

**Evaluation of fish community response to dam removals
and fish passage
in Northeastern Illinois**

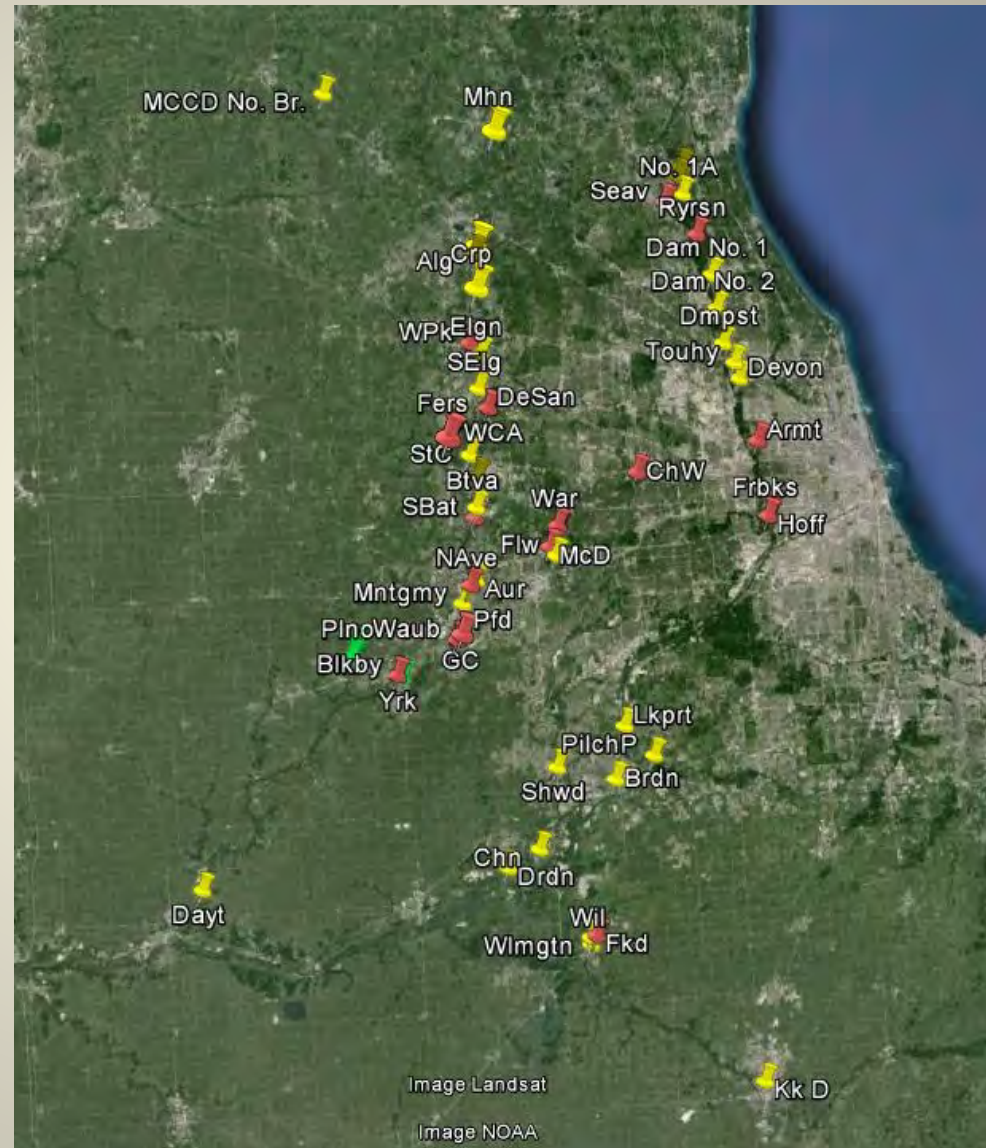
Steve Pescitelli and Bob Rung, Division of Fisheries





Dam Projects in Illinois - Update

- 23 projects completed
- 19 removals (red)
- 4 fish passage (green)
- 300? Miles re-connected
- 16 additional removals planned in new initiative





