Larkin Creek Phase II
Project 11-1800

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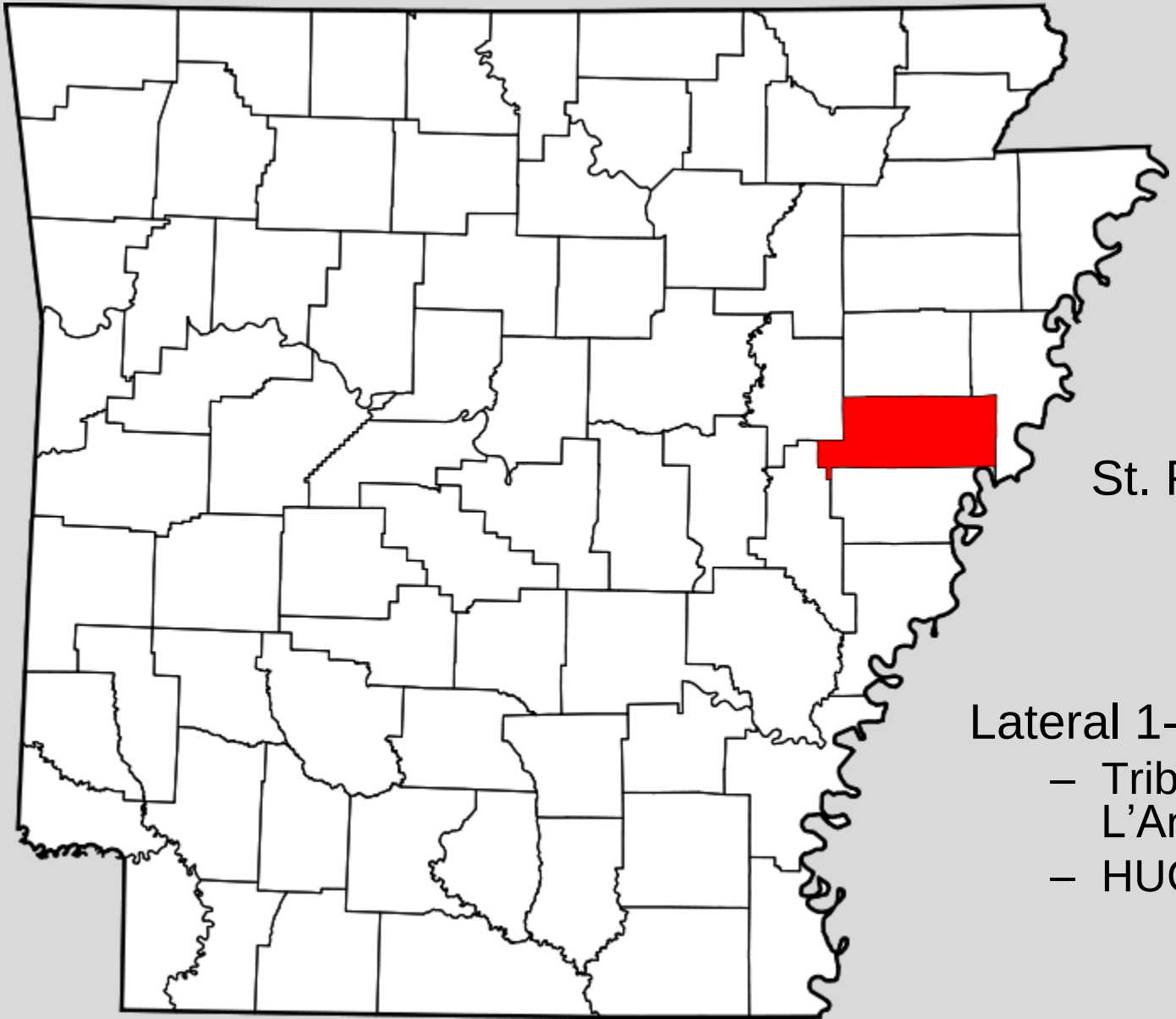
Background

- Larkin Creek
  - tributary of the L'Anguille River
  - dominated by row crop agriculture.
- L'Anguille River
  - tributary of the St. Francis
  - in the Delta ecoregion
- ADEQ authorized the St. Francis County Conservation District to implement BMPs to reduce pollutant loading to L'Anguille

