



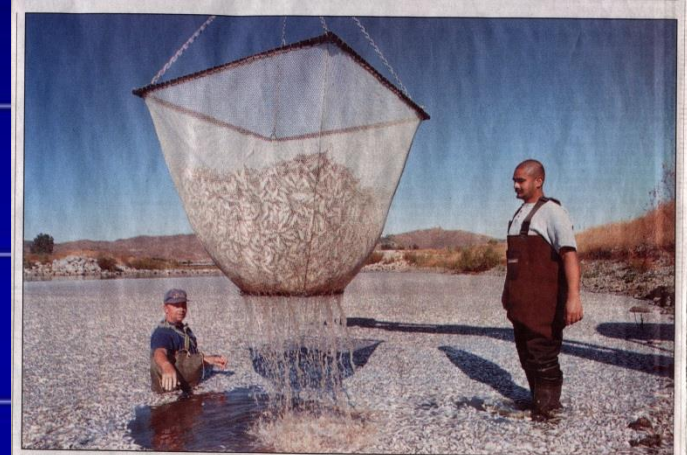
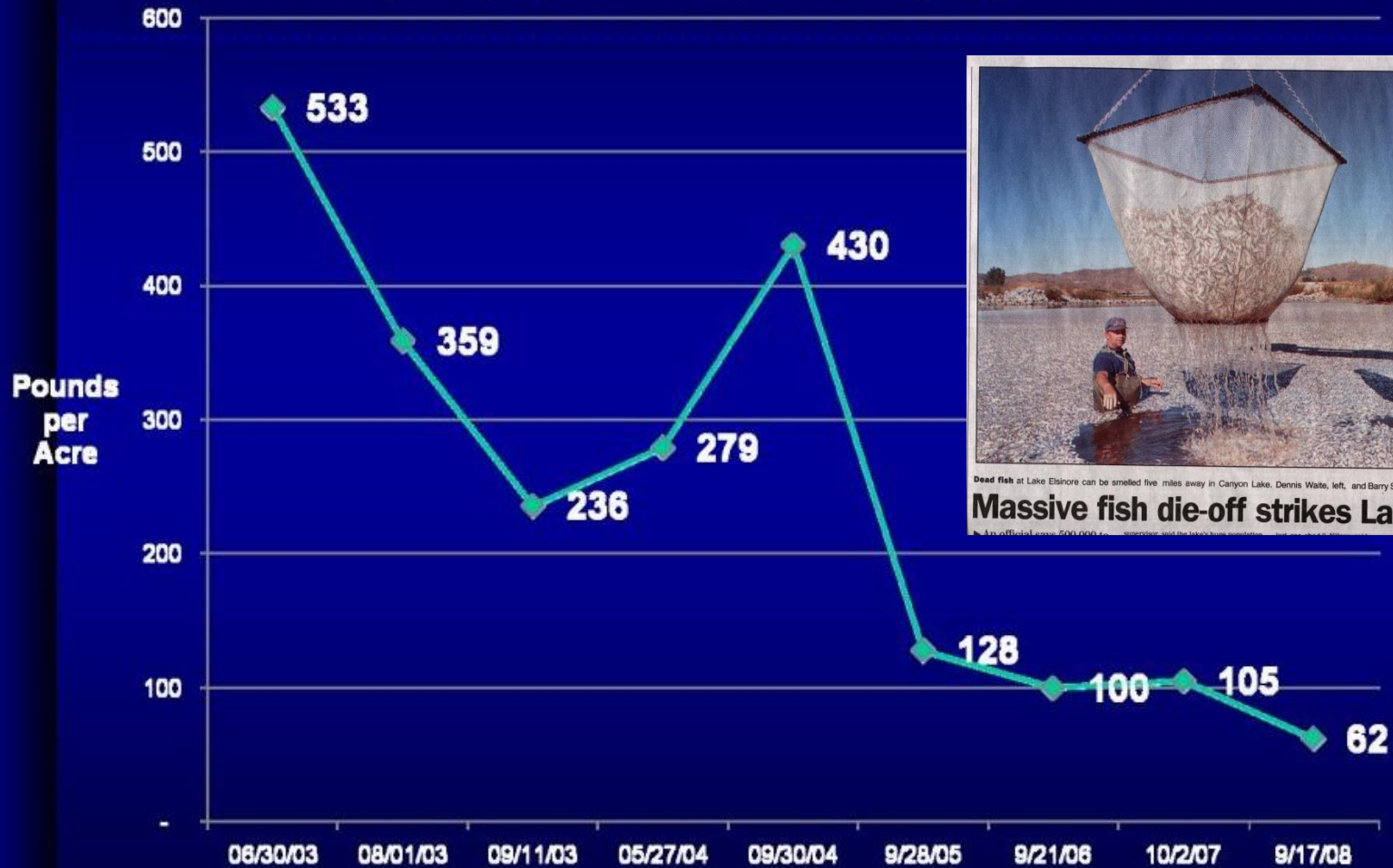
Timothy F. Moore
Risk Sciences

What's Next?

