

# Big Creek Research and Extension Team: Final Report

House and Senate Public Health, Welfare and Labor  
Committee

June 8, 2020 Virtual Meeting

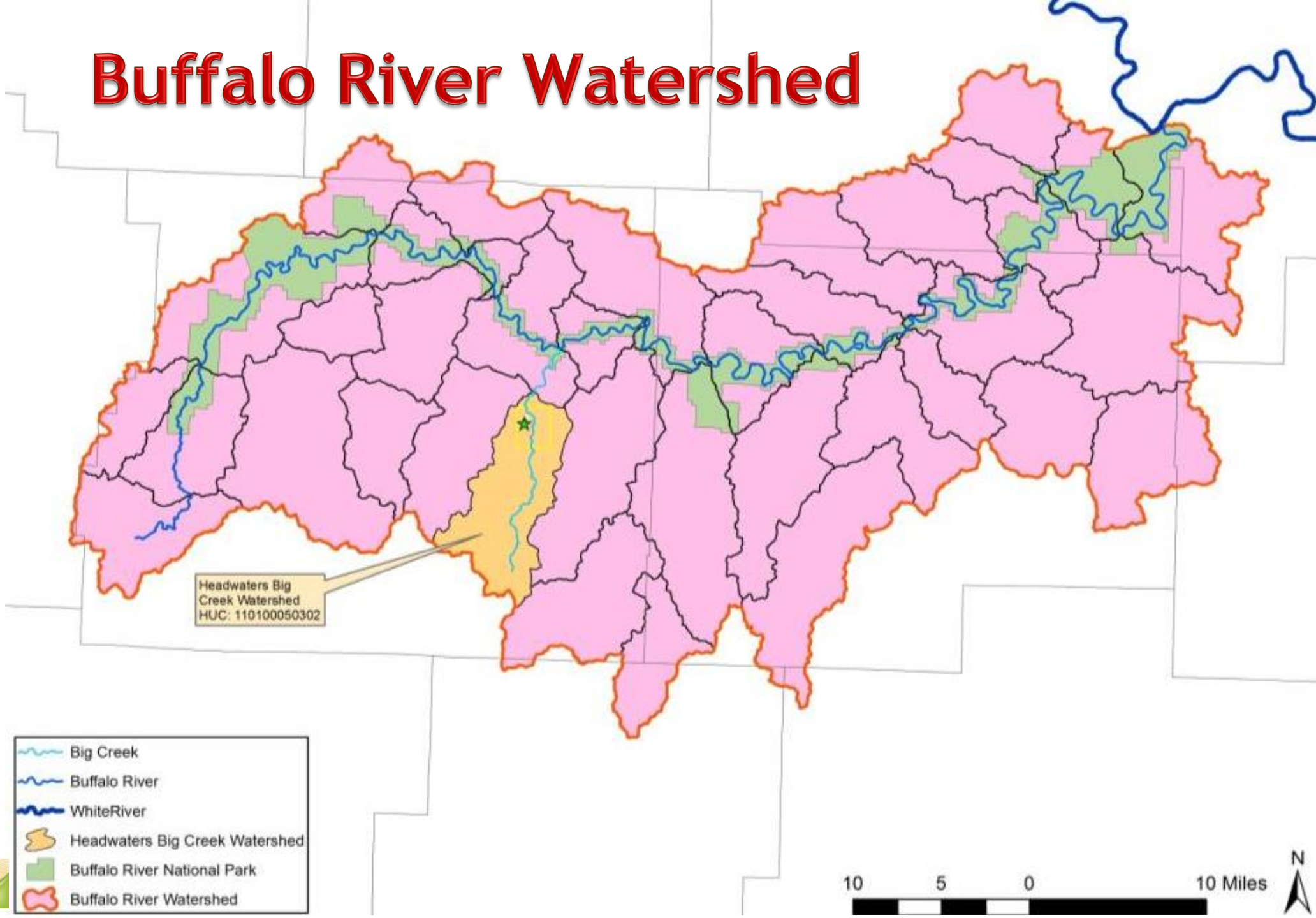
- ✓ Farm established in early 2013
- ✓ We started monitoring in early Sept. 2013

**BCRET**

# Project objectives

- ✓ Monitor fate & transport of nutrients & bacteria from land-applied swine slurry
- ✓ Assess impact of farm operations on area water quality
- ✓ Assess manure treatment options that enhance export out of the watershed
- ✓ Provide transparent & unbiased science for landowner & State to make informed decisions

