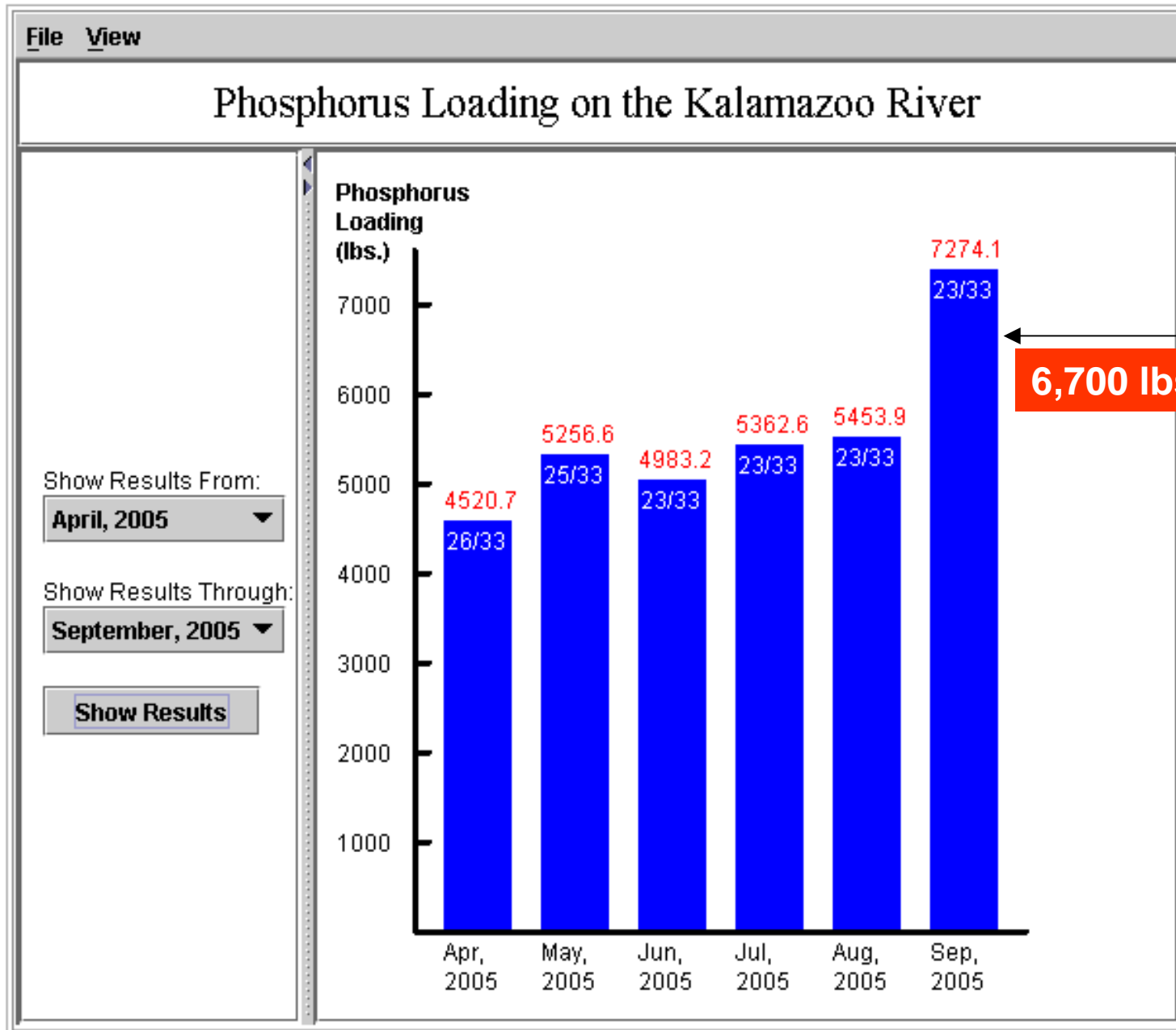


Kalamazoo River Water Quality ~ Assessment of 1998 - 2007 Trends ~

- PS Compliance (2005 - 2007)
- Flow data (2000 - 2007)
- Non-point Source Loads
 - 1998 - 2007
 - Monthly trends
 - Seasonal trends
- MSU/MDEQ comparison of 1999 to 2005 data
- Cumulative Loads and Seasonal Trends
- NPS Load Distribution Re-visited

*Presented to the TMDL Implementation
Committee on November 8, 2007*

September 2005 WLA Exceedance of Monthly Goal by Point Sources



2006 WLA Compliance with Point Source Loading Goals

File View

Phosphorus Loading on the Kalamazoo River

Show Results From:

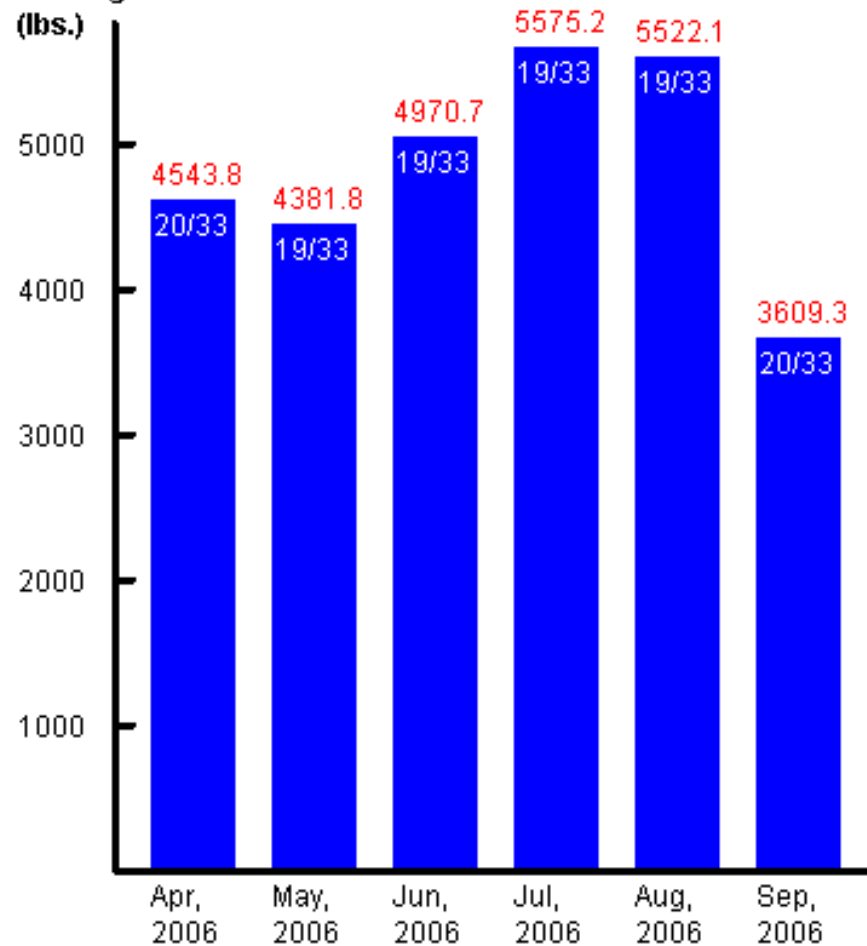
April, 2006

Show Results Through:

