

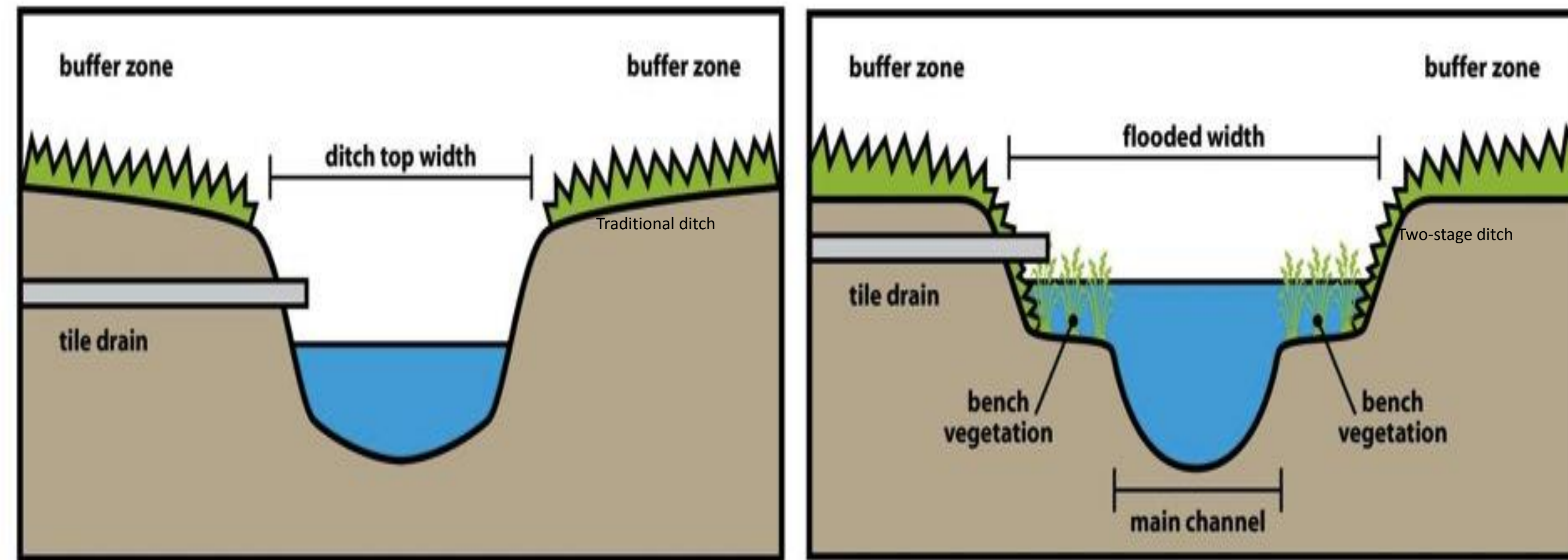
Construction and monitoring of a two-stage ditch



