

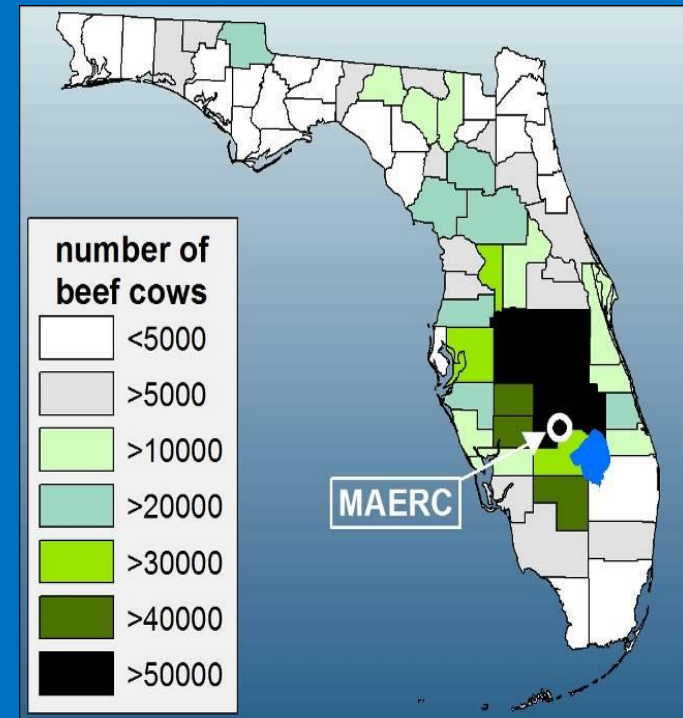
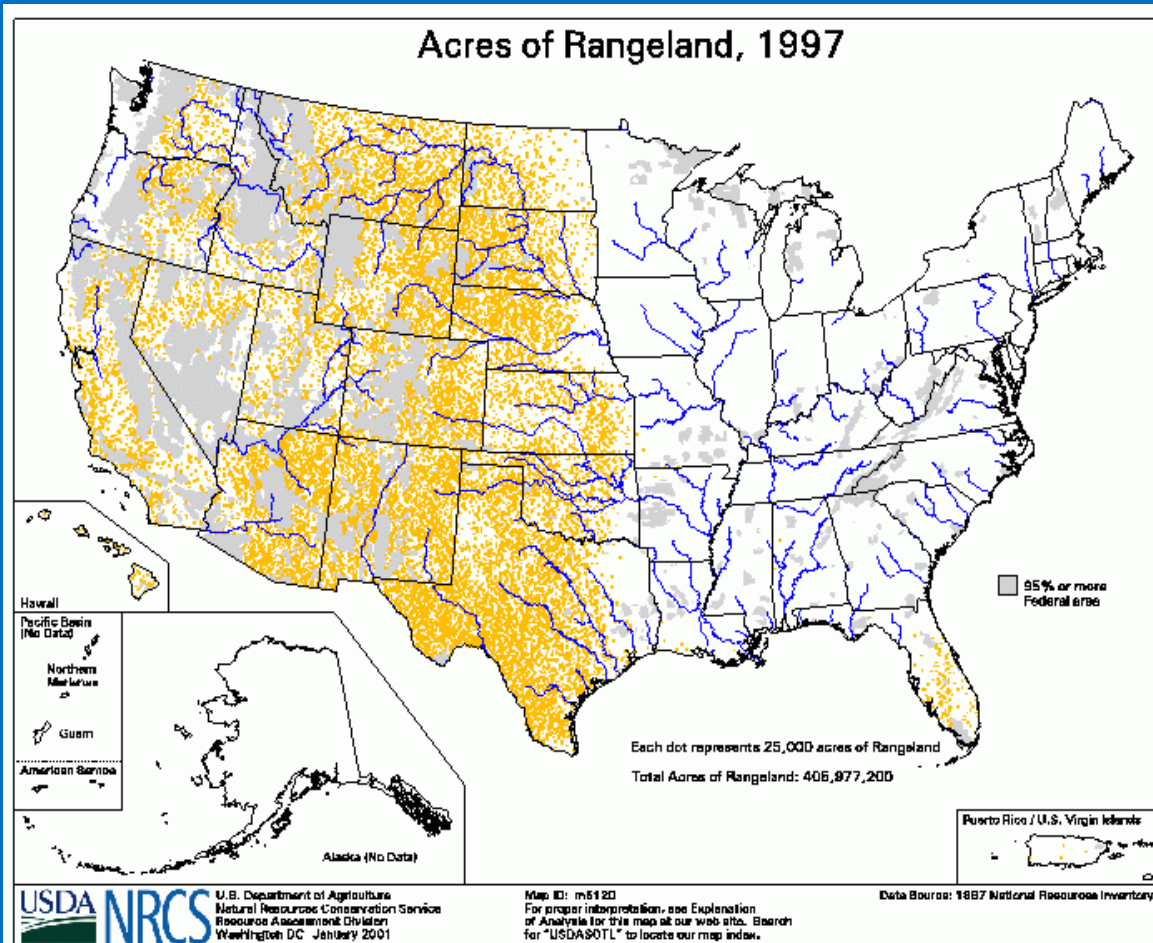
Wetlands as a Key to Water Quality Best Management Practices on Florida Ranchlands



