Water and the Post-Natural City

Reversals, Invasions, and Prospects for Sustainability

Mike Bryson
Director of Sustainability Studies
Associate Professor of Humanities
Roosevelt University
mbryson@roosevelt.edu

SLSA 2013 Conference
"Postnatural"
University of Notre Dame
3 October 2013

Water in Chicago as postnatural: historical roots, present conditions

Transformations: changes in the Chicago River and relation to urban infrastructure

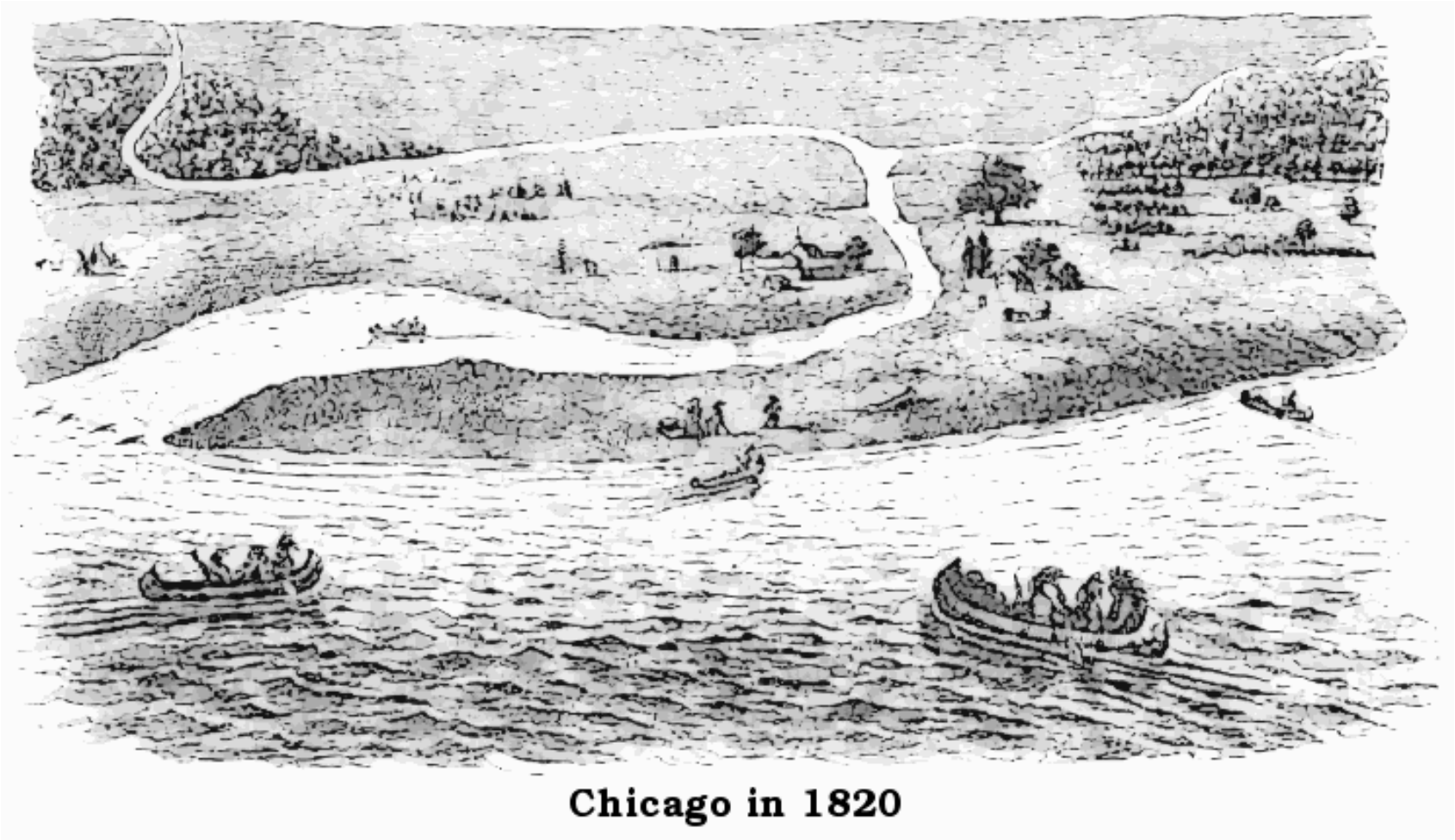
Connections among water systems: water supply, surface water, groundwater, wastewater

