



AGRICULTURAL
ENGINEERING
SERVICES, PLLC



Veness Brook

Floodway Improvements



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A.A.S. Ecology and Environmental Technology

Wetland Delineation, Limnology, Stream Ecology, Field Ecology, Environmental Chemistry, Organic Chemistry I & II, Environmental Technology Laboratory, Applied Environmental Microbiology, Politics of the Environment



B.S. in Environmental Resource and Forest Engineering

Hydraulics I & II, Soil Mechanics I & II, Structural Analysis, Engineering Economic Decision Analysis, Water Pollution (Wastewater) Engineering, Seepage & Earth Dam Design, Probability and Statistics, Forest Ecology and Silviculture, Dendrology, Surveying

Veness Brook

**Drainage Area = 1.93 Square Miles
(1,235 Acres)**

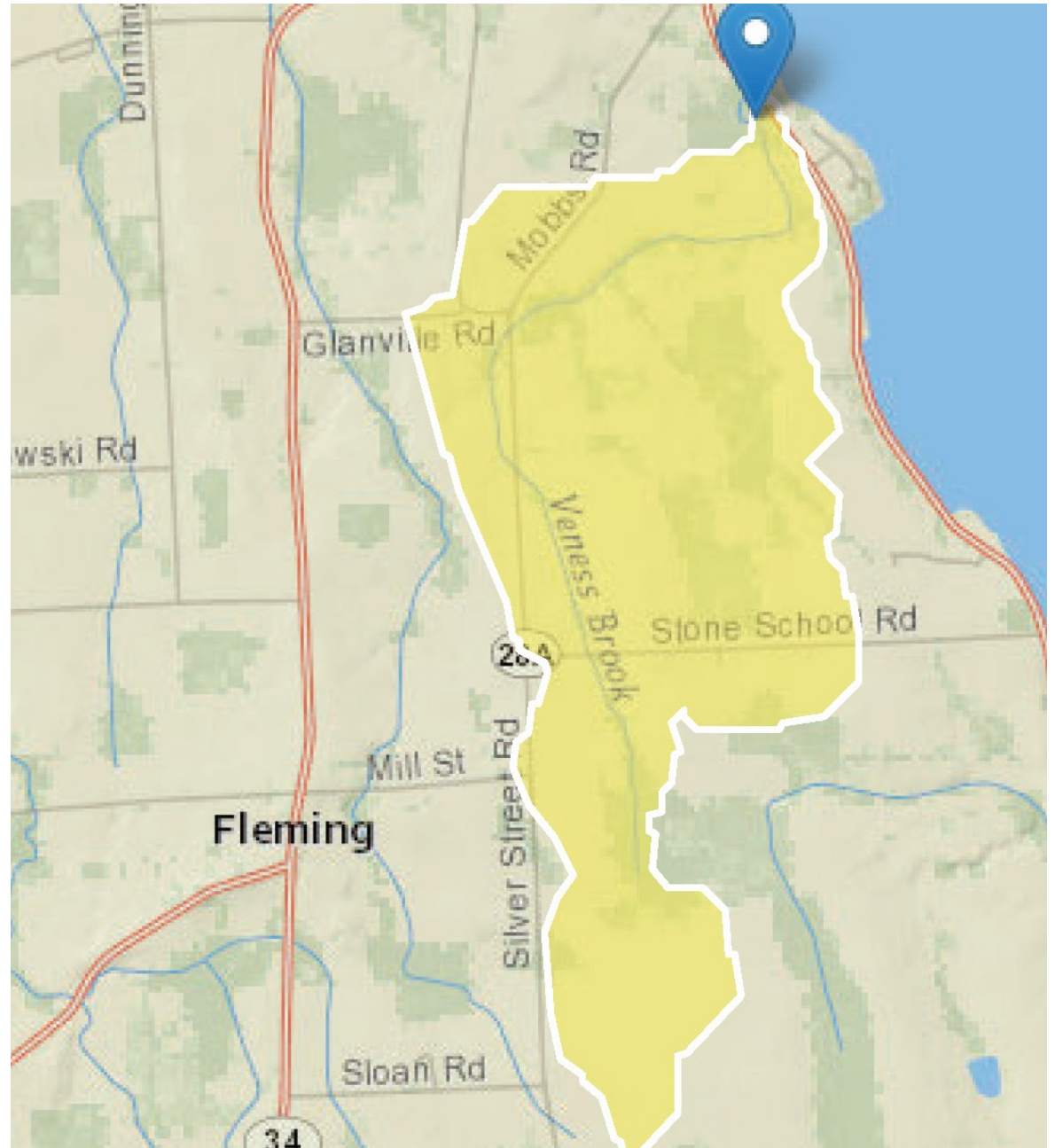
**Poor Draining Soils
Intermittent Flow**

