WATER QUALITY PRESENTATION

WATER CAUCUS STATEHOUSE

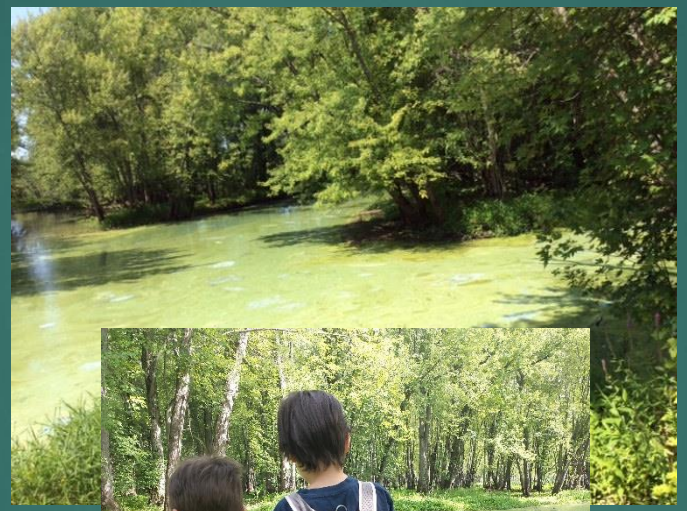
Defining the Problem

- 10,000 Leaks

Defining the Problem

- Vermont is fortunate to have an abundance of fresh water, rainwater and snowmelt;
- Vermont also has beautiful rolling hills and rivers;
- We all live downstream from someone;
- Currently, our water quality is being threatened;
- Clean water is essential for human and animal life.
- Most of the nutrients are entering our waterways on average in **15 rain events/year.**

