



# Using Water Quality Monitoring to Assist Farmers in Developing Best Management Practices

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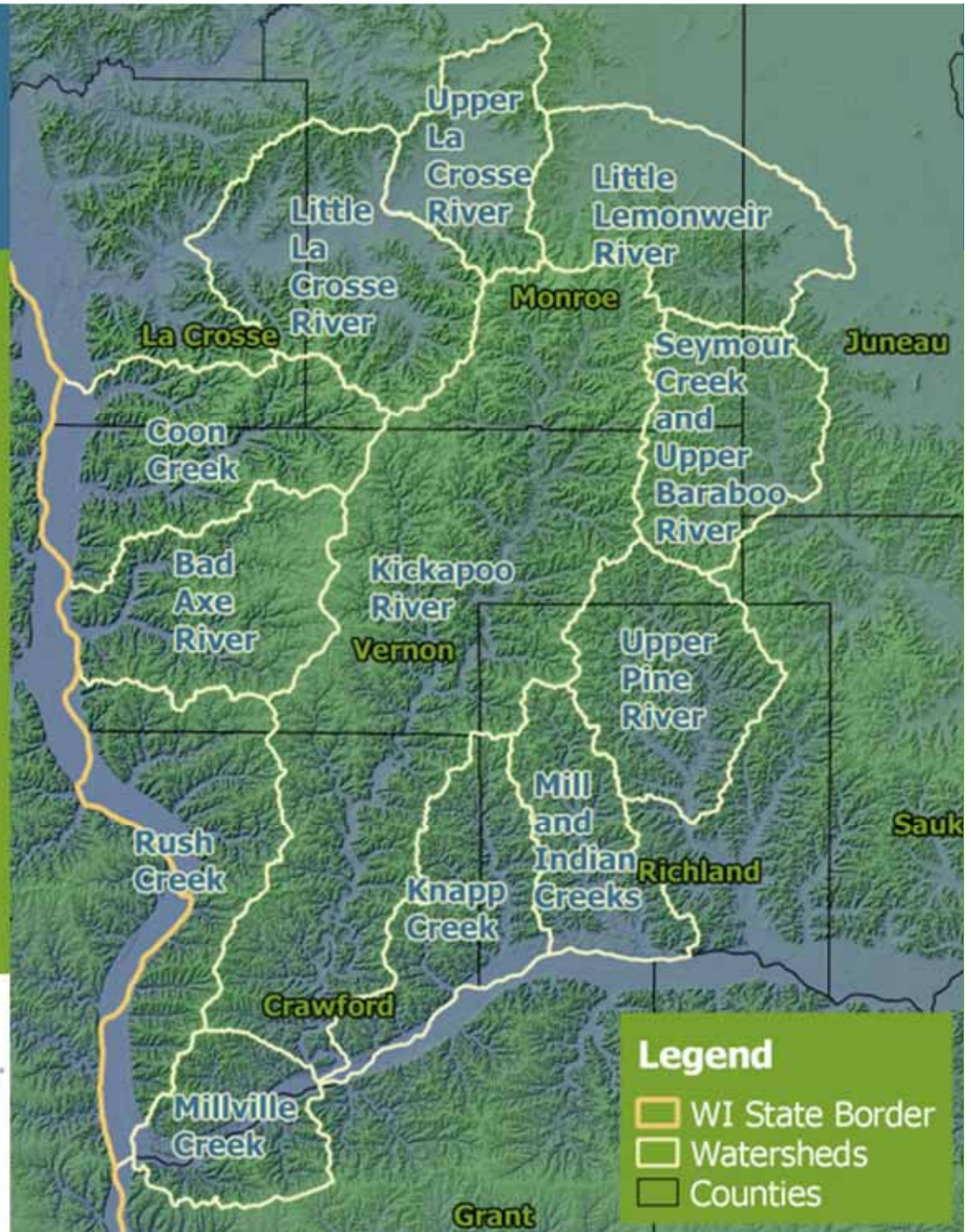
Shelly Brenneman, Programs Manager

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# Valley Stewardship Network

Protects and promotes healthy ecosystems and water quality through community engagement and education about sustainable land use.