Peak Flows (StreamStat)

5 yr - 130 cfs

25yr - 190 cfs

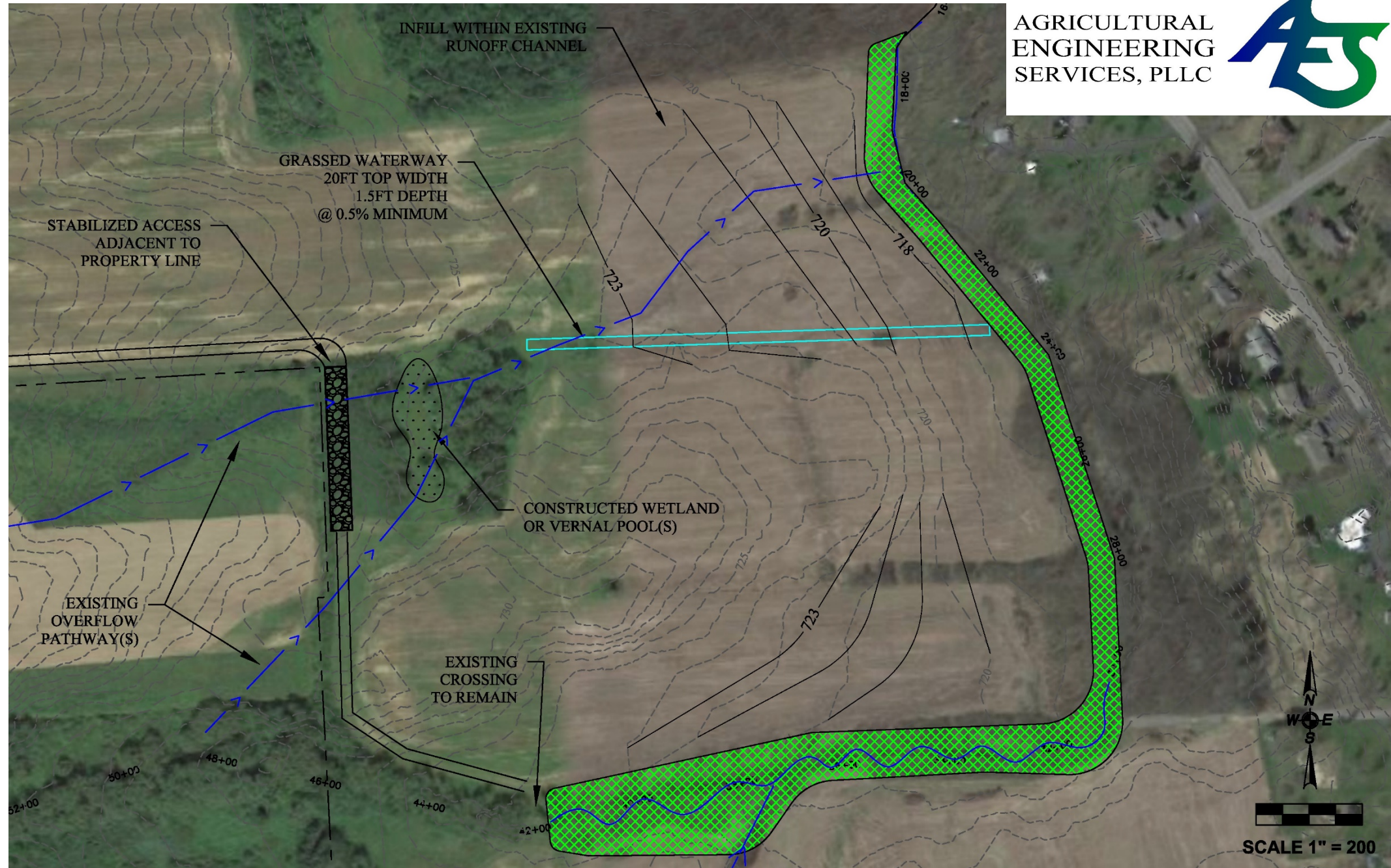
100 yr - 230 cfs











Streambank Stabilization

(Brown & Oltz Properties)

