



What is the “Use Attainability Analysis” for the Chicago Area Waterway System and why does Illinois have to do one?

Margaret Conway, Principal Attorney
March 27, 2015 Seminar



The Illinois Environmental Protection Act, 415 ILCS 5/1 et seq. was created in 1970.

The Act establishes a unified, state-wide program to restore, protect and enhance the quality of the environment and assures that adverse effects upon the environment are fully considered and borne by those who cause them.



Section 5 of the Act gives the Illinois Pollution Control Board (IPCB) authority to adopt standards governing environmental issues and submit them for approval to the United States Environmental Protection Agency (U.S. EPA)

The Federal Water Pollution Control Act (the “Clean Water Act” or “CWA”), 33 U.S. Section 1313 governs these standards.

The goal of the CWA is for waters to be “Fishable/Swimmable.”



A rulemaking is the process used to adopt regulations.

The IPCB adopts rules to implement or alter the State's environmental program (Title VII of the Environmental Protection Act, 415 ILCS 5/26-29)

The Illinois Environmental Protection Agency (IEPA) typically proposes rules.



October 2007, the IEPA filed with the IPCB a proposal to amend the current water quality standards for the Chicago Area Waterway System and the Lower Des Plaines River.

In preparation for the Proposal, the IEPA engaged interested participants by forming a stakeholder advisory group and retained consultants.

The UAA for the LDPR began in 2000

The UAA for the CAWS began in 2002



The goal of each UAA was to identify attainable recreational and aquatic uses for the CAWS and LPDR and to set standards protective of those uses.

To support its proposal IEPA submitted supporting documentation from its retained consultants.

Based upon consultant reports and input from stakeholders and the public, IEPA determined that the CAWS and LDPR could not meet the CWA goals of “fishable/swimmable” in setting designated uses and standards protective of those uses.



To establish new designated uses other than the CWA aquatic life and recreational goals, the State must address the six UAA factors set forth in 40 C.F.R. Section 131.10(g):

- (1) Naturally occurring pollutant concentrations prevent the attainment of the use; or
- (2) Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the use; or
- (3) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct to leave in place; or



- (4) Dams, diversions or other types of hydrologic modifications preclude attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use; or
- (5) Physical conditions related to the natural features of the water body, such as the lack of proper substrate, cover, flow, depth pools, riffles, and the like, unrelated to water quality, preclude attainment of the aquatic life protection uses; or
- (6) Controls more stringent than those required by sections 301(b) and 306 of the Act [CWA effluent standards] would result in widespread economic and social impact.



IPCB sets a schedule of public hearings to allow the IEPA to submit testimony supportive of its Proposal.

Interested parties have the opportunity to submit testimony supportive of changes to the Proposal.

General public can also file written comments.



After public hearings conclude:

IPCB issues a First Notice Opinion and Order. The First Notice period commences upon publication of the IPCB's Notice of Rulemaking in the Illinois Register and lasts a minimum of 45 days.

The First Notice Period expires when the IPCB files with the Joint Commission on Administrative Rules (JCAR)

The Rulemaking expires if not adopted within 1 year after commencement of First Notice.



The General Public can file comments on the First Notice Opinion and Order.

Illinois Administrative Procedures Act (IAPA) requires that the Department of Commerce and Economic Opportunity review each proposed rulemaking to determine its impact on small business. The DCEO may issue a report or decline to issue one.

A public hearing may be held during this period and IPCB can modify the rulemaking by submitting a First Notice Changes document to JCAR when it gives Second Notice.



After reviewing public comments (and can include responses to those comments), IPCB issues a Second Notice Opinion and Order.

The IPCB may alter the proposed regulation based upon hearing testimony (if a hearing is held) or public comment.

Once the Second Notice Opinion and Order is issued the rule is reviewed by JCAR and can only be changed at the request of JCAR.

The public can submit comments to JCAR.



The Second Notice period last 45 days , unless extended for another 45 days by agreement of JCAR and IPCB.

JCAR staff review the regulation and legislators meet to discuss it.

JCAR looks for statutory authority, propriety, standards for exercise of discretion, economic effects, clarity, procedural requirements, technical aspects, etc.

If JCAR does not object to the regulation, it files a Certificate of No Objection.

Rules published to Illinois Register.



JCAR and IPCB may agree to modifications adopted through JCAR Agreements. Agreements are appended to the Certificate of No Objection.