Site description

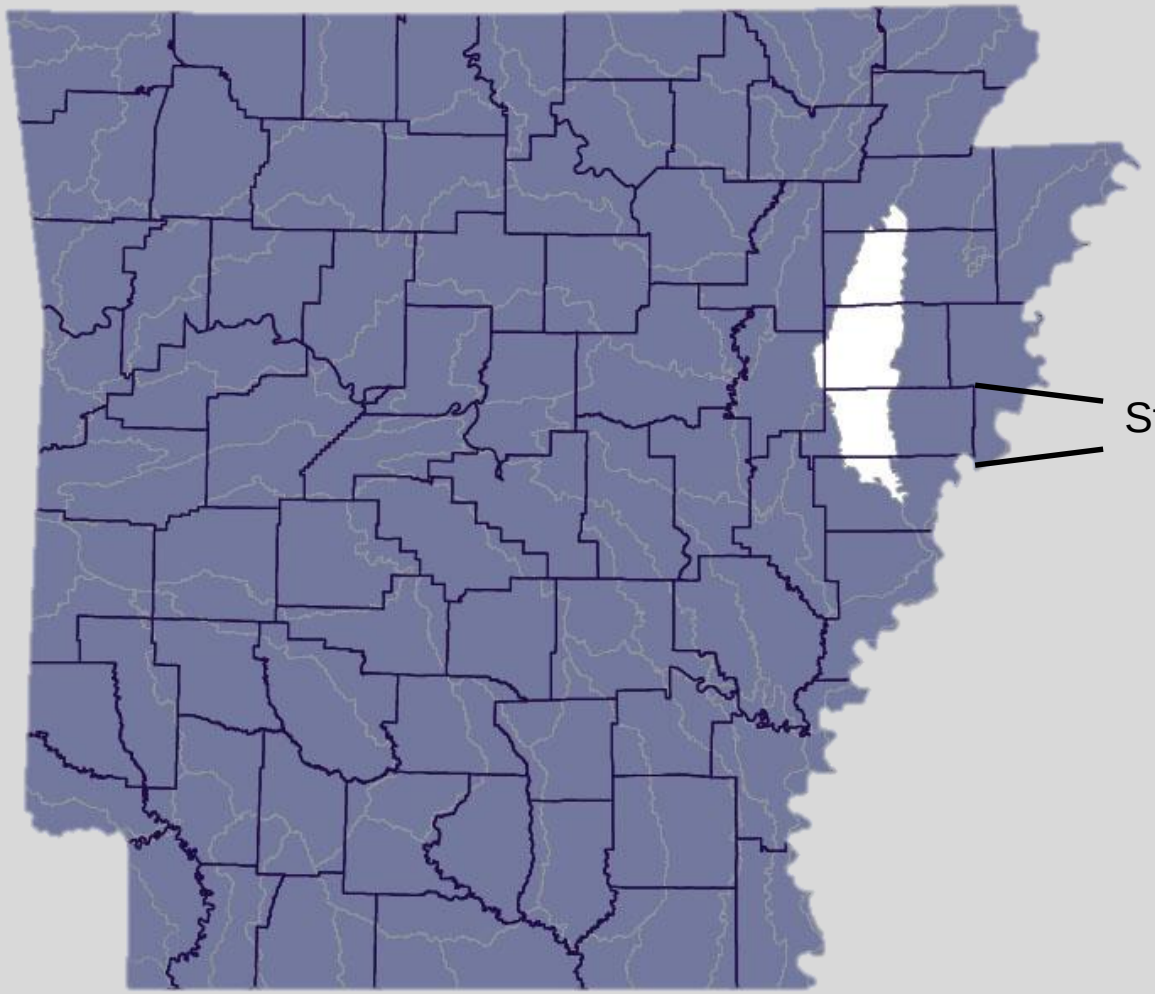


St. Francis County

Lateral 1-A of Larkin Creek

- Tributary of the L'Anguille River
- HUC#080202050506

Site description



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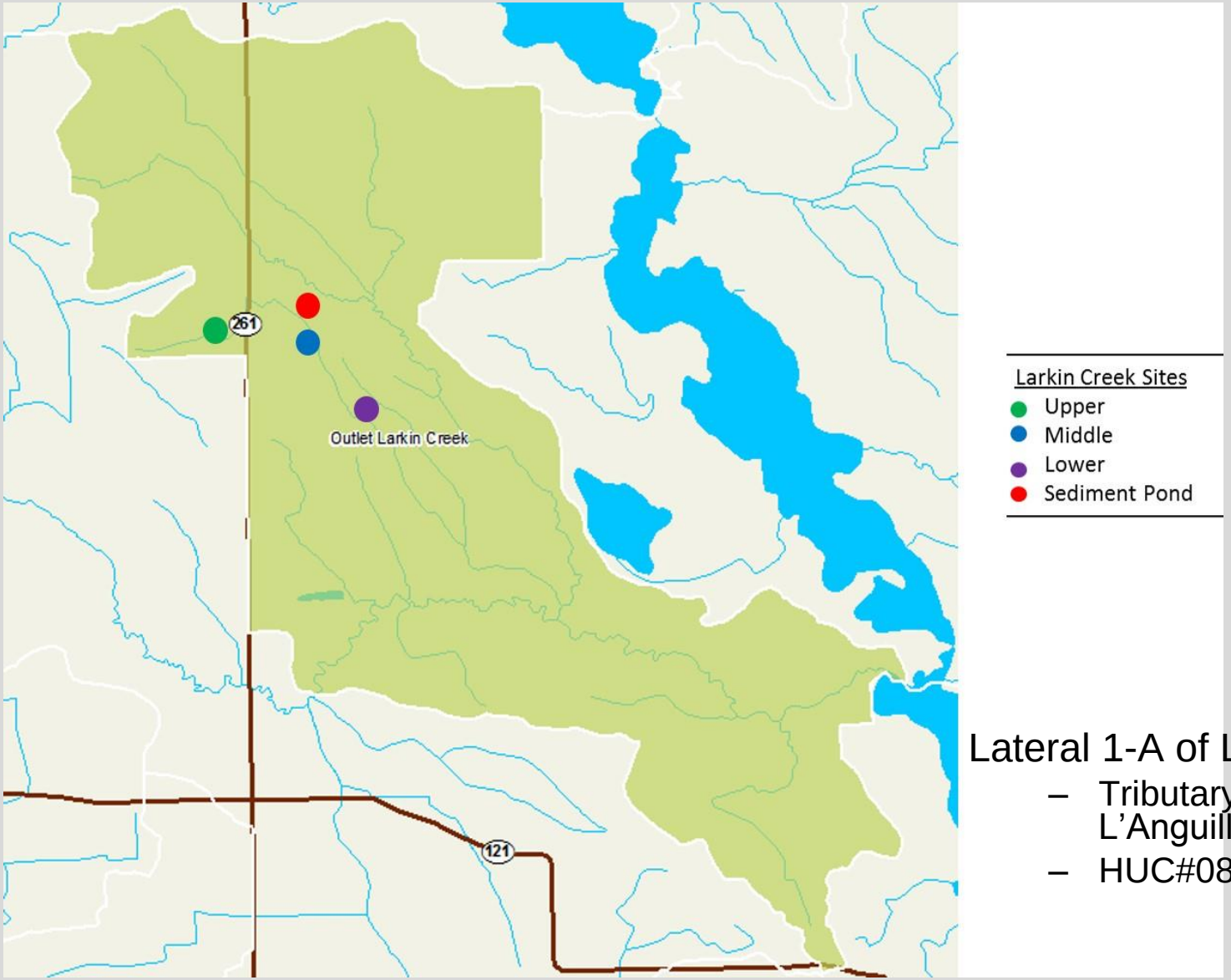


