



wood.

Bank Remediation and
Restoration for a Time
Critical Removal Action
with Water Control
Structure Removal

WEDA DREDGING
SUMMIT & EXPO '19

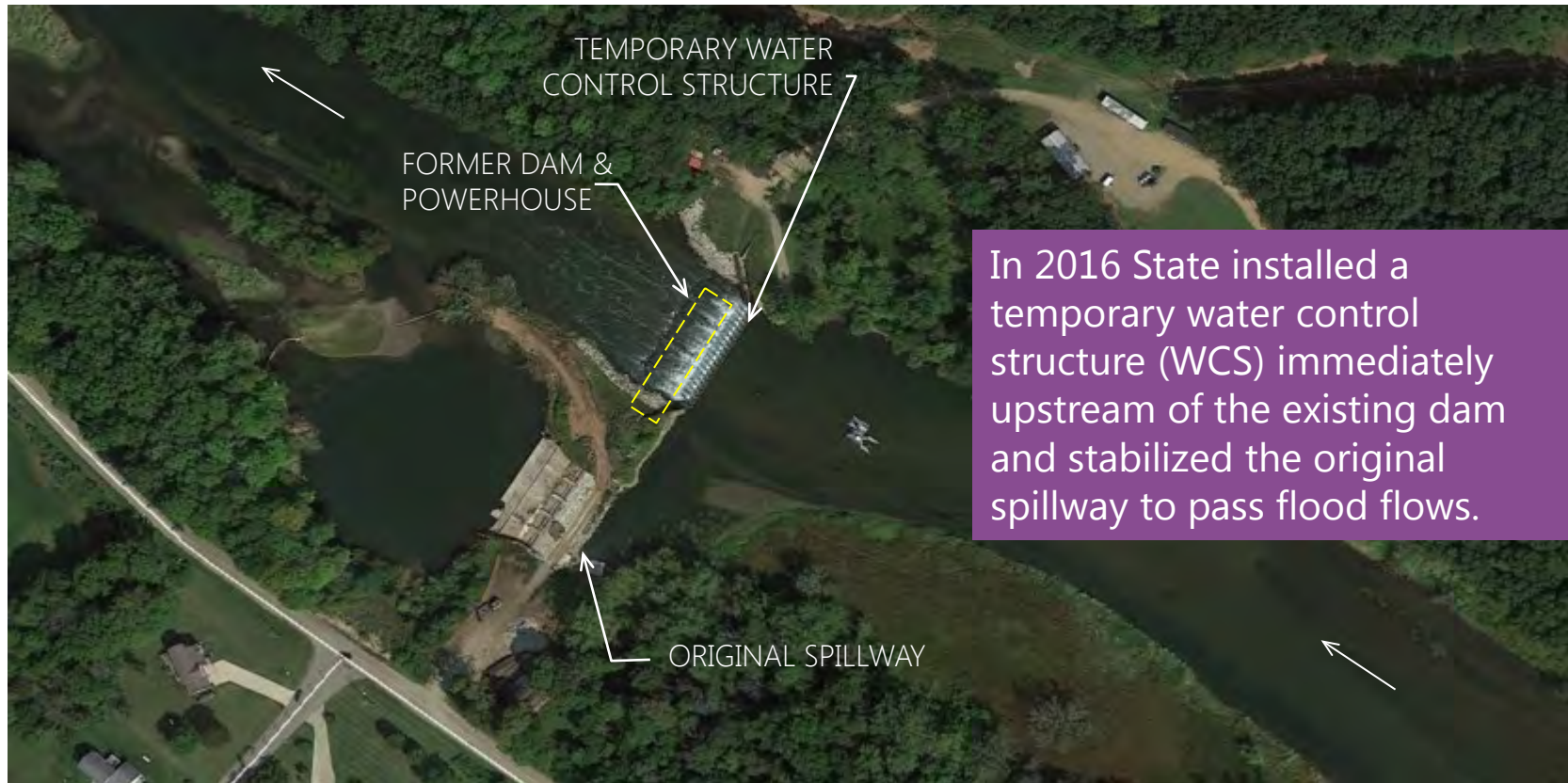
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Background