If JCAR makes recommended modifications, IPCB responds to the recommendation within 90 days by either making the recommended changes; withdraw the regulations; or, adopt the regulation with no changes.

If IPCB ignores JCAR's recommendation, and JCAR determines the regulation is a threat to the public interest, safety or welfare it can block the regulation by a 3/5 vote.



Illinois Register contains all rulemaking activity and can be found through www.ilga.gov.

Illinois Administrative Code contains all IPCB rules and is found through www.ilga.gov.

IPCB's website contains all rulemaking activity pending before the Board and can be found at www.ipcb.state.il.us



Chicago Area Waterway System Use Attainability Analysis An Epic Rulemaking

Jennifer Wasik, Supervising Aquatic Biologist
Environmental Monitoring and Research
March 27, 2015 Seminar



CAWS UAA

- Main Stakeholders/Participants
 - MWRD
 - IEPA, USEPA, Illinois Attorney General
 - Industrial dischargers
 - Midwest Generation, Citgo, Exxon-Mobil, Ingredion (formerly Corn Products), IERG
 - Environmental Groups
 - Sierra Club, Friends of the Chicago River, Environmental Law & Policy Center, Southeast Environmental Task Force



CAWS UAA

- MWRD contributed most of the data used for the initial IEPA proposal
 - Continuous Dissolved Oxygen and temperature monitoring (up to 23 stations since 1998)
 - Ambient Water Quality Monitoring (26 CAWS stations since 2001)
 - Biological (fish & benthic invertebrate) monitoring
 - Habitat Evaluation
- MWRD conducted many extensive studies along the way
 - CAWS DUFLOW Water Quality Model
 - CAWS Risk Assessment (Geosyntec)
 - CAWS Epidemiological Study - CHEERS (UIC)
 - Numerous technical memoranda detailing feasibility and costs of various alternatives to meet proposed water quality standards (CTE-AECOM)
 - CAWS Habitat Evaluation and Improvement Study (LimnoTech)



