



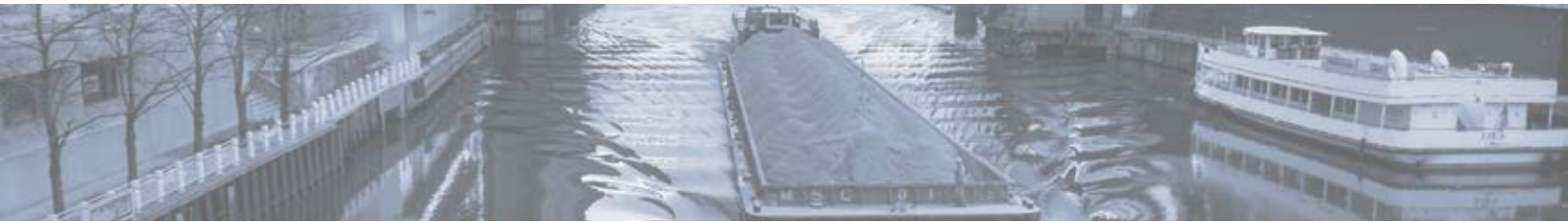
Industrial Usage of Chicago Area Waterway System

DRAFT Final Report
March 31, 2015

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I. Executive Summary



Chicago Area Waterways System Map

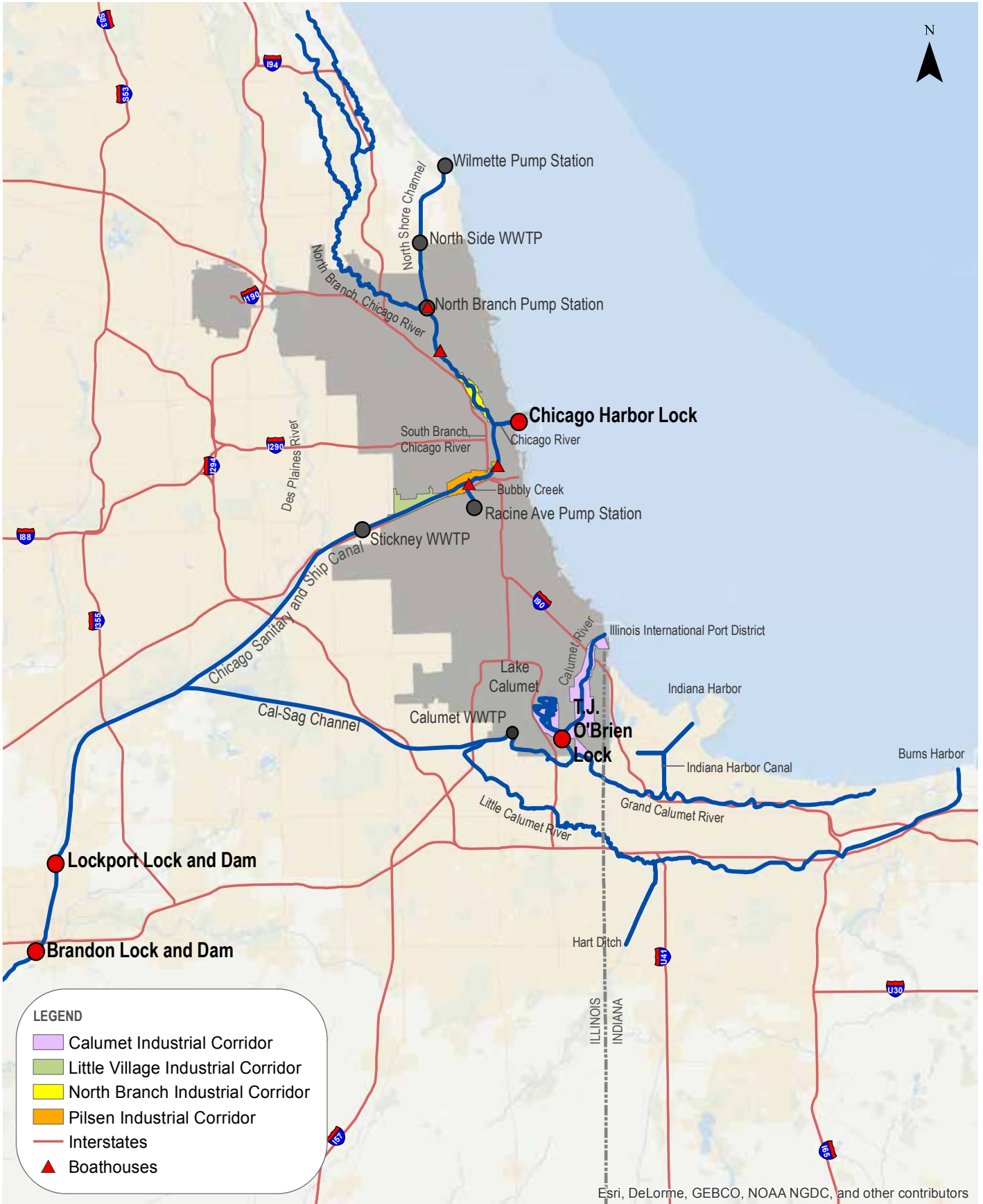


Figure 1. Chicago Area Waterways System Map

Introduction

Goodman Williams Group is heading a team retained by the City of Chicago Department of Planning and Development (DPD) to analyze the industrial usage of the Chicago Area Waterway System (CAWS) and to make recommendations related to the use of parcels located adjacent to the Waterway. Team members include Cambridge Systematics Inc., and U.S. Equities Realty, now part of CBRE.

The Chicago Area Waterway System is a strategic transportation link, connecting the Mississippi River System (MRS), the Gulf Coast, and the Great Lakes. The CAWS is comprised of a number of segments. As shown in Figure 1, the following segments are entirely or partially located within the boundaries of the City of Chicago:

- Chicago River Main and North Branches;
- Chicago River South Branch, which extends from Lake Street south to Damen Avenue. Bubbly Creek is the name given to the dead-end fork in the Chicago River that flows from Ashland to just north of Pershing Road;
- Chicago Sanitary and Ship Canal, which extends in a southwesterly direction from Damen to well beyond Chicago's borders.
- The Calumet River, which connects Lake Michigan to the Cal-Sag Channel and Lake Calumet;
- Lake Calumet;
- The Little Calumet River and Cal – Sag Channel, small portions of which touch the City's southernmost boundary.

Two locks along the CAWS are located within the City of Chicago: the Chicago Lock, which is located at the Main Branch of the Chicago River at the entrance to Lake Michigan; and the T.J. O'Brien Lock located along the Calumet River. The T. J. O'Brien Lock provides the only commercial access from CAWS to Lake Michigan.

Nature of the Assignment

In December 2014, the team completed a draft of a Phase I – Existing Conditions report. This document presented information on the four industrial corridors in the City with sites located adjacent to the Waterway:

- North Branch
- Pilsen
- Little Village
- Calumet

The report also included historic information on trends in barge traffic by tonnage and commodities, as well as a summary of recent studies addressing a number of environmental, safety, infrastructure, and commercial issues related to the CAWS.

Subsequent to the Phase I report, the team continued to collect and refine waterway usage data, forecast future usage based on current and anticipated trends, and conducted select interviews with barge users and with the Chairman of the Illinois International Port District.

Key Findings and Recommendations

Key findings and recommendations from the Phase I data collection and subsequent work are described below.

Recognize the importance of barge usage to key industries on various segments of the Chicago Area Waterway System.

Commerce on the waterway system is small when compared to Chicago's massive trucking and rail industries, and has been generally declining in recent years, as summarized in the table below.

Nonetheless, waterway access remains critical for certain industries that transport raw materials including sand and gravel, scrap metal, and certain minerals. While the South and North Branches of the Chicago River carry a fraction of the waterborne commerce compared to the Calumet River, construction and metal recycling, in particular, are key waterway-oriented industries along these segments.

Construction. Poured concrete is a critical component of many of Chicago’s construction projects, from roadway and public infrastructure improvements to the development of new downtown highrises. Concrete is a time-sensitive material that must be poured at the construction site within 30 minutes of being “mixed”, depending on the customer specification. Therefore, close proximity of the redi-mix concrete yards to project sites is critical.

Ozinga and Prairie Material, two of the city’s largest concrete suppliers, maintain multiple locations within the City, including barge facilities in the North Branch, Pilsen, and Little Village Industrial Corridors. Prairie Material and Ozinga receive raw materials via barges traveling up the Mississippi River System. Both companies noted that **transporting material by barge is less expensive** than trucking in raw materials, helping to keep construction costs in Chicago comparatively low. In addition, barge travel eliminates trucks on the City’s expressways, **reducing traffic and truck emissions**. According to our interviews, which are described in more detail later in this report, one barge carries about 1,500 tons of raw material, or the equivalent of between 60 and 90 trucks.

Table 1. Waterways Tonnage

Waterways - Total Tonnage (000s of tons)			
Segment	2003	2012	Change %
Chicago River, Main and North Branch	1,828	792	-56.7%
Chicago River, South Branch	3,946	1,267	-67.9%
Lake Calumet	963	808	-16.1%
Calumet Harbor and River	11,213	11,968	6.7%
Calumet Sag Channel <i>(On City boundary and outside City)</i>	6,576	5,461	-17.0%
Sanitary and Ship Canal <i>(Only a small portion within City)</i>	19,465	11,915	-38.8%

Source: USACE Waterborne Commerce of the United States

Metal Recycling. Scrap metal recyclers are also active barge users in the CAWS. According to our interview with General Iron, the company receives discarded scrap metal from a variety of sources, typically by truck. Once it is shredded and processed at the company’s North Branch facility, much of the recycled metal is shipped via barge through the Sanitary and Ship Canal down the Mississippi River System to steel companies and other buyers. The company reported shipping an average of 13.5 barges per month in 2014, each barge carrying the equivalent of 80 trucks worth of scrap metal.

Support Increased Investment in The Port of Chicago and along the Calumet River.

The majority of the City’s waterway-oriented industrial activity takes place in the Calumet Industrial Corridor on the City’s southeast side. According to the U.S. Army Corps of Engineers, The Calumet Corridor contains 58 commercial docking facilities, or 71% of all those located in the City. The Corridor also contains critical rail and highway infrastructure, making it an important area for warehousing, logistics, and other transport-oriented industrial activities.

The Illinois International Port District (IIPD or “the Port”) controls industrial areas on the east and west banks of Lake Calumet, as well as Iroquois landing, located six miles to the north at the confluence of the Calumet River and Lake Michigan. The Port itself does not conduct commerce, but serves as a landlord that leases sites and facilities to private companies needing waterway access.

A Strategic & Capital Needs Study was completed for the Port District in 2012. It recommended a new direction for the Port that:

- “Is focused on industrial, maritime, and freight movement issues and opportunities;
- Provides for active management of IIPD property;
- Aggressively promotes and markets the Port as an ideal location for industrial/maritime business; and
- Rigorously seeks operational efficiency and financial accountability.”