Dam Project Evaluations

Brewster Creek

- YWCA 2004
- DeSantos 2006

Ferson Creek

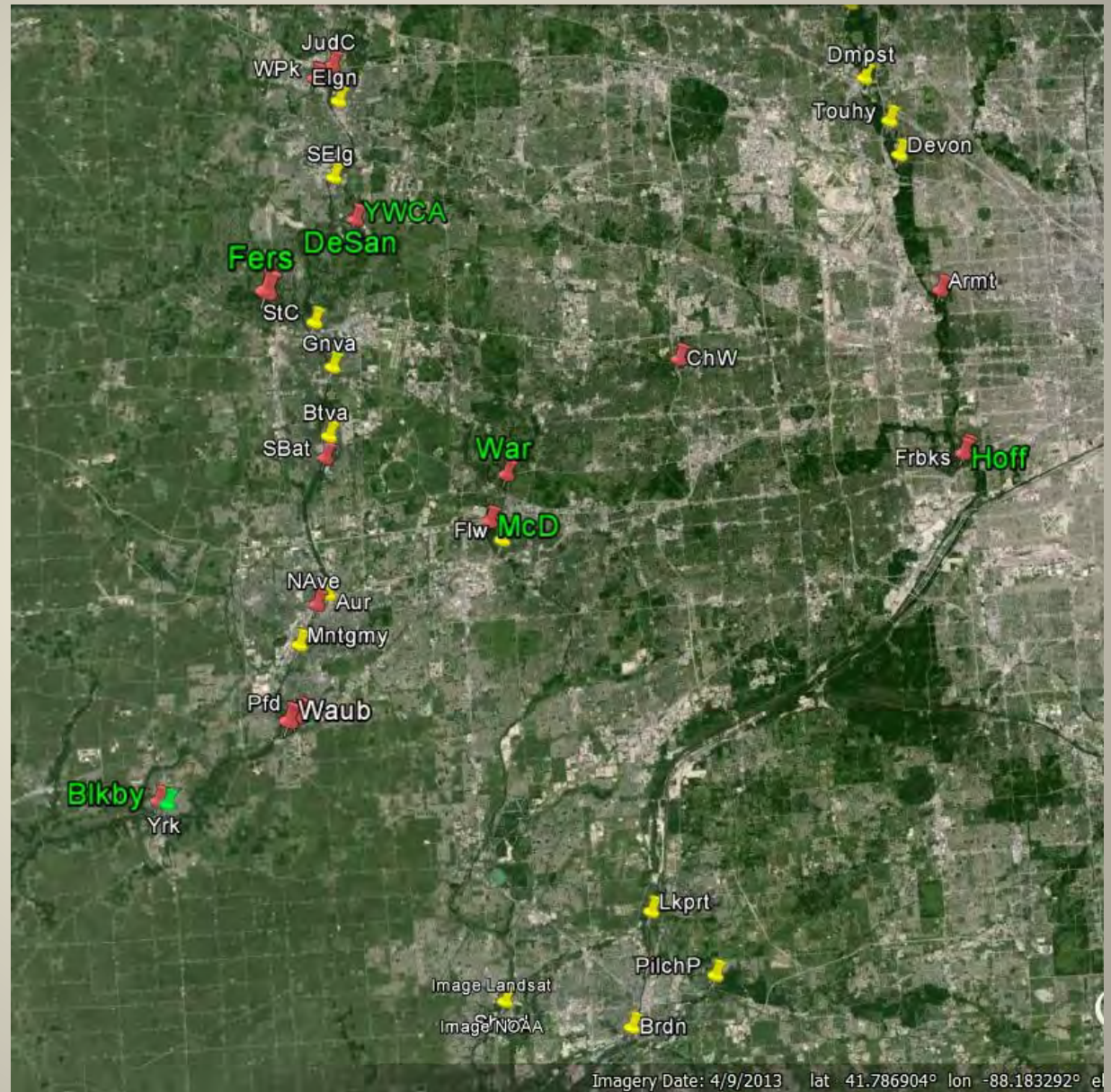
- Creek Bend 2010

Des Plaines River

- Hoffman 2012

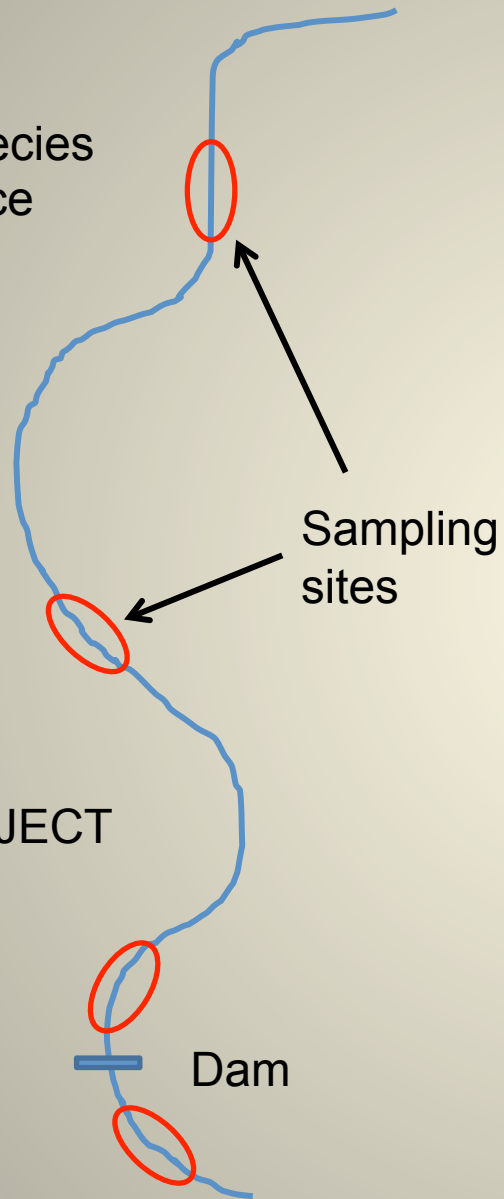
Blackberry Creek

- River Road 2013



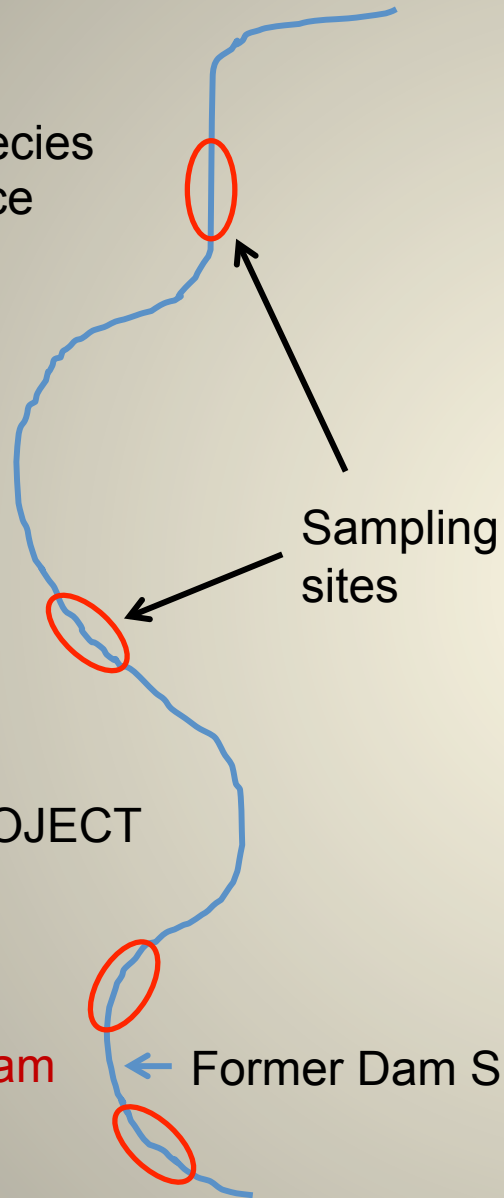
Criteria:

- No. of species
- Abundance
- IBI



Criteria:

- No. of species
- Abundance
- IBI



Index of Biotic Integrity – IBI

METRIC	SCORE
No. native fish species	0-6
No. sucker species	0-6
No. sunfish species	0-6
No. intolerant species	0-6
No. minnow species	0-6
No. benthic invertivore species	0-6
Prop. specialist benthic invertivores	0-6
Prop. generalist feeders	0-6
Prop. coarse mineral spawners	0-6
Prop. tolerant species	0-6
total	0-60

Difference of >10 = biologically meaningful change

Brewster Creek – YWCA dam Removed 2004



Brewster Creek

- 18 sq. mi. watershed
- YWCA dam removed 2004 (8 X 25 ft)
- DeSantos dam removed 2006 (3 X 20 ft)
- 1 mi. upstream Fox River