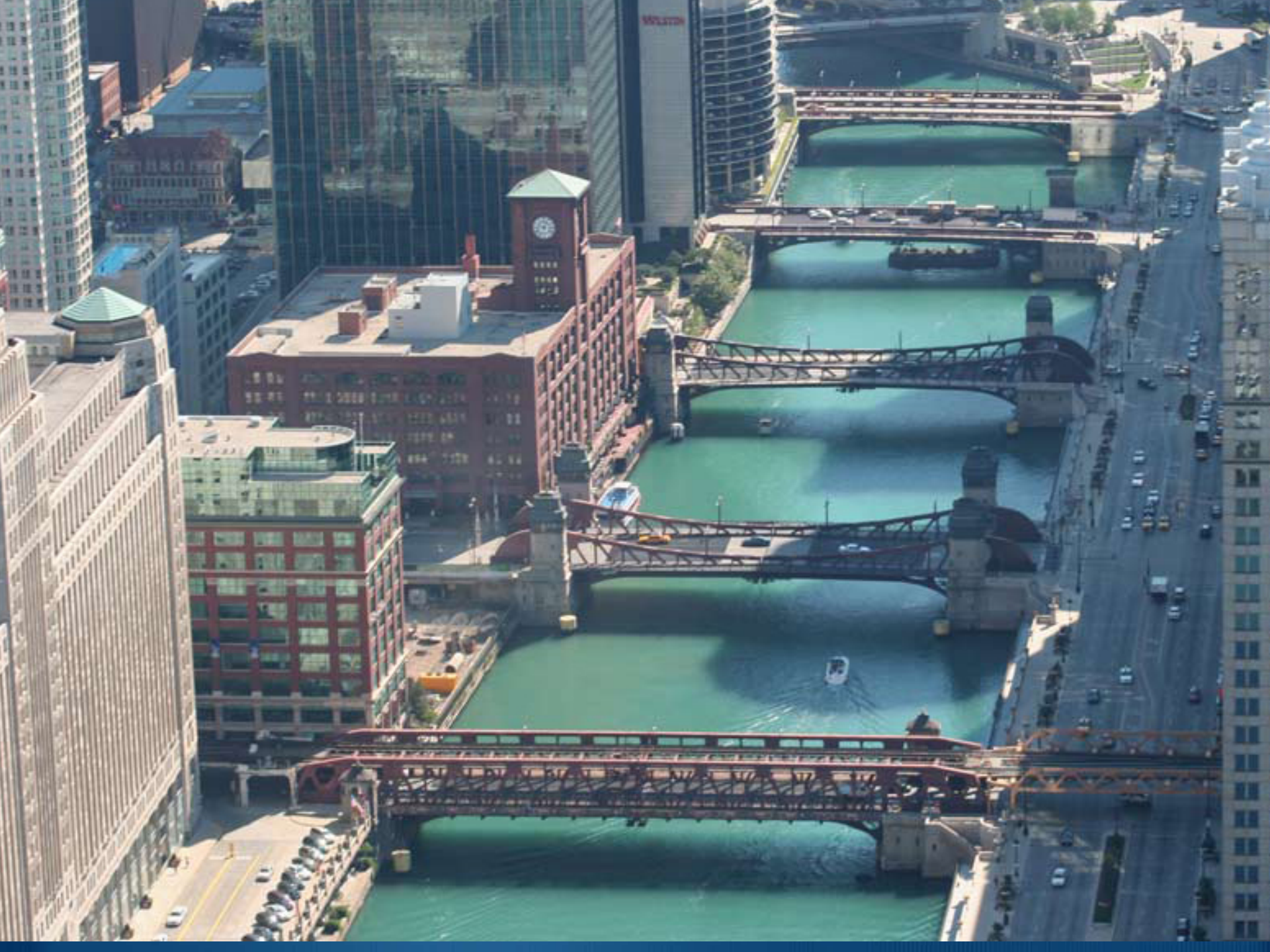
Virtual tour of issues at hand



ASHLAND AVENUE

ART 525 ART 525























WMS







WARNING
NO MOORING
TO THIS WALL

Ryder

5000
WINN
2000



NO MOORING
DANGER
NO SHORE ACCESS

NO MOORING
DANGER
ELECTRIC FISH BARRIER

Comparison of the Chicago Area Waterway System (CAWS) and a Natural River

TYPICAL CHICAGO AREA WATERWAY

Deep Draft

The CAWS was constructed specifically to facilitate urban drainage and commercial barge traffic. The steep sides allow for maximum volume capacity and barge navigation, but provide little habitat for fish.

Lack of Shade

The CAWS receives little shade from trees relative to the overall channel widths, especially in areas of urban or industrial land-use. These conditions encourage algae growth and discourage fish colonization.

Channelized Waterways

Most of the CAWS was constructed or modified to be straight with little variation in width and depth. It was designed specifically for wastewater conveyance and commercial navigation, without accounting for any aquatic life or recreational uses. There is no riffle or pool development.



Impaired Sediments

Homogenous silty sediments dominate the CAWS. These fine-grain sediments are not conducive to healthy invertebrate or fish communities, and are generally more likely to be associated with organic and heavy metal contaminants.

Barge Traffic

Commercial barges are prevalent in much of the CAWS. In 2006, over 12 million tons of commercial goods were shipped up through Lockport Lock into the Chicago Sanitary and Ship Canal on barges.

Controlled Flow

Hydrologic control structures (locks, dams, etc.) adjust water levels in the CAWS based on anticipated rain events to protect public health and prevent flooding of homes and businesses. Most of the time, flow in the CAWS is much slower than that of a natural river of comparable size. During rain events, however, rapid draw-down in water levels can lead to unsafe flow conditions.



TYPICAL NATURAL RIVER

Canopy Cover

Trees provide shade for aquatic life, keep the temperature down, and limit algae growth.

Gradually Sloping Banks

Natural banks allow light to penetrate to aquatic plants. They also offer a safer exit pathway for recreators.



Rocks and Aquatic Vegetation

In-stream habitat provides shelter and spawning area for fish, along with substrate for aquatic insects.

Varied Sediment Size

Heterogeneous sediment particles are able to support a diverse variety of aquatic invertebrates. Coarse sediments are more stable and not usually associated with chemical contamination.

Sinuous Path

A natural river meanders around curves and has varying depths, widths, and flow velocities. This variety functions to support a diverse assemblage of fish and invertebrates. Riffles increase the amount of oxygen in the water.



