

Big Creek Research & Extension Team Update

Andrew Sharpley

Soil & water quality, watershed mgt.

July 10th, 2017 -Joint meeting of

Senate Committee on Public Health, Welfare, and Labor

House Committee on Public Health, Welfare, and Labor

Senate Committee on Agriculture, Forestry, and Economic Development

House Committee on Agriculture, Forestry, and Economic Development

Mary Savin

Structure & function of microbial communities

Karl VanDevender

Extension engineer, manure mgt. & planning

Adam Willis

County Extension Agent - Agriculture

Field technicians

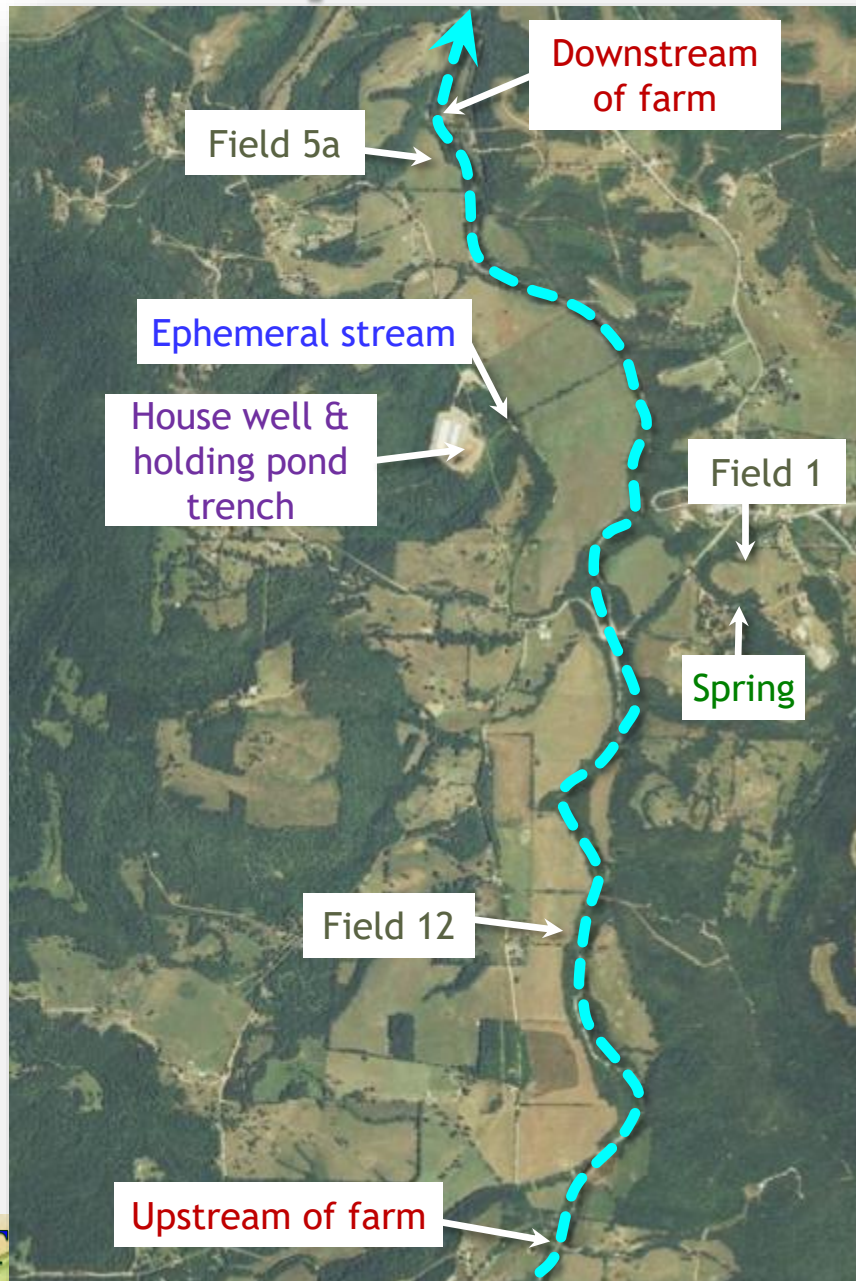
Equipment construction, soil & water sampling experts