Future Prospects: water and urban nature in a postnatural age

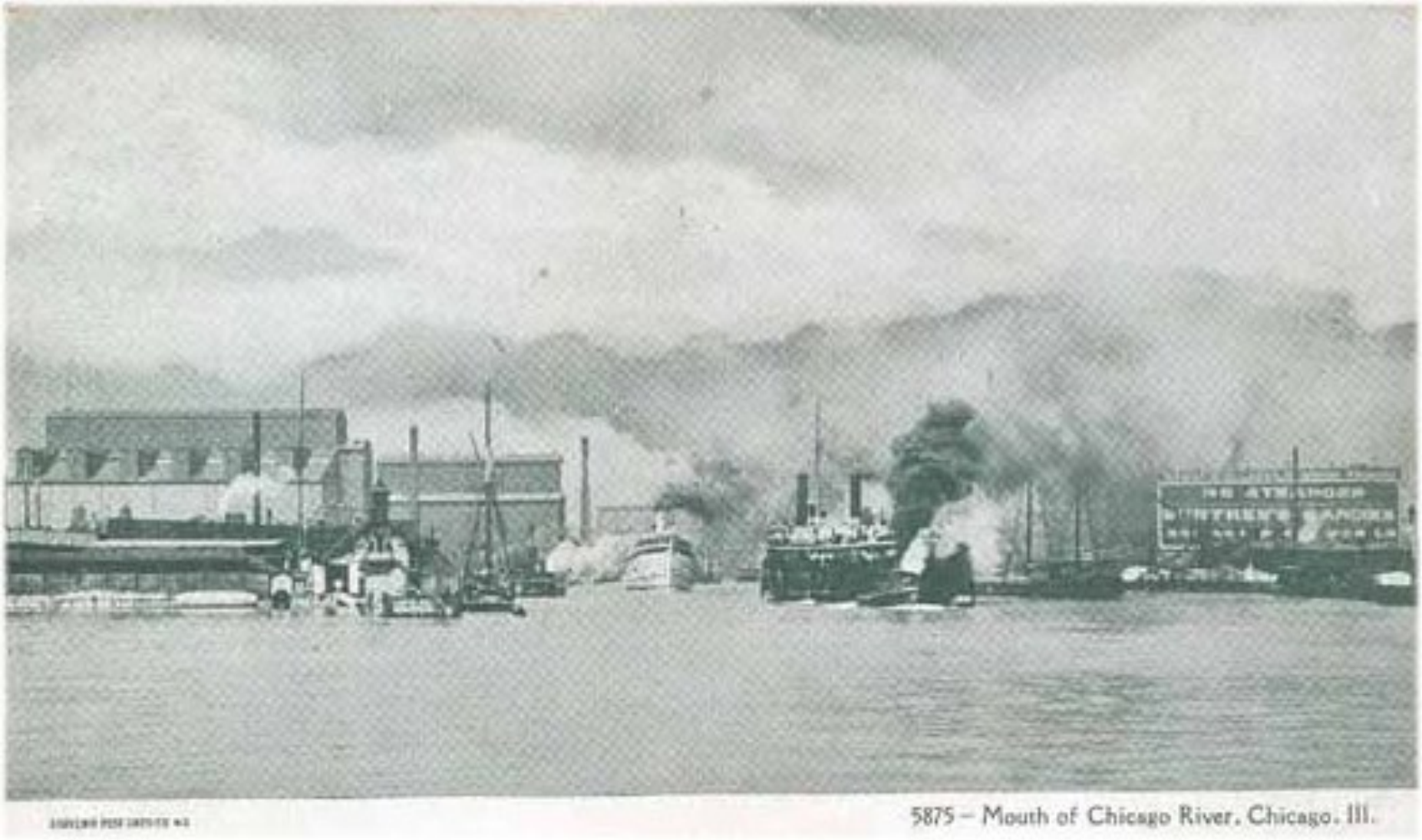
Water as civic icon: approaching the confluence of the North and South Branches of the Chicago River, Oct. 2011 (M. Bryson)