**VALLEY**  
**STEWARDSHIP**  
— NETWORK —





# Water Action Volunteers

VSN involved with  
WAV for 15 years

- 200+ Trained
- 50+ Stations
- 25+ Active

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# “Measure to Manage” Monitoring in Partnership with Farmers & Landowners

Water Quality  
Monitoring

Soil Quality  
Research

Habitat and  
Wildlife  
Inventories

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# Grazing and Water Quality Pilot Project

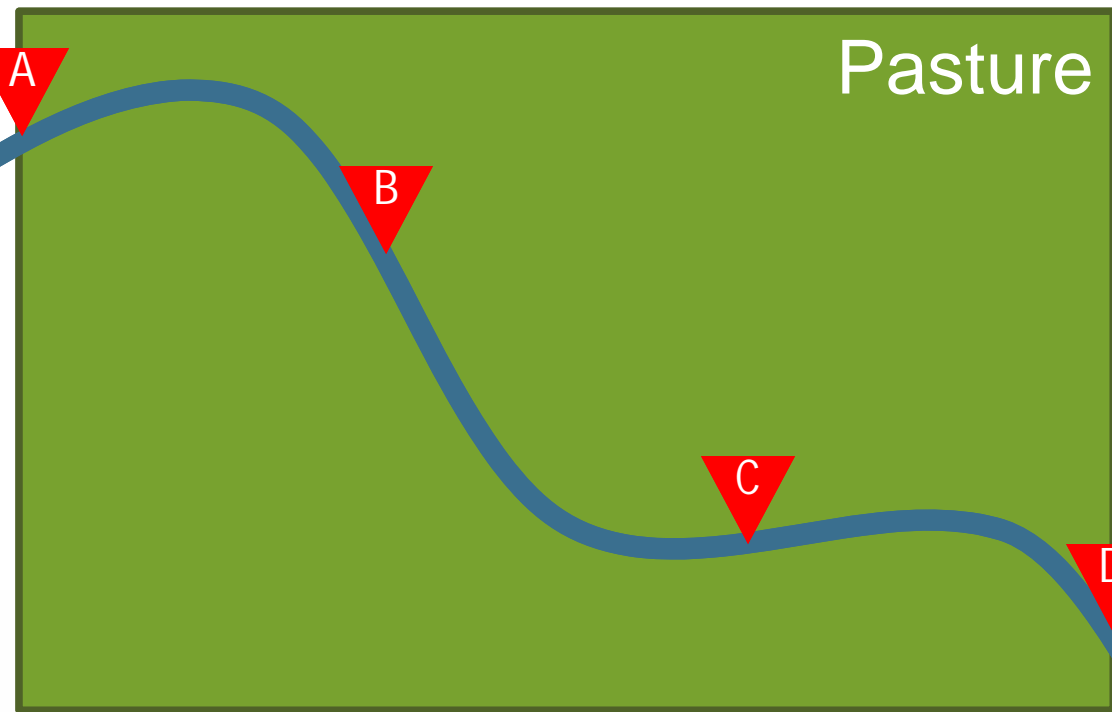
VSN staff and volunteers are conducting water quality monitoring on area farms to measure the relationships between water quality and rotational grazing and other land uses.



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# Experimental Design



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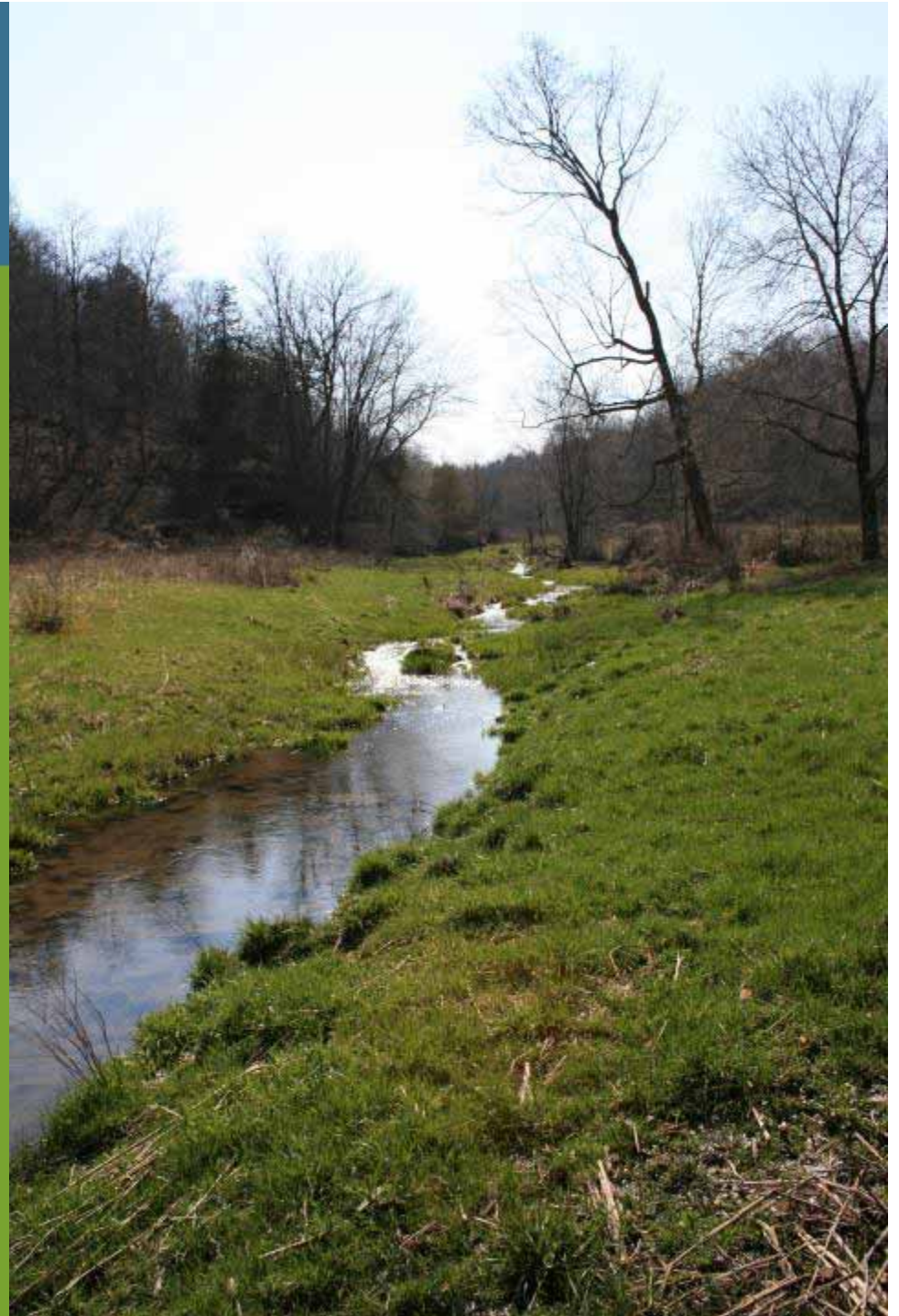