C&H Hog Operation

Approach & Tasks

- ✓ Developed monitoring network at field, farm, & watershed scale to determine impact of farm operations on Big Creek water quality
- ✓ Evaluate manure management system & nutrient management plan
- ✓ Characterize soil chemical properties on 3 application fields using grid soil sampling every 2 years
- ✓ Monitor slurry holding pond leakage with inceptor trenches
- ✓ Minimum of 5 years monitoring needed

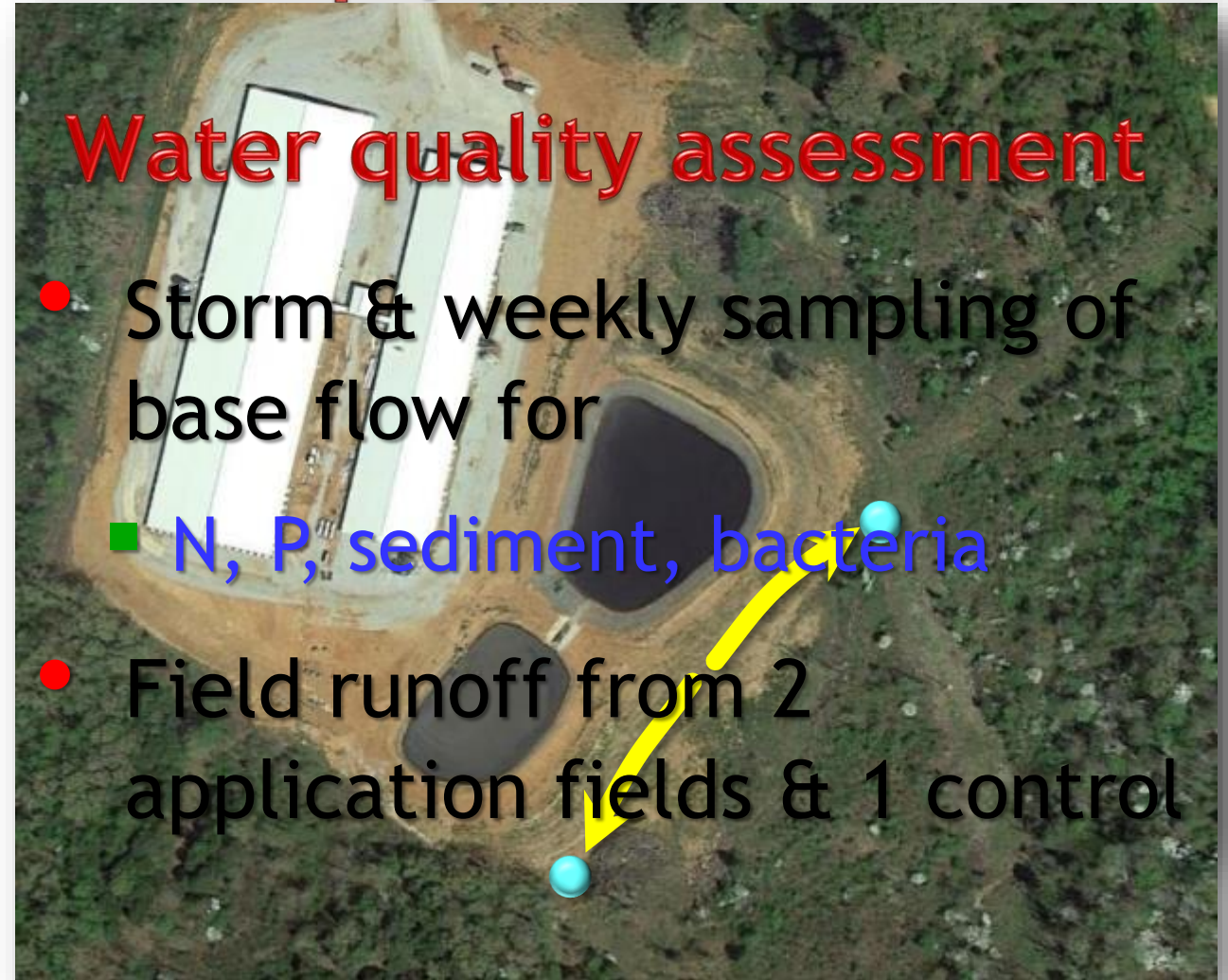
Water sample collection locations



Holding pond & trench

Water quality assessment

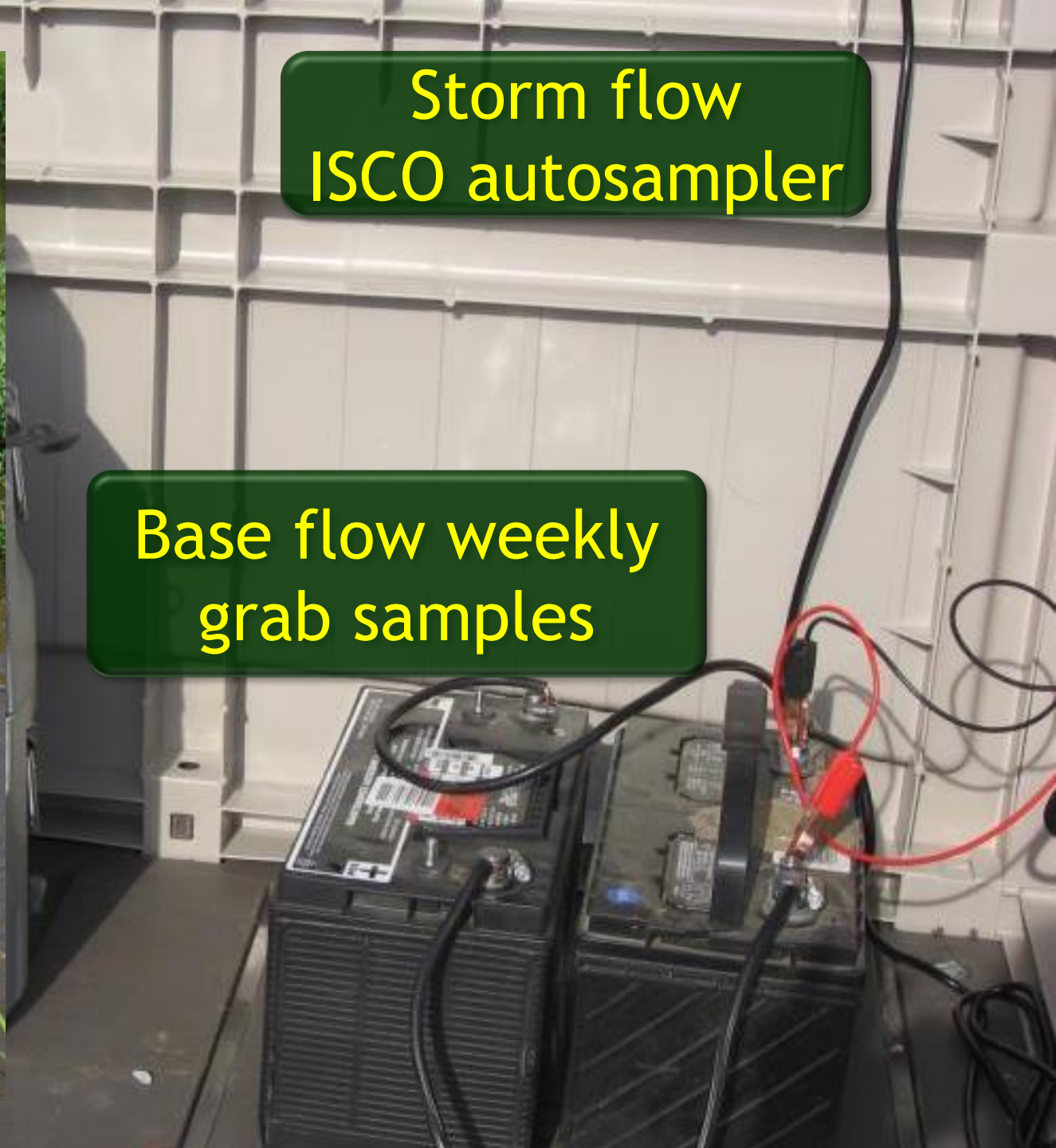
- Storm & weekly sampling of base flow for
 - N, P, sediment, bacteria
- Field runoff from 2 application fields & 1 control