Concept of a two-stage ditch

Stage 1 : channel-forming discharge channel

Stage 2 : flood plain bench



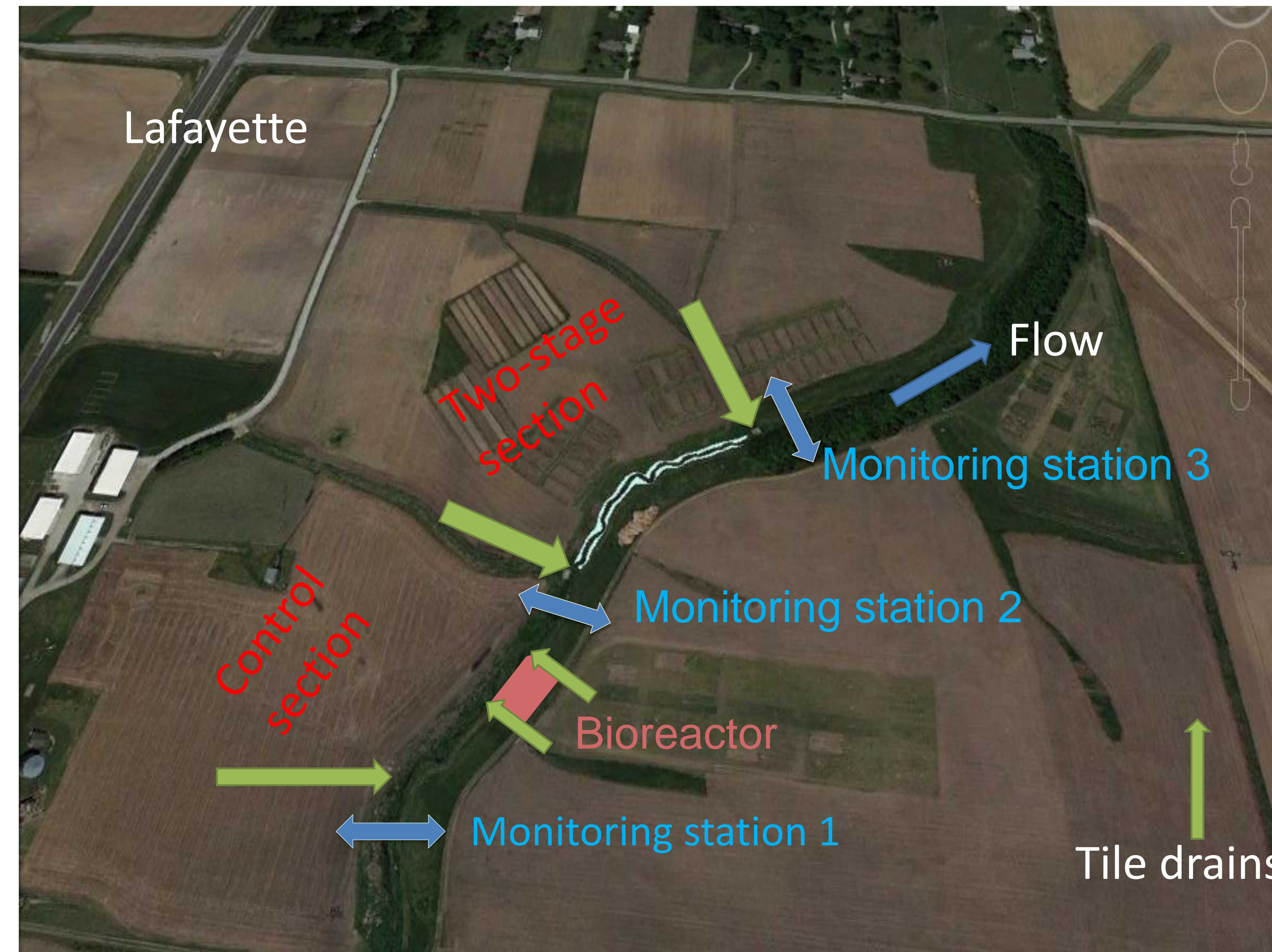
Project Goals

1. Determine the water quality impacts of the two-stage ditch.
2. Compare the establishment and nutrient uptake of alternative seeding mixes for the bench vegetation.
3. Evaluate improvements in geomorphic stability, aquatic habitat creation, and fish utilization.
4. Educate the public on this innovative ditch management strategy and its impacts.