- Time Critical Removal Action with dam removal from a EPA Region 5 river Superfund Site
- Bank stabilization and sediment removal along 1.7 miles
- Design criteria based on hydraulic and sediment transport model results

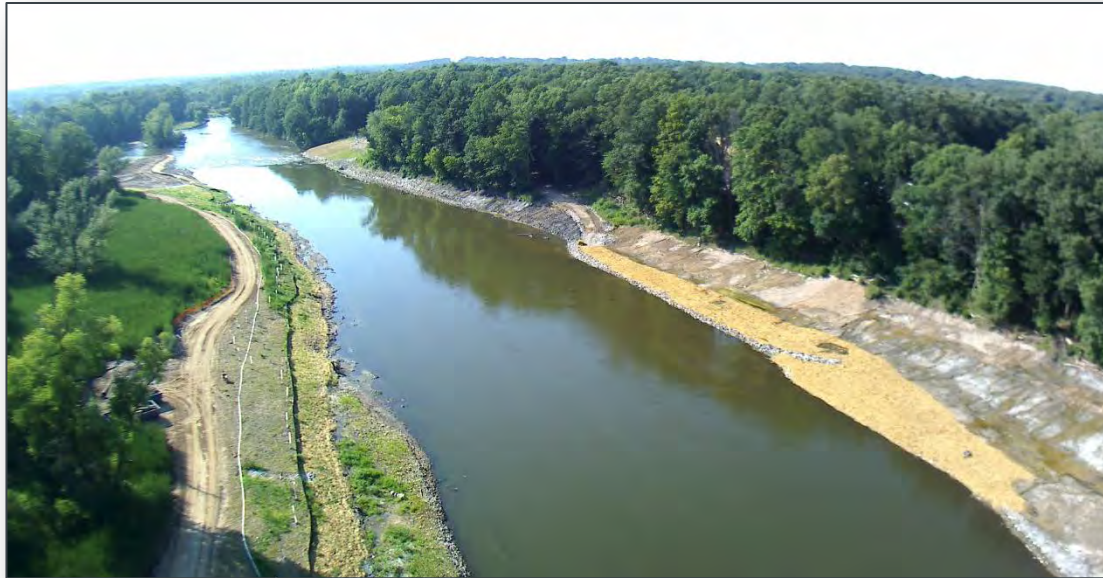


Former Dam Area