# Sampling Protocol

- **Standard WAV Protocol**
  - Dissolved Oxygen, Transparency, Water Temperature, pH
- **Phosphorus**
- **Monthly Sampling**
  - & following large rain events

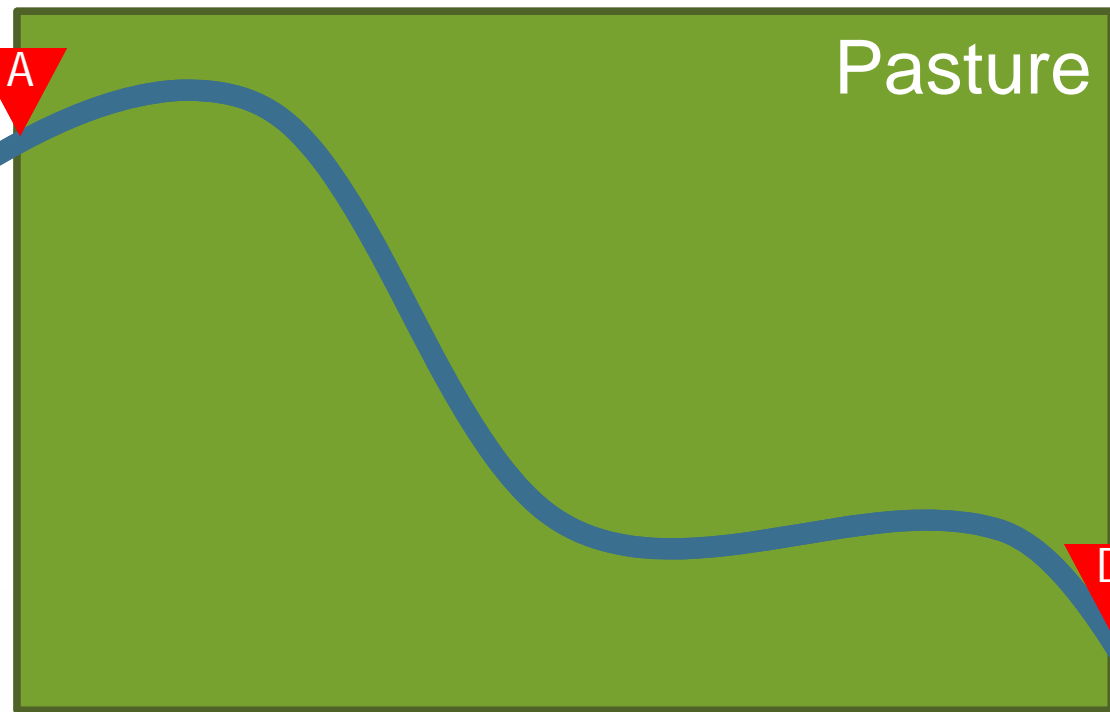
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# % Change in Water Quality - Whole Pasture

