

Reconnecting Fish Passage from Lake Erie to the River Raisin

National Conference on Ecosystem Restoration

Scott Dierks, PE





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- Mike D'Agostini, D'Agostini Contractors
- Scott Isenberg, Michelle LaRose, Andy McDowell, Jeff Guerrero, & Matt Gates, Cardno JFNew

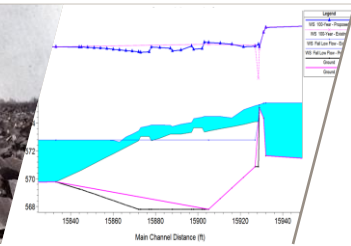
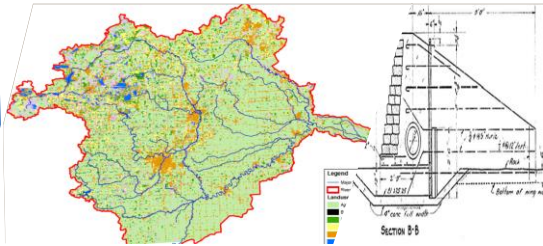
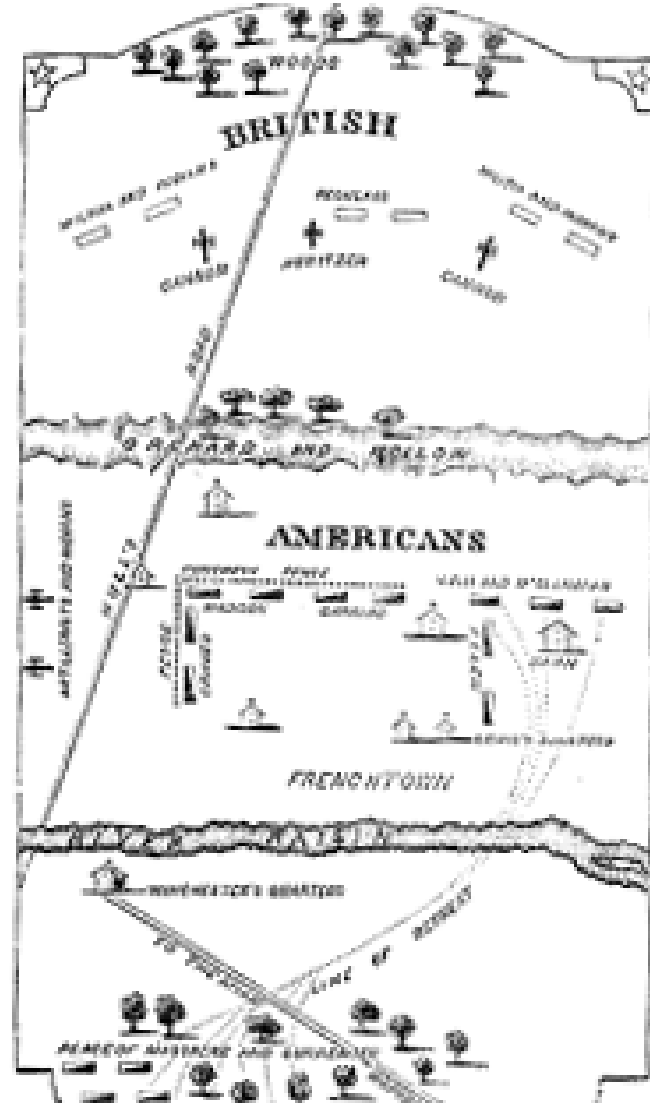
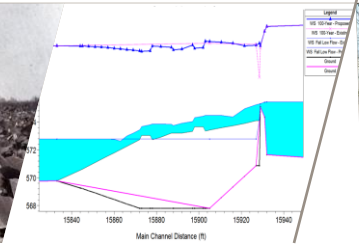
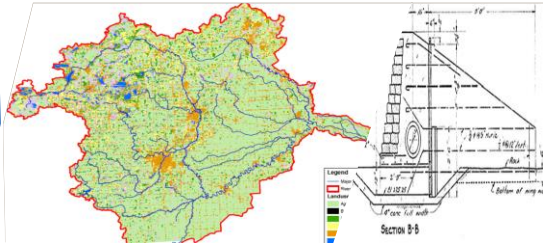


Image NOAA
Image © 2013 TerraMetrics
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Google earth