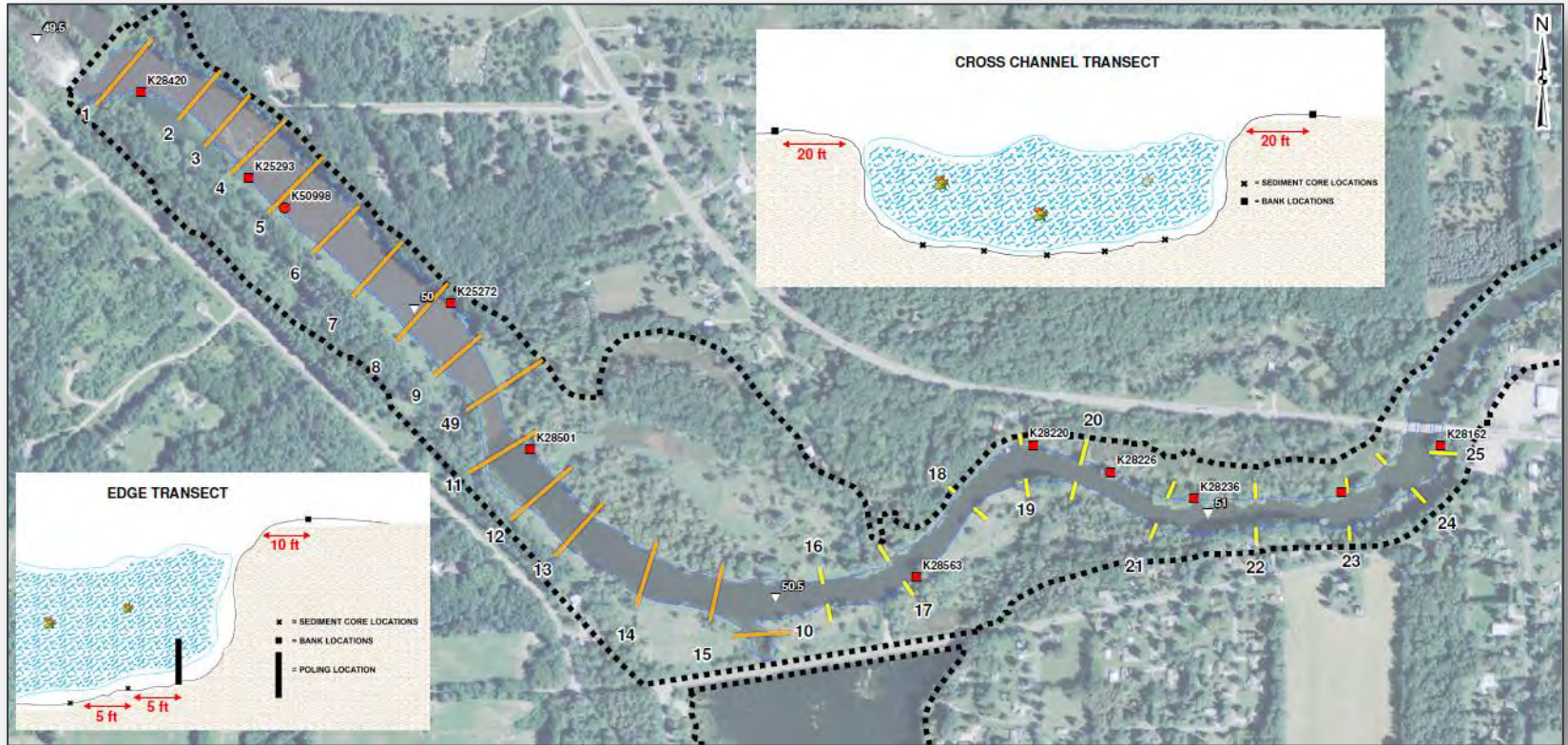


Goals

- Provide a stable river condition with dam removed
- Address potentially erodible sediment / banks containing PCBs



Pre-Design Work

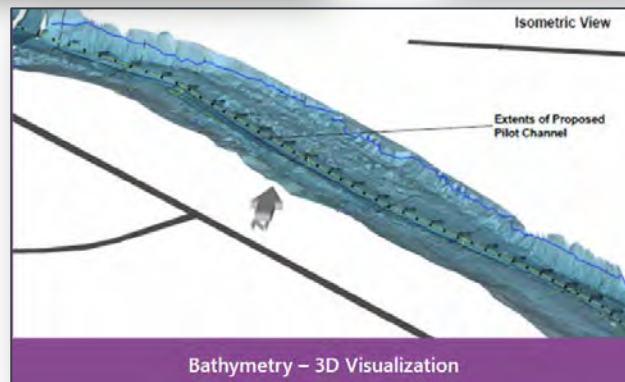
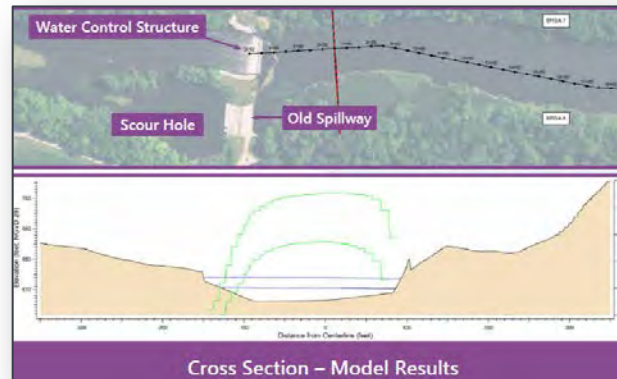
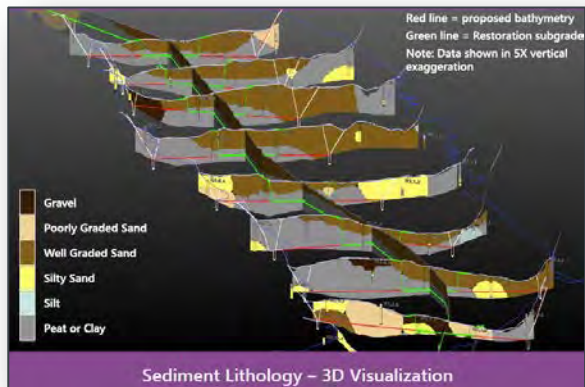