Lateral 1-A of Larkin Creek

- Tributary of the L'Anguille River
- HUC#080202050506

BMPs

St. Francis County Conservation District

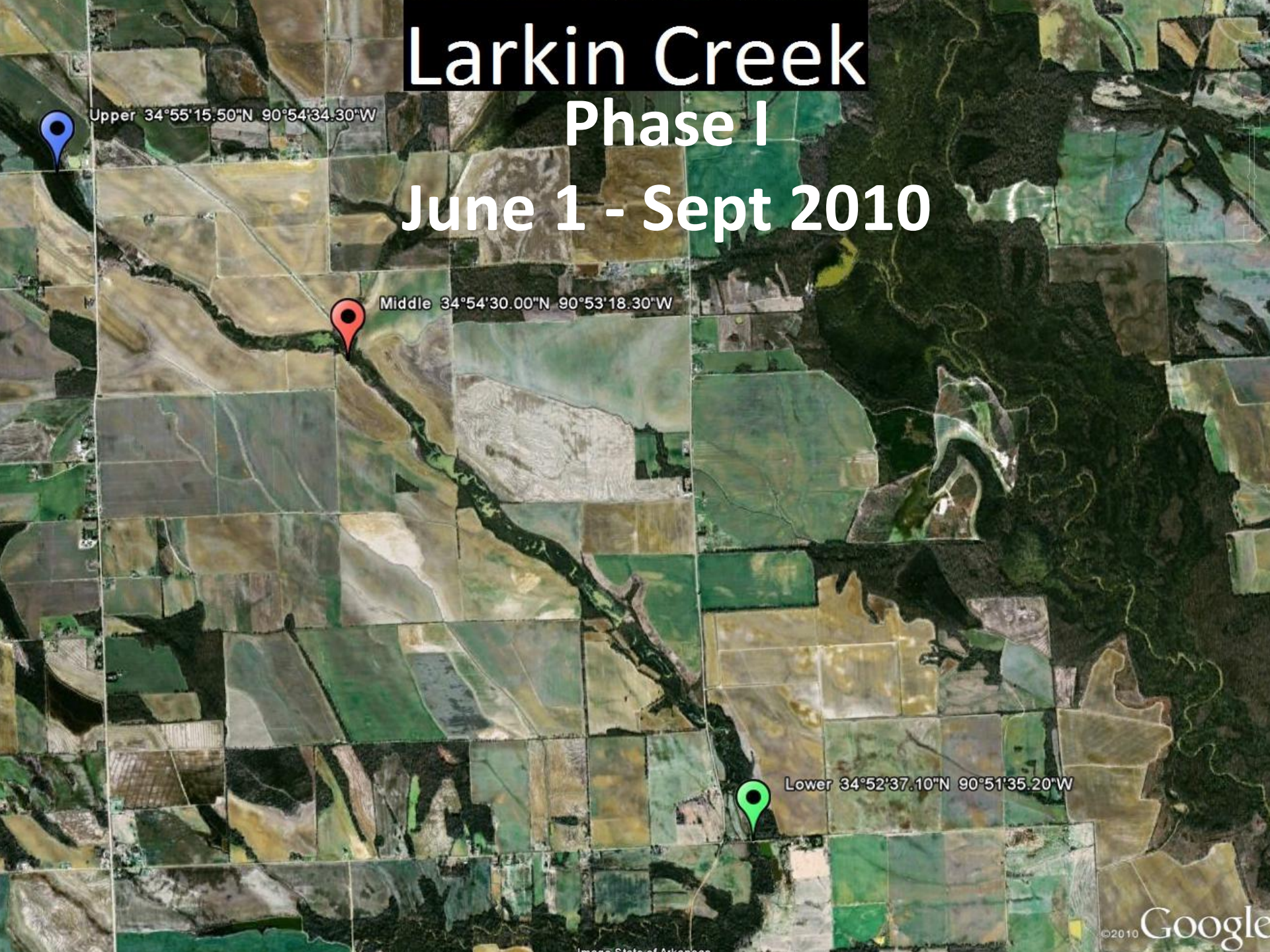
- sediment pond construction
- plant riparian buffers
- remove sediment
- restore the channel
  - Lateral 1-A of Larkin Creek

L'Anguille River

- Agricultural activities cited as major cause of the impairment within watershed
  - excessive turbidity from silt, suspended solids loading, sedimentation

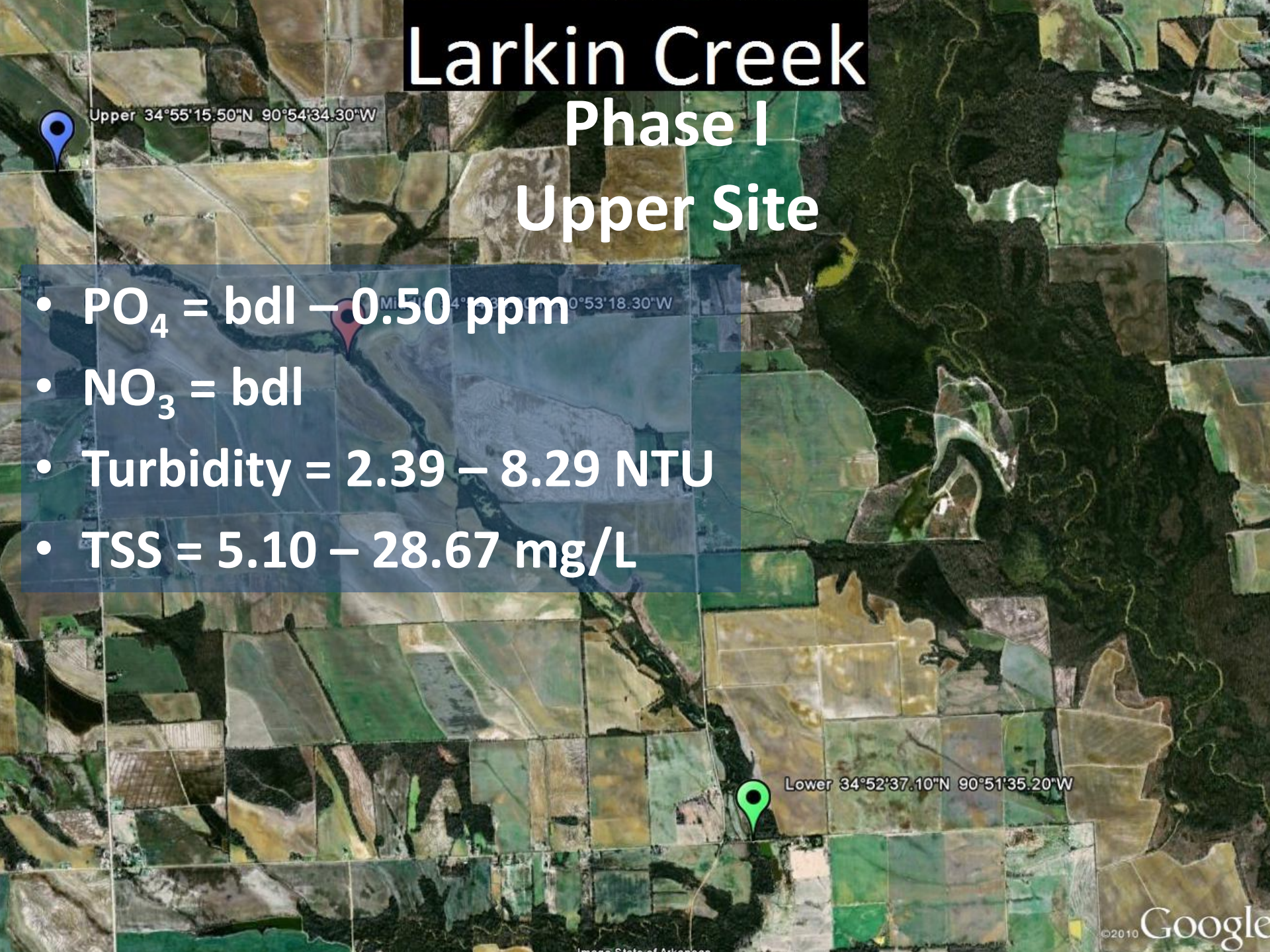
Measured Parameters

- pH
- Dissolved Oxygen
- Total Suspended Solids (TSS)
- Turbidity
- Dissolved Nitrate, Nitrite, Orthophosphate