**New channel in former lake bed
2004 - 4 months post removal**

**New channel in former lake bed
2008 - 4 years post removal**



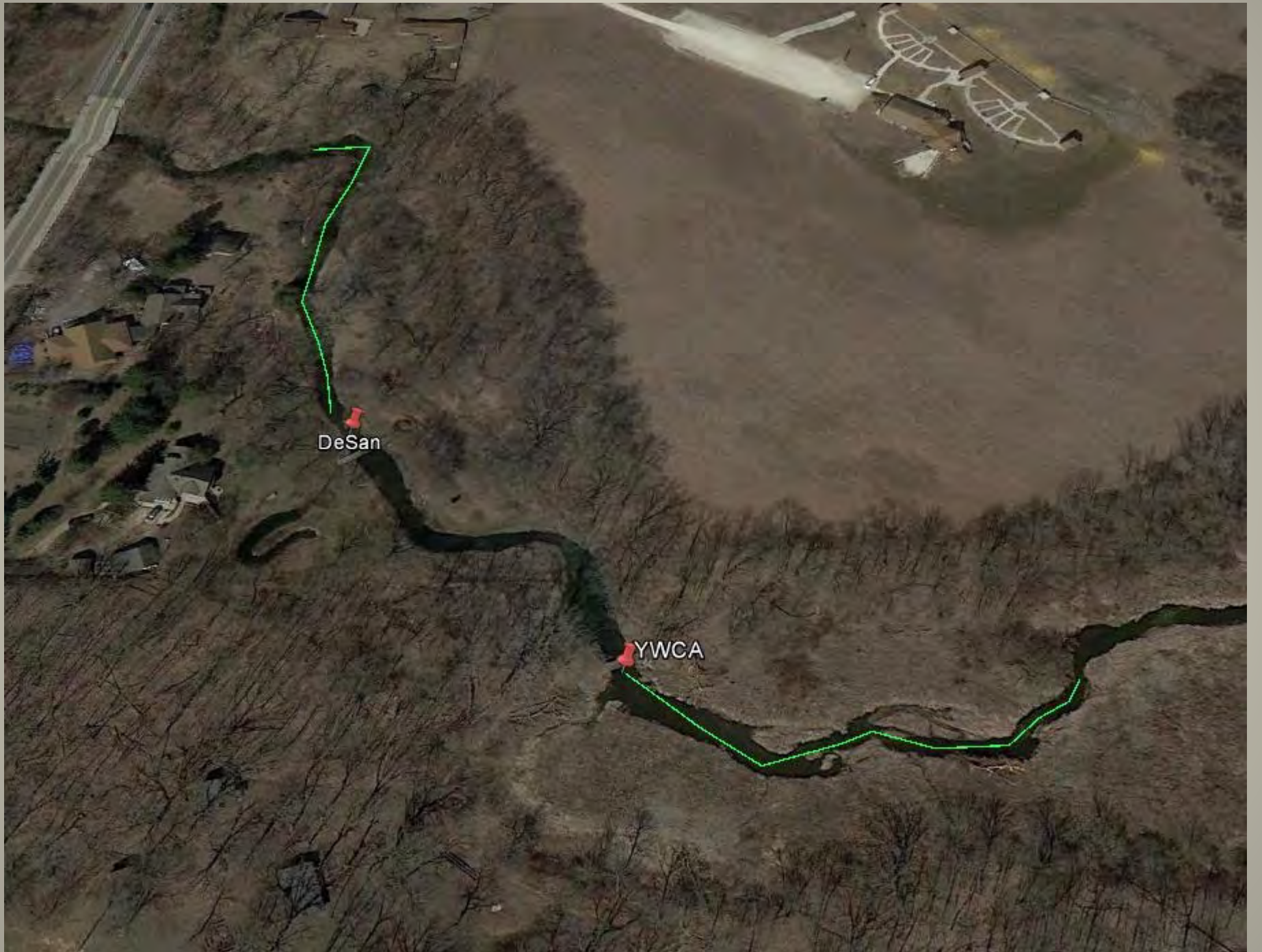


BREWSTER CREEK DeSantos Dam

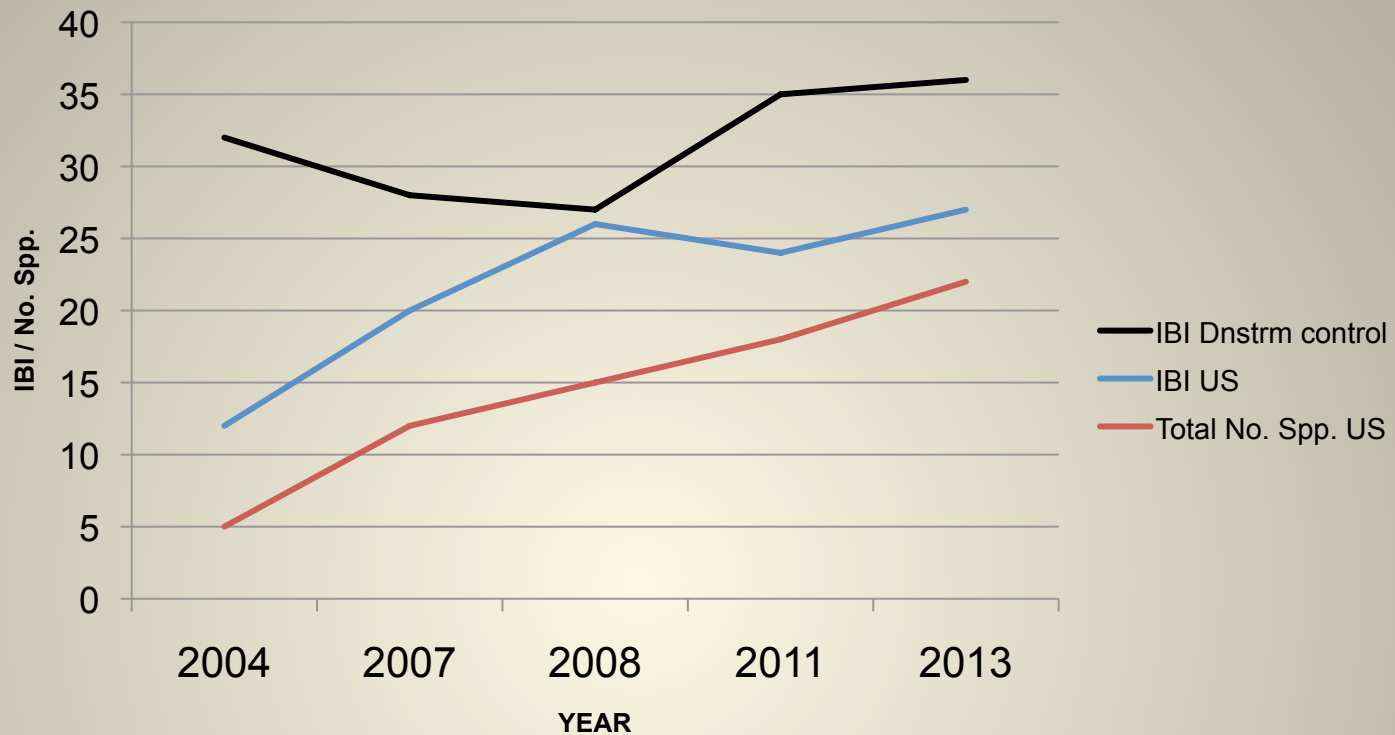
BEFORE REMOVAL

AFTER 2006 REMOVAL





Brewster Creek Dam Removal



Year	IBI Dnstrm control	IBI Upstrm	Total No. Spp. US
2004	32	12	5
2007	28	20	12
2008	27	26	15
2011	35	24	18
2013	36	27	22



Riverine species in
Brewster Creek after removal

15 New Species in former dam

pool

Banded darter

Bluntnose minnow*

Central mudminnow*

Central stoneroller

Channel catfish

Common shiner

Creek chub*

Flathead catfish

Golden shiner

Johnny darter*

Quillback carpsucker

Sand shiner

Smallmouth bass

Spotfin shiner

Stonecat

White sucker*

*occur upstream



11 species not previously collected above former dam

NO DOWNSTREAM IMPACTS



Ferson Creek Dam Removal

Ferson Creek – Creek Bend
-Watershed area 54 sq. mi.
-Height = 4 ft; width = 60 ft
-completed 11/2010
-3 mi. upstream of Fox River







**New Species
above former dam**

Central stoneroller

Sand shiner

Spotfin shiner

Golden shiner

Common shiner

Bluntnose minnow

Mottled sculpin*

Channel catfish *

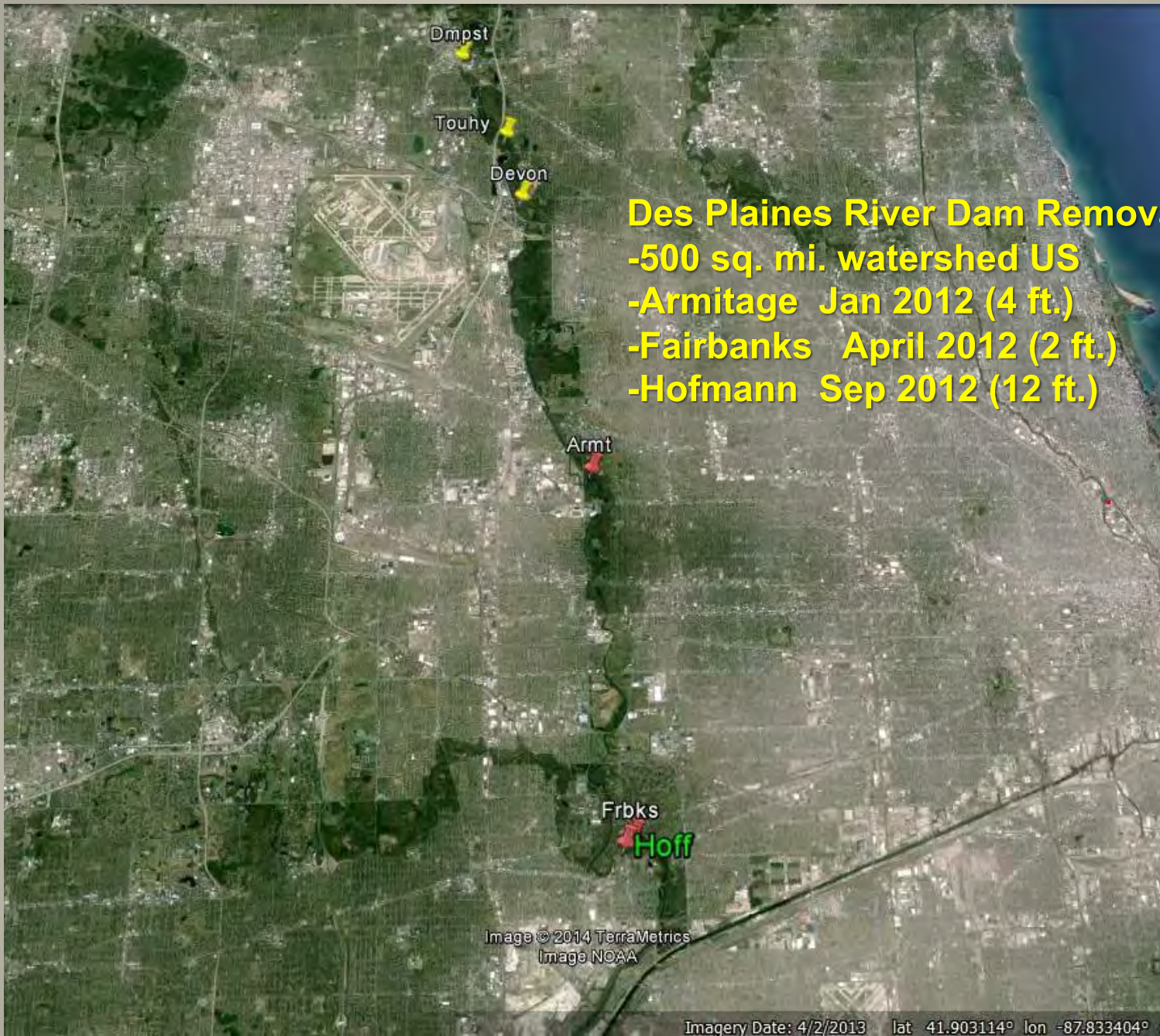
Stonecat

Smallmouth bass*

Fantail darter

Banded darter

*** Not collected upstream**



Des Plaines River Dam Removals
-500 sq. mi. watershed US
-Armitage Jan 2012 (4 ft.)
-Fairbanks April 2012 (2 ft.)
-Hofmann Sep 2012 (12 ft.)

