



CAMP MIAKONDA RESTORATION PROJECT

Partners for Clean Streams

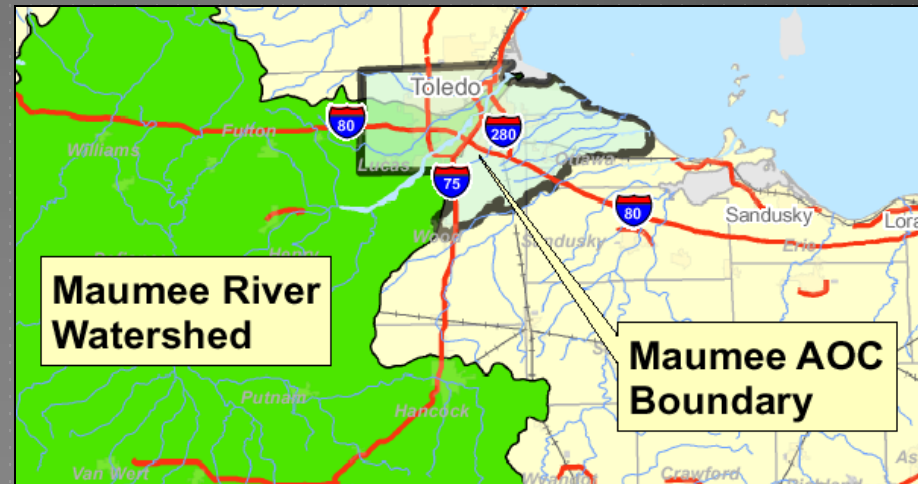
Kristina Patterson – Executive Director

Kyle Spicer – Project Coordinator



PCS & THE MAUMEE RAP COMMITTEE

- ▶ Formed in 2007 – grew out of the Maumee RAP Program
- ▶ 501(c)3 non-profit community organization
- ▶ Support local and regional water quality improvements
- ▶ Maumee RAP Committee is nestled within PCS organization and works side-by-side with State and Federal program



WHAT PCS DOES



- ▶ Community outreach programs
 - ▶ Designed to teach and involve public in activities addressing water quality.
- ▶ Patch Day
- ▶ Clean Your Streams Day
- ▶ Get the Lead Out!
- ▶ Storm Drain Marking

WHAT ELSE?

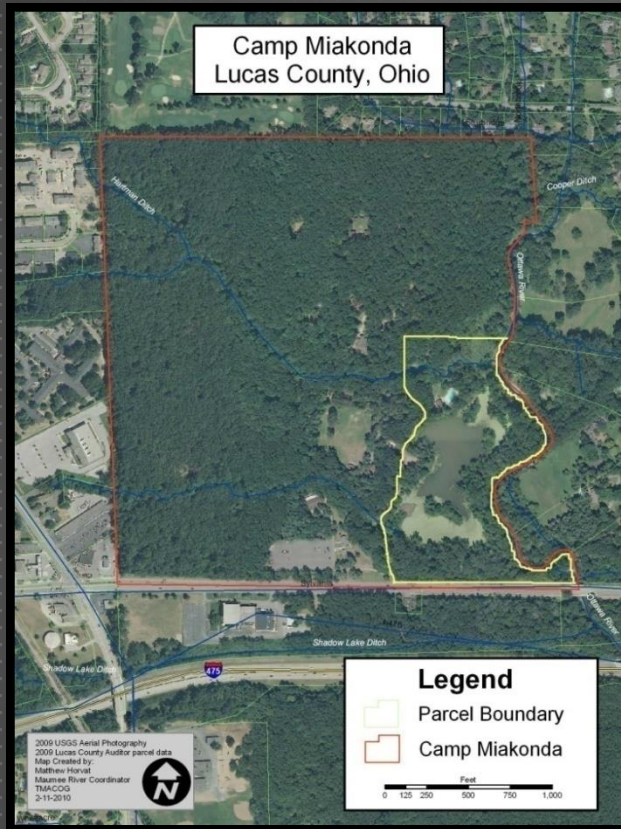
- ▶ Watershed-planning
- ▶ Research (like the Wetland Inventory)
- ▶ Secure grants (like Miakonda)
- ▶ Collaboration with environmental partners
- ▶ Host workshops and field days
- ▶ Fundraising



Camp Miakonda

OTTAWA RIVER WETLAND AND HABITAT RESTORATION PROJECT

GOALS



- ▶ \$1.36 Million GLRI grant from US EPA
 - ▶ 3 year duration
- ▶ Restore/enhance approx. 10 acres wetlands & approx. 30 acres associated wetlands.
- ▶ Reduce erosion & stream bank restoration from 1,200' adjacent Ottawa River
- ▶ Increase in-stream habitat for fish and macro invertebrates
- ▶ Increase diversity of in-water habitat for Lake Sawyer, allowing fish to winter over and encourage more active use of Lake Sawyer by Scouts
- ▶ Support educational use of wetland, lake, river, and upland habitat
- ▶ Contribute to BUI (Beneficial Use Impairment) goals and improvements for BUI 14 – Loss of Fish and Wildlife & BUI 3 – Degradation of Fish and Wildlife Habitat

Camp is a busy place...

- BSA continued to utilize camp during restoration.
 - Local Scout Shop
 - Offices for council administrators
 - Camps, camps, and more camps.
- There's one drive into camp, closed numerous times.
 - Hundreds of dump trucks in and out.



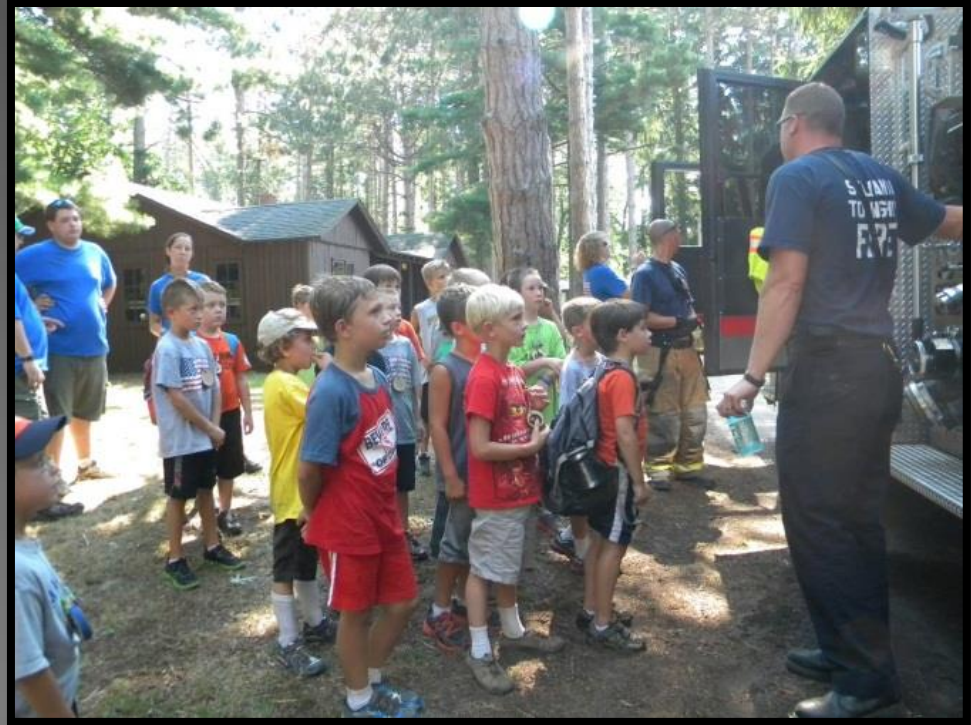
Camp is a busy...and popular place...