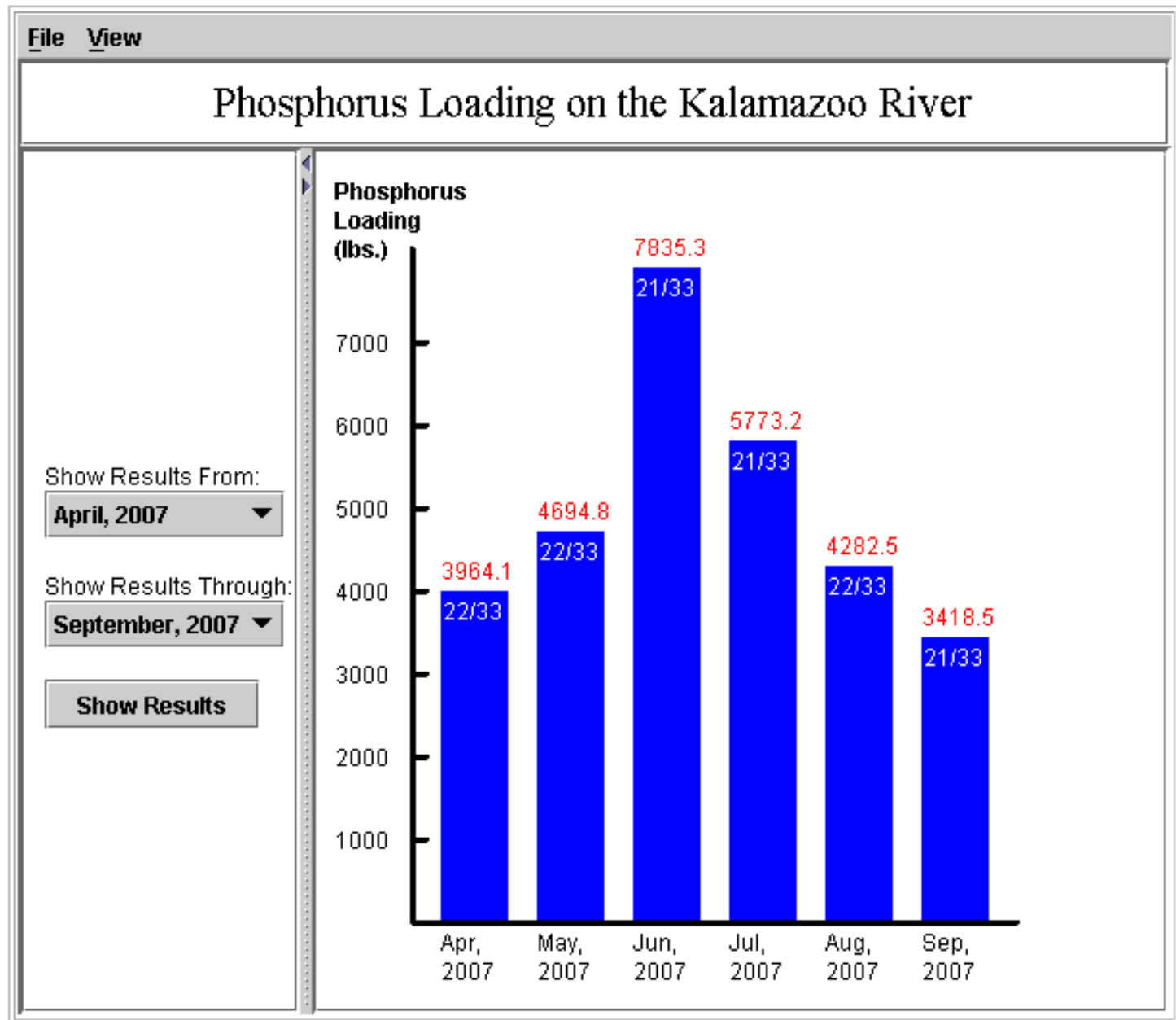
September, 2006

Show Results

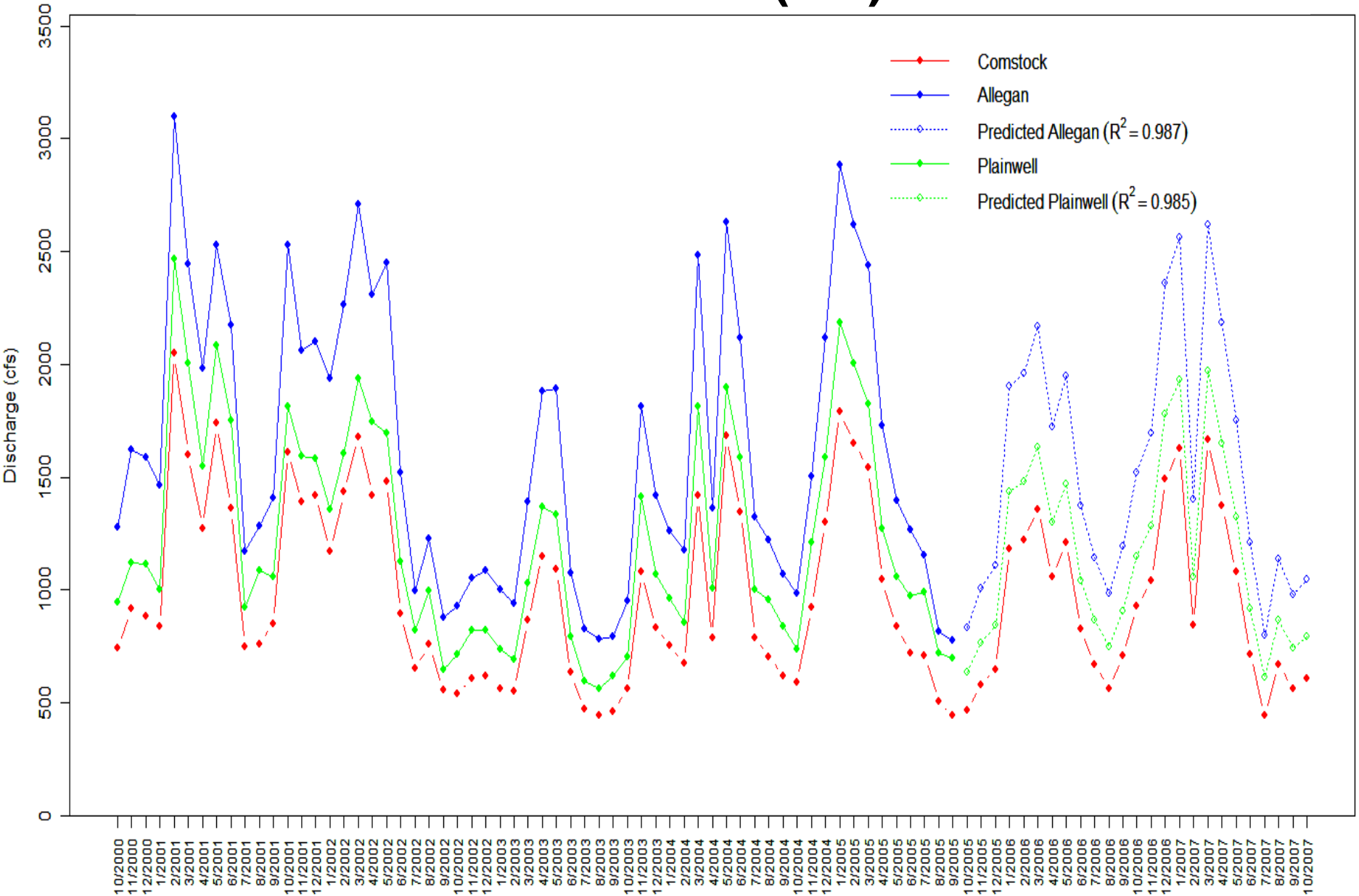
Phosphorus Loading (lbs.)



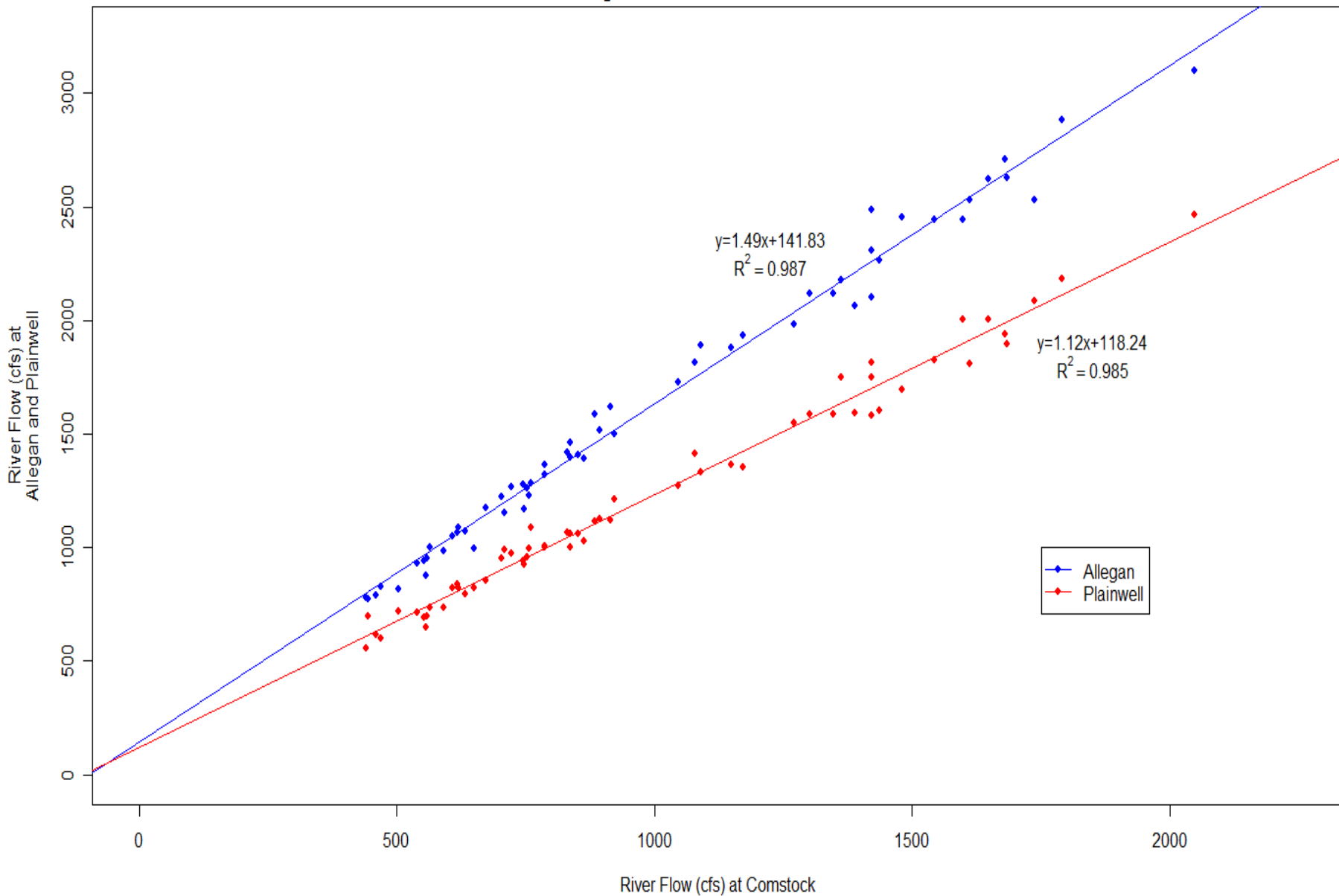
2007 WLA Compliance with Point Source Loading Goals



Kalamazoo River Flows (cfs) from 2000-2007



Relationship Between Flow at Allegan, Plainwell and Comstock (USGS Gauging Station Data)