# Buffalo River Watershed

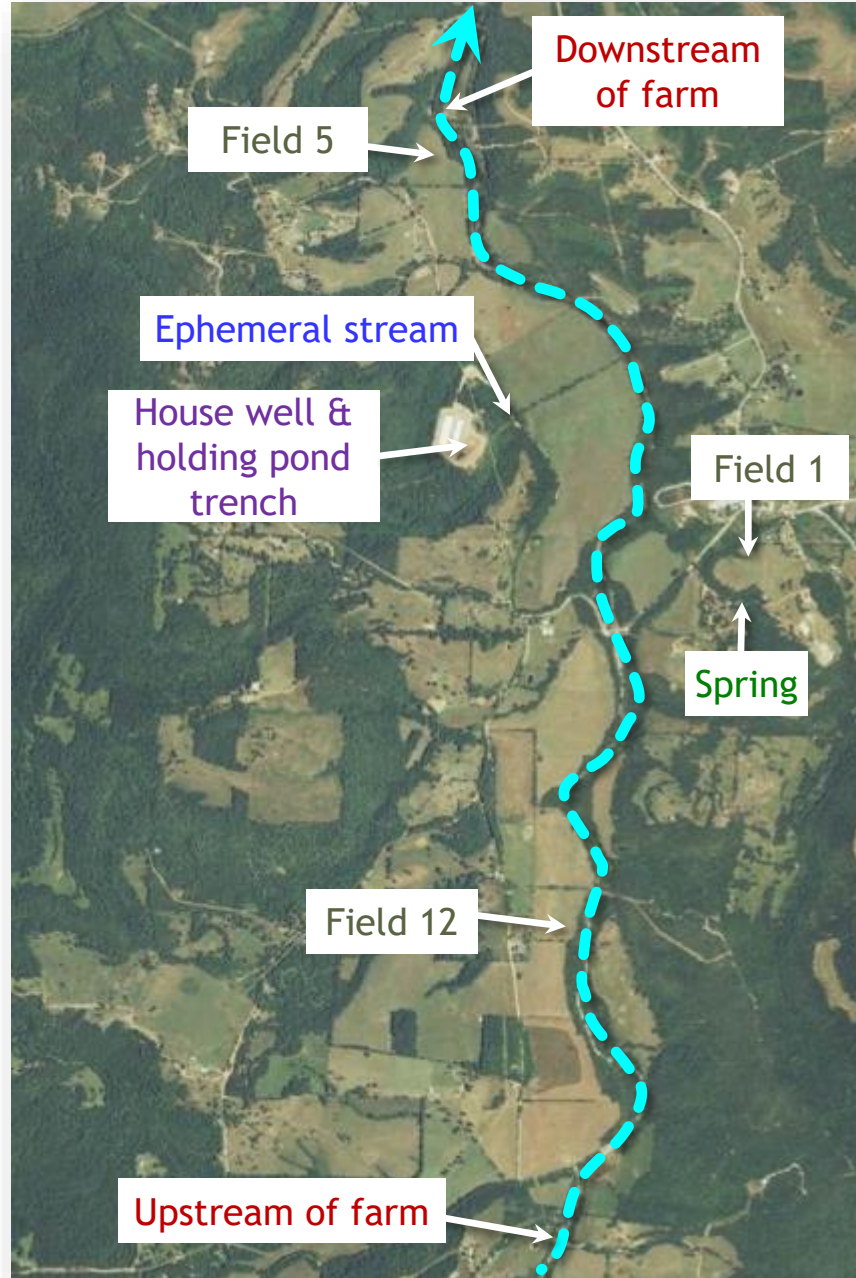


Headwaters Big  
Creek Watershed  
HUC: 110100050302

- Big Creek
- Buffalo River
- White River
- Headwaters Big Creek Watershed
- Buffalo River National Park
- Buffalo River Watershed