- In 2012, over 21,000 people used camp; not all Scouting related.
 - The BSA served over 6,300 youth in 2012.
- Outreach and partnership building important goals.
 - Educating the Scouts and adult leaders on maintaining the camp after project success.
 - Numerous outreach sessions
 - Five districts within Erie Shores Council.
 - Each with their own leadership & members



Camp is a busy...popular...and hectic place...

- **Contractors and Consultants and Landowners, Oh My!**
 - The BSA is volunteer based, events change or blossom almost instantaneously.
 - Flexible contractors!
 - Keeping each member of the trio abreast of each other's plans was my number one priority.





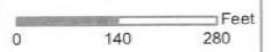
Reach #1 – Looking DS

OTTAWA RIVER BEND #1 – CAMP MIAKONDA

Draft Environmental Master Plan

Camp Miakonda
5600 W Sylvania Ave
Toledo, OH

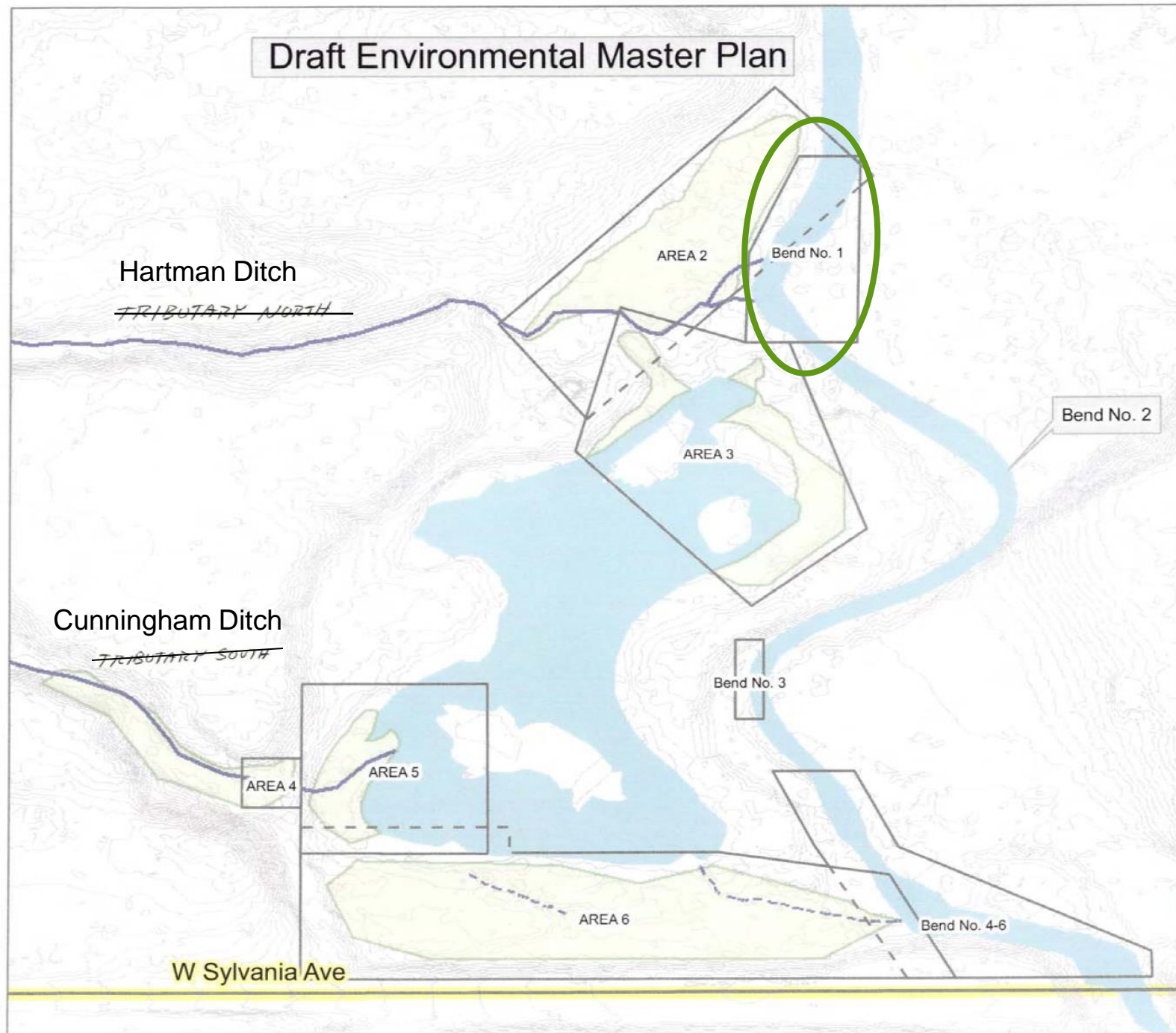
Index 2



- Streams
- Swales
- Wetlands



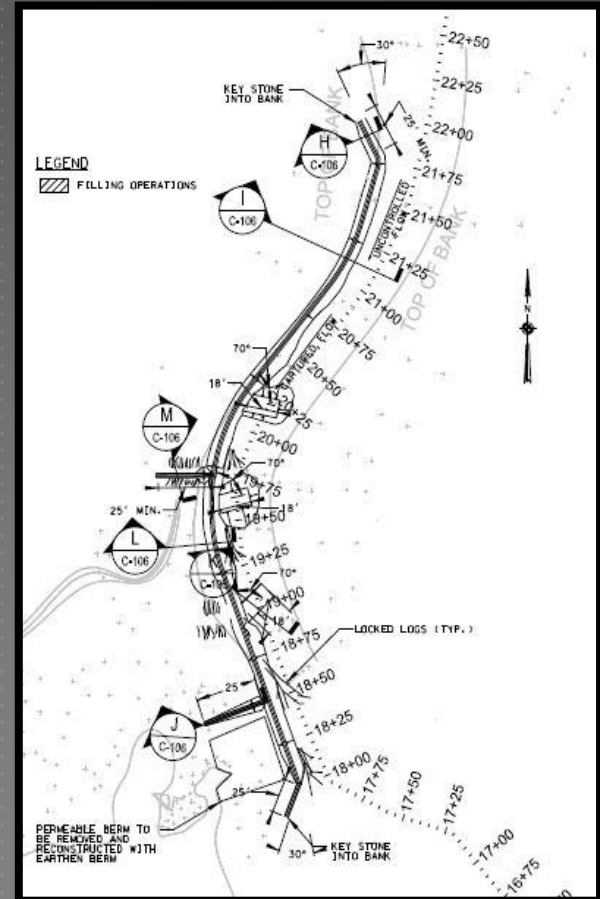
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OTTAWA RIVER – CAMP MIAKONDA