A natural river? The North Branch at Ronan Park, Oct. 2012 (M. Bryson)

Maybe not. This is the Lawrence Avenue wastewater pumping station, also on the North Branch at Ronan Park, Oct. 2012 (M. Bryson)



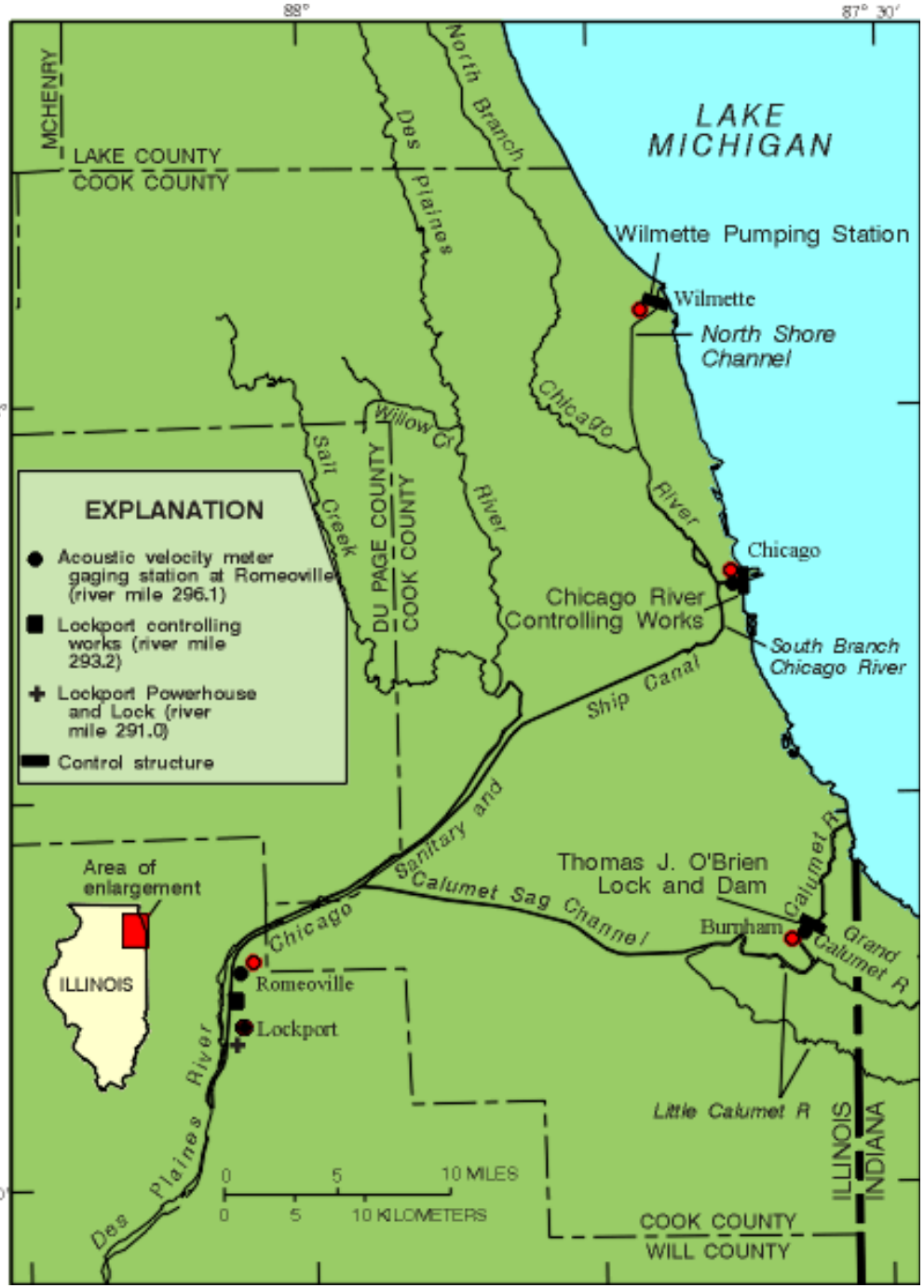
Postcard depiction of the mouth of the Chicago River



