

STATE OF MICHIGAN
CIRCUIT COURT FOR THE 30TH JUDICIAL CIRCUIT
INGHAM COUNTY

2000

PLATTE LAKE IMPROVEMENT
ASSOCIATION, a Michigan non-profit
corporation, BIG PLATTE LAKE, a
natural living body of water in the
State of Michigan,

Plaintiffs,

File No. 86-57122-CE

v

HON. THOMAS L. BROWN

MICHIGAN DEPARTMENT OF
NATURAL RESOURCES, an agency of
the State of Michigan; GORDON E.
GUYER, Director of the Michigan
Department of Natural Resources; JOHN
A. SCOTT, Chief of the Fisheries Division,
Michigan Department of Natural
Resources,

Defendants.

Frederick D. Dilley (P26090)
Attorney for Plaintiffs

James L. Stropkai (P24588)
Attorney for Defendants
Michigan Department of Attorney General
Natural Resources Division
P.O. Box 30028
Lansing, MI 48909
(517) 373-7540

Required major reduction of hatchery phosphorus loading
Set Platte Lake total phosphorus standard of 6.4 mg/m³

CONSENT JUDGMENT

The Plaintiffs are the Platte Lake Improvement Association (PLIA), a Michigan non-profit corporation and Big Platte Lake, a natural living body of water in the state of Michigan.

The Defendants are the Michigan Department of Natural Resources (MDNR), an

The Water Environment Federation (WEF)
and the Michigan Water Environment Association

WATERSHED 2004 INTERNATIONAL CONFERENCE
HYATT REGENCY DEARBORN
DEARBORN, MICHIGAN, USA
11-14 JULY 2004

Reduction of Total Phosphorus Loads to Big Platte Lake, MI
through Point Source Reduction and Watershed Management.

By

Dr. Raymond P. Canale, Emeritus Professor, The University of Michigan.
Ron Harrison, Benzie County Conservation District.
Penelope Moskus, Limno-Tech Inc, Ann Arbor, Michigan
Troy Naperala, Limno-Tech Inc, Ann Arbor, Michigan
Wilfred Swiecki, Platte Lake Improvement Association.
Gary Whelan, Michigan Department of Natural Resources-Fisheries Division.

Phosphorus Action Plan for Big Platte Lake, MI.
by
Dr. Raymond P. Canale, Emeritus Professor, The University of Michigan.
Todd Redder, LimnoTech, Ann Arbor, Michigan
Wilfred Swiecki, Platte Lake Improvement Association
Gary Whelan, Michigan Department of Natural Resources-Fisheries Division

Journal of Water Resources Planning and Management
American Society of Civil Engineers



