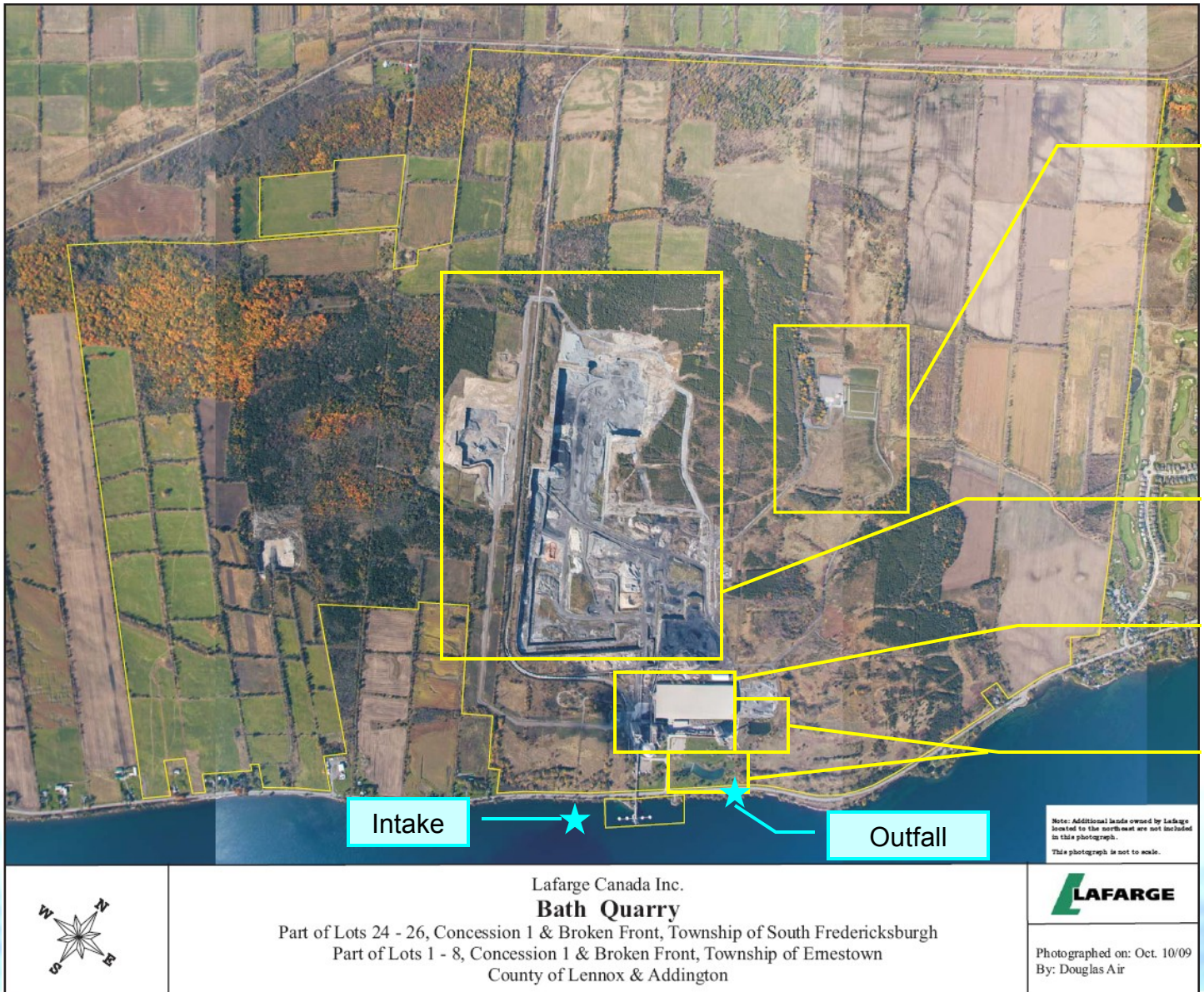
October 9, 2008

Source: http://edcsns17.cr.usgs.gov/NewEarthExplorer/

Lafarge NA Cement Plant

- General description:
  - Located in Bath, Ontario on the shore of Lake Ontario
  - Produces Portland cement
  - ~4 square mile site area

Lafarge Cement Plant



Definitions Can Affect Results

What is “Consumption”