Postcard depiction of the mouth of the Chicago River, c. 1906

A chicken stands upon Bubbly Creek, c.1911 (Chicago Historical Society)


Mississippi River Basin
CHICAGO RIVER
LAKE MICHIGAN
DES PLAINES RIVER
APPROXIMATE BASIN DIVIDE
CALUMET RIVER
Great Lakes Basin
© Great Lakes Commission



Lake Michigan and the Chicago Region's Rivers

Chicago **A**rea **W**aterway **S**ystem: rivers, canals, locks, and controlling structures

Note the relation of the **CAWS** to the Des Plaines River and Salt Creek

Urban wilderness: Upper North Branch of the Chicago River (M. Bryson)

Channelization: the riparian zone in the 21st century (M. Bryson)

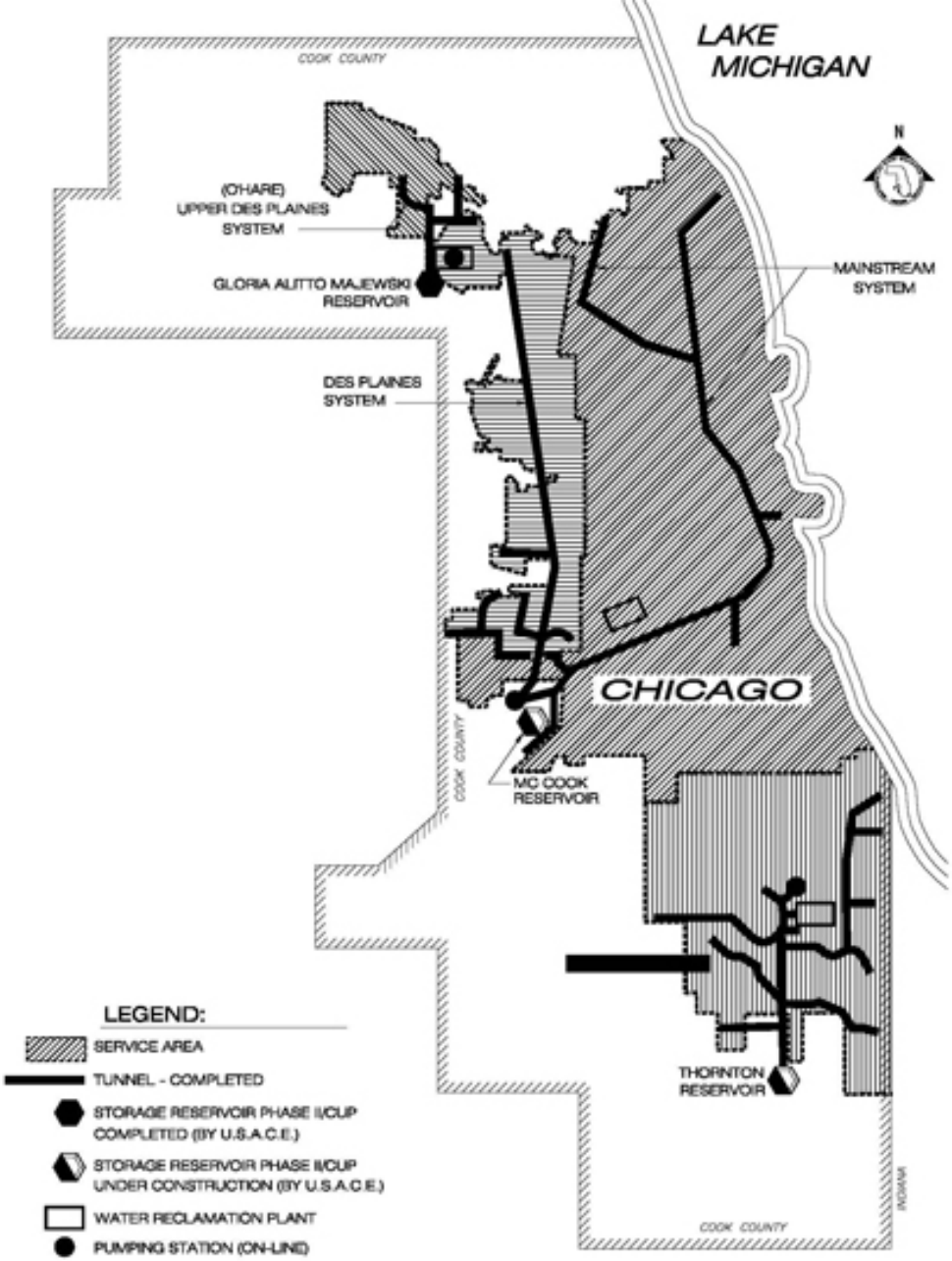
Water for industry: The Morton Salt Plant,
North Branch of the Chicago River, Oct. 2011 (M. Bryson)