According to Michael Forde, Chairman of IIPD, the Port is continuing to explore the potential for a master lease that would attract private capital and improve maritime industrial operations. Among all locations in the City, the Calumet Corridor is best positioned for new maritime-related industrial investment.

Promote Enhanced Communication Among Diverse Users of the CAWS.

On all segments of the Chicago River, interest in cleaning up and increasing access to the riverfront is growing. Additional recreational, tourism, and transportation uses on the River are envisioned as well. Efforts are underway to enhance safety measures and encourage communication and cooperation among the diverse users of the CAWS.

Of particular note, the U.S. Coast Guard Marine Safety Unit in Chicago established a Chicago Harbor Safety Committee in 2013. Subcommittees of specific interests were formed, including the Towing Vessel Subcommittee, which is comprised of towing vessel operators. At a meeting with this Subcommittee in September 2014, members expressed concern about the need for better communication in particular between barge operators and recreational boaters, both those operating small motor-boats as well as human-powered crafts like kayaks.

DPD should also be aware of potential impacts on industrial users as new boat houses are proposed, more pedestrian access to the River is considered, and additional riverwalks are planned.

Encourage Investment in Regional Maritime Infrastructure.

The infrastructure along the CAWS, and indeed along the larger inter-dependent network of waterways, is in poor condition, preventing the efficient movement of goods. A September 2014 report from the Infrastructure Council of the Illinois Chamber of Commerce documented the dire state of this infrastructure. Of Illinois' eight locks and dams, seven were built in the 1930s. Investment in this infrastructure has been grossly inadequate, and improvements to the infrastructure are characterized by the U.S. Army Corps of Engineers as a "fix-as-fail" strategy, rather than preventative maintenance, let alone investing for future opportunities. Recently, the T.J. O'Brien Lock was closed for emergency repairs.

These issues transcend municipal borders, and City policy and resources alone cannot address the challenges. However, it should be recognized that the portion of Chicago's economy that is tied to waterborne commerce is dependent on a functional system of regional waterway infrastructure. Opportunities for the City to play a role at the State and Federal levels to leverage regional investment should be encouraged, which in turn will result in direct benefits back to Chicago's economy.

Support the City's Industrial Waterway Interests in Regional Discussions on Invasive Species and Stormwater Management.

The potential of a physical separation between the Mississippi River System and the Great Lakes is currently being debated. This could have profound impacts on waterborne commerce within the City of Chicago. While the major impact may be the loss of economic activity along the waterway, this type of separation could also affect how bulk materials would be transported through the City. More rail traffic could be expected, as well as increased truck traffic on the City's expressways.

This report does not take a position on the looming issue of invasive species entering the Great Lakes. Rather, it stresses the importance of having the City of Chicago's economic and transportation issues adequately represented as the complex issues and potential solutions are discussed.

II. Barge Facilities by Industrial Corridor

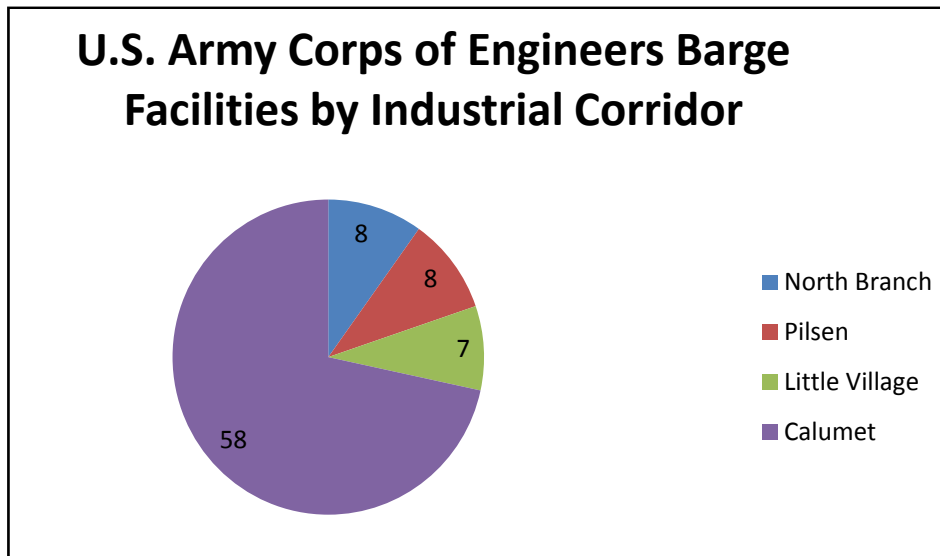


All of the barge facilities in the City of Chicago are located within one of four industrial corridors: North Branch, Pilsen, Little Village, and Calumet. The U.S. Army Corps of Engineers (USACE) provides information on approved barge facilities and designated areas for the loading and unloading, breaking down, and/or staging of barge tows. Figure 2 shows the most recent distribution of barge facilities by the four industrial corridors within the City. It should be noted that not all of the facilities listed are currently in use.

Of particular note are the closed Fisk Generating Station in the Pilsen Industrial Corridor and the Crawford Station in the Little Village Industrial Corridor, both of which received coal by barge when they were open.

The following tables provide more detailed information for each corridor along with maps that show the location and owner of each of the parcels with an approved barge facility.

Figure 2. U.S. Army Corps of Engineers Barge Facilities by Industrial Corridor



Source: U.S. Army Corps of Engineers Appendix A: Commercial Barge Facilities, Illinois Waterway Navigation Charts 2013

North Branch Industrial Corridor

Table 2. U.S. Army Corps of Engineers Barge Facilities in North Branch Industrial Corridor Summary Table

U.S. Army Corps of Engineers Barge Facilities in North Branch Industrial Corridor Summary Table		
<u>Company</u>	<u>Address</u>	<u>Business Description</u>
Ogden Avenue Materials	931 N. Ogden Ave.	Asphalt paving materials
Morton Salt, Inc.	1357 N. Elston Ave.	Salt processing
Ozinga Ready Mix Concrete, Inc.	2001 N. Mendell St.	Ready-mixed concrete
Prairie Material Yard 32	901 N. Sangamon St.	Other Building Material Dealers
City of Chicago Recycling Wharf	1150 N North Branch Street	Recyclable Material Merchant Wholesalers
Chicago Water Taxi North Ave Dock	1536 N. Cherry Ave.	Water transportation: inland water passenger transportation
General Iron Industries Recycling Center	1909 N. Clifton Ave	Recyclable Material Merchant Wholesalers, Scrap and Waste Materials
Sims Metal Management Cortland Wharf	1509 W. Cortland St.	Recyclable Material Merchant Wholesalers, Scrap and Waste Materials

Source: U.S. Army Corps of Engineers Appendix A: Commercial Barge Facilities, Illinois Waterway Navigation Charts 2013

North Branch Industrial Corridor Barge Facilities



Figure 3. North Branch Industrial Corridor Barge Facilities

Pilsen Industrial Corridor Barge Facilities

Table 3. U.S. Army Corps of Engineers Barge Facilities in Pilsen Industrial Corridor Summary Table

**U.S. Army Corps of Engineers Barge Facilities
in Pilsen Industrial Corridor Summary Table**

Company	Address	Business Description
Commonwealth Edison Co. Fisk Station Coal Wharf	1111 W Cermak Rd	Coal and Other Mineral and Ore Merchant Wholesalers
American Sugar Refining Corp. / Domino Sugar	2905 S. Western Ave.	Liquid sugar processing
Sims Metal Management-Midwest	2500 S. Paulina St.	Company headquarters & scrap iron, steel & nonferrous metal processing
Ozinga Ready Mix Concrete, Inc.	2255 S. Lumber St.	Ready-mixed concrete
Tri-River Docks, Damen Avenue Terminal Wharf	2700 S. Robinson Ave	Ship Building & Repairing
E.A. Cox Construction Co. Wharf	2515 S. Laffin St.	New Single-Family housing construction
Commonwealth Edison Co. Loomis St. Coal Storage Terminal	1111 W Cermak Rd	Coal and Other Mineral and Ore Merchant Wholesalers
Hanson Material Service, Damen Ave Mooring	3111 S Western Ave	Cement Manufacturing

Source: U.S. Army Corps of Engineers Appendix A: Commercial Barge Facilities, Illinois Waterway Navigation Charts 2013



Figure 4. Pilsen Industrial Corridor Barge Facilities

Little Village Industrial Corridor Barge Facilities

Table 4. U.S. Army Corps of Engineers Barge Facilities in Little Village Industrial Corridor Summary Table

**U.S. Army Corps of Engineers Barge Facilities
in Little Village Industrial Corridor Summary Table**

Company	Address	Business Description
Midwest Generation, Crawford Station Coal Wharf	3501 S. Pulaski Rd	Fossil Fuels Electric Power Generation
Reliable Asphalt Corp.	3741 S. Pulaski	Asphalt paving compounds
Prairie Material	3300 S. California Ave.	Ready-mixed concrete
Ameropan Oil Corp. Bell Oil Terminal Wharf	3741 S. Pulaski	Asphalt paving compounds
City of Chicago Dept of Transportation Marshall Blvd Wharf	3124 S California Ave	Regulation and Administration of Transportation Programs: Transportation departments
Ameropan Oil Corp. 33rd Street Terminal Dock	3301 S California Ave	Marine Cargo Handling
Prolerized Chicago Corp. Wharf	3151 S California Ave.	Marine Cargo Handling

Source: U.S. Army Corps of Engineers Appendix A: Commercial Barge Facilities, Illinois Waterway Navigation Charts 2013