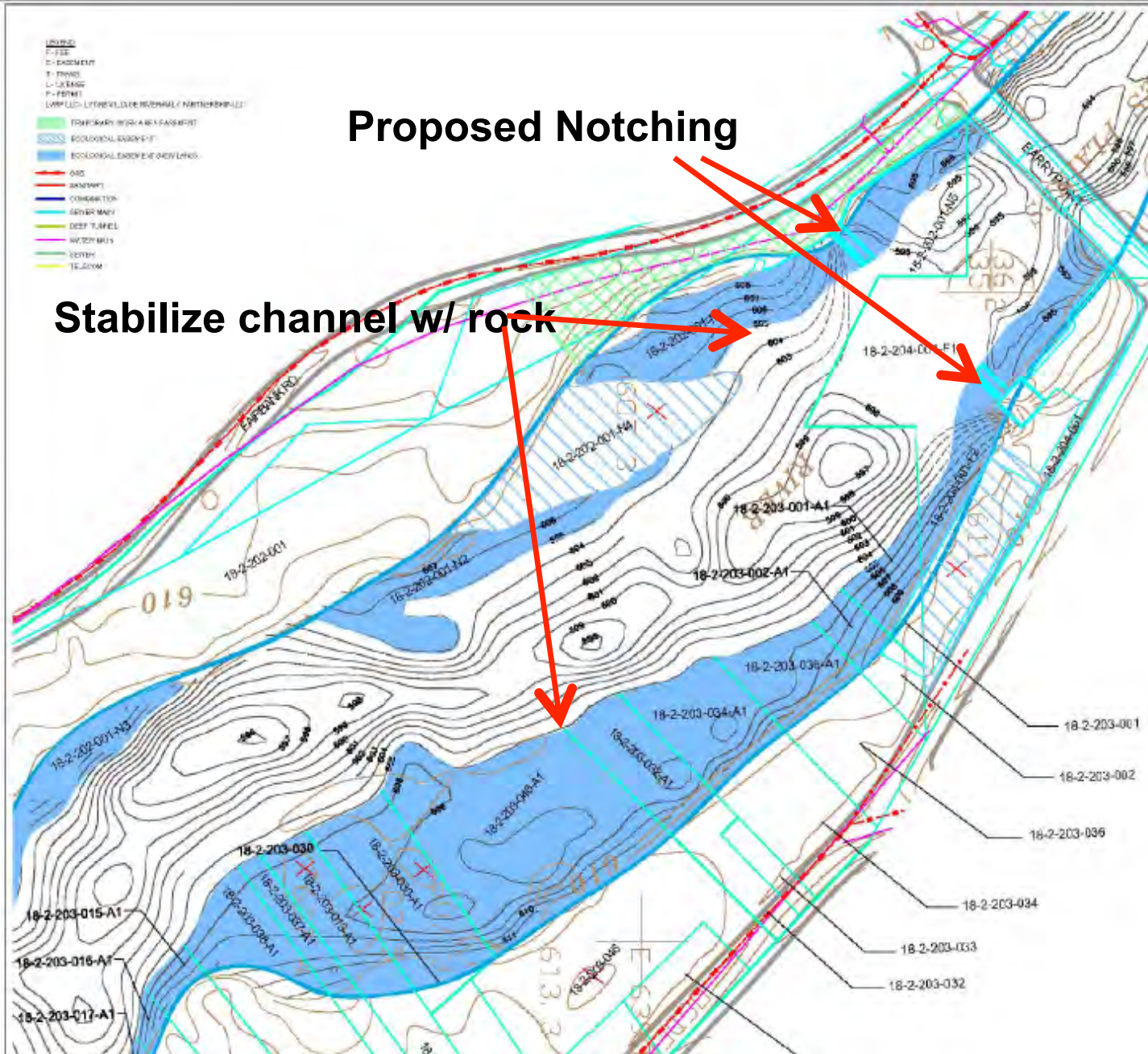
Image © 2014 TerraMetrics
Image NOAA

Imagery Date: 4/2/2013 lat 41.903114° lon -87.833404° e

- UR/MSL
- P - FEE
- D - DRAINAGE
- F - FLOOD
- L - LICENSE
- P - PERMIT
- UWP (L) - UTILITY/UNDERGROUND/NOT TO BE MOVED
- TEMPORARY BOUNDARY/ASSESSMENT
- ECOLOGICAL BENEFIT
- ECOLOGICAL IMPROVEMENT/ENHANCEMENT
- OLD
- SKINNY
- CONCRETE
- SEWER MAIN
- DEEP TUNNEL
- WATER MAIN
- SEWER
- TE. ROOM