Brown Property: 250 Lineal Feet

Oltz Property: 150 Lineal Feet

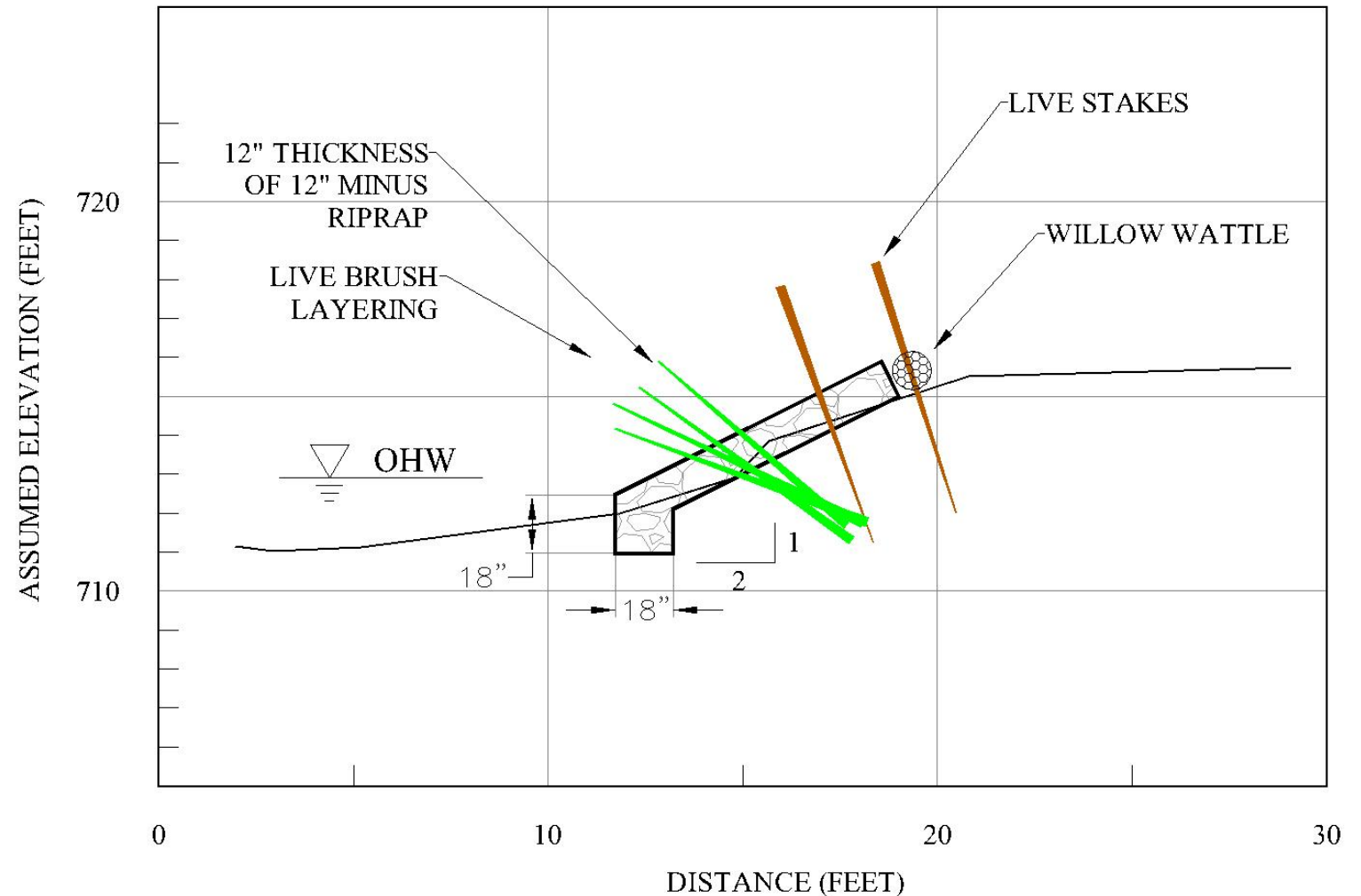
A combined approach of traditional rip rap stone protection augmented with biotechnical treatments has been proposed and permitted by the USACE.