Technology employed to plan for compliance with 6.4 mg/m3 standard

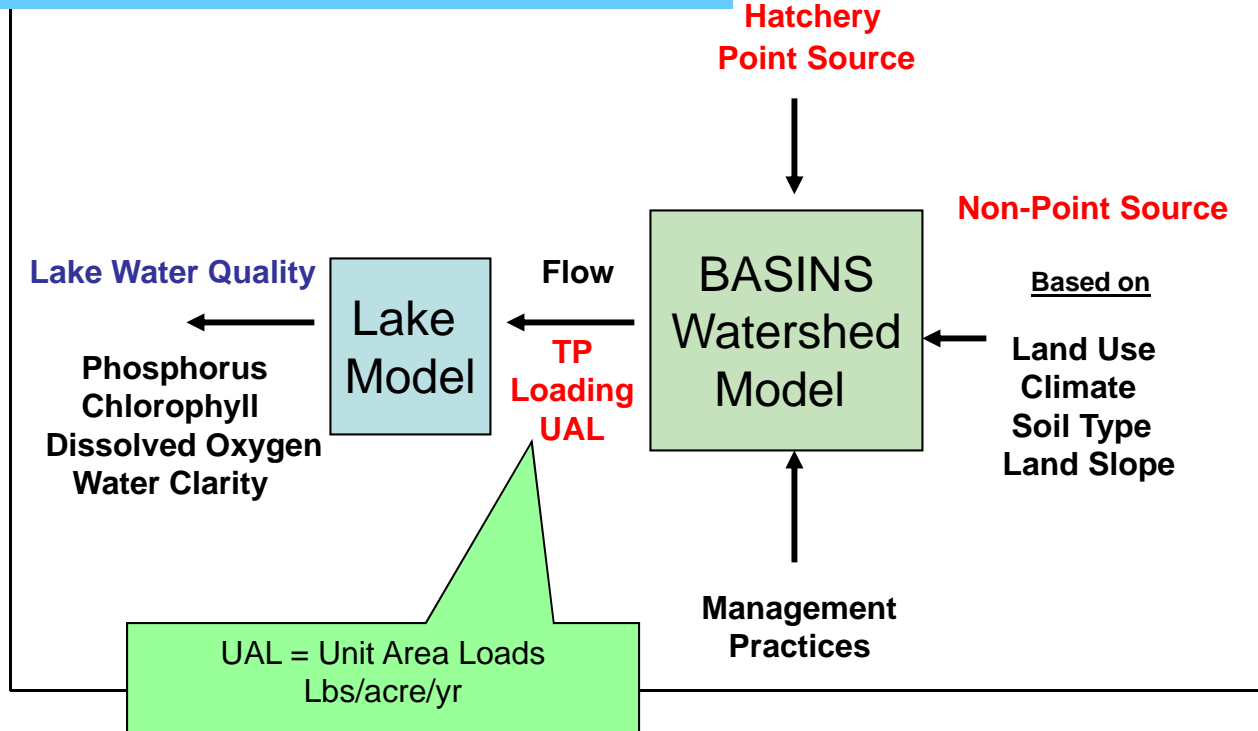