Storm flow
ISCO autosampler

Base flow weekly
grab samples



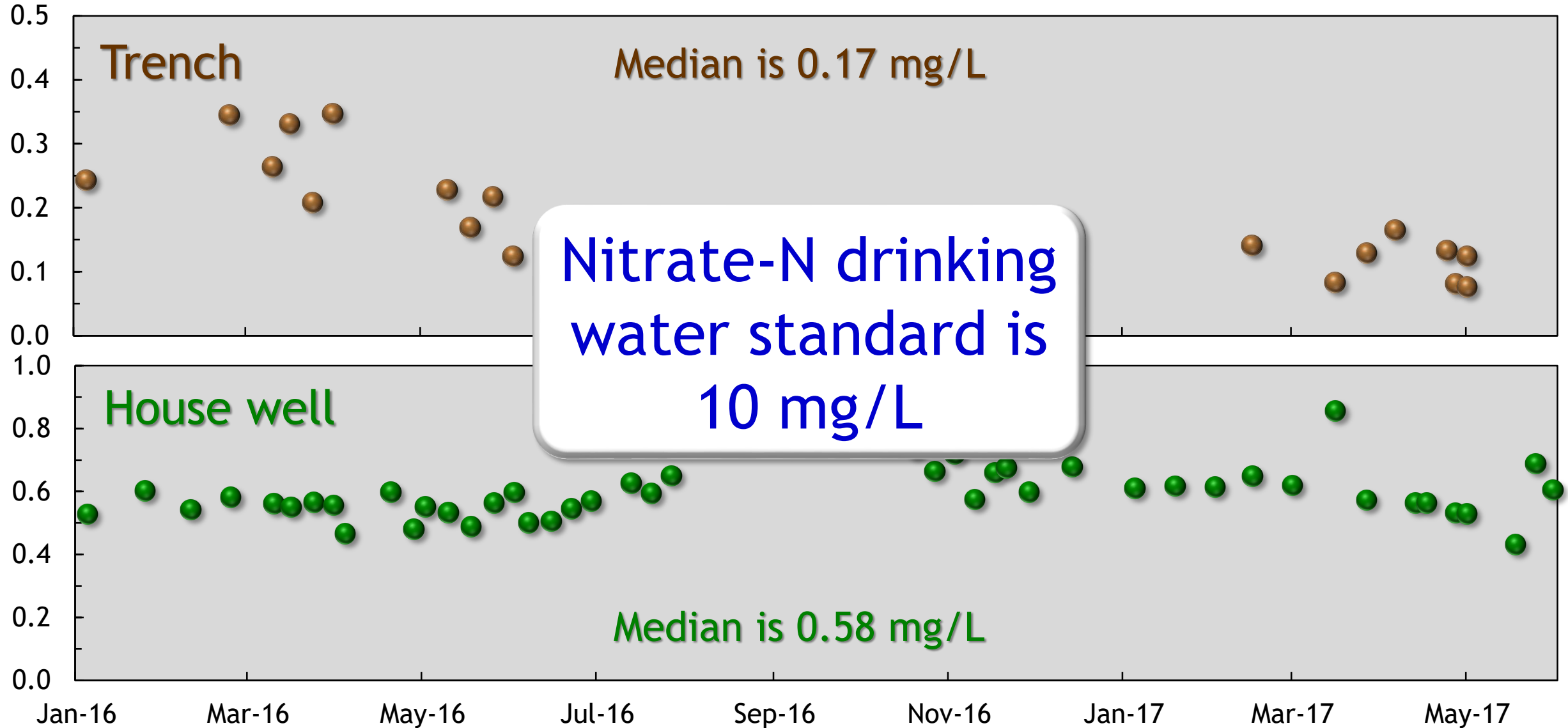
What have we found so far?