Patrick J. Bohlen, University of Central Florida



Florida's Unique Rangelands

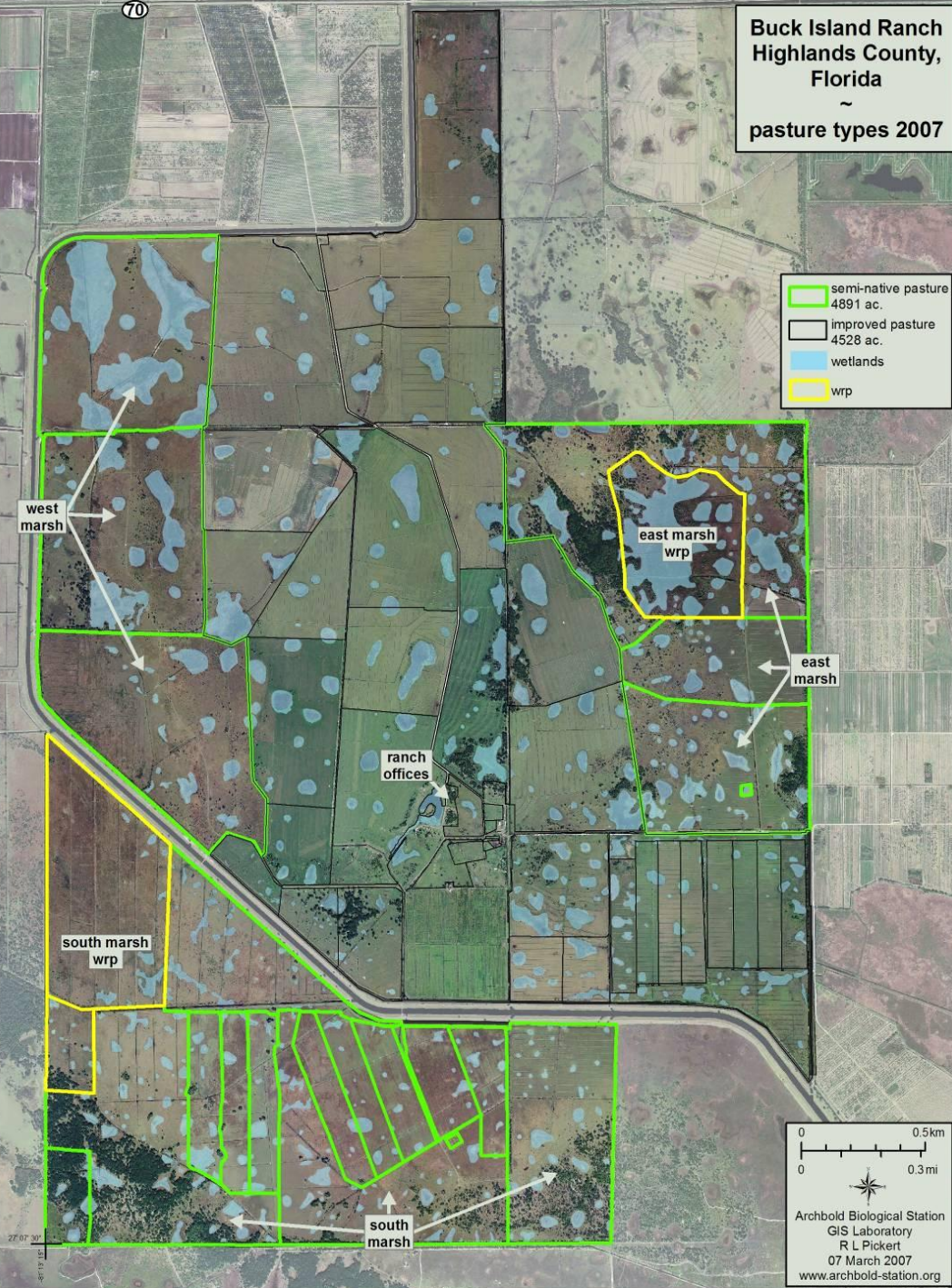




Wetlands comprise 15-20% of landscape

Buck Island Ranch
Highlands County,
Florida
~
pasture types 2007

- semi-native pasture
4891 ac.
- improved pasture
4528 ac.
- wetlands
- wrp

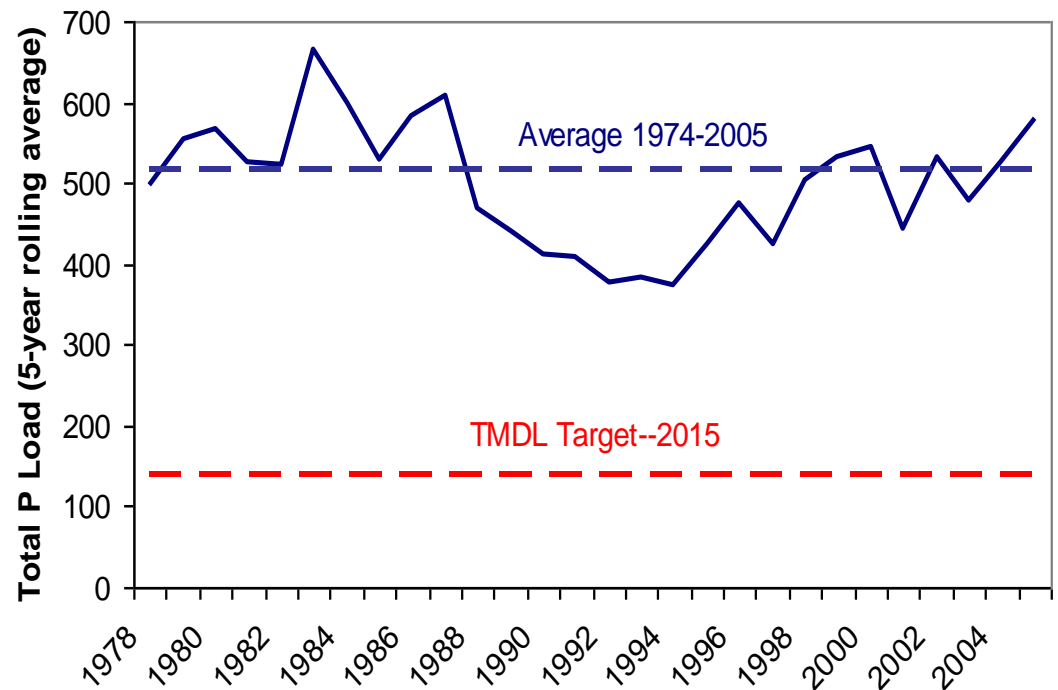


Archbold Biological Station
GIS Laboratory
R L Pickert
07 March 2007
www.archbold-station.org



Regional objectives

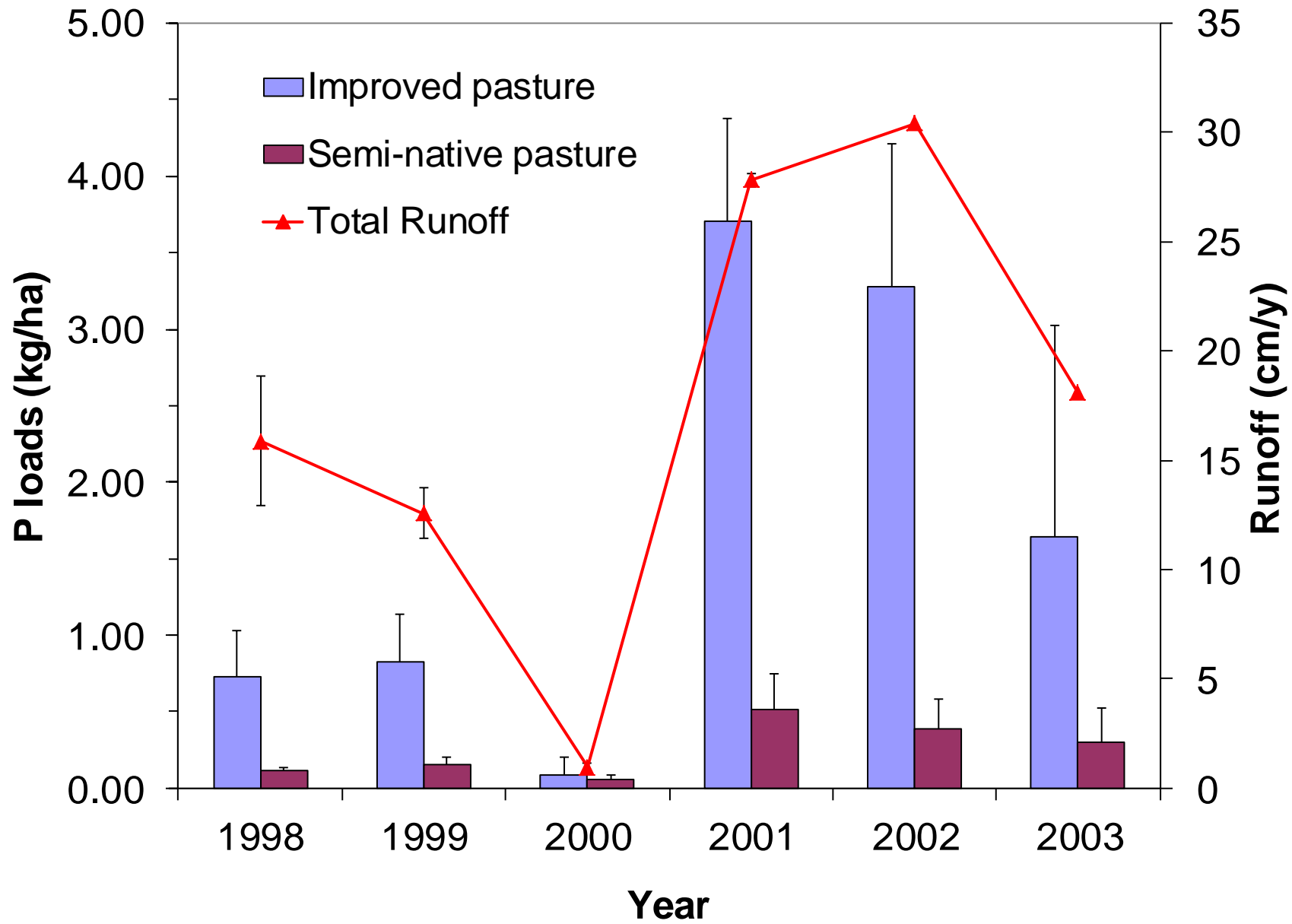
- Reduce nutrient loads
- Increase water storage



