

UORB muck farm discharge estimates

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Bureau of Water Resources

November20, 2015



Upper Ocklawaha River Basin

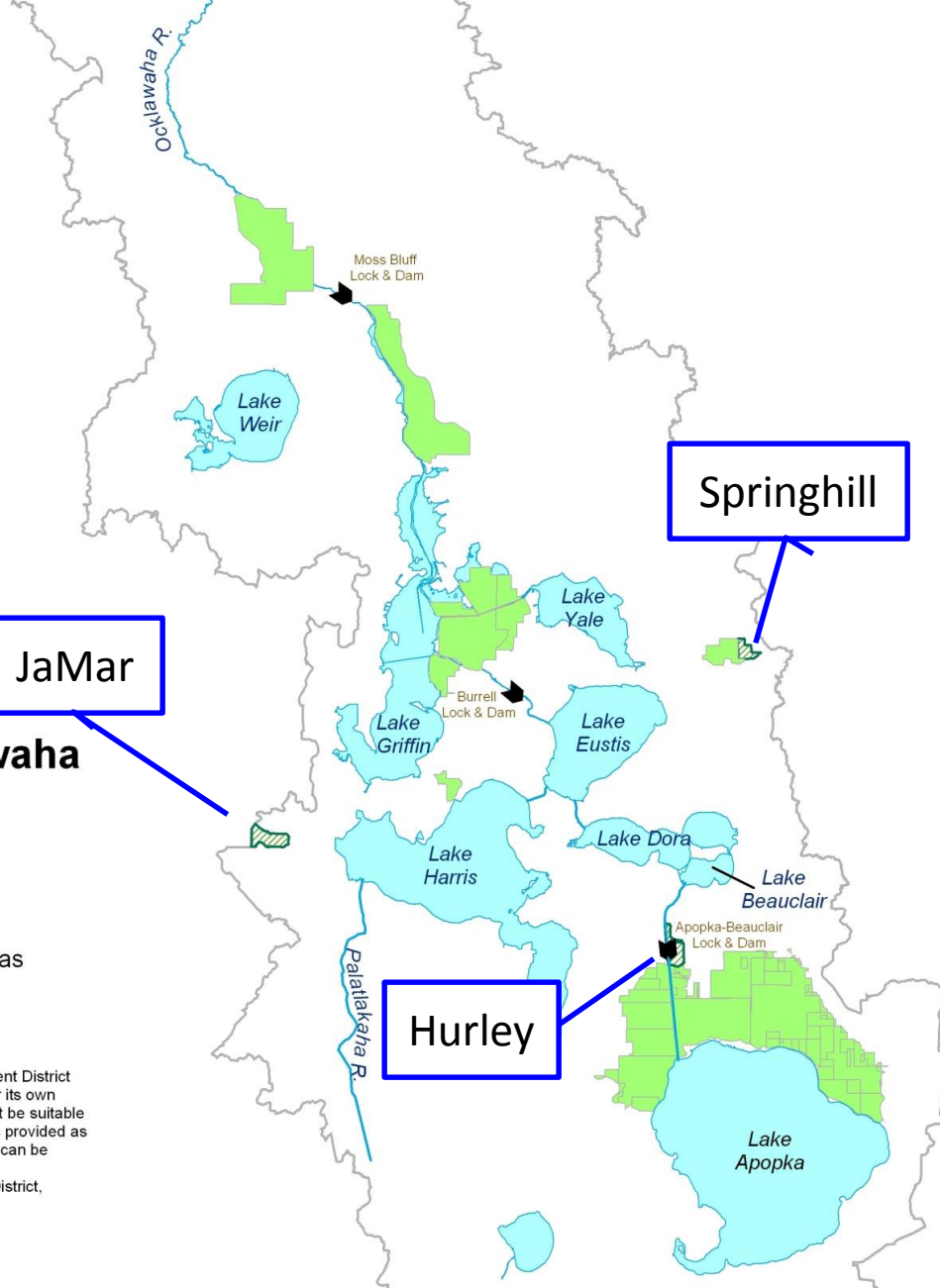
-  Dam
-  Muck Farms
-  Restoration Areas
-  Lakes

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 St. Johns River Water Management District,
 Geographic Information Systems,
 Program Management,
 P.O. Box 1429, Palatka, Florida
 32178-1429. Tel: (386) 329-4176.