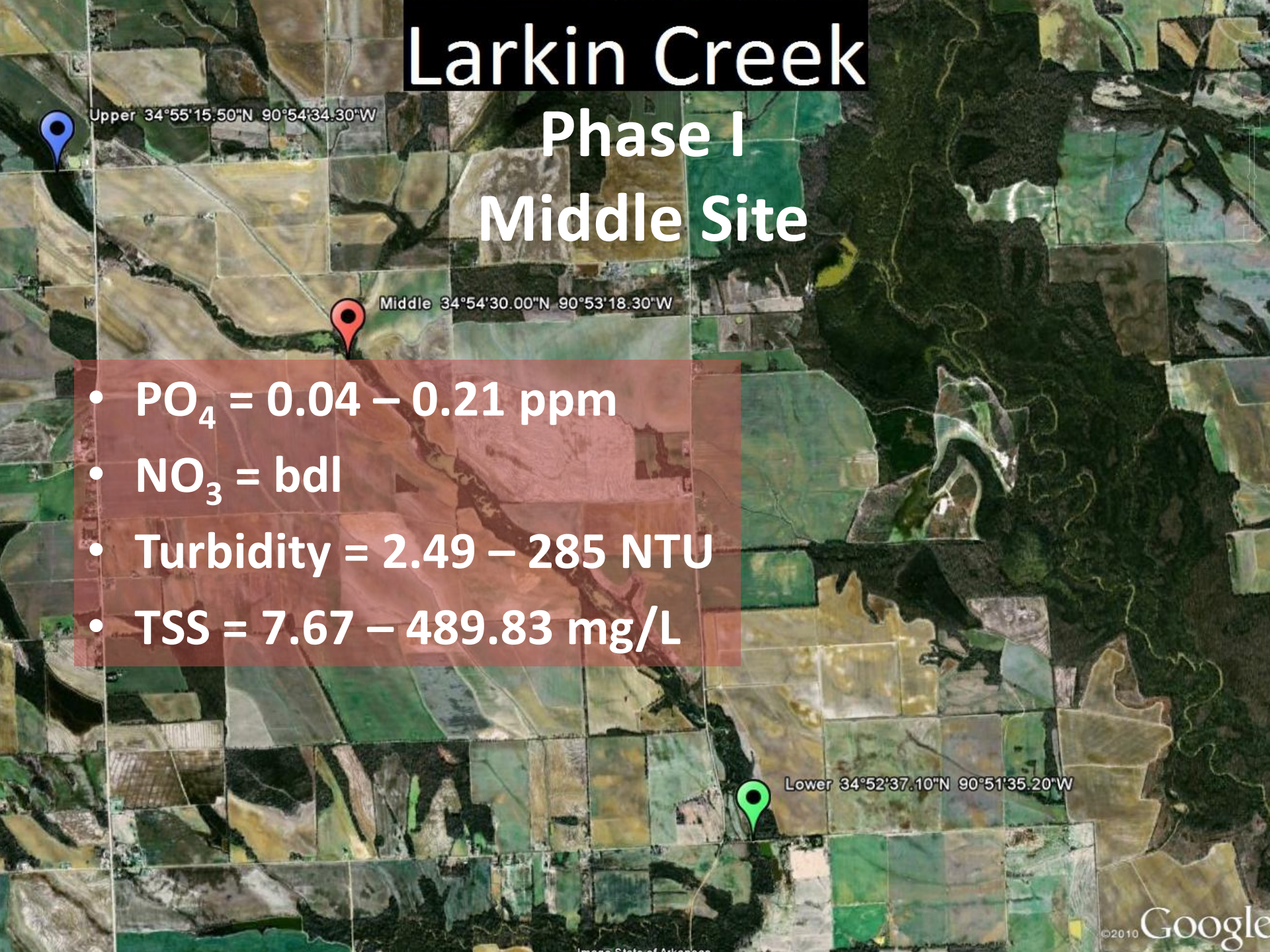

Larkin Creek
Phase I
June 1 - Sept 2010
Upper 34°55'15.50"N 90°54'34.30"W
Middle 34°54'30.00"N 90°53'18.30"W
Lower 34°52'37.10"N 90°51'35.20"W
©2010 Google

Larkin Creek

Phase I
Upper Site



- PO_4 = bdl – 0.50 ppm
- NO_3 = bdl
- Turbidity = 2.39 – 8.29 NTU
- TSS = 5.10 – 28.67 mg/L