Goals:

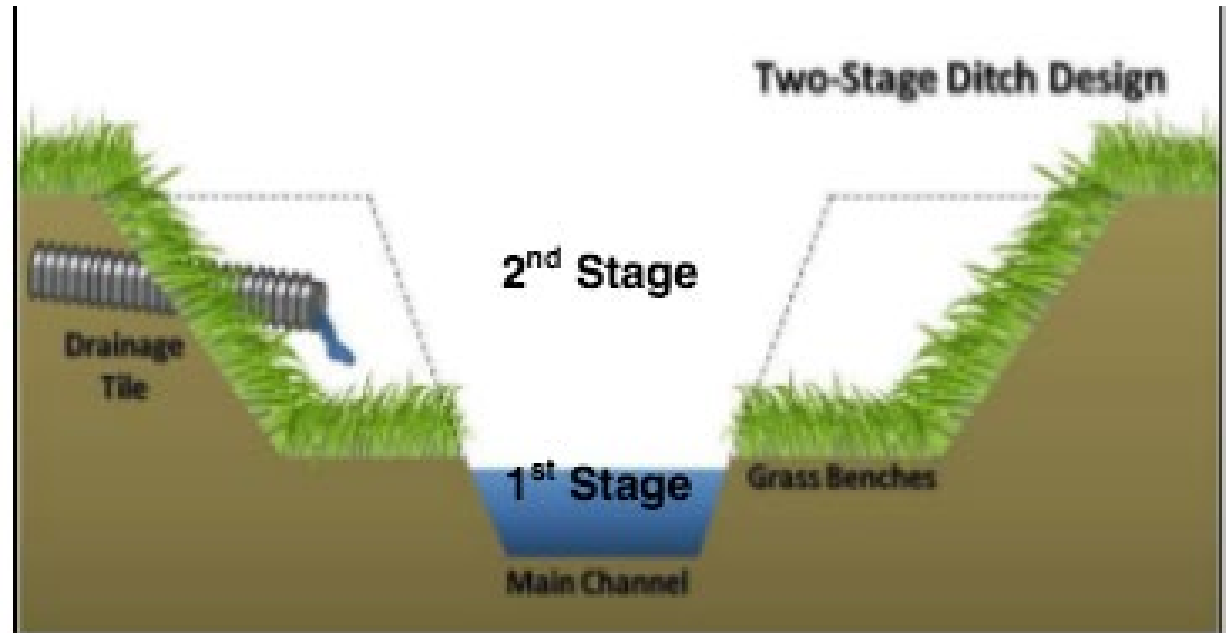
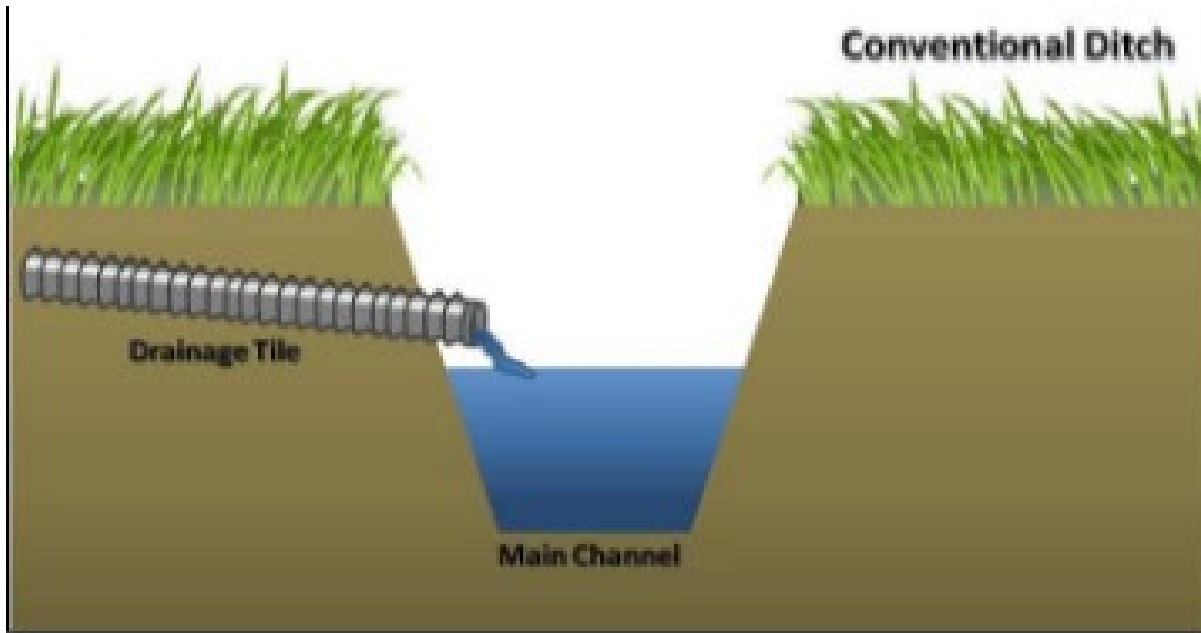
- Hold the Stone (root matrix)
- Hold the Bank
- Cool the water
- Increase habitat
- Slow the flow
- Promote retention of Colloidal Sediment on Vegetation