$$\frac{\text{D} - \text{A}}{\text{A}} * 100$$

= % Change





# Pasture Management

## 3 Pastures

### 1. Rotational – Frequent Movement

- Many paddocks
- Cattle moved every few days

### 2. Rotational – Less Frequent Movement

- Few paddocks
- Cattle moved less frequently

### 3. Continuous

- No paddocks
- Cattle have free access to pasture

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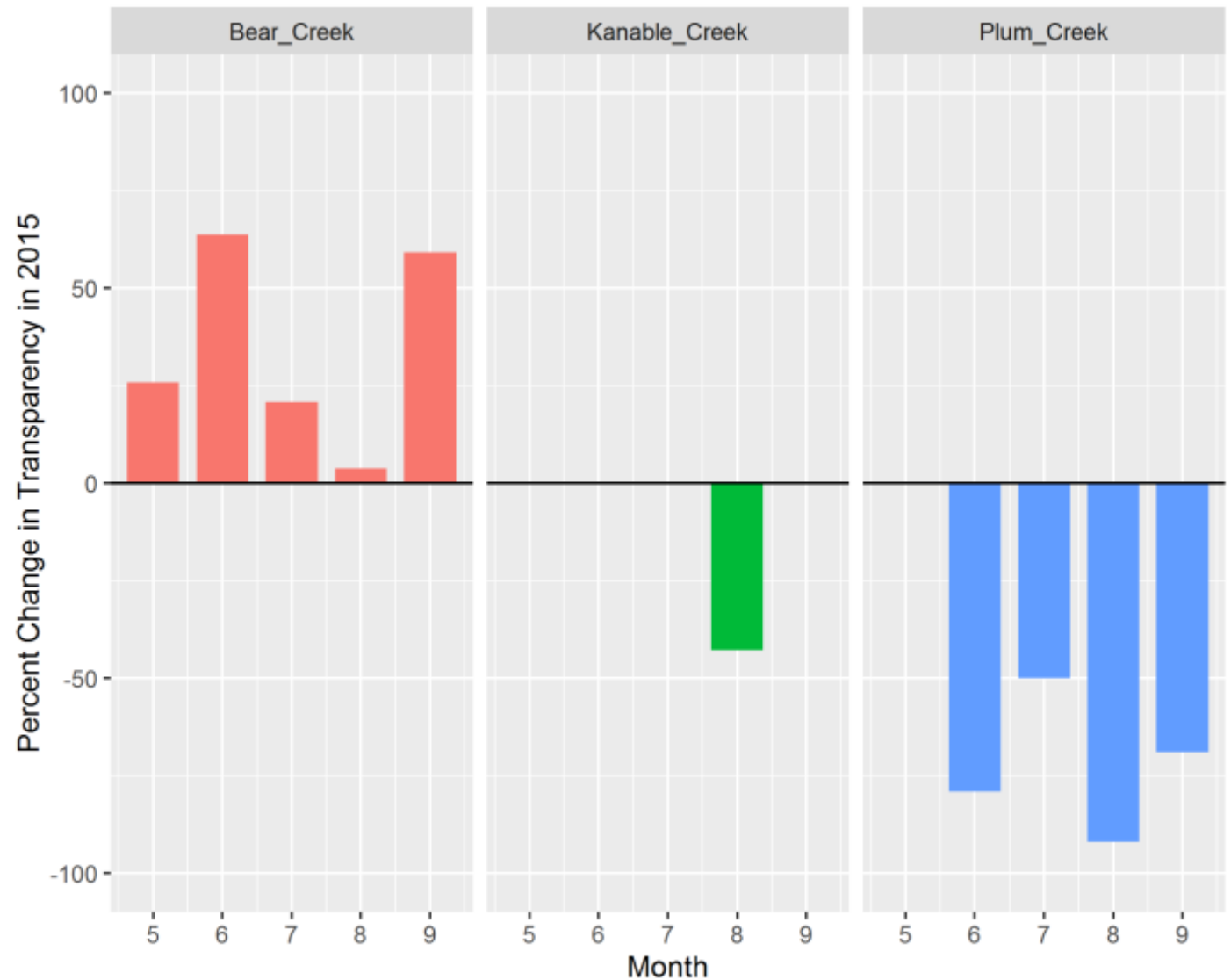