DATE	EVENT
Dec-04	TMDL Adopted
Sep-05	EPA Approval
Mar-06	Monitoring Plan Approved
Mar-07	Task Force Established
Jun-07	Aeration Operation Begins
Nov-07	Lk. Els. Nutrient Reduction Plan
Nov-08	Carp Removal Concluded
Mar-09	Prop13 Effectiveness Demonstrations
Jan-10	MS4 Permit Renewed
Nov-10	Updated Runoff Models
May-11	HOS Preliminary Design
Sep-11	Reg. Bd. Authorizes \$ Reallocation
Dec-11	Draft CNRP Submitted
Nov-12	Anderson Reports Completed
Dec-12	Revised CNRP Submitted
Mar-13	Dairy Permit Issued
Oct-13	Alum Grant Received
Jul-13	EVMWD Permit Renewed
Aug-13	CNRP Approved
Sep-13	1st Alum Application
Feb-14	2nd Alum Application
Jun-14	MS4 Permit Application Due
Sep-14	3rd Alum Application
Jan-15	MS4 Permit Renewal Due
Feb-15	4th Alum Application
Sep-15	5th Alum Application
Dec-15	TMDL Interim Deadline

**Lake Elsinore
and
Canyon Lake
TMDL
Task Force
(2004 – 2015)**

Lake Elsinore 2003-2008 Est. Carp Density (Based upon pounds of Carp per seine netting area)

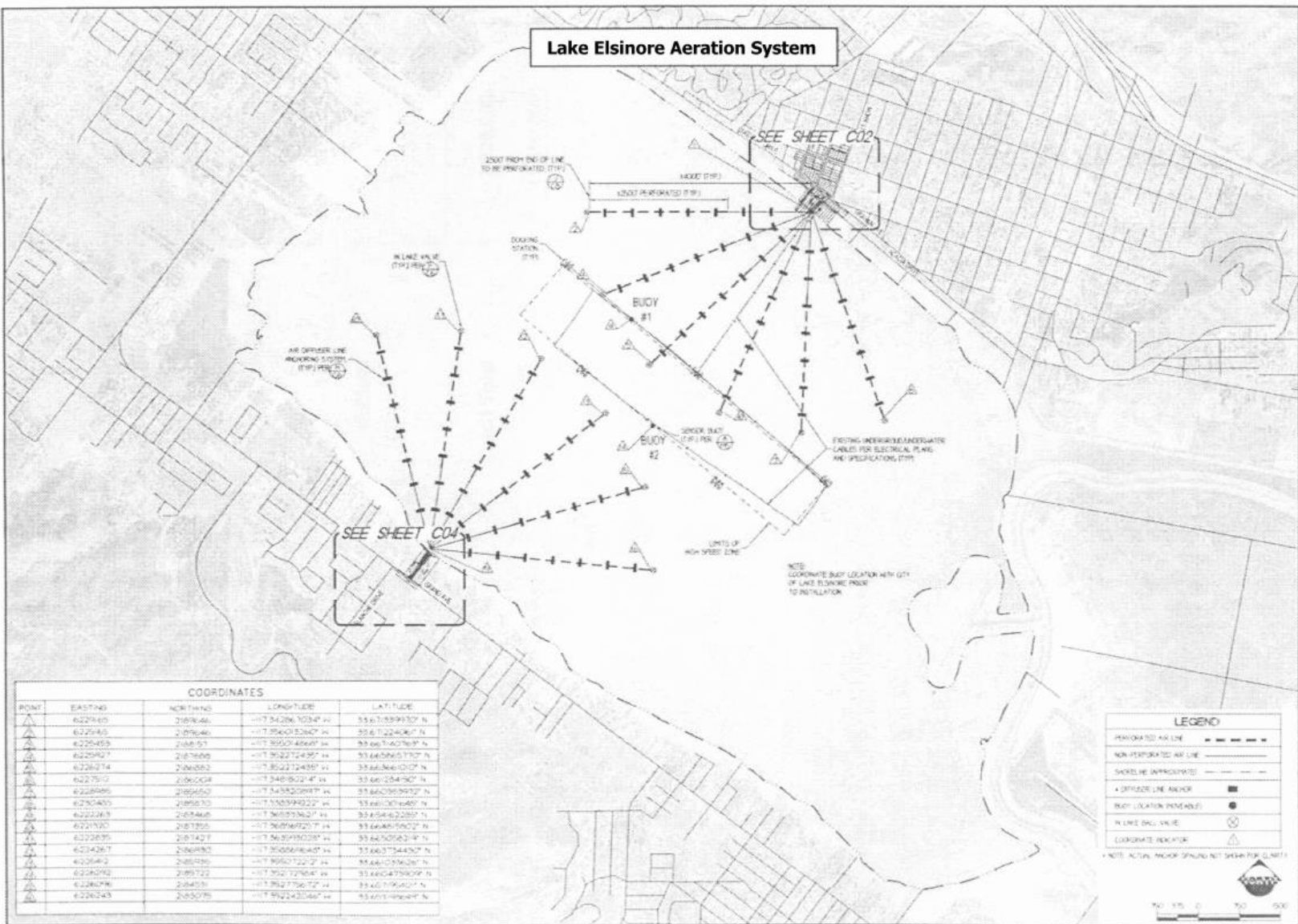


Dead fish at Lake Elsinore can be smelled five miles away in Canyon Lake. Dennis Walte, left, and Barry Sainz watch a giant net scoop up shad.

