BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:

WATER QUALITY STANDARDS AND EFFLUENT LIMITATIONS FOR THE CHICAGO AREA WATERWAY SYSTEM AND THE LOWER DES PLAINES RIVER: PROPOSED AMENDMENTS TO 35 Ill. Adm. Code Parts 301, 302, 303 and 304	))))))	R08-9(C) (Rulemaking – Water)

NOTICE OF FILING

TO: Mr. John T. Therriault
Assistant Clerk of the Board
Illinois Pollution Control Board
100 West Randolph Street
Suite 11-500
Chicago, Illinois 60601
(VIA ELECTRONIC MAIL)

Ms. Marie E. Tipsord
Hearing Officer
Illinois Pollution Control Board
100 West Randolph Street
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Chicago, Illinois 60601
(VIA FIRST CLASS MAIL)

(SEE PERSONS ON ATTACHED SERVICE LIST)

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Illinois Pollution Control Board **PRE-FIRST NOTICE COMMENTS OF CORN PRODUCTS INTERNATIONAL, INC.**, a copy of which is herewith served upon you.

Respectfully submitted,

CORN PRODUCTS INTERNATIONAL, INC.,

Dated: March 5, 2012

By: /s/ Katherine D. Hodge
Katherine D. Hodge

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CERTIFICATE OF SERVICE

I, Katherine D. Hodge, the undersigned, hereby certify that I have served the attached PRE-FIRST NOTICE COMMENTS OF CORN PRODUCTS INTERNATIONAL, INC. upon:

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Assistant Clerk of the Board
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via electronic mail on March 5, 2012; and upon:

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by depositing said documents in the United States Mail, postage prepaid, in Springfield, Illinois on March 5, 2012.

/s/ Katherine D. Hodge
Katherine D. Hodge

CORN:006/Fil/ NOF-COS –Pre-First Notice Comments of Corn Products International, Inc.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
WATER QUALITY STANDARDS AND	)	
EFFLUENT LIMITATIONS FOR THE	)	R08-9(C)
CHICAGO AREA WATERWAY SYSTEM	)	(Rulemaking – Water)
AND THE LOWER DES PLAINES RIVER:	)	
PROPOSED AMENDMENTS TO 35 Ill.	)	
Adm. Code Parts 301, 302, 303 and 304	)	

PRE-FIRST NOTICE COMMENTS OF
CORN PRODUCTS INTERNATIONAL, INC.

NOW COMES Corn Products International, Inc. ("Corn Products"), by and through its attorneys, HODGE DWYER & DRIVER, pursuant to the Hearing Officer Order dated February 3, 2012, and submits the following Pre-First Notice Comments in Subdocket C.

I. OVERVIEW

Corn Products Argo Plant representatives would like to thank the Illinois Pollution Control Board ("Board") for the opportunity to participate in these Subdocket C proceedings. Alan Jirik, James Huff,[1] and Joseph Idaszak filed testimony on behalf of Corn Products on April 20, 2009[2] and answered questions at hearings on July 28-29, 2009. In addition to these three primary witnesses, Mark Bosse, Safety and Engineering Manager at Corn Products; Tom Siil, Staff Engineer at Corn Products; and Chai Rhee, Principal Engineer at Ambitech Engineering Corporation ("Ambitech") were present at

[1] On May 6, 2009, Mr. Huff introduced a report into the record on behalf of both Citgo Petroleum Corporation and PDV Midwest, LLC and Corn Products. *See* Exhibit 285, Attachment 6, Thermal Evaluation of the Chicago Sanitary and Ship Canal and the Calumet-Sag Channel as it Pertains to Fisheries Quality, Huff & Huff (Mar. 2009), *In the Matter of: Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and Lower Des Plaines River: Proposed Amendments to 35 Ill. Adm. Code 301, 302, 303 and 304*, R08-9 (Ill.Pol.Control.Bd. May 6, 2009) (hereinafter report cited as "Thermal Report" and rulemaking is cited as "*CAWS/LDPR*").

[2] The April 20, 2009 Pre-Filed testimony on behalf of Corn Produets replaced testimony that was filed the previous year. *See* Hearing Officer Order, *CAWS/LDPR*, R08-9 (Ill.Pol.Control.Bd. Mar. 16, 2009).

the hearings to assist with responses to questions. Corn Products presented testimony in Subdocket C related to the aquatic life use designation proposed by the Illinois Environmental Protection Agency ("Illinois EPA") for the Chicago Sanitary and Ship Canal ("Sanitary & Ship Canal"). Testimony presented by Corn Products demonstrates that Illinois EPA's proposed use designation for the Sanitary & Ship Canal is inappropriate and justifies an alternative use designation. Accordingly, Corn Products proposes regulatory language for an alternative use designation.