Design Considerations and Approaches

- Designed in phases by Bank Removal and Stabilization Areas (9 total)
- Contractor Collaboration
- Protect endangered species
- Long-term protection against erosion of steep banks
- Utilize functional bank treatments
 - Coir face
 - Rootwads
 - Joint planting
 - Install J-hooks to redirect flow
- Protection of existing structures
 - Bridges
 - Coordinate with DOT
 - Water control Structures



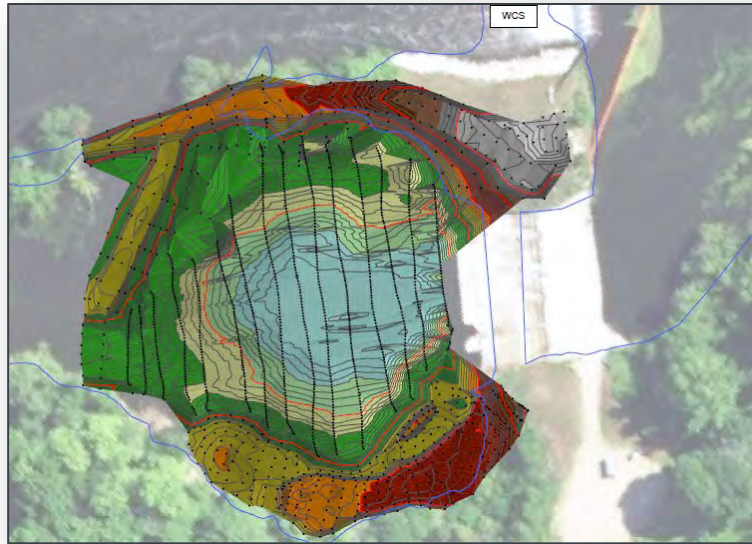
New Channel Design



Design – Pilot Channel



Pilot Channel – Sediment Reuse



Elevation (feet, NGVD 29)



Note:

WCS = Water control structure
 NGVD 29 = National Geodetic Vertical Datum of 1929

Shoreline
 Survey Locations



Implementation – Bank/Sediment Removal and Restoration

- Clearing/access roads
- Staging areas/water treatment
- Cofferdam systems
- Bank/Sediment removal
- Restoration



Implementation – J-hooks

- Boulders sized to withstand 100+ year flow
- J-hooks situated according to modeled locations; boulders placed guided by GPS survey equipment
- Height of J-hook in-field adjustment