Massive fish die-off strikes Lake Elsinore

By a Staff Writer / The Press-Enterprise

Lake Elsinore Aeration System



COORDINATES				
POINT	EASTING	NORTHING	LONGITUDE	LATITUDE
	6229460	2187946	+073 26.10384° W	55 51 33.9933° N
	6229545	2187965	+073 26.012860° W	55 51 32.9067° N
	6229585	2187981	+073 25.924660° W	55 51 32.4078° N
	6229625	2187998	+073 25.832456° W	55 51 31.9089° N
	6229674	2188035	+073 25.740249° W	55 51 31.4100° N
	6229750	2188058	+073 25.648042° W	55 51 30.9111° N
	6229885	2188050	+073 25.555836° W	55 51 30.4122° N
	62290400	2188010	+073 25.599432° W	55 51 30.9166° N
	6222263	2181465	+073 36.533637° W	53 45 54.62285° N
	6221735	2181355	+073 36.678207° W	53 45 54.91602° N
	6222035	2181427	+073 36.591038° W	53 45 55.0214° N
	6214267	2186980	+073 35.664640° W	53 46 57.34430° N
	6215642	2186195	+073 35.696122° W	53 46 57.36628° N
	6216050	2186122	+073 35.727564° W	53 46 57.38826° N
	6186796	2186796	+073 36.77667° W	53 46 51.95401° N
	6226345	2185095	+073 36.242366° W	53 47 1.98968° N

LEGEND	
PERFORATED AIR LINE	----
NON-PERFORATED AIR LINE	————
SACRED LINE (APPROXIMATE)	- - - - -
• DISTANCE LINE ANCHOR	■
BUILT LOCATION (PERMANENT)	●
IN LINE SHALL VALUE	⊗
COORDINATE INDICATOR	△

* NOTE: ACTUAL ANCHOR SPACING NOT SHOWN FOR CLARITY

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**PACIFIC ADVANCED
CIVIL ENGINEERING**
13750, 140 Avenue, Suite 1, Irvine, CA 92618
Tel: 949/451-1111 Fax: 949/451-1112

ALTERNATE SITE PLAN

REALTY
INCORPORATED
OF FLA. II



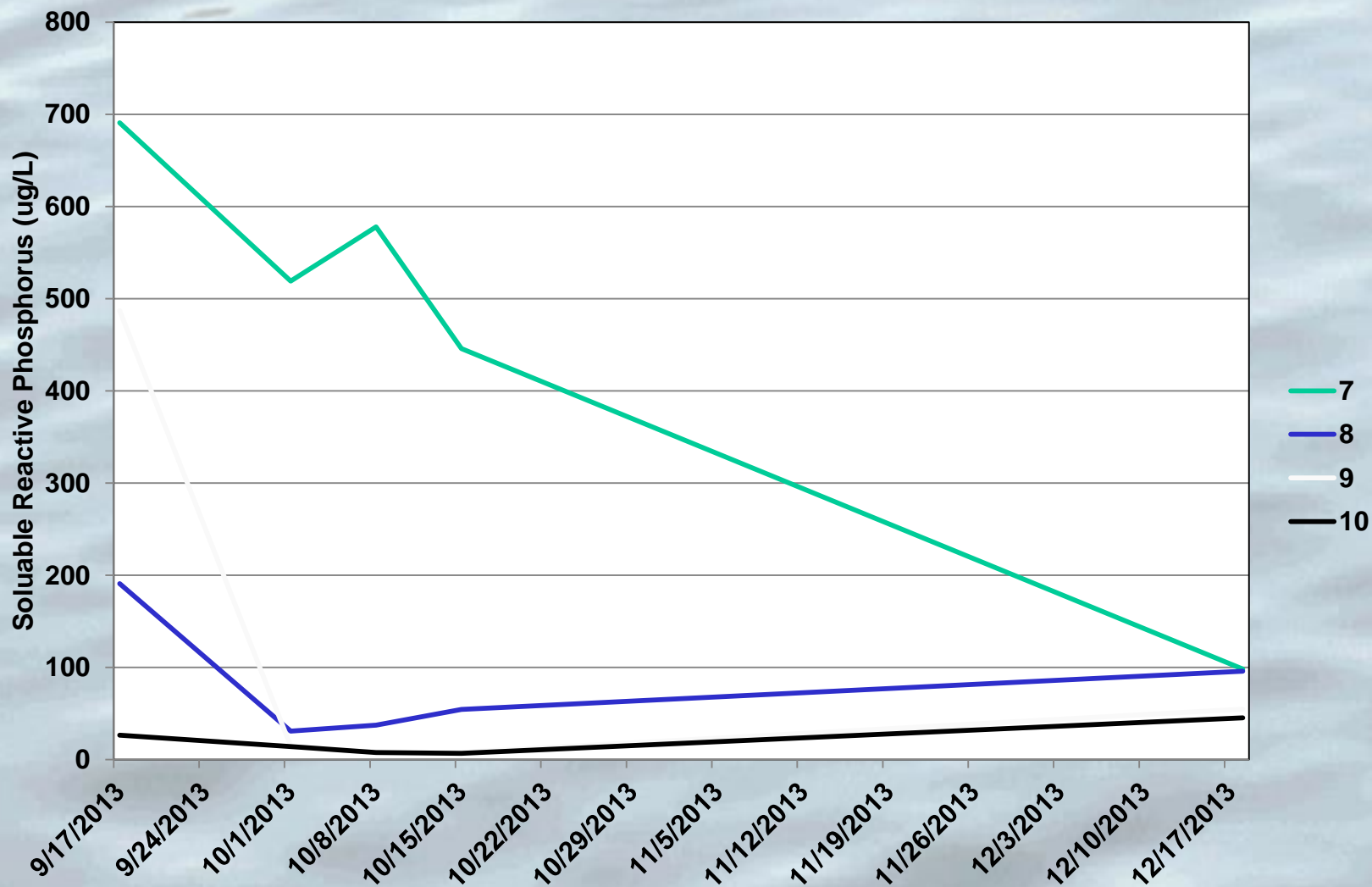
G01

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24



Total Phosphorus - Canyon Lake





2012 SePRO Preferred Applicator Business Seminar

San Jacinto Watershed Model Update (2010) - Final

Submitted to:

Lake Elsinore & San Jacinto Watersheds Authority



Lake Elsinore & San Jacinto Watersheds Authority
11615 Sterling Ave
Riverside, CA 92503

Submitted by:



Tetra Tech, Inc.
1230 Columbia St., Suite 1000
San Diego, CA 92101

October 7, 2010

The First Turning Point

San Jacinto Watershed Hydrology Features



Runoff in valley flows rapidly to Mystic Lake

Without overflow, downstream reaches often dry

Perris Reservoir

- Largest drinking water reservoir in watershed
- No effects on river

Perris Valley Storm Drain

- Significant source of urban runoff to Canyon Lake, similar to Salt Creek
- No natural or manmade containments

Mystic Lake

- Mystic Lake can be totally dry for several years
- Empty Mystic Lake can handle single large overflow from Hemet Lake
- Lake's depth increasing each year due to significant subsidence, increasing storage capacity and requiring larger rain events to cause overflow
- Second overflow from Hemet Lake in a wet year can cause Mystic Lake to overflow

Canyon Lake

- Fed by Mystic Lake during torrential rainfall events or extended rain
- Receives significant urban stormwater runoff from Salt Creek and Perris Valley Storm Drain

Lake Elsinore

- Flow from Canyon Lake only during wet periods
- Supplemental discharges of reclaimed water from EVMWD during dry months

Salt Creek

- Main tributary to Canyon Lake
- Peaks in flow due to runoff from urban areas

Headwaters

- Perennial flow
- Influenced by infiltration and existing soil moisture from previous rain

Hemet Lake

- Water conservation reservoir
- Large precipitation events can cause overflows

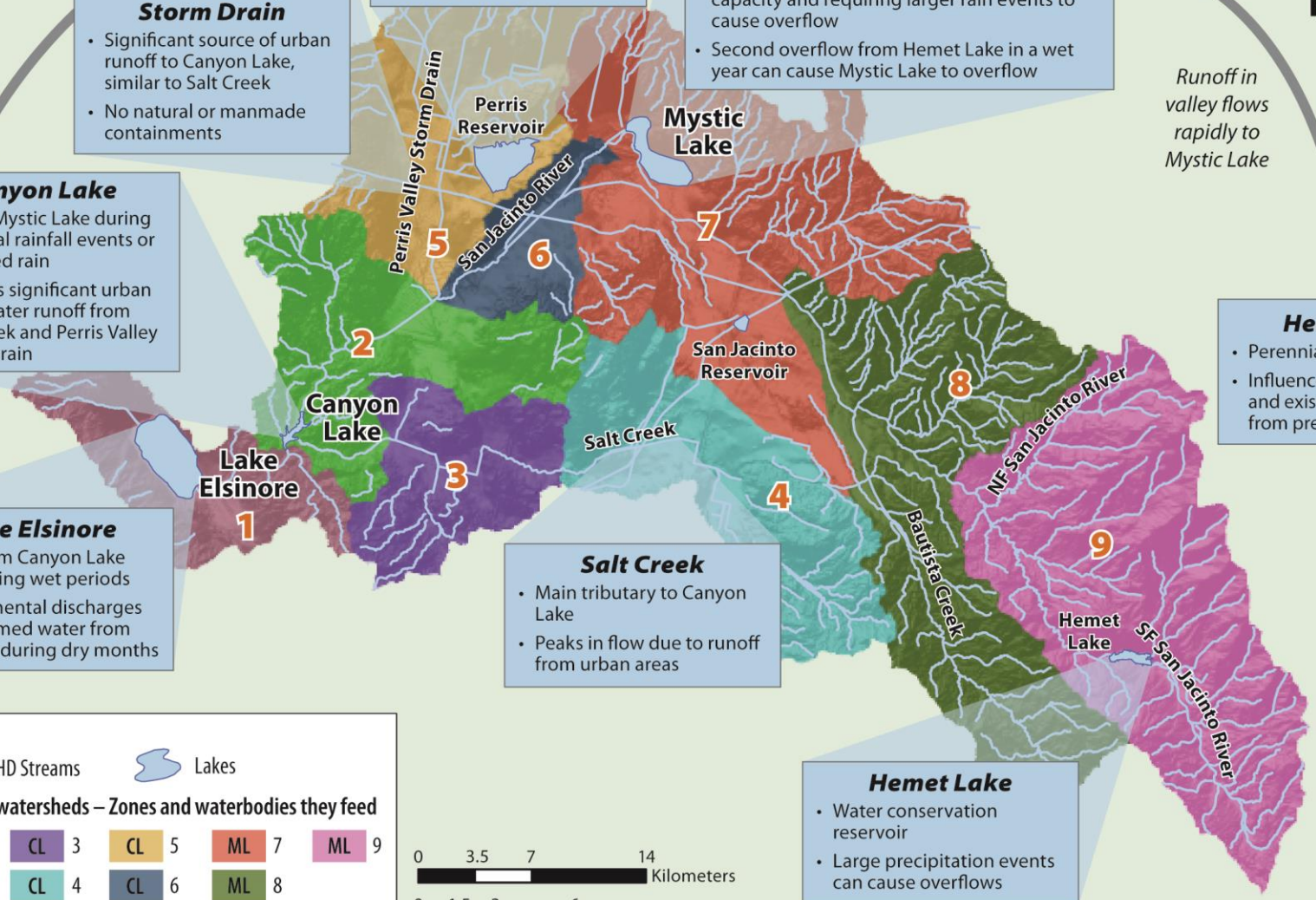
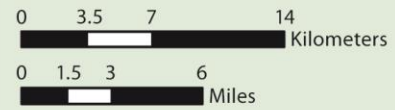
Legend