JaMar

Springhill

Hurley



Discharge volumes

- Based on regression analysis of reported pump discharges from several upper Ocklawaha and Apopka muck farms during the mid-1980s to early 1990s
- Discharges estimated as a function of farm area, monthly rainfall, and evaporation
- If farm has retention pond, monthly discharges from pond estimated as pumped inflows + rain – evaporation
- If estimated monthly discharge is <0 , that represents a water deficit that must be made up before any discharges occur

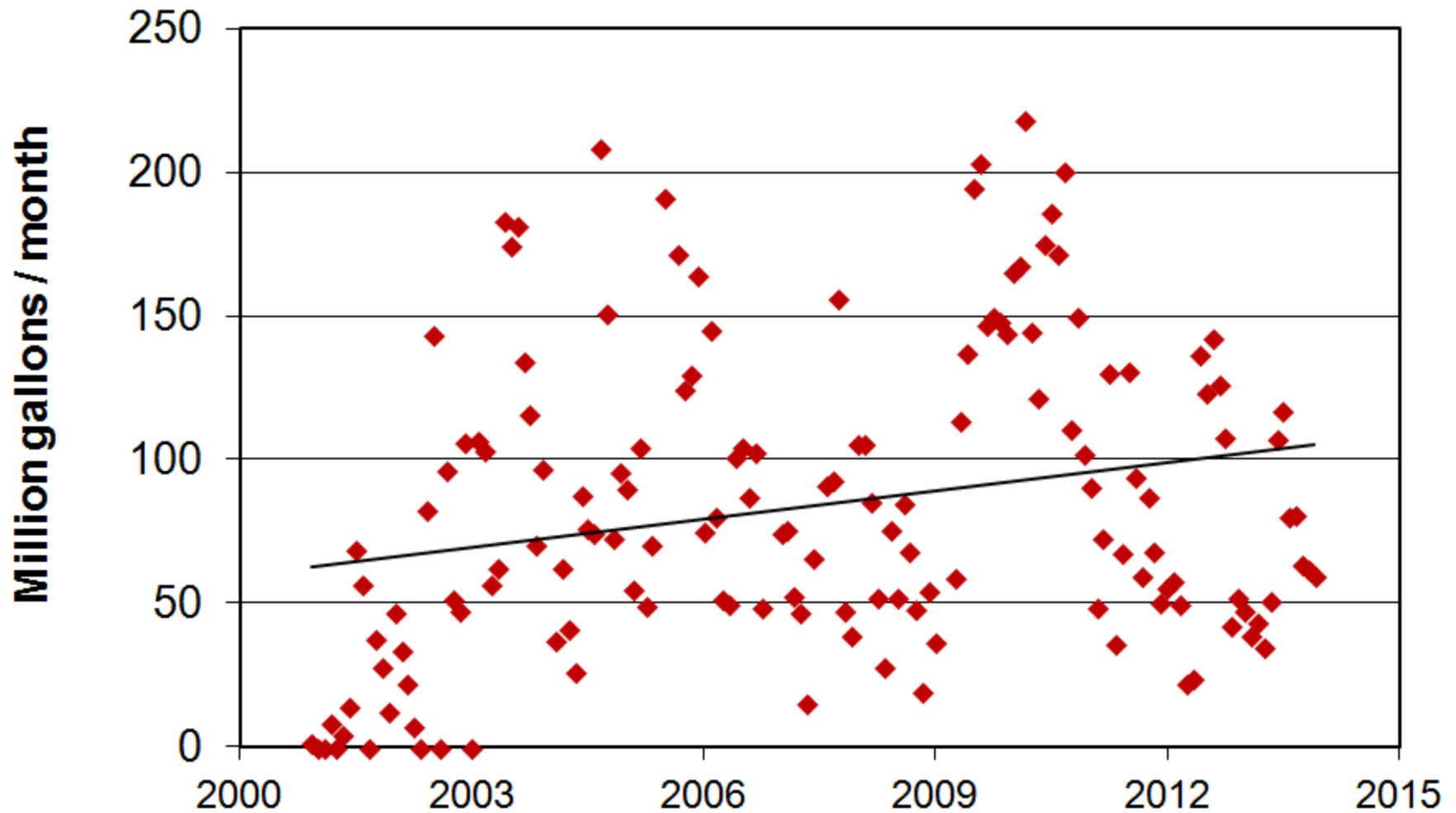


Do remaining muck farms have lower discharges?