Aerial view
after J-hook
Installation

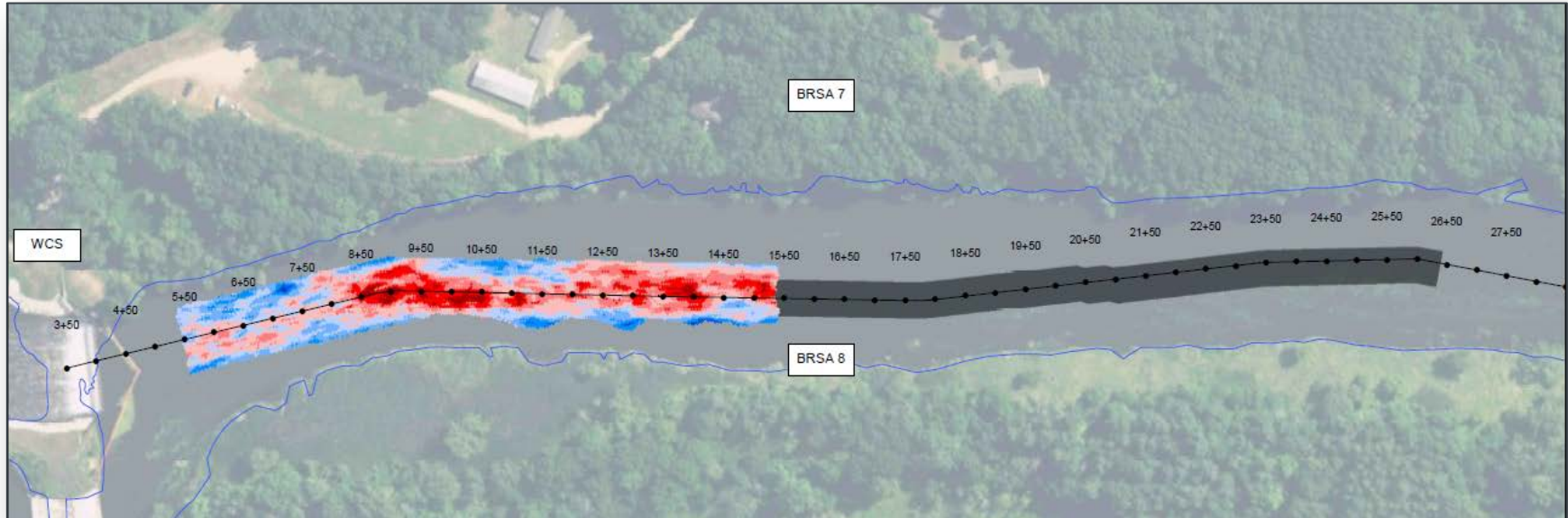
Implementation – Pilot Channel and Beneficial Sediment Re-use



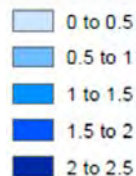
Implementation – Dredging and Turbidity Controls



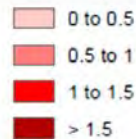
Implementation – Monitoring Dredging Progress



Net Loss (ft)



Net Gain (ft)



Note:

BRSA = Bank removal stabilization area
WCS = Water control structure

Net Loss = 835 cubic yards
Net Gain = 1489 cubic yards



Implementation – Water Control Structure Removal



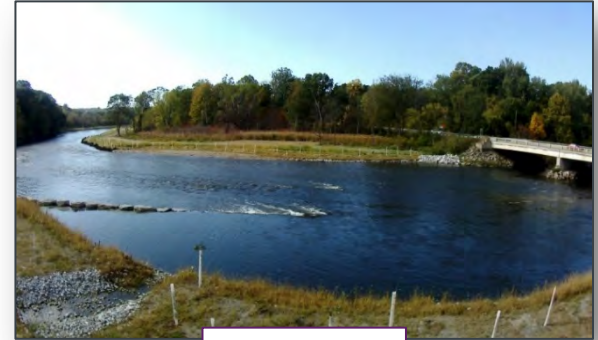
Project Completion



Image from drone –
looking upstream at
completion of construction

Results

- Completed successfully, within schedule and budget
- A high flow event occurred during construction without significant damage or delay
- The river stabilization structures remain stable and functioning as intended



After



Questions