Proposed Notching

Stabilize channel w/ rock



Hoffman Dam removal

Day One
6/19/12



6/21/12 - Day 3



6/26/12 – Day 8



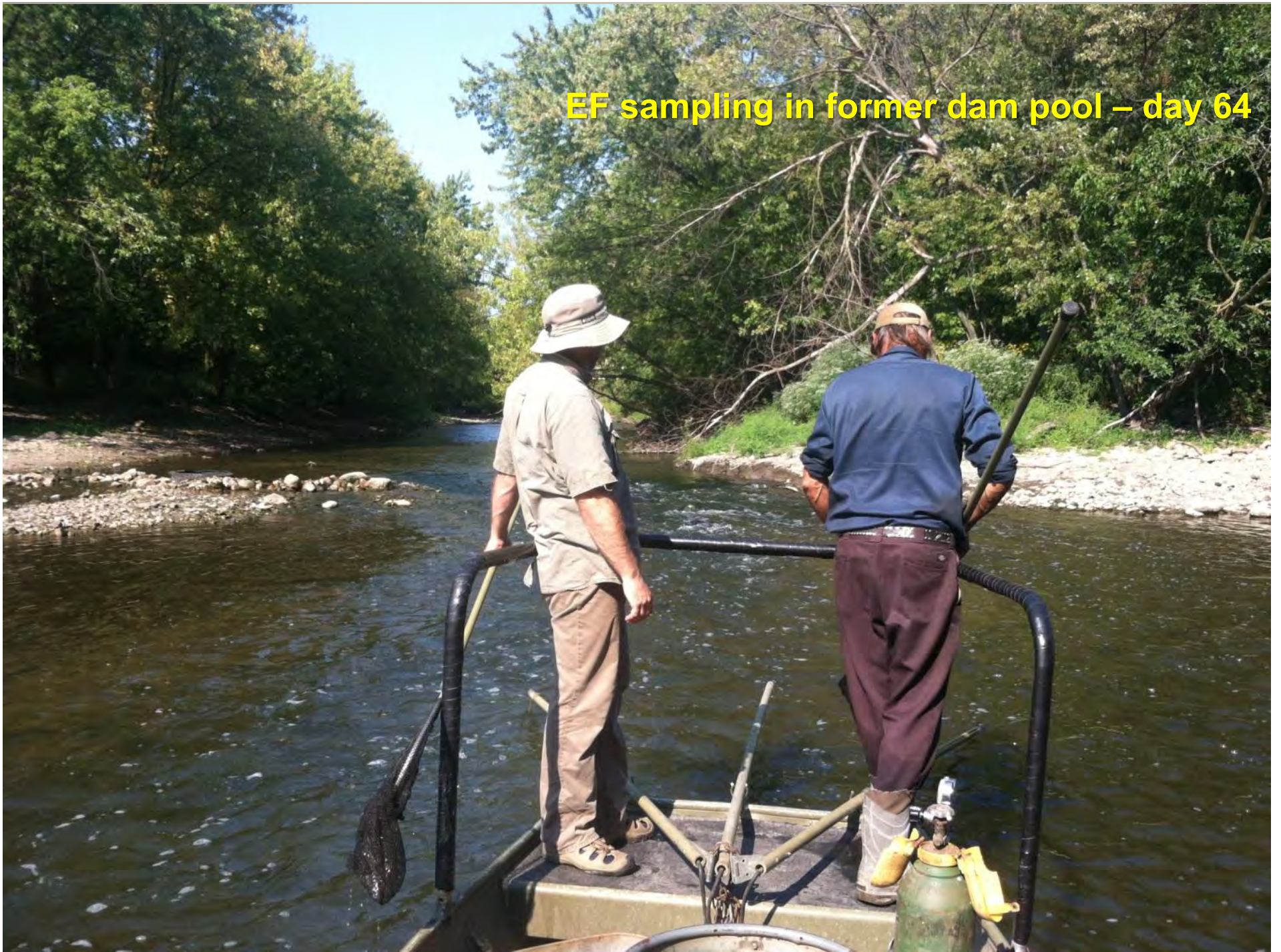
7/17/12 – day 29



Hoffman Dam pre- and post- removal 2012



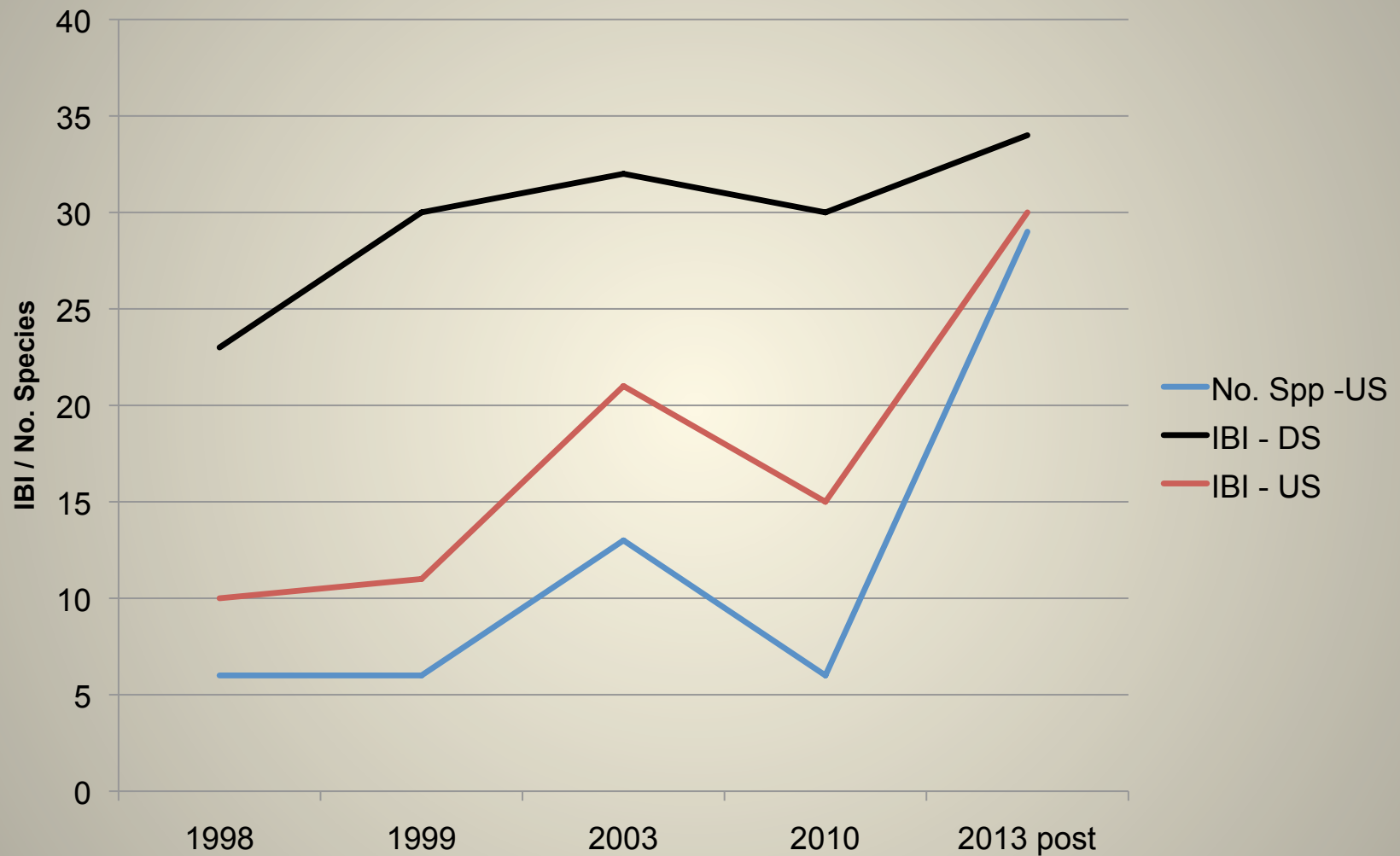
EF sampling in former dam pool – day 64





Hoffman Dam Removal Evaluation

IBI and No. species Downstream (DS) v. Upstream (US)