NHD Streams Lakes

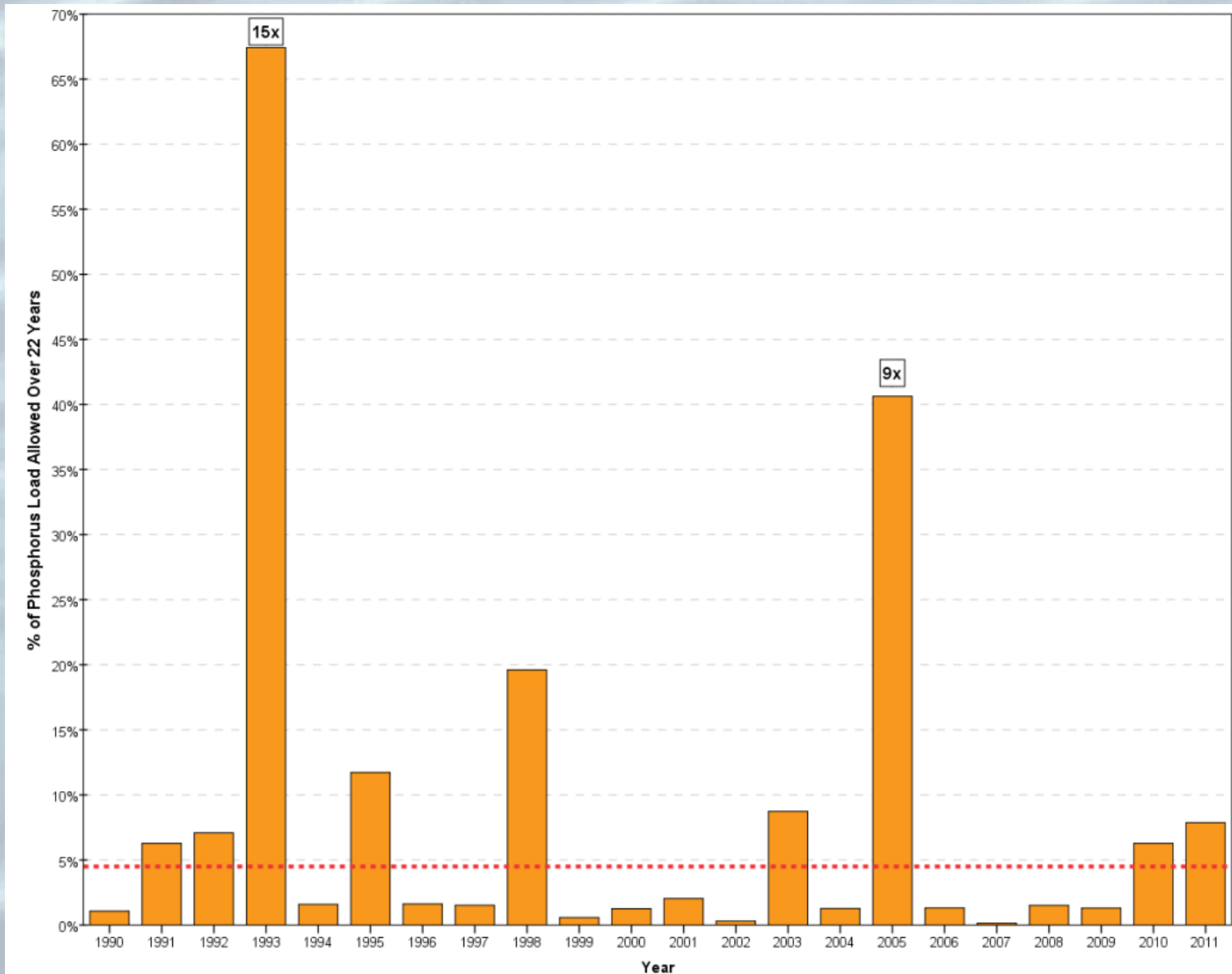
Model Subwatersheds – Zones and waterbodies they feed