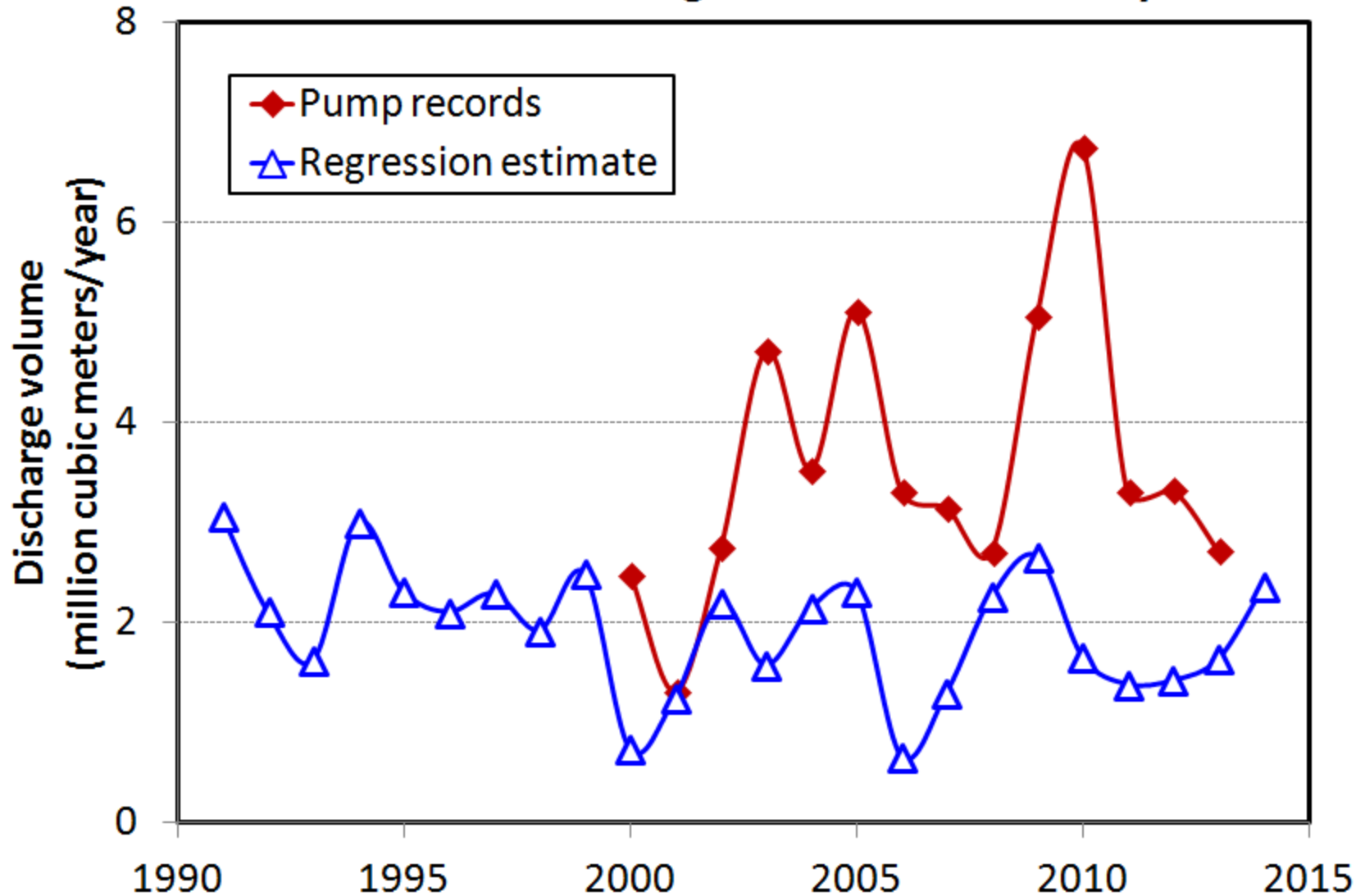
- Muck farms needed to discharge because they were developed from drained wetland areas
- Those areas still would tend to accumulate water, which may still need to be discharged even if changed from row crops to sod
- Permit data from Hurley Farm indicates still discharging large volumes



Estimated discharges to Hurley pond



Estimated annual discharge volumes from Hurley Farm



TP concentrations in discharges

- Based on most recent water quality in permit reports from the farms:
 - Hurley – July 2009, 0.16 mg/L (160 ppb)
 - JaMar – mean 2001-2005, 0.23 mg/L
 - Springhill – March 2006, 0.93 mg/L
- Typical agricultural runoff:
 - Pasture – 0.39 mg/L
 - Tree crops – 0.14 mg/L
 - Cropland – 0.67 mg/L
 - Other agriculture – 0.49 mg/L
 - Feeding operations – 6.53 mg/L



Alternative estimates of muck farm TP discharges – Mean 2001-2014 (kg/year)

	Regression method *	Stormwater runoff method
Hurley Farm	386	474
JaMar Farm	446	645

*** Used in lake TP loading estimates**



Site 1

Lake Jem Park

11/26/14

TP = 673 ppb

OrthoP = 463 ppb

TN = 4.31ppm

Turbidity = 31.4 ntu

7/29/15

TP = 325 ppb

OrthoP = 280 ppb

TN = 1.00 ppm

Site 2

448A & Duda

11/26/14

TP = 783 ppb

OrthoP = 594 ppb

TN = 4.36 ppm

Turbidity = 19.0 ntu

7/29/15

TP = 491 ppb

OrthoP = 433 ppb

TN = 2.23 ppm

Possible reasons why Hurley TP discharge may be underestimated

- Assume negative discharge volume estimates represent a true water deficit
- Discharge estimates from regression analysis are smaller than estimated from farm pump records, or from standard stormwater runoff calculations
- Assumed TP concentration in discharges is smaller than typical agricultural runoff or found in recent LCWA measurements