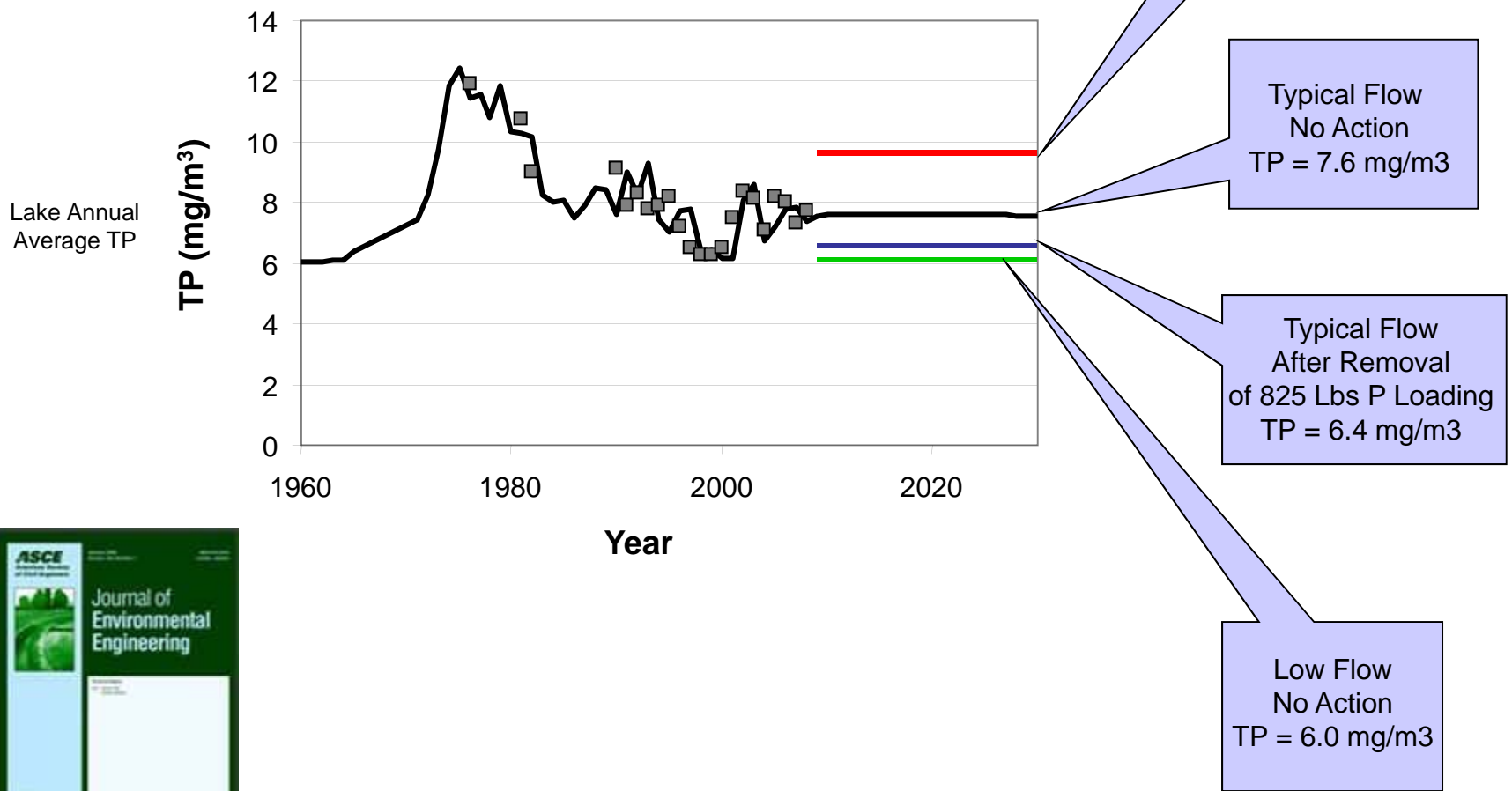
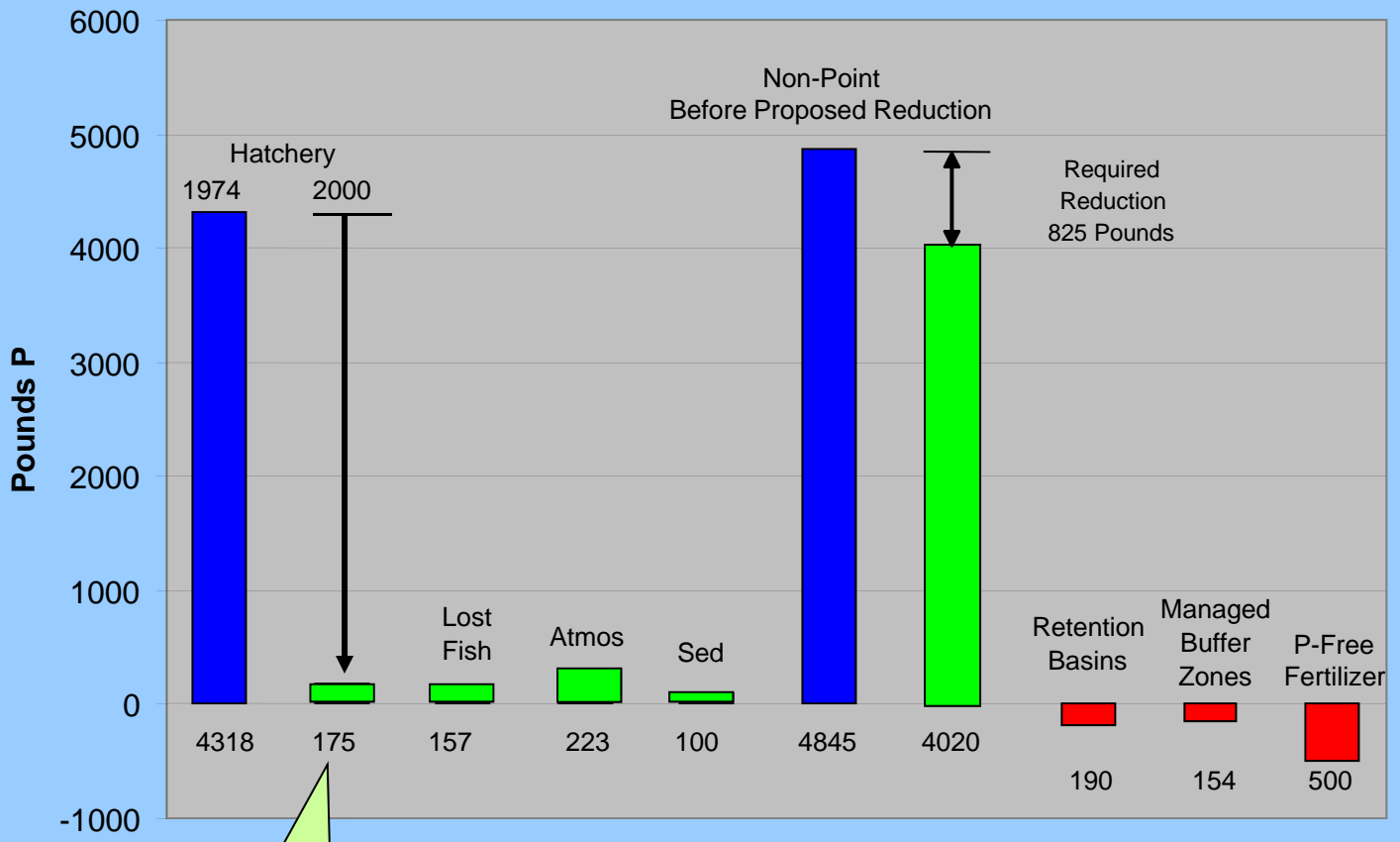