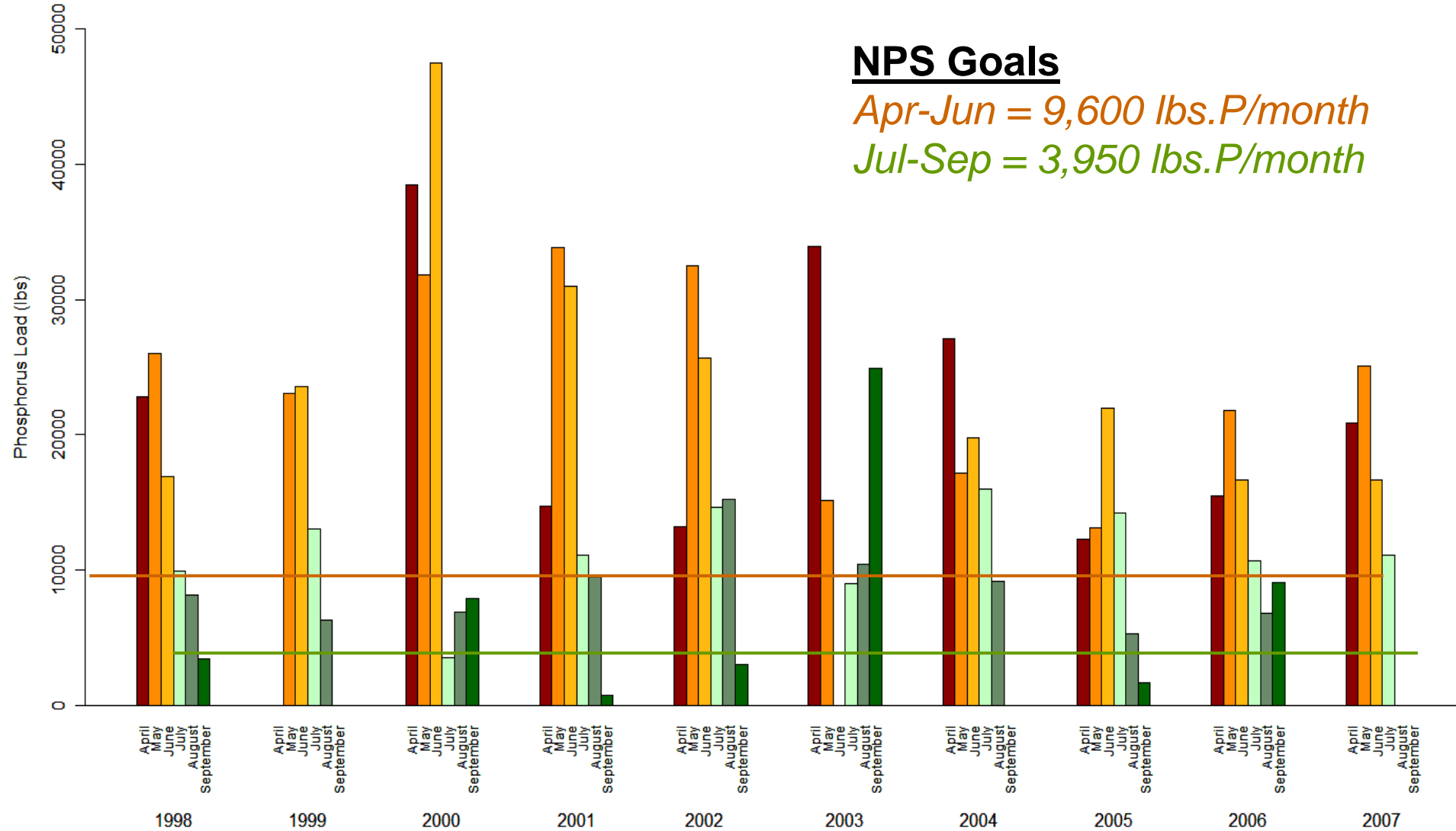


NPS Loads to Kalamazoo River 1998 - 2007

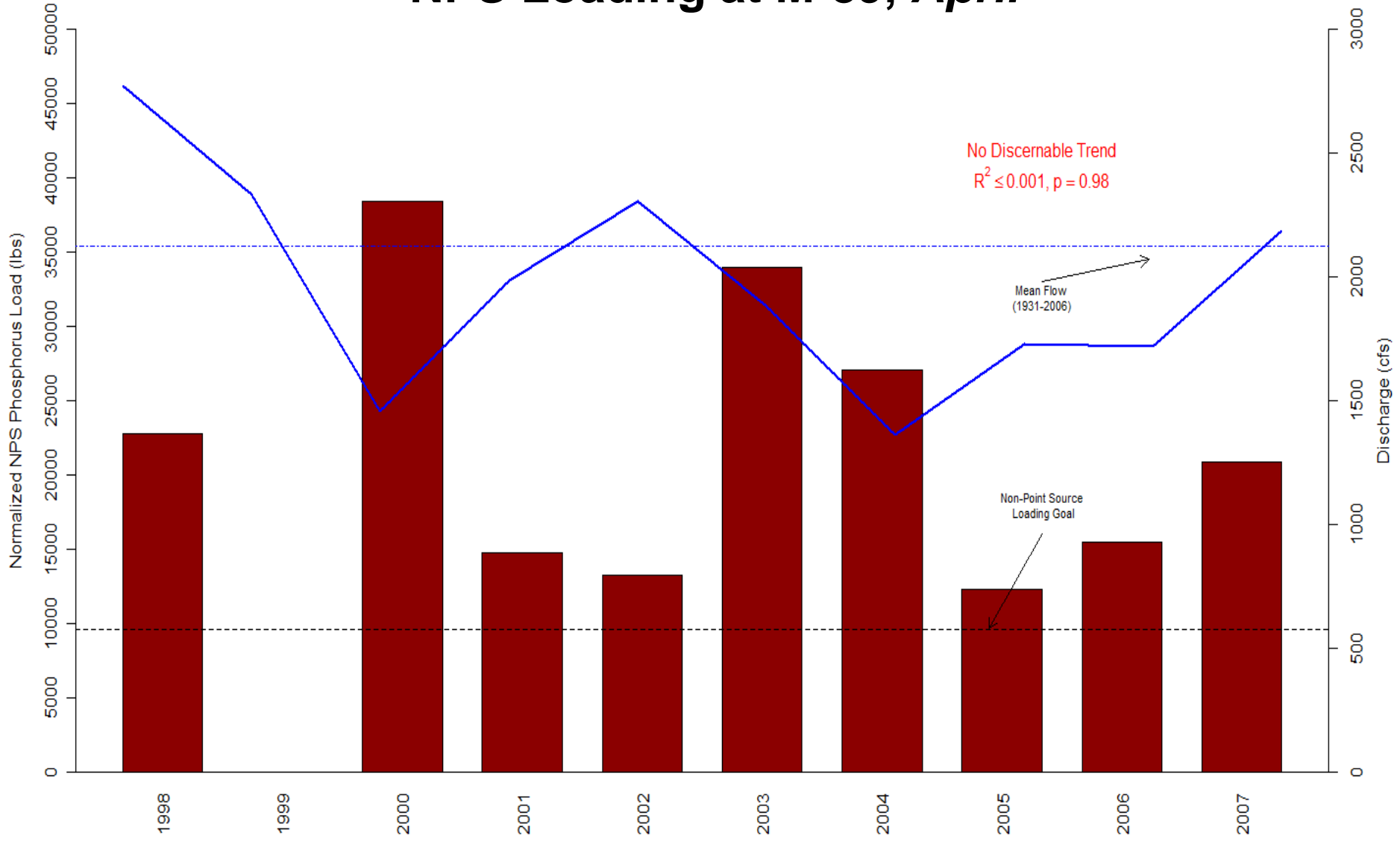
NPS Goals

Apr-Jun = 9,600 lbs.P/month

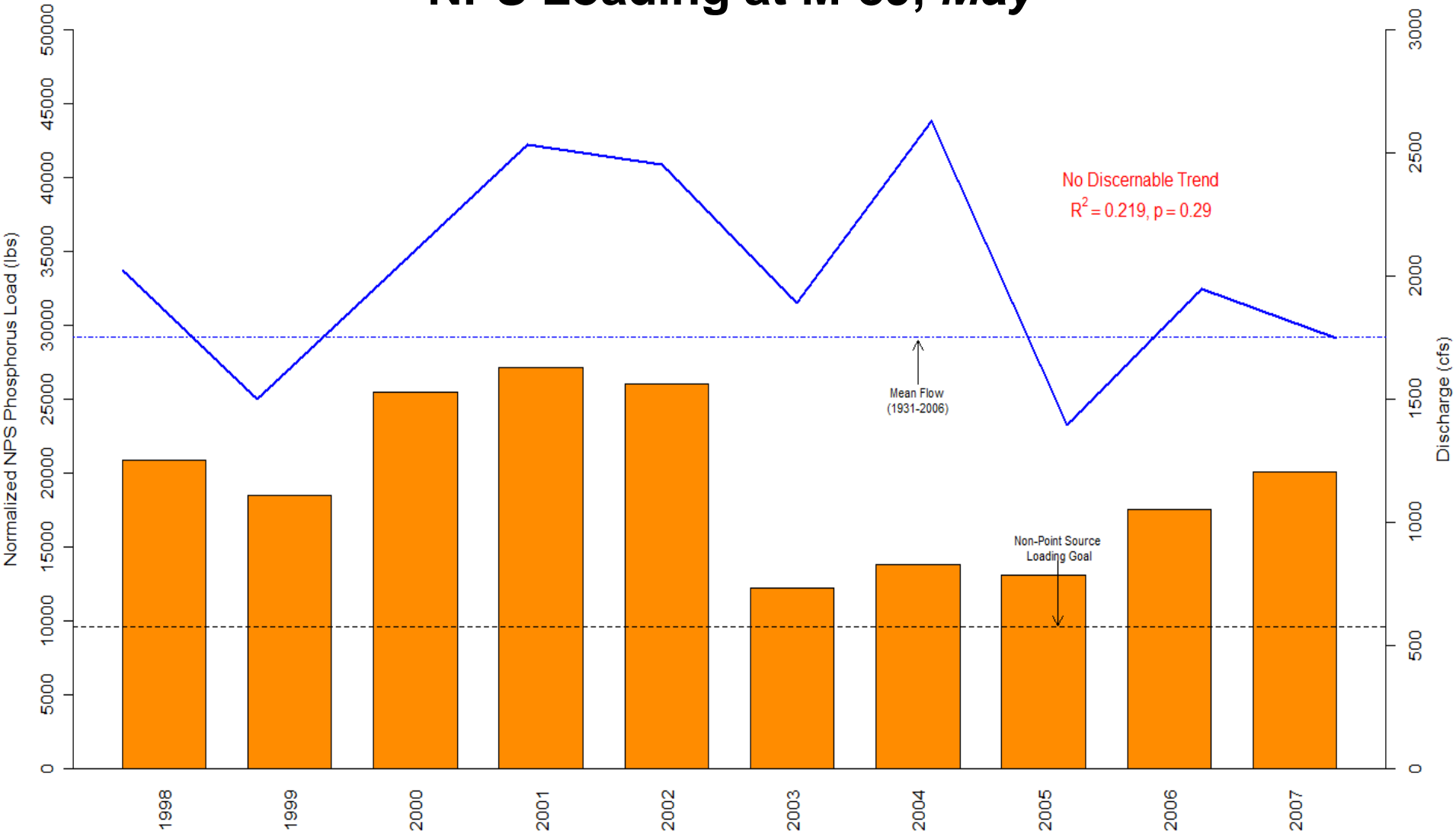
Jul-Sep = 3,950 lbs.P/month