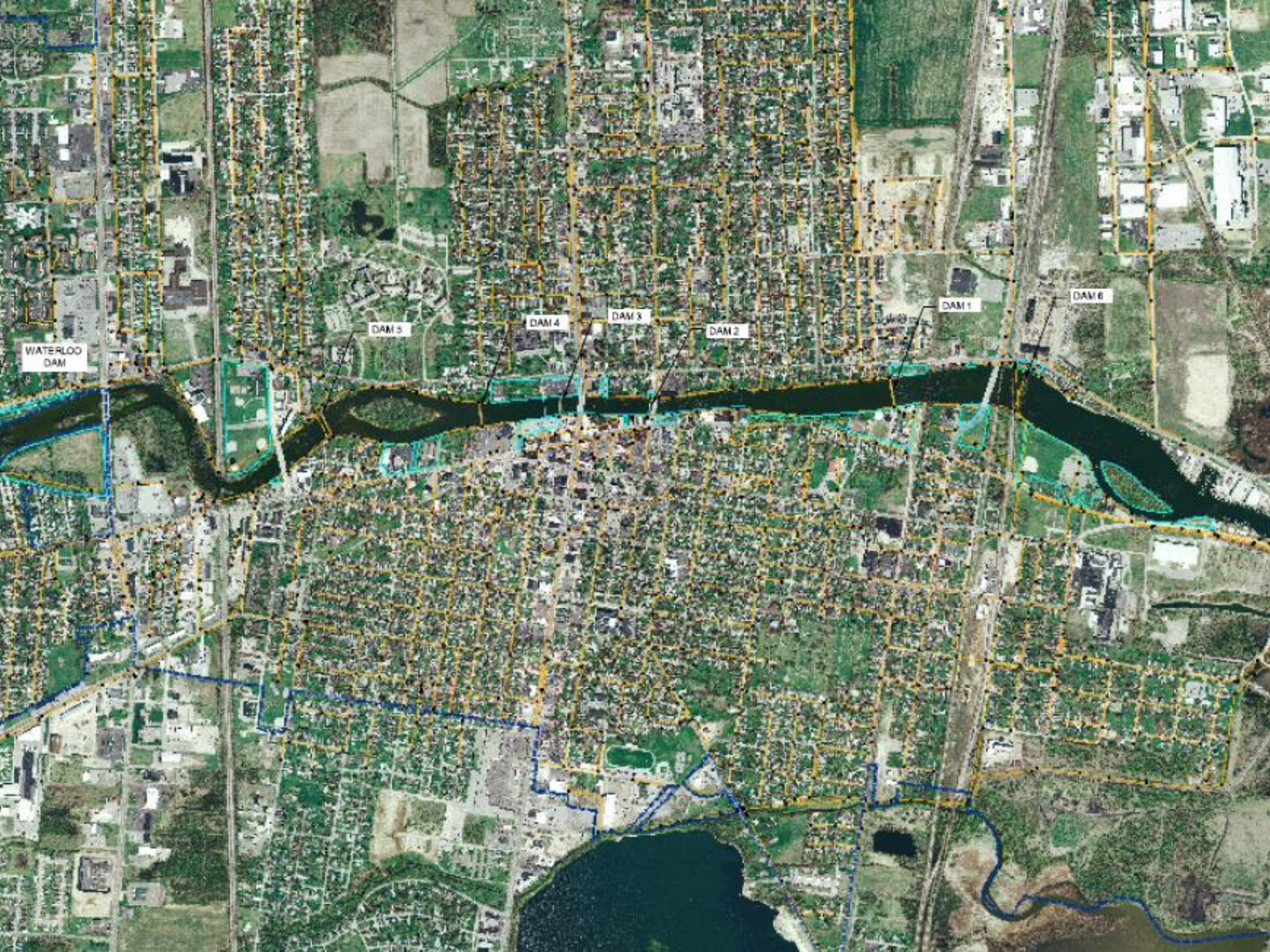
Dam Mitigation Projects

- Raisin AOC presents a unique opportunity for delisting
- EPA dredging combined with this project & Sterling State Park wetland restoration could lift habitat impairments.
- Restoration projects funded by GLRI.
- Dam project to be accomplished in two phases by Fall, 2013 and create fish access from Lake Erie to Dundee (~23 miles)
- MDEQ working on strategies for other impairment delistings, recognizing that Monroe will remain an important shipping port for foreseeable future
- Raisin AOC delisted 2015-2016?



Project Area – Phase 1 & Phase 2





WATERLOO
DAM

DAM 5

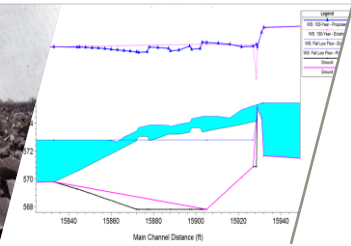
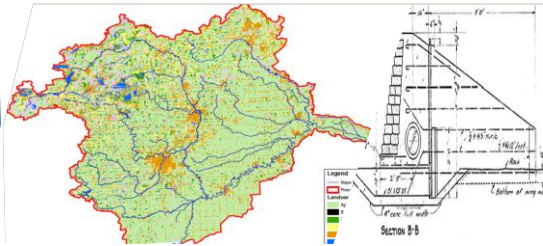
DAM 4

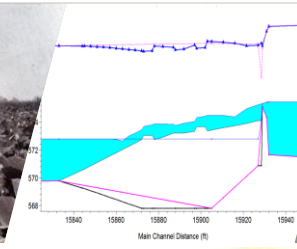
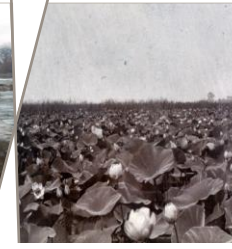
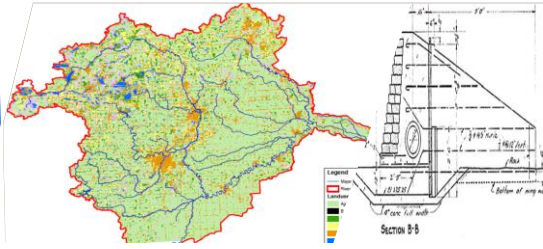
DAM 3