VENESS BROOK STREAMBANK STABILIZATION PROJECT

TYPICAL REPAIR DETAIL

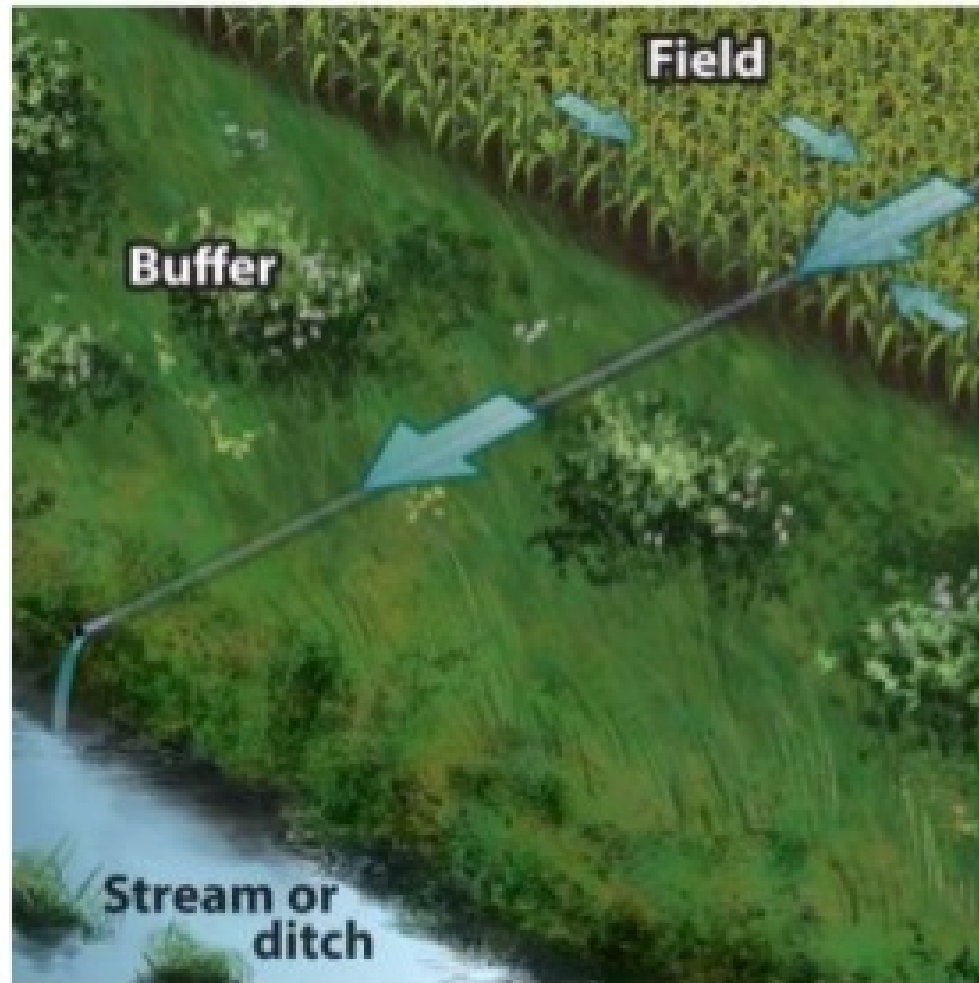


Open Channel/Two-Stage Ditch (NRCS 582)