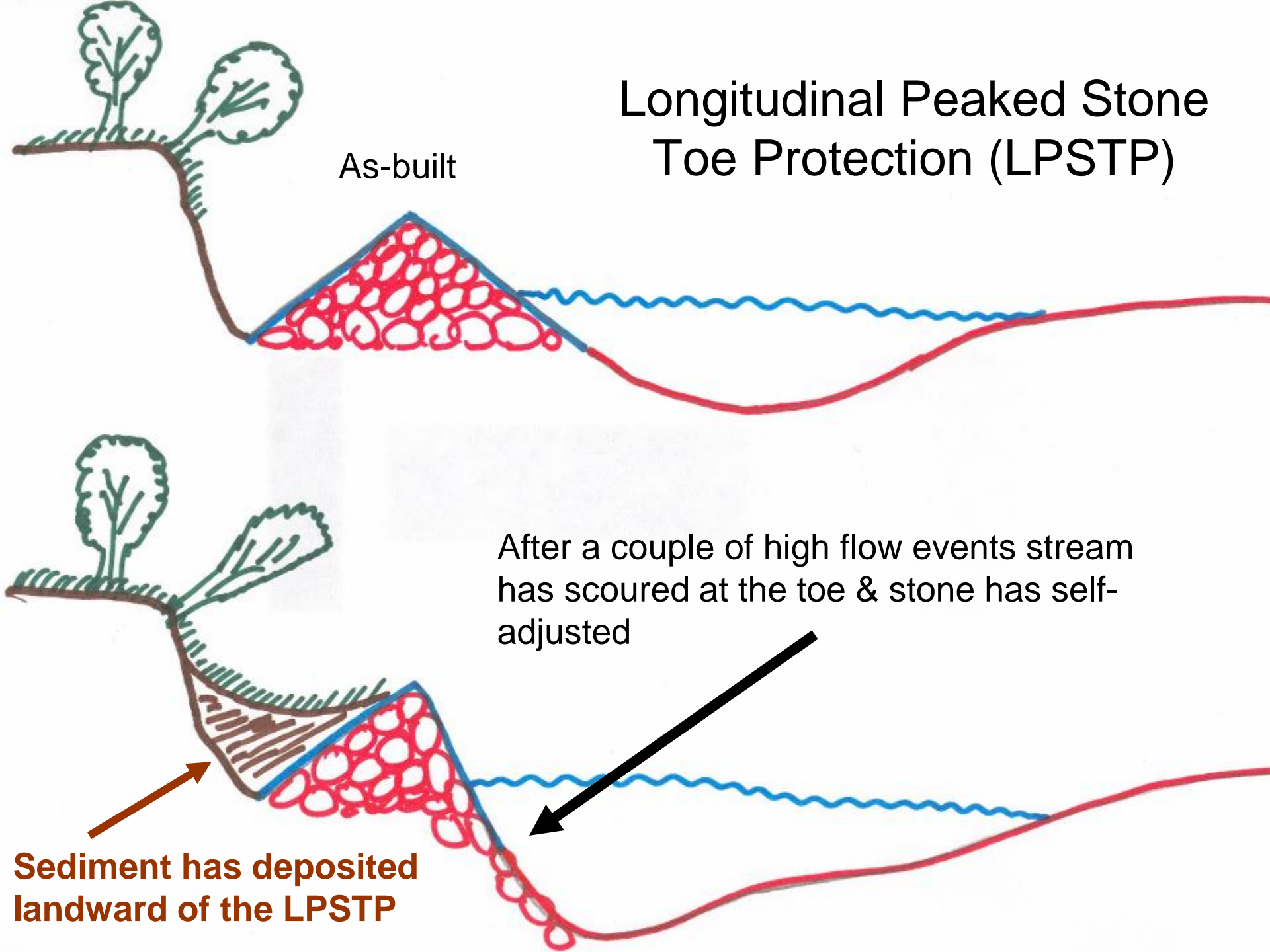
- ▶ Identified as a priority item from Inventory Plan.
- ▶ Stream bank stabilization & erosion control methods.
 - ▶ Stream bank erosion was rapidly decreasing the amount of land between the two bodies of water.
 - ▶ 10ft at most.
- ▶ Numerous in-stream improvements.
 - ▶ Longitudinal Peaked Stone Toe Protection (LPSTP), Bendway Weirs, Locked Logs, Live Siltation & Living Dikes

Ottawa River Draft Plans



Longitudinal Peaked Stone Toe Protection (LPSTP)

As-built




After a couple of high flow events stream
has scoured at the toe & stone has self-
adjusted

Sediment has deposited
landward of the LPSTP

Longitudinal Peaked Stone Toe Protection (LPSTP)

◆ Description:

- ◆ A continuous stone dike placed longitudinally at, or slightly streamward of the toe of the eroding bank.
- ◆ Cross-section is triangular.
- ◆ The LPSTP does not necessarily follow the toe exactly, but can be placed to form a "smoothed" alignment through the bend. Smoothed alignment might not be desirable from the environmental or energy dissipation points of view.
- ◆ Amount of stone used depends on depth of scour at the toe, estimated stream forces (impinging flow) on the bank, and flood durations and stages.
- ◆ Approx. 2tons/linear ft. was used in this project.

- 
- A photograph showing a river bend with a stone-lined bank. A yellow excavator is visible in the background on a dirt bank. The river is calm, reflecting the surrounding trees. The sky is blue with some clouds.
- ▶ LPSTP lining bend #1.
 - ▶ 40ft upstream key back-filled.
 - ▶ Live siltation along key, behind LPSTP within the floodplain bench.

Reach #1 – Looking DS

- ▶ Floodplain bench used as haul road.
 - ▶ Bench did not used to exist.
 - ▶ Notice point bar.
- ▶ Pipe below is draining Lake Sawyer – shut off valve; silt curtain.



- ▶ Locked Log
- ▶ Pointed DS to encourage stream thalweg away from bank.
- ▶ Habitat creation from low velocity waters.

Reach #1 – Looking DS



► Bendway Weirs
(3)

- Designed to encourage thalweg away from protected bank.
- Built into LPSTP for stabilization

► Floodplan Bench

► Living Locked Logs

- ▶ Multiple rows of live siltation; living dikes. Collect sediment and other materials at high flow.
- ▶ Living locked logs provide shade.
- ▶ Various heights enable bank protection at high flow.