Figure 5. Little Village Industrial Corridor Barge Facilities

Calumet Industrial Corridor Barge Facilities

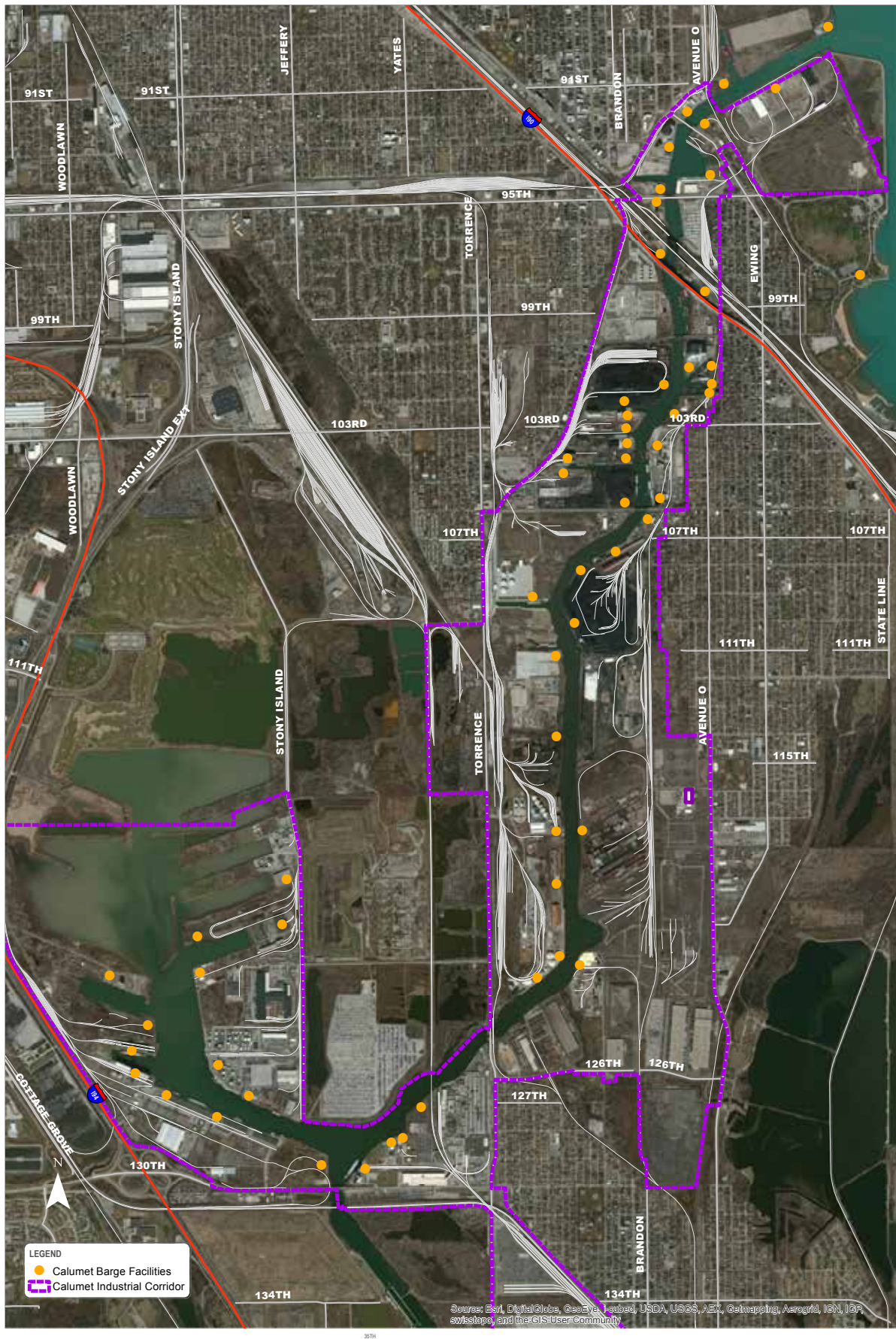


Figure 6. Calumet Industrial Corridor Barge Facilities

Map by Goodman Williams Group
 February 25, 2015
 Source: US Army Corps of Engineers, 2013

Table 5. U.S. Army Corps of Engineers Barge Facilities in Calumet Industrial Corridor Summary Table

U.S. Army Corps of Engineers Barge Facilities in Calumet Industrial Corridor Summary Table			
Company	Address	Business Description	Label
Beemsterboer Slag and Ballast Wharves	2900 E. 106th St.	Ground or Treated Minerals & Earths Manufacturing	1
Lafarge North America, Inc.	2150 E. 130th St.	Cement & block & precast concrete	2
American Sugar	2400 E. 130th St.	Sweeteners	3
P V S Chemicals, Inc.	12260 S. Carondelet Ave.	Industrial chemicals	4
Cargill Salt, Inc. Salt Wharf	12201 S. Torrence Ave.	Rock & solar salt packaging	5
Cargill Salt, Inc. Grain Wharf	12201 S. Torrence Ave.	Rock & solar salt packaging	6
Interstate Processing Co.	12100 S. Stony Island Ave.	Steel slitting	7
Dockside Steel Coils	11828 S. Stony Island Ave.	Steel processing & slitting	8
Horsehead Corp.	2701 E. 114th St.	Zinc powder	9
Arro Corp.	10459 S. Muskegon Ave.	Contract packaging	10
Carmeuse Lime & Stone, Inc. North Slip	3245 E. 103rd St.	Lime & limestone	11
Carmeuse Lime & Stone, Inc. South Slip	3245 E. 103rd St.	Lime & limestone	12
ELG Metals, Inc.	3253 E. 103rd St.	Stainless steel scrap processing	13
Sims Metal Management, Inc.-Midwest	3200 E. 96th St.	Scrap metal recycling	14
Sims Metal Management - Scrap Processing, Inc.	9331 S. Ewing Ave.	Scrap metal recycling	15
Scrap Corp. of America Butler Wharf	12901 S. Stony Island Ave	Recyclable Material Merchant Wholesalers	16
First Choice Logistics	12550 S Stony Island Ave	Special Waste Hauling	17
Reserve Marine Terminals Calumet Dock #1	12654 S. Butler Dr.	General Warehousing & Storage, Marine Cargo Handling	18
S.H. Bell Co. Lake Calumet Terminal	12601 S. Butler Dr.	General and Special Warehousing & Storage	19
Kinder Morgan Chicago Terminal, Docks A & B Wharves	12200 S. Stony Island Ave.	Special Warehousing & Storage	20
Illinois International Port District Grain Elevators #1	12298 S. Doty Ave.	Grain Elevators, storage only	21
Illinois International Port District Grain Elevators #2	12300 S. Doty Ave.	Grain Elevators, storage only	22
St. Mary's Cement, Lake Calumet Plant Dock	12101 S. Doty Ave.	Cement manufacturing	23
Emesco Marine Term, Lake Calumet Slip	12100 S. Stony Island Ave.	Marine Cargo Handling	24
Town and Country Landscaping Supply Co.	1600 E. 122nd St.	Landscape Architectural Services	25
S.E.E. Terminal Wharf	2322 E. 130th St.	Marine Cargo Handling	26
Kinder Morgan Ferro Operation Wharf	2926 E. 126th St.	Special Warehousing & Storage	27
Midwest Marine Terminals	11707 S. Torrence Ave	Marine Cargo Handling	28
Nidera - Chicago & IL River Marketing	11700 S. Torrence Ave	Farm Product Warehousing & Storage	29
Reserve Marine Terminals Calumet Dock #2	3232 E. 118th St.	General and Special Warehousing & Storage	30
Walsh Construction Co Dock	11100 S. Torrence Ave.	Commercial Building Construction	31
Asphalt Operating Services of Chicago, LLC	2835 E. 106th St.	Petroleum Bulk Stations and Terminals	32
KCBX Chicago Fuels Terminal	10730 S. Burley Ave.	Coal and Other Mineral and Ore Merchant Wholesalers	33
Calumet River Terminal	10740 S. Burley Ave.	General Warehousing and Storage	34
Arcelormittal Long Carbon North America, Calumet Depot	10705 S. Burley Ave.	Iron and Steel Mills and Ferroalloy Manufacturing	35
Specialty Steel Products Wharf	10800 S. Burley Ave.	Metal Service Centers and Metal Merchant Wholesalers	36
Midwest Marine Terminals	11701 S. Torrence Ave	Marine Cargo Handling	37
Hanson Material Service, Yard No. 20 Wharf	3230 E. 104th St.	Cement manufacturing	38
Holcim Chicago South Terminal, 103rd St	3020 E. 103rd St.	Cement manufacturing	39
KCBX Terminals Co., Barge-Unloading Slip	3259 E. 100th St.	Coal and Other Mineral and Ore Merchant Wholesalers	40
S.H. Bell Co. Chicago Terminal, Barge Wharves	10218 S. Avenue O	General and Special Warehousing & Storage	41
S.H. Bell Co. Chicago Terminal, South Slip	10218 S. Avenue O	General and Special Warehousing & Storage	42
S.H. Bell Co. Chicago Terminal, Middle Slip	10218 S. Avenue O	General and Special Warehousing & Storage	43
S.H. Bell Co. Chicago Terminal, North Slip	10218 S. Avenue O	General and Special Warehousing & Storage	44
KCBX Terminals Co., Loading Wharf	3259 E. 100th St.	Coal and Other Mineral and Ore Merchant Wholesalers	45
Morton Salt, Inc. Calumet River Wharf	3507 E. 100th St.	Table salt processing, salt manufacturing (except table	46
Kindra Lake Towing Slip	9864 S. Avenue N	Navigational Services to Shipping	47
Cozzi Calumet River Wharf	3200 E. 96th St.	General and Special Warehousing & Storage	48
Holcim Chicago South Terminal, 95th St	3331 E. 95th St.	Cement manufacturing	49
The Brown 95th Street Wharf	3200 E. 96th St.	Port and Harbor Operations	50
Great Lakes Towing Co, Calumet River Dock	9402 S. Ewing Ave.	Navigational Services to Shipping	51
North American Salt Co., Chicago Plant Wharf	9200 S. Ewing Ave.	Table salt processing, salt manufacturing (except table	52
City of Chicago, Ewing Avenue Dock	9211 S. Ewing Ave.	Regulation and Administration of Transportation Programs	53
U.S. Army Corp of Engineers, Calumet Harbor Boatshed	8725 S Mackinaw Ave.	Marinas	54
Illinois International Port District, Iroquois Landing Wharf	Calumet River & Lake Michigan	Port and Harbor Operations	55
U.S. Army Corp of Engineers, Calumet Harbor Stone Dock	Calumet River & Lake Michigan	Port and Harbor Operations	56
U.S. Coast Guard Station, Calumet Harbor IL	4001 E. 98th St.	Regulation and Administration of Transportation Programs	57

Source: U.S. Army Corps of Engineers Appendix A: Commercial Barge Facilities, Illinois Waterway Navigation Charts 2013

III. The Port of Chicago



The following chapter is based on an interview with Michael Forde, Chairman of the Illinois International Port District, conducted on January 20, 2015. Also referenced is the June 2012 report, *A Strategic & Capital Needs Study*, commissioned by the Port and prepared by BMO Capital Markets.

The shaded areas adjacent to Lake Calumet, as well as Iroquois Landing, are owned by the Illinois International Port District.

Description of the Port Property

The Illinois International Port District (IIPD) is a landowner with assets located in the Lake Calumet area. While their holdings are primarily industrial, with facilities that serve the goods movement industry (shown in gray on the accompanying map), the Port also oversees the 36-hole Harborside International Golf Complex constructed on reclaimed land (shown in green). Industrial facilities include:

Iroquois Landing Lakefront Terminus. Located at the mouth of the Calumet River at Lake Michigan, Iroquois Landing is a 100-acre, open paved terminal with 3,000 linear feet of ship and barge berthing space and a navigational depth of 27 feet. There are two 110,000 square-foot transit sheds, with direct truck and rail access. 100 acres of adjacent property is available for lease and development.

Lake Calumet. Lake Calumet operations and terminals are located at the junction point of the Grand Calumet and Little Calumet Rivers approximately 6 miles inland from Lake Michigan. The southwest quadrant of this area has three transit sheds totaling over 400,000 square feet adjacent to approximately 3,000 linear feet of ship and barge berthing space. The IIPD owns two grain elevators at Lake Calumet with a capacity of 14 million bushels, and has liquid bulk storage capacity of 800,000 barrels.