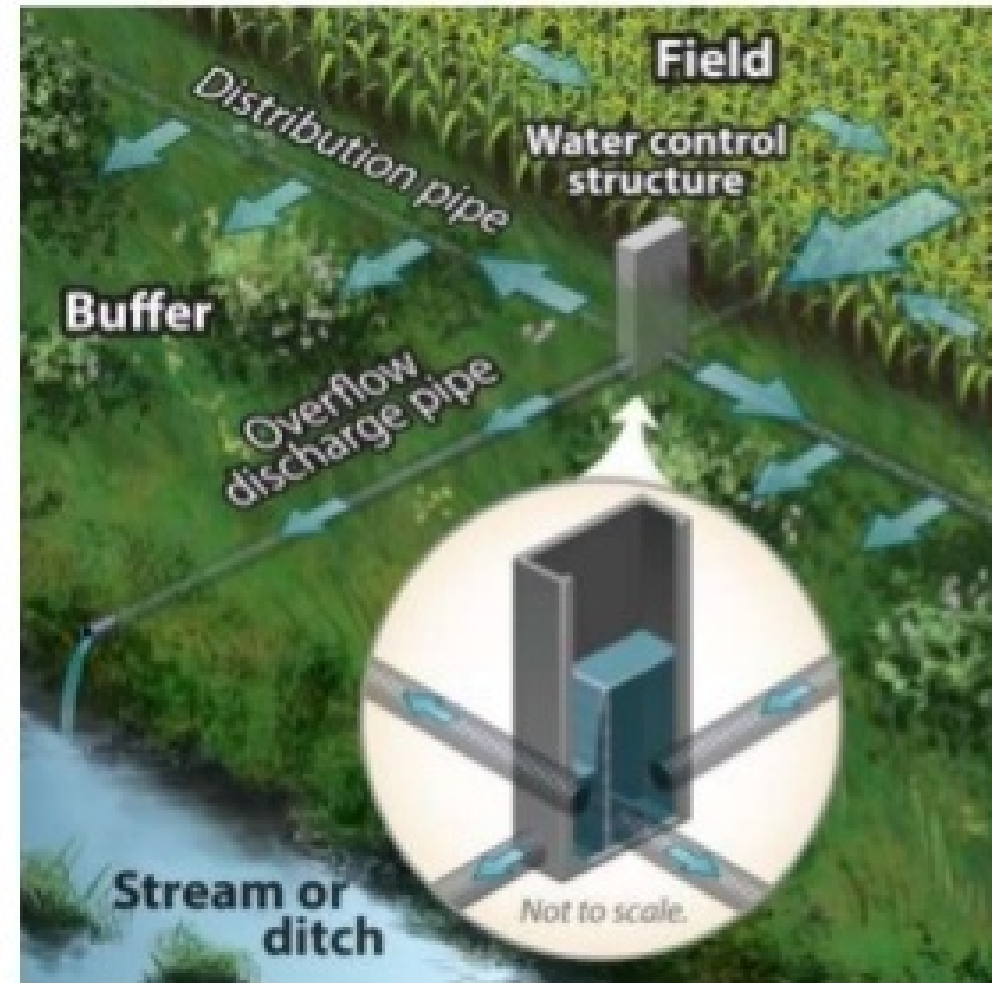


Saturated Buffer

Conventional Outlet



Outlet with Saturated Buffer



COMPLIMENTARY PRACTICES

Two-Stage Channel

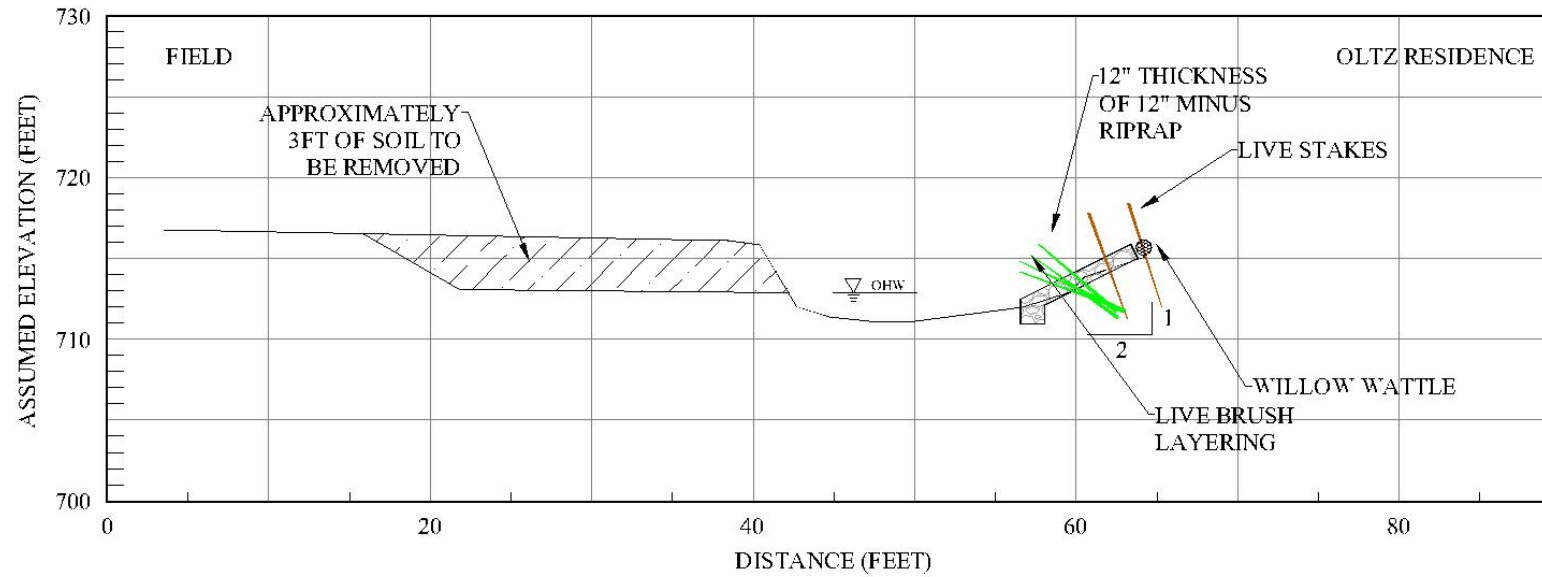
- Best suited to low grade streams and ditches (<2%)
- Appropriate for channels that experience bank erosion
- Promotes greater bank stability
- Reduces nutrient and sediment exports
- Improves plant-soil-water interactions and nutrient cycling within benched area
- **Nutrient Export Decreases the more the benches are wet!!**