DAM 2

DAM 1

DAM 6





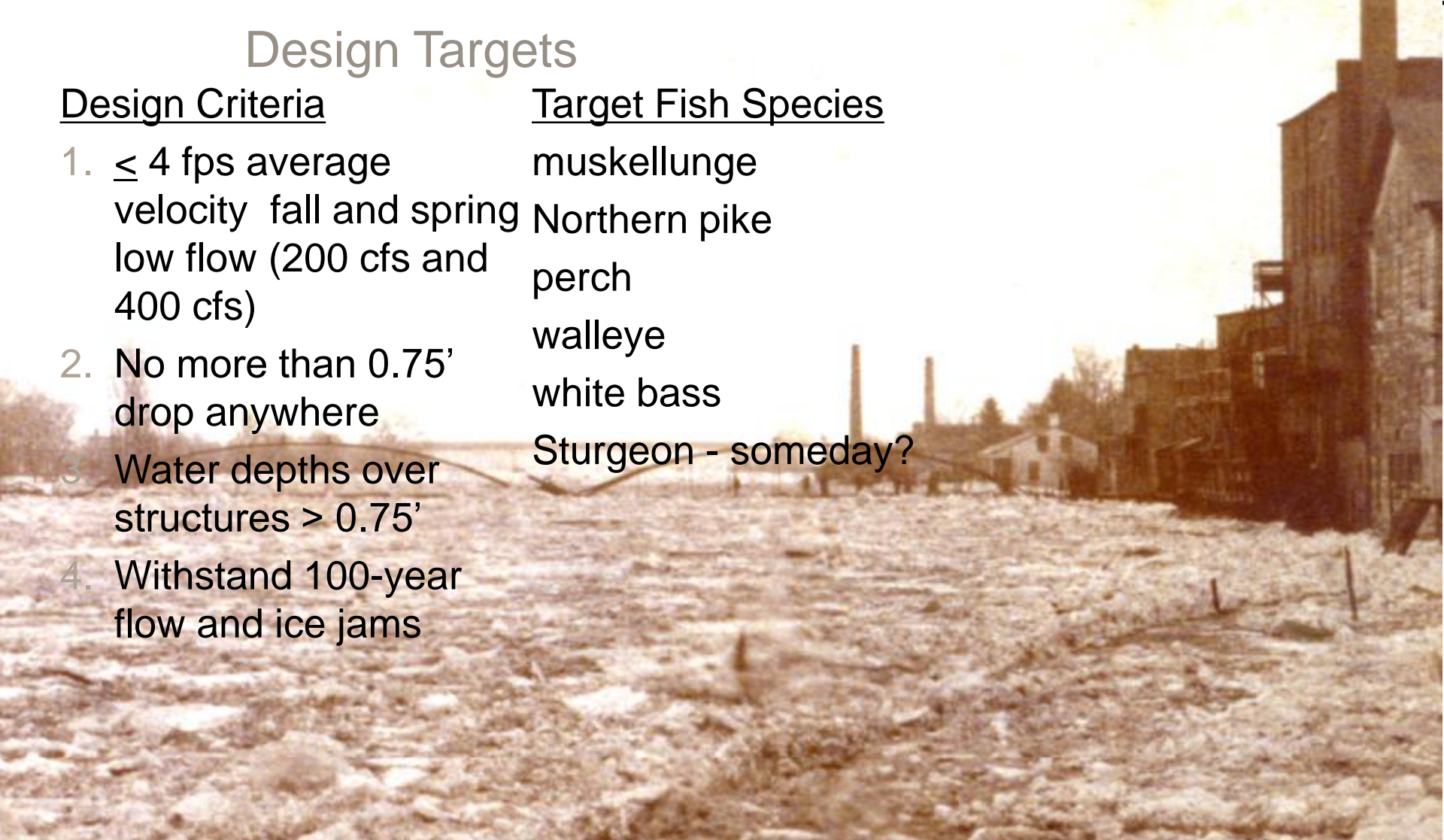
Design Targets

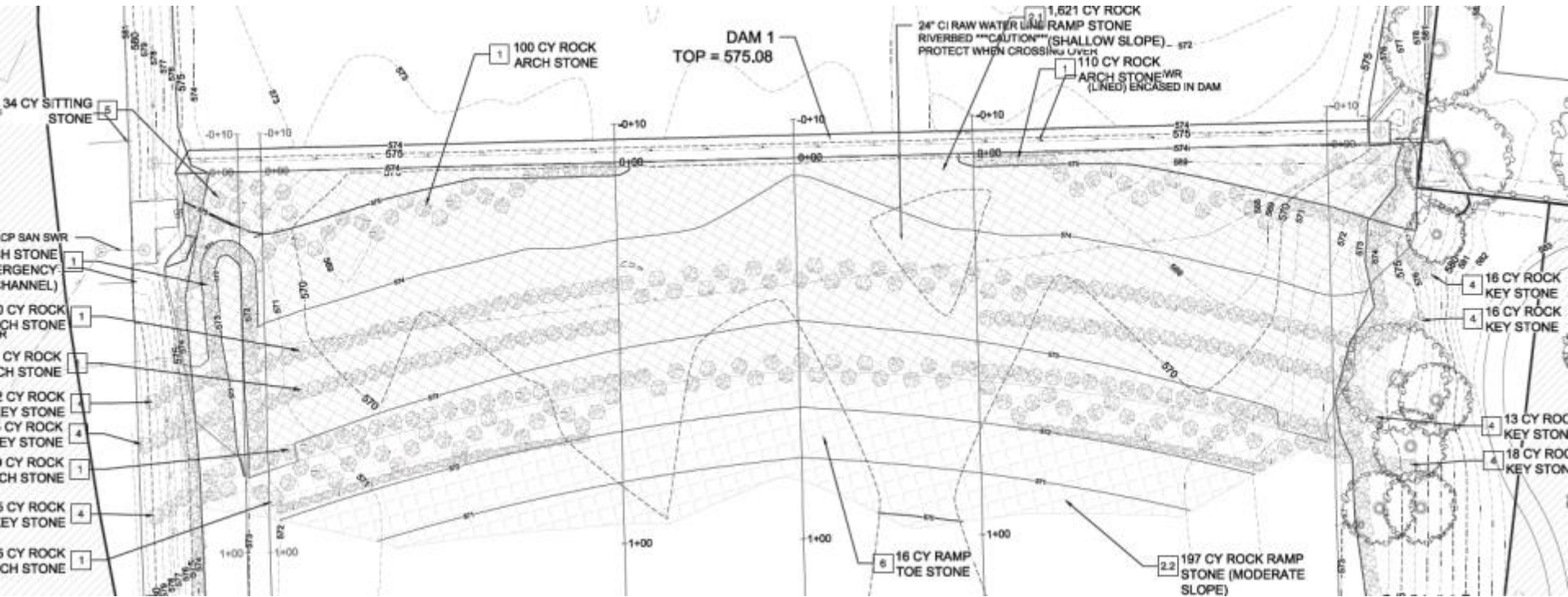
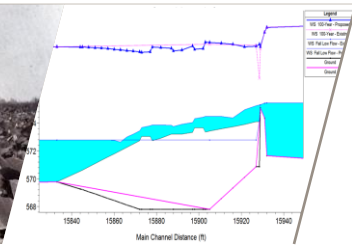
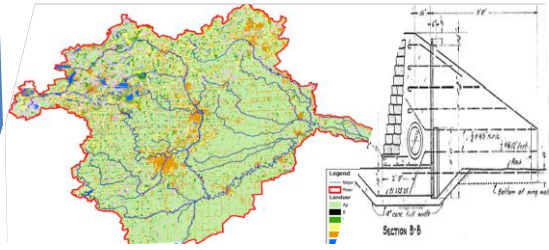
Design Criteria