Numerous other privately-owned bulk facilities and industries are located along the six miles of the Calumet River that connect Iroquois Landing and the Lake Calumet area. These private terminals compete with operators located at IIPD facilities.

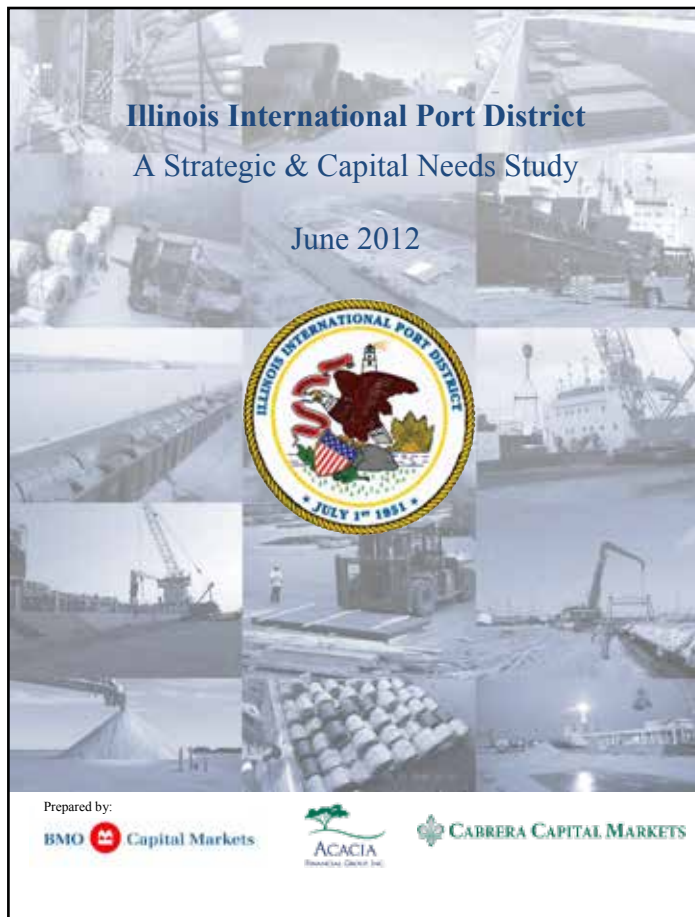
Figure 7. Map of Illinois International Port District Property



Source: *A Strategic and Capital Needs Study*, 2012

A Strategic & Capital Needs Study

In June 2012 the Port hired BMO Capital Markets to develop A Strategic & Capital Needs Study. The Study's goals were to address the Port's current situation, its near-term opportunities in the local and regional freight transportation network, and its prospects for attracting investment from the private sector. Over the course of the Study the BMO team reviewed the Port's facilities, management practices, tenant agreements, rail provider contracts, environmental studies, and local and regional economic factors. Over 40 Port stakeholders were also interviewed as part of the process.



The Study highlighted several issues surrounding the Port and its operations, including:

- The potential physical separation of the inland and Great Lakes waterways due to invasive species;
- Competition with other ports, private terminals and the rail network;
- The cost structure of operating the IIPD facilities, and
- The need for infrastructure investments.

The Study concluded by noting “a new direction is needed” that will help address the above issues, as well as focus on industrial and maritime opportunities, provide for active management of IIPD facilities, make capital investments, promote/market the Port, and ensure the Port is financially accountable.

Waterway Usage and Capital Needs of the Port

The use of the IIPD is a reflection of the economy and regulations that govern trade. Historically the Port, and the Lake Calumet area specifically, was “grain out and steel in.” This was due to the steel and heavy manufacturing industry that surrounded the Port, as well as a Board of Trade requirement that grain traded in the Chicago market be held locally. The local steel industry has since been transformed, and the Board of Trade requirement was removed some 40 years ago, diminishing the Port's role in the movement and storage of grain. While these commodities are still present in the system, they are in a significantly smaller volume than in the past.

The IIPD is geographically positioned at the only connection in the country that serves both Great Lakes and inland waterway traffic. However, according to the June 2012 A Strategic & Capital Needs Study, the Port's facilities have struggled to attract Great Lakes traffic and are currently barge-centric. The report does not indicate whether a portion of this barge traffic traverses the Great Lakes and connects to points such as Burns Harbor, in addition to traffic using the CAWS. While the Port can serve ocean-going freighters, stakeholders interviewed as part of that Study indicated that there is a high cost to using the St. Lawrence Seaway to transit between lake and ocean, and the seasonal operation limits year round activity.

Other capital and operational constraints at the Port also limit the amount of ocean freighter and laker activity, including the lack of "scheduled" freighter service (e.g., between Chicago and a European port), the need to maintain 27-foot minimum depth at Slip 2 on Lake Calumet's east side as well as the channel, and the antiquated "finger" configuration of the dock area. The Study noted that uncertainty on the availability of the waterway in the future (i.e., possibility of permanent separation due to invasive species) has limited investments by existing companies and detracted potential tenants.

Port Privatization

Investment in Port infrastructure has lagged for a variety of reasons, including the need to utilize the majority of income from industrial/maritime rentals to support staff and pension obligations. In recent years, the Port has explored the concept of entering into a long-term master lease with a private operator to help bolster the Port's contribution to the greater Chicago economy and to receive a capital infusion to upgrade the Port's facilities. It was announced in July 2013 that the IIPD had reached a deal with the Denver-based Broe Group to take over operation and management of the IIPD, a deal expected to yield \$500 million in infrastructure investment and 1,000 new jobs within a decade. The 2013 agreement was never finalized, but the IIPD indicated that privatization of Port operations remained a key strategy for generating critically-needed capital investment.

Non-Industrial Uses of Port Property

In addition to Harborside International Golf Center, additional environmental and recreational uses are envisioned on and near Lake Calumet. In October 2014, the IIPD Board approved an agreement to sell 282 acres of unused property in and adjacent to the north portion of Lake Calumet to the Illinois Department of Natural Resources. The sale has not yet been finalized.



IV. Case Studies of Barge Users



As part of this assignment, the consultants interviewed three companies that are active barge users along the North Branch as well as other segments of the CAWS. We were seeking to understand their current usage of the waterway as well as anticipated trends. Our interviews are summarized in the following pages.

GENERAL IRON INDUSTRIES

Location: 1909 North Clifton Avenue, Clybourn Corridor PMD

Employees: More than 100 at site

Acreage: 15+ in North Branch Industrial Corridor

Source: February 10, 2015 Interview with Adam Labkon, owner of General Iron



Description of the Business

General Iron takes in scrap metal from four primary sources:

- Demolition companies
- Auto wreckers
- Independent recyclers (alley scavengers)
- Other scrap metal dealers that lack large-scale equipment for shredding

The company estimates that over 80% of the scrap metal it receives originates from within an hour's drive of its north side location. All of the scrap items received by General Iron are "obsolete"; in other words, the items are not available for re-sale or scavenging in their original form (as may be the case with a junkyard), but instead are all processed for metal content and shipped off-site.

Mr. Labkon noted that many of the large refuse items received from alley scavengers would otherwise be the responsibility of the City to collect and dispose of – items that the City may not be well-equipped to handle. The material is processed through a large shredder and sorting equipment, which effectively separates the scrap into three types of materials: ferrous metal (steel and other metal that contains iron), non-ferrous metal, and non-metal material.

The metal materials are then shipped via barge and truck and sold to steel mills and other metal processors down river to the south and in Northwest Indiana..

According to General Iron, the company is unique within the city with regard to the capacity of its shredder and scale of its operation. Mr. Labkon noted that General Iron installed a new and faster shredder in 2002 inside an acoustic enclosure, reducing noise impacts and allowing for earlier shut-down times. According to the company, the new shredder design combined with a water spray system, has reduced explosions by more than 10-fold. In addition, in 2012 the company installed an air filtration system.

Barge Usage

In 2014, the company shipped roughly 13.5 barges of metal per month, compared with 14.4 barges per month in 2013, and 13.5 per month in 2012. Each barge carries roughly 1,600 net tons of material, or the equivalent of approximately 80 over-the-road trucks.

All barges from General Iron travel down the river system via the Sanitary & Ship Canal to steel companies and other buyers located further south in the United States. This barge traffic constitutes a little over half of all metal shipped from General Iron, the remainder of which is trucked to steel companies in and around Northwest Indiana.

Very little rail transport is used, though Mr. Labkon noted that it is important for the company to maintain the option of shipping by rail.

Access to river transport is absolutely essential to General Iron's operations. Without the ability to transport material by barge, the company could not secure enough customer orders to process and ship the volume necessary to cover its costs. While the company's location on the north side appears not to be critical to the business, relocation to another site is viewed to be infeasible due to significant in-place, immovable equipment costs, estimated to be more than \$50 million.

Mr. Labkon also noted that General Iron dredged and installed more than 600 feet of new seawall and decorative riveredge fencing along its active dock.

OZINGA

Location: 2255 N. Lumber Street

Employees: Approximately 300 (Chicago region)

Source: February 10, 2015 Interview with Marty Ozinga, Paul Ozinga, and Lloyd Meyer

Description of the Business

Ozinga Brothers, Inc. is a fourth-generation family-owned business providing concrete to the Chicago area. Ozinga has two major locations on the Chicago River with waterway access:

- 2001 North Mendell Street
- 2255 S. Lumber Street

Ozinga also operates a terminal on the east side of Lake Calumet (11701 South Torrence Avenue) that handles a variety of bulk materials. Other concrete facilities in the region do not have waterway access and primarily receive materials via truck.

Ozinga provides concrete for public- and private-sector construction projects in the Chicago region. Concrete must be poured within a tight timeframe of being “mixed”, sometimes within as little as 30 minutes depending on the customer specification, which means that the facility from which the concrete originates needs to be no more than 20 -30 minutes from the jobsite to allow for adequate mixing and pouring time. Inspectors at the jobsite are tasked with ensuring that the delivered concrete meets American Society of Testing Materials specifications; if the time between mixing and delivery is too long, the concrete cannot be used.

Ozinga is one of several companies that provide concrete to construction projects ranging from the high-rise buildings to road repair and bridge maintenance in the City of Chicago. The company notes that “concrete is the second most consumed product, after water,” illustrating the ubiquitous and important nature of the material.

Barge Usage

According to Ozinga, in the peak season the company handles roughly 2 to 3 barges daily on the North Branch of the CAWS. These barges carry cement and aggregate materials – primarily sand and stone. Each barge carries about 1,500 net tons of material, or the equivalent of between 60-90 over-the-road trucks. The seawall and barge facilities on the 2001 N. Mendell facility are sized to handle up to two barges at a time; the 2255 S. Lumber Street facility can handle 4 or 5 barges simultaneously.