# Water sample collection locations





# Water sample collection locations, Buffalo River Watershed



## Upstream site



Upstream of farm



# Water sample collection locations

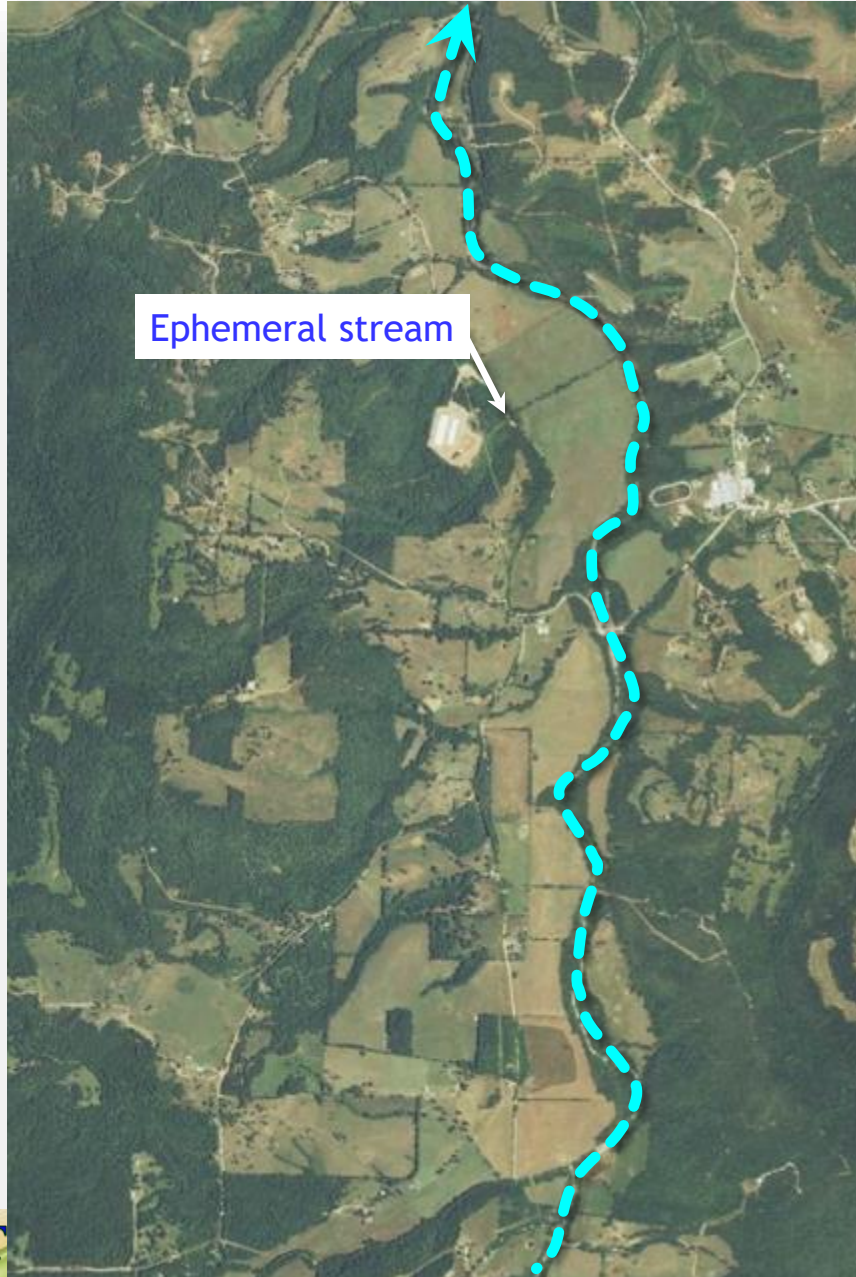


## Downstream site





# Water sample collection locations

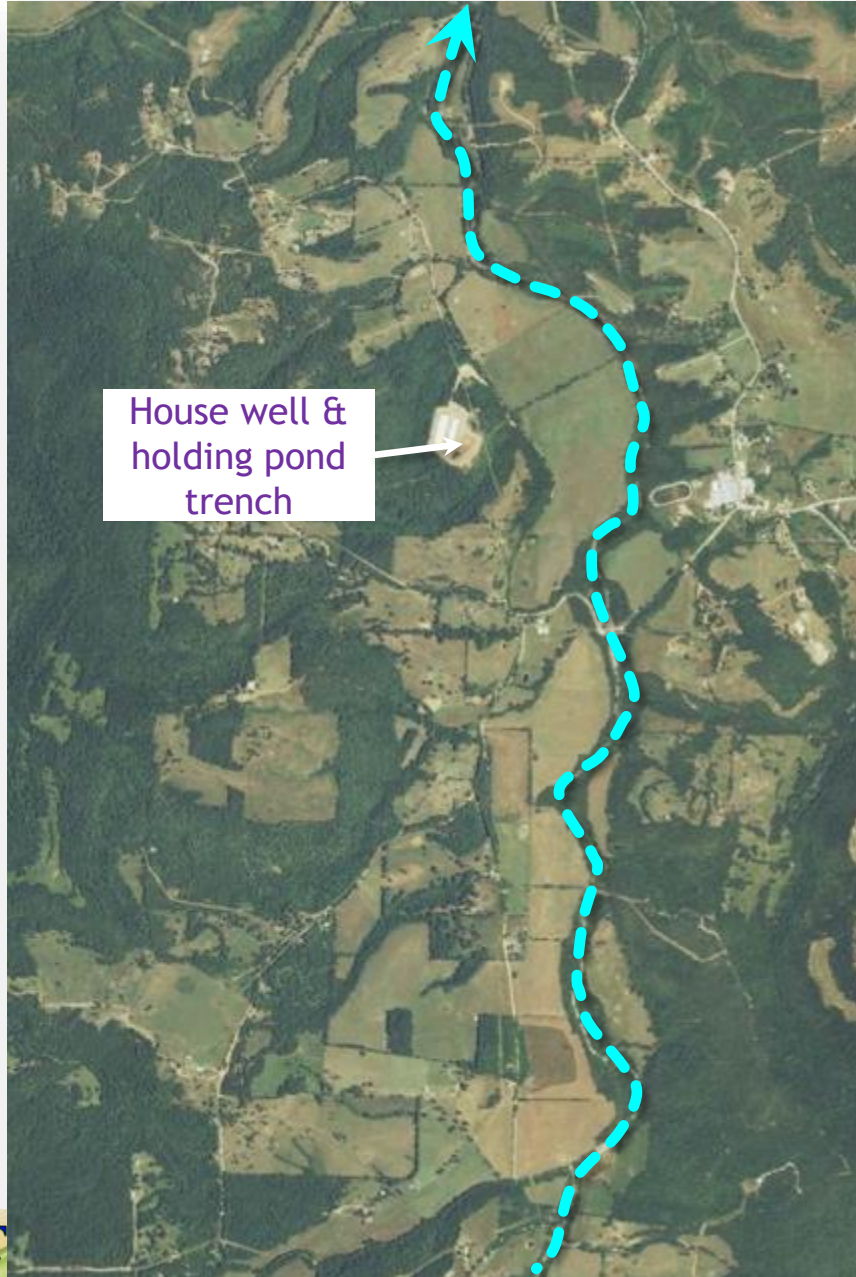


## Ephemeral stream





# Water sample collection locations

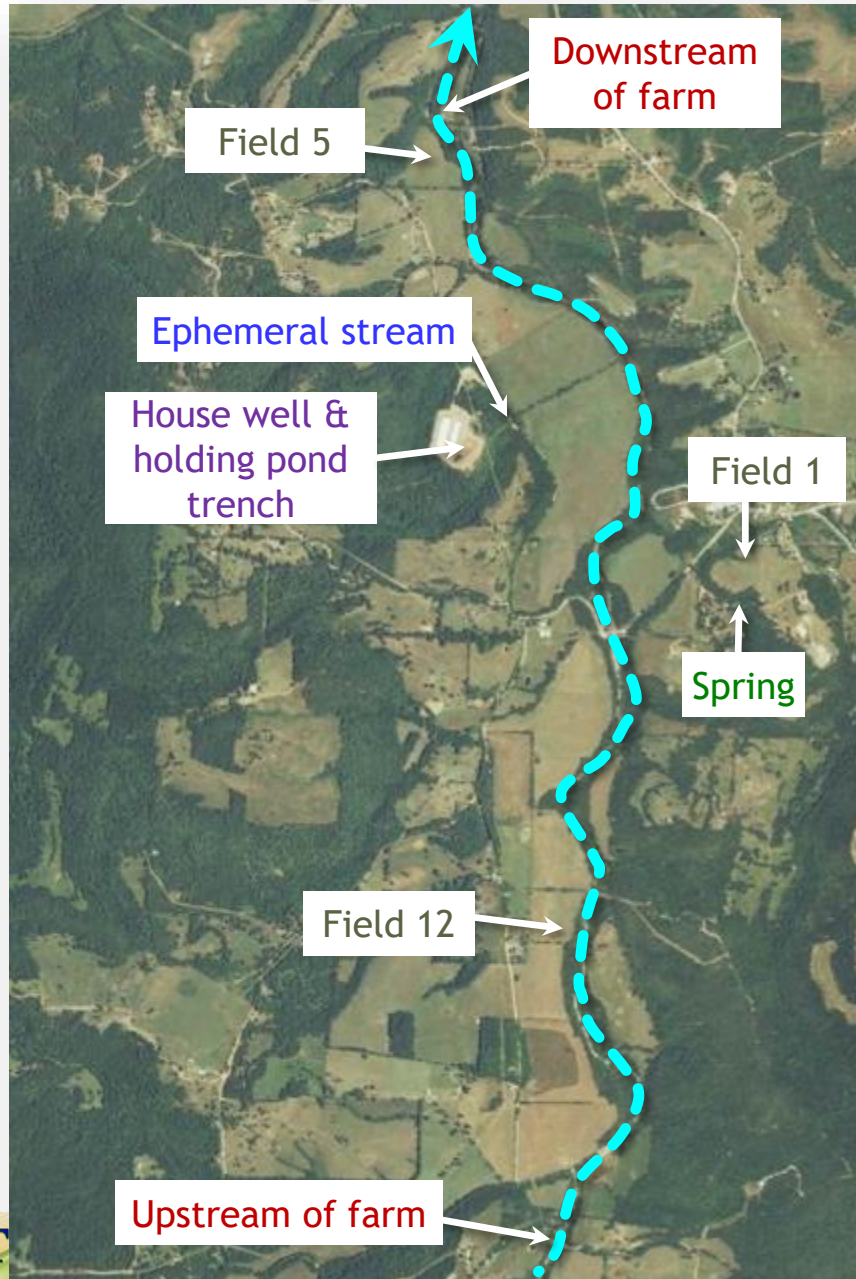