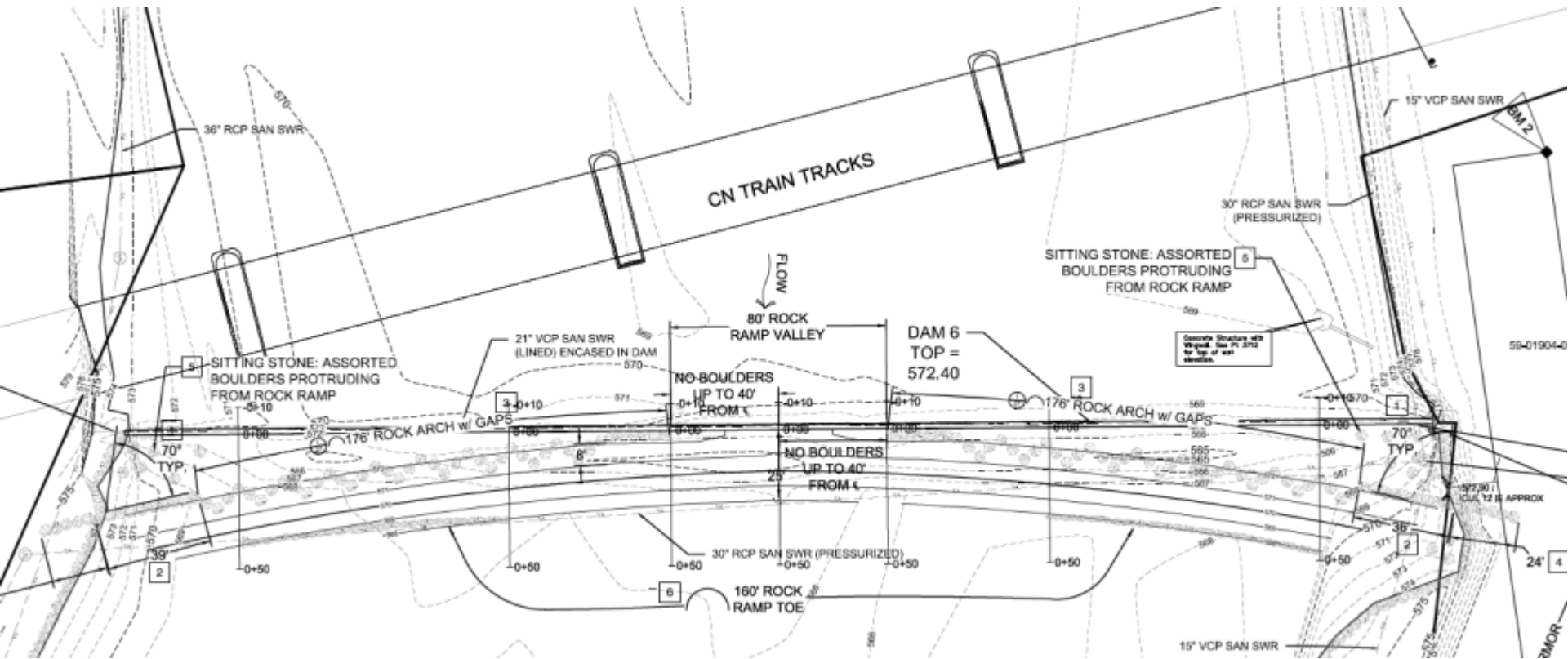
1. ≤ 4 fps average velocity fall and spring low flow (200 cfs and 400 cfs)
2. No more than 0.75' drop anywhere
3. Water depths over structures $> 0.75'$
4. Withstand 100-year flow and ice jams

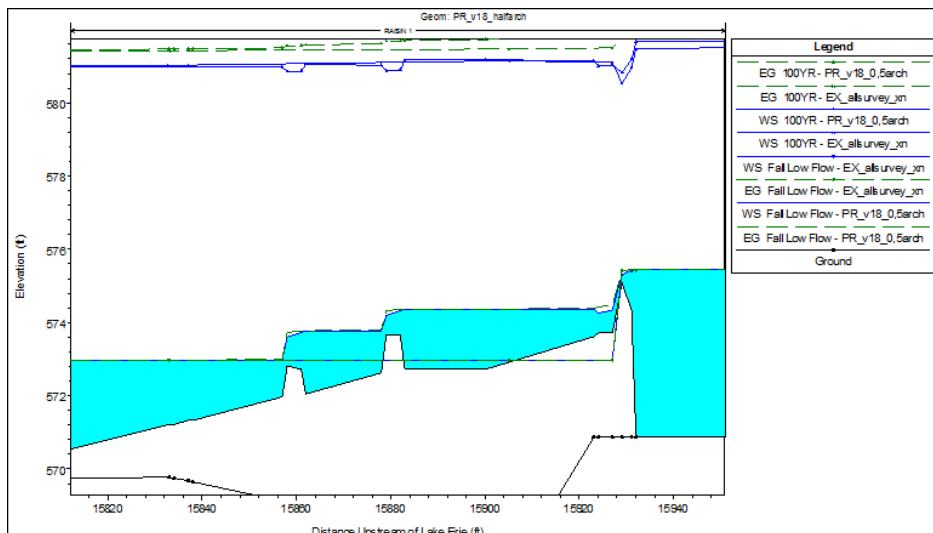
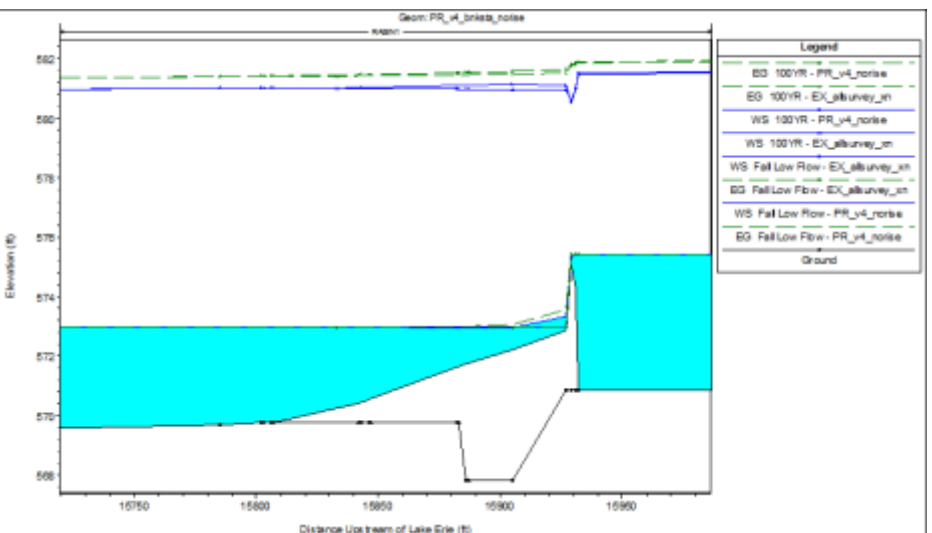
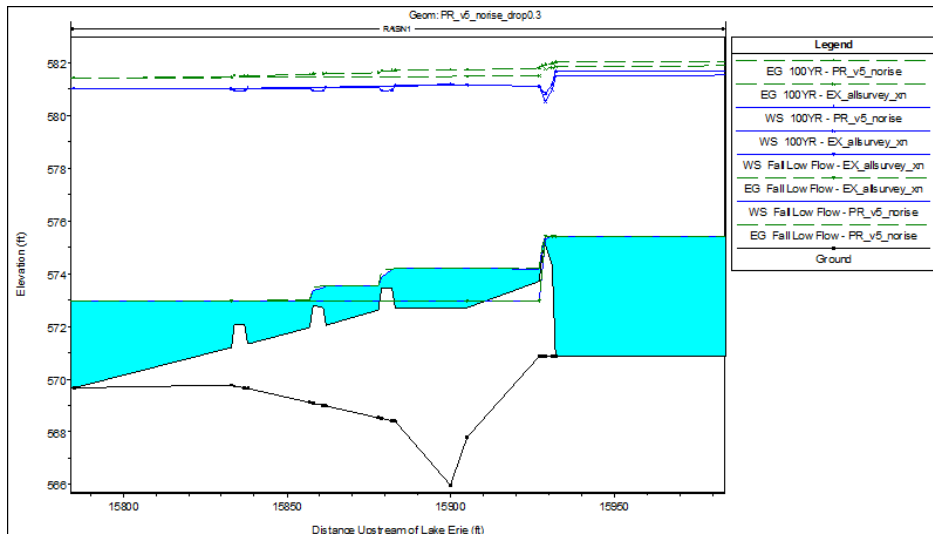
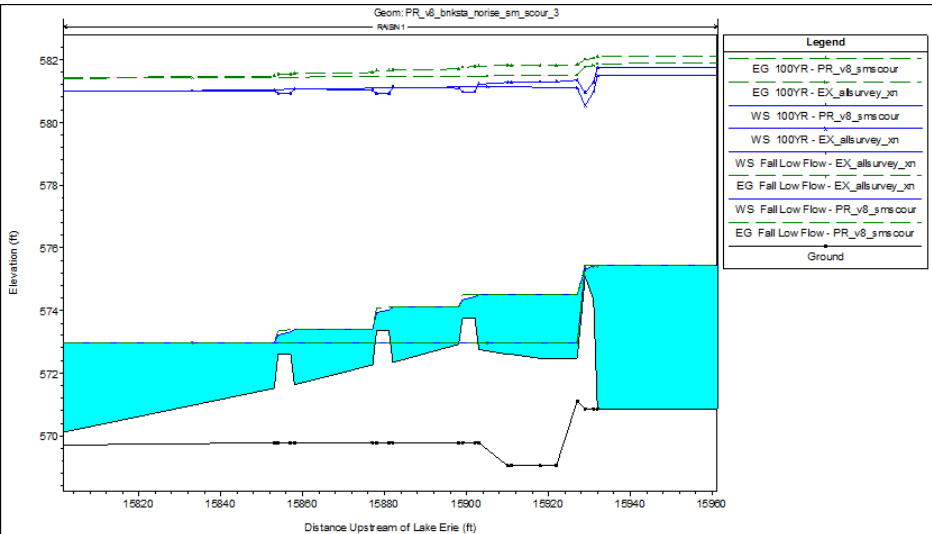
Target Fish Species