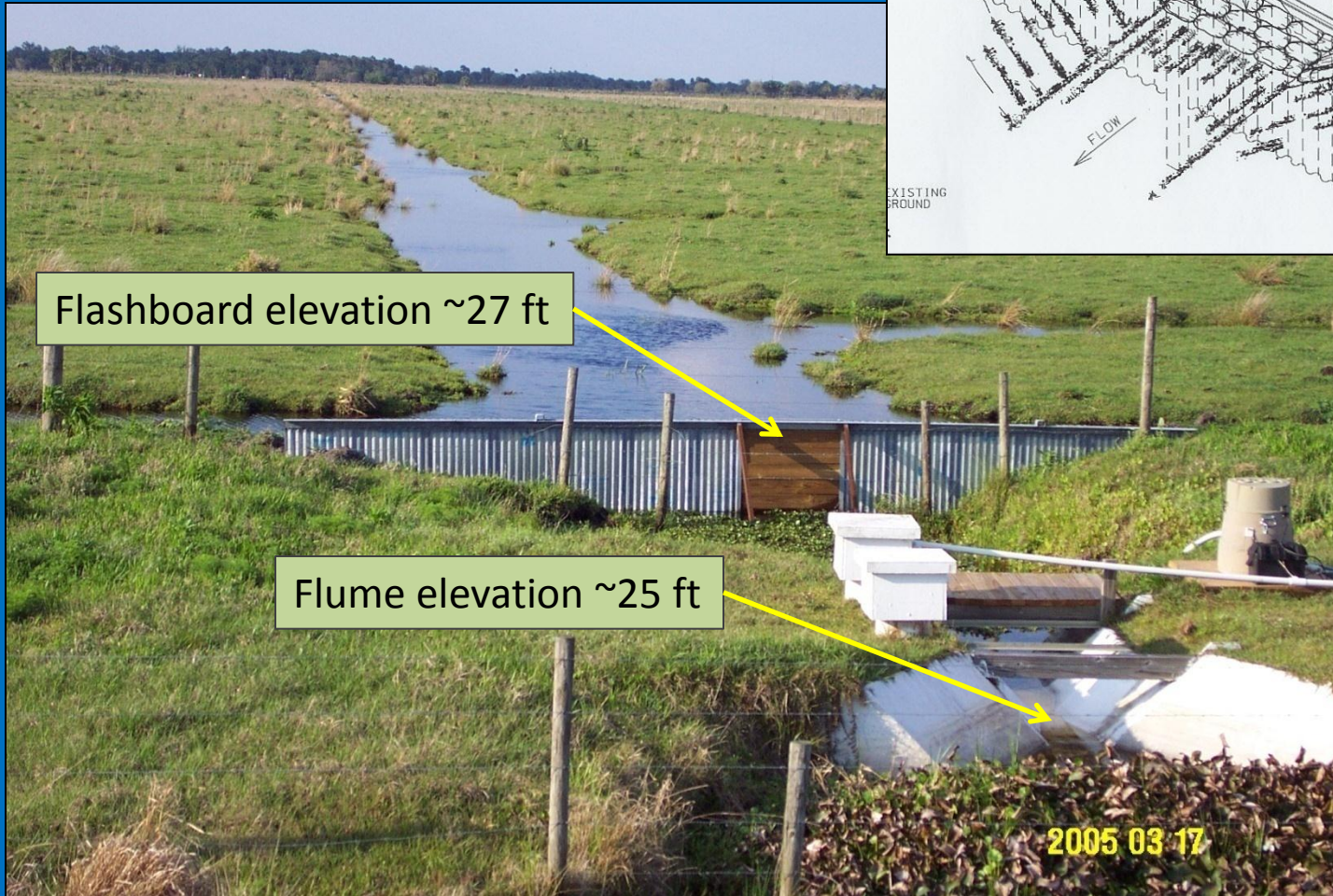
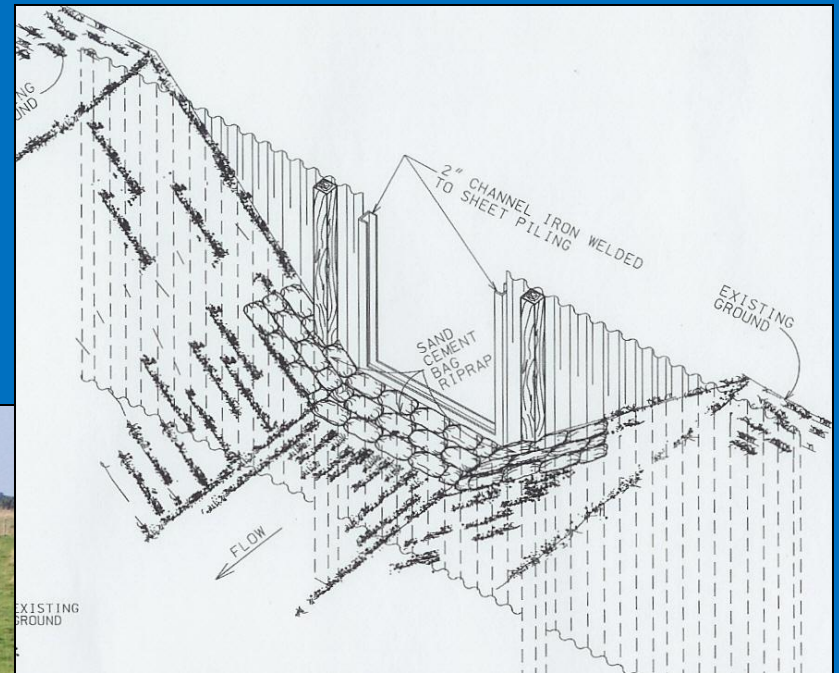
Water BMP Projects Buck Island Ranch