Larkin Creek
Phase I
Middle Site
Upper 34°55'15.50"N 90°54'34.30"W
Middle 34°54'30.00"N 90°53'18.30"W
Lower 34°52'37.10"N 90°51'35.20"W
• PO_4 = 0.04 – 0.21 ppm
• NO_3 = bdl
• Turbidity = 2.49 – 285 NTU
• TSS = 7.67 – 489.83 mg/L
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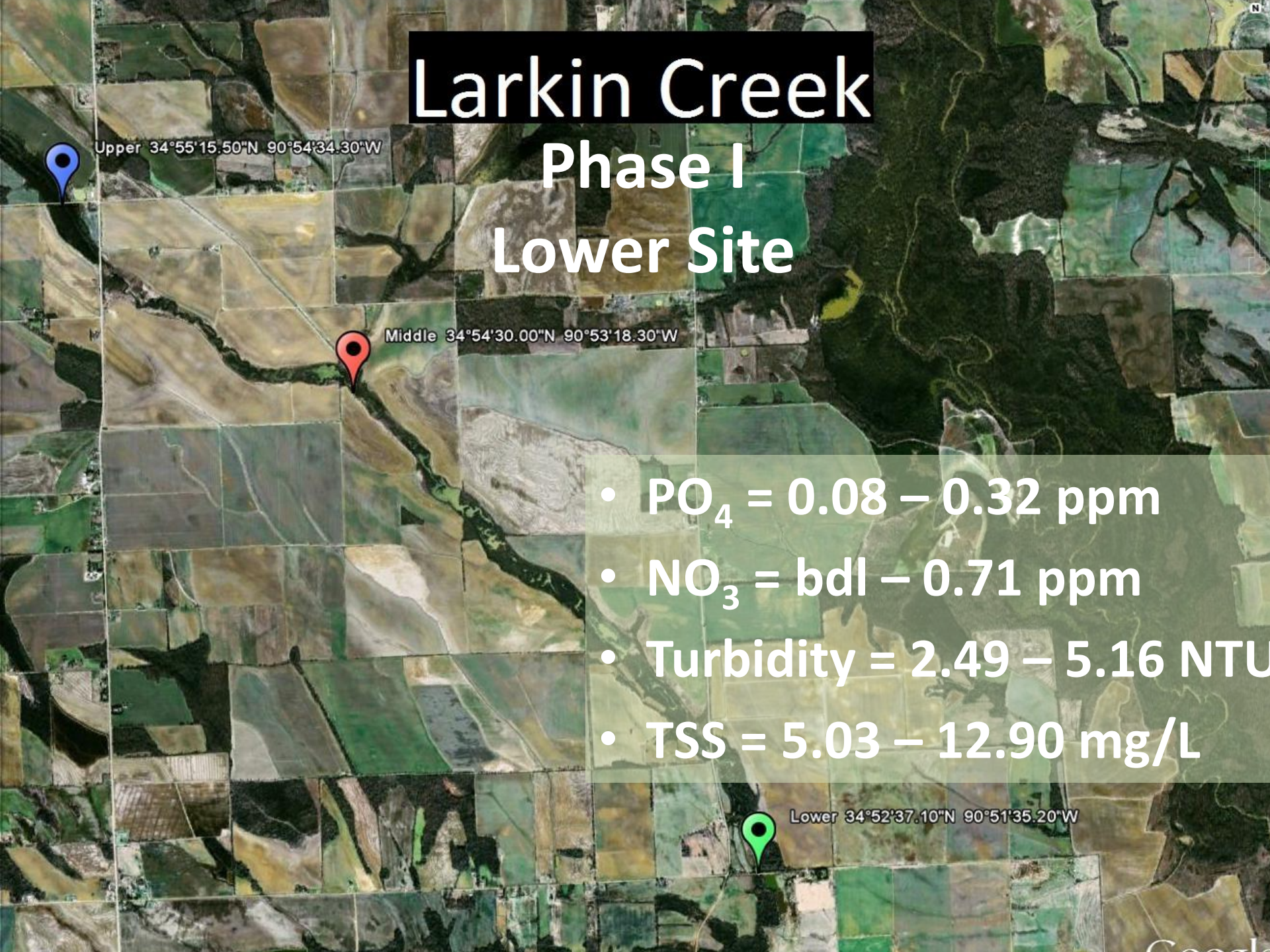
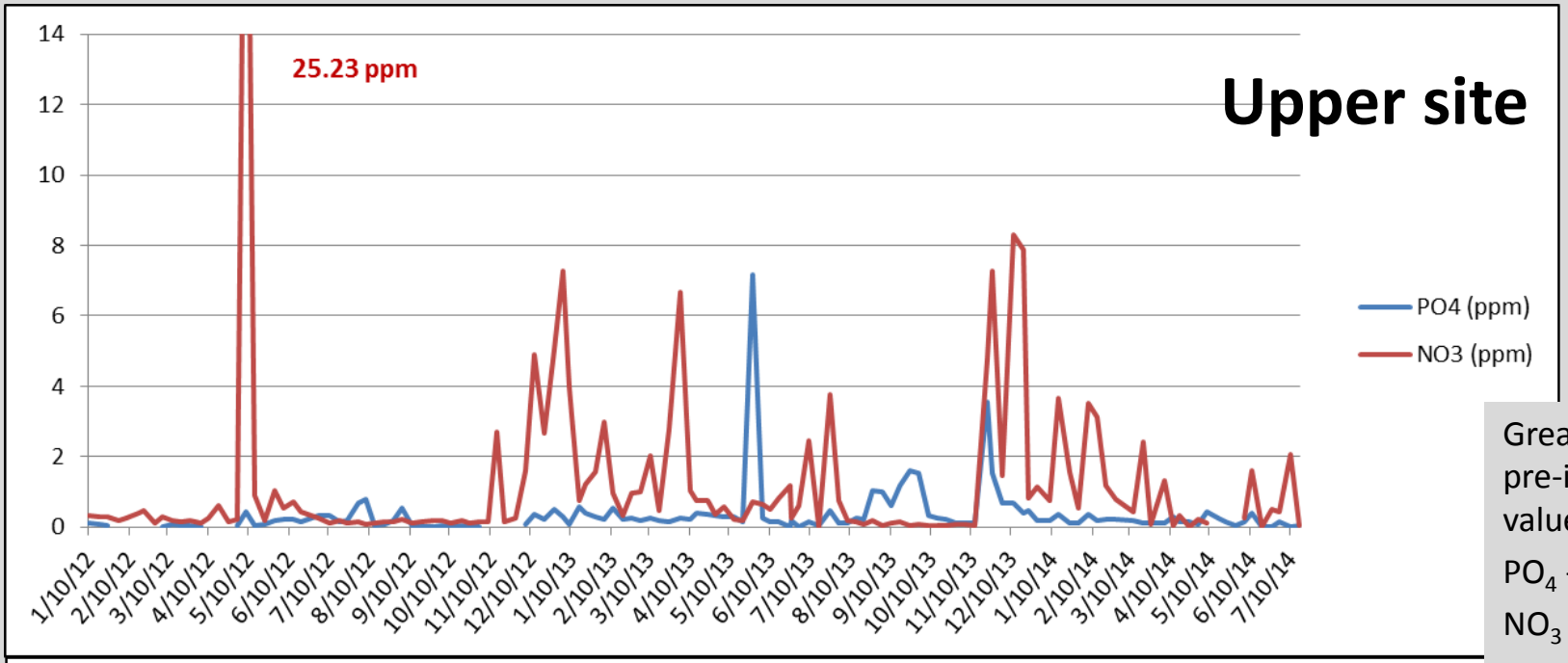
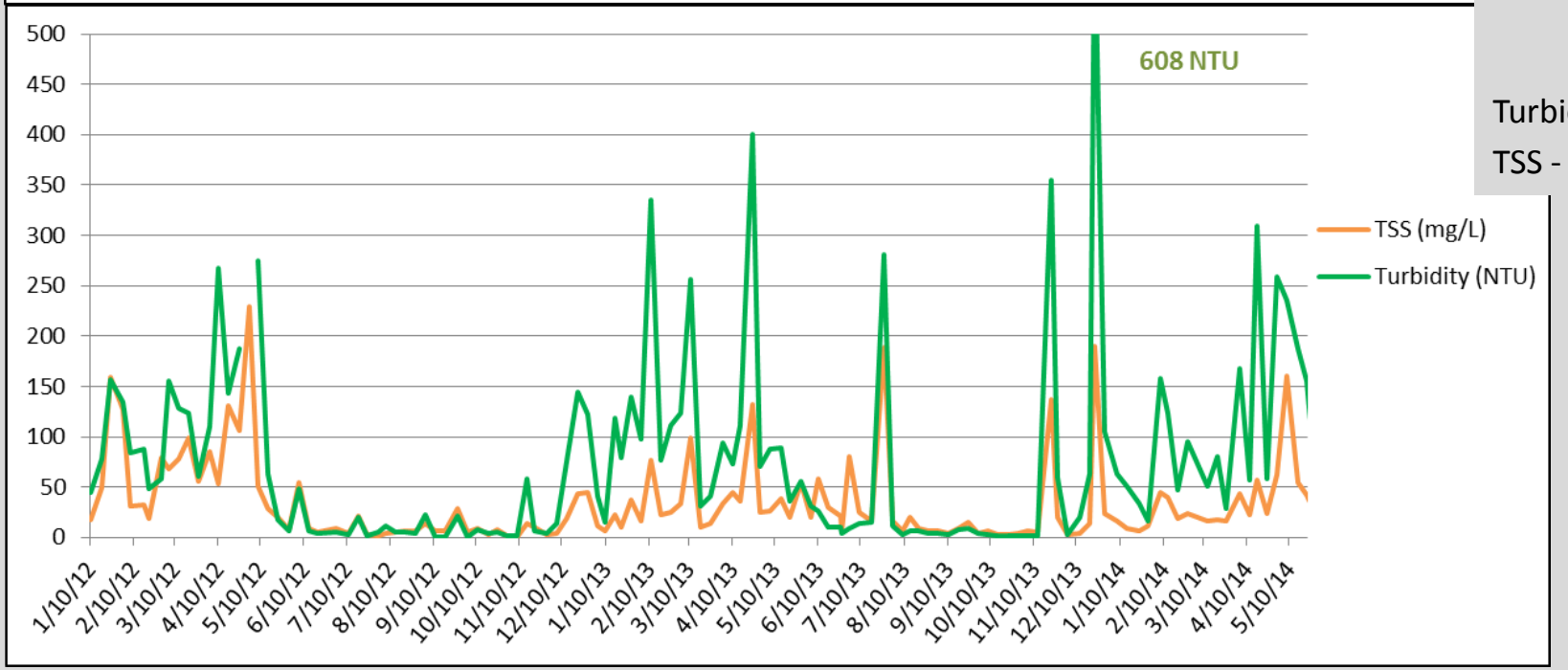