Reach #3 – Looking DS

OTTAWA RIVER BEND #3 – CAMP MIAKONDA

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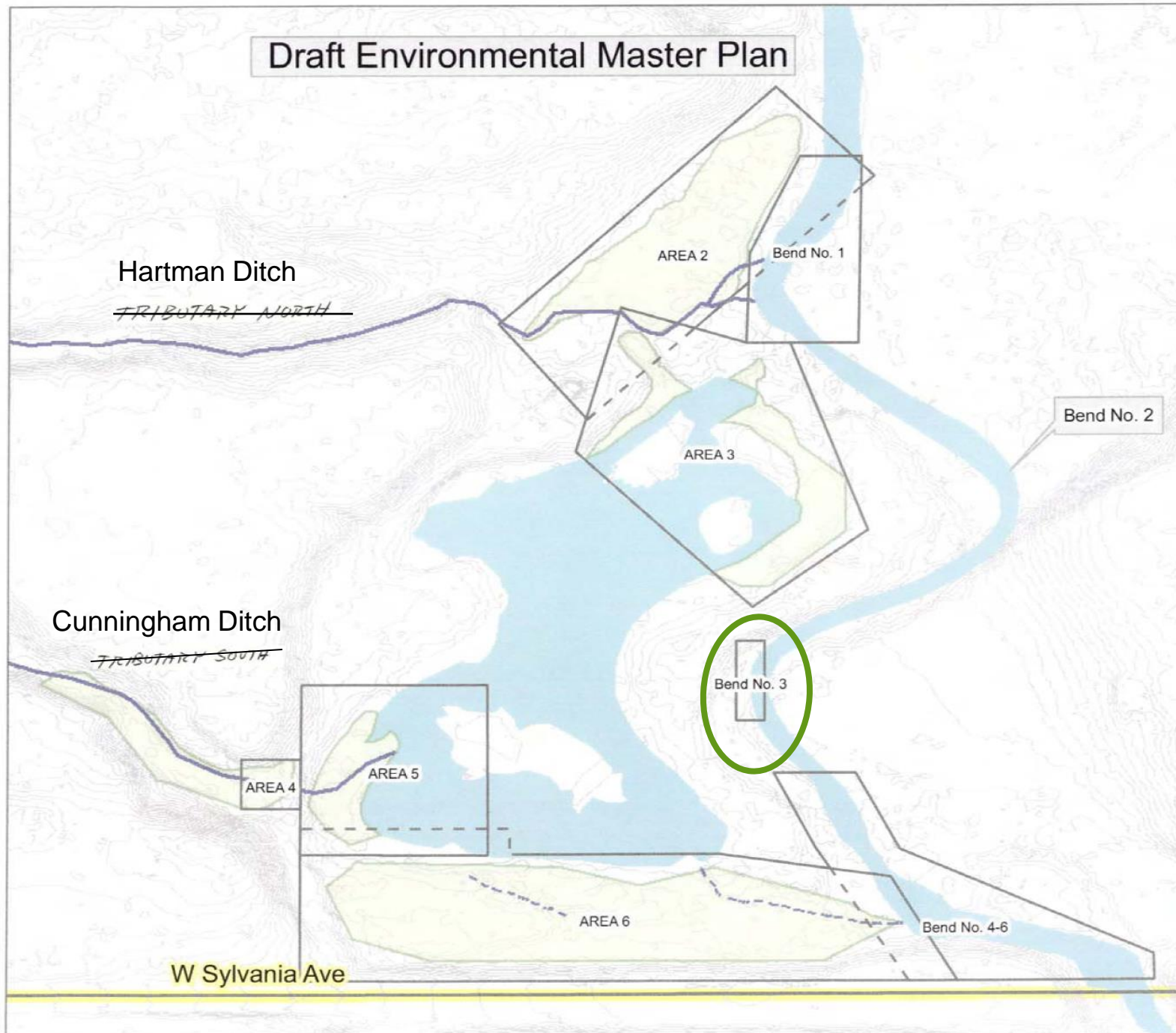



0 140 280 Feet


- Streams
- Swales
- Wetlands




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- 
- ▶ Series of three Bendway Weirs, like bend #1.
 - ▶ 600+ft of LPSTP lining the Ottawa River.
 - ▶ Note the clear point bar opposite the steep slopes.

- 
- ▶ Bendway Weir is “choked” with smaller stones.
 - ▶ Give Scouts fishing access for the first time.
 - ▶ Steps dug into the bank.
 - ▶ Thalweg clearly visible in bubble line.



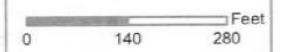
Cunningham – Looking US

CUNNINGHAM DITCH – CAMP MIAKONDA

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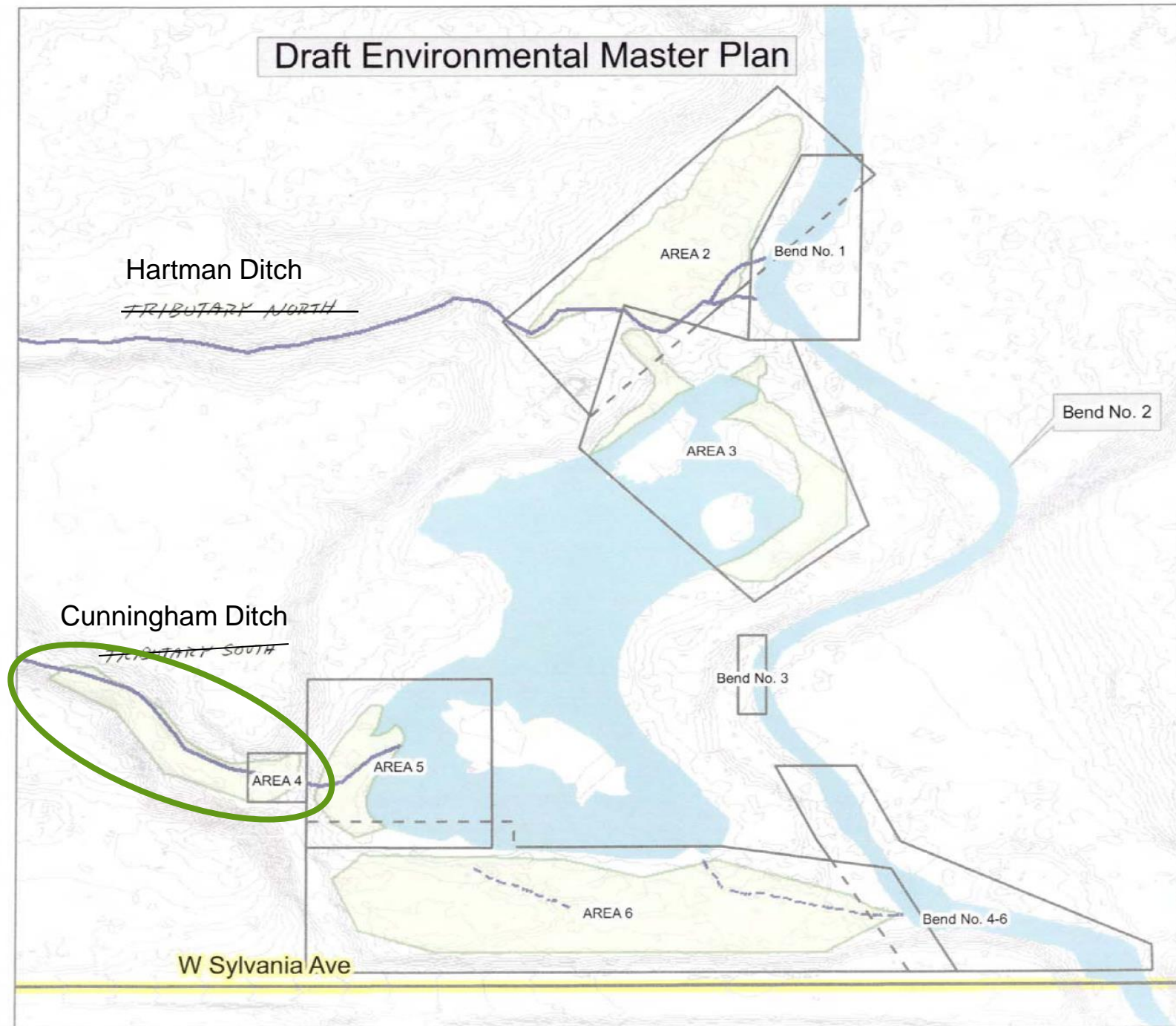
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- ▶ Concrete pad was removed.
- ▶ Exposed pipe used to channel stream underground; removed.
- ▶ Exposed more of the existing “bowl” to create large pool for overflow.



- ▶ Series of “steps” were created; riffle > pool
 - ▶ Allows water to drop in elevation while slowing velocity.
 - ▶ Riffles help filter out and collect sediment & small debris.
- ▶ Plantings installed on either side.
- ▶ Educational area fondly known as Sedge-U-Cation.