2005 03 17



Pasture water retention



Flashboard elevation ~27 ft

Flume elevation ~25 ft

2005 03 17

SUMMER
PASTURES
50 ACRES

SP1

SP2

SP3

SP4

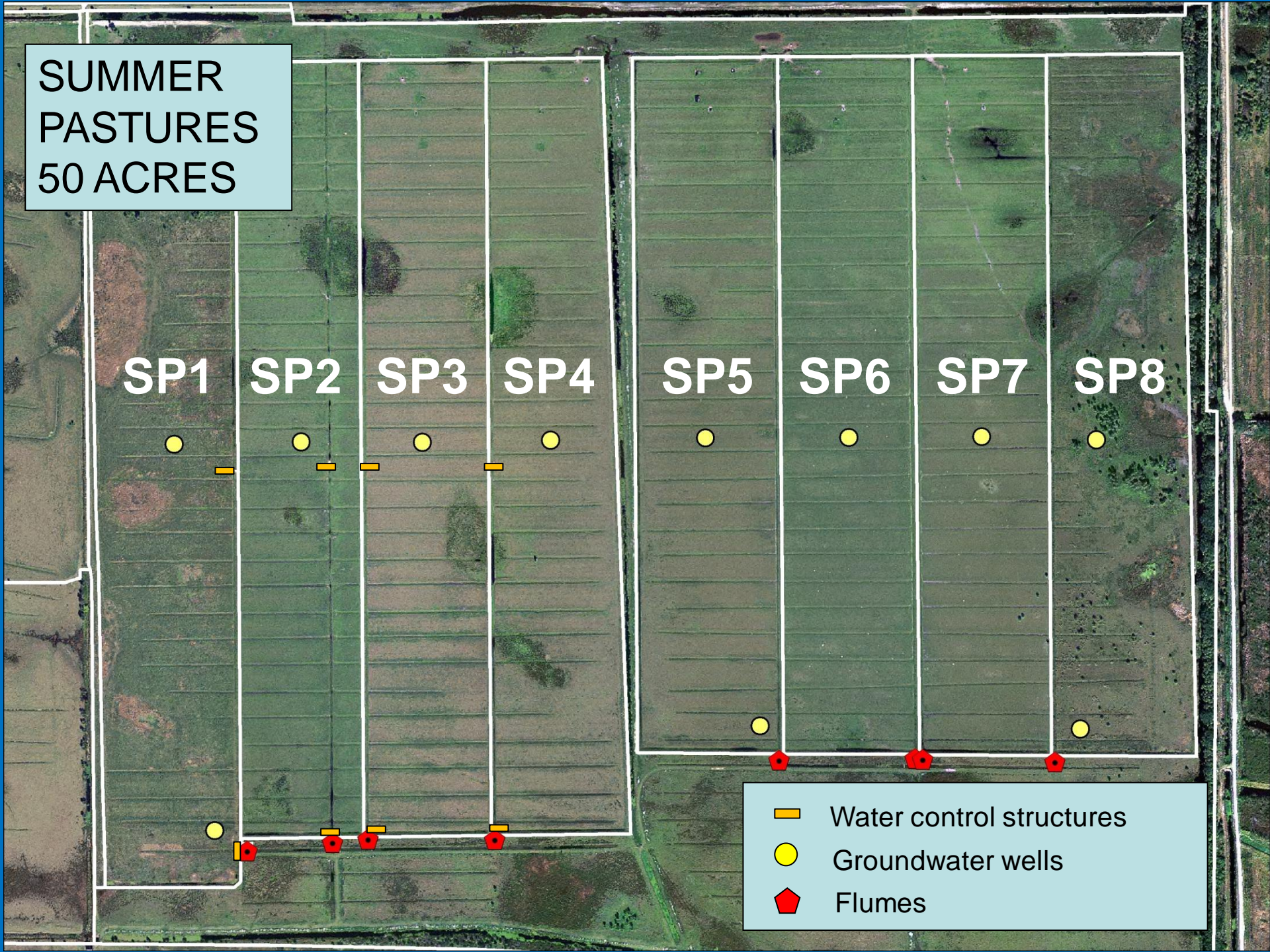
SP5

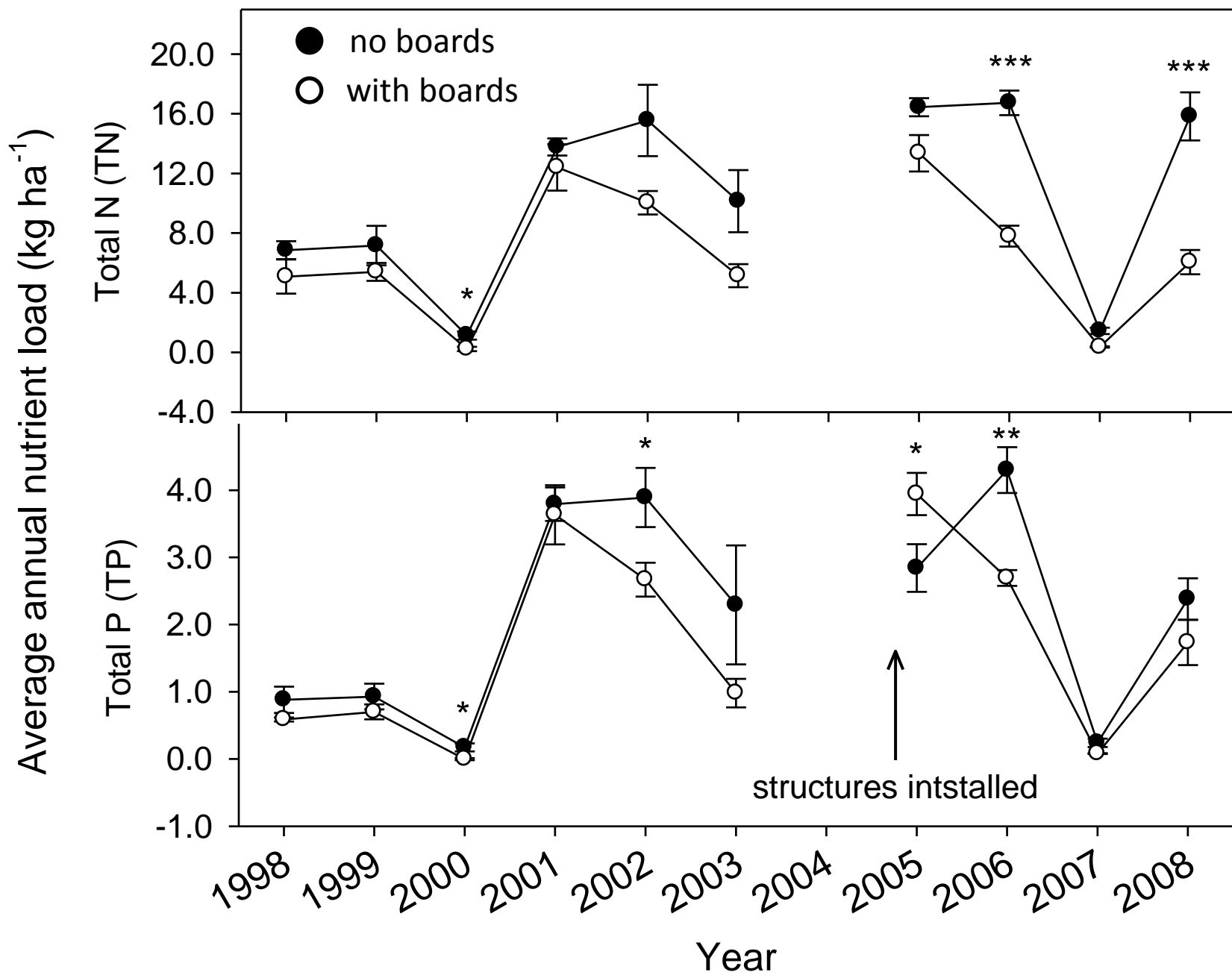
SP6

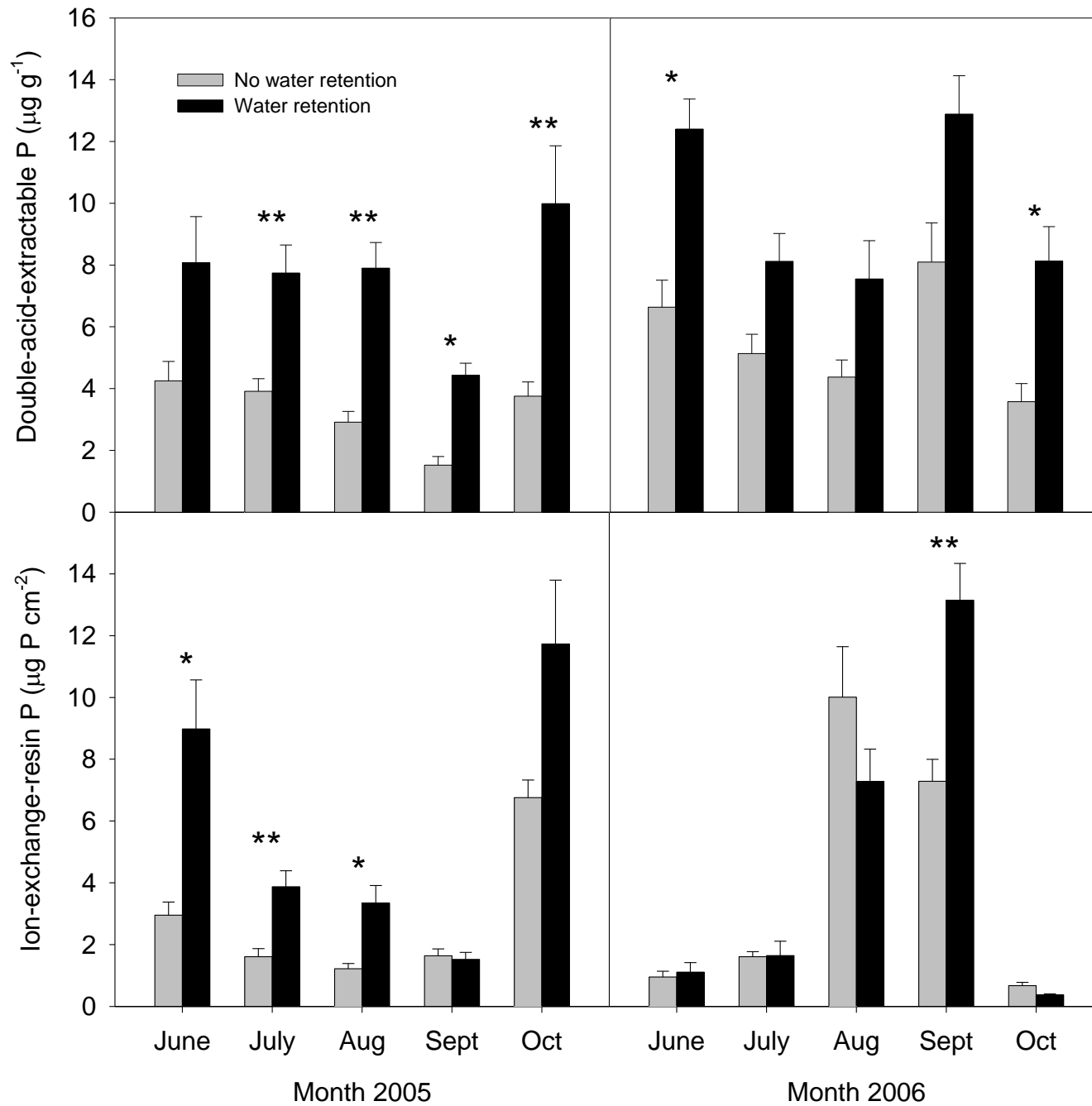
SP7

SP8

- Water control structures