Rulemaking Divided in March 2010



R08-09

Subdocket A -
Recreational Uses

Subdocket B -
Water Quality
Standards to protect
recreational uses

Subdocket C -
Aquatic Life Uses

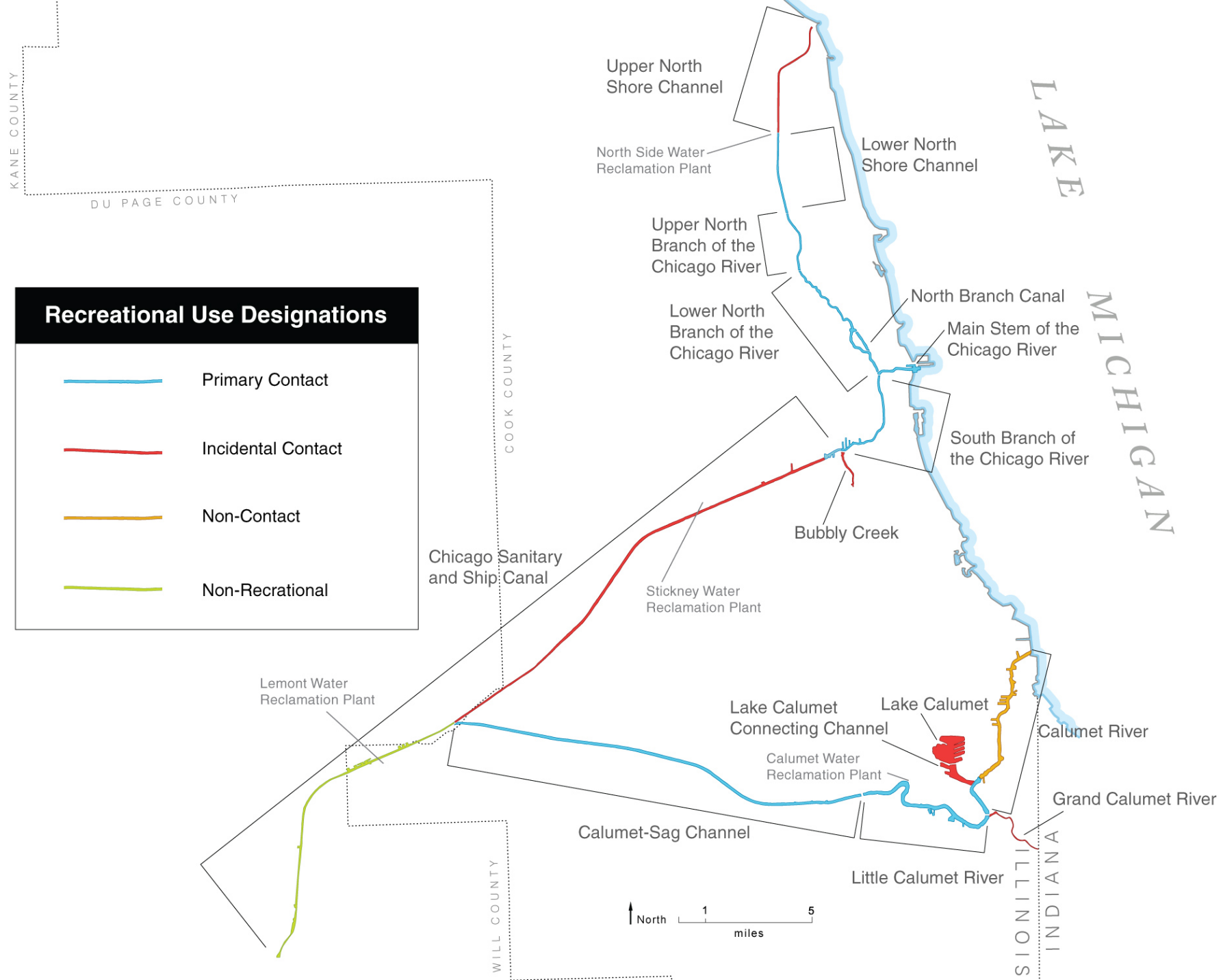
Subdocket D -
Water Quality
Standards to protect
aquatic life uses



CAWS UAA Rulemaking R08-9

What's been decided so far?

- Recreational Use Designations
 - “Primary Contact Recreation” means any recreational activity in which human contact consists of full body contact with the waters, such as swimming, diving or jumping, and includes all Incidental Contact Recreation.
 - “Incidental Contact Recreation” means any recreational activity in which human contact with the water is incidental and in which the probability of ingesting appreciable quantities of water is minimal, such as fishing; commercial boating; small craft recreational boating; and any limited contact associated with shoreline activity such as wading.
 - "Non-contact Recreation" means any recreational or other water use in which human contact with the water is unlikely, such as pass through commercial or recreational navigation, and where physical conditions or hydrologic modifications make direct human contact unlikely or dangerous.
 - "Non-recreational" means a water body where the physical conditions or hydrologic modifications preclude primary contact, incidental contact and non-contact recreation.