## Interceptor trenches





# Water sample collection locations



## Water quality assessment

- Storm & weekly sampling of base flow for
  - N, P, sediment, bacteria
- Field runoff from 2 application fields & 1 control

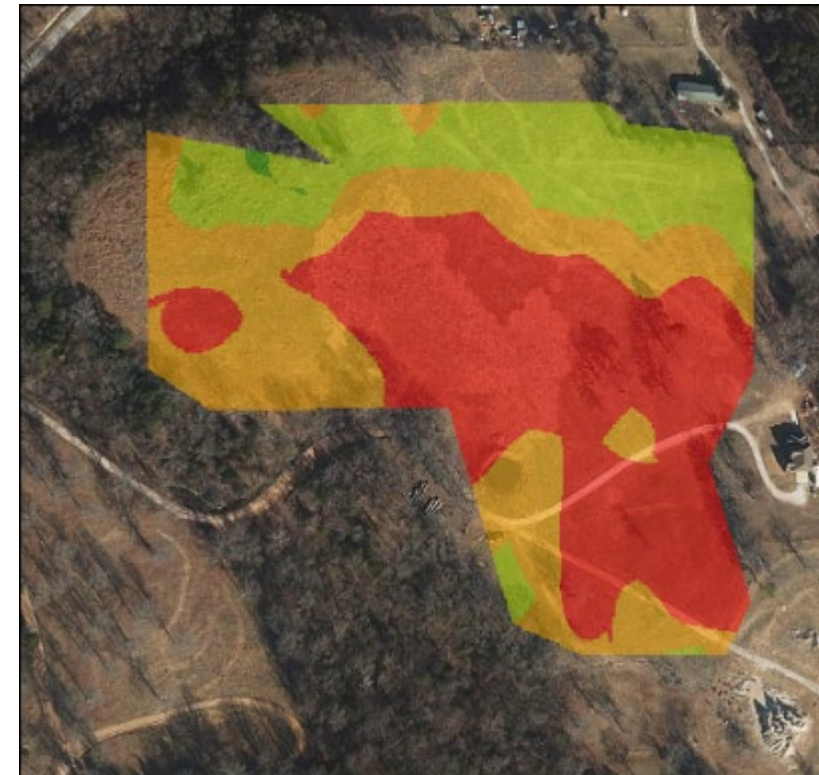
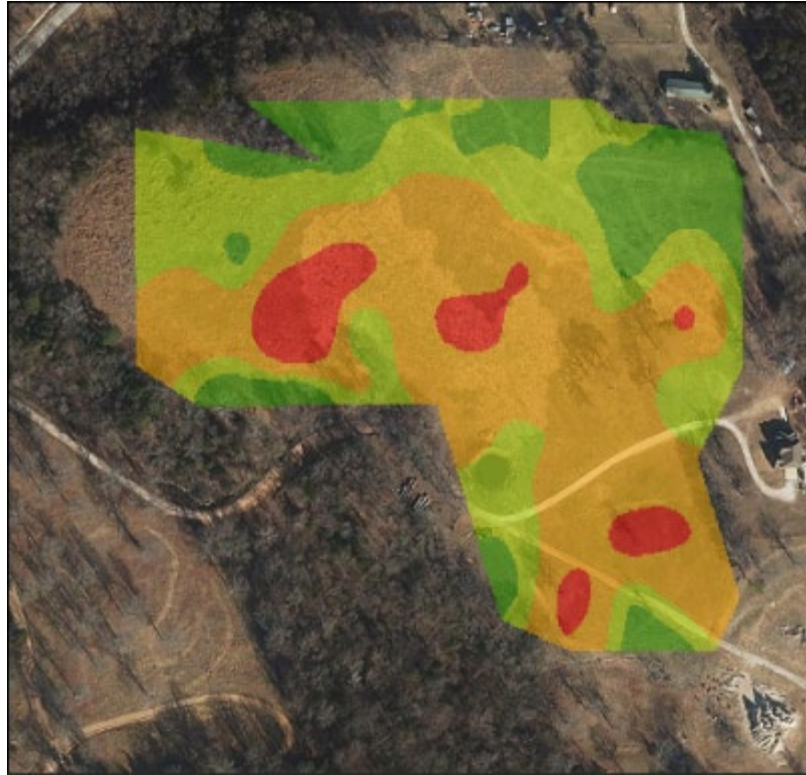
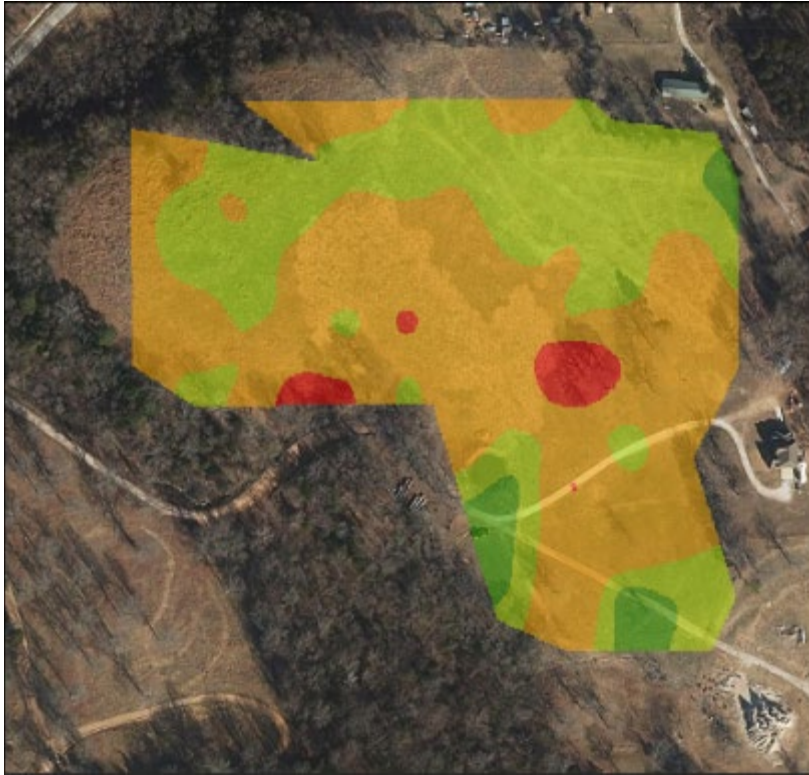