Figure 5.

**Model Projections
for Various Flow Conditions
and Remedial Actions following reduction of
Hatchery load**



Components of Phosphorus Loads to Big Platte Lake (Normal Flow Conditions)



3% of Total
Watershed Load



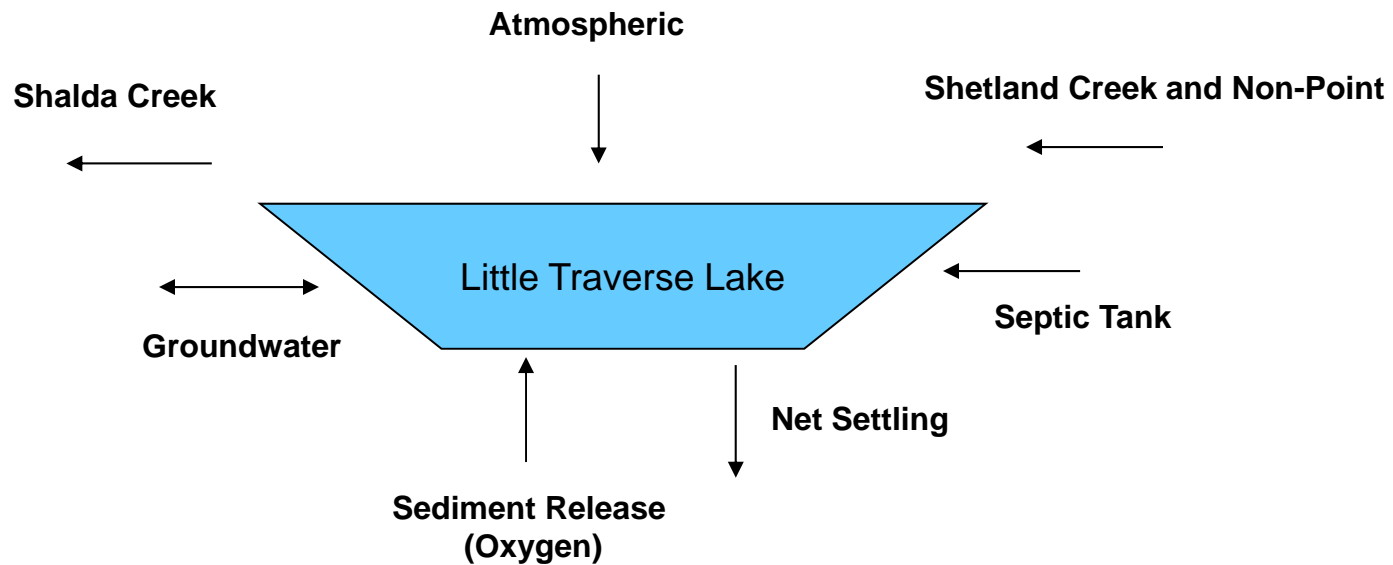
Leelanau Conservancy

**REPORT OF THE
LEELANAU WATERSHED COUNCIL
NUTRIENT DATA and BUDGETS
for
LEELANAU COUNTY
STREAMS AND LAKES
1990 to 1996**

Prepared by
Raymond P. Canale, Ph.D., P.E.
Walter H. Nielsen, BS, ChE
September, 1997

TABLE 9. Little Traverse Lake nutrient budget (1992-1995)

	Flow	Total Nitrogen		Total Phosphorous			N/P Ratio
	cfs	µg/L	lb/yr	µg/L	lb/yr	% Total	
INPUT:							
Shettland Creek	15.87	550	17,176	6.2	194	30	88.7
Atm. Deposition	2.36		4,748		144	22	33.0
Septic Systems			2,649		208	32	12.7
Internal Loading			410		41	6	10.0
Groundwater	<u>3.52</u>	<u>1573</u>	<u>10,896</u>	10.0	<u>69</u>	10	<u>157.3</u>
	21.75		35,879		656		54.7
OUTPUT:							
Shalda Creek	19.13	551	20,742	6.2	233		88.9
Evaporation	2.36						
Groundwater	<u>0.26</u>	551	<u>282</u>	6.2	<u>3</u>		<u>88.9</u>
	21.75		21,024		236		88.9
NUTRIENT RETENTION			41.4%		64.0%		



$W = \text{Total Load} = \text{Shetland Creek} + \text{Direct} + \text{Atmospheric} + \text{Sediment} + \text{Septic}$

$p = \text{volume weighted TP of lake}$

$Q = \text{average annual outflow}$

$A = \text{bottom area of lake}$

$v_s = \text{apparent settling velocity (m/y)}$

At steady state $IN = OUT$ $W = Q p + v_s A p$

$$p = \frac{W}{(Q + v_s A)}$$