Water supply infrastructure:
Jardine Water Filtration Plant on Chicago's lakefront

Wastewater infrastructure: Racine Ave Pumping Station (M. Bryson)

Wastewater infrastructure: the Stickney Wastewater Treatment Plant, the world's largest such facility (MWRD)

Wastewater infrastructure: Upper Des Plaines Tunnel section of TARP
(*Chicago Tribune*, 1998)



TUNNEL and RESERVOIR PLAN PROJECT STATUS

Deep Tunnel (TARP)

Map depicts project status as of 2010

Vast tunnel and reservoir system begun in the early 1980s and designed to store combined sewage/stormwater during rain events before it's transported to wastewater treatment plants.

(Expected completion: 2029)

Embracing the postnatural:
Water in the city as a hybrid of nature and the built environment

Water and urban sustainability: improving water quality, restoring biodiversity, conserving water supply, enhancing human contact with urban nature

Crises old and new: persistent pollution, wasted water, invasive species (e.g., Asian carp)

Emerging narratives: watershed separation, green infrastructure

Water as waste sink: Combined Sewage Outfall, Bubbly Creek (M. Bryson)

Water for play: Kayaking the Main Branch of the Chicago River, Sept. 2013 (B. Quesnell)

Biodiversity: herons on North Branch, River Park, Oct. 2012 (M. Bryson)