CAWS UAA Rulemaking R08-9

What's been decided so far?

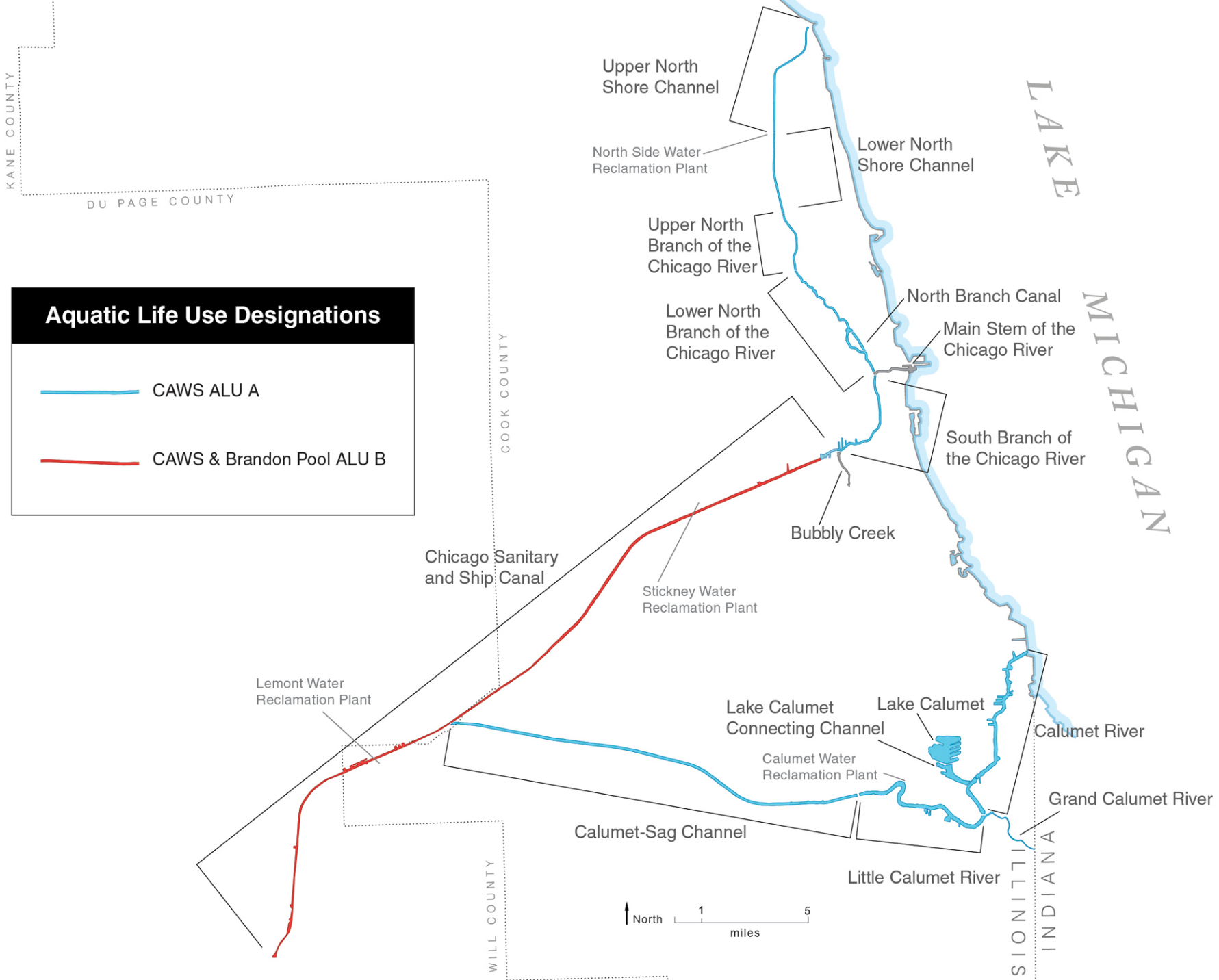
- Water Quality Standard to protect Recreational Uses
 - During the months May through October, based on a minimum of five samples taken over not more than a 30 day period, fecal coliform shall not exceed a geometric mean of 200 per 100 ml, nor shall more than 10% of the samples during any 30 day period exceed 400 per 100 ml in protected waters. Protected waters are defined as waters which, due to natural characteristics, aesthetic value or environmental significance are deserving of protection from pathogenic organisms.