What excessive nutrients look like in our lakes and rivers

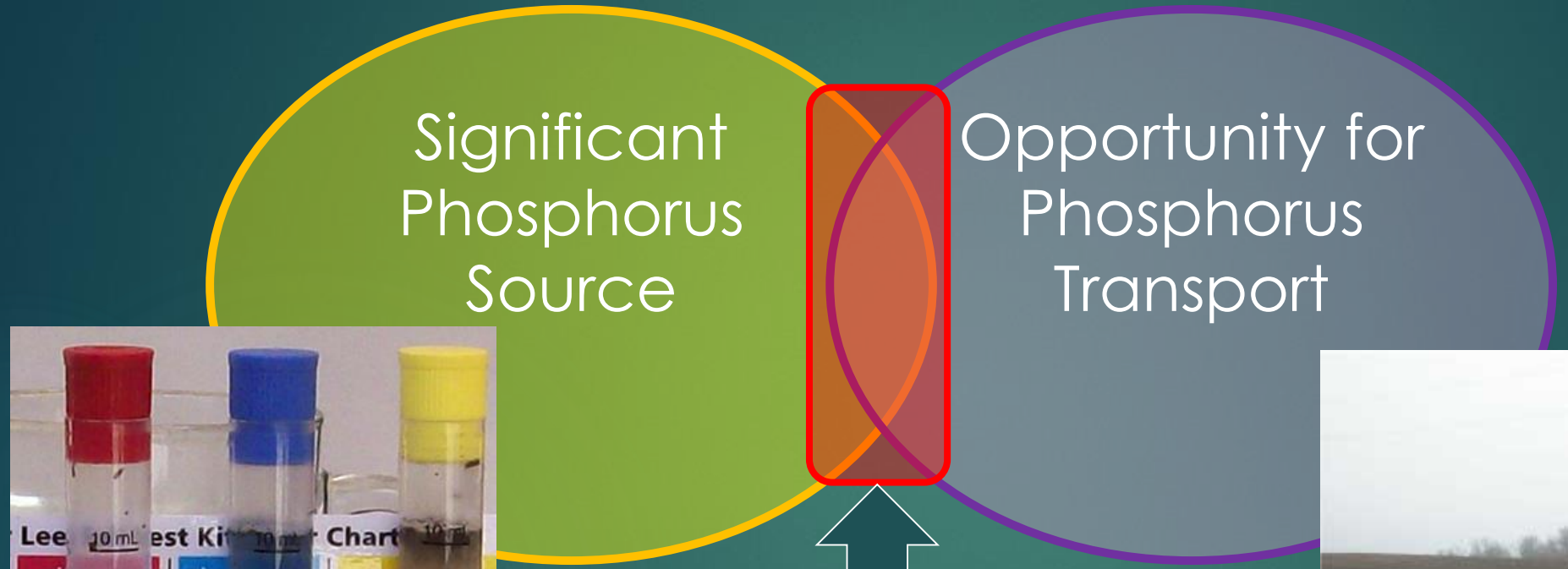


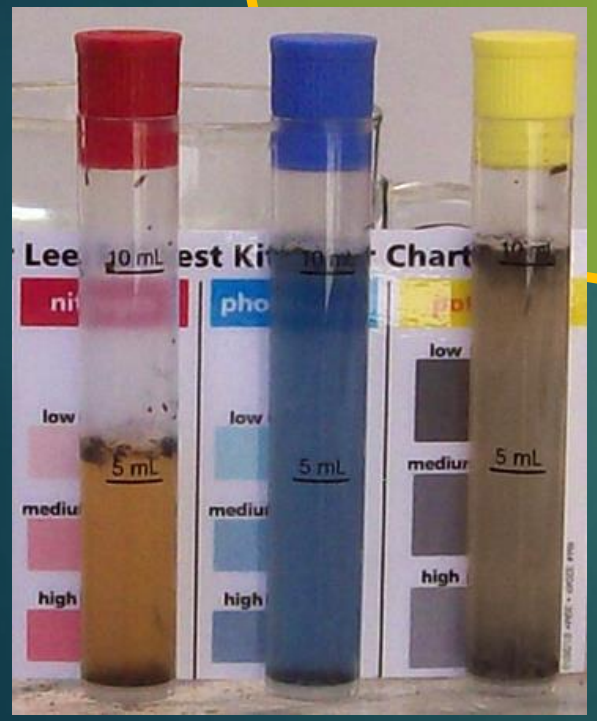
Nutrients Entering our Streams

What can and should be done?

1. Focus our money and our resources;
2. Work in the Critical Source Areas of a watershed and the MOST IMPAIRED AREAS;
3. Be deliberate in our approach;
4. Work together to solve this issue because it matters to everyone;
5. Appropriately fund water quality clean up in Vermont!