Species not previously collected in dam pool

Northern pike

Channel catfish*

Rock bass

Black crappie

Creek chub

Rosyface shiner*

Sauger*

Hornyhead chub

Orangespotted sunfish

Blackside darter

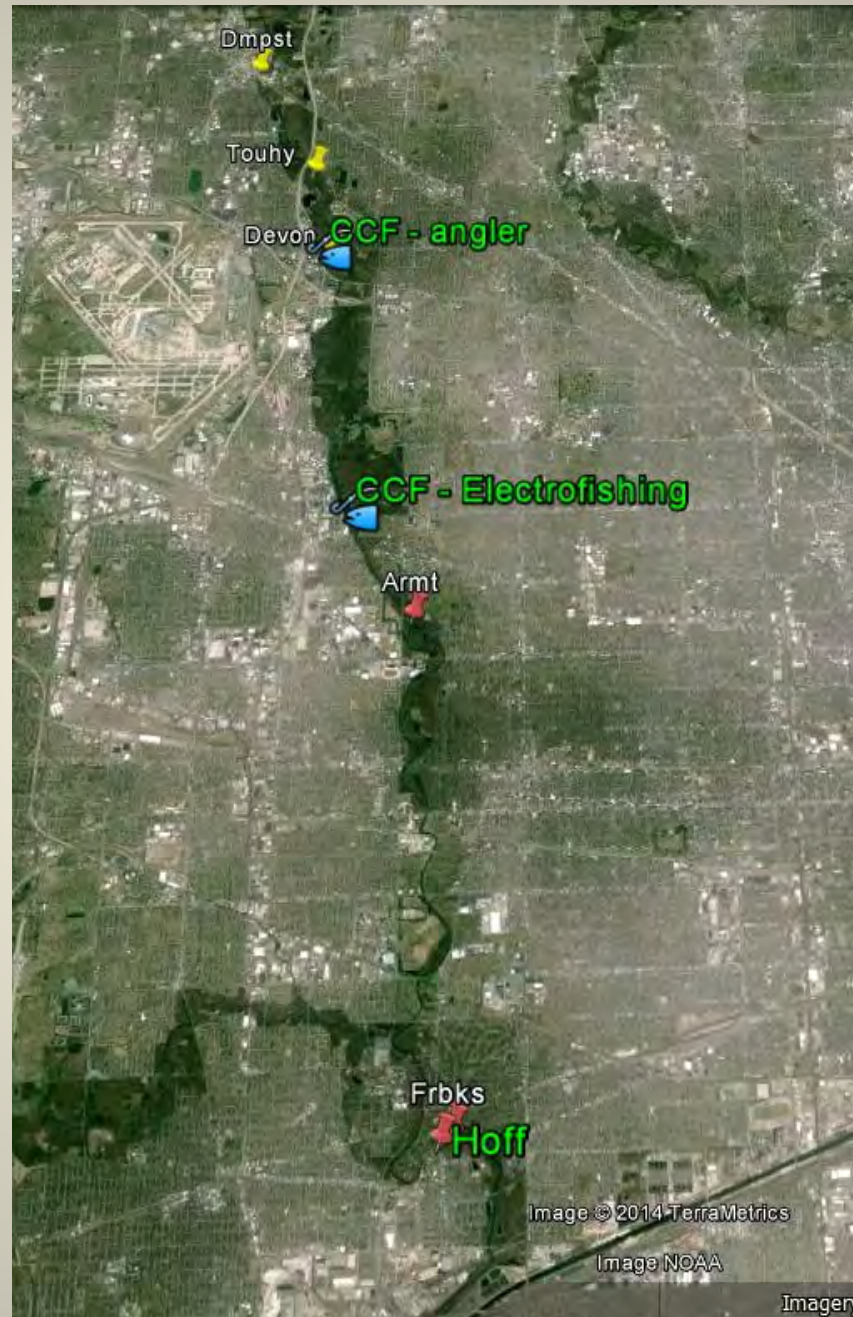
Black bullhead

Yellow bullhead

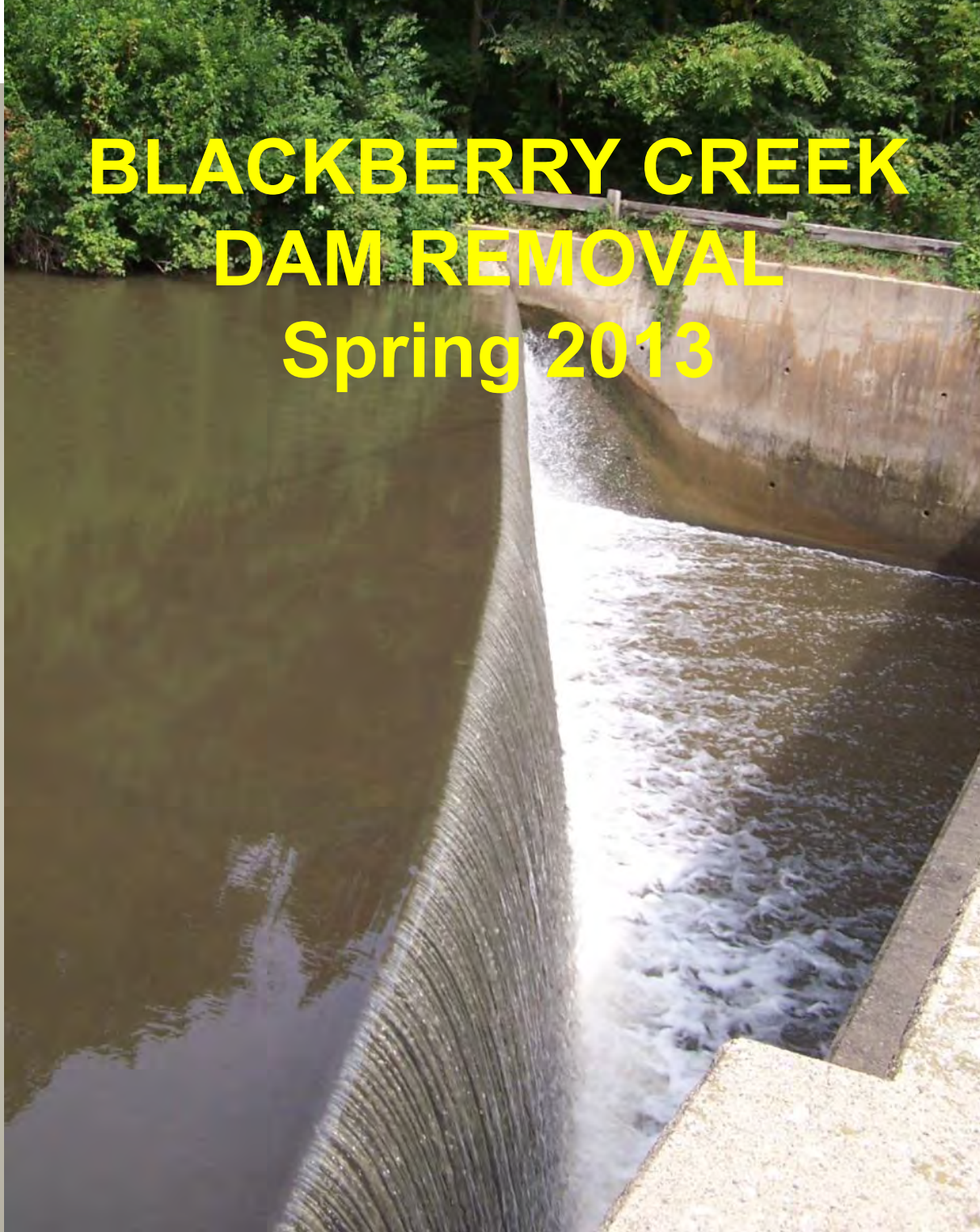
Muskellunge*



Channel catfish (CCF)
Post Hofmann removal
migration 10 miles upstream



**BLACKBERRY CREEK
DAM REMOVAL
Spring 2013**





Watershed area 73 sq. mi.
 Height – 12 ft.
 Width - 75 ft.
 900 ft. upstream of Fox
 River



Fox River

Image U.S. Geological Survey

Google earth

1998

Imagery Date: 4/30/2008 41°38'48.04" N 88°27'10.02" W elev 584 ft eye alt 2672 ft









Spring 2013 – 2 weeks post removal
Shorthead redhorse and quilback carpsucker spawning run





5/23/2013

W Semonauk St

Game Farm rd

West St

W Center St

King St

River Rd

Google
Riv

1998

Imagery Date: 5/23/2013 41°38'47.42" N 88°27'08.40" W elev 584 ft eye alt

Blackberry Creek – Former Dam Pool



**Blackberry Creek
Dam Evaluation Study sites
2011 pre-project
2013 post project**

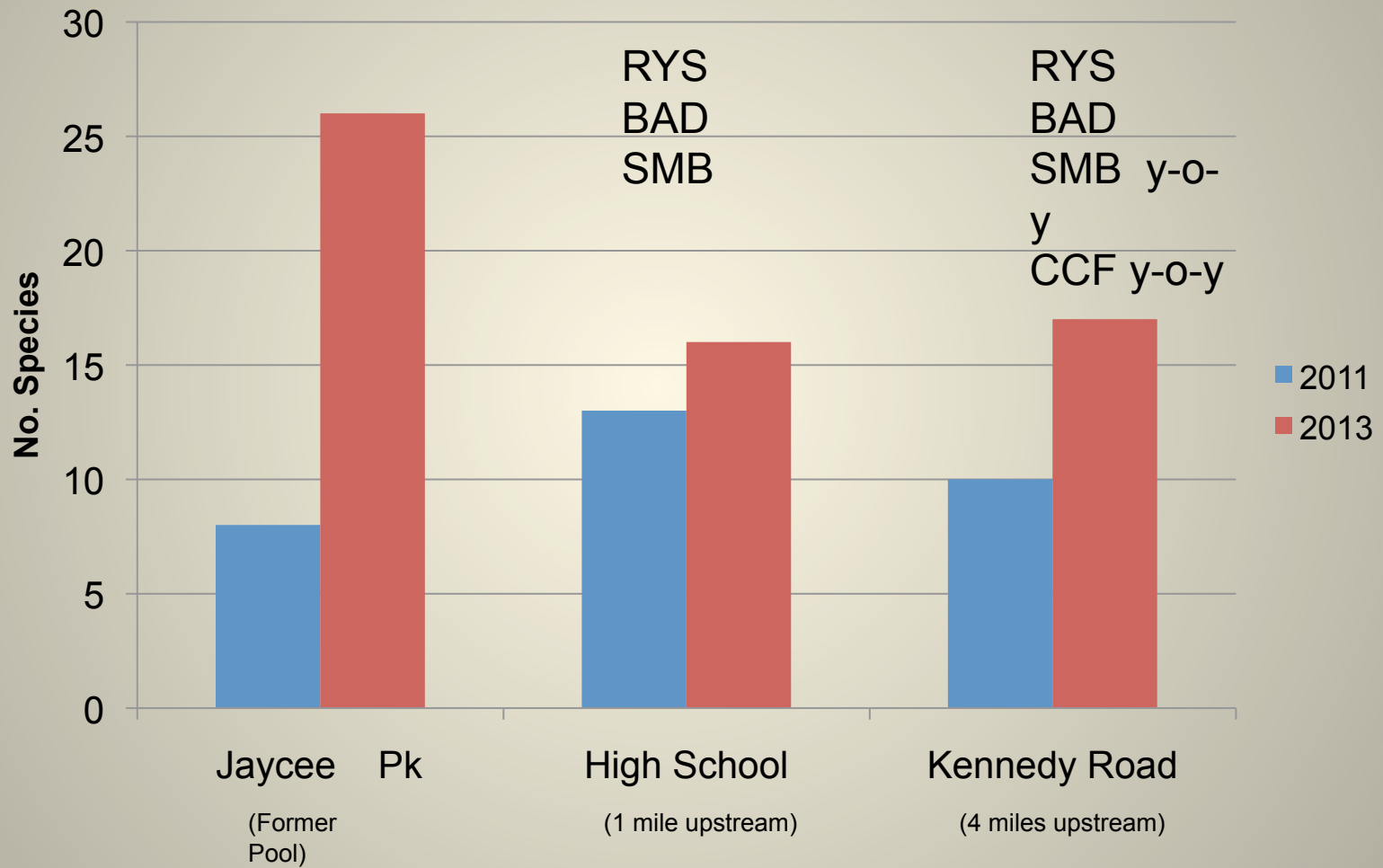


1998

Imagery Date: 5/23/2013 lat 41.657787° lon -88.447588° elev 638 ft eye alt 19140 ft

Blackberry Creek Dam Evaluation

No. species pre (2011) vs. post (2013)



Blackberry Creek Dam Pool Area			
	2011 pre	2013 post	
No. Species	8	26	24
Total No. Fish	74	898	3039

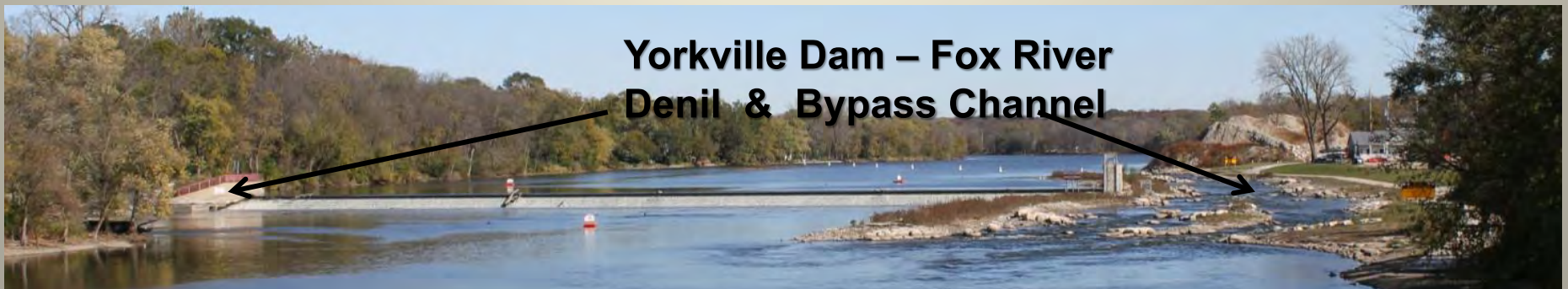


9

Evaluation of Dam Removals

- **Dam removal benefits**
 - **no. species and no. fish: increase typically rapid and easy to document**
 - **IBI may take longer, can be less “bump”**
- **Response depends on quality of stream and recruitment source**
- **Restores diversity to upstream area – benefit to stream**
- **Spawning of riverine species – benefit to system**
- **Instream habitat restored**
- **New channel more productive (no. fish)**
- **No downstream sediment impacts observed**
- **Fish passage works – not as effective more maintenance costs**