Saturated Buffer

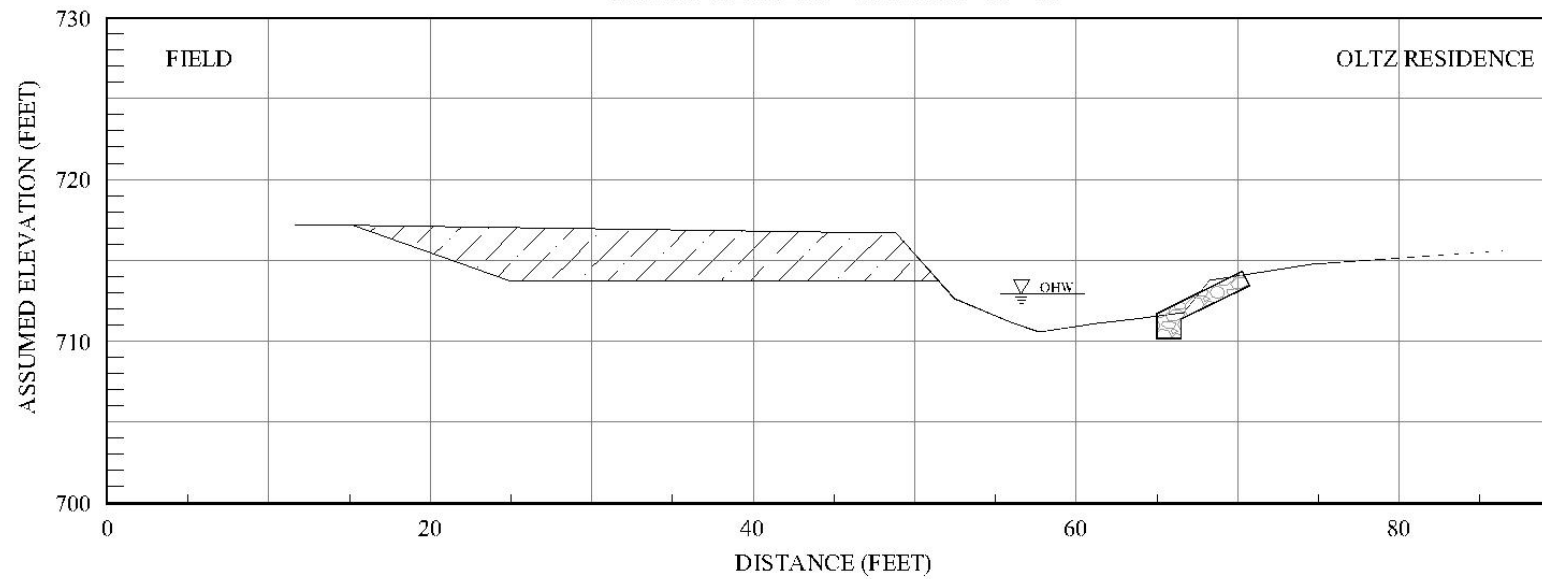
- Divert tile water into shallow laterals that raise the water table within the buffer and slow outflow
- Store water within the soil of field buffers
- Can be effective at removing nitrate from tile water
- **Help reduce peak flow in streams**