Holding pond inceptor trench



Nitrate-N, mg/L



Mean annual surface runoff loss

Site	P added	Total P runoff	P loss	N added	Total N runoff	N loss
	kg/ha		%	kg/ha		%
Field 1	13	0.011	0.1	30	0.023	0.1
Field 5a	113	0.284	0.2	42	0.439	0.6
Field 12	17	0.020	0.1	38	0.046	0.1

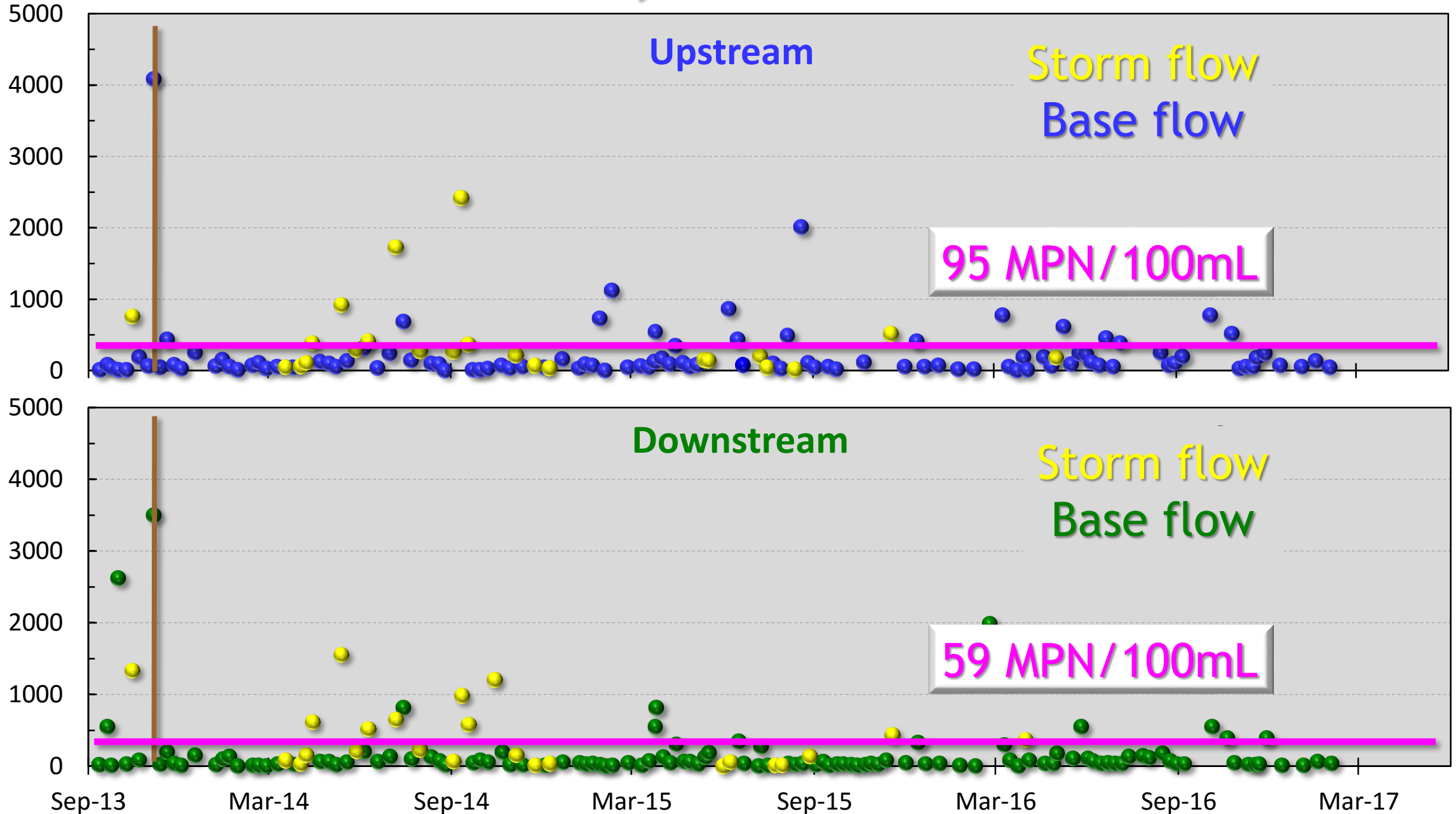
Field 5a received mineral fertilizer & poultry litter but no swine slurry