A river reversed, a problem created

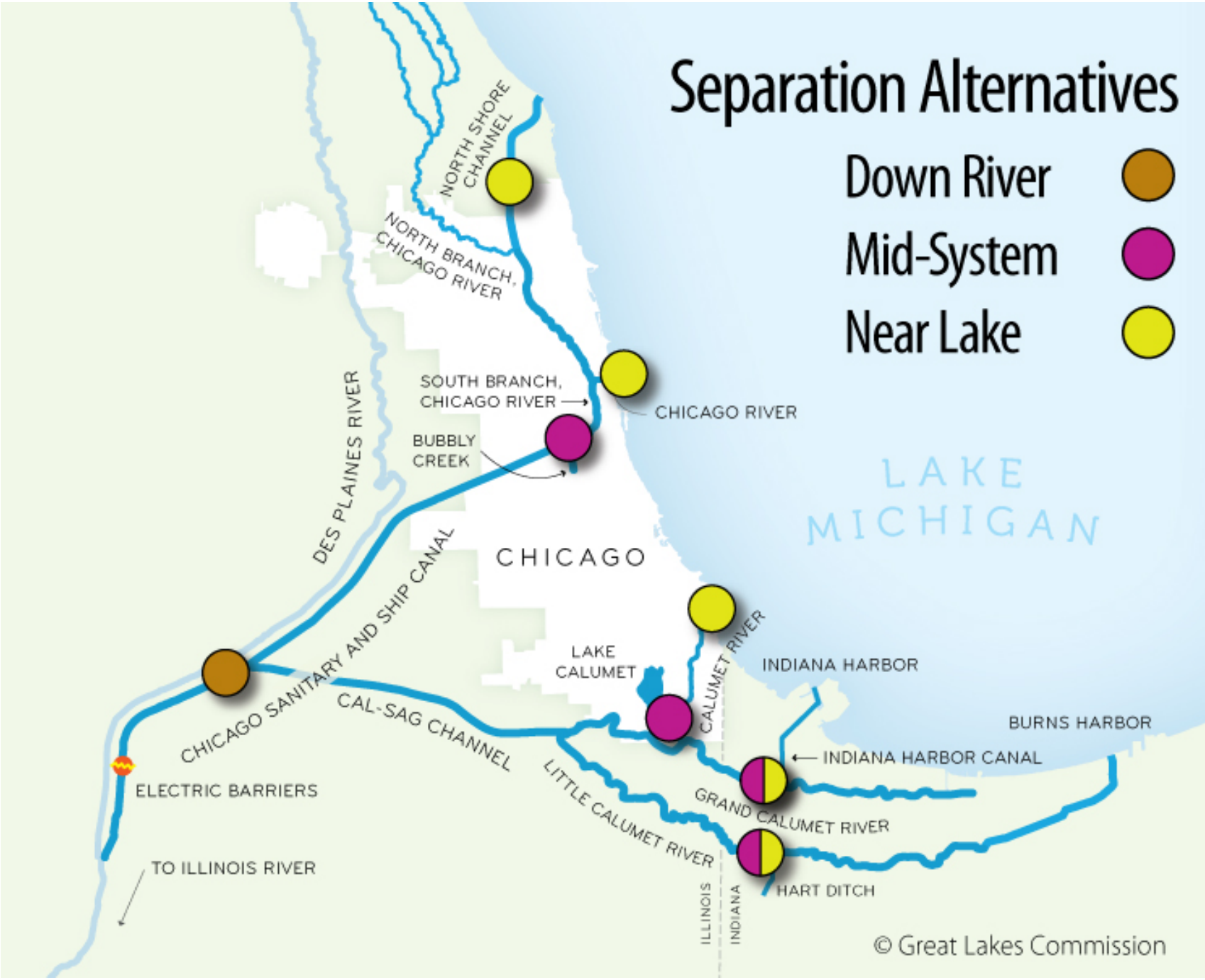
The Chicago and Calumet rivers were once tiny waterways that trickled into Lake Michigan. Begining in 1900 the city dug a series of canals that reversed their flows so they could carry the city's waste into the Mississippi River basin, and away from