**Fish
Passage
Projects**



**Denil Fish Ladder
Completed March 2008**

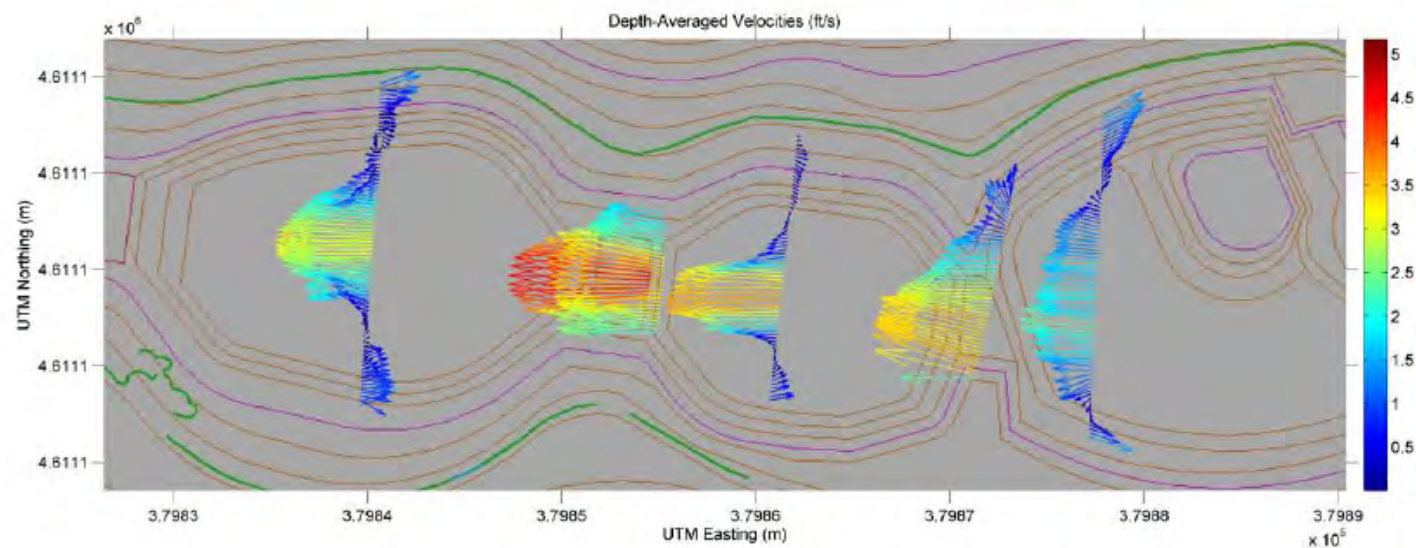
**Watercraft and Fish
Bypass Channel
Completed Sept 2010**

**Steps and Denil: \$2.7
million
Bypass: \$5.0 million
Bridge: \$0.4 million**





Sites F to K – plan view



STUDY AREA

Yorkville Dam

Yorkville, IL

Release Site

Capture Area



Number of fish tagged for the bypass study, 2011

Date	total	SMB	CCF	CAP	FCF
20-May-11	34	15	6	10	3
13-Jul-11	23	3	11	3	6
14-Jul-11	36	9	14	10	3
total	93	27	31	23	12
Length range		244-467	324-622	388-570	472-880

**-Flathead tagged 5 miles downstream, 26-Aug-09
-Recaptured upstream of Yorkville Dam, 14-Jul-11**





**-SMB tagged 14-Jul-11; Recap by Angler 11-Aug-11
-One of only 27 SMB tagged in 2011**

Longnose gar

Yorkville, IL, USA

Montgomery Dam

S Bridge St
N Bridge St

© 2013 Google

Image U.S. Geological Survey

Google

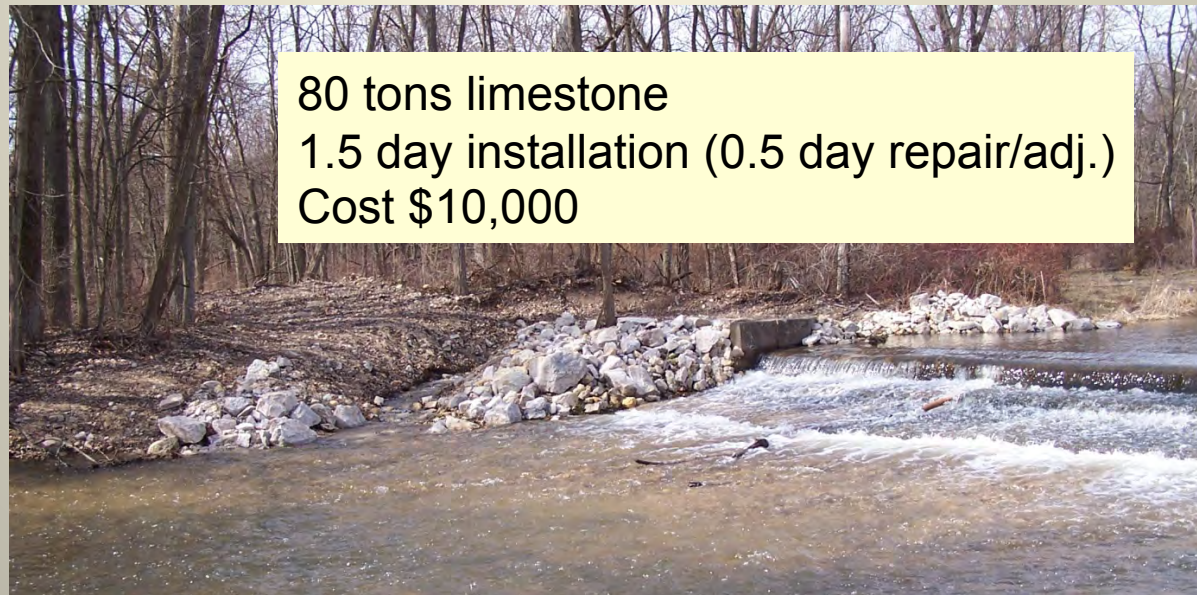
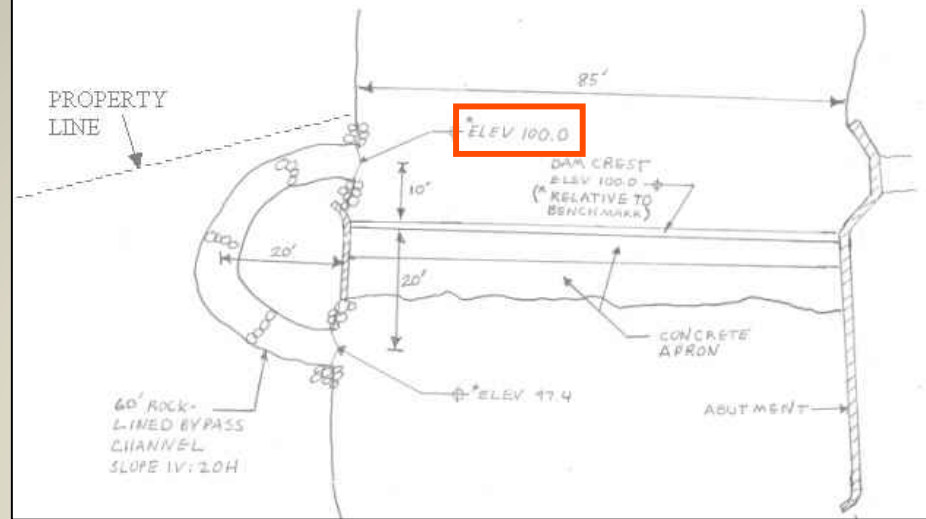
Date: 3/12/2012