# Field 1: Soil test P of 0 to 4 inches

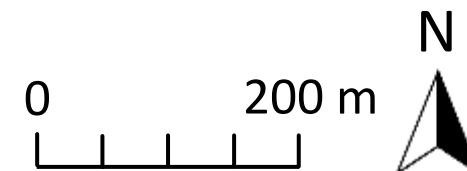
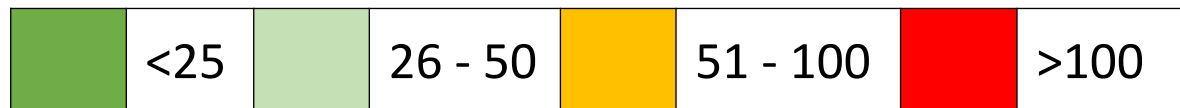
2014

2016

2018



Mehlich-3 extractable soil P, mg kg<sup>-1</sup>





# Field 12: Soil test P of 0 to 4 inches

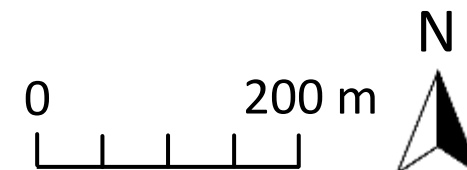
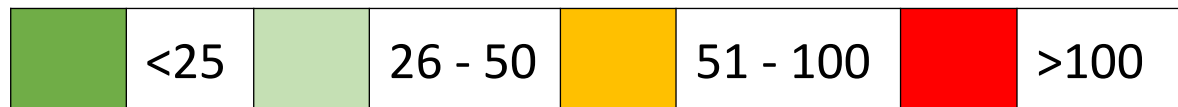
2014

2016

2018



Mehlich-3 extractable soil P, mg kg<sup>-1</sup>





# Field 5: Soil test P of 0 to 4 inches

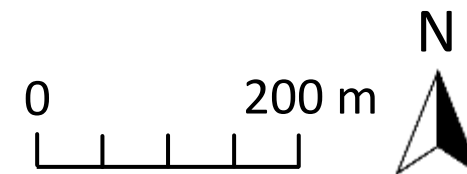
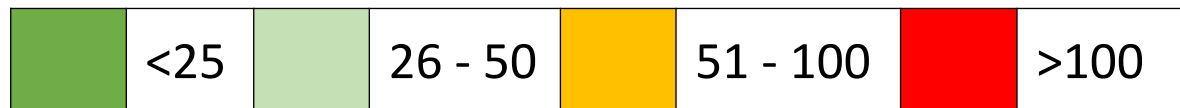
2014