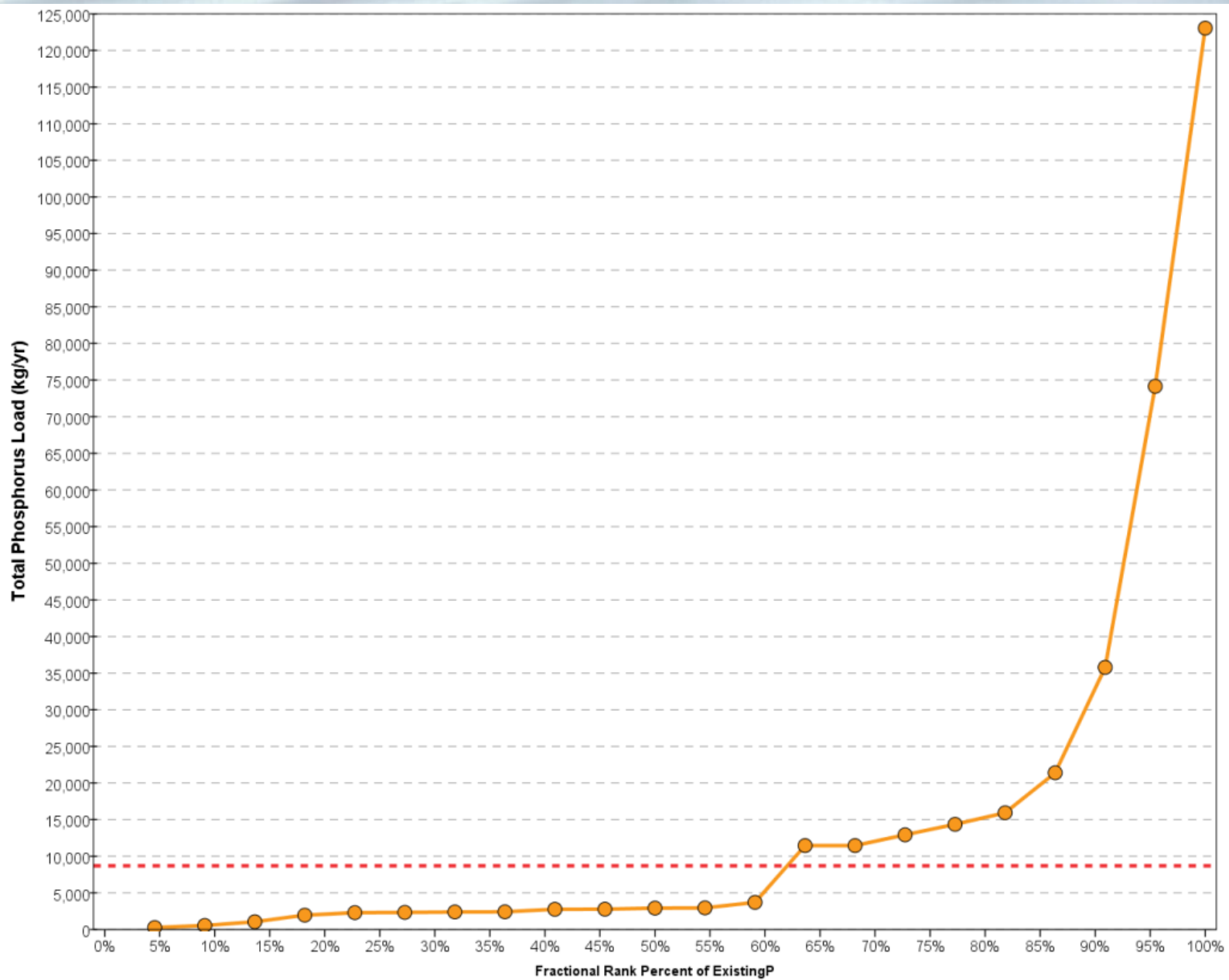
LE 1	CL 3	CL 5	ML 7	ML 9
CL 2	CL 4	CL 6	ML 8	

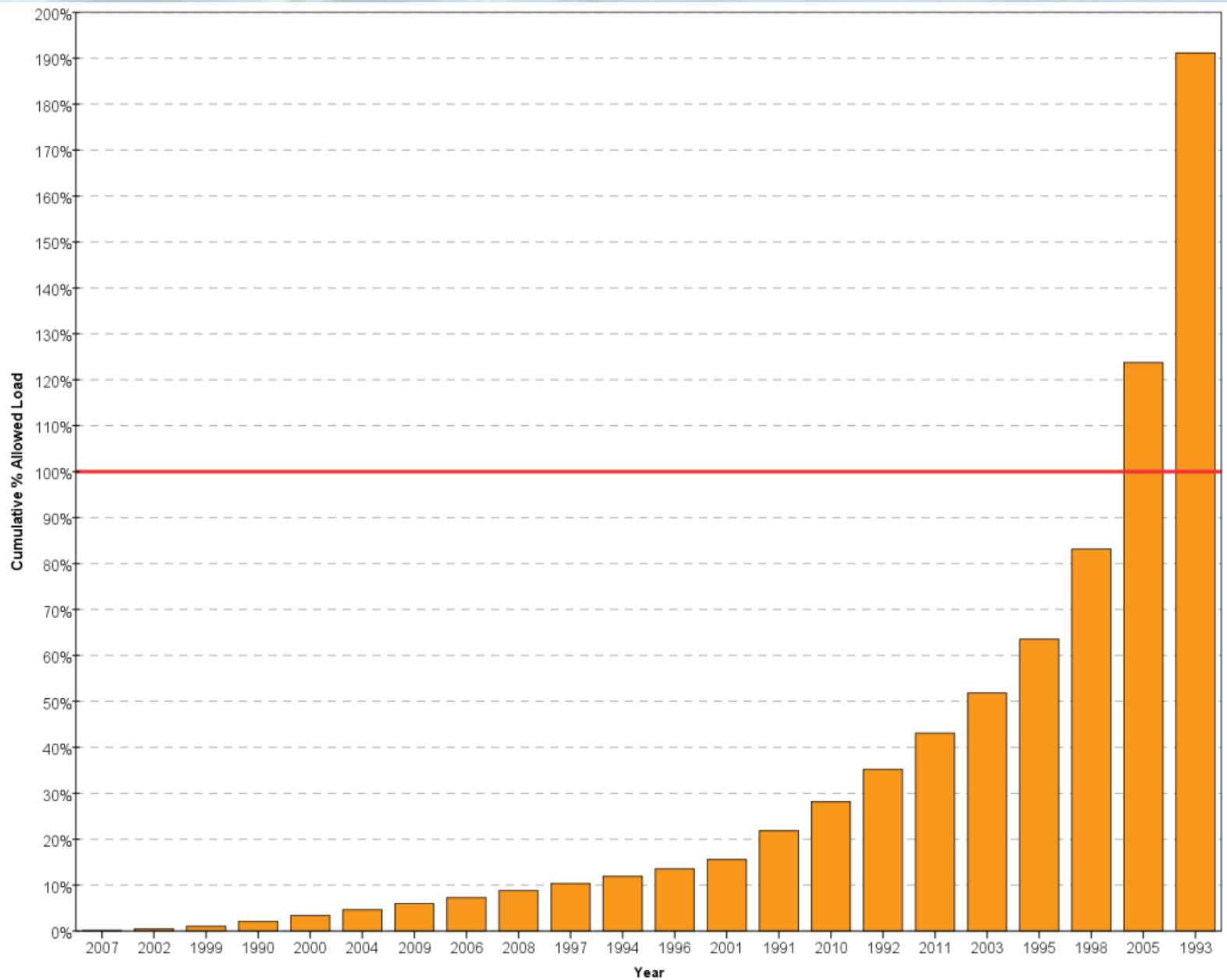
(LE – Lake Elsinore; CL – Canyon Lake; ML – Mystic Lake)