- 
- The image shows a stone structure, possibly a well or a culvert, built into a grassy bank. The structure is made of large, rectangular stones and has a circular opening at the base. In the foreground, there is a stream with a rocky bed and some fallen leaves. The background is a dense forest of bare trees, suggesting a late autumn or winter setting. A paved road is visible in the distance.
- ▶ Clear view of the bowl nestled around great looking existing architecture.
 - ▶ Already greening up – Scouts appreciated.
 - ▶ Second pool visible > riffle.



HARTMAN DITCH – CAMP MIAKONDA

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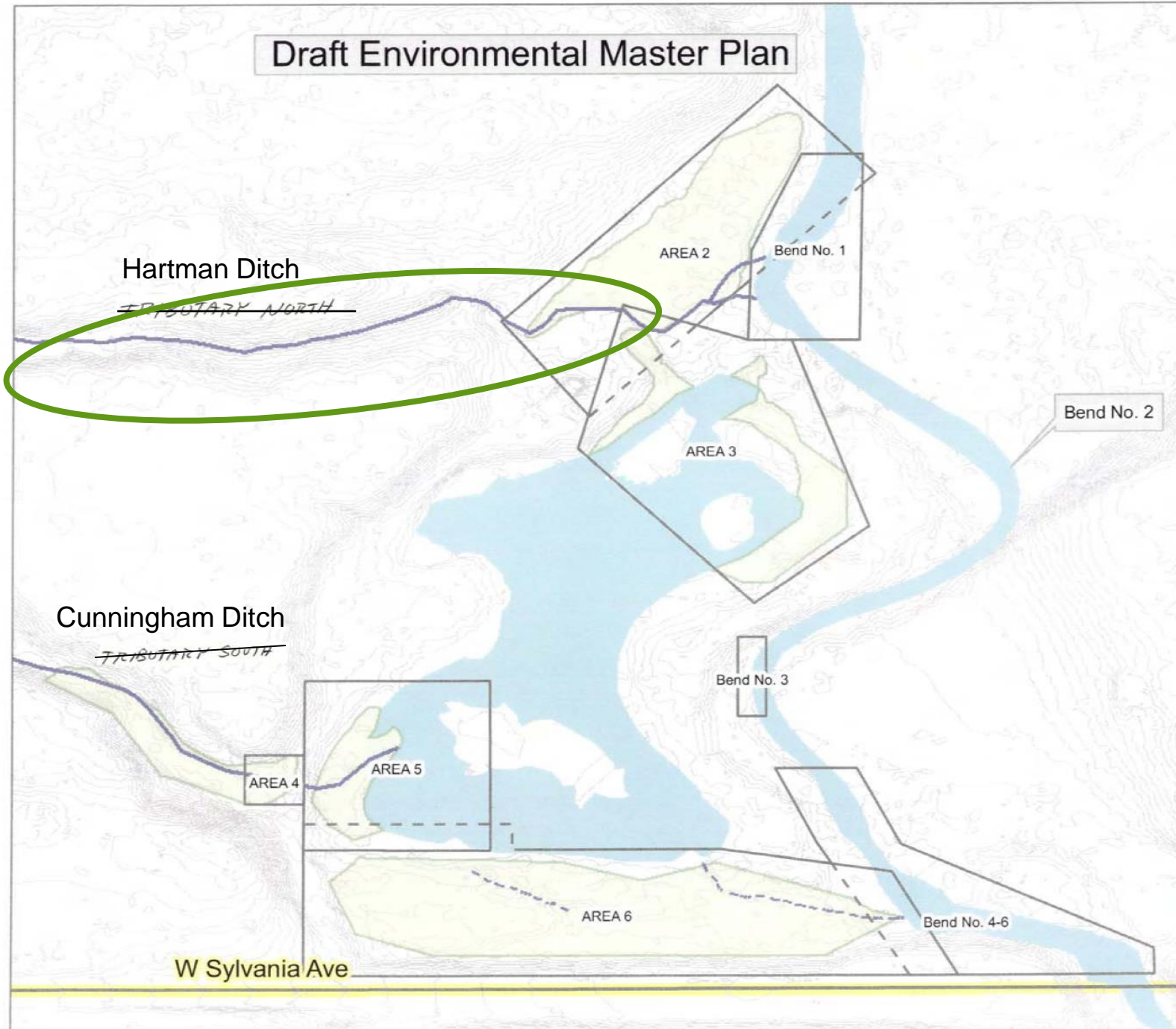


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► Erosion & sediment control methods.

- Highly visible area
- Stone bank protection
- Rock riffle; note sediment build up behind bridge.
- Coconut matting – planted.

Hartman – Looking US



- ▶ V-notch weirs installed.
- ▶ Angled downstream; sediment control.
- ▶ Keyed into banks - 10ft.
- ▶ Note additional bank protection – LPSTP.

Hartman – Looking US



- ▶ Hartman made an “awkward” turn into the existing culvert.
- ▶ Bank protection added, and used to help turn the stream.

Hartman – Looking DS



- ▶ Hartman was redirected into Lake Sawyer.
- ▶ A pre-cast concrete culvert was installed.
- ▶ Bank protection was added on both US & DS sides.

Hartman – Looking DS





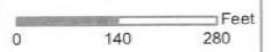
North Wetland

NORTH WETLAND – CAMP MIAKONDA

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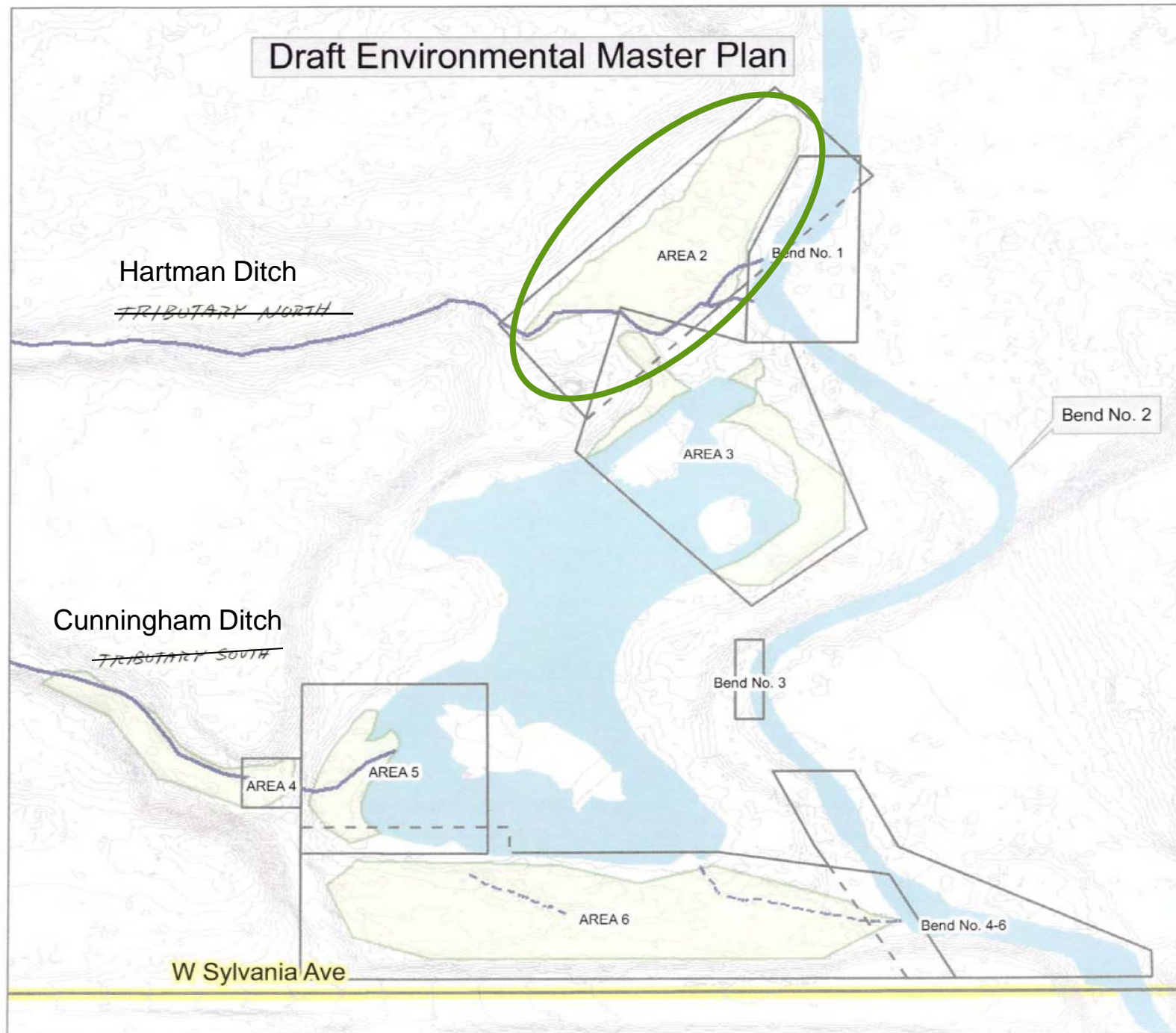
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- ▶ Reed canary grass sprayed and then removed along with ~1 ft of additional sod.
- ▶ Floating excavator used extensively – other equipment was positioned using stone pads to minimize disturbance.