# Transparency Results

Rotational –  
Frequent  
Movement

Rotational –  
Less Frequent  
Movement

Continuous



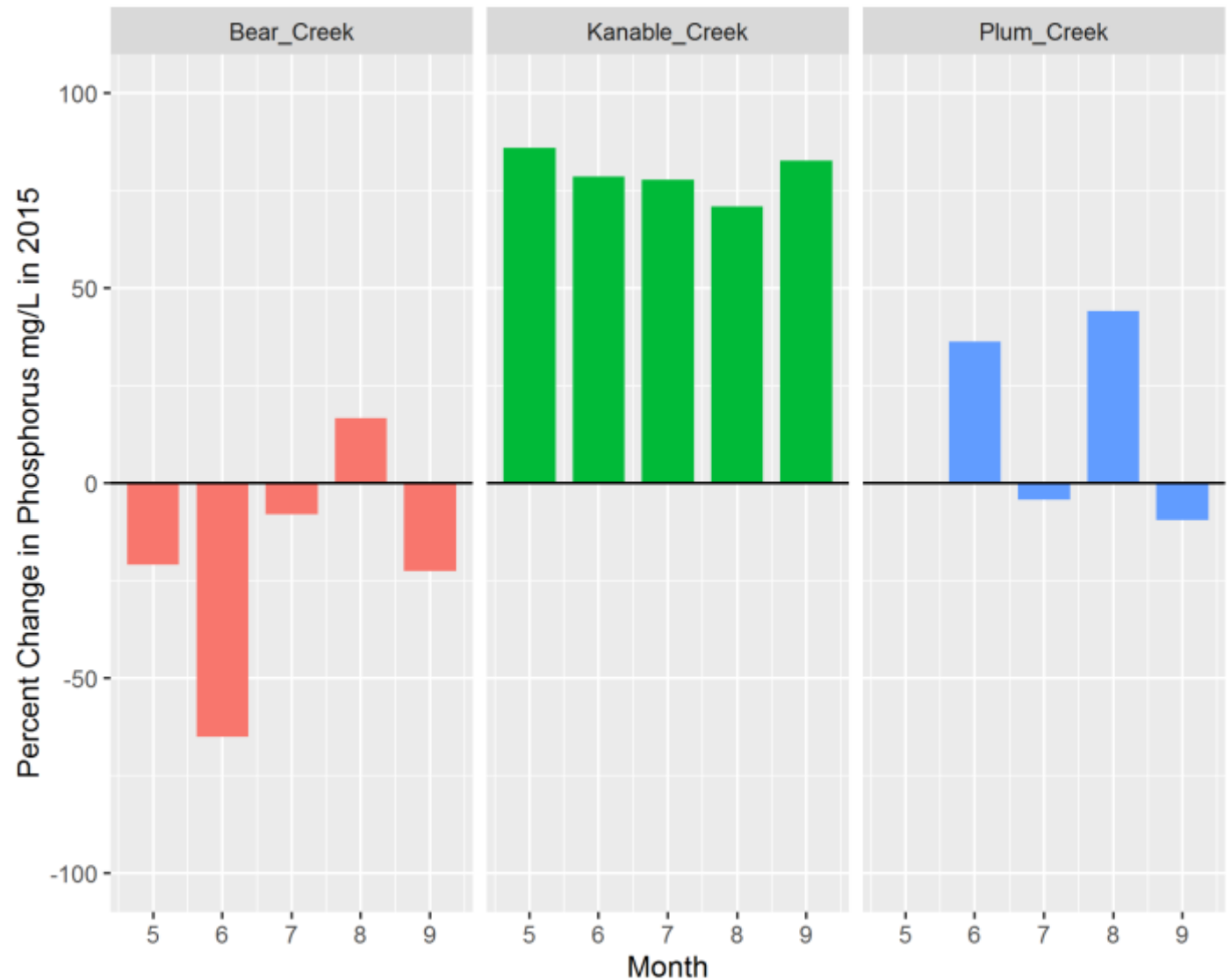


# Phosphorus Results

Rotational –  
Frequent  
Movement

Rotational –  
Less Frequent  
Movement

Continuous



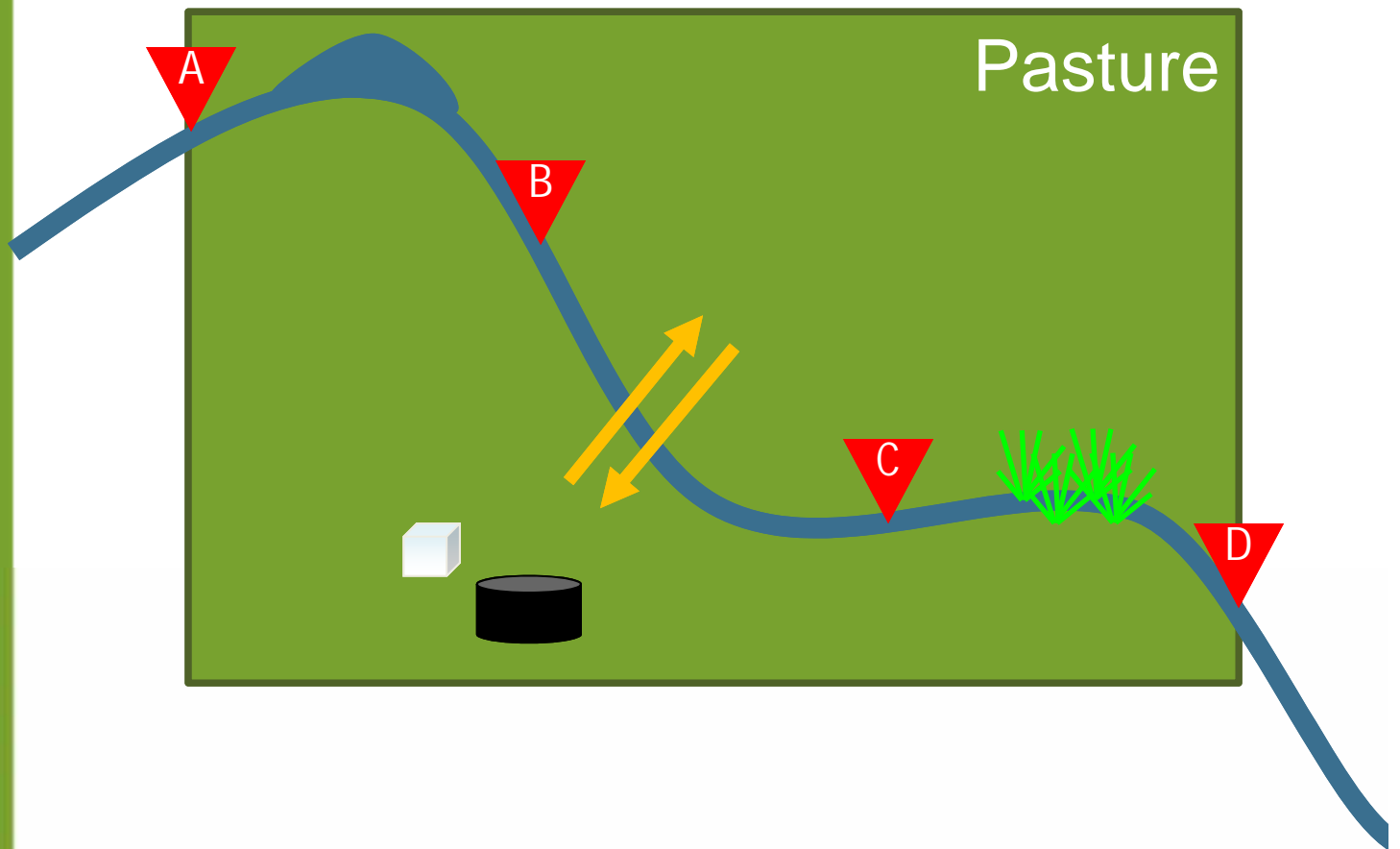
# Insights

- We were able to find some differences among pastures.