Sand and stone for Ozinga’s plants are sourced from quarries in downstate Illinois and other locations along the Mississippi River system. Barges carrying these materials move from their sources up the CAWS to Ozinga’s plants. Cement is sourced from both domestic and international sources, in which case it enters the U.S. at the Port of New Orleans and similarly travels up the Mississippi River System to Ozinga.



In addition to the two North Branch plants, Ozinga’s terminal at Lake Calumet (11701 South Torrence Avenue) also has waterway access. Raw materials are primarily brought in by truck, however, with some rail and barge service. For materials traveling via barge, they are shipped via the Great Lakes and enter the CAWS through the T.J. O’Brien Lock. The company reports that after the barges deliver materials to Ozinga, they generally pick up goods from downriver companies so that they are not empty for the return trip.

Ozinga reports that the ability to receive materials shipped via barge is essential to its business, and to the construction and maintenance activities requiring concrete in the Chicago region. The lower costs associated with water transportation directly translate to price savings for concrete in the Chicago region, versus similar active construction markets without convenient industrial waterway access such as Manhattan. Ozinga noted that a recent unscheduled closure of the Lockport lock in the fall of 2014 caused concrete to be temporarily unavailable for construction activities in Chicago, as the supply of needed aggregate materials was trapped behind the lock. This illustrates the inter-dependent nature of infrastructure throughout the regional waterway network.

PRAIRIE MATERIAL

Location: 835 N. Peoria Street

Employees: 100+ (North Branch facility)

Source: February 19, 2015 Interview with Mike Davis, Jim Munro, Chad Groff of Prairie Material and Mike Holzer of North Branch Works

Description of the Business

Prairie Material is a vertically integrated manufacturer of cement and supplier of building materials. It is part of Votorantim Cement North America, which is a wholly-owned subsidiary of Votorantim Cimentos, an international cement manufacturer based in Sao Paulo, Brazil. The company has several locations on the CAWS within Chicago :

- Prairie Material – Yard 32 - 835 N Peoria St (near Chicago and Halsted in North Branch Industrial Corridor)
- Prairie Material - Yard 33 - 3300 South California Avenue (Little Village Industrial Corridor)
- St. Mary's Distribution Center - 12101 South Doty Avenue

Prairie Materials provides concrete for public- and private-sector construction projects throughout the City. Maps showing the 2014 distribution of delivery points from Yards 32 and 33 are included. Prairie Materials' subsidiary, St. Mary's, also supplies cement to other concrete companies in the region out of its Lake Calumet facility.

Barge Usage

According to Prairie, 95 percent of raw materials to its North Branch facility – Yard 32 – are brought in via barge, amounting to three-quarters of a million tons, or 450 barges, annually. These barges carry cement and aggregate materials – primarily sand and stone. Each barge carries about 1,500 net tons of material, or the equivalent of between 60-90 over-the-road trucks. Similarly, on the South Branch facility – Yard 33 – receives aggregate materials by barge.

Sand and stone for Prairie's plants are sourced from quarries in downstate Illinois and other locations along the Mississippi River system. Barges carrying these materials move from their sources up the CAWS to Prairie's plants where they are used in mixing concrete.

Prairie has invested in both its north and south branch facilities over the past year to increase the capacity of these plants and is looking to increase the amount of materials brought in via barge. The company forecasts roughly a 10 percent increase in demand annually.



The company's cement subsidiary, St. Mary's, brings in material via barge to the Lake Calumet facility. Cement is then trucked to Prairie, as well as other concrete manufacturers in the Chicago region. The company reports receiving about 1 barge every 2-3 days to the Lake Calumet facility. Cement is sourced from the Upper Peninsula of Michigan, among other locations, and is brought into Lake Calumet via the Great Lakes. Barges enter the CAWS through the T.J. O'Brien Lock.

Prairie reports that the ability to receive materials shipped via barge is essential to its business, and to the construction and maintenance activities requiring concrete in the Chicago region. The company notes that losing barge service would lead to a significant increase in regional truck volumes and associated negative impacts such as congestion and pollution.

The 2014 delivery points from Yard 32 (Figure 8) and Yard 33 (Figure 9) follow. These maps help to illustrate the proximity between the concrete mixing facilities and job sites.

Prairie Yard 32 Distribution of Delivery Points 2014

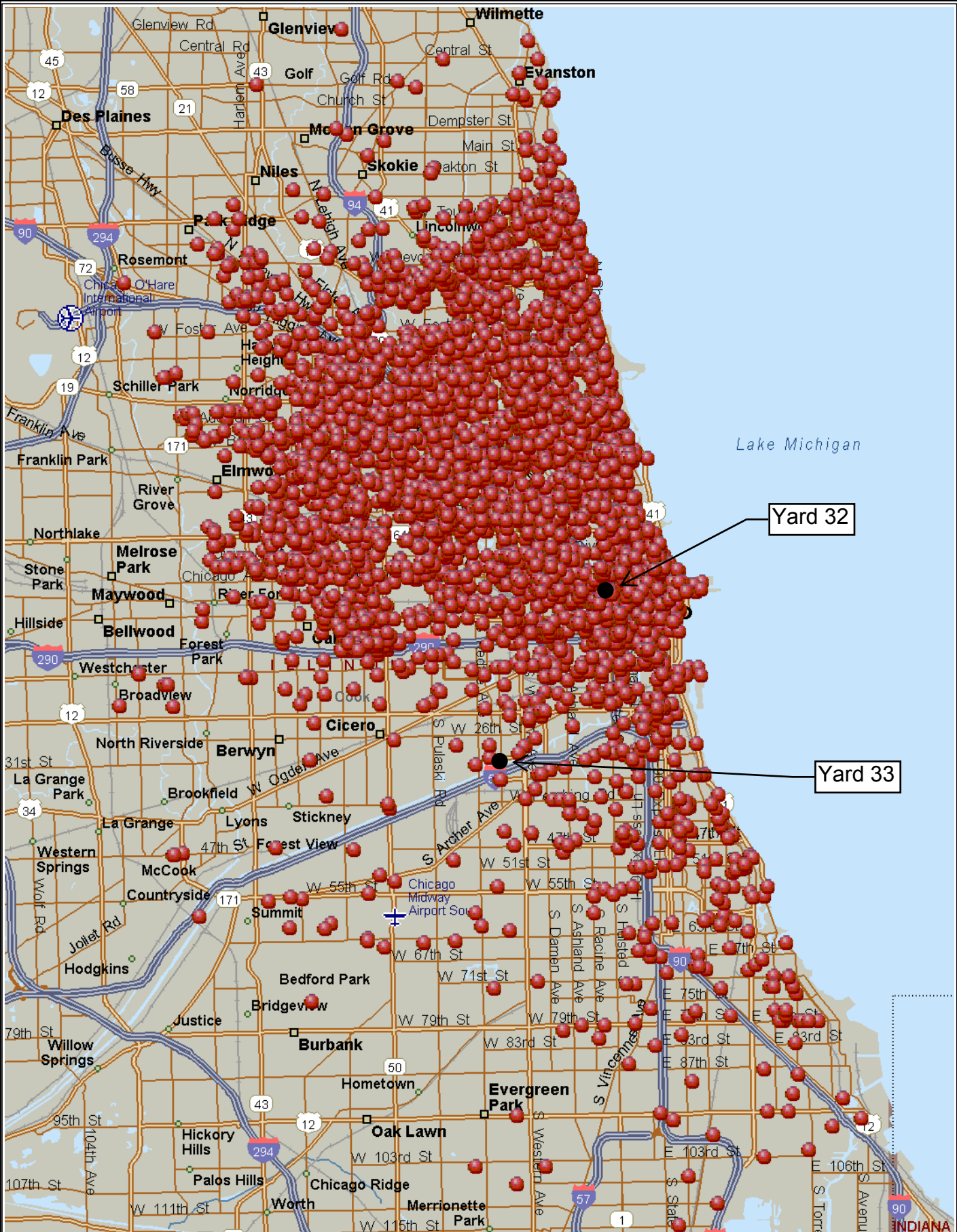


Figure 8. Prairie Yard 32 Distribution of Delivery Points 2014

Prairie Yard 33 Distribution of Delivery Points 2014

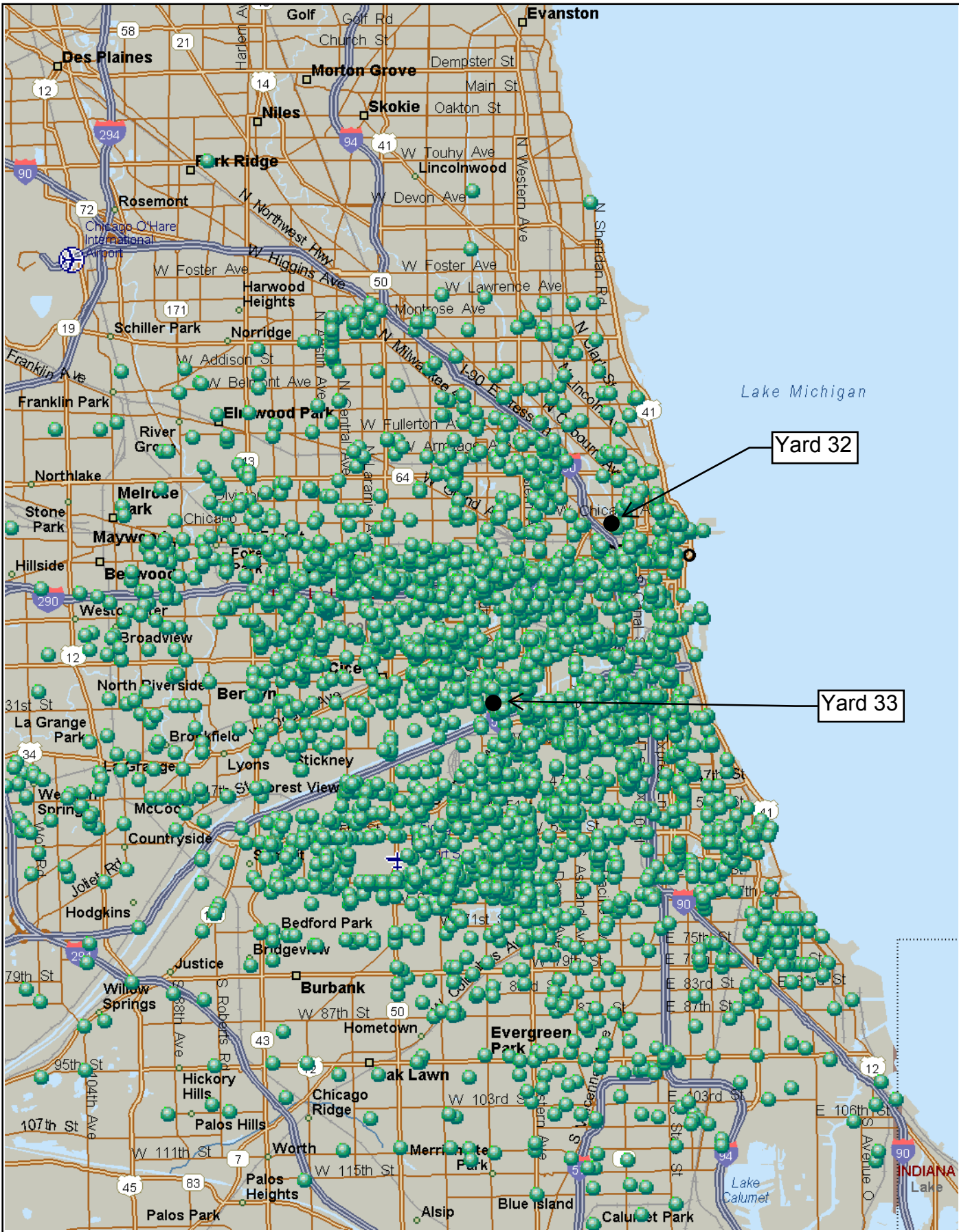


Figure 9. Prairie Yard 33 Distribution of Delivery Points 2014

V. Trends and Forecasts of Industrial Usage of the Chicago Area Waterway



The inland waterway system plays an important role in regional, national, and international commerce, typically handling high weight, low value commodities. These commodities serve industries that transport large quantities of goods that do not have restrictive delivery windows, like mining, agriculture, and construction. Since 1971, total demand on the U.S. inland waterway system has been relatively flat. The 2007-2009 recession resulted in a decrease in demand, although in the past few years there has been some recovery of domestic tonnage from the 2009 lows.¹