- 
- A photograph of a wetland area. In the foreground, a muddy stream flows from the bottom left towards the center. The banks are composed of dark, wet mud and scattered brown leaves. Several young, bare trees are planted in the area, some with visible stumps. In the background, a dense forest of taller, bare trees stands under an overcast sky. A blue text box is overlaid on the right side of the image.
- ▶ With sod removed, wetland was significantly planted with high quality species.
 - ▶ Hartman re-route visible.



LAKE SAWYER – CAMP MIAKONDA

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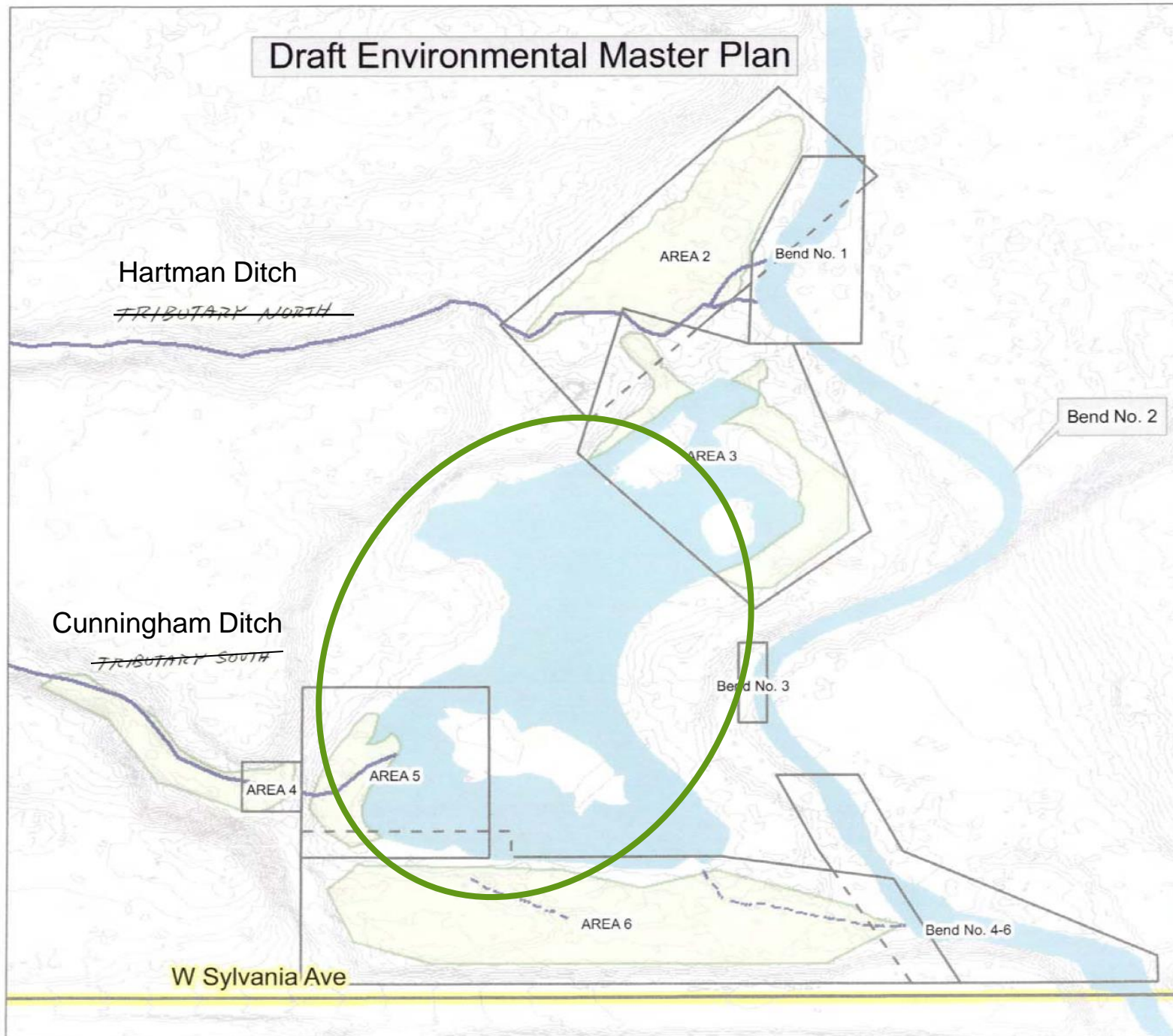


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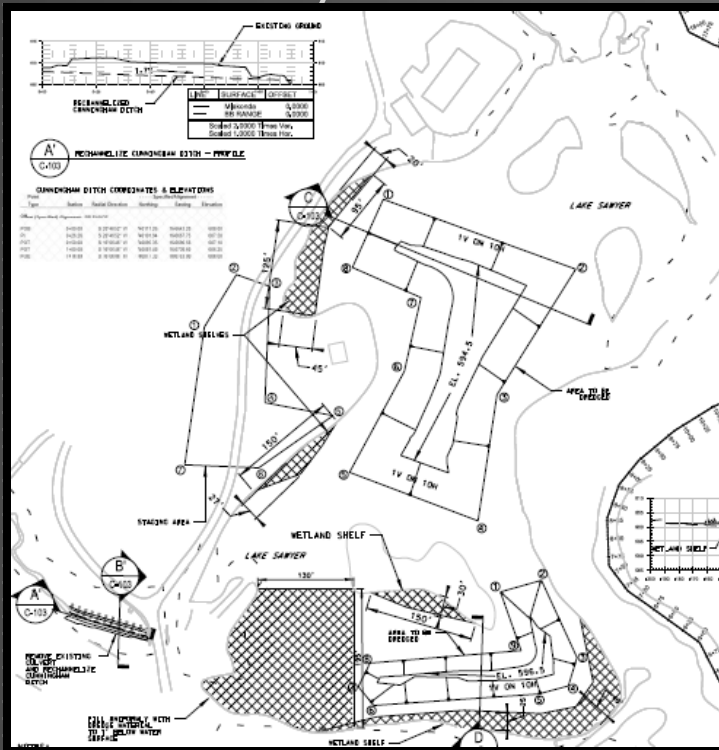


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LAKE SAWYER – CAMP MIAKONDA

Lake Sawyer Draft Plans



- ▶ Hand-dug lake 70 years ago as WPA project.
- ▶ Ottawa floods frequently into the lake.
 - ▶ 2ft deep across.