- muskellunge
- Northern pike
- perch
- walleye
- white bass
- Sturgeon - someday?









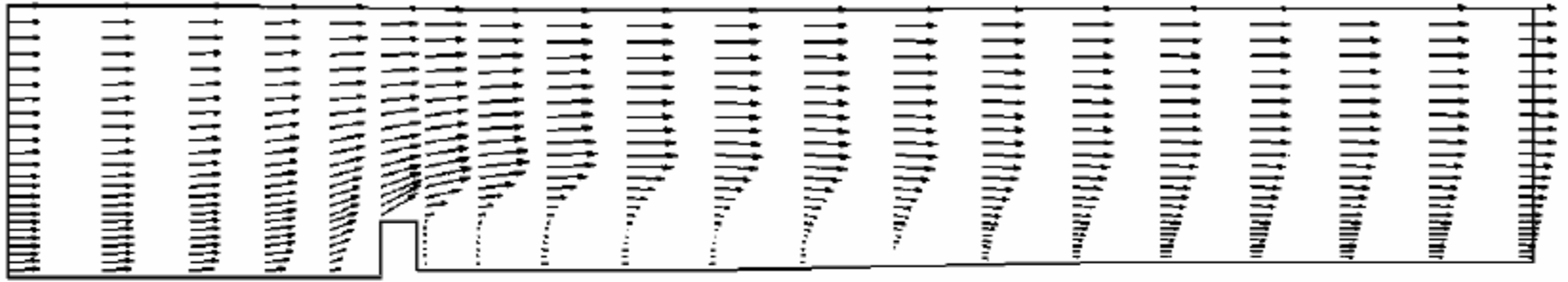


Figure 4 Velocity Vectors for Pre-Fill Conditions at Fargo North Dam (USACE, 2000)

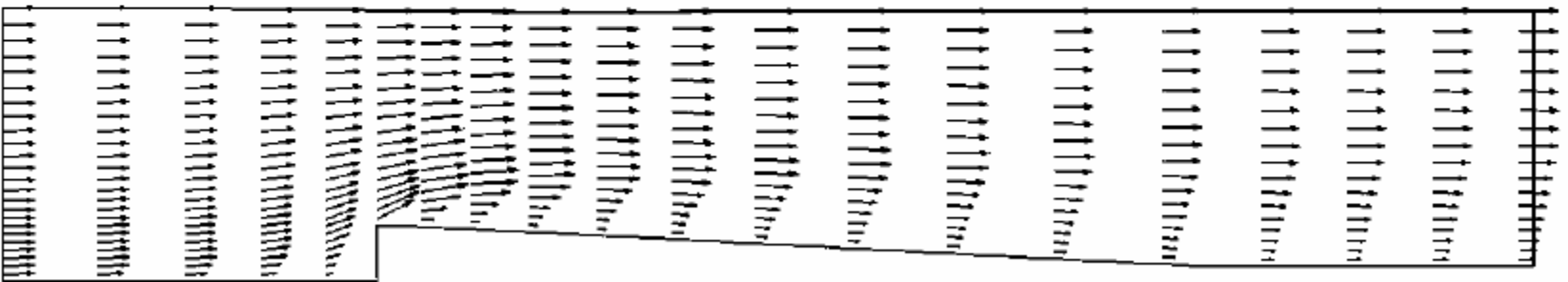
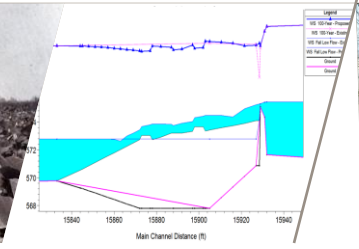
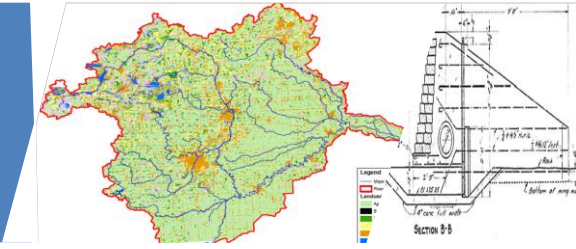
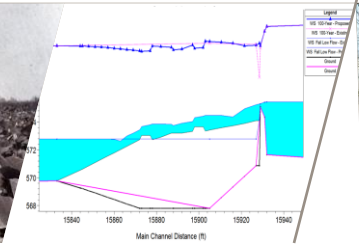
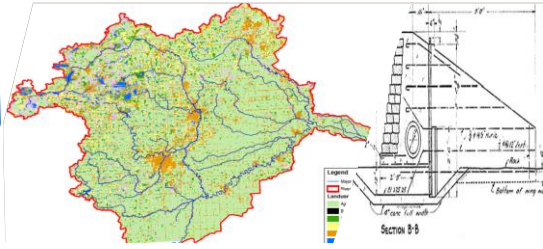
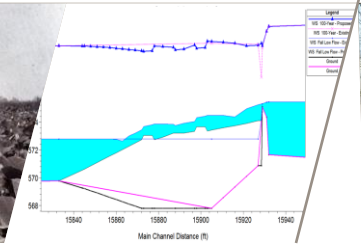
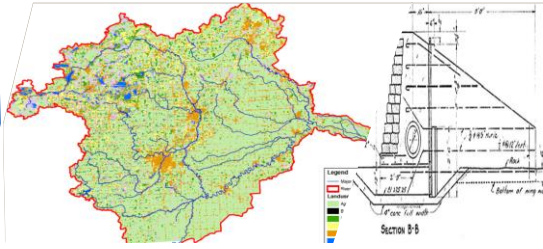
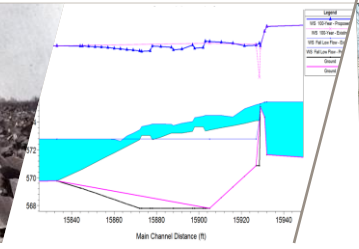
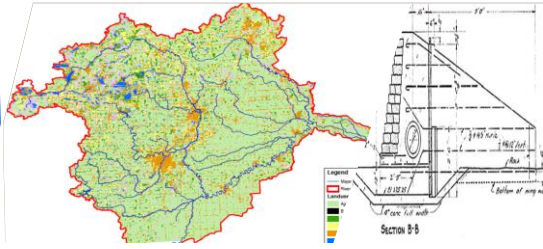