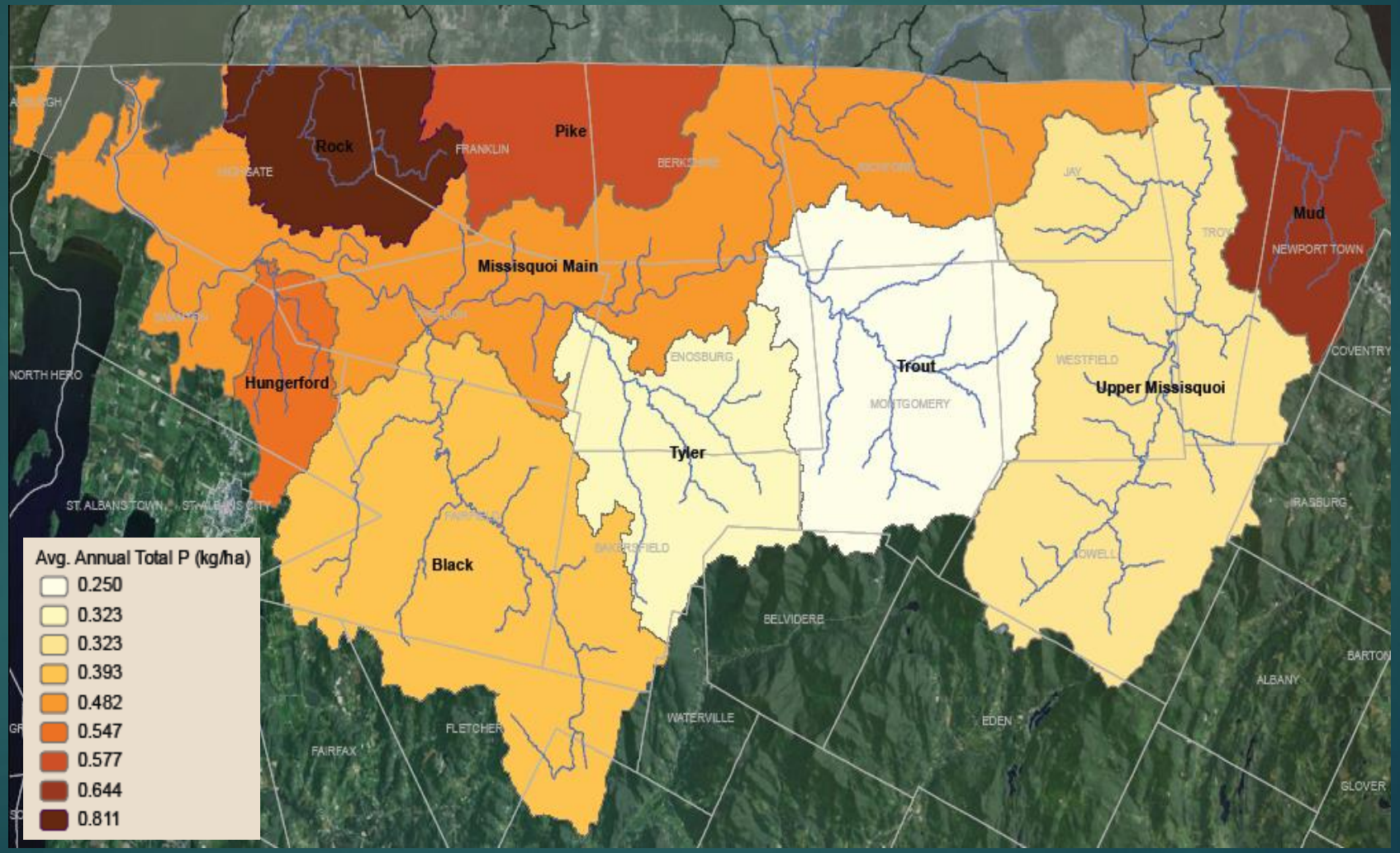
What is a Critical Source Area?