NPS Loading at M-89, *April*

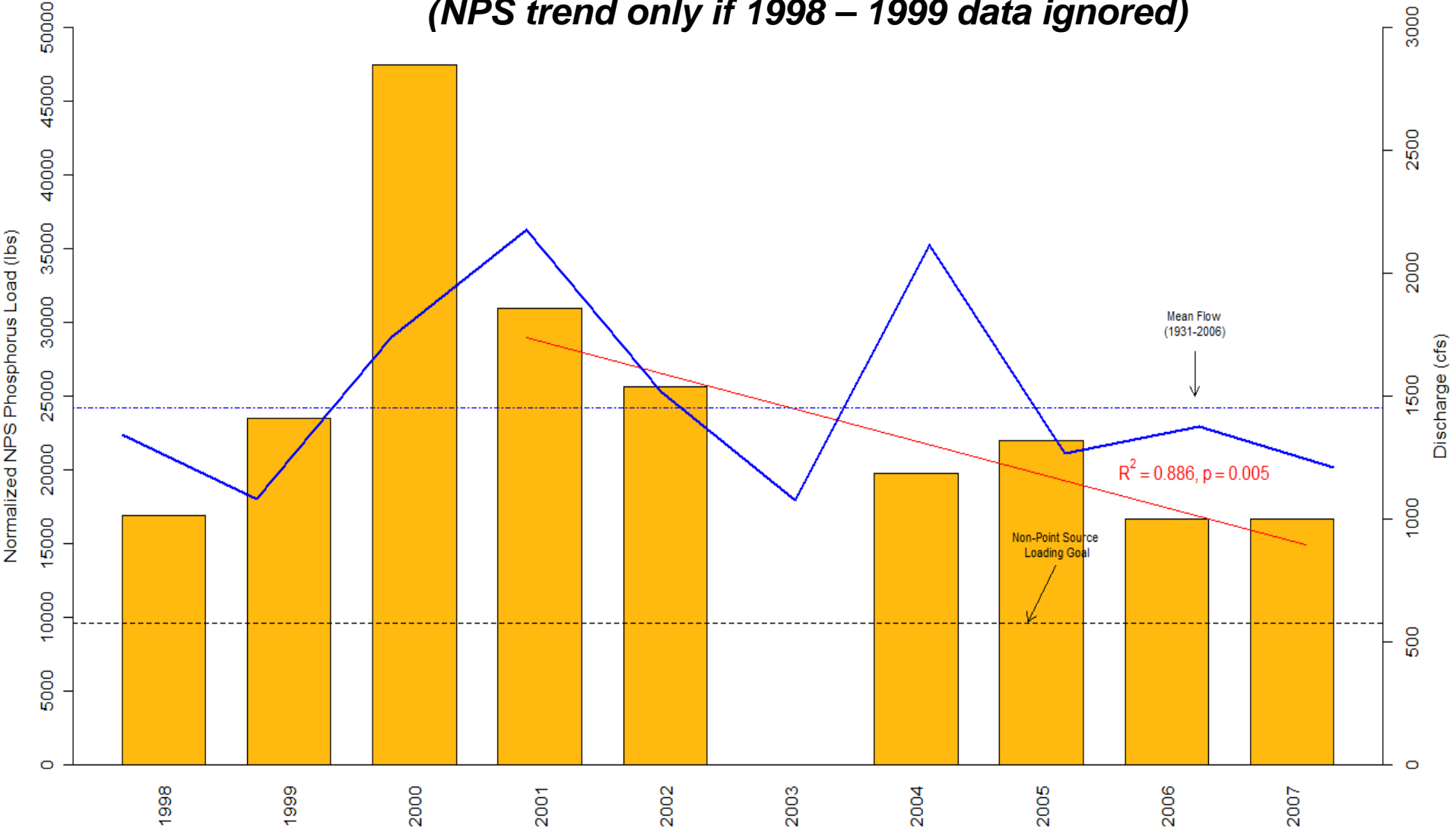


NPS Loading at M-89, May

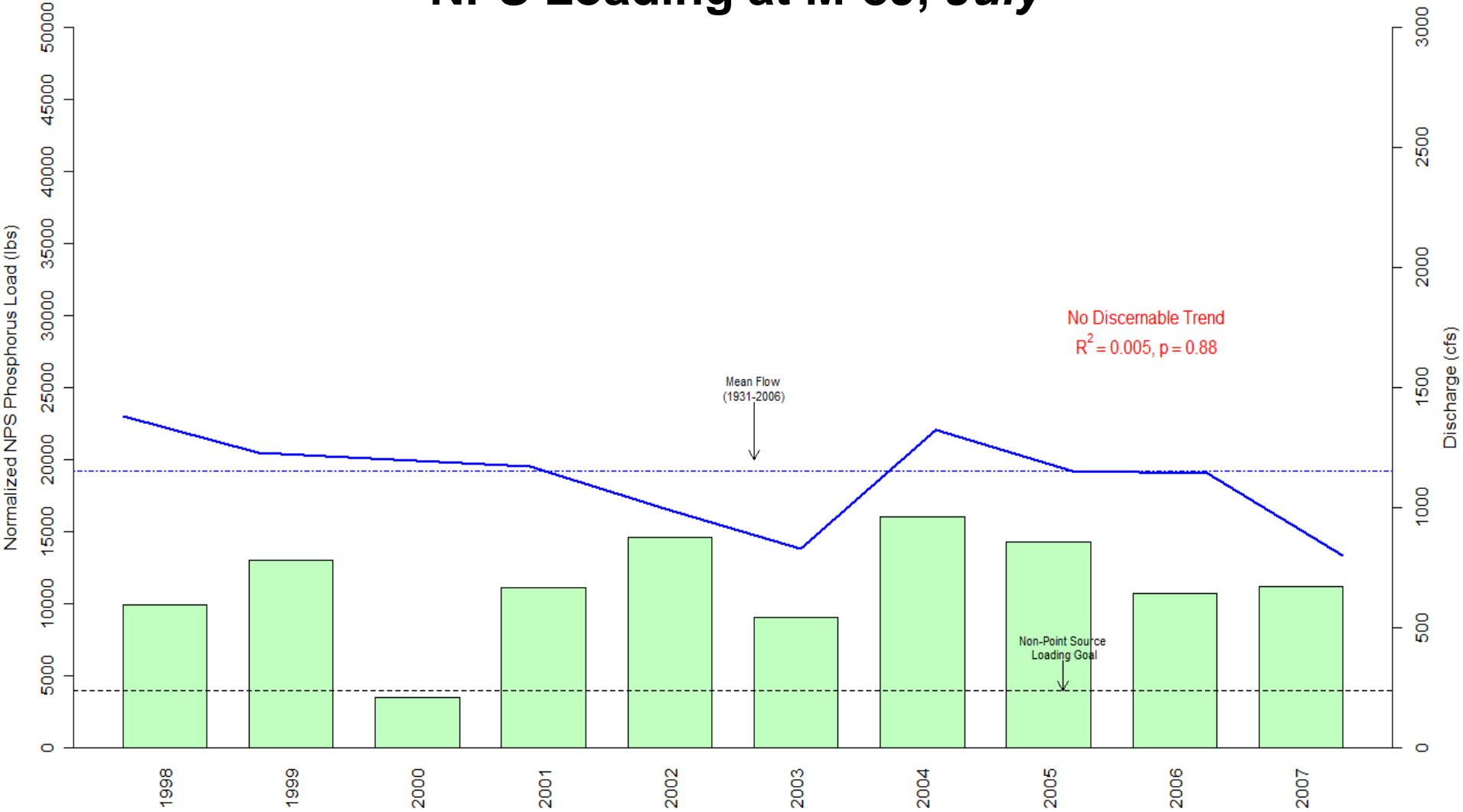


NPS Loading at M-89, June

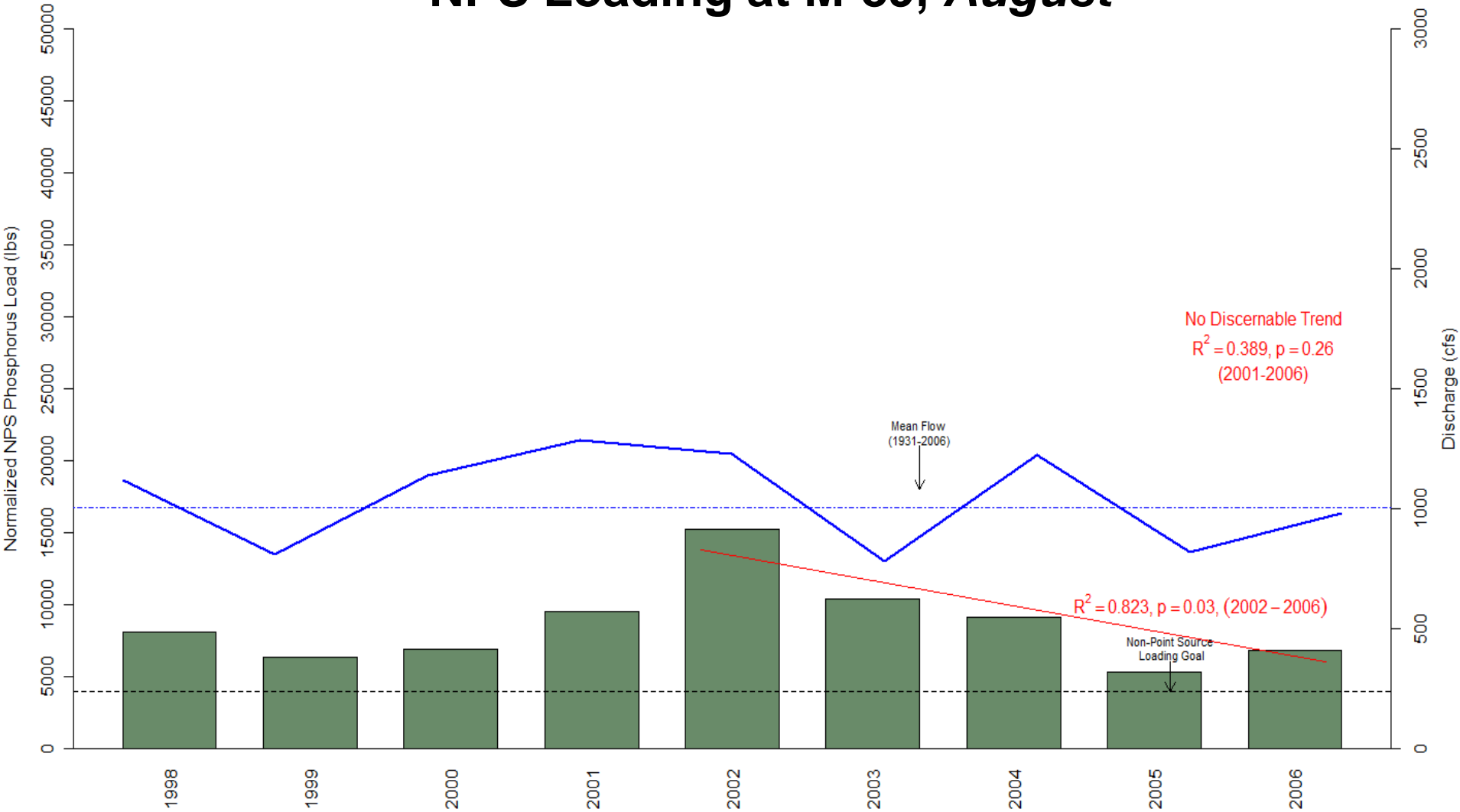
(NPS trend only if 1998 – 1999 data ignored)