2016

2018

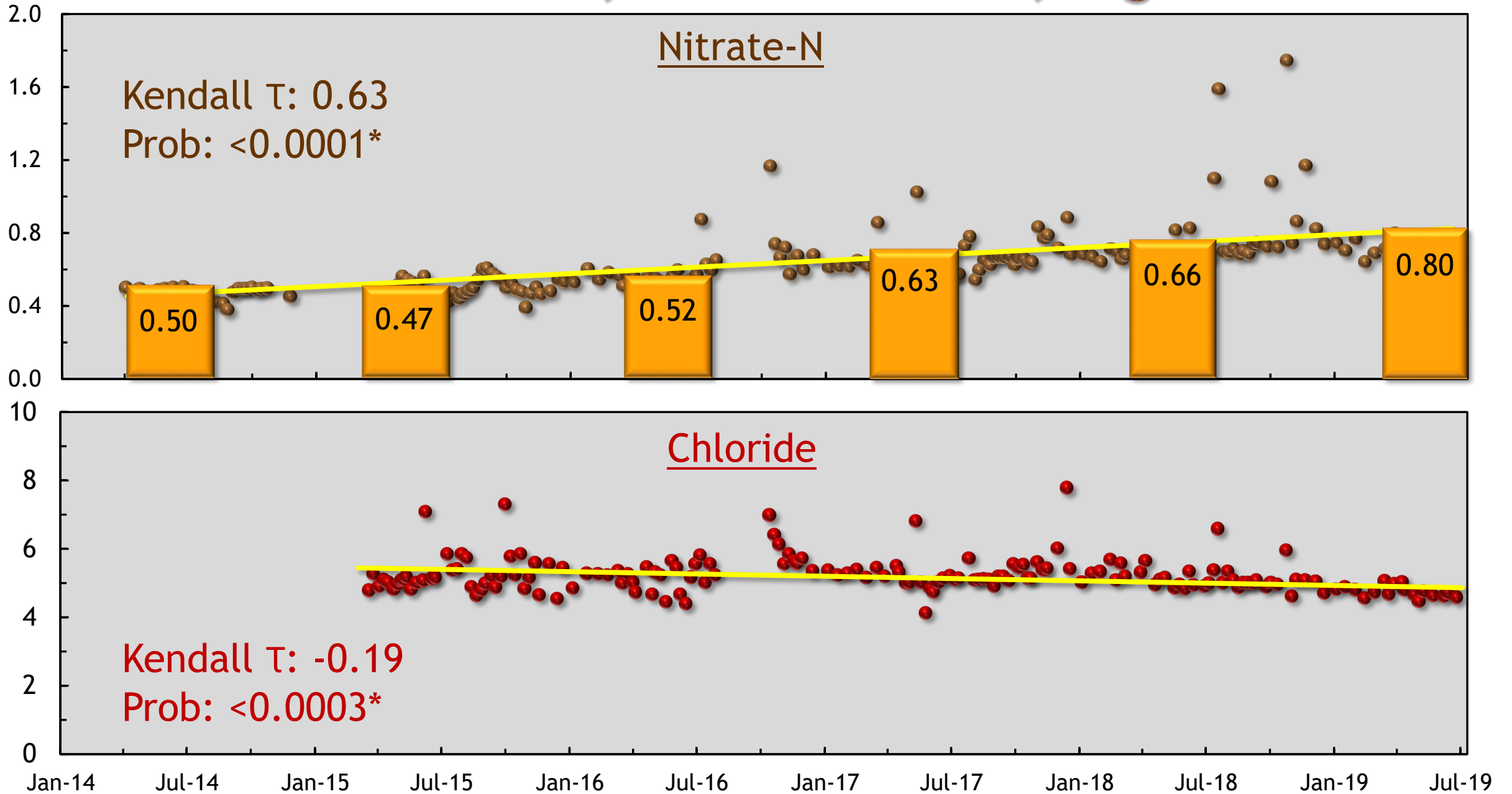


Mehlich-3 extractable soil P, mg kg<sup>-1</sup>

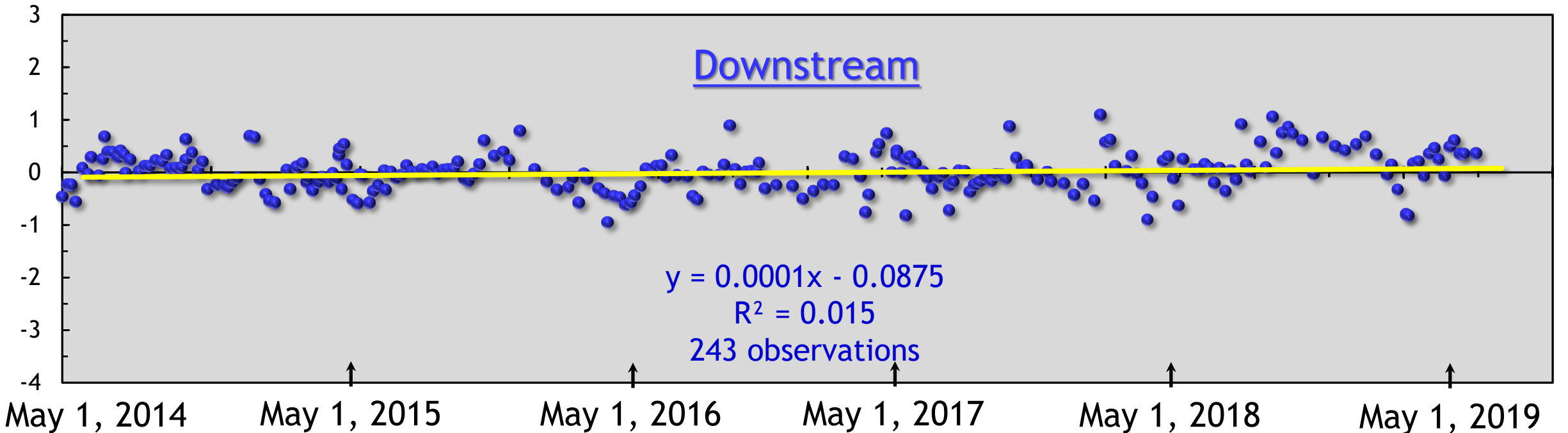
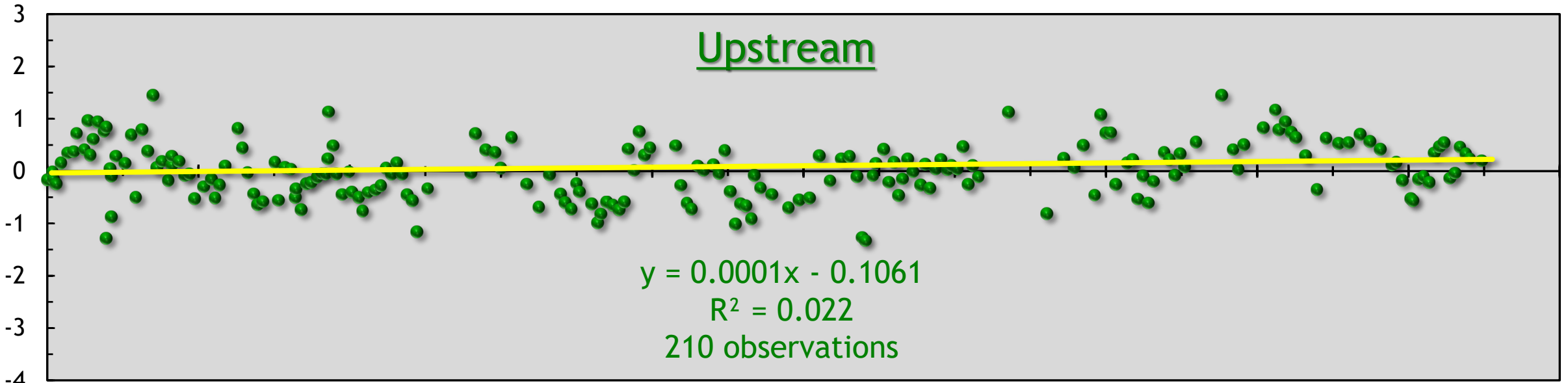