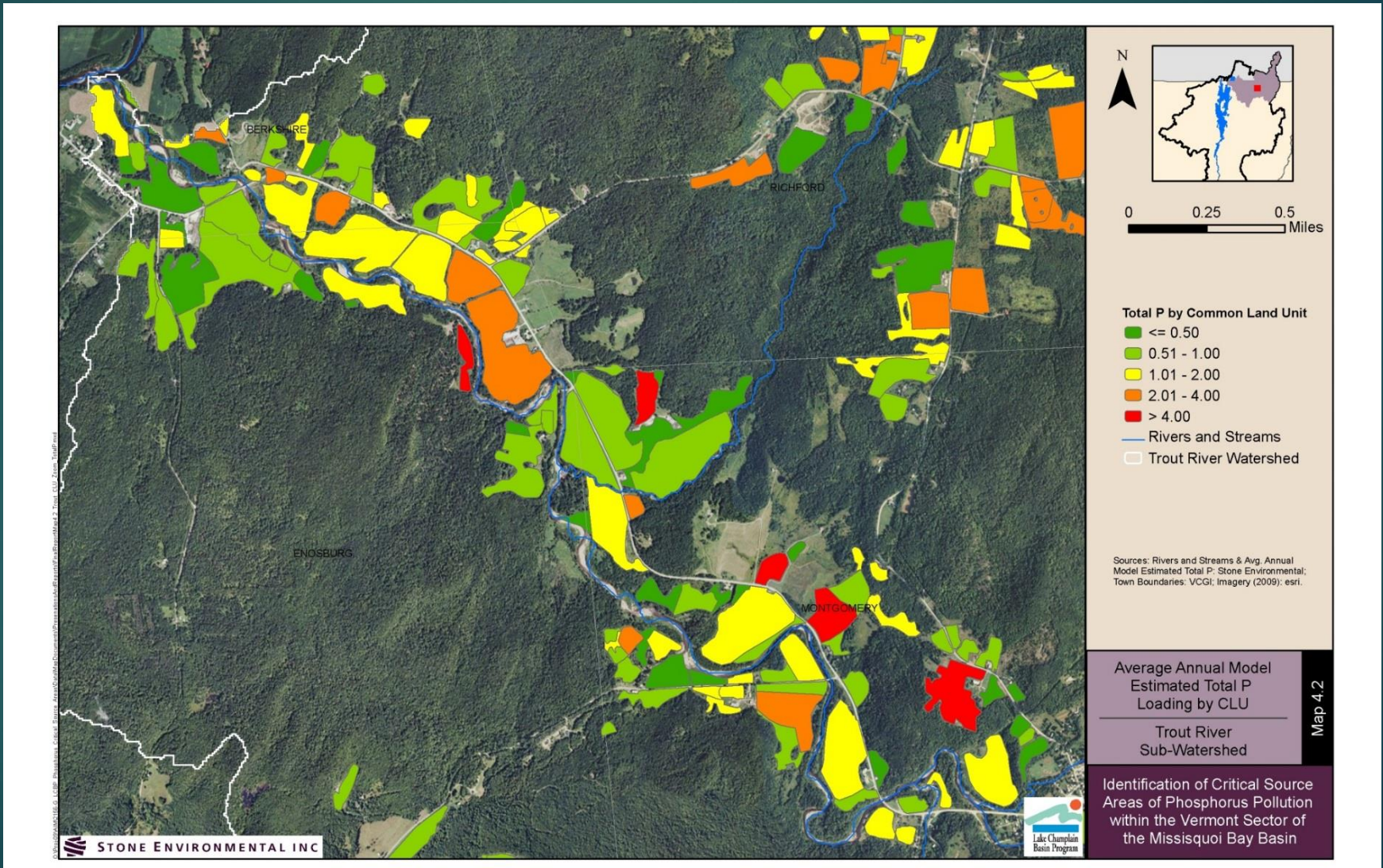


Targeted Management

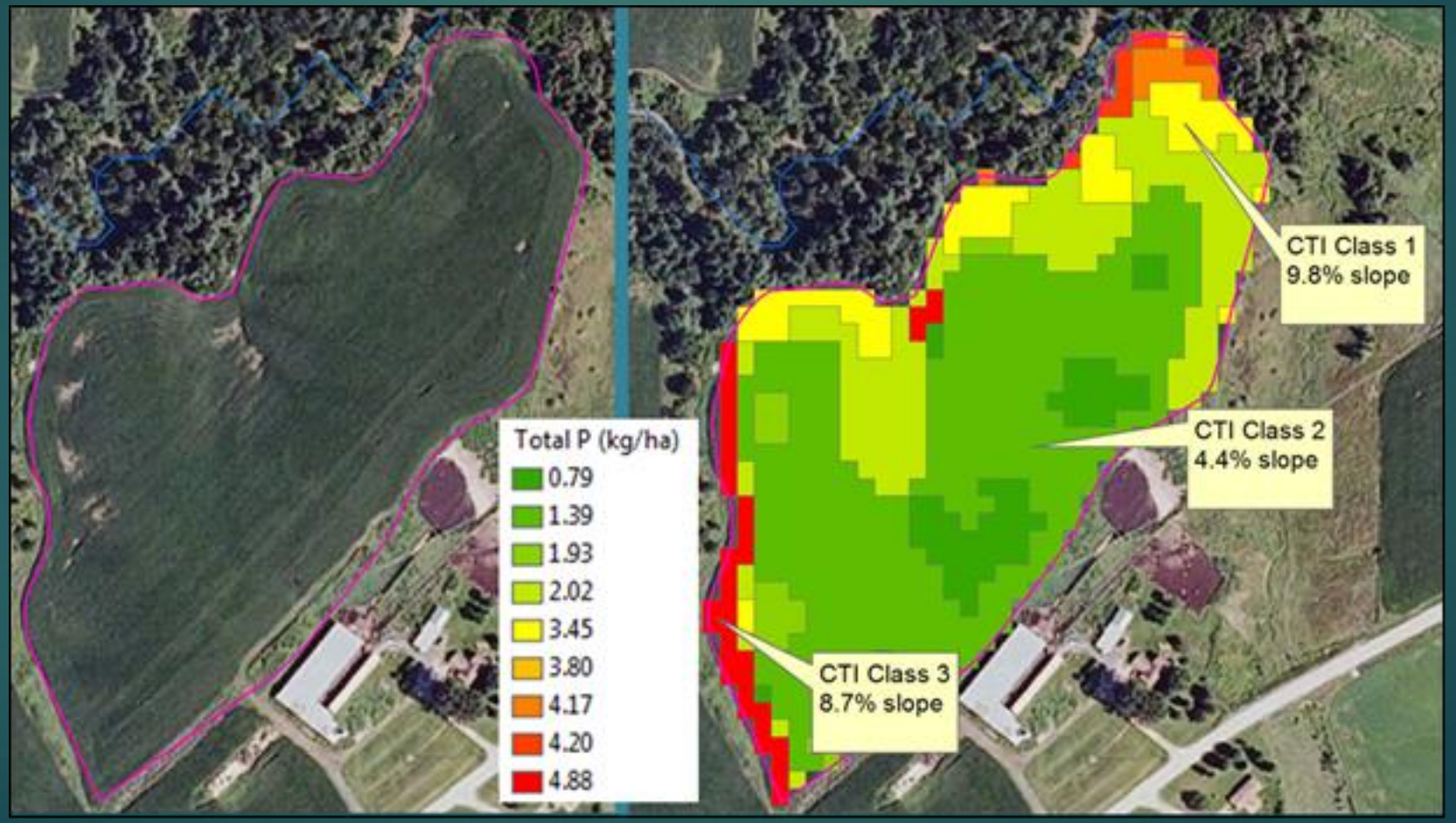
CSA Identification: Sub Watershed Level Results



CSA Identification: Field Level Results



CSA Identification: Sub-Field Level Results



BMP examples and on-going annual costs to the farm.

- **Agriculture erosion projects:**

- Would be the most beneficial and most cost effective for water quality:

  $20,000 per farm per year for Implementation of field conservation practices that include:

  - Appropriate no-till acres
  - Conservation rotation
  - Acres that need to be taken out of production
  - Cover Crops
  - Ditch and River Buffers
  - Strip Cropping
  - Grassed waterways
  - Manure Injection

Tillage Practices

Reduced Tillage
39% P loss reduction
26.2 Tons/yr. P saved
$937,000 ongoing annual cost
Very low cost $12-22/lb. P reduction

Cover Crop

Cover Crop

- **50% P loss reduction**
- **33.2 Tons/yr. P saved**
- **$4,000,000 ongoing annual cost**
- **Medium cost $60/lb. P reduction**

Before

After

Buffers

Buffer

58% P loss reduction
12 T/yr. P saved
$380,000 ongoing annual cost
Very Low cost $14/lb. P reduction

Before

After

Grass Waterways

(land retirement)
- 75 % P loss reduction
- 6 T/yr. P saved
- $1,518,144 ongoing annual cost
- Highest cost $120/lb. P reduction