the lake – the city's drinking water source. A push is now under way to engineer a system to re-establish the natural hydrological divide between Lake Michigan and the Mississippi.

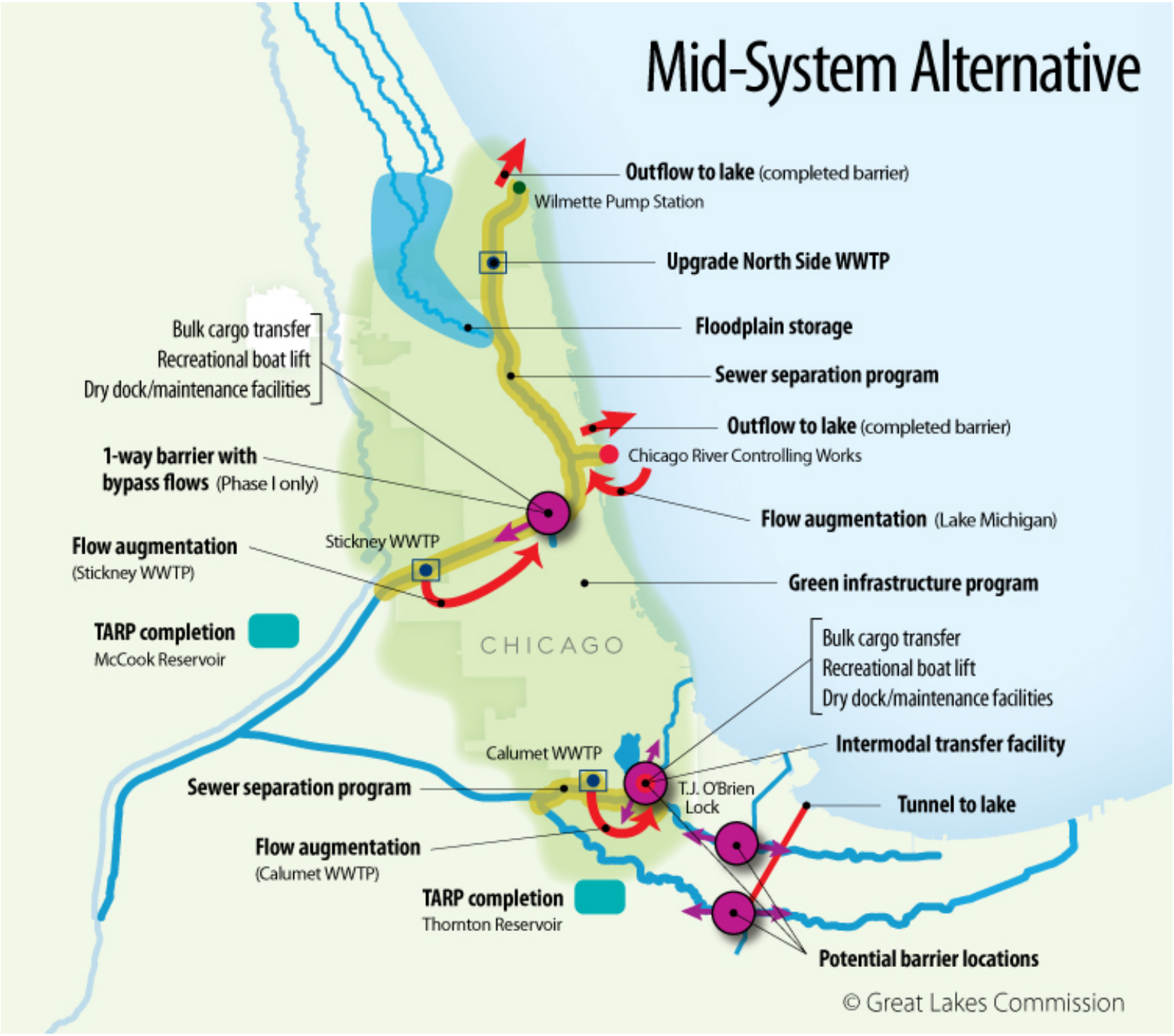
MAN-MADE WATERWAYS | SITES TESTING POSITIVE FOR ASIAN CARP DNA OR FISH | WATER TREATMENT PLANTS | LOCKS