- ▶ Excavator with thumb placed concrete debris along excavated area for road stability.
- ▶ Fortunately we struck hard ground several thousand cubic yards later.



- ▶ Drainage channels were kept lower than road.
 - ▶ As water seeped through the muck, pumps removed it.
- ▶ Pumps continually worked 24hrs/ day.

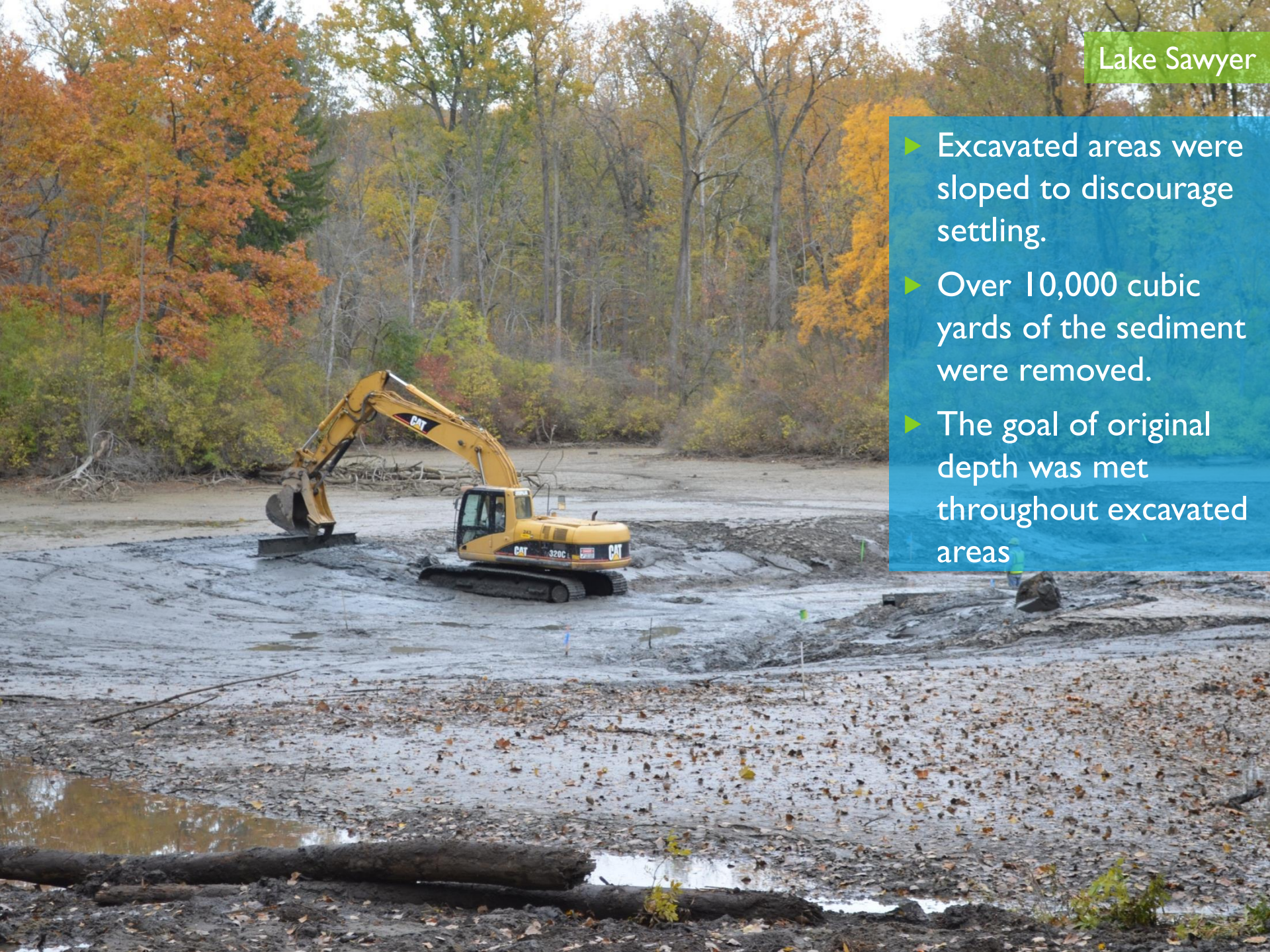


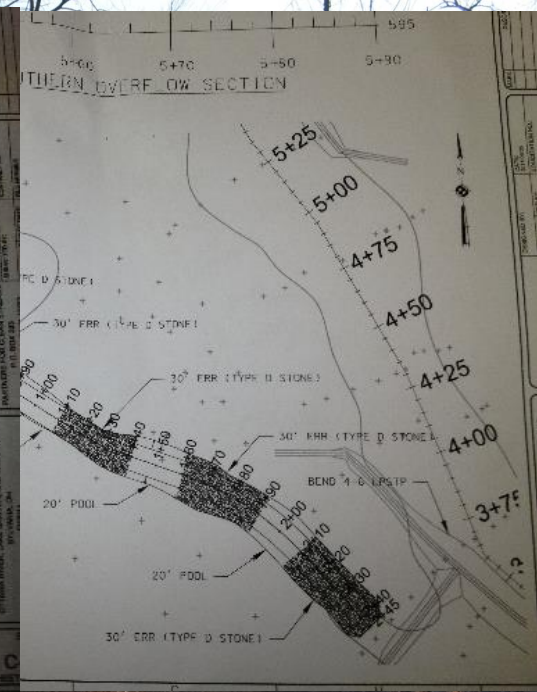
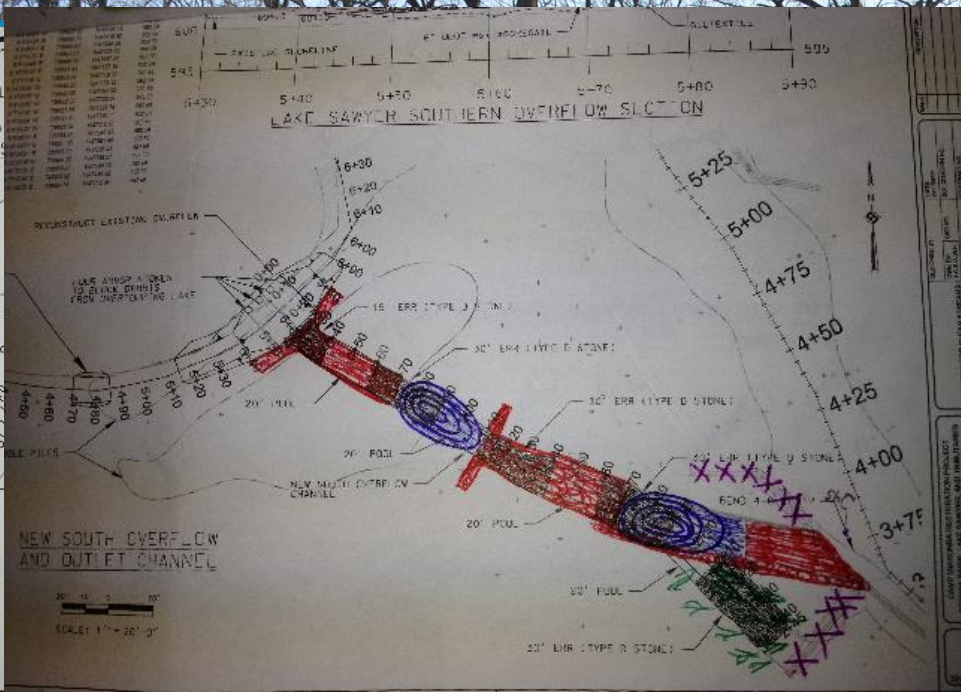
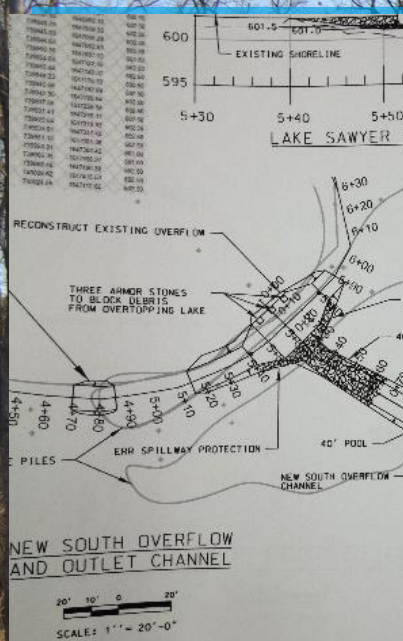
- ▶ “The Pit” was dug for excavated materials to de-water.
- ▶ Material was then taken off site for disposal.
 - ▶ Quarry hole.