- Groundwater wells
- Flumes



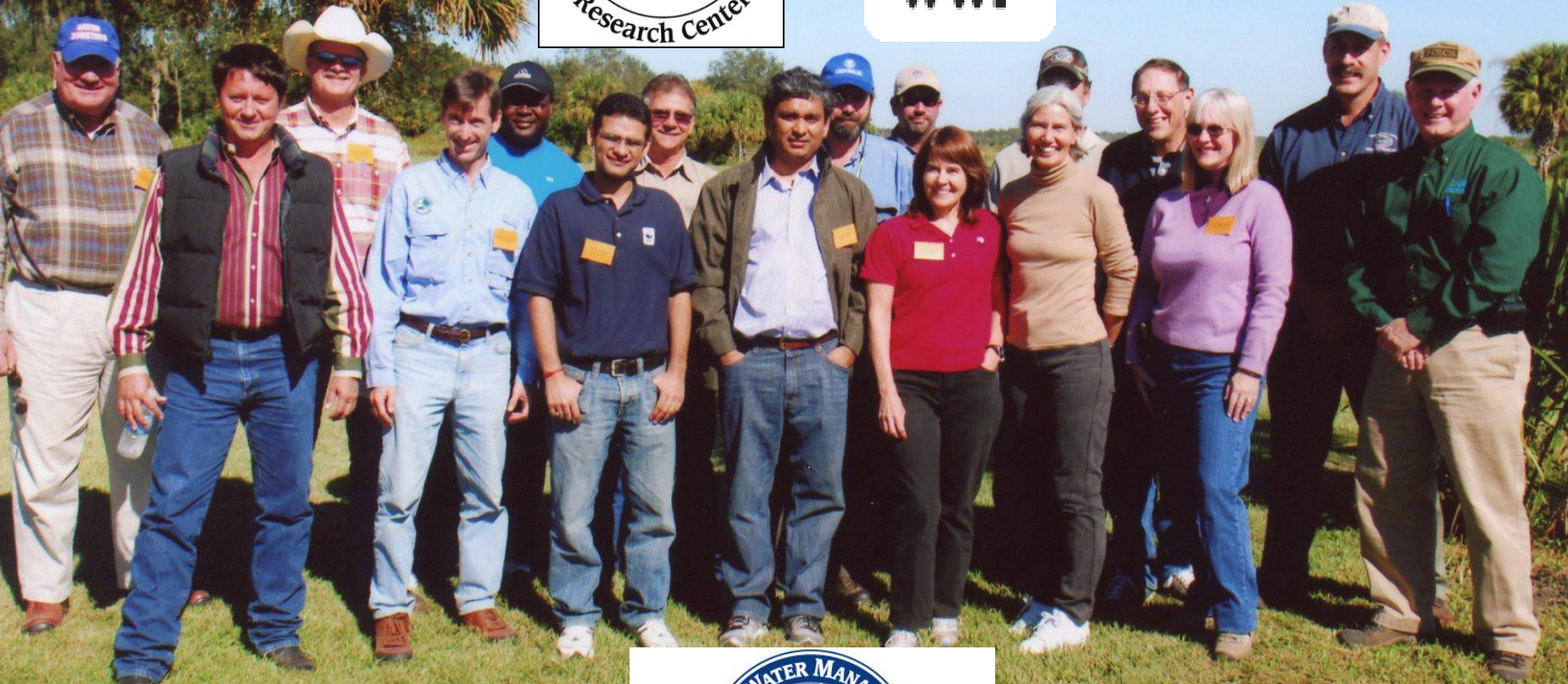




Florida Ranchlands Payment-for-Environmental-Services Program

- Ranchers can provide environmental services to the public
- Pay ranchers for “extra” service
- Services demanded
 - Dispersed water storage
 - Nutrient retention