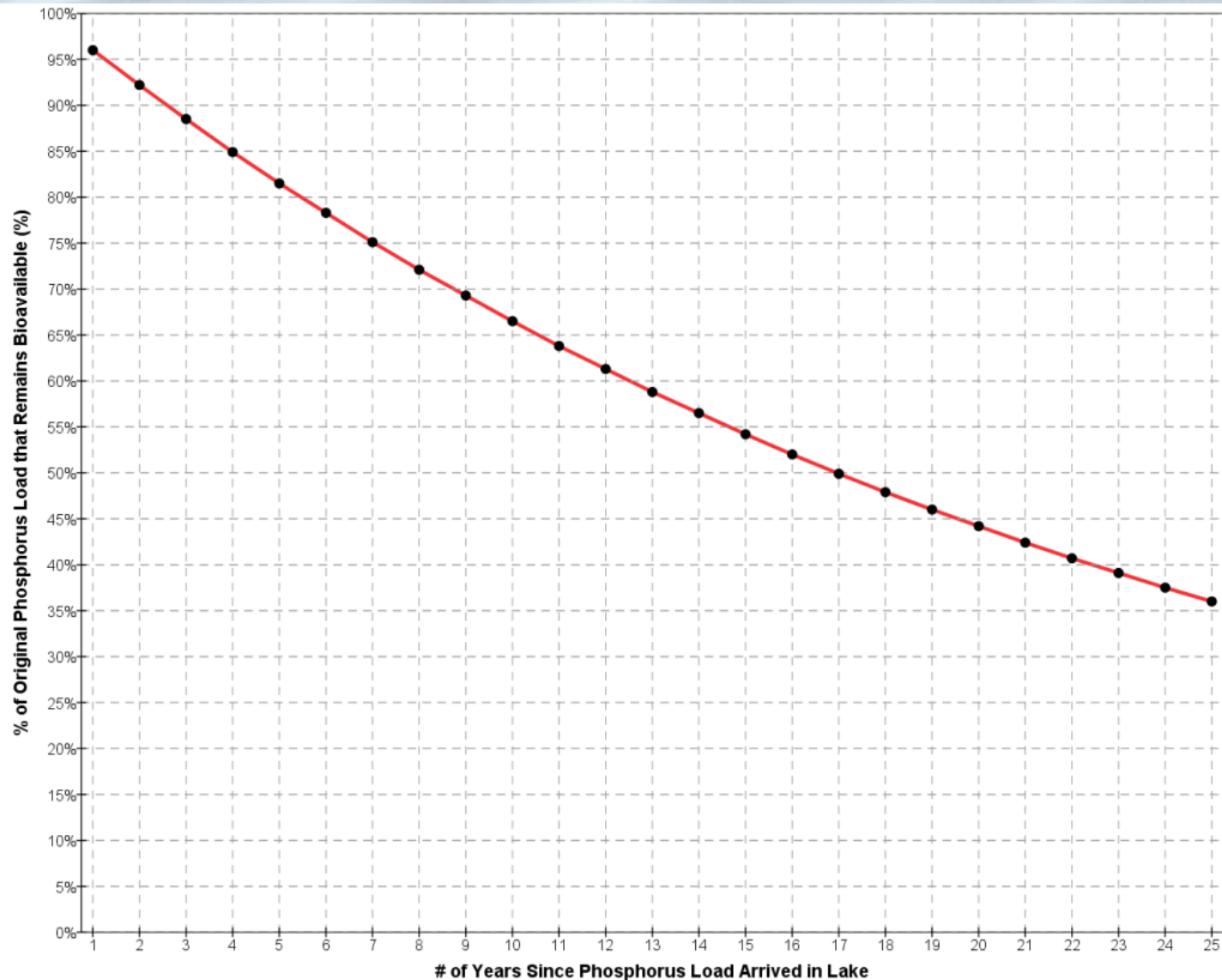
Wide Variability in Phosphorus Loading





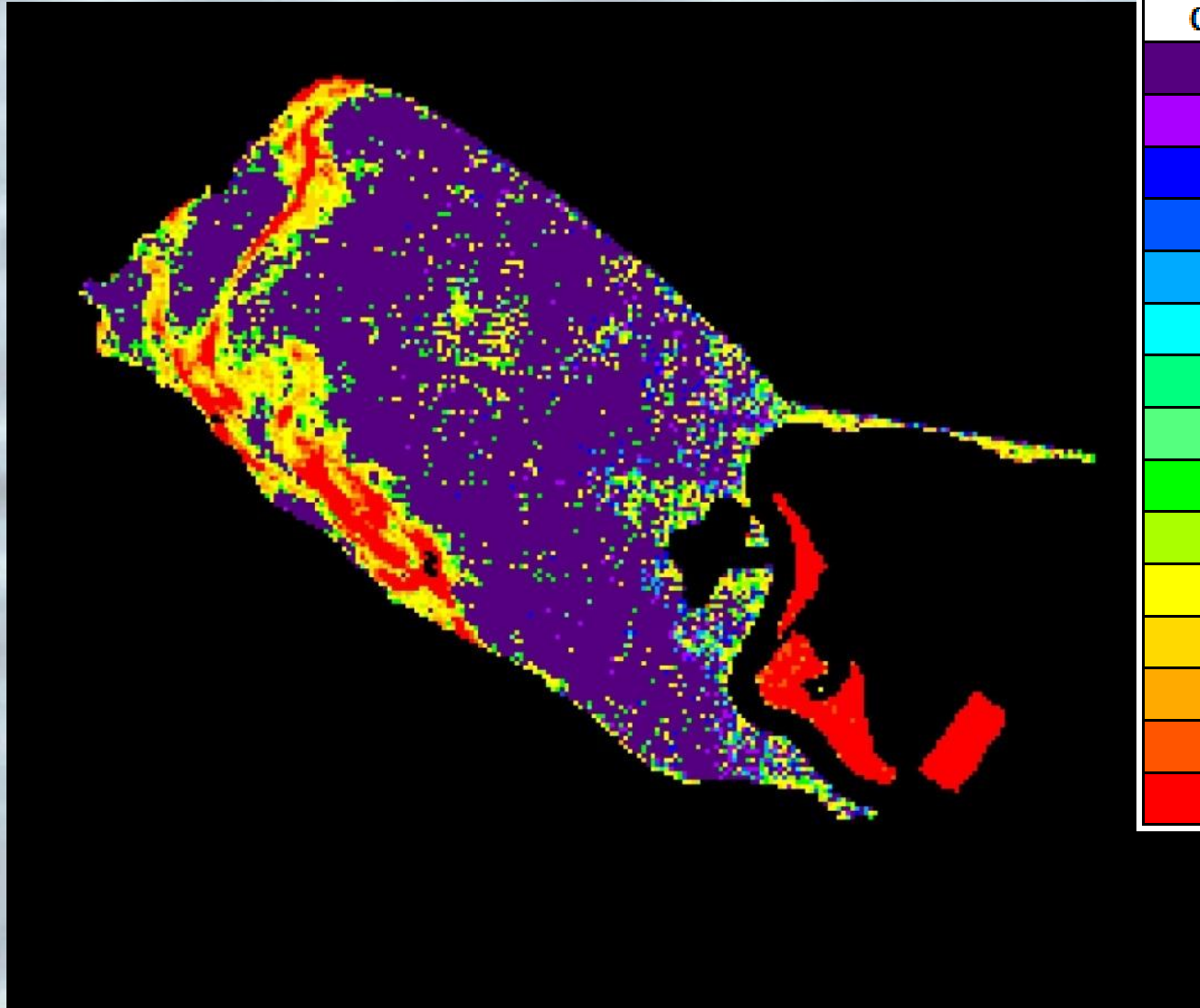


Phosphorus Neutralizes VERY Slowly





Lake Elsinore: Oct. 1, 1997



Color	Chl-a (PPB)	% of Lake
	0-5	62.1
	6-10	1.3
	11-15	1.3
	16-20	0.3
	21-25	0.9
	26-30	0.1
	31-35	0.1
	36-40	1.0
	41-45	4.5
	46-50	3.4
	51-75	9.5
	76-100	3.4
	101-125	2.0
	126-150	1.4
	>150	8.7

Must Update the TMDL to Account for:

- 1) Mystic Lake Subsidence**
- 2) Asymmetric Loading**
- 3) Long Decay Cycle**
- 4) Role of Zooplankton**
- 5) Salinity Constraints**
- 6) Variable Lake Levels**
- 7) BMP Implementation**
- 8) Changing Land Uses**
- 9) Natural Loading**
- 10) Limited Dairy Runoff**
- 11) Measuring Compliance**
- 12) Status of Recycled H₂O**

Competing & Conflicting Mandates

On-site Retention & Urban Runoff Diversion vs...

- 1) Stable Lake Levels**
- 2) Stream Habitat**
- 3) Downstream Water Rights**
- 4) Flood Control Protection**

In-Lake Treatment Strategies vs...

- 1) EPA Regulations**
- 2) CEQA**
- 3) Recreational Inconvenience**
- 4) TMDL Compliance Metrics**

The Second Turning Point