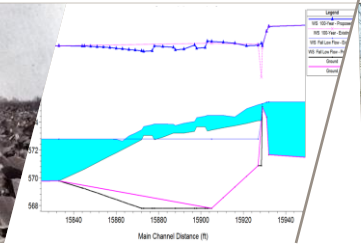
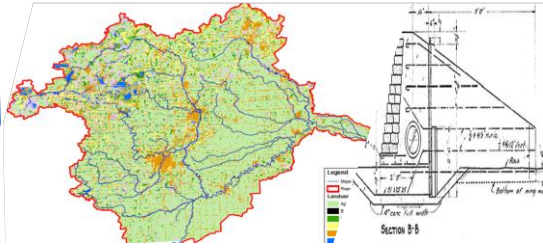
Figure 5 Velocity Vectors for Post-Fill Conditions at Fargo North Dam (USACE, 2000)

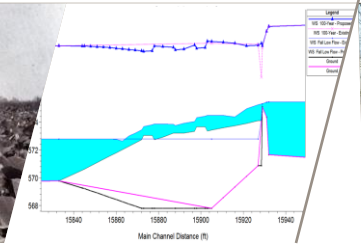
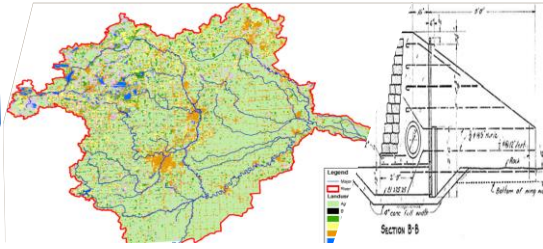


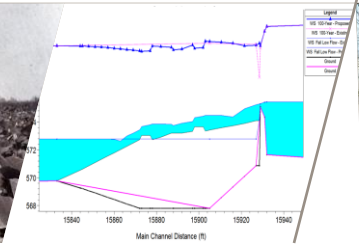
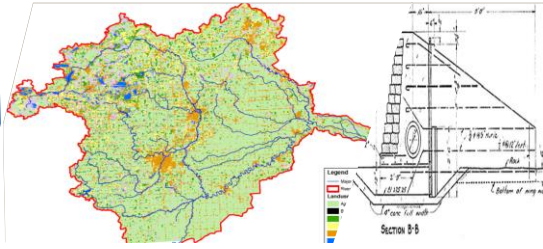


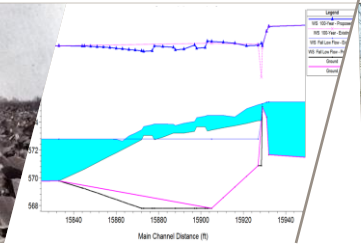
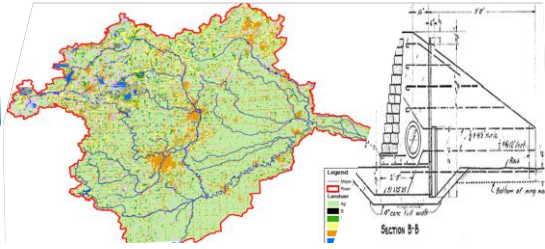


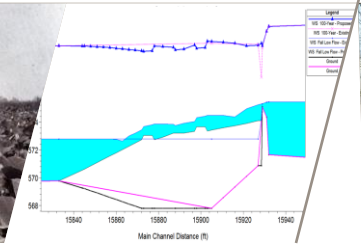
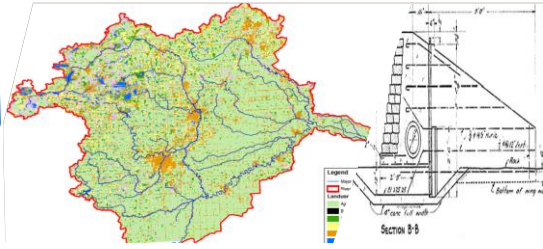


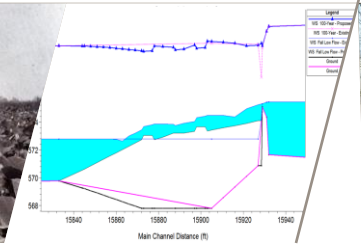
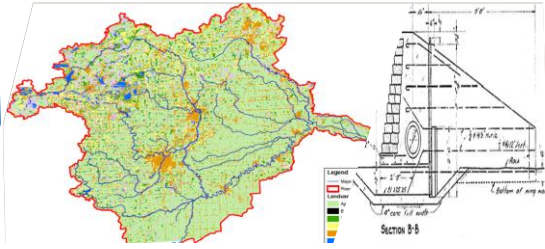