Larkin Creek
Phase I
Lower Site
Upper 34°55'15.50"N 90°54'34.30"W
Middle 34°54'30.00"N 90°53'18.30"W
Lower 34°52'37.10"N 90°51'35.20"W
• PO_4 = 0.08 – 0.32 ppm
• NO_3 = bdl – 0.71 ppm
• Turbidity = 2.49 – 5.16 NTU
• TSS = 5.03 – 12.90 mg/L

Phase I
Upper Site

Upper site





Greatest pre-implementation values

PO_4 - 0.50 ppm

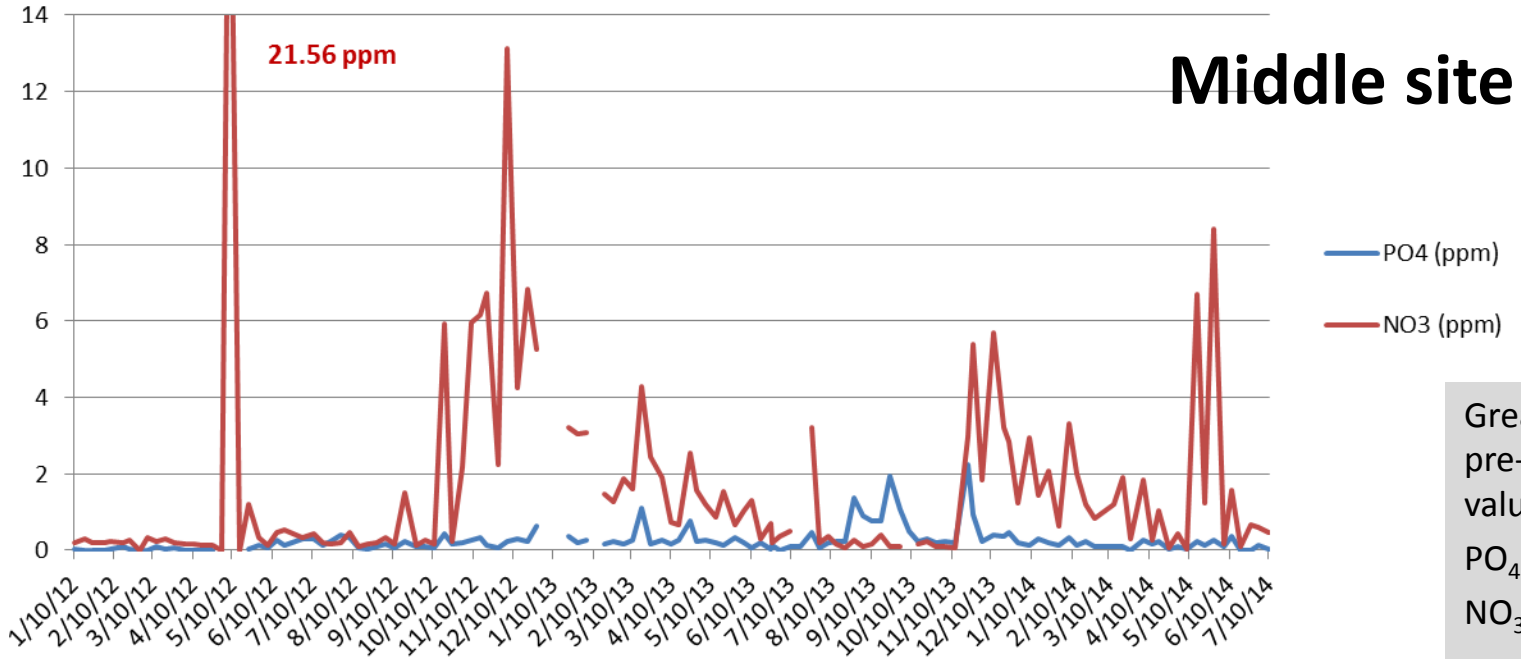
NO_3 - bdl

Turbidity - 8.29 NTU

TSS - 28.67 mg/L

Phase I
Middle Site

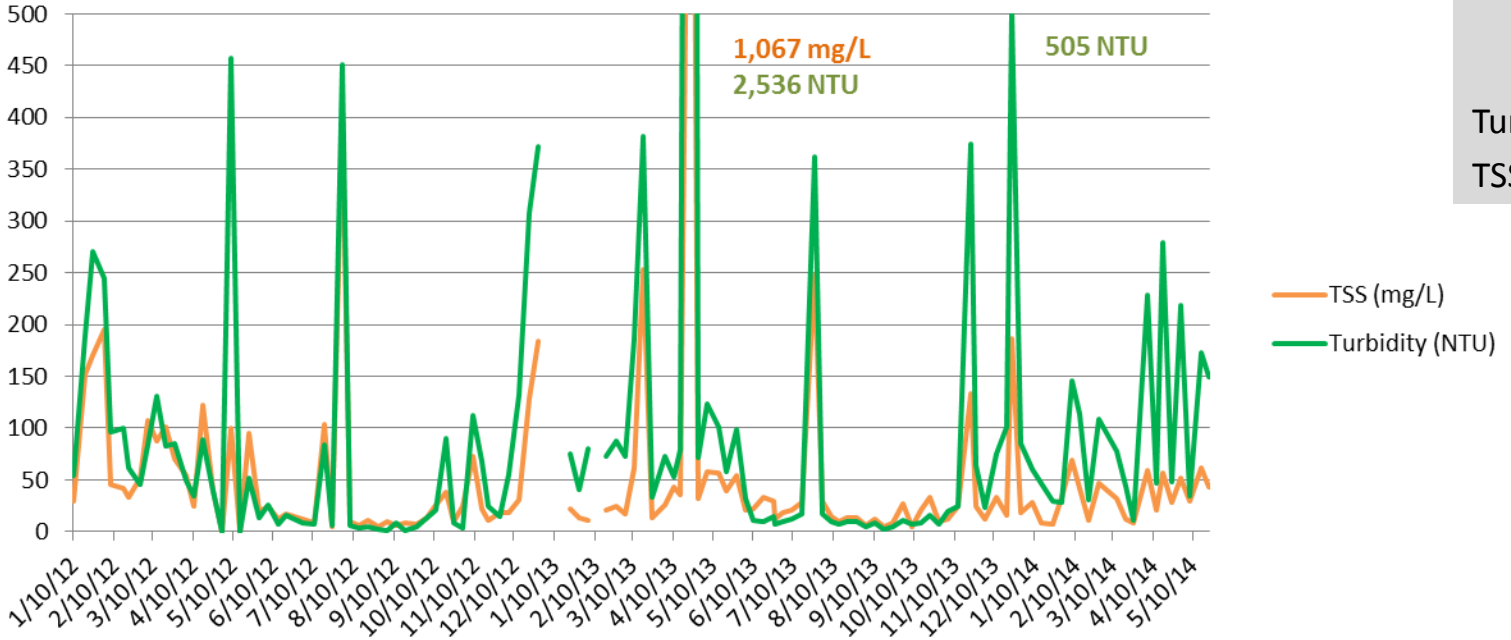
Middle site



Greatest pre-implementation values

PO_4 - 0.21 ppm

NO_3 - bdl

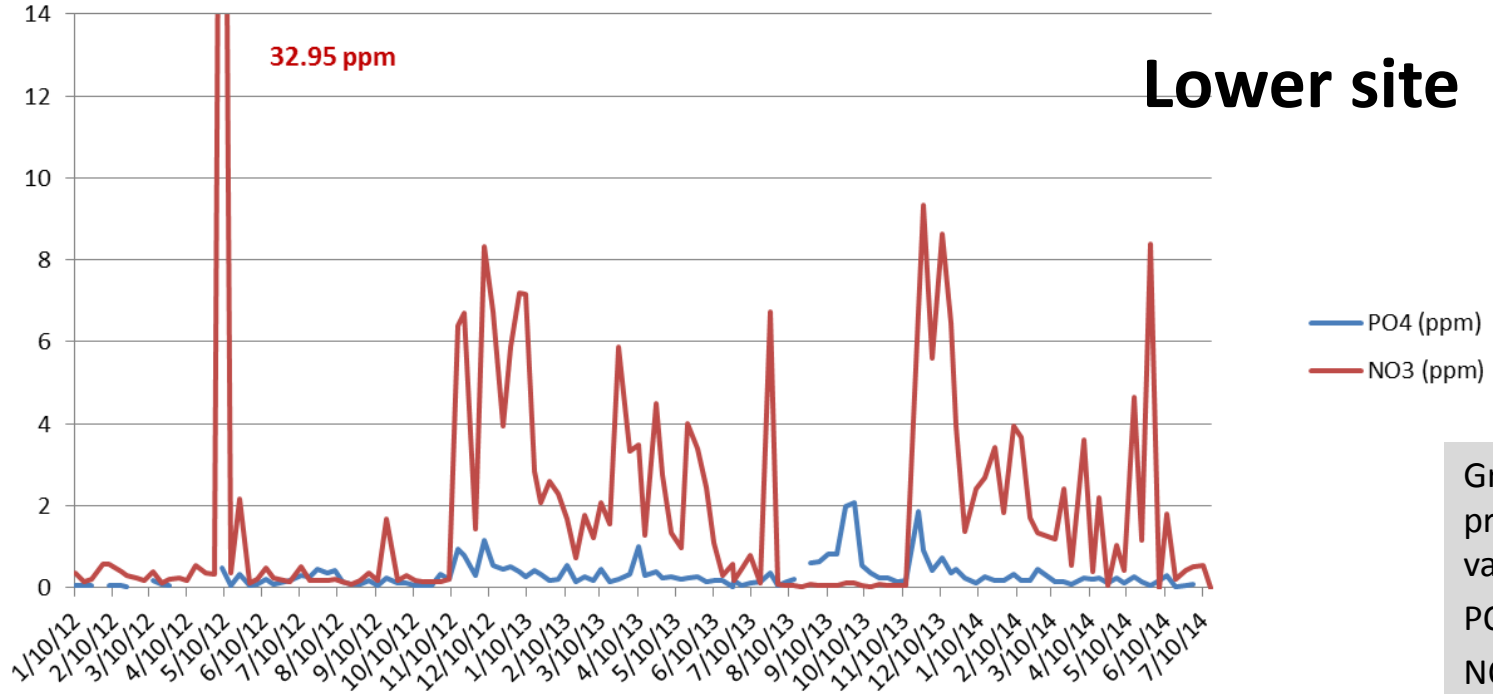


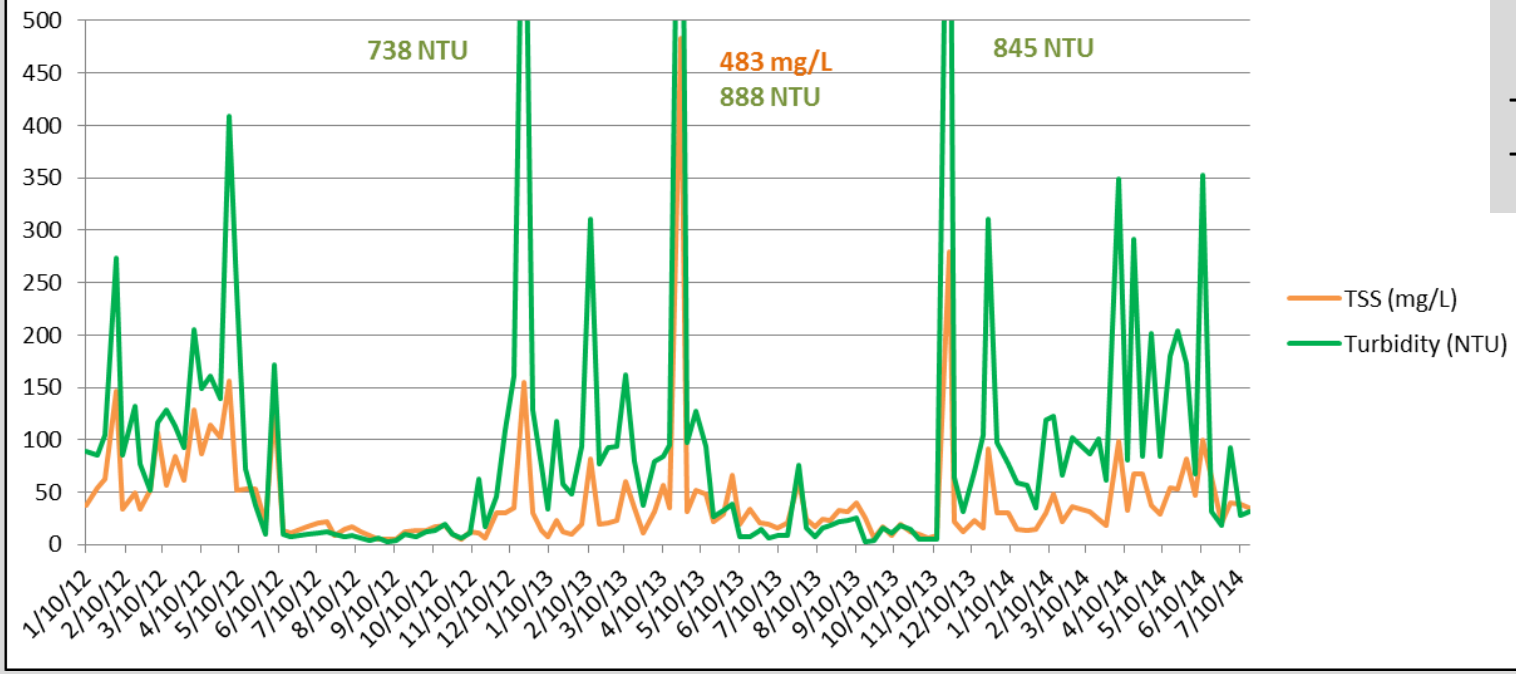
Turbidity - 285 NTU

TSS - 489 mg/L

Phase I
Lower Site

Lower site





Greatest pre-implementation values

PO_4 - 0.24 ppm

NO_3 - 0.71 ppm

Turbidity – 5.16 NTU