CAWS UAA Rulemaking R08-9

What's been decided so far?

- Aquatic Life Use Designations
 - Waters designated as **Chicago Area Waterway System Aquatic Life Use A Waters** are capable of maintaining, and shall have quality sufficient to protect, aquatic-life populations predominated by individuals of tolerant and intermediately tolerant types that are adaptive to the unique physical conditions, flow patterns, and operational controls necessary to maintain navigational use, flood control, and drainage functions of the waterway system. Such aquatic life may include, but is not limited to, fish species such as channel catfish, largemouth bass, bluegill, black crappie, spotfin shiner, orangespotted sunfish, common carp, and goldfish.
 - Waters designated as **Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters** are capable of maintaining, and shall have quality sufficient to protect, aquatic life populations predominated by individuals of tolerant types that are adaptive to unique physical conditions and modifications of long duration, including artificially constructed channels consisting of vertical sheet-pile, concrete and rip-rap walls designed to support commercial navigation, flood control, and drainage functions in deep-draft, steep-walled shipping channels. Such aquatic life may include, but is not limited to, fish species such as common carp, golden shiner, bluntnose minnow, yellow bullhead and green sunfish.





CAWS UAA Rulemaking R08-9

What's left to be decided?

- IPCB First Notice Opinion and Order for Subdocket D issued on September 18, 2014 contained new water quality standards to support the CAWS A and CAWS B Aquatic Life Uses.
- IPCB Second Notice Opinion and Order for Subdocket D just issued March 19, 2015.
- Depending on volume of comments, the final rulemaking and publication to the Illinois Register could be in the next 3-6 months.



Comparison of previous and proposed Water Quality Standards for the Chicago Area Waterway System

Constituent	Former WQS (mg/L) TOTAL	Proposed WQS (mg/L) DISSOLVED	
		Acute	Chronic
Arsenic	1.0	0.34	0.15
Barium	5.0	None	
Cadmium	0.15	0.02*	0.002*
Hexavalent Chromium	0.3	0.016	0.011
Trivalent Chromium	1.0	1.07*	0.14*
Copper	1.0	0.03*	0.02*
Iron	2.0, 0.5 (dissolved)	1.0	
Lead	0.1	0.17*	0.04*

*WQS standard calculated based on hardness in receiving stream



Comparison of previous and proposed Water Quality Standards for the Chicago Area Waterway System

Constituent	Former WQS (mg/L) TOTAL	Proposed WQS (mg/L) DISSOLVED	
		Acute	Chronic
Manganese	1.0	7.4*	3.2*
Mercury	0.5 µg/L	0.012 µg/L total, Human Health Standard	
		1.2 µg/L	0.65 µg/L
Nickel	1.0	0.16*	0.01*
Selenium	1.0		1.0
Silver	1.1		0.013*
Zinc	1.0	0.23*	0.06*
Fluoride	15.0	15.3, total*	7.7, total*

*WQS standard calculated based on hardness in receiving stream



Comparison of previous and proposed Water Quality Standards for the Chicago Area Waterway System

Constituent	Former WQS (mg/L)	Proposed WQS (mg/L)		
		Acute	Chronic	
Cyanide	0.10	0.022	0.010	
Phenols	0.3	860 (Human Health Standard)		
BETX	None	B	4.2	0.86
		E	0.15	0.014
		T	2.0	0.6
		X	0.92	0.36
Total Dissolved Solids	1,500	None		
Chloride	None	500		
		Chicago San and Ship Canal Site specific standard 990 (acute) 660 (chronic) Dec. 1 – Ap.30		
Sulfate	None	2,000		



Comparison of previous and proposed Water Quality Standards for the Chicago Area Waterway System

Constituent	Former WQS (mg/L)	Proposed WQS (mg/L)	
		Acute	Chronic
Ammonia-Nitrogen	0.1 (unionized portion only)	15	4.65*
Temperature	Shall not exceed 34°C more than 5% of the time, or 37.8°C any time	Shall not exceed 15.6 C more than 1% of the time, or 17.3°C any time Dec-March	
		Shall not exceed 32.2 C more than 1% of the time, or 33.9°C any time April-November	