Participating
Florida Ranchers



Pilot program

- 
- A map of Florida with a semi-transparent overlay showing the locations of several ranches. The map includes labels for Rafter Ranch, Alderman-Delaney Ranch, Payne & Sons Ranch, Williamson Ranch, Lightsey XL Ranch, Syfrett Ranch, Buck Island Ranch, and Lykes Bros. Inc. Ranch. Lake Okeechobee is also labeled. The background of the map shows a landscape with water and green fields.
- Rafter Ranch
 - Alderman-Delaney Ranch
 - Payne & Sons Ranch
 - Williamson Ranch
 - Lightsey XL Ranch
 - Syfrett Ranch
 - Buck Island Ranch
 - Lykes Bros. Inc. Ranch
- Lake Okeechobee



Williamson Cattle Company: 250 Acre Rehydrated Wetland With A 900 Acre Drainage Area



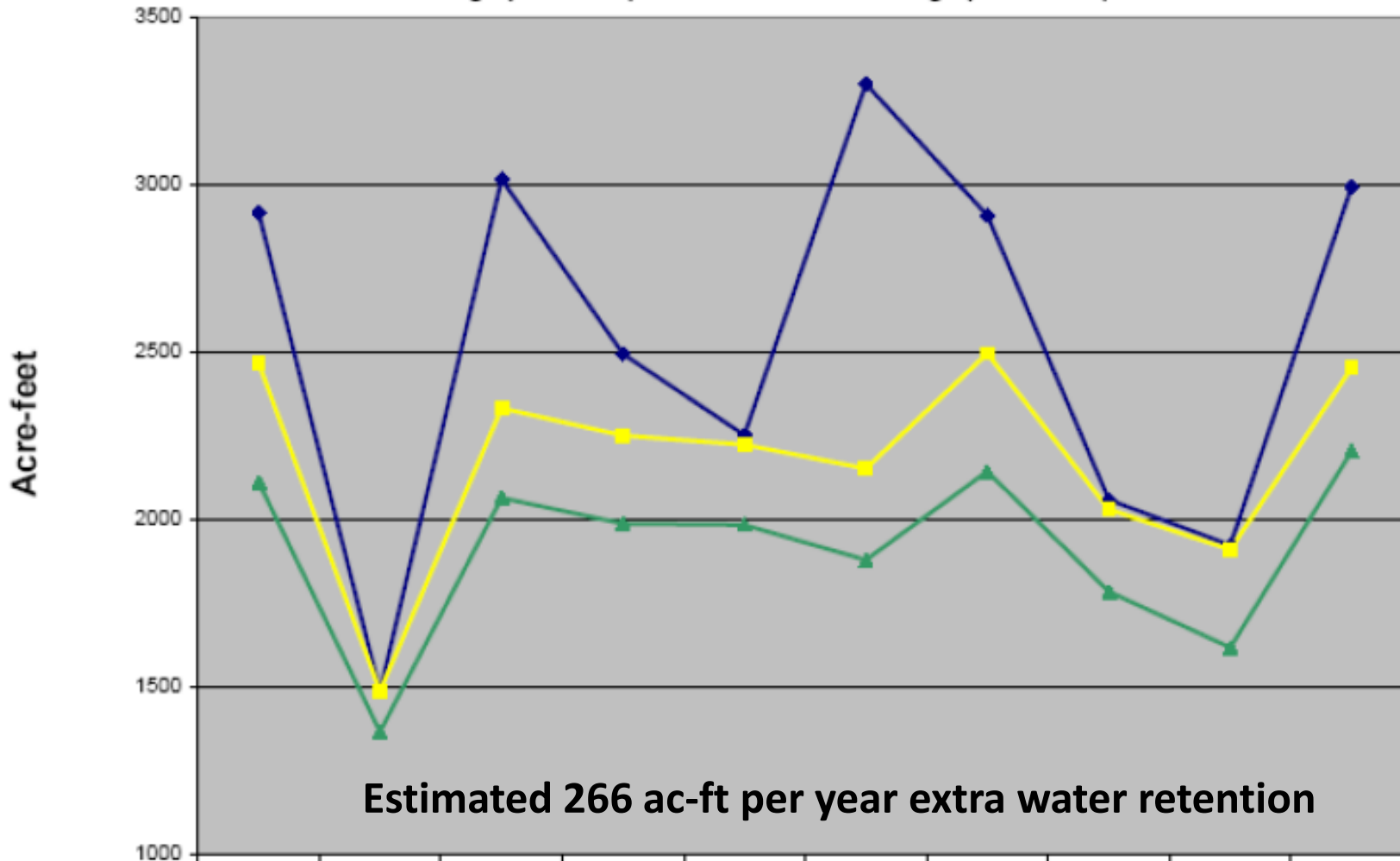
POTENTIAL WATER RETENTION MODEL

Williamson Cattle Company - Basin 1

Annual Retention

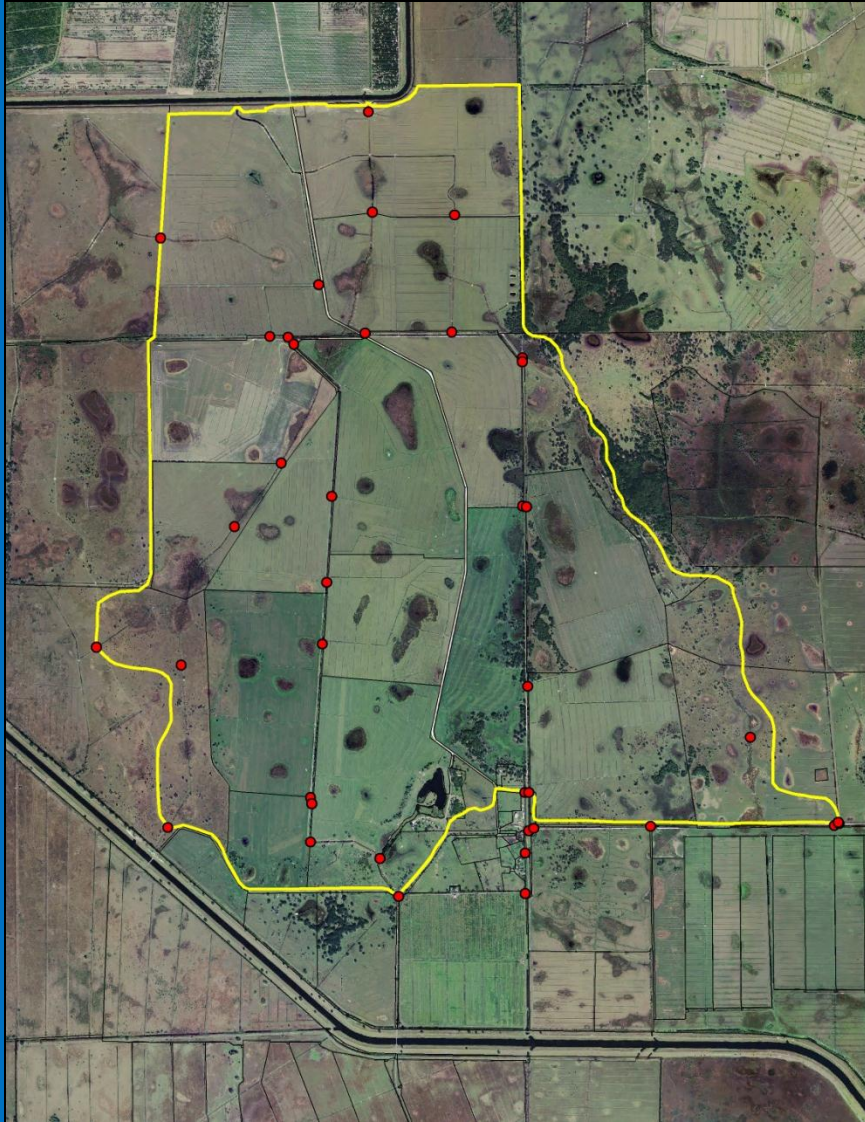
Uncontrolled Discharge (Pre-WMA) and Controlled Discharge (Post-WMA)