Construction & evolution of the two-stage ditch



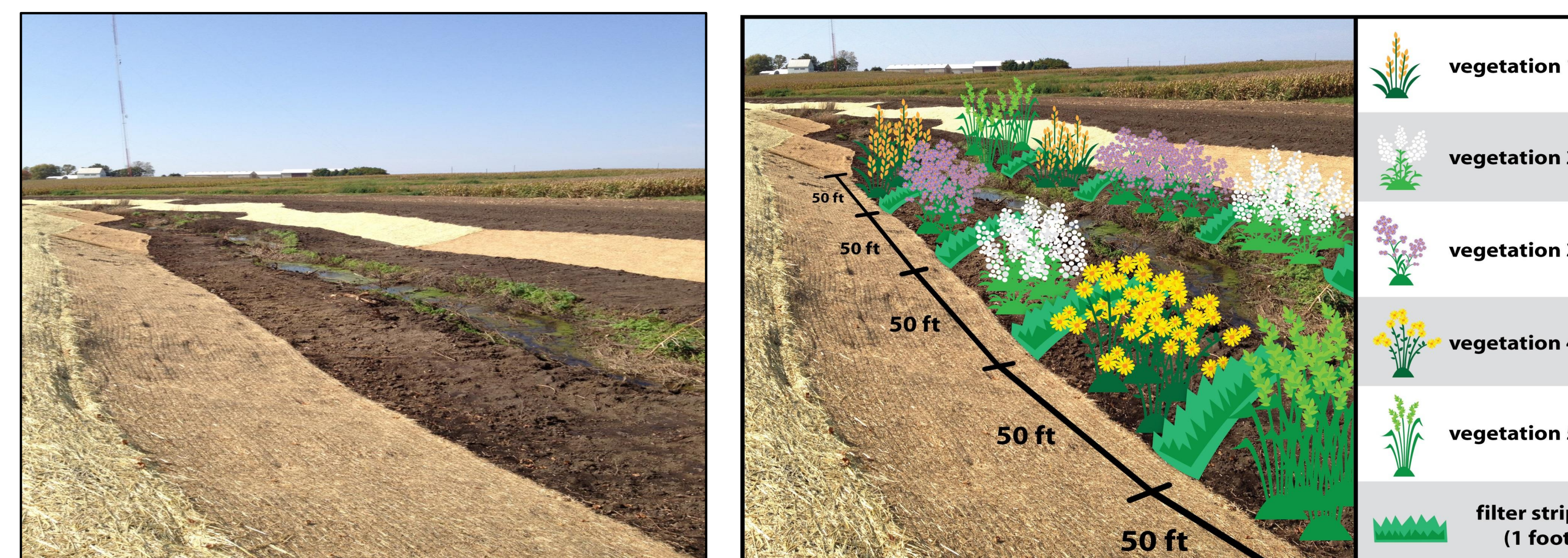
Monitoring performance



The study area compares a **control section** (upstream of the two stage ditch) and **treatment section** (two stage ditch).