Summary of Key Trends

Demand on the Chicago Area Waterway System (CAWS) reflects some of these national long-term trends of static to declining waterway use, as well as the short-term decrease in barge use following the 2007-2009 recession with a moderate recovery in following years. Locally, the past decades have seen a greater drop-off in traffic on the eastern part of the CAWS – in particular the Sanitary and Ship Canal and the T.J. O'Brien lock, whereas the decline at the Western Locks has been less noticeable. Traffic on the South Branch of the Chicago River increased in the years leading up to the economic recession, but has since fallen. These and other trends discussed in the following figures are results of the region's local industrial shifts and indicative of the fact that the city's traditional barge-using industrial base is changing.

The following points summarize the key commodity movement trends on the CAWS:

- Barge volumes on the Chicago Area Waterway System (CAWS) are relatively small when compared to movements on the Great Lakes or the primary Mississippi River System and have been declining in recent years, especially on the North Branch.
- Total volumes are declining in part because some industries (such as coal-fired power plants) are no longer generating barge traffic. However, certain industries still consider barge access important to their business, and plan to continue to use and/or increase their use of barge traffic in the future.
- Most of the traffic on the North Branch is aggregate (sand and gravel) raw materials for concrete production sourced from downstate Illinois and the Mississippi River Valley. Industry sources estimate the daily barge volumes on the North Branch to be the equivalent of between 100 and 400 trucks, depending on the season.
- A number of industries located in the Lake Calumet and Calumet River area use barges to bring goods from Michigan or other sources via Lake Michigan. Some of these goods are then trucked to other destinations in the Chicago region.
- Through traffic along the Cal-Sag Channel, which is the primary connector between the Mississippi River System and Lake Michigan, constitutes about one-third of total barge traffic on the CAWS.

¹ AASHTO Water Bottom Line Report, 2011

Waterborne Freight Trends in the Chicago Region

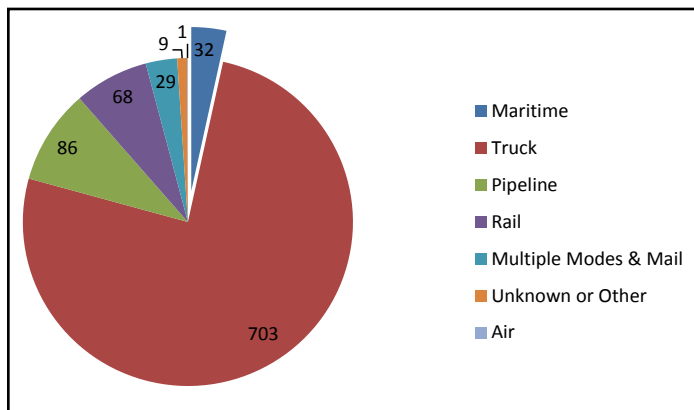
Greater Chicago’s freight transportation system underpins the area’s multi-billion dollar economy. According to the Federal Highway Administration’s (FHWA) Freight Analysis Framework (FAF)², in 2012, the greater Chicago freight system handled nearly 1 billion tons worth \$1.24 trillion. As shown in Figures 10 and 11, by far the dominant freight mode in greater Chicago is truck. In 2012, trucks carried 76 percent of freight tonnage and 67 percent of freight value, and this trend is expected to continue in the future. In 2012, maritime movements accounted for 3.4 percent (32 million tons) of all freight tonnage and 0.3 percent (\$3.7 billion) by value in greater Chicago.

CAWS Barge Usage and Historical Trends

This section describes trends of waterborne freight on the CAWS, using a combination of USACE Waterborne Commerce of the United States (WCUS) data and Lock Performance Monitoring System (LPMS) data. These data sources provide information on waterway movements, by river segment and by individual lock.

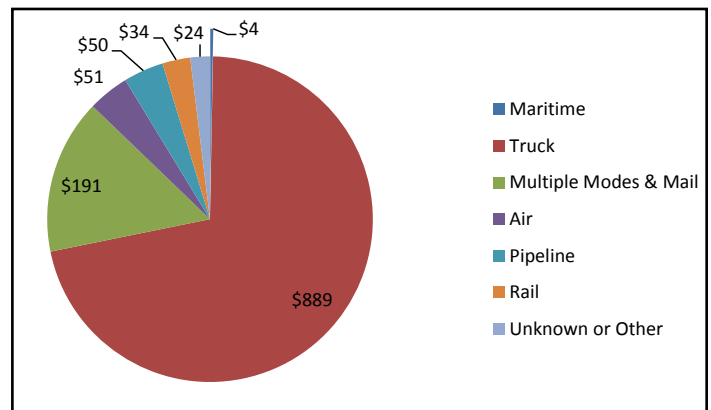
Maritime tonnage on the CAWS varies considerably by segment, and is influenced by the location of industries along the waterway. According to USACE lock data, tonnages are higher on the locks leading to the Des Plaines and Illinois Rivers, and lower at locks closer to Lake Michigan. This likely reflects the fact that the bulk of water-borne commerce is oriented toward the Mississippi River System, with the exception of the portion of the Calumet River closest to Lake Michigan.

Figure 10. Greater Chicago Freight Flows by Tonnage (2012, million tons)



Source: FAF3.5, Greater Chicago Region – IL portion.

Figure 11. Greater Chicago Freight Flows by Value (2012, \$ billions)



Source: FAF3.5, Greater Chicago Region – IL portion.

² The Federal Highway Administration’s (FHWA) Freight Analysis Framework (FAF), a multimodal freight database that integrates data from a variety of sources to create a comprehensive picture of freight movements among states and major metropolitan area. Version 3.5 was used for the analysis in this report. “Greater Chicago” includes all counties within the CMAP region (Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will) and surrounding counties in Illinois. FAF3.5 data is used to provide understand regional trends, and includes river traffic, traffic at the Port of Chicago, as well as industries that are directly served on Lake Michigan in the FAF area. Analysis in the next section focuses on movements only on the CAWS.

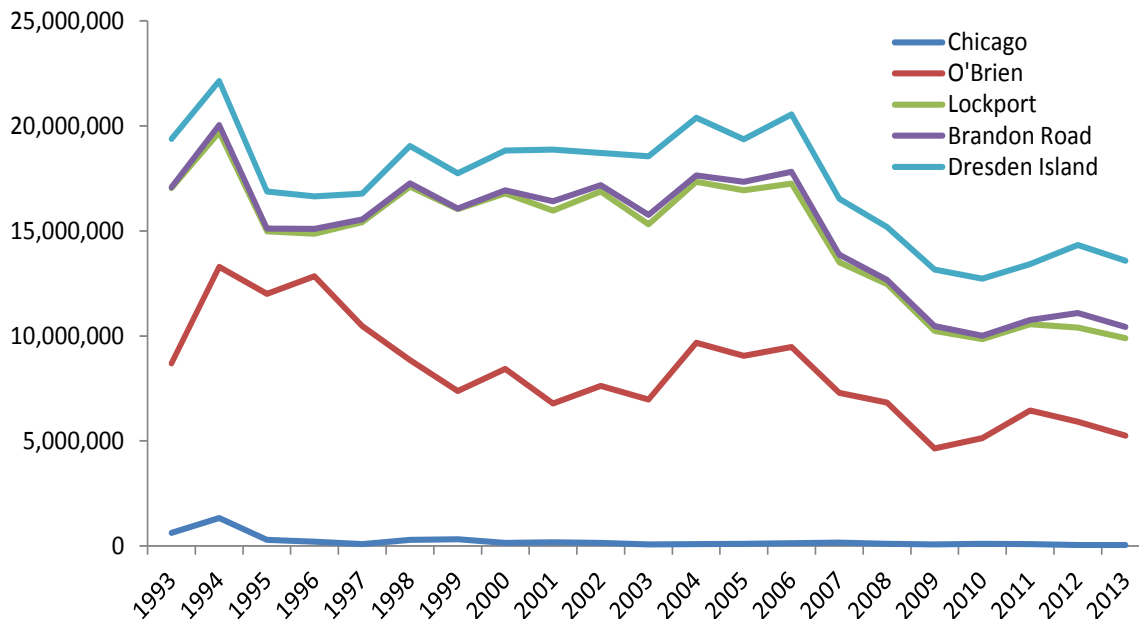
Figure 12 illustrates that the Dresden Island Lock, which is the furthest west lock on the CAWS, has the highest volumes of any lock in the greater Chicago area at 13.6 million tons. The T.J. O'Brien Lock, which is located in the City on the Calumet River and provides access between the Great Lakes and the CAWS, has the lowest tonnage. The Chicago Lock is not currently in active use for barge traffic.

The graph also illustrates a significant drop in lock usage from the 20-year-high seen in 1994. In the early 2000s volumes remained relatively steady on the locks west of the CAWS, but there was a noticeable decreasing trend at the T.J. O'Brien lock. Each of these locks saw a slight pre-recession boom in the mid-2000s, but during the recession tonnages once again dropped and have not risen to their pre-recession levels. This is reflected not only in the tonnages locked at each lock and dam, but also in the segments of the waterway, shown in the next figure.

Similar to the data seen at the locks, reported tonnages on the CAWS have decreased from historic highs. Figure 13 shows the historic tonnage on these segments over the last 20 years. The label "CAWS" indicates the total volumes moving on the river system, accounting for through-traffic moving between multiple segments of the river. While the lock data showed a relatively steady usage between 1995 and 2006, the data on the river indicates that there was a significant drop off in usage in 2002, before rebounding to the highs seen in 2005, and another subsequent drop-off due to the economic recession. One slight variation on this trend is on the South Branch of the Chicago River, which actually saw its highest volumes pre-recession in about 2006; however traffic along this segment has been continually declining since that time. Overall, use of the CAWS for barge traffic is currently at its lowest level since 1992.