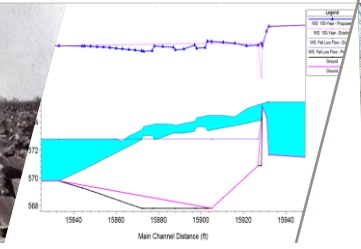
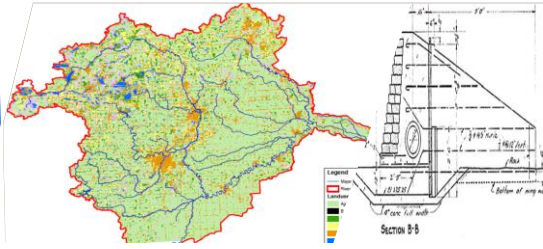


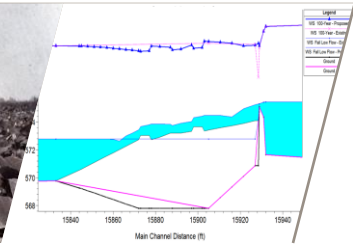
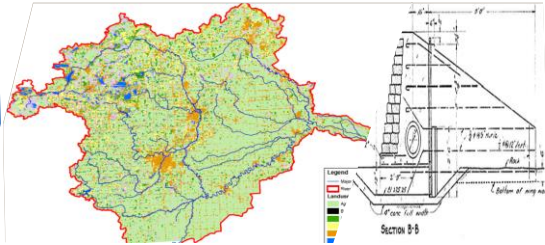


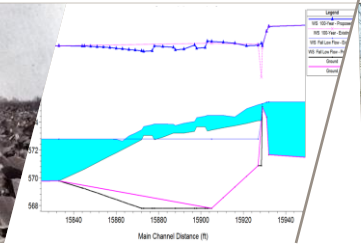
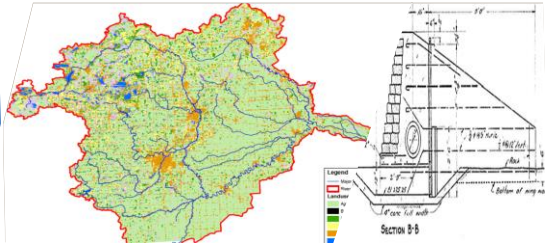


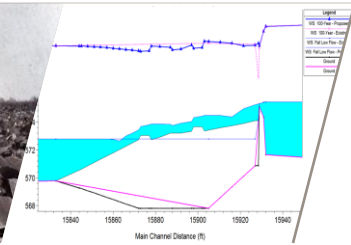
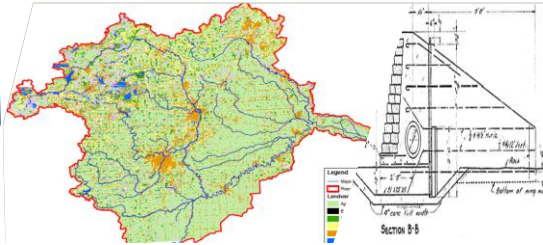


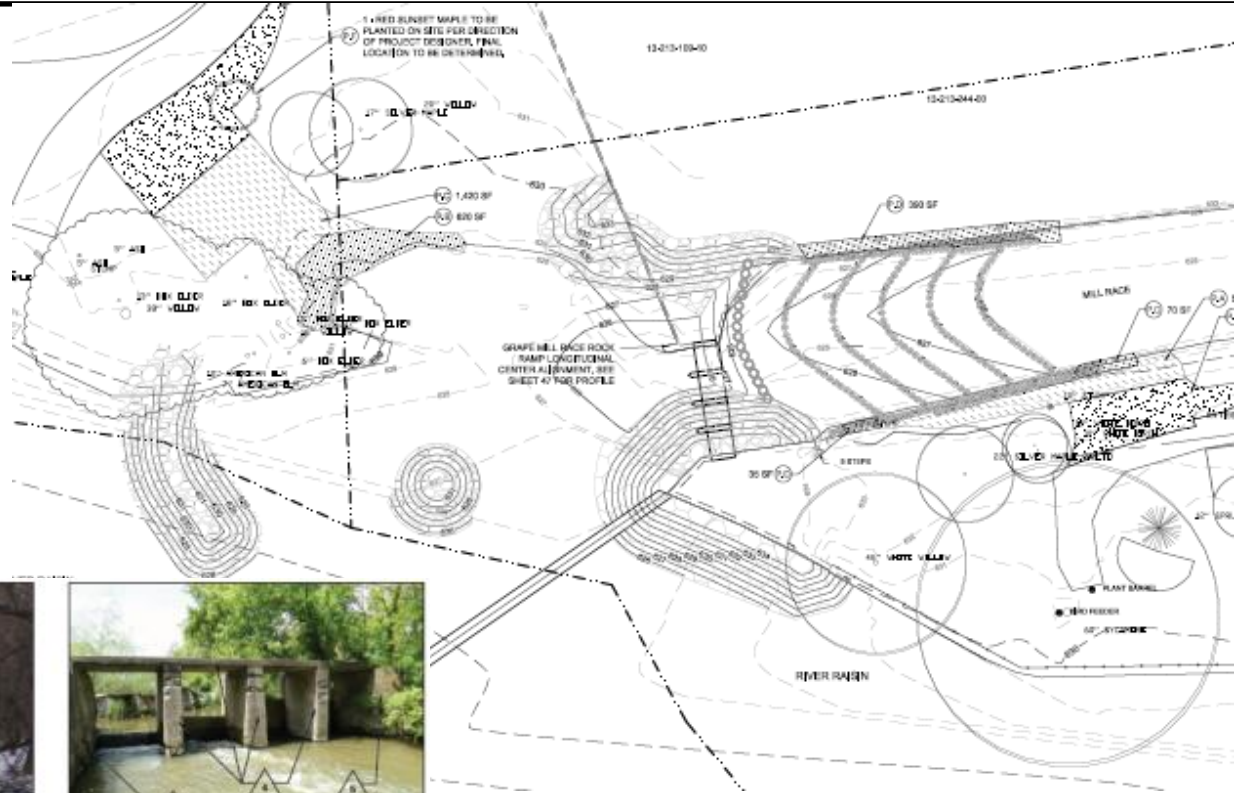
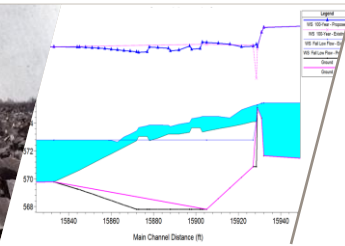
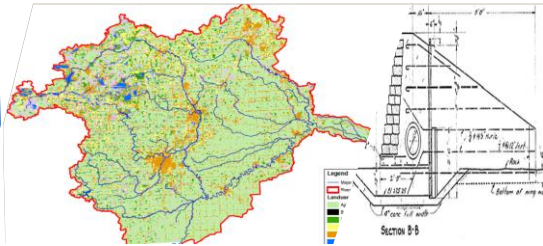