# Well water, concentration, mg/L

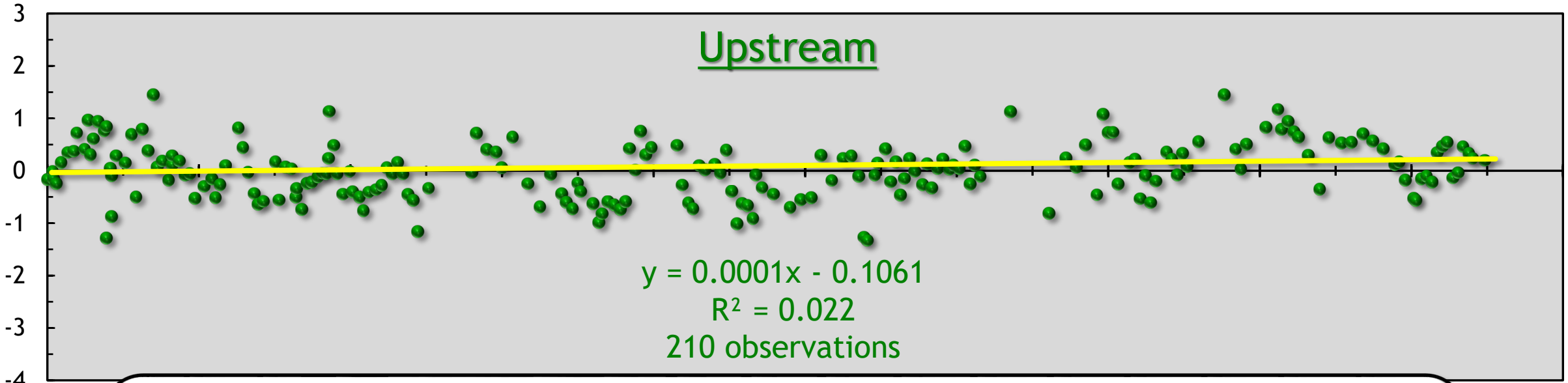


# Big Creek - flow adjusted nitrate-N concentration, mg/L

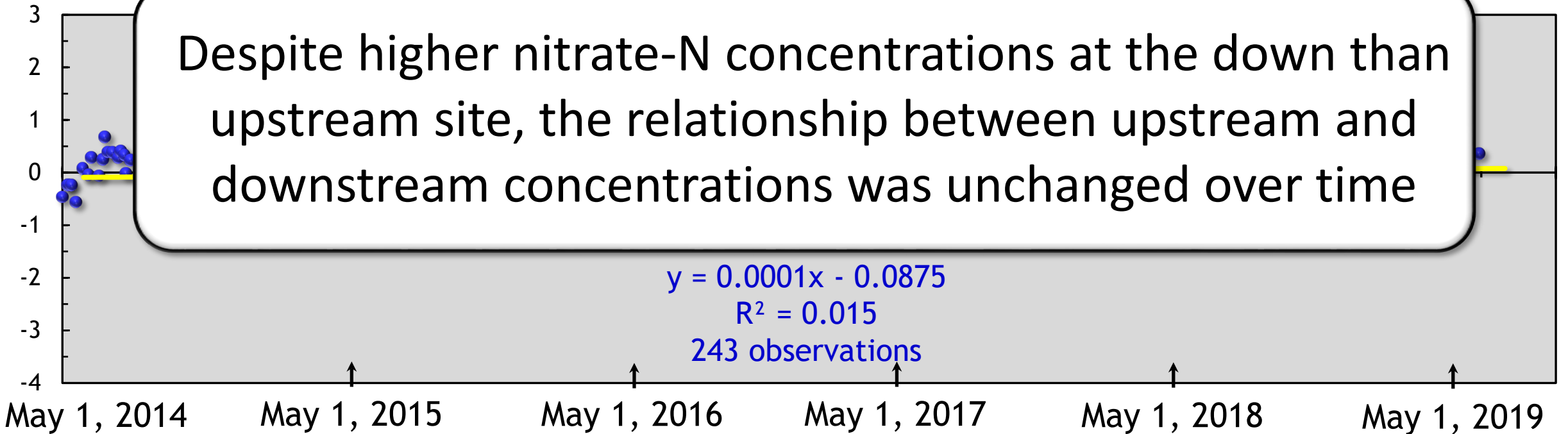




# Big Creek - flow adjusted nitrate-N concentration, mg/L



Despite higher nitrate-N concentrations at the down than upstream site, the relationship between upstream and downstream concentrations was unchanged over time