II. TESTIMONY OF ALAN L. JIRIK

The Corn Products Argo Plant ("Argo"), which is located in Bedford Park, processes corn and produces numerous food products and ingredients such as corn sweeteners, starches, edible oils, and animal feeds. Exhibit 303, Pre-Filed Testimony of Alan L. Jirik on Behalf of Corn Products International, Inc., *CAWS/LDPR*, R08-9 at 2-3 (Ill.Pol.Control.Bd. April 21, 2009) (hereinafter cited as "Jirik P.F Test."). Argo has operated at this location for over 100 years and is a major employer, with economic benefits extending far beyond its gates. *Id.* at 5.

As described below, Mr. Jirik described Argo's current use of the Sanitary & Ship Canal as a source for non-contact cooling water. Mr. Jirik demonstrated that this use is not preserved under Illinois EPA's proposed aquatic life use designation for the Sanitary & Ship Canal. Mr. Jirik also noted that the Thermal Report prepared by Mr. Huff shows that aquatic life is not limited by thermal conditions in the Sanitary & Ship Canal. Mr. Jirik also detailed how unique uses and characteristics of the Sanitary & Ship Canal indicate that the Sanitary & Ship Canal qualifies for a use designation that differs from what is proposed by Illinois EPA and justifies an alternative aquatic life use designation.

Finally, Mr. Jirik described results of a study assessing compliance alternatives that would allow Argo to continue to use the Sanitary & Ship Canal for non-contact cooling water in the event that Illinois EPA's proposed use is adopted.

A. Argo Currently Uses the Sanitary & Ship Canal as a Source of Non-Contact Cooling Water and Operates Near the Approximate Limit of its Allowable Thermal Discharge

Argo withdraws water from the Sanitary & Ship Canal for use as non-contact cooling of various processes, and returns the warmed non-contact cooling water back to the Sanitary & Ship Canal pursuant to its National Pollution Discharge Elimination System ("NPDES") permit. Jirik P.F. Test. at 3-4. The use of non-contact cooling water from the Sanitary & Ship Canal is fundamental to the design and operation of processes at Argo. *Id.* at 3. Specifically, the cooling water provides for heat removal in the production and operating processes, including: dextrose manufacturing, corn sweetener refining, wet starch co-product drying, as well as the operation of various air compressors, electric generators, and air conditioning equipment. *Id.*

At hearing, Mr. Jirik described the physical process of removing water from the Sanitary & Ship Canal for use as non-contact cooling water. July 28, 2009 P.M. Hearing Transcript, *CAWS/LDPR*, R08-9 at 26-27 (Ill.Pol.Control.Bd. Aug. 7, 2009) (transcript hereafter cited as "July 28, 2009 Tr."). Mr. Jirik noted that the peak design capacity of the pumps removing water from the Sanitary & Ship Canal is approximately 65 million gallons per day ("GPD"). *Id.* at 49. However, Corn Products removes an average of approximately 36 million GPD. *Id.* at 50. Approximately 99.4 % of the water withdrawn is returned to the Sanitary & Ship Canal, approximately 0.2% is sent to the Metropolitan

Water Reclamation District of Greater Chicago ("MWRDGC"), and approximately 0.4% evaporates. *Id.* at 51.

When Corn Products added additional equipment that increased the heat load and cooling needs of Argo in the mid-1990s, there was concern that the additional thermal loading to the Sanitary & Ship Canal discharge might affect compliance with the thermal limits of its NPDES permit. Jirik P.F. Test. at 3. Therefore, Corn Products chose to install a dedicated-use cooling tower for the new equipment to avoid adding thermal load to the Sanitary & Ship Canal. *Id.* at 3-4. The dedicated-use cooling tower uses less than one percent of the current amount of water withdrawn from the Sanitary & Ship Canal at Argo. *Id.* at 4. This cooling tower allowed Corn Products to remain in compliance with the thermal limits in its NPDES permit. *Id.* Therefore, it is Corn Products' opinion that Argo operates near the approximate limit of its allowable thermal discharge to the Sanitary & Ship Canal. *Id.*

B. Illinois EPA's Proposed Use Designation does not allow for the Continued Use of Non-Contact Cooling Water by Argo

At present, Argo operates near the approximate limit of allowable thermal discharge. *Id.* Therefore, any change in use designation and corresponding tightening of thermal water quality standards threatens the use of the Sanitary & Ship Canal water for cooling purposes at Argo. *Id.* Nevertheless, Illinois EPA proposes to designate the Sanitary & Ship Canal to which Argo discharges non-contact cooling water as "Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters" (hereinafter "Use B"). Illinois EPA Proposed Amendments at 35 Ill. Admin. Code 303.235, *CAWS/LDPR*, R08-9 (Ill.Pol.Control.Bd. Oct. 26, 2007).