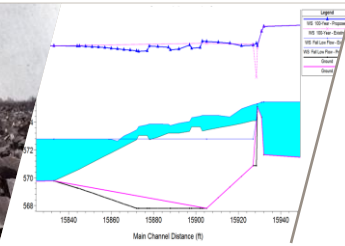
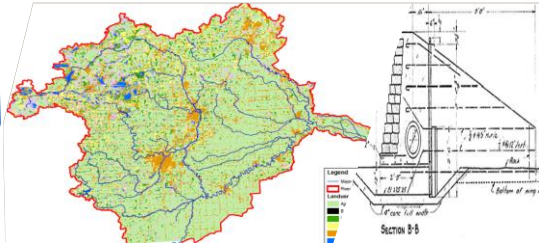






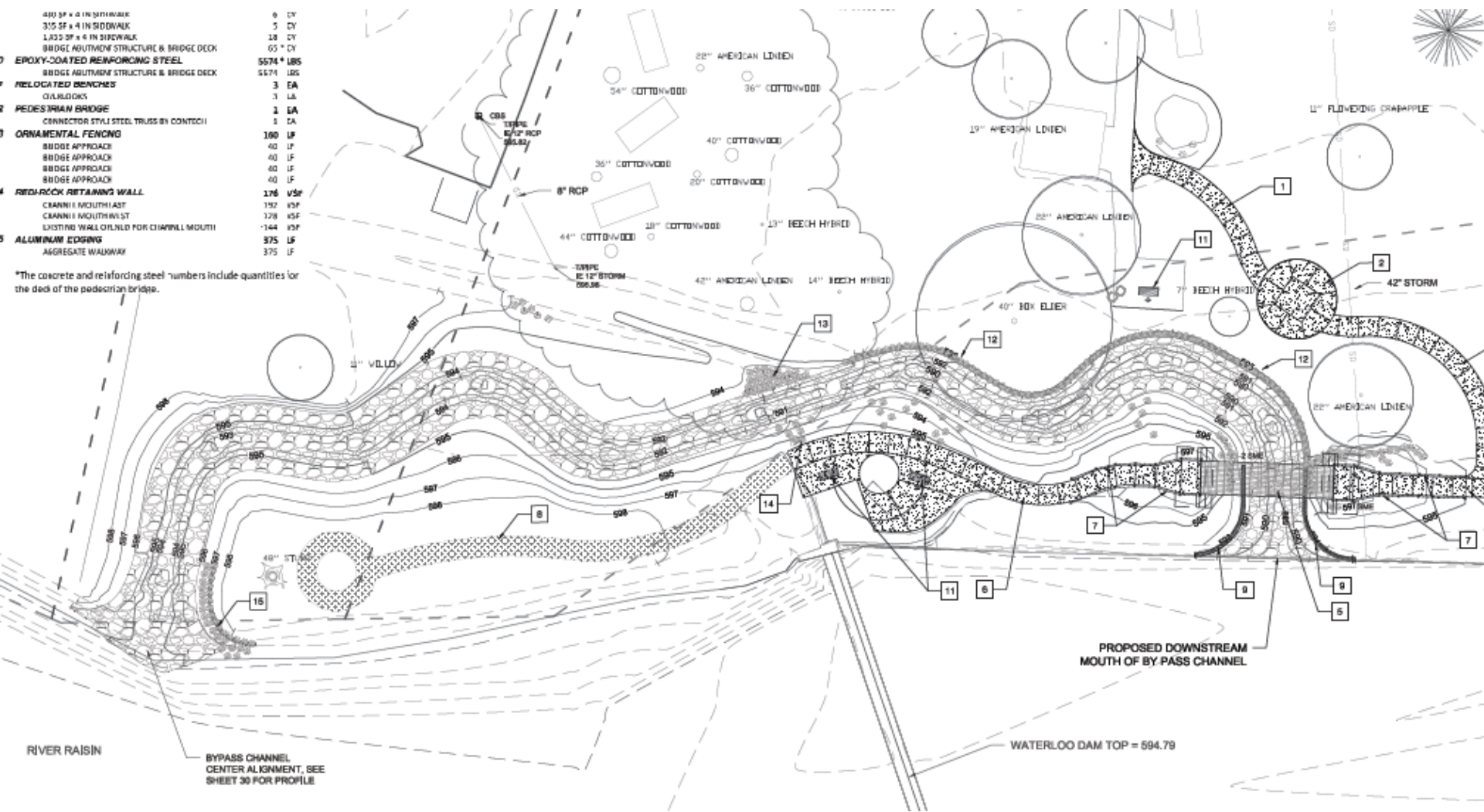






400 SF x 4 IN SIDEWALK	0 CY
315 SF x 4 IN SIDEWALK	5 CY
1,033 SF x 4 IN SIDEWALK	18 CY
BRIDGE ABUTMENT STRUCTURE & BRIDGE DECK	65 * CY
EPOXY-COATED REINFORCING STEEL	5574 * LBS
BRIDGE ABUTMENT STRUCTURE & BRIDGE DECK	5174 LBS
RELOCATED BENCHES	3 EA
CURBLEDGES	3 LA
PEDESTRIAN BRIDGE	1 EA
CONNECTOR STAYL STEEL TRUSS BY CONTECH	1 CA
ORNAMENTAL FENCING	100 LF
BRIDGE APPROACH	40 LF
BRIDGE APPROACH	40 LF
BRIDGE APPROACH	40 LF
REDWOOD RETAINING WALL	176 VSF
CHARNELL MOUTHPIECE	152 VSF
CHARNELL MOUTHPIECE	128 VSF
EXISTING WALL CHANNELED FOR CHARNELL MOUTH	-144 VSF
ALUMINUM EDGING	375 LF
AGGREGATE WALKWAY	375 LF

*The concrete and reinforcing steel numbers include quantities for the deck of the pedestrian bridge.





Observations

- 2 dam removals + 2 rock arch rapids constructed - \$1.1M
- 1 rock arch rapid, 1 dam notch + rock ramp, one dam diversion channel + millrace improvements - \$1.2M
- Phase 2 – Pre-con next week
- Phase 2 construction August - October, 2013
- Issues to date: infrastructure conflicts, hydraulic modeling & sea lamprey passage issues, all resolved. Modeling and sea lamprey issued did cause project delays
- Suckers and bass observed going over the structures
- Fish, macroinvertebrate & mussel surveys 2014



Questions?

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