41°39'34.99" N 88°24'19.94" W elev 585 ft

Eye alt

Bypass Channel

Big Rock Creek Fish Passage Project – Harrington Dam



80 tons limestone
1.5 day installation (0.5 day repair/adj.)
Cost \$10,000

Capture Net Results

Species	2 MAY -	20 APR-	total
	30 JUNE	9 JUL	
	2006	2007	
Bluntnose minnow	2	5	7
Sand shiner	1	2	3
Central stoneroller	4	3	7
Hornyhead chub	0	1	1
Creek chub	0	2	2
Common shiner	3	2	5
Blacknose dace	1	0	1
Redfin shiner	1	1	2
Common carp	3	32	35
White sucker	1	1	2
Quillback	0	1	1
Channel catfish	0	10	10
Yellow bullhead	1	0	1
Bluegill	3	10	13
Green sunfish	3	4	7
Rock bass	1	1	2
Orangethroat darter	2	0	2
TOTAL NO.	26	75	101
NO. SPP	13	14	17

Captured in bypass channel

Species	April 25	May 14	June 6	total
Common carp	1		1	2
Central stoneroller	26		2	28
Creek chub	4			4
White sucker			1	1
Mottled sculpin*	6	2		8
Orangethroat darter	17	5	2	24
Johnny darter*	1			1
total	55	7	6	68

* not captured in net

04/15/2007

PLANO DAM



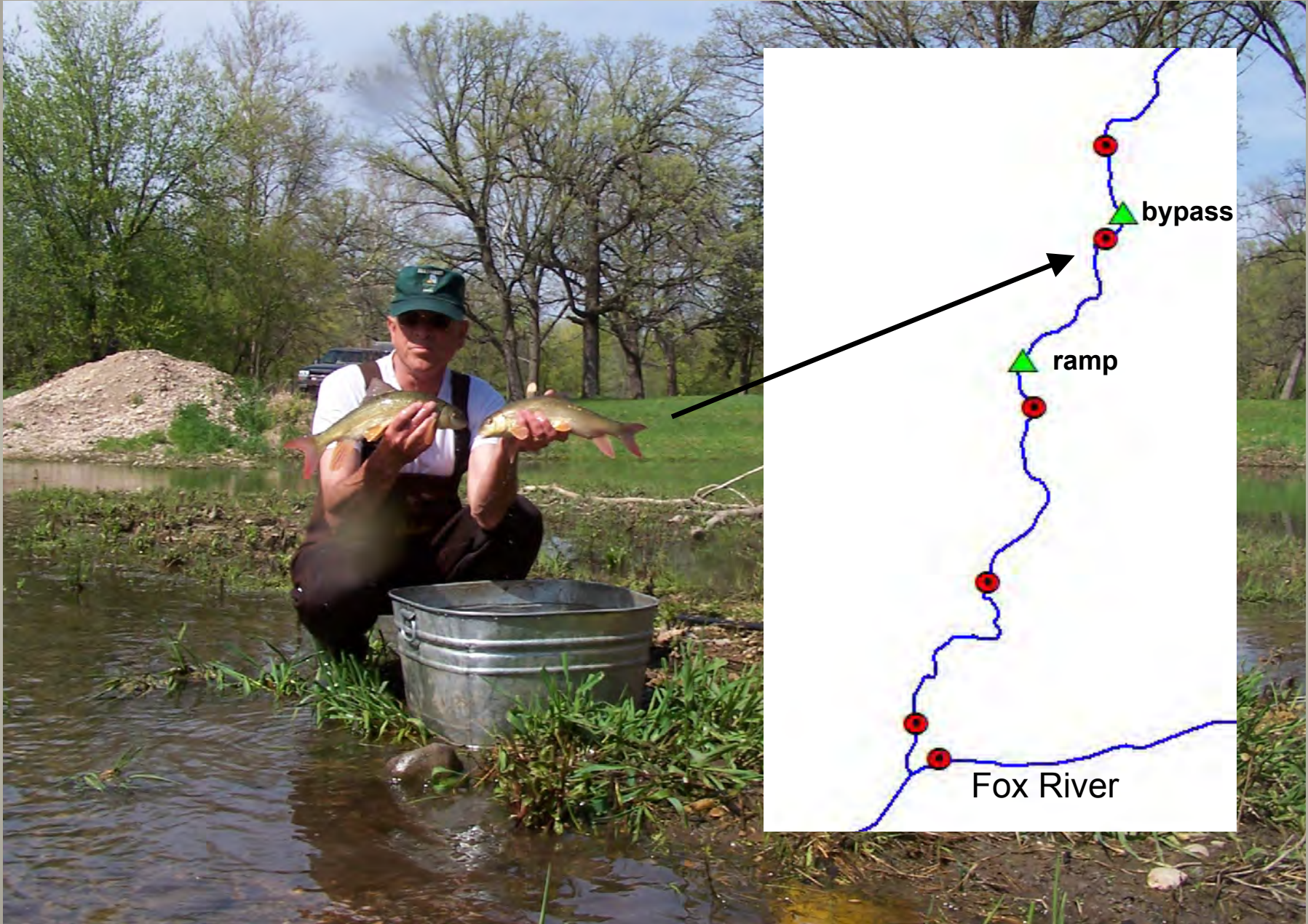
BEFORE



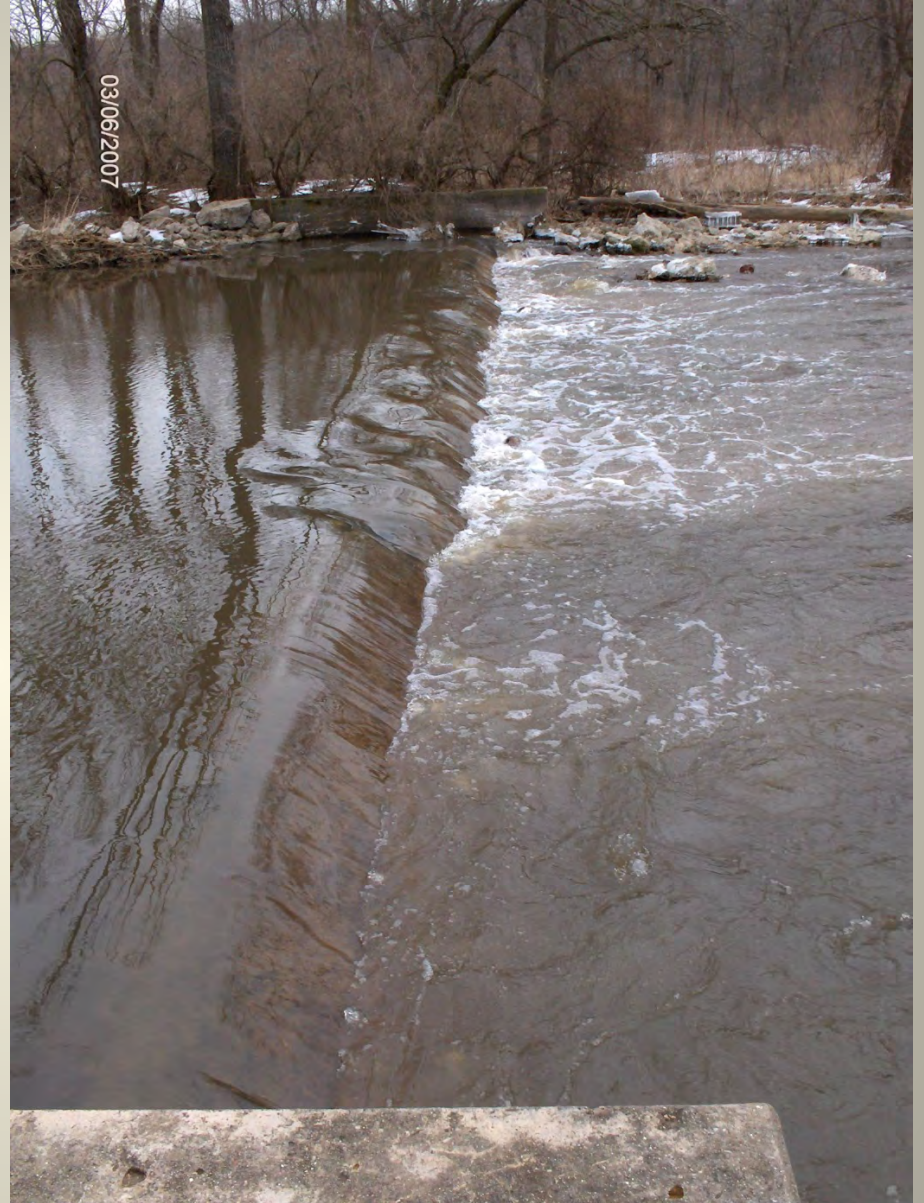
1600 tons limestone
2.5 days installation
COST \$35,000

AFTER










2 years after flood damage
September 2010



Former bypass channel
To be re-excavated
March 2010



\$2000 Repairs
funded by