An analysis of tonnage shipped on each segment of the CAWS from 2003 to 2012 shows overall declines, with the most severe decreases along the Illinois River and the Chicago Sanitary and Ship Channel. The one region which saw growth is the Calumet Harbor and River east of the T.J. O'Brien lock, which saw a 7 percent increase in tonnages over this time frame.

Figure 12. Historical Lock Tonnage on the CAWS (1993-2013)



Source: USACE Lock Performance Monitoring System

Looking at both waterway and lock usage statistics, it is clear that the total tonnage of goods shipped in the Chicago area waterway is declining. This is in part due to changes in the composition of Chicago's economic base, with movement away from industries once dependent on the CAWS towards more high-value based industries. The Bureau of Economic Analysis notes that between 2008 and 2011 greater Chicago's GDP grew some 1.4 percent, primarily driven by professional and business services; at the same time, there were declines in natural resources, mining and construction, industries which have been historically dependent on the maritime transportation system. Nonetheless, today some of the key commodity businesses and users of bulk products are dependent on the CAWS and will continue to need the waterway for their businesses.

CAWS Usage by Commodities

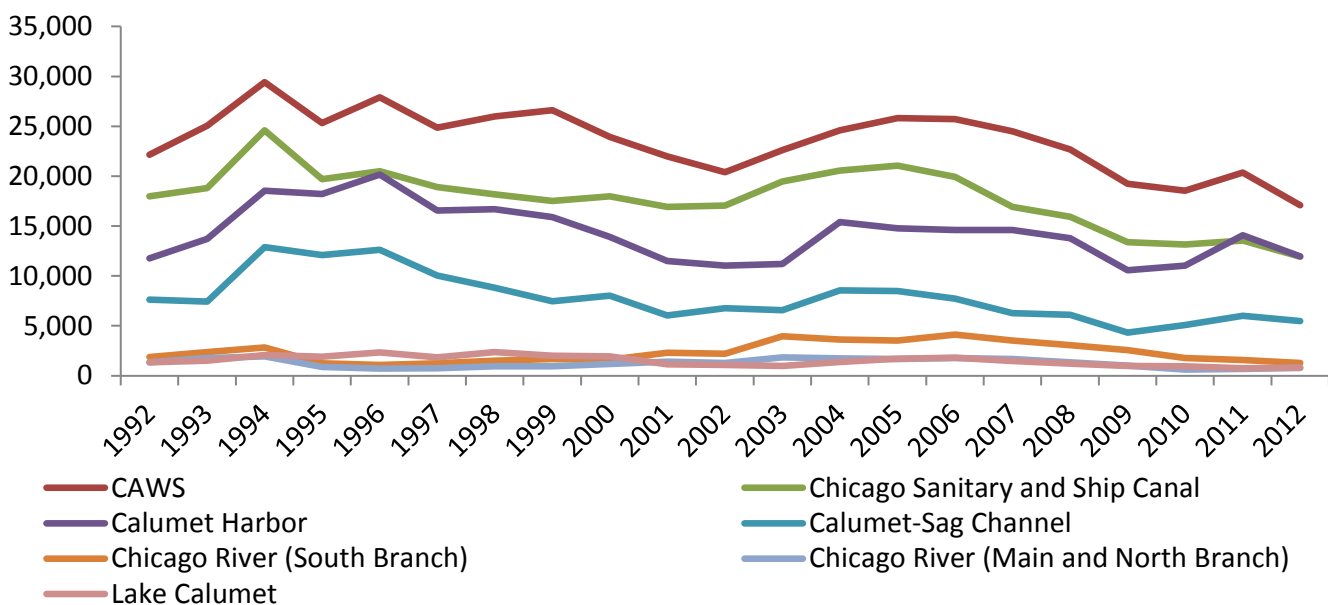
Certain types of commodities are more likely to use the waterway system. In general, bulk goods requiring low cost shipping without restrictive delivery windows are more suited for waterway travel via barge. These goods are often high weight, low value commodities such as construction materials or scrap.

Table 6 illustrates the tonnages moved on each segment of the Chicago River, by commodity, as reported in the WCUS data (see Table 6 for a description of each commodity group). Again, the "CAWS" column refers to the total tonnage on the river, accounting for through-traffic among the various segments. Calumet Harbor refers to the total tonnage at Lake Calumet and on the Calumet River (up to Turning Basin No. 5 (130th Street Bridge)).

The most active segments of the CAWS are the Calumet Harbor Region and the Chicago Sanitary and Ship Canal (about 13 million tons, annually, on each segment).

About 18 million tons of goods moved by barge on the CAWS in 2011/2012. About 30 percent of these movements were coal, and over 25 percent was comprised of crude materials, primarily sand and gravel moving to concrete plants and other industrial sites in the Chicago region. Petroleum products, such as pet-coke and manufactured goods, including cement, each represented just under 20 percent of movements. In the future, non-coal commodities, in particular crude materials, will represent an increasingly higher percentage of movements on the CAWS as use of coal in the region declines.

Figure 13. Historical Tonnage for Waterway Segments of the CAWS (1992-2012)



Source: USACE Waterborne Commerce of the United States

Historically, coal represented the major commodity shipped on the CAWS; however this is quickly changing due to the closure of power plants such as Fisk and Crawford on the Sanitary & Ship Canal. A report by the Lake Carriers Association also shows significant decreases in coal moved on the Great Lakes over the past six years, with an 8.2 percent decrease between 2011 and 2012, resulting in a 2012 value 25 percent less than the prior five-year average.³ Similarly, a review of commodity data at locks within the study area show that coal tonnage has been in gradual decline on the inland waterway system for the past two decades.

Crude materials, such as sand and gravel, have replaced coal as the commodity with the highest volumes shipped on the CAWS. In fact, sand and gravel represents a vast majority of all freight moving on the South and Main/North Branches of the Chicago River.

Group	Commodities
Coal	Coal & Lignite; Coal Coke
Petroleum and Petroleum Products	Crude Petroleum; Gasoline; Distillate Fuel Oil; Residual Fuel Oil; Lube Oil & Greases; Naphtha & Solvents; Asphalt, Tar & Pitch; Petroleum Coke
Chemicals and Related Products	Nitrogenous Fertilizer; Potassic Fertilizer; Benzene & Toluene; Other Hydrocarbons; Alcohols; Organic Compounds not elsewhere classified; Sodium Hydroxide; Inorganic Elements, Oxides, & Halogen Salts; Metallic Salts; Inorganic Chemicals not elsewhere classified; Chemical Products not elsewhere classified
Crude Materials, Inedible Except Fuels	Wood Chips; Limestone; Sand & Gravel; Waterway Improvement Material; Iron Ore; Iron & Steel Scrap; Aluminum Ore; Manganese Ore; Clay & Refractory Material; Slag; Non-Metallic Minerals not elsewhere classified
Primary Manufactured Goods	Cement & Concrete; Paper Products; Miscellaneous Mineral Products; Pig Iron; Ferro Alloys; Iron & Steel Plates and Sheets; Iron & Steel Bars & Shapes; Iron & Steel Pipe & Tube; Primary Iron & Steel not elsewhere classified; Fabricated Metal Products
Food and Farm Products	Wheat; Corn; Soybeans; Vegetable Oils; Animal Feed, Prep; Sugar
Manufactured Equipment, Machinery, and Products	Machinery (not electric); Electrical Machinery; Vehicles & Parts; Manufactured Products not elsewhere classified

Table 6. Current CAWS Volumes by Commodity and Segments (000s of Tons)

Commodity Group	CAWS	Chicago River (Main and North Branch)	Chicago River (South Branch)	Lake Calumet	Calumet Harbor	Calumet-Sag Channel	Chicago Sanitary and Ship Canal
Coal	5,495	0	193	0	3,982	1,228	2,824
Petroleum	3,336	4	0	39	2,171	857	2,449
Chemicals	1,247	1	1	8	263	328	1,286
Crude Materials	4,881	689	1,122	73	3,239	1,222	3,278
Manufactured Goods	3,465	40	93	625	2,989	1,711	2,476
Food and Farm	262	4	4	31	254	275	300
Manufactured Equipment	24	1	1	0	114	109	124
Unknown or Not Elsewhere Classified	13	0	0	0	13	0	0
Total	18,721	737	1,416	776	13,020	5,727	12,734

Source: USACE Waterborne Commerce of the United States

Note: "Current" is defined as the average of 2011 and 2012 volumes

3 Lake Carriers' Association, 2012 Statistical Annual Report. <http://www.lcaships.com/wp-content/uploads/2013/03/Coal-by-dock-and-narrative.pdf>

Much of this freight is supplying construction and ready-mix yards in the city that in turn service local construction projects (See Ozinga and Prairie Materials case studies). Also represented in the Crude Materials group, iron and steel scrap is sent downbound from the Main/North Branch through the CAWS to recycling facilities and industries located downstream (See General Iron case study).

Another previously important commodity on the CAWS is agricultural products, listed under the Food and Farm commodity group. Today, these products only have a minimal share of the traffic on the CAWS. In Illinois, shippers are sending grain and other products from regions outside of Chicago downstream to the Gulf of Mexico or other markets, but these movements are almost entirely downstream of the CAWS. Recent studies of new Container-on-Barge (COB) markets for agricultural products focus on movements from the Joliet and Peoria region to the Mississippi River System downstream, which do not utilize the portion of the CAWS near Lake Michigan.^{4,5}

Table 7. Summary of Short-term Forecast Assumptions

Commodity Group	2012-2020 Trend	Rationale
Coal, Lignite, & Coal Coke	Declining	Fisk and Crawford plants used 55% of coal/coke shipments moving on the CAWS in 2010; with the closure of these 2 plants and without new plants, future volumes are likely to shrink.
Petroleum & Petroleum Products	Relatively static	Most petroleum moved by pipeline; plants are dependent upon barge for bulk outputs, such as petcoke, and asphalt.
Chemicals & Related Products	Relatively static	A variety of chemicals utilize the CAWS, but new facilities are not likely to locate along the waterway. Forecasts from the USACE GLMRIS study were adopted.
Crude Materials	Increasing	Crude materials includes high volume goods such as sand and stone, iron ore and scrap, and other non-metallic minerals that are well suited to barge travel. Local industries utilizing these products are experiencing growth.
Primary Manufactured Goods	Relatively static	This category includes lime, cement, glass, and iron and steel products. Growth or decline will be tied to automotive and construction industries but much of the growth will likely move on the road or rail system.
Food & Farm Products	Minimal use of the CAWS	Although historically significant; recent use of the CAWS for agricultural products is minimal
Manufactured Equipment & Machinery	Minimal use of the CAWS	Industry typically uses other modes for transport.
Unknown or Not Elsewhere Classified	Minimal use of the CAWS	Industry typically uses other modes for transport.