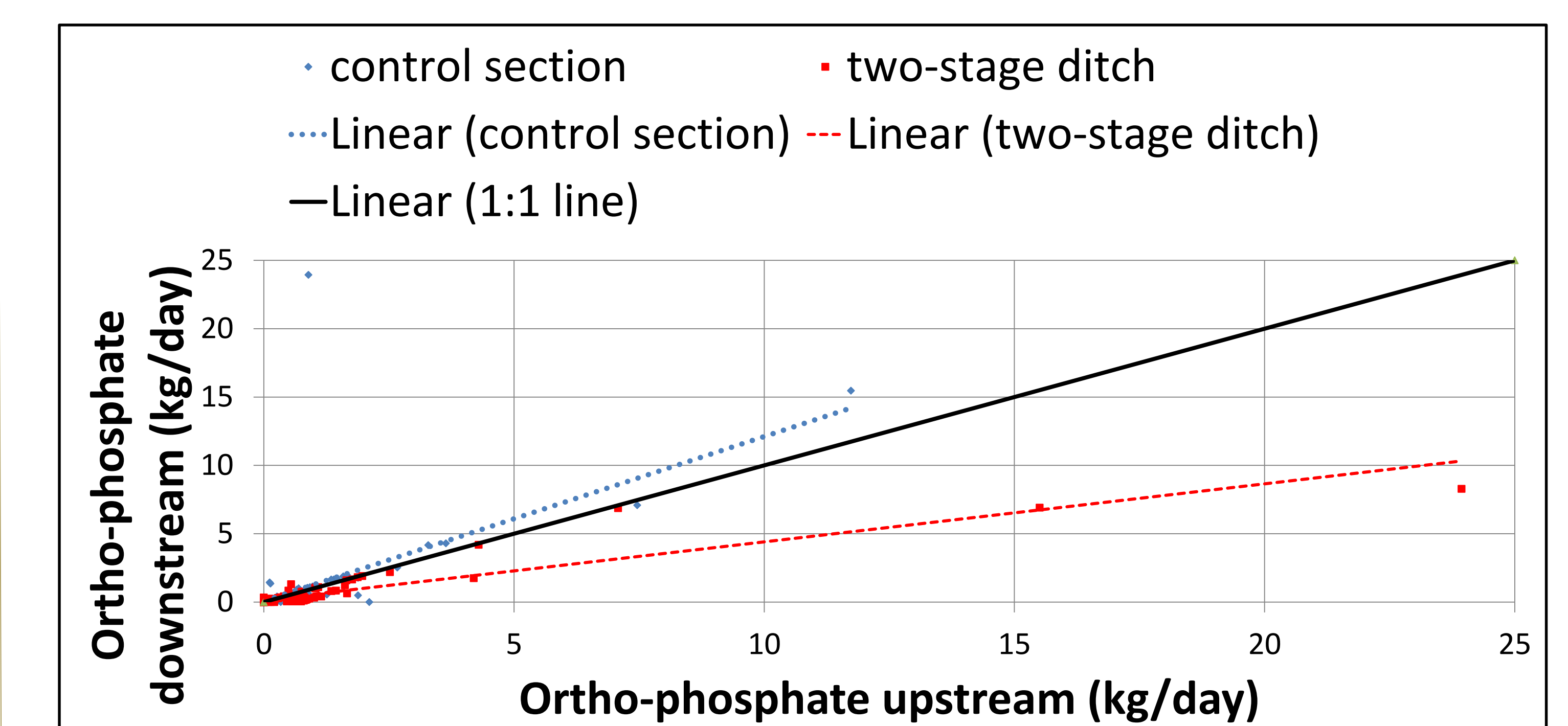
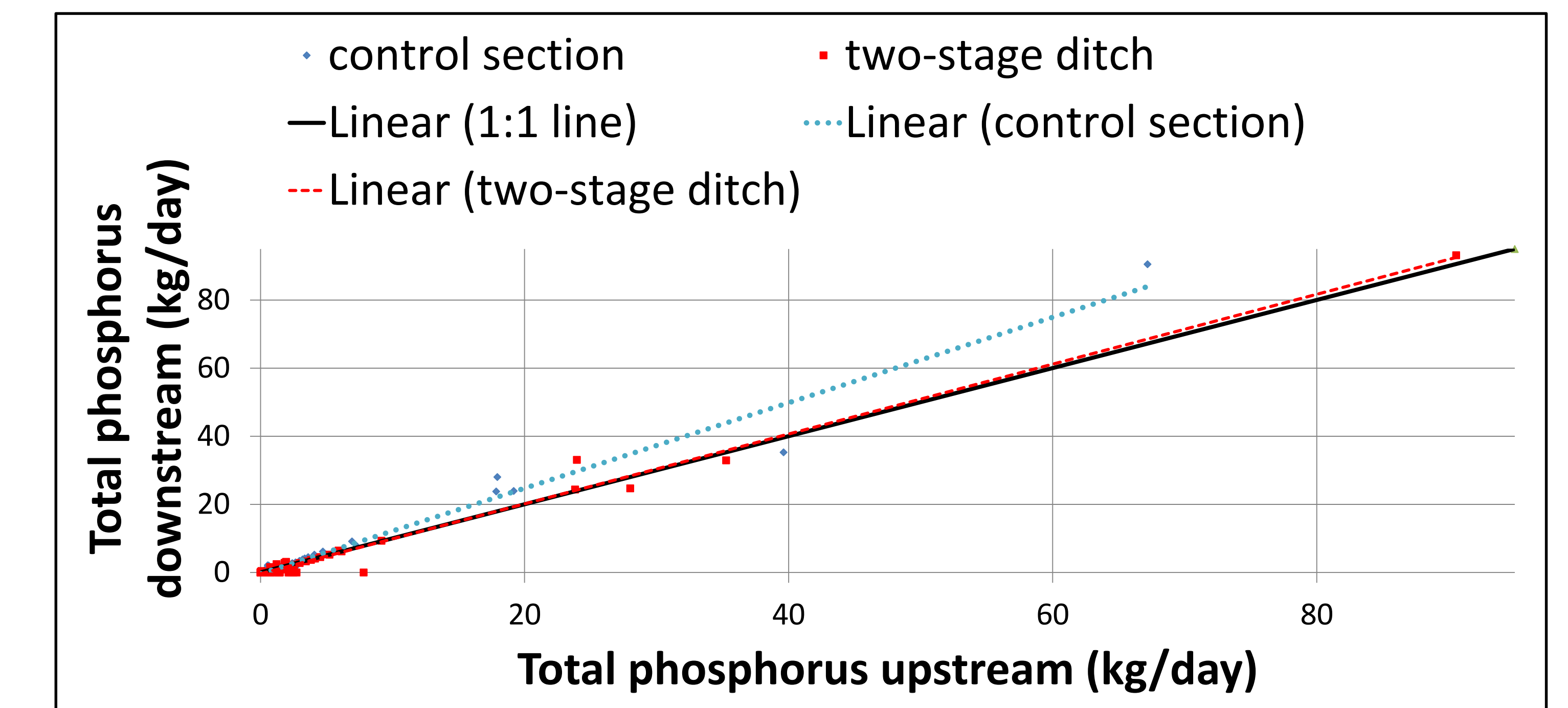
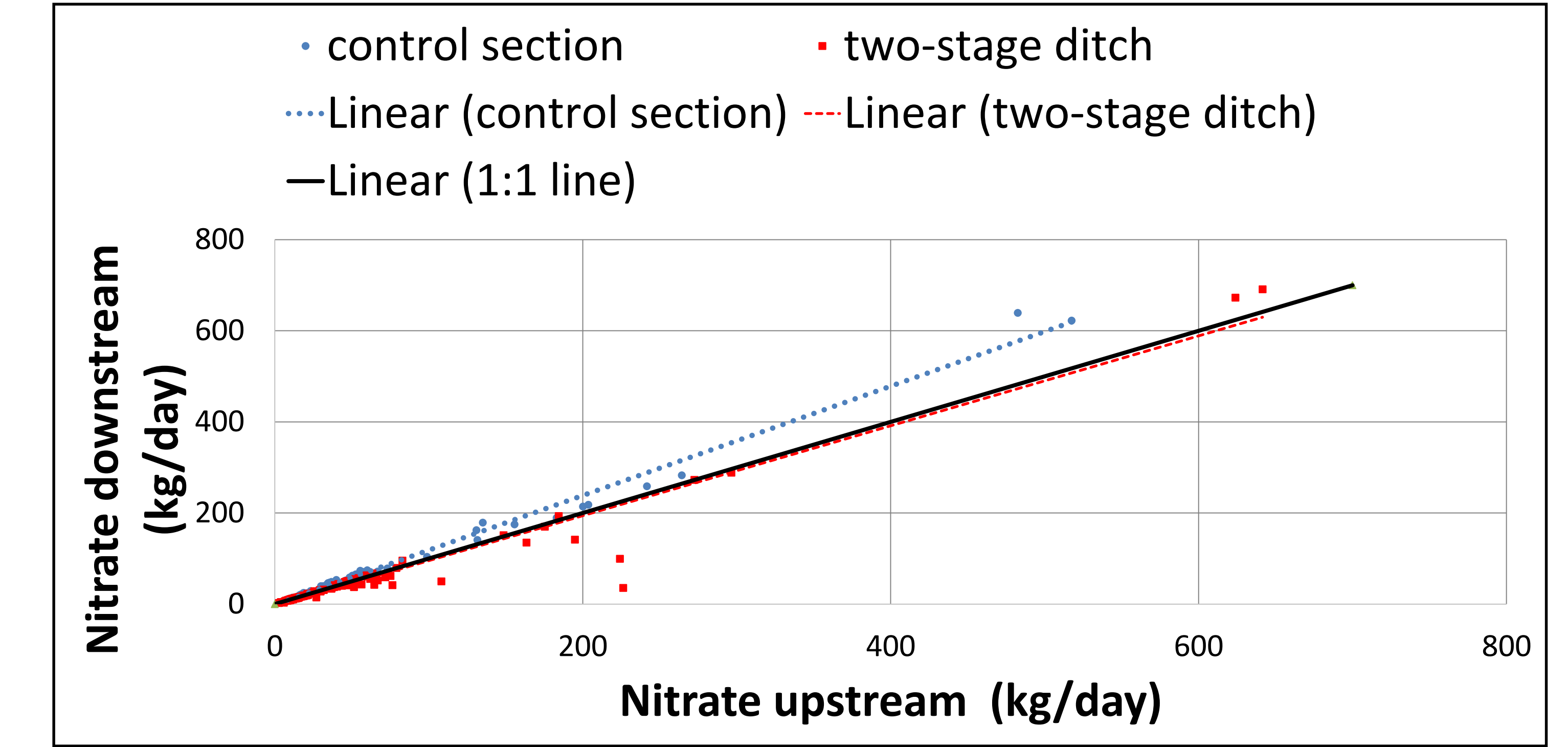
Monitoring includes:

- Monitoring stations that measure discharge, nutrient concentrations and total suspended solids at three cross-sections
- Two multi-parameter water quality sondes that measure turbidity, temperature, conductivity, and dissolved oxygen in the ditch.
- Discharge and concentrations from all the tile drains that drain into the ditch.
- Fish species richness in the control section, treatment section and downstream of the treatment section.
- Topographic surveying of the ditch: both cross-sections and longitudinal profile to assess channel stability over time.
- Plant performance in nutrient uptake and establishment on the benches



Preliminary results

Daily load comparisons between the control section and the two-stage ditch section for the period of January – June, 2014



Plant performance for each mix for the 20 plots. Stand count performed May 19th, 2014. Seeding was done July 1st, 2013.