Big Creek monitoring

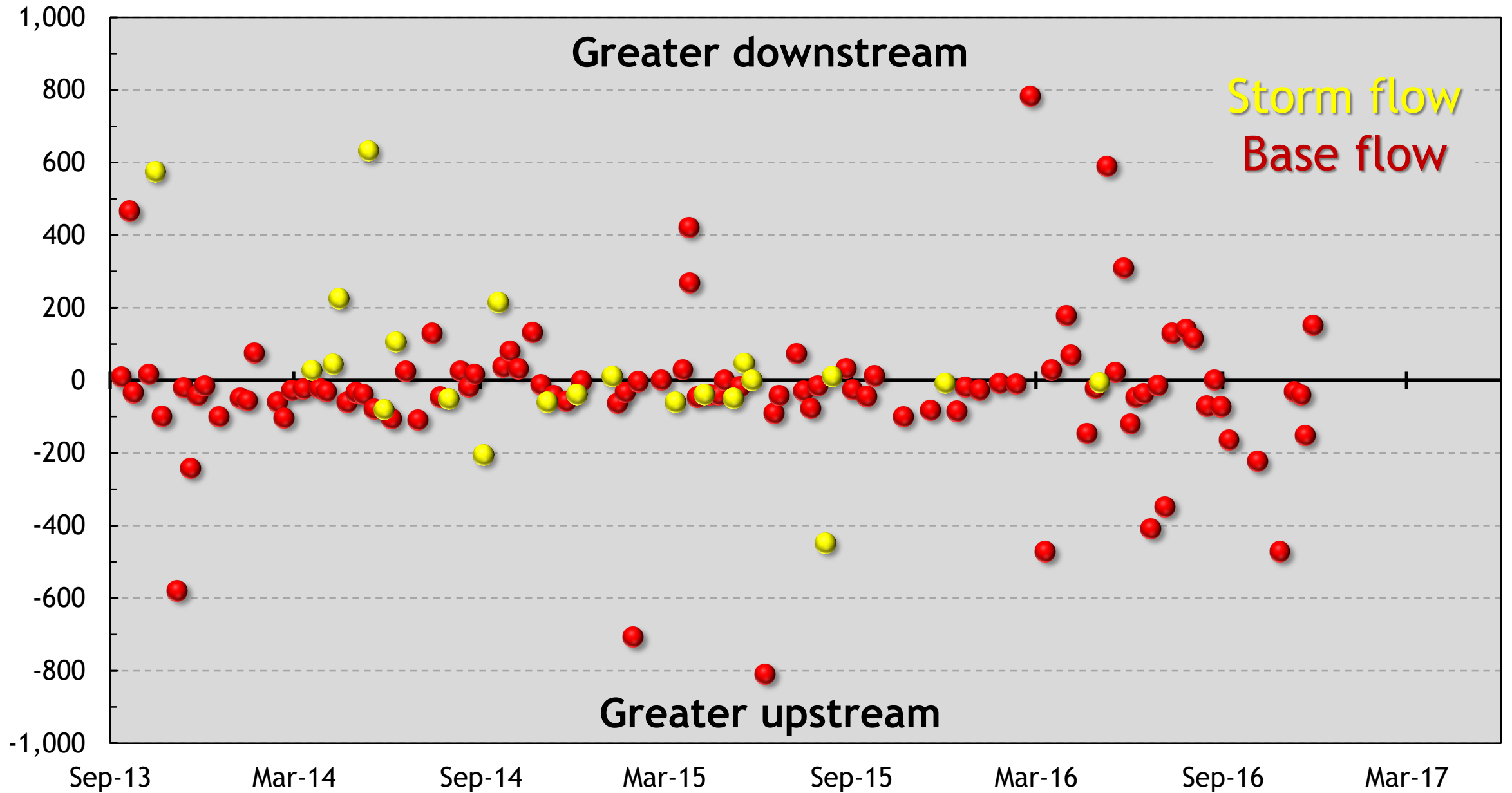


Initial slurry application