Lake Sawyer – “The Pit”

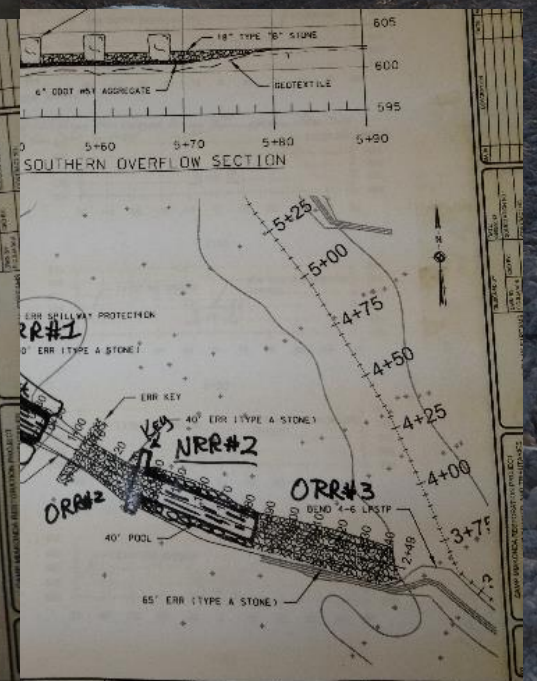
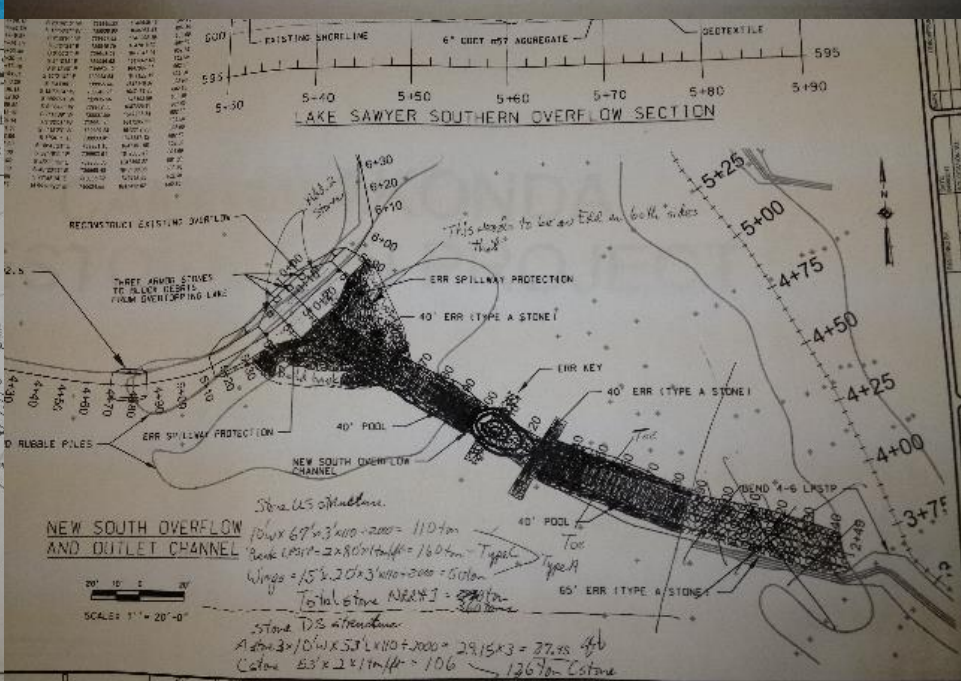
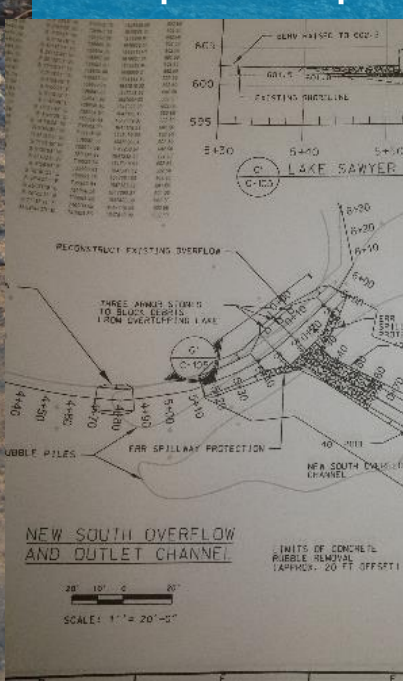


- ▶ Excavated areas were sloped to discourage settling.
- ▶ Over 10,000 cubic yards of the sediment were removed.
- ▶ The goal of original depth was met throughout excavated areas





► important piece



- ▶ Numerous wetland shelves were created around the lake.
- ▶ Shelves act as nutrient filters and sediment controls.
- ▶ The floating excavator was useful in shelf creation.



Lake Sawyer – Wetland Shelf

- ▶ Crews had to get creative for shelf plantings; foam board walkways.
- ▶ Nearly 26,000 plants were installed throughout the project.
 - ▶ Not including seed!



What's Next?

- Monitoring, assessment, & evaluations continue through this year.
- Expand educational opportunities for Boy Scouts and the public.
 - Informational signage/kiosks. Program expansion & cooperation.
- Create and present the BSA with a management plan.
 - Little time commitment is necessary.
- Adaptive management: plant survivability, structure maintenance, invasive species management.



Thank You.

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