Average Annual Retention
(Post - Pre) = 266 ac-ft
Average Annual Discharge (ac-ft)
Pre = 621
Post = 355



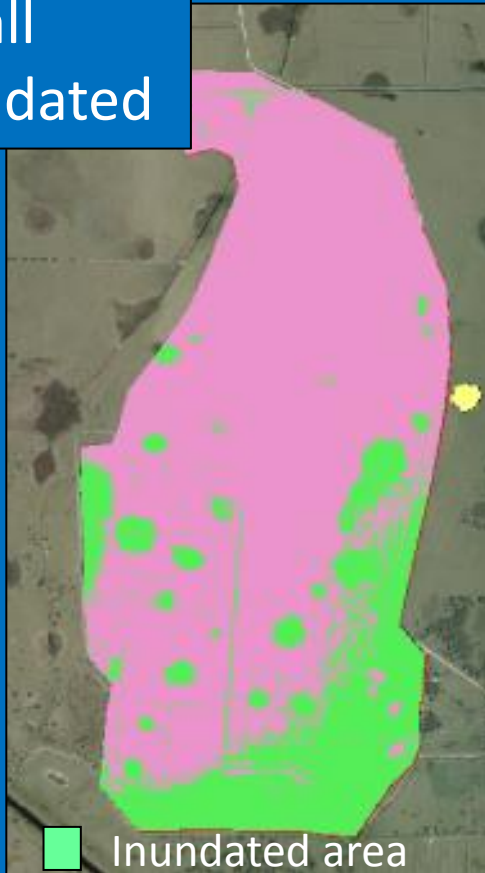
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
◆ Rainfall	2,914	1,487	3,014	2,493	2,250	3,299	2,907	2,058	1,922	2,992
▲ Retention - Uncontrolled	2,110	1,365	2,063	1,986	1,983	1,878	2,142	1,783	1,616	2,202
■ Retention - Controlled	2,465	1,487	2,331	2,249	2,222	2,151	2,494	2,028	1,908	2,451

Buck Island Ranch: 3,700 Acre Cascading Pasture Water Retention System

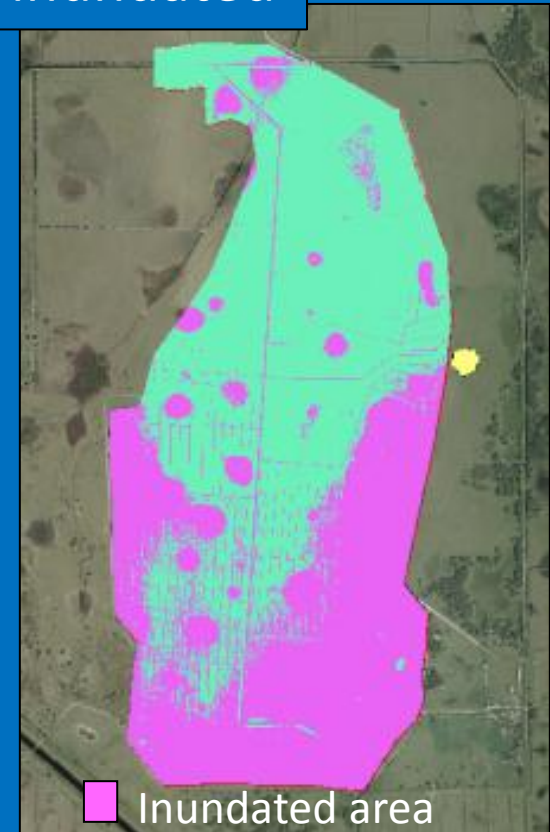


Water retention can increase discharge and nutrient loads!

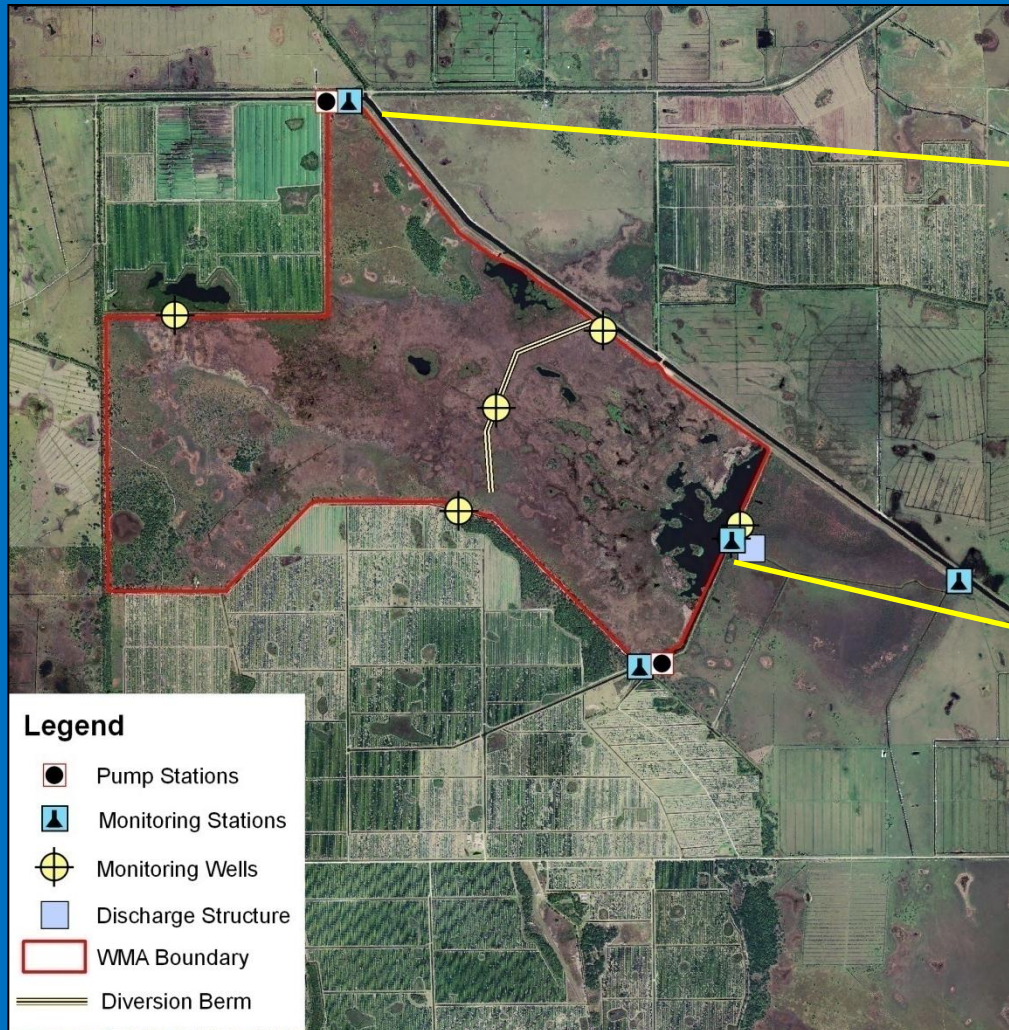
Low boards:
1.5 in. rainfall
116 ha inundated