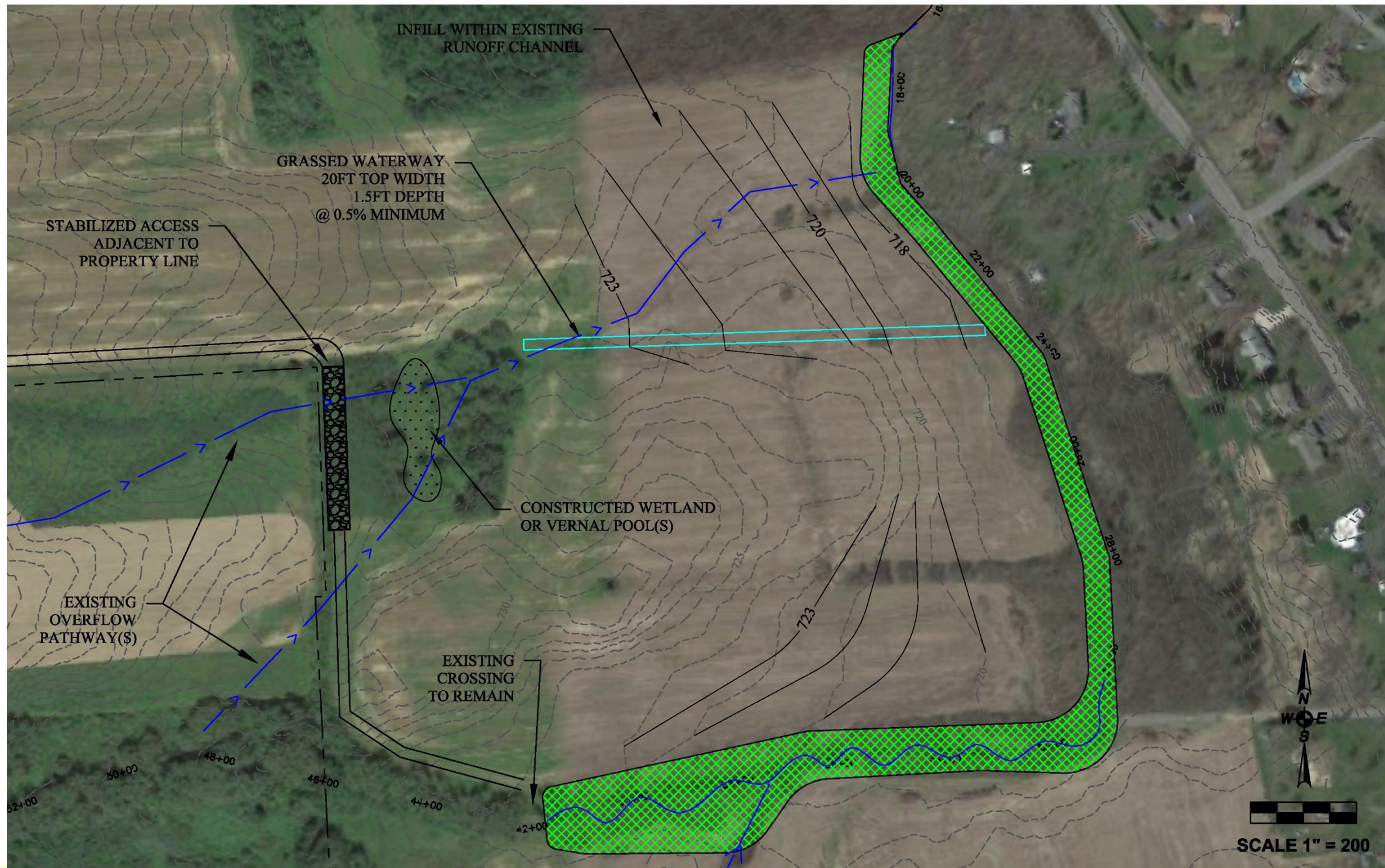
VENESS BROOK - FLOODWAY IMPROVEMENT PROJECT

CROSS SECTION - STATION 16+58



CROSS SECTION STATION 17+13





Anticipated Project Sequence

- **Fall 2018** - Install Grass-Lined Waterway & Stabilized Access
- **Fall 2018** - Improve existing wetland filtration area by removing invasive Buckthorn and Honeysuckle and promoting grasses
- **Winter 2018/2019** - Removal of Trees and invasive Buckthorn within floodway over the winter to minimize soil disturbance and impacts to bats. Stumpage to remain.
- **Winter 2018/2019** – Design and Permitting of Floodway Improvements
- **Spring/Summer 2018** – Construction of Floodway Improvements