Before

After

Strip Cropping

Strip cropping (extended crop rotation)
- **75% + 3% P loss reduction**
- **2 T/yr. P saved**
- **$224,760 ongoing annual cost**
- **Medium cost $53/lb. P reduction**

Before

After

Manure Injection

Before

After

Examples of Practice and P Load Reductions Percentages

Practice	Reduced P Loss	Cost	Time Horizon
Conservation rotation and reduced tillage	50%-90%	Low	20 Years
Sedimentation ponds or constructed wetlands	85%	Medium	25 Years
Field terrace and strip cropping	77%	Medium	25 Years
End of tile phosphorous removal system	90%	Medium	10 Years
Cover crops	50% - 90%	Medium	Annual
Grazed pastures	59%	Low	30 Years
Buffers	58%	Low	30 Years
Conversion to energy crops for biomass	34%	Medium	Annual

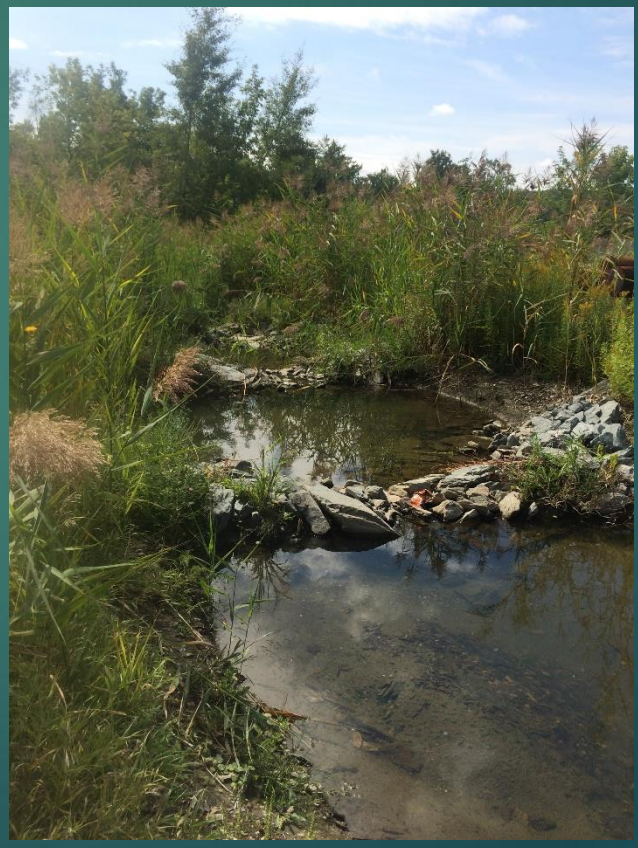
What to do and what it costs

- **Stormwater erosion projects:**
  - 600 projects in Franklin and Grand Isle Counties that we know of. We have completed 1% of them. The average project costs for road and developed land retrofits and best management practices are $50,000.

Step Pool Drainage System in the Village of Enosburgh Falls $35,000

Before

After



Green Infrastructure Island in Swanton $20,000

Before

After

Alburgh Shoreline Restoration Project

Before

After

What to do and what it costs

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- **$4,000,000/year for 200 farms**
- **$20,000,000 over 5 years**

What to do and what it costs

- **Stormwater erosion projects:**
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- **$6,000,000/year**
- **$30,000,000 total over 5 years**

Outreach, Education & Compliance Assistance

- **Outreach, education, project identification, training, technical assistance, engineering design:**
  - 8 people on the ground in Franklin County for 5 years.
  - Block grant to watershed organizations to implement the projects
- **$1,000,000/year**
- **$5,000,000 total over 5 years**
  - **Staff and hours of inspections, compliance assistance:**
    - 7 new people in the Agriculture Water Quality Division:
- **$1,000,000/year**
- **$5,000,000 total over 5 years**

Total Budget over 5 years

- $12,000,000/year
- $60,000,000 over 5 years