- At this point it is difficult to determine the cause of these differences.
- More quantitative measures of cattle activity within the pastures is needed.
- Several years of both pre and post management change is needed.





# Within Pasture Changes



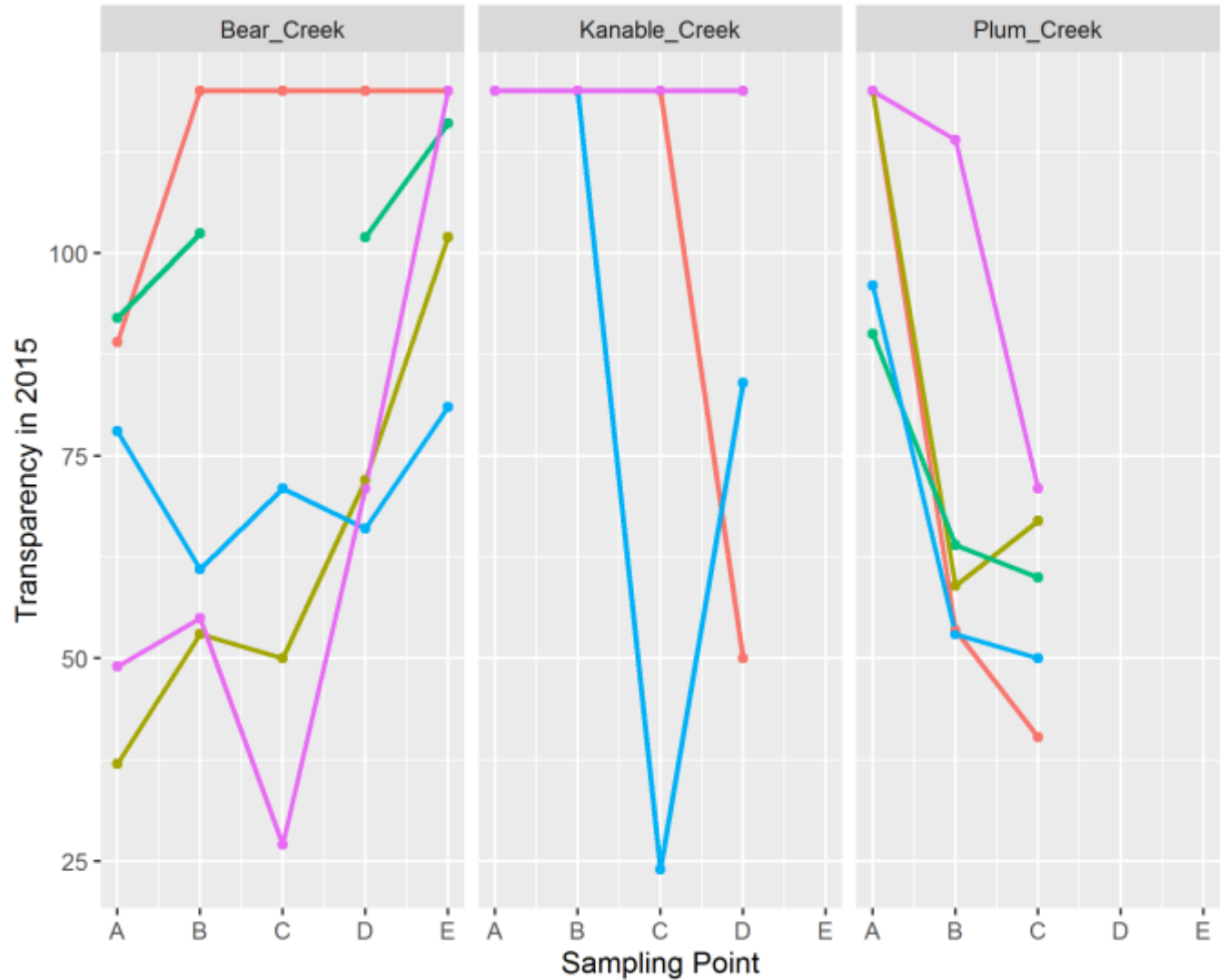
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# Within Pasture Results