E. coli, MPN/100mL

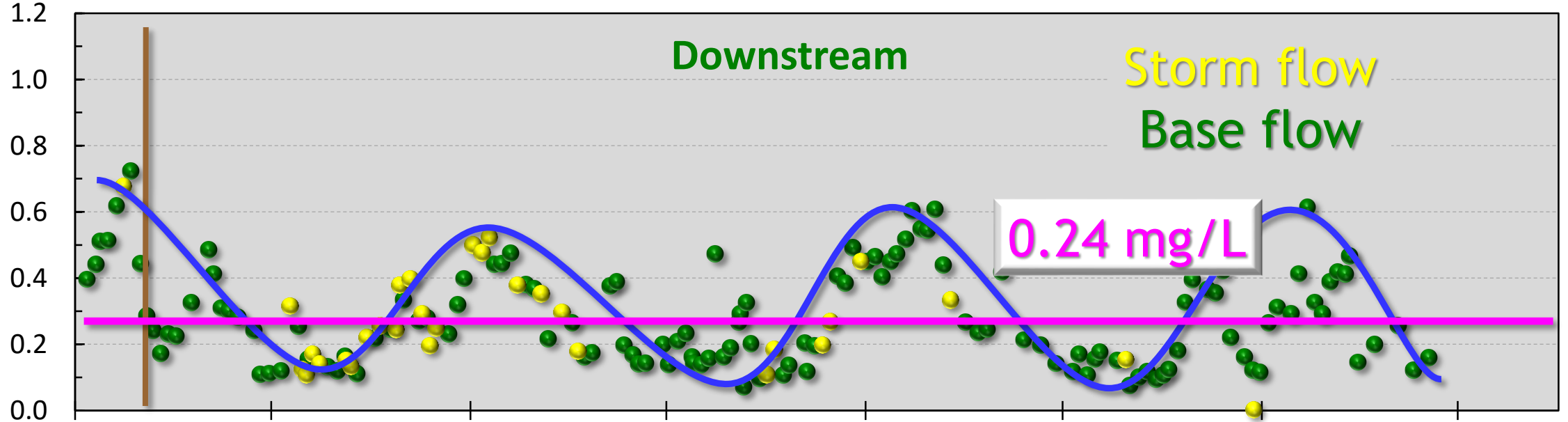
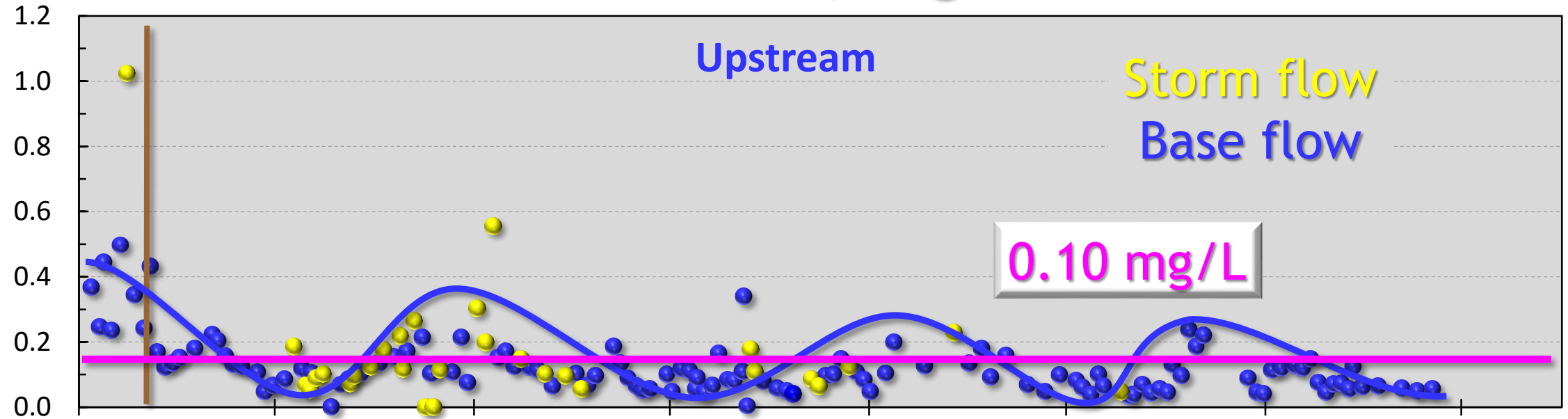