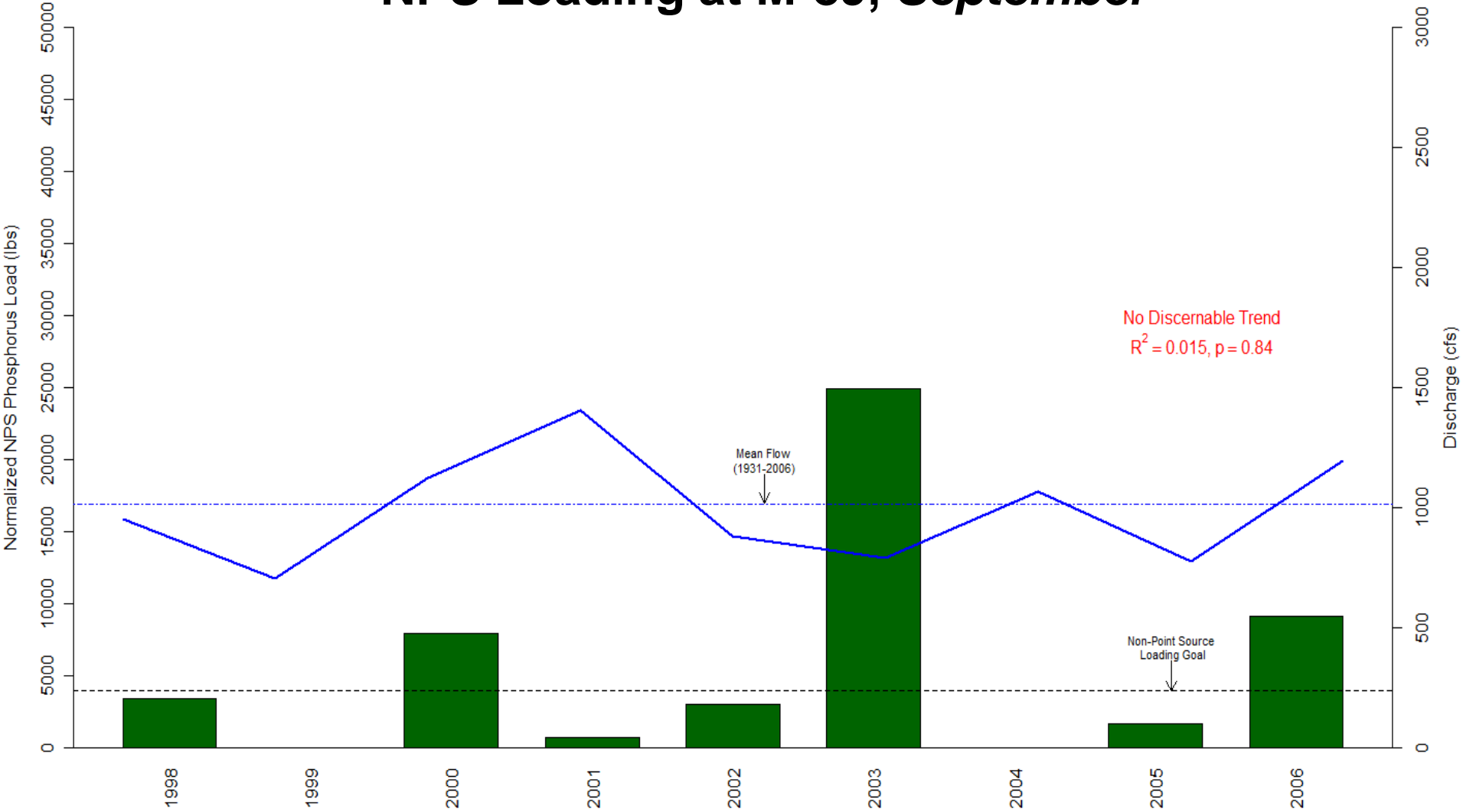
NPS Loading at M-89, July



NPS Loading at M-89, August



NPS Loading at M-89, *September*



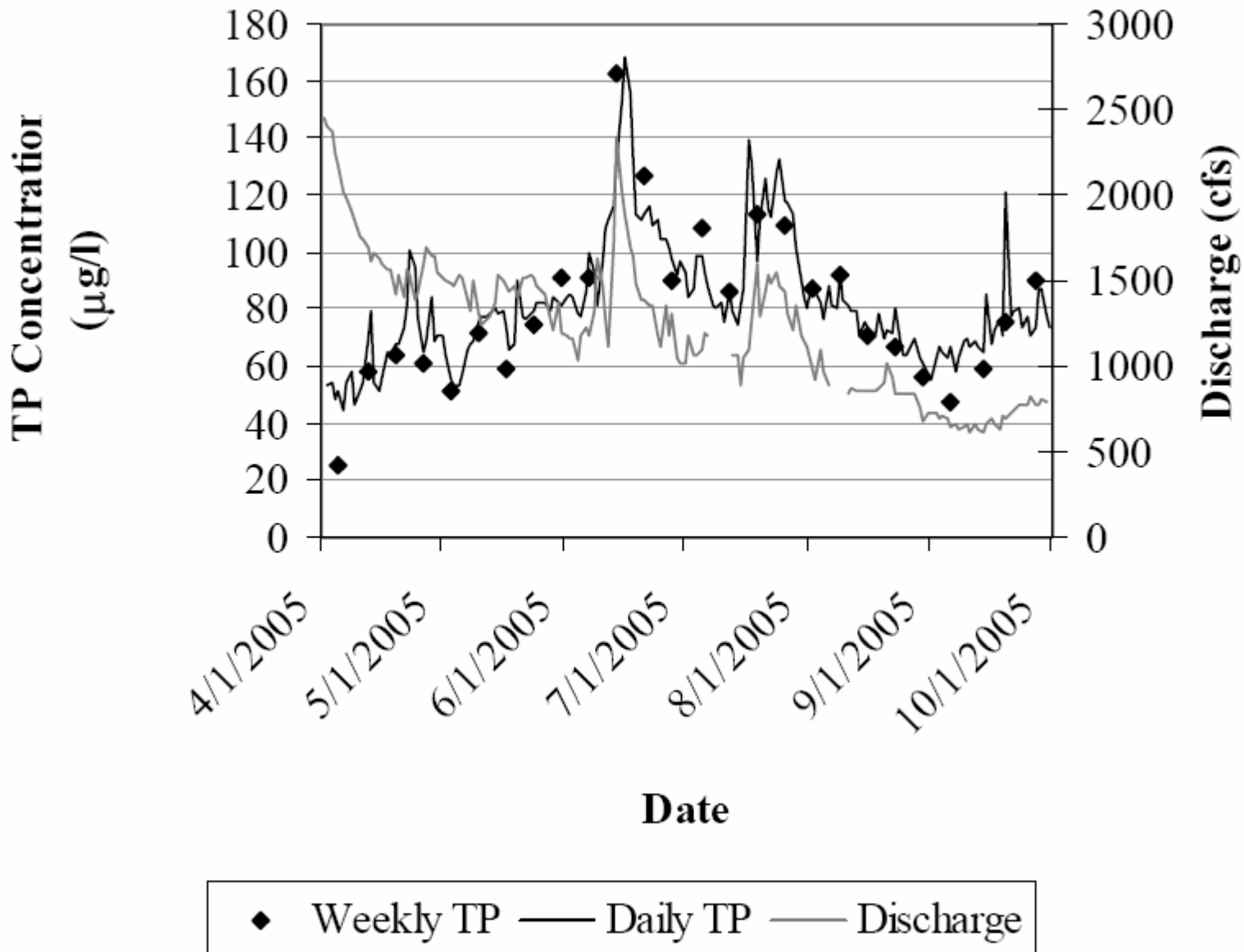
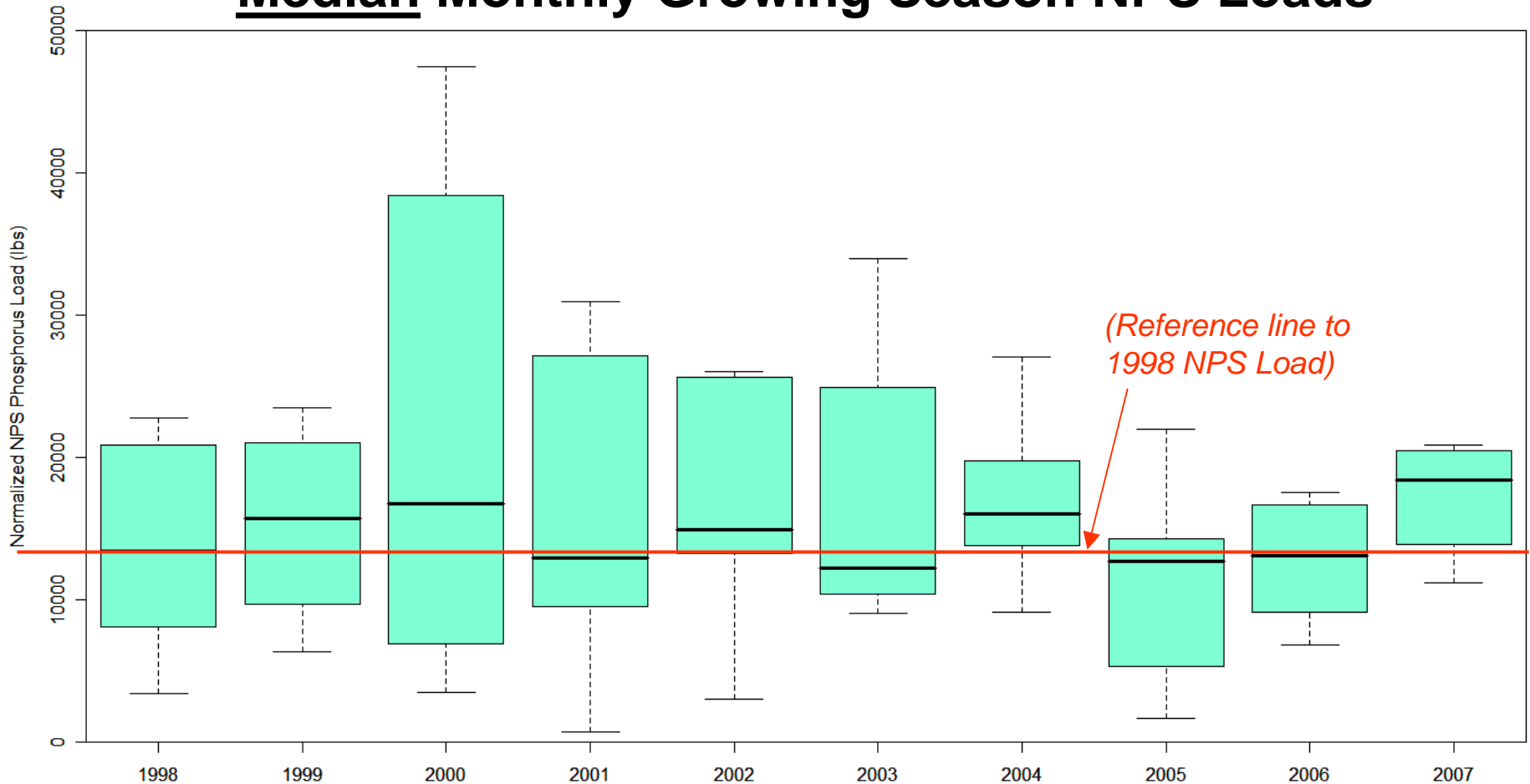


Figure 3: Kalamazoo River at M-222 TP and Discharge Data

(Data as Reported by MSUE, 2005)

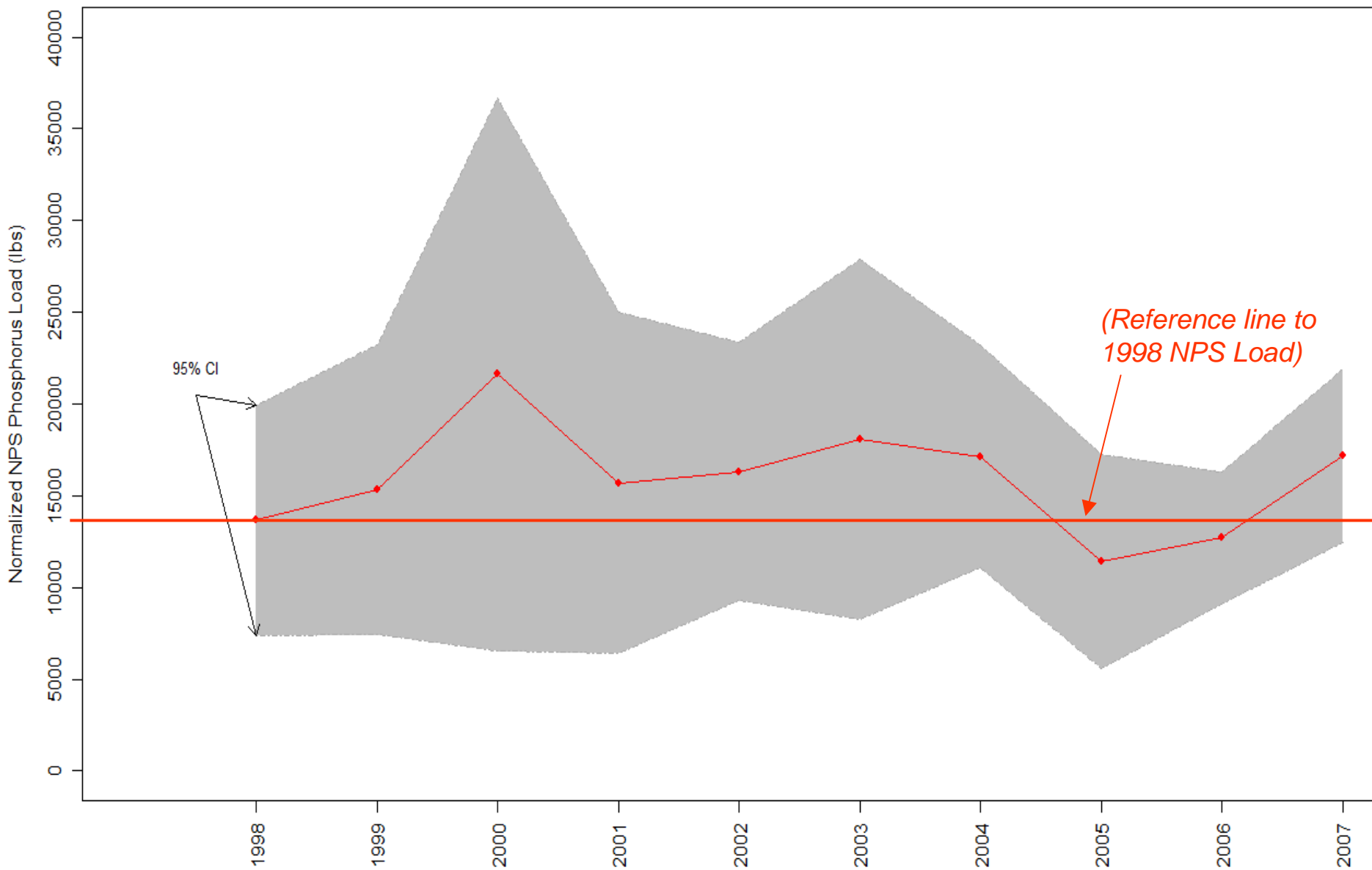
“Nearly 20% NPS loading reduction between 1999 and 2005” (MDEQ 2006)