⁴ Illinois Soybean Association, "ISA Study: COB Shuttle Program is Feasible, Offers Biodiesel Opportunities." April 2012. <http://www.ilsoy.org/mediacenter/details.cfm?pageID=42&mediaCenterID=1569>

⁵ Ross, Martin, "Container-on-barge downstream opportunity?" Farm Week Now, July, 2013. <http://farmweeknow.com/story-container-barge-downstream-opportunity-1-99791>

Future Use of the CAWS

Short-term forecasts by commodity group for future use of the CAWS in 2020 were developed by Cambridge Systematics. Forecasts are based on the WCUS data and LPMS data referenced above, and also rely on findings from the USACE Great Lakes and Mississippi River Interbasin Study (GLMRIS).⁶

Forecasts were developed using a "high" and "low" scenario method. The "High" growth scenario predicts growth in all commodity movements, except coal. The "Low" growth scenario is that although some commodities continue to use the waterway, barge movements on the CAWS decline overall, and volumes resemble those during the recent economic recession. Table 8 summarizes the assumptions made for future tonnages of each of these commodity groups.

⁶ U.S. Army Corps of Engineers. Great Lakes and Mississippi River Interbasin Study (GLMRIS), 2014. GLMRIS is a USACE study which presents a range of options and technologies to prevent aquatic nuisance species (ANS) movement between the Great Lakes and Mississippi River basins. As part of this study, baseline and future cargo assessments were conducted. The methodology and projections determined from GLMRIS were consulted to help guide the projected presented here along with input from more recent industry trends and developments. More information on the GLMRIS study can be found here: <http://glmr.is.anl.gov/>

As industry, supply chains, and use of the waterway for barge transportation continues to be in flux, it is difficult to predict the future usage of the CAWS. In the “Low” scenario, overall usage of the CAWS declines from current volumes, as most commodities shift their supply chains away from barge travel and/or the demand for these commodities diminishes. The exception is crude materials, as interviews with local industries have indicated they expect to grow and increase their use of barge in the future.

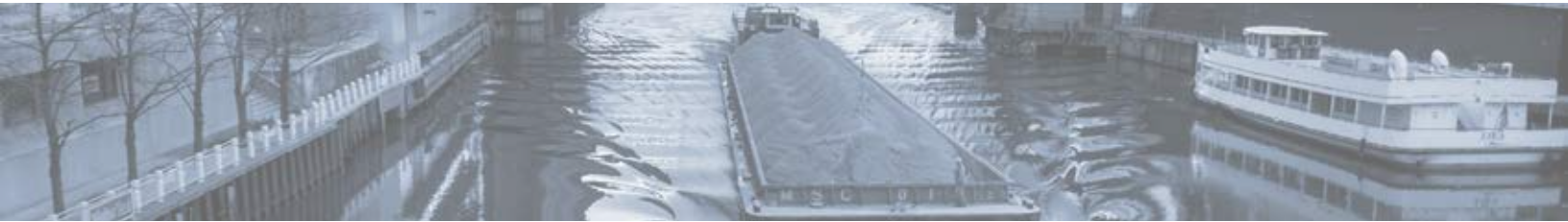
The “High” scenario represents a different picture, where many commodities are increasingly using the waterway, and overall volumes increase by about 30 percent. However, the deteriorating condition of the CAWS infrastructure and surrounding waterway will make this growth challenging. In all likelihood, to reach the volumes in this scenario will require greater levels of investment in the waterway to ensure the reliability and the usability of the system for barge travel. Some of these needs on the waterway system are discussed in the following section.



Table 8. Short-term forecasted barge volumes on the CAWS (000s of tons)

Commodity Group	Current volumes (2011/2012 average)	2020 “Low” Forecasted Volume	2020 “High” Forecasted Volume
Coal	5,495	2,000	4,000
Petroleum	3,336	3,000	4,000
Chemicals	1,247	500	1,500
Crude Materials	4,881	7,000	8,200
Manufactured Goods	3,465	1,600	4,300
Food and Farm	262	0	1,000
Manufactured Equipment	24	0	200
Unknown or Not Elsewhere Classified	13	0	200
Total	18,721	14,100	23,400

VI. CAWS Infrastructure Conditions and Needs



Infrastructure is a driving factor in whether or not the CAWS is used and how efficiently it serves its users. As discussed by the Illinois Chamber of Commerce Infrastructure Council in their 2014 report: Illinois Waterways, a Crisis Continued, Congress enacted the Water Resources Development Act (WRDA) in 2007, and the Water Resources Reform and Development Act (WRRDA) in 2014, authorizing \$4 billion and \$5.5 billion respectively in funding to rebuild some of the oldest and most degraded locks and dams in the U.S. Unfortunately, implementation of these programs have so far been challenging, and subsequently many of the needs on the Chicago Waterway System and connecting waterways remain unaddressed. Existing and potential impediments and barriers to efficient goods movement, such as lock delays, lock size, navigable channel depth and width, overhead clearances, and others, are discussed in this section, as well as needs identified by the USACE to mitigate current conditions and improve barge transport efficiencies in the future are noted.



Lock Infrastructure

The locks on the CAWS have significant infrastructure challenges, including length of chamber, usable length of chamber, width of chamber, and usable width of chamber. Over one-third of the barges traversing the CAWS locks experience delay due to a combination of these factors. Detailed statistics by lock related to vessel processing time, number of barges and vessels, number of lockages (the number of times the locks are transited by vessels), unavailable time, and tons locked are available from the USACE Lock Performance Monitoring System. Key issues are summarized below¹:

Vessel Processing Time. Each of the CAWS locks experiences an average delay of nearly an hour or more per tow. In addition to delay, the average processing time for these locks was up to an hour, with the highest average processing time at the Lockport Lock. As most locks are only 600 feet in length, each passage requires a double-lockage for barges over 600 feet long.

Number of Lockages. Today, the Chicago area locks are only handling one-third or less of their designed tonnage capacity; however, unavailable time, and limitations of the waterway significantly contribute to reducing the amount of lockages that can be achieved.

Unavailable Time. The 2013 statistics for unavailable time are a marked decline over previous years with each lock recording unavailable time in 2013. The T.J. O'Brien Lock is the only lock that experienced a decrease in overall unavailable time due to a large reduction in scheduled unavailabilities.

1

<http://www.navigationdatacenter.us/lpms/lpms.htm>

Other CAWS-area Infrastructure Conditions

As part of the 2010 CMAP Regional Freight System Planning Recommendations Study, Chicago area maritime stakeholders operating on inland waterways as well as Lake Michigan were interviewed to determine their assessment of the inland waterway system. Overall, the respondents replied that poor lock reliability, inadequate dredging, and required setbacks are the key challenges facing their industry. There is also significant concern over the fish barrier on the Chicago Sanitary and Ship Canal and stakeholders would like to see greater modal connectivity to take advantage of available maritime capacity. Marine system reliability and maintenance, improvements to ports, and connection between port and rail services were ranked as the highest priority needs of the water freight system. Features of the waterway itself also present barriers to efficient operations. Key barriers are described below.²

Overhead structures. There are a number of low clearance railroad bridges along the CAWS. The most noteworthy is the Lemont Rail Bridge, owned by BNSF, over the Chicago Sanitary and Ship Canal. This bridge is effectively fixed with a vertical clearance of 19.1 feet and can be a barrier to barge traffic. Due to this severe vertical clearance, large tows can only pass if they have telescoping pilothouses, and other types of barges must be reconfigured in order to clear the bridge and travel between the Illinois River and the CAWS. It is noted that on a number of occasions each year, commercial vessels such as USACE heavy crane barges and large passenger vessels (e.g. tour boats) are prevented passage between the MRS and the Great Lakes. In some cases, where it is possible, large equipment is rerouted along next best watercourse or transit options.

Weather and waterway levels. In recent years, the entire inland waterway system has struggled with both record high and low water levels. These levels cause significant problems for business and navigation. Navigation may be ceased as the USACE must remove critical lock operating equipment. Low water levels can put barges at risk for running aground. In the case of both high and low water levels, it is difficult to develop reliable forecasts for returning waterways back to use, as weather is ever changing and unpredictable.

The Metropolitan Water Reclamation District of Greater Chicago (MWRD) has some control over the Chicago Sanitary and Ship Canal water levels in order to prevent catastrophic flooding in downtown Chicago. On average, about 15 times a year the Lockport pool is drawn down in anticipation of heavy rains to provide additional floodwater storage within the waterway banks. During these drawdowns, river navigation is slowed or halted, depending on how near to the open gates or operating controlling works the tow is located.

² USACE, "Appendix D-Chicago Sanitary and Ship Canal," Great Lakes Navigation System Review Study, 2002

CAWS Capital Program

The USACE has developed a prioritized plan for investment at locks along the CAWS; unfortunately, few of these projects are actually funded, and the list does not fully address the scope of the needs along the CAWS noted in the previous subsection. Maintenance projects and needs at the two Chicago locks are described below:

Chicago Lock. The Chicago Lock is one of two locks located at the entrance to Lake Michigan in Chicago; however, this lock is generally closed to barge traffic. The Chicago Lock Sector Gate Replacement was completed in April 2011, up until which point there were several infrastructure failures and shutdowns during the last twenty years that closed the lock for up to six months at a time.³ The Chicago Lock served barge traffic when the O'Brien Lock was closed for maintenance in late 2014 – early 2015.

T.J. O'Brien Lock. The T.J. O'Brien Lock is the only commercial access from the Illinois Waterway to Lake Michigan. Investment of over \$48.4 million is required for major rehabilitation at this location. High usage at this lock, combined with frequent flooding and temperature extremes, has significantly deteriorated the lock concrete, as well as the mechanical and electrical systems. Sections of the lock wall have periodically been removed, but hazards still remain to lock personnel, barges, and their personnel due to the condition of the concrete.

Some maintenance on the lower and upper sector gates occurred in late 2014 and early 2015. This consisted of two separate lock closures of approximately 47 days each: November 3, 2014 through December 19, 2014 and January 5, 2015 to February 20, 2015.⁴ The dewatering of this lock not only allowed for critical maintenance to be performed but also for an inspection of the infrastructure for the first time in nearly 35 years.⁵

There are also significant maintenance needs of well over \$100 million at locks downstream of the CAWS that will impact the region's connections to the Mississippi River System and the overall ability to serve barge traffic.



³ USACE, Chicago Harbor Lock Sector Gate Replacement – 01 November 2001 – 15 April, 2011. Presentation on June 15, 2011.

⁴ <http://www.futuresmag.com/2014/10/30/tj-obrien-lock-dam-closure>

⁵ <http://www.mvr.usace.army.mil/Media/NewsReleases/tabid/6637/Article/502064/corps-of-engineers-to-close-tj-obrien-lock-for-critical-maintenance.aspx>