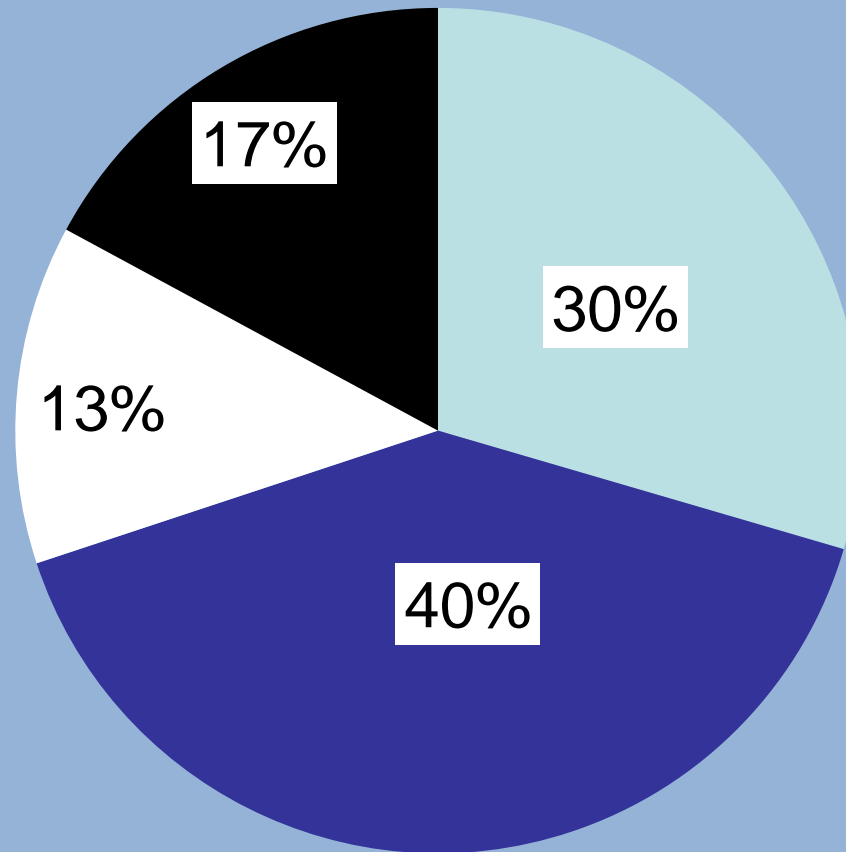
High boards:
1.1 in rainfall
213 ha inundated



Lykes Bros. Inc: 2,500 Acre Treatment Marsh In Existing Reservoir To Treat Off-Site Water



Water storage and losses

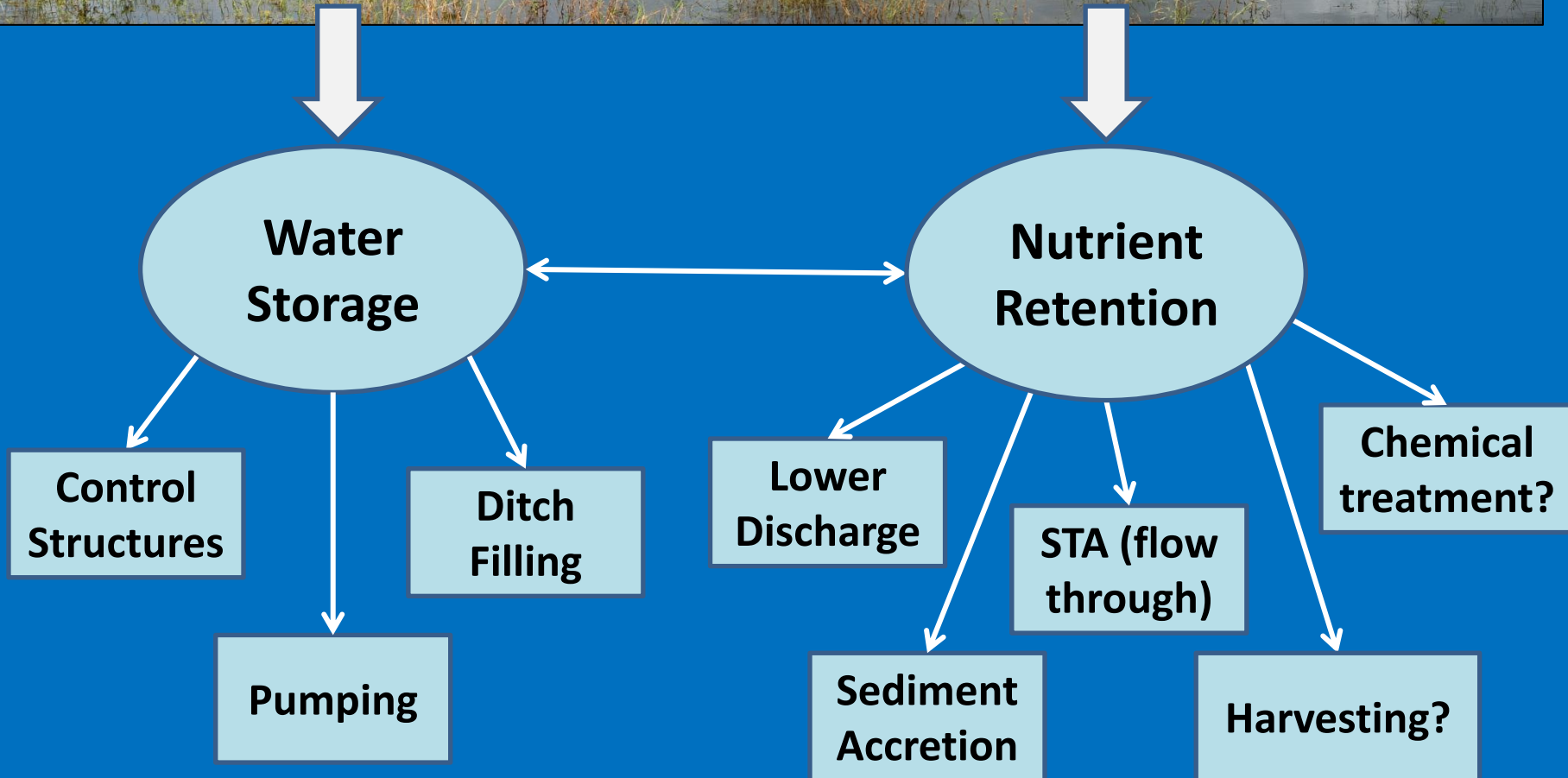


■ ET ■ Discharge ■ Seepage ■ Storage

55% P Removal Efficiency

P Inflow (kg)	5924 kg
P Outflow P (kg)	2642 kg
P retained (kg)	3282 kg
Retention Efficiency (%)	55%
Treatment Per Unit Area	3.4 kg/ha

Wetlands and Water Quality Best Management Practices



Questions?