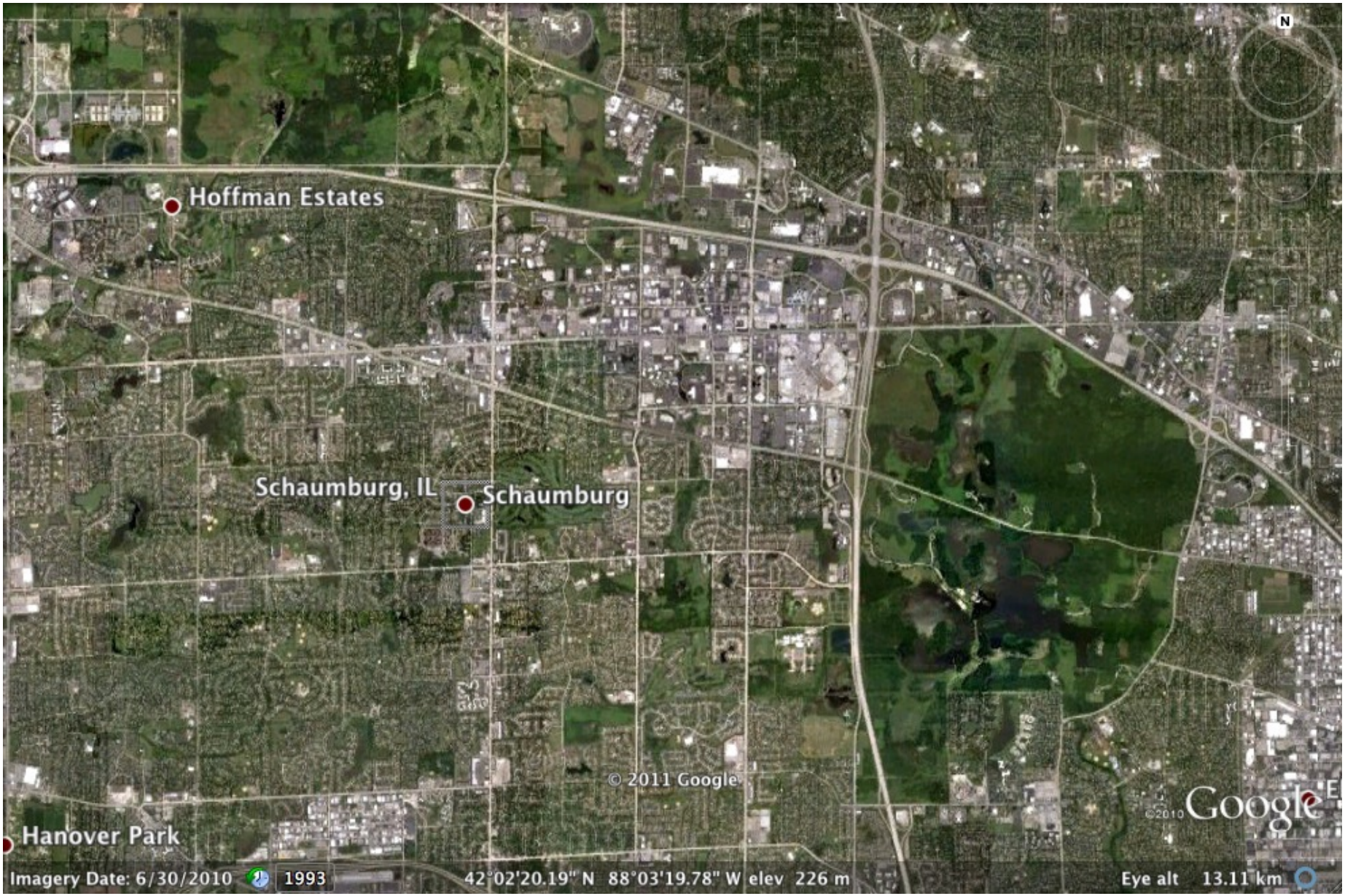
Sources: Great Lakes Fishery Commission

Journal Sentinel

Pre-1900 hydrology of the Chicago-area waterways (left); current flows, location of locks and water treatment plants, and Asian carp sightings as of summer 2010 (Milwaukee Journal-Sentinel / Great Lakes Fisheries Commission)


Separation Alternatives
Down River
Mid-System
Near Lake
NORTH SHORE CHANNEL
NORTH BRANCH, CHICAGO RIVER
SOUTH BRANCH, CHICAGO RIVER
CHICAGO RIVER
BUBBLY CREEK
DES PLAINES RIVER
CHICAGO
LAKE MICHIGAN
CHICAGO SANITARY AND SHIP CANAL
LAKE CALUMET
CALUMET RIVER
INDIANA HARBOR
BURNS HARBOR
INDIANA HARBOR CANAL
CAL-SAG CHANNEL
LITTLE CALUMET RIVER
GRAND CALUMET RIVER
HART DITCH
ELECTRIC BARRIERS
TO ILLINOIS RIVER
ILLINOIS
INDIANA
© Great Lakes Commission


Mid-System Alternative
Outflow to lake (completed barrier)
Wilmette Pump Station
Upgrade North Side WWTP
Floodplain storage
Bulk cargo transfer
Recreational boat lift
Dry dock/maintenance facilities
Sewer separation program
Outflow to lake (completed barrier)
Chicago River Controlling Works
1-way barrier with bypass flows (Phase I only)
Flow augmentation (Lake Michigan)
Flow augmentation (Stickney WWTP)
Stickney WWTP
Green infrastructure program
TARP completion
McCook Reservoir
CHICAGO
Bulk cargo transfer
Recreational boat lift
Dry dock/maintenance facilities
Intermodal transfer facility
Calumet WWTP
Sewer separation program
T.J. O'Brien Lock
Tunnel to lake
Flow augmentation (Calumet WWTP)
TARP completion
Thornton Reservoir
Potential barrier locations
© Great Lakes Commission



Green Infrastructure: Busse Woods / Cook County Forest Preserves

Postnatural water in suburbia: the MWRD's John Egan WTP in Schaumburg, around which flows the West Branch of Salt Creek into Busse Woods (right)

The future of water in postnatural Chicago: enhancing human interaction with the river. RU students canoe Bubbly Creek, May 2009 (M. Bryson)