E. coli, MPN/100mL



Initial slurry application

Nitrate-N, mg/L



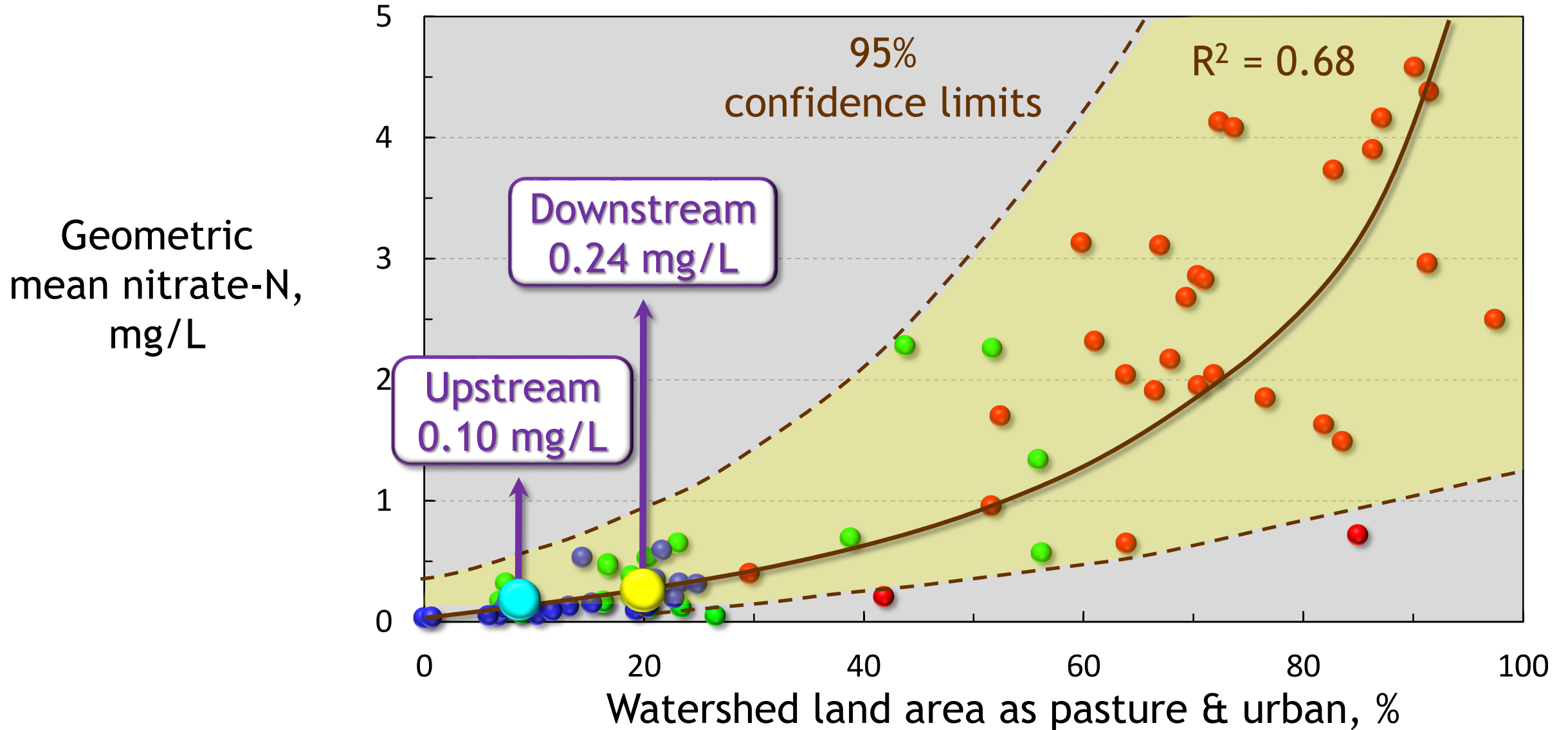
Sep-13 Mar-14 Sep-14 Mar-15 Sep-15 Mar-16 Sep-16 Mar-17

Putting this into a regional context

Beaver Reservoir Watershed

Buffalo River Watershed

Illinois River Watershed





What have we learnt so far?

- No build-up of P in surface soil from slurry application
- Soil P accumulation in cattle feeding & loafing areas
- No evidence of slurry holding pond leakage to date
- No consistent water quality trends to date
- Continue to provide transparent, unbiased science for landowner & State to make decisions

Thank you

<http://www.bigcreekresearch.org>