Median Monthly Growing Season NPS Loads

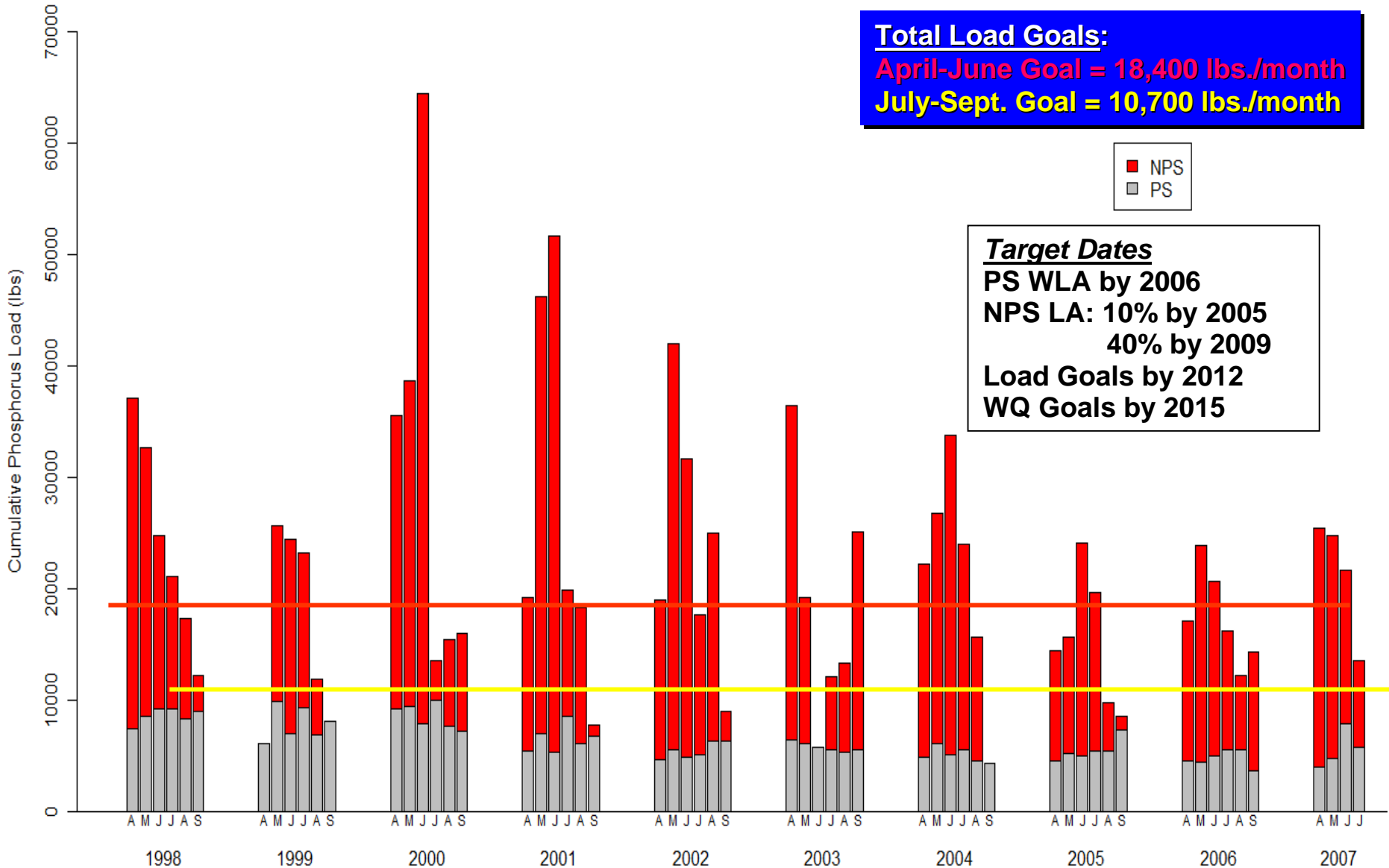


Current K&A Assessment: Data do **NOT** support MDEQ conclusion of progress towards load allocation based on just 1999 and 2005 NPS load comparison.

Mean Monthly NPS Phosphorus Loading by Year during the Growing Season (April-Sept) @ M-89