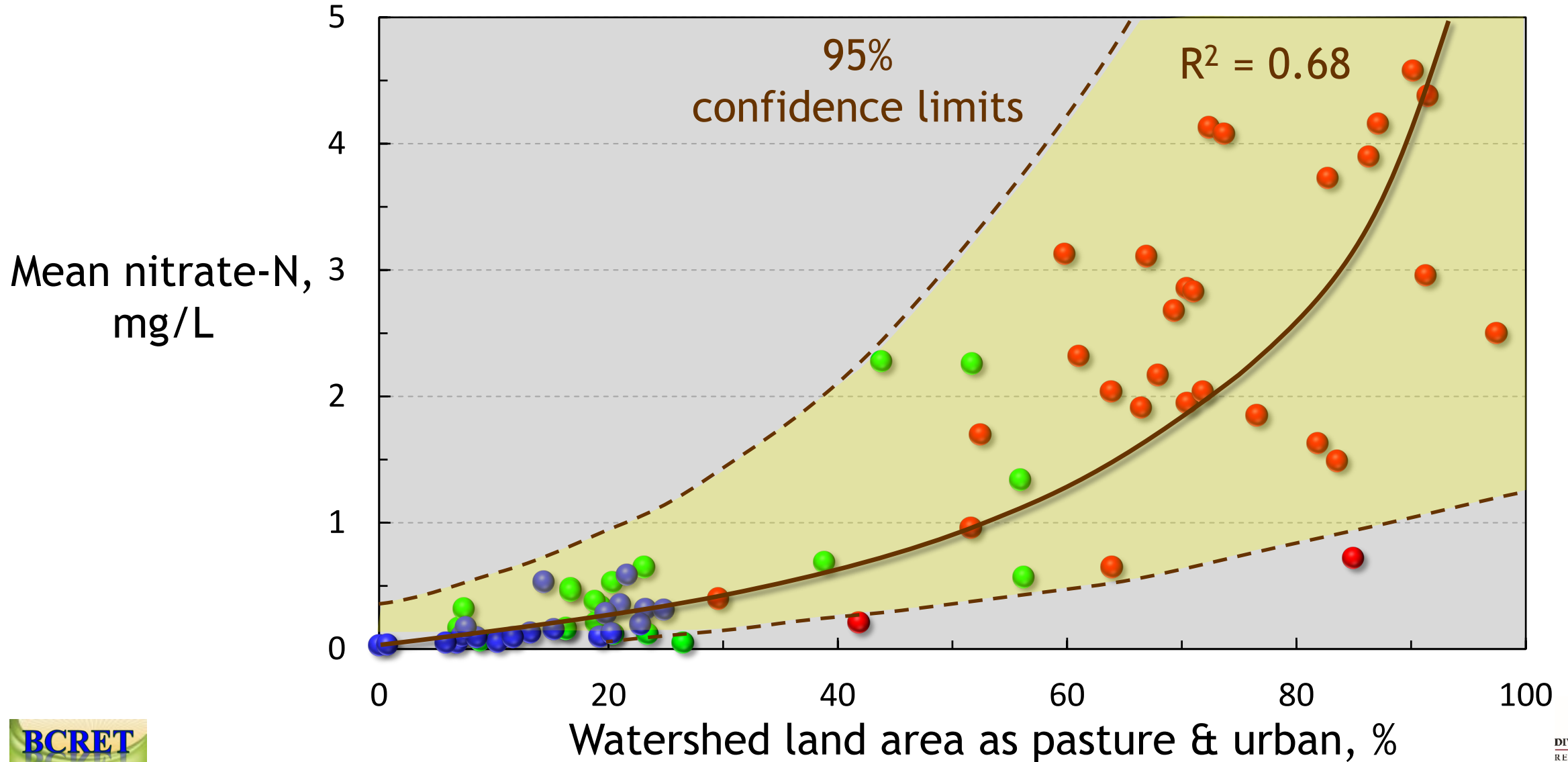


# Putting this into a regional context

Beaver Reservoir Watershed

Buffalo River Watershed

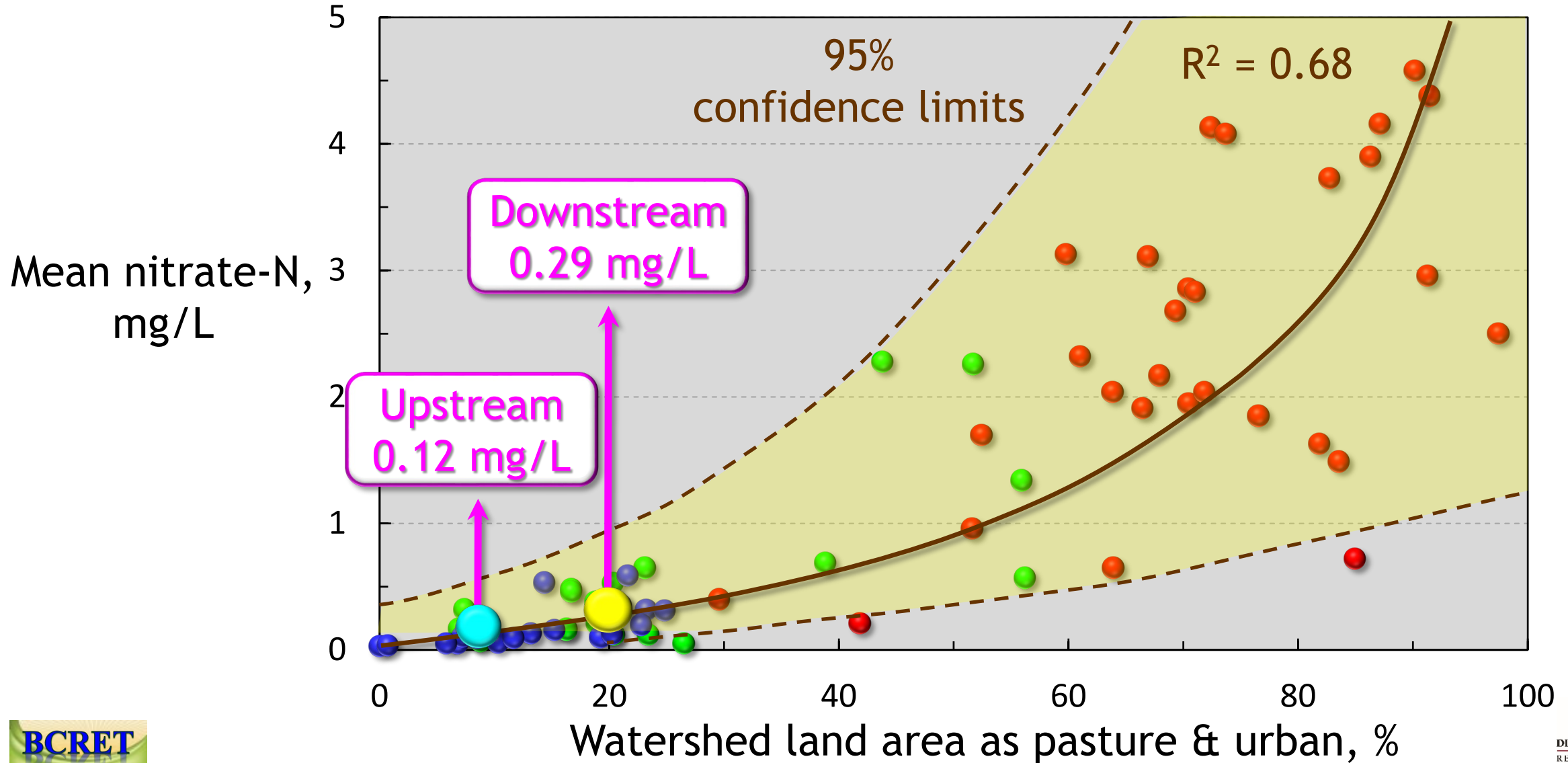
Illinois River Watershed





# Putting this into a regional context

Mean nitrate-N in Big Creek up & downstream of farm over monitoring period







**Details can be found at:**

<http://www.bigcreekresearch.org>