TSS – 12.17 mg/L

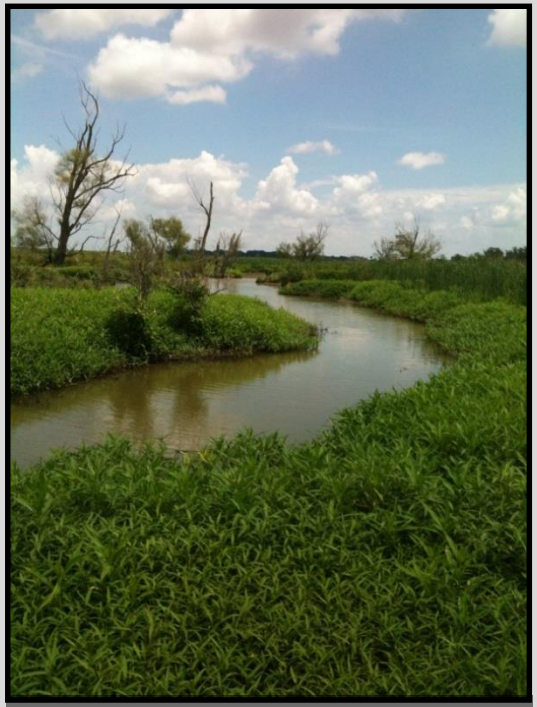
Results

2012-2014 Cumulative means			
	Upper	Middle	Lower
PO4 (ppm)	0.35	0.26	0.30
NO3 (ppm)	1.26	1.61	1.96
TSS (mg/L)	35.2	56.4	42.4
Turbidity (NTU)	76.5	105.6	93.6

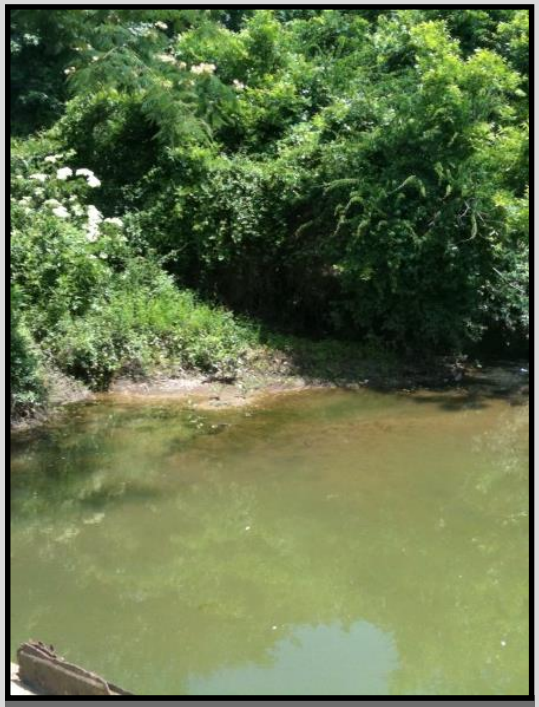
- TSS remains highest at Middle Site
  - Especially following rain events
- Nutrient spikes following applications and rainfall events
  - Greater values at lower site
- Data following conservation practice implementation may show improvement over time
  - Drought year (2012) and wet years (2013 & 2014)
  - Separate rain and baseflow events for final interpretation
- Sampling continues through Oct 2014

Questions?

Upper Larkin Creek



Middle Larkin Creek



Lower Larkin Creek

Thanks to ANRC, Sarah Vogt, students and technicians at Ecotox