*WQS standard calculated based on pH and temperature in receiving stream



CAWS UAA – Most significant issues remaining

- Temperature
 - 3 year delayed effective date
- Chlorides
 - 3 year delayed effective date
- Bubbly Creek – Subdocket E



Temperature

- Has not been significant issue for MWRD
- IEPA's original proposal used MWRD continuous waterway temperature data to determine relative "background" temperature conditions. Never intended for MWRD to have to cool effluent.
- After much testimony on temperature and significant opposition by Midwest Generation and industrial stakeholders, IPCB ended up ordering that the CAWS meet General Use water quality temperature standards.



Chloride Workgroup

- CAWS has not previously had a chloride water quality standard
- Proposal called for 500 mg/L water quality standard, which is occasionally exceeded in the winter months
- IEPA approached the District in late 2014 to initiate and organize a CAWS chloride workgroup.
 - Implement BMPs for deicing and salt application
 - Apply for waterbody variance to temporarily suspend the unattainable chloride water quality standard during winter months in the CAWS
- Goal during variance period will be to show decrease in salt application and increase in use of BMPs.

Summary of Chloride Exceedances of 500 mg/L during December - March, 2004 through 2013 in the Chicago Area Waterway System

Location	N Observations	N > 500 mg/L	Percent > 500 mg/L
Central Street, North Shore Channel	6	0	0.0
Dempster Street, North Shore Channel	3	1	33.3
Oakton Street, North Shore Channel	32	0	0.0
Touhy Avenue, North Shore Channel	39	7	17.9
Foster Avenue, North Shore Channel	35	7	20.0
Wilson Avenue, North Branch Chicago River	34	9	26.5
Diversey Parkway, North Branch Chicago River	40	3	7.5
Grand Avenue, North Branch Chicago River	34	5	14.7
Lake Shore Drive, Chicago River	23	1	4.3
Wells Street, Chicago River	38	1	2.6
Madison Street, South Branch Chicago River	32	2	6.2
Loomis Street, South Branch Chicago River	40	2	5.0
Archer Avenue, Bubbly Creek	33	2	6.1
Damen Avenue, Chicago Sanitary & Ship Canal	34	3	8.8
Cicero Avenue, Chicago Sanitary & Ship Canal	40	2	5.0
Harlem Avenue, Chicago Sanitary & Ship Canal	40	1	2.5
Route 83, Chicago Sanitary & Ship Canal	32	3	9.4
Stephen Street, Chicago Sanitary & Ship Canal	37	1	2.7
Lockport Forebay, Chicago Sanitary & Ship Canal	163	17	10.4
Ewing Avenue, Calumet River	18	0	0.0
130th Street, Calumet River	19	0	0.0
Burnham Avenue, Grand Calumet River	18	0	0.0
Indiana Avenue, Little Calumet River	19	0	0.0
Halsted Street, Little Calumet River	33	1	3.0
Ashland Avenue, Calumet Sag Channel	30	2	6.7
Cicero Avenue, Calumet Sag Channel	31	1	3.2
Route 83, Calumet Sag Channel	27	1	3.7





STOCK YARDS.



Bubbly Creek Feasibility Study - ACOE

- Problems to be addressed include stream channelization, sediment degradation, lack of in-stream and riparian habitat and water quality issues. Ecosystem restoration measures considered in the feasibility phase included: 1) Selective Dredging; 2) Capping; 3) Creating channel base flow 4) Bypassing the RAPS overflow, and 5) No Federal Action.
- Tentatively recommended plan including limited dredging, substrate restoration (capping), riparian, emergent, and submergent plantings; and large woody debris additions.
- Cost of \$16,370,000, including required \$5,729,500 non federal match