## Month

- May
- June
- July
- August
- September

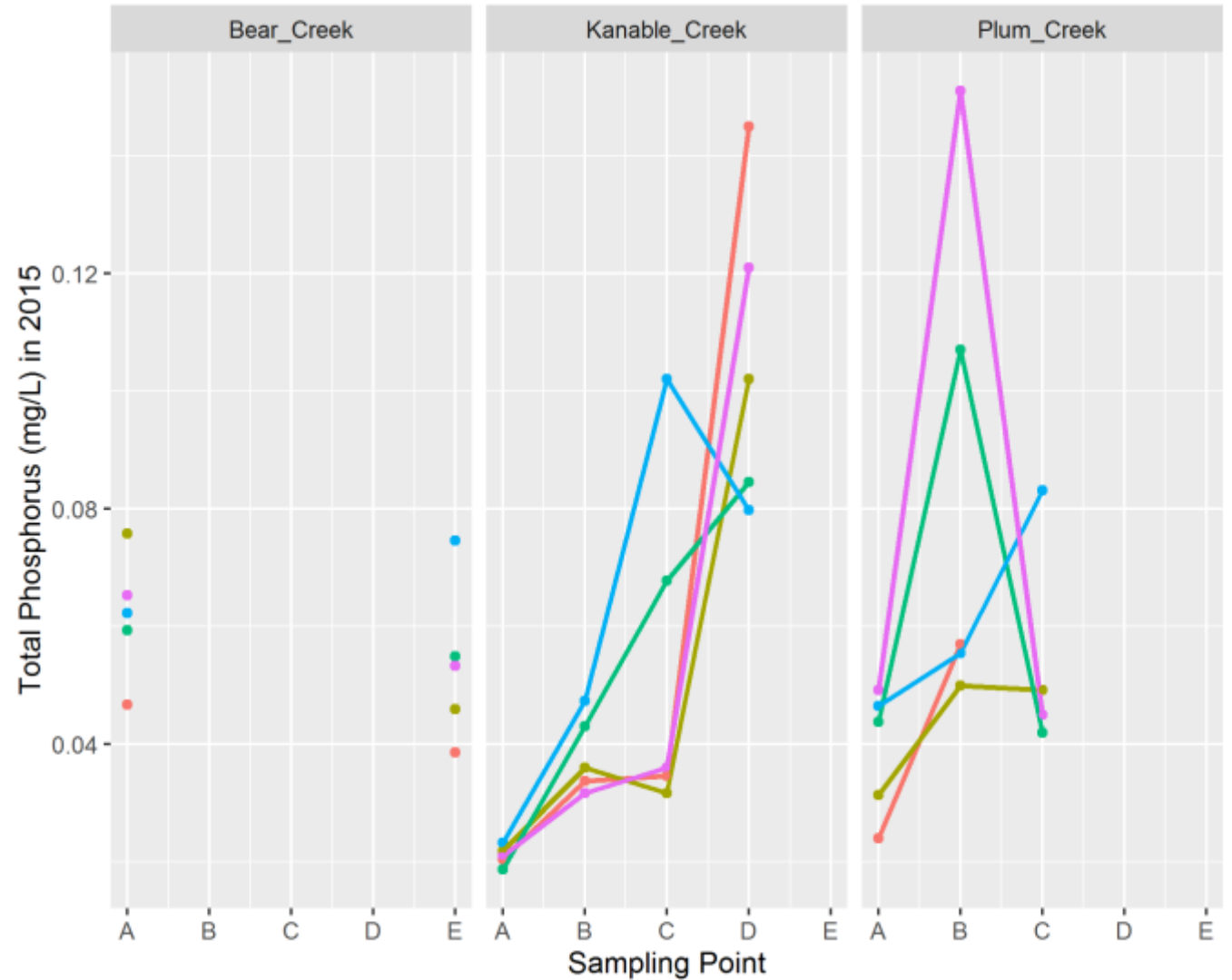




# Within Pasture Results

## Month

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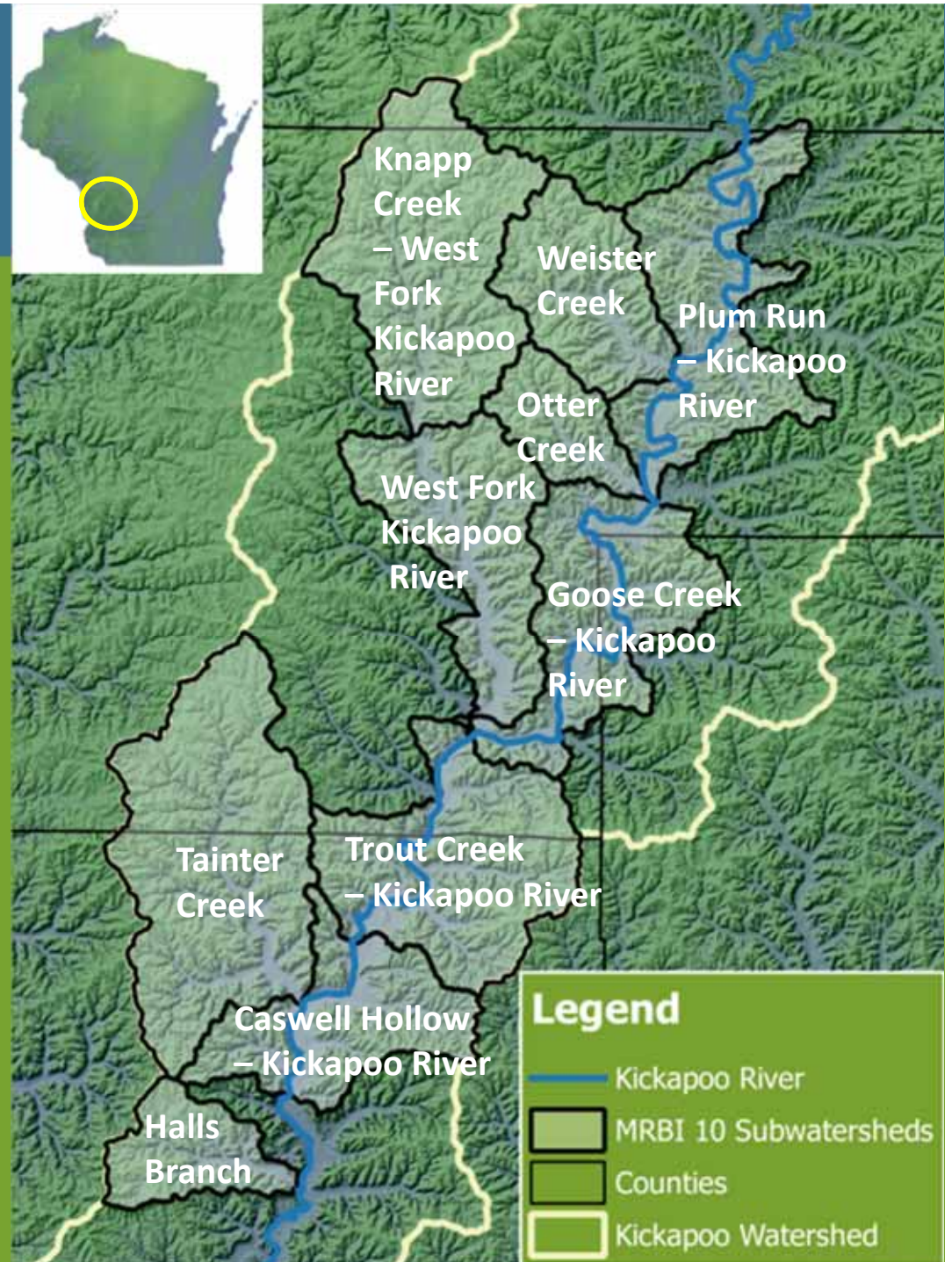


# Insights

- Within pasture measurements may be useful to identify problem areas.
- Or to assess changes following the implementation of best management practices.

# MRBI

Mississippi River Basin  
Healthy Watersheds  
Initiative (MRBI).



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# Questions?



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