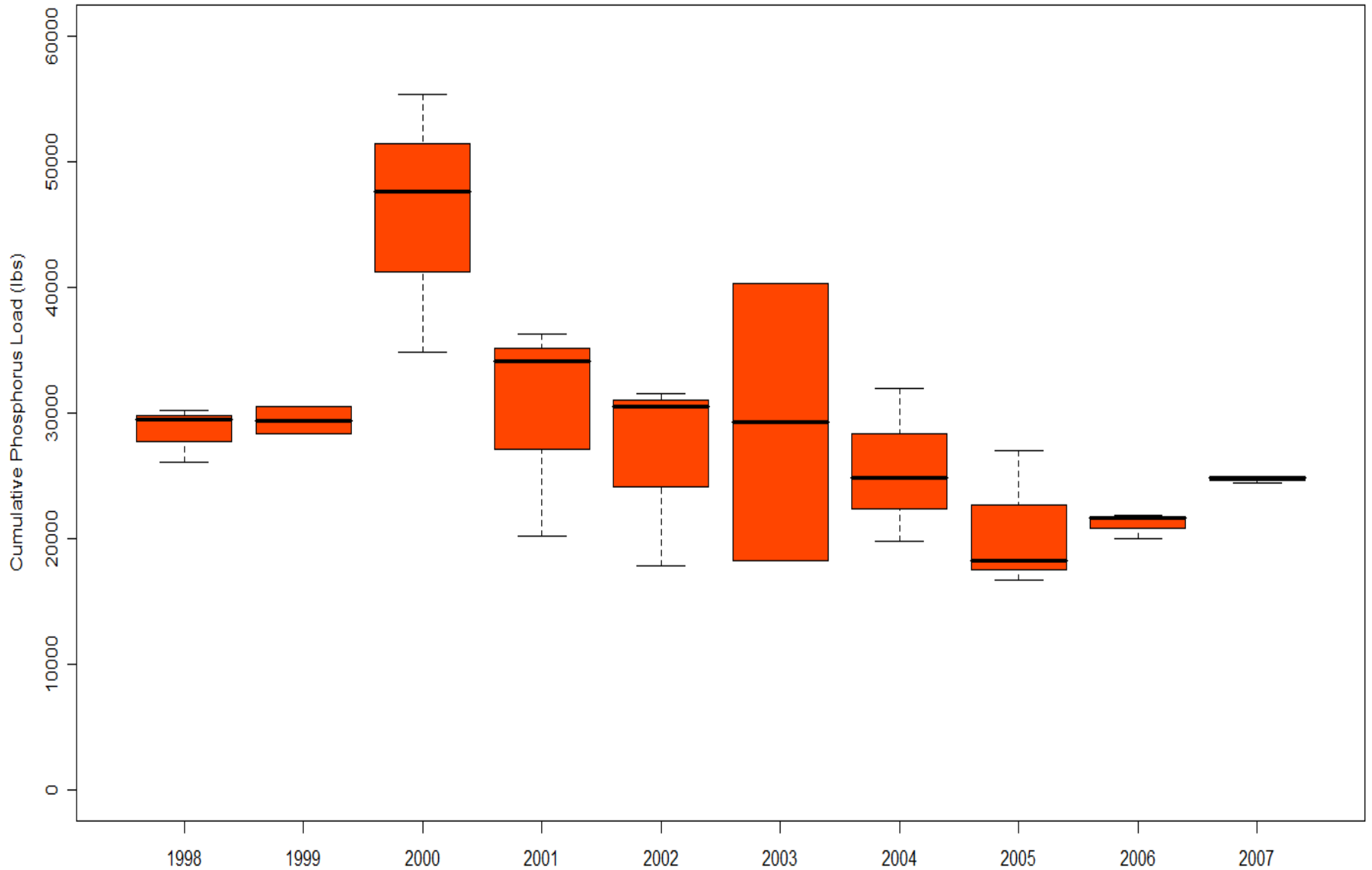


Cumulative Phosphorus Loads by Month



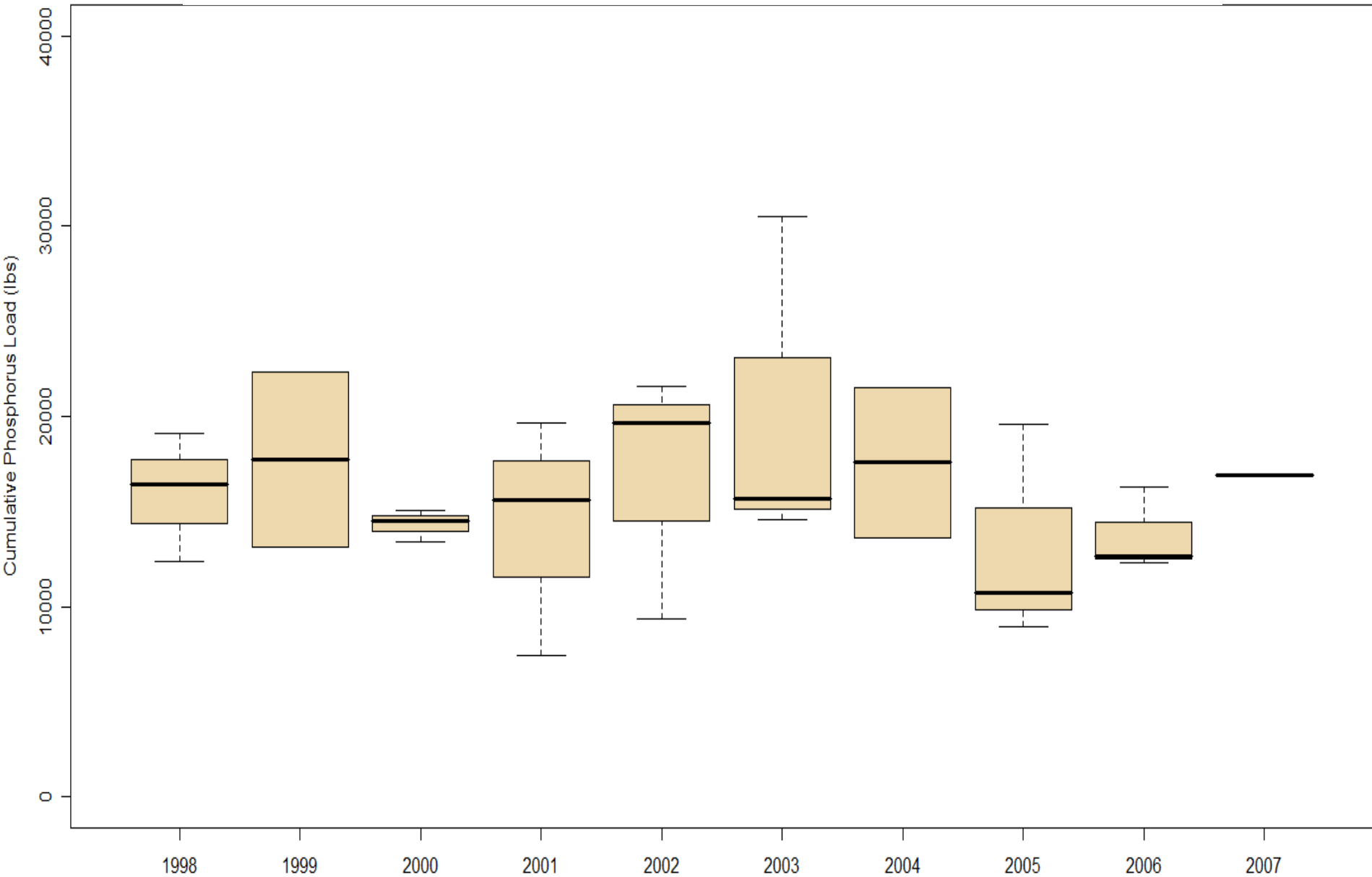
PS + NPS Total Phosphorus Load at M-89

April - June



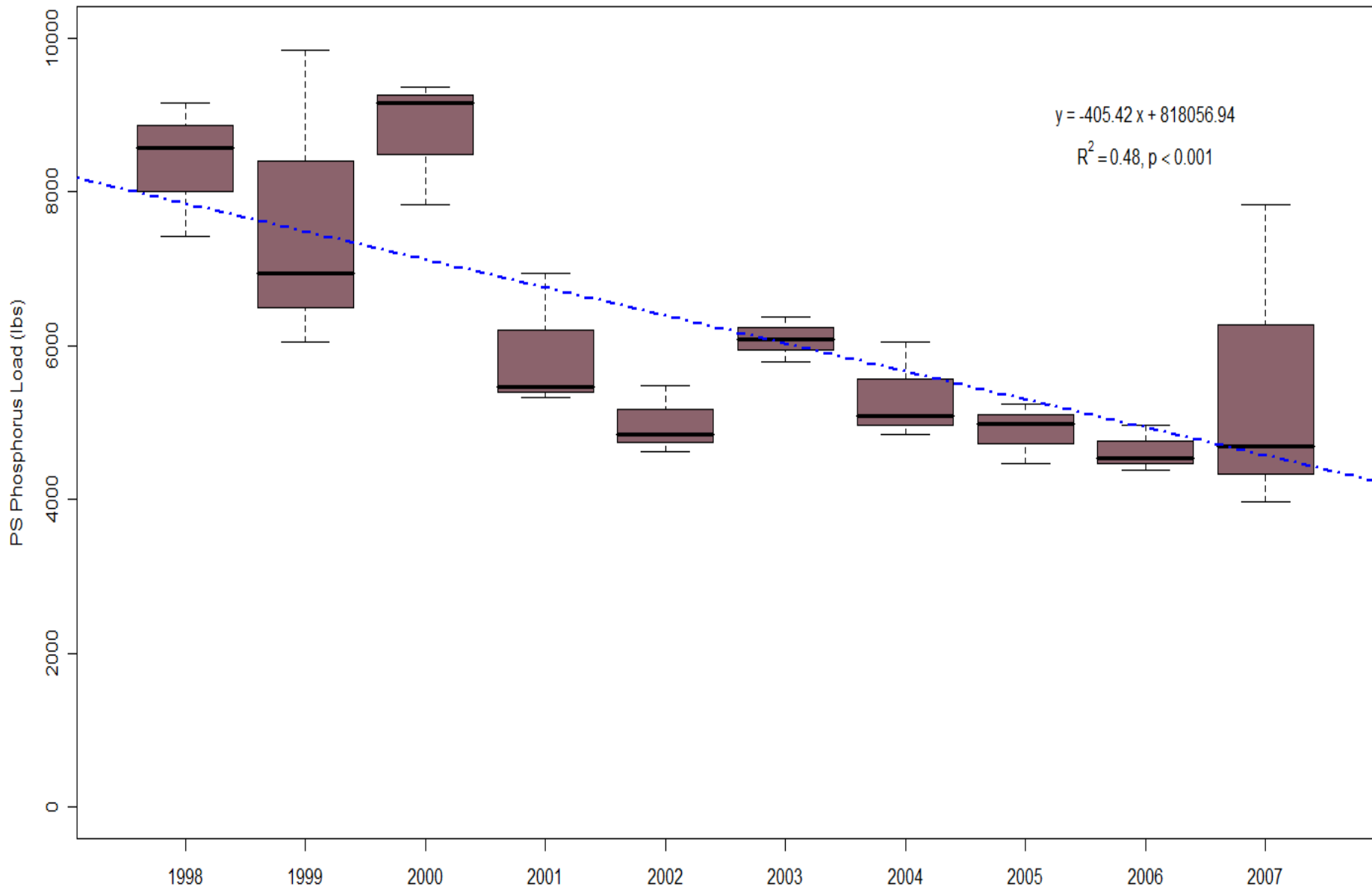
PS + NPS Total Phosphorus Load at M-89

July - September



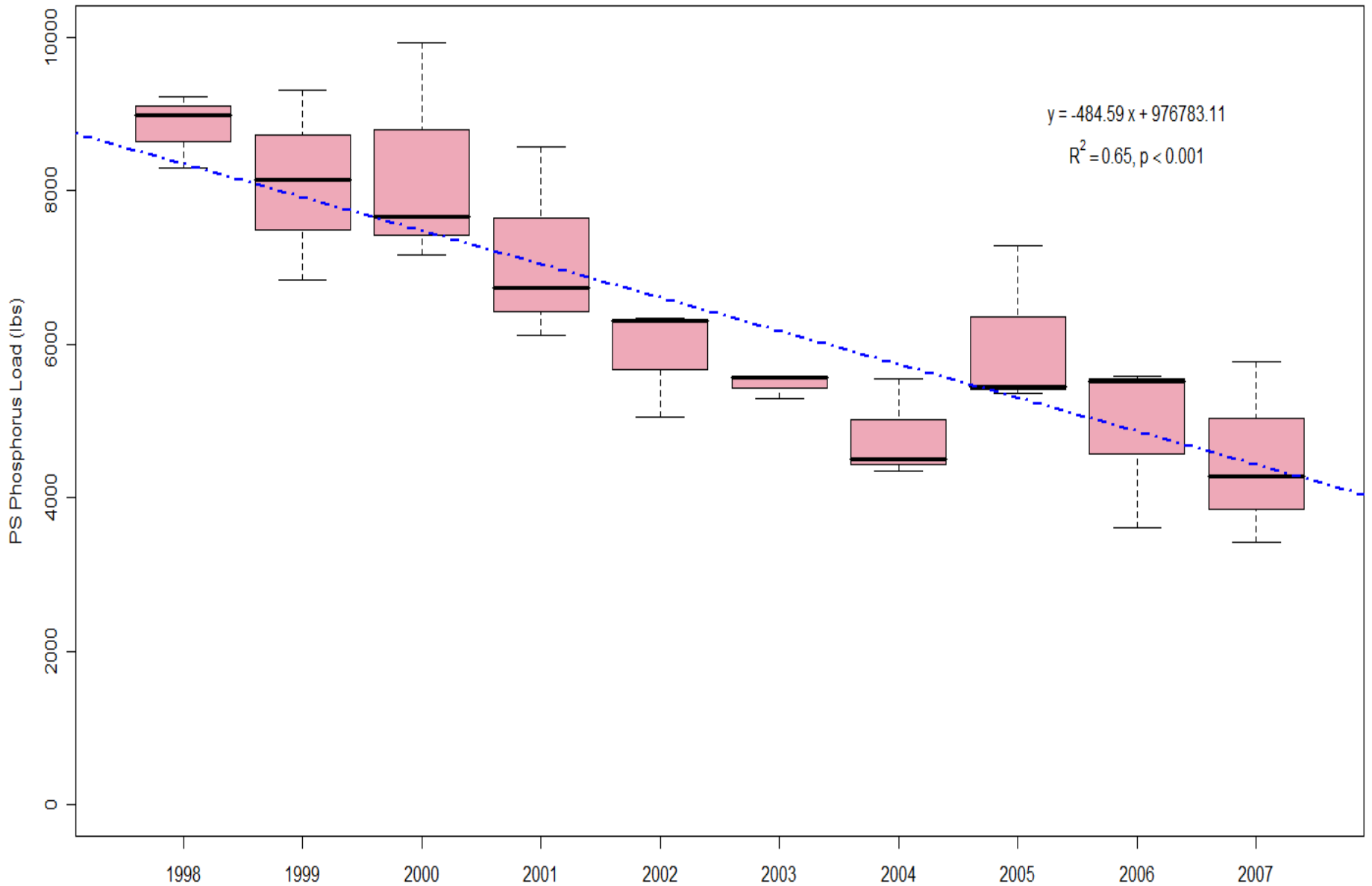
Point Source Total Phosphorus Load

April - June



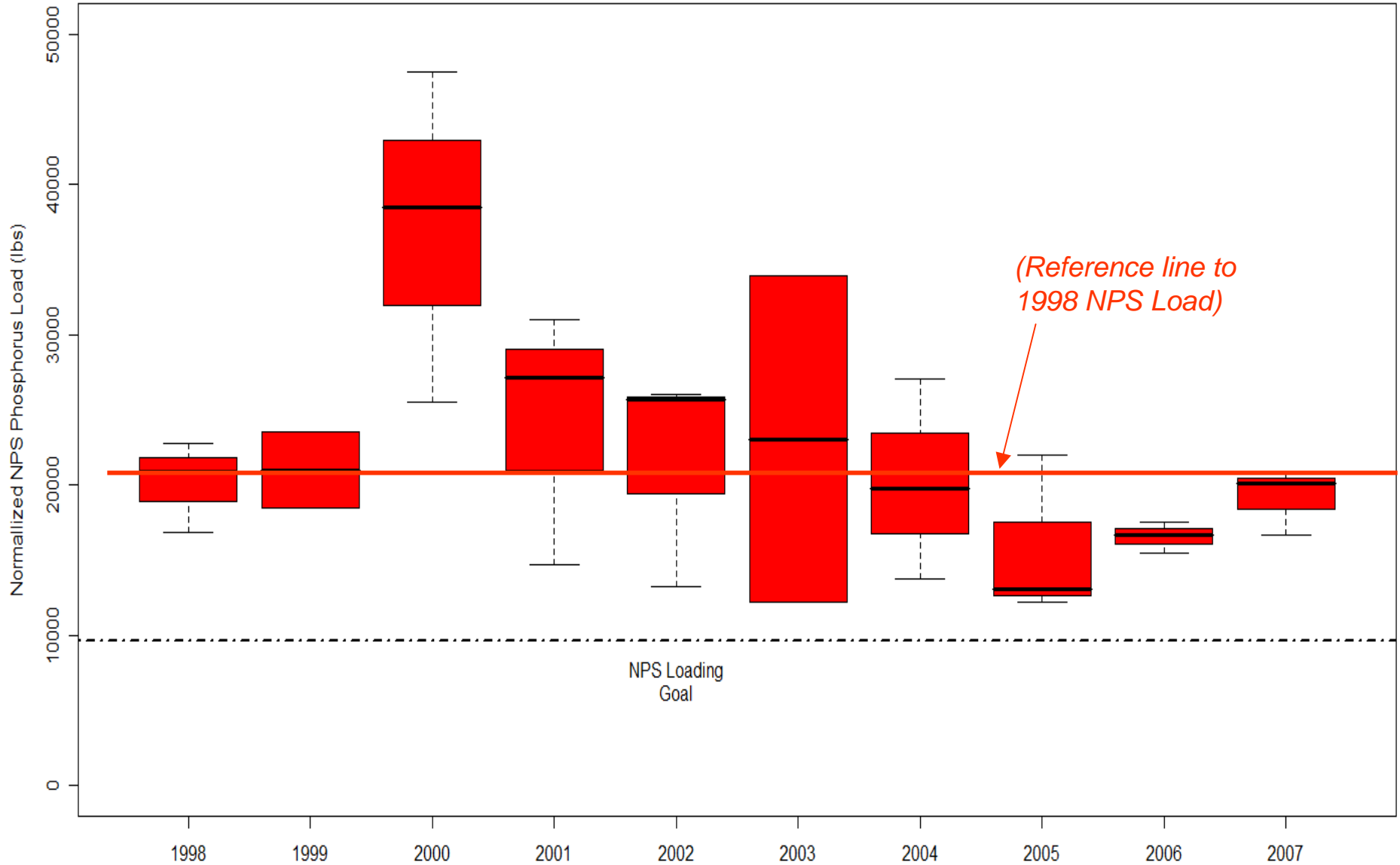
Point Source Total Phosphorus Load

July - September



Median NPS Phosphorus Loads

April - June



Median NPS Phosphorus Loads *July - September*

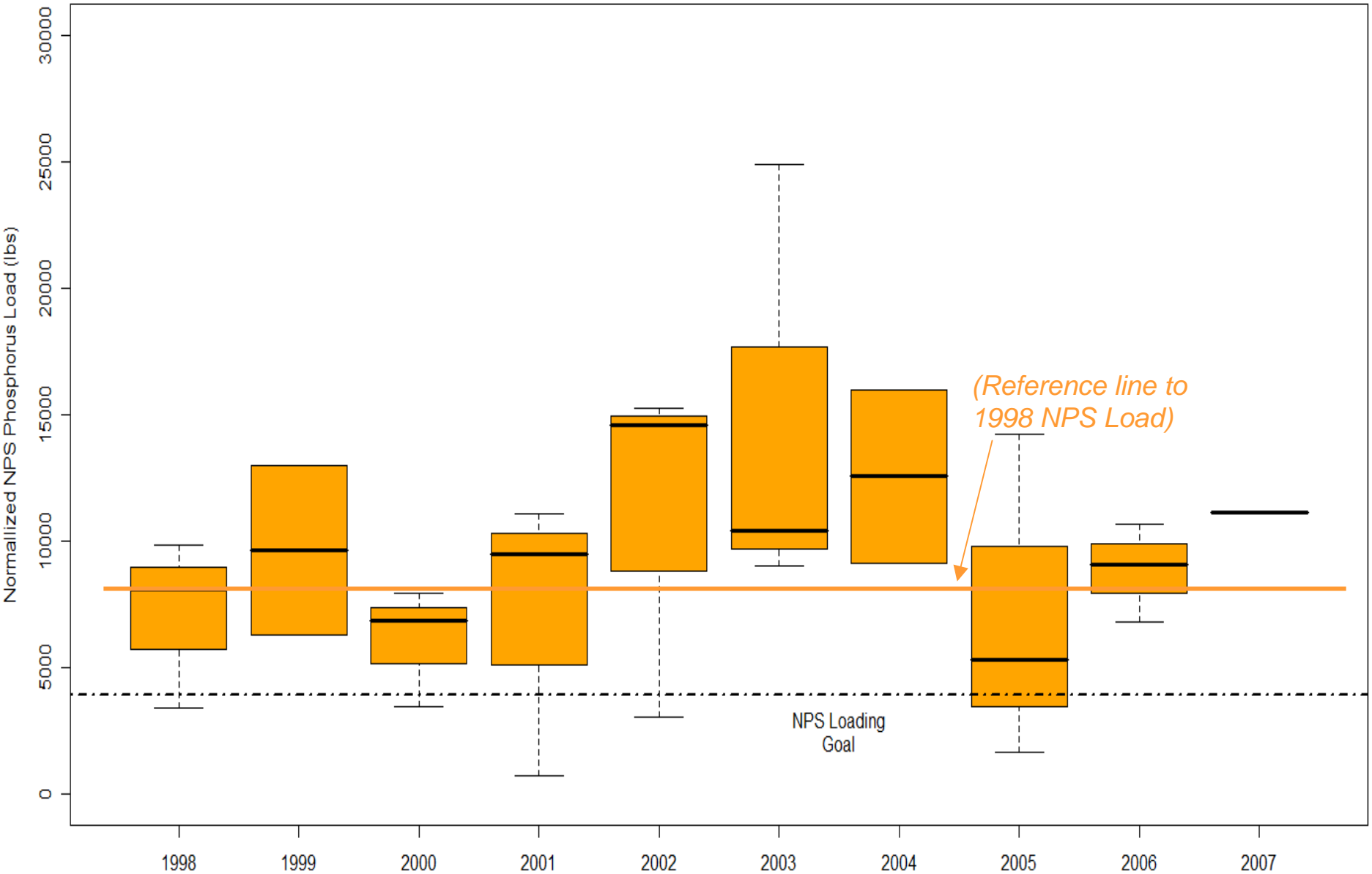
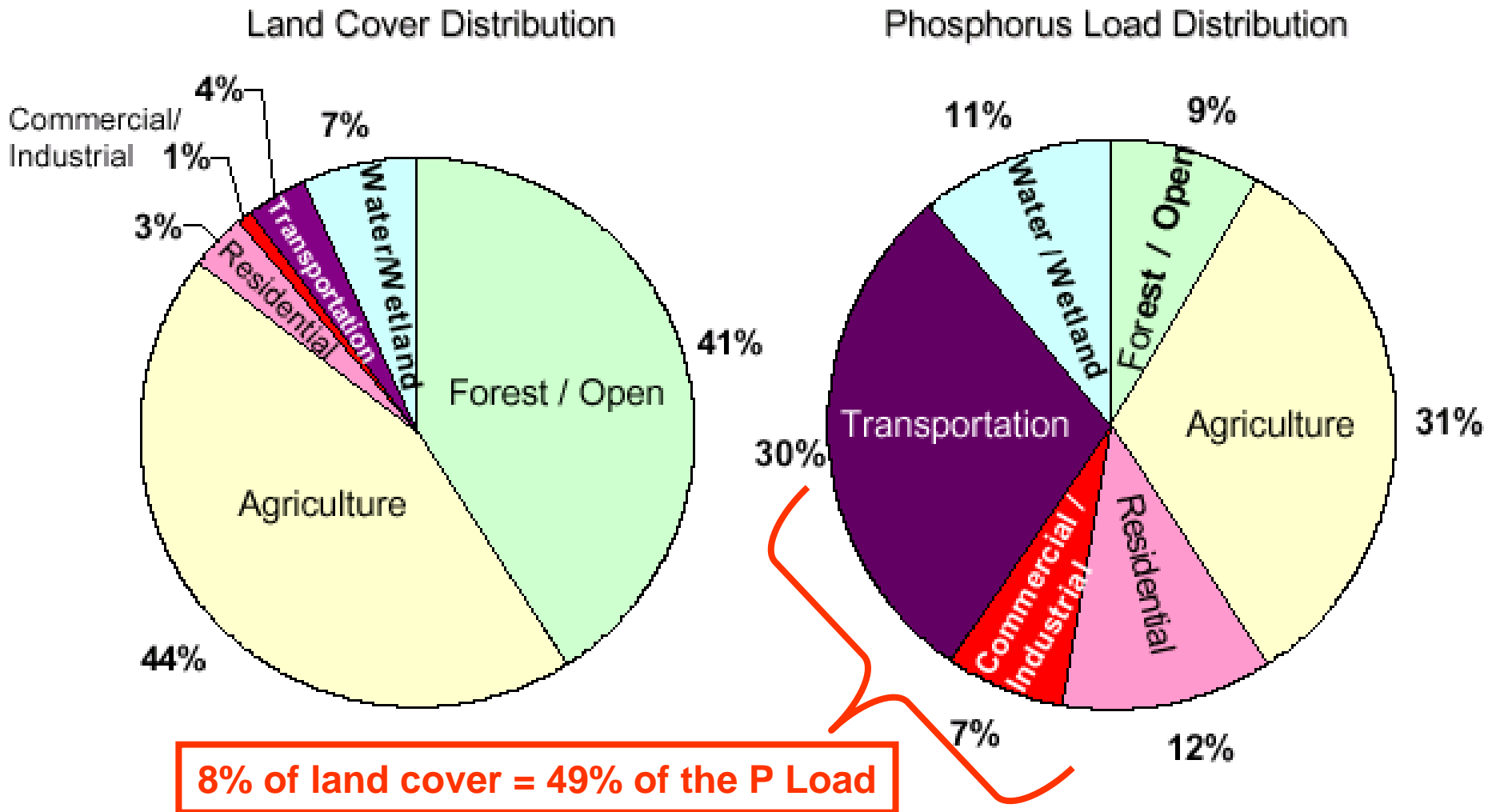


Figure 16. Distribution of Land Covers and Phosphorus Loads in the Lake Allegan/Kalamazoo River Watershed.
 (Seasonal Load = April 1 – September 30, 1998)



From K&A 2001 NPS Modeling Report

<http://www.kalamazooriver.net/tmdl/docs/Final%20Report.pdf>

TMDL Status as of 2007

- Point sources largely in compliance with WLA (One monthly exceedance of WLA in September 2005)
- Point source reductions from 1998-2007 are statistically significant
- No statistically significant trends noted for non-point source loads from 1998-2007 (based on mean and median load calculations for monthly or seasonal data from M-89 station above Lake Allegan)
- 2006 MDEQ public pronouncement of LA progress based on 18% NPS load reduction between 1998 and 2005 NOT substantiated
- NPS loads increased in 2006 and 2007 over outlier year of 2005
- Nine years of data suggest NO significant progress towards LA
- DEQ data reports not published since 2004
- Future MDEQ Lake Allegan/River monitoring limited or non-existent
- Urban NPS sources continue to contribute nearly 50% of the TP load but only comprise 8% of total land area above Lake Allegan