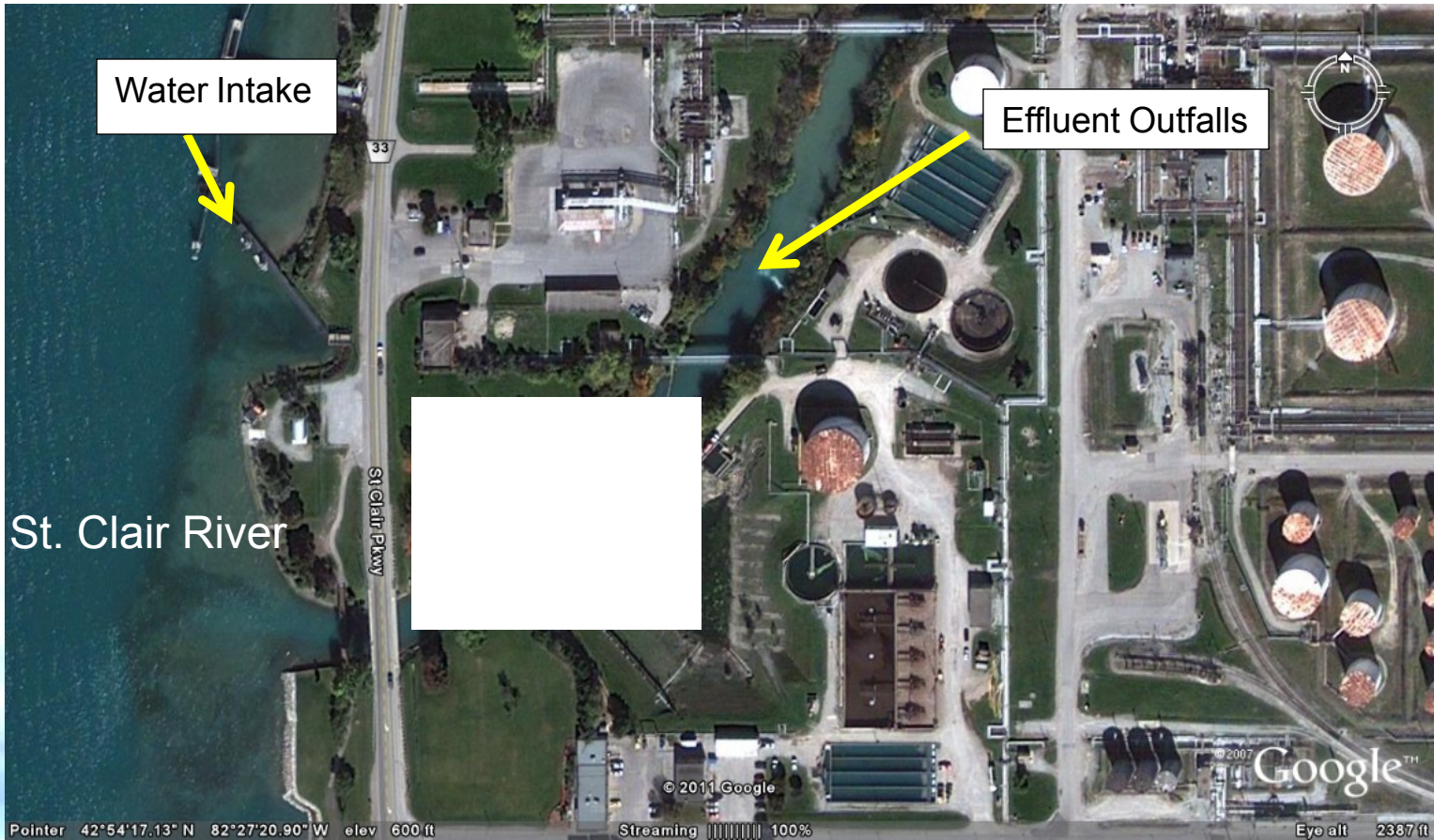
361,873 m3/yr

805,601 m3/yr

- 299,108 m3/yr (negative value)

Shell Sarnia Manufacturing Centre

- Produces refined oil products (fuels, petrochemicals, solvents)



Flow measurements are not always suitable for metrics calculation

- Volume withdrawn is less than volume discharged plus volume evaporated
  - Possibly due to condensate blowdown, rainfall influx into system, and possible discrepancies with inlet and outlet meters
- Measurement precision is suitable for current regulatory requirements and company uses
- Global Water Tool calculates negative consumption

No one Tool Provides all the Answers

- Diverse set of tools are quite useful but have implicit boundaries
- Objectives for tools differ
- Risks in adapting tools for objectives not intended
- Other sustainability concerns are often missing
  - Ecological, social and economic
- No one tool addresses Great Lakes Compact/Agreement

For more information…

Council of Great Lakes Industries

http://www.cgli.org/waterfootprint/waterfootprint.html

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