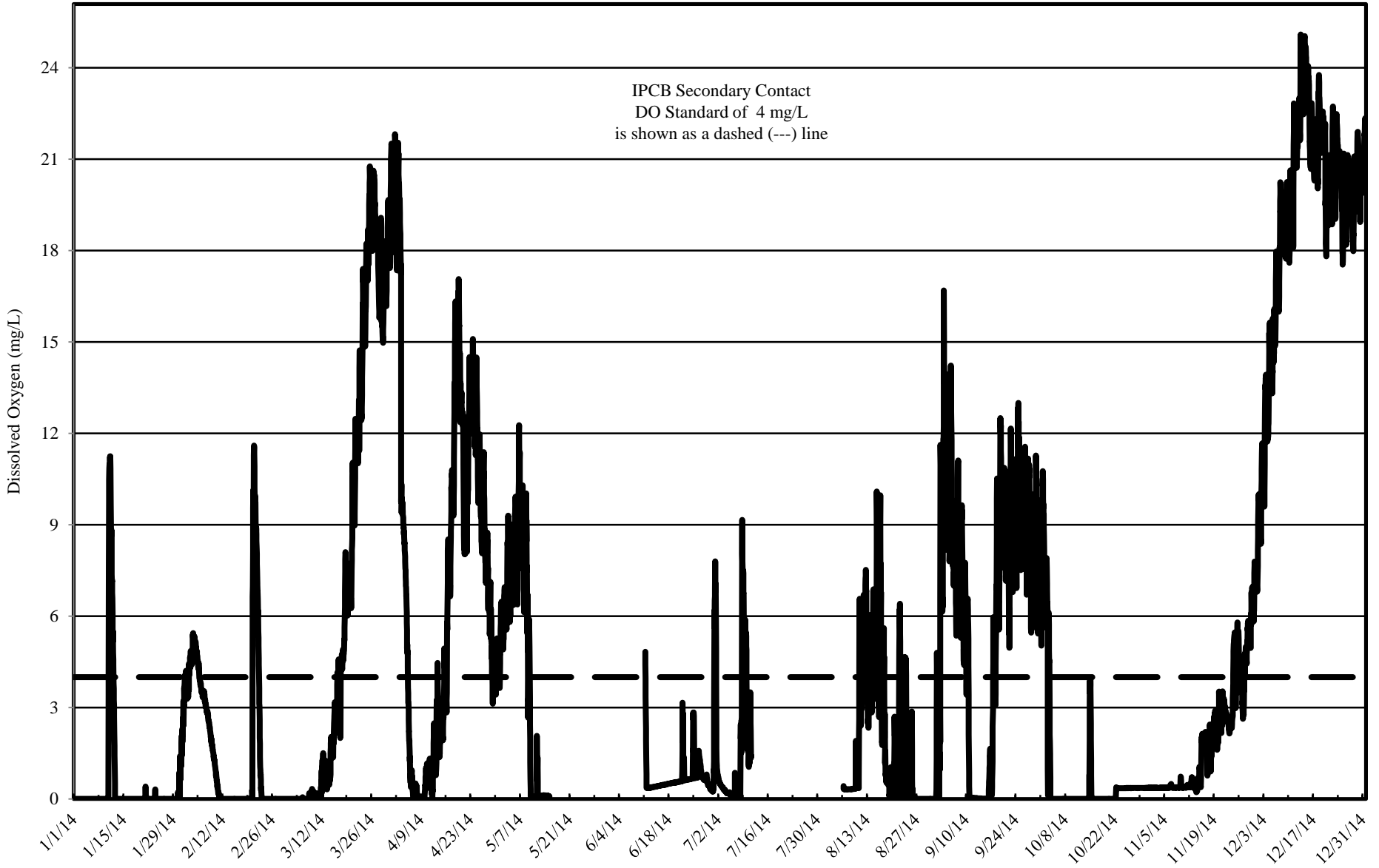


Bubbly Creek Feasibility Study - ACOE

- July 14, 2014 independent external peer review of the Feasibility Study
 - “Although any improvement to this complex and degraded urban ecosystem is better than what is currently located in the area, the information provided does not demonstrate that the project will successfully achieve its objectives or the objectives would be sustainable over the long term.”
 - “The document compares Bubbly Creek to a backwater, when it is really a novel urban system. Many of the project’s assumptions have been based on generalities associated with backwaters; however, because of the novel nature of the Bubbly Creek system, the assumptions are not supported by the generalities provided.”
 - “Based on the information provided, the Panel believes that the current National Ecosystem Restoration (NER) plan has a moderately high potential for plant failure.”



DISSOLVED OXYGEN CONCENTRATION MEASURED HOURLY AT 36TH STREET
IN BUBBLY CREEK, JANUARY 1, 2014 THROUGH DECEMBER 31, 2014











EV65
INVERTER

AMPS
FOOT
ADJUST
STAY
METER

SHIMADA 1.5 AMP 100V

YAMAHA



Acknowledgments

- Everyone?



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