At hearing, Mr. Jirik described how compliance with the current thermal standard is calculated using mixing zone calculations. July 28, 2009 Tr. at 30-33. However, according to Illinois EPA, a noncomplying water body is not allowed the use of a mixing zone to attain compliance. Testimony of Scott Twait, January 28, 2008 Hearing Transcript, *CAWS/LDPR*, R08-9 at 47 (Ill.Pol.Control.Bd. Feb. 7, 2008) (transcript hereinafter cited as "January 28, 2008 Tr.").

Past data indicates that the Sanitary & Ship Canal does not meet the thermal water quality standards corresponding to Use B. Jirik P.F. Test. at 5. In particular, temperature data from the Argo's intake structure taken between January 2004 and November 2007 indicates that the water temperature at the Argo intake often equals or exceeds the proposed thermal water quality standards of Use B. *Id.* At hearing, Mr. Jirik depicted these exceedances in Exhibit 312, which is a graphical representation of intake data compared to proposed period average temperature standards. July 28, 2009 Tr. at 86-89. Using Exhibit 312, Mr. Jirik demonstrated that over much of the year, particularly outside the peak summer period, the Sanitary & Ship Canal is at or exceeds Illinois EPA's proposed period average temperature standards at the point of Corn Products' intake. July 28, 2009 Tr. at 98; *see also* discussion of Mr. Huff's testimony below.

Even if the Sanitary & Ship Canal marginally met the Use B thermal water quality standards, thereby allowing a mixing zone, since the receiving waters are at or near a thermal water quality standard, they would provide insufficient capacity to assimilate additional heat. Jirik P.F. Test. at 6. As explained in more detail by Mr. Jirik at hearing, when the temperature of water in the Sanitary & Ship Canal is equal to the water quality standard, there is no ability for the water to receive any additional heat without exceeding

the water quality standard. July 29, 2009 Hearing Transcript, *CAWS/LDPR*, R08-9 at 44 (Ill.Pol.Control.Bd. Aug. 7, 2009) (transcript hereafter cited as "July 29, 2009 Tr."). Similarly, if the temperature of the water in the Sanitary & Ship Canal is below the water quality standard but still close to the water quality standard, then only small amounts of heat may be added without exceeding the water quality standards. *Id.* at 45-46. Therefore, the practical effect of water temperatures in the Sanitary & Ship Canal that just barely meet water quality standards is that the corresponding mixing zone would be virtually useless to thermal dischargers. *Id.* at 46. Thus, the proposed Use B would deprive Argo of its current use of the Sanitary & Ship Canal. Jirik P.F. Test. at 6.

C. Aquatic Life Use in the Sanitary & Ship Canal is not Limited by Thermal Conditions

The fisheries in the Sanitary & Ship Canal are subject to habitat limitations and other non-thermal stressors. *Id.* at 4. As demonstrated by Mr. Huff and discussed in further detail below on page 16, designating the Sanitary & Ship Canal as Use B will provide no meaningful improvement of fisheries relative to current conditions. By comparing fisheries present in the Sanitary & Ship Canal to those present in the Calumet-Sag Channel, Mr. Huff showed that thermal conditions are not a limiting factor in the Sanitary & Ship Canal. Similarly, Mr. Huff showed that within the Sanitary & Ship Canal, temperature is not limiting the quality of fisheries.

D. Unique Uses and Characteristics of the Sanitary & Ship Canal Differentiate it from other Proposed Use B Waterways and Justify an Alternative Use Designation

In addition to Argo's use of the Sanitary & Ship Canal for non-contact cooling, additional uses and characteristics of the waterway are unique and/or inconsistent with Illinois EPA's proposal to group the Sanitary & Ship Canal with other proposed Use B

waterways. The unique uses and characteristics of the Sanitary & Ship Canal differentiate the Sanitary & Ship Canal and justify an alternative use designation.

The Sanitary & Ship Canal is an artificial manmade channel that was relatively recently created by mining and excavating limestone bedrock. *Id.* at 7. The Sanitary & Ship Canal was created primarily to reverse the flow of the Chicago River to transport human waste and disease away from Lake Michigan. Chicago Area Waterway System Use Attainability Analysis Final Report, Camp, Dresser, and McKee (Aug. 2007), Illinois EPA Statement of Reasons, Attachment B, *CAWS/LDPR*, R08-9 at 3-16 (Ill.Pol.Control.Bd. Oct. 26, 2007) (hereinafter "CAWS UAA"). Therefore, from both a functional and physical perspective, the Sanitary & Ship Canal is more like an engineered aqueduct than a natural river. Jirik P.F. Test. at 8.

At hearing, Mr. Jirik clarified that many segments covered by this rulemaking resulted from natural geomorphological processes and evolved and matured over thousands of years, resulting in natural rivers and streams. July 28, 2009 Tr. at 57. A number of natural waterways that have been modified still maintain vestiges of a natural river. *Id.* at 59. Different from those waterways, the Sanitary & Ship Canal was carved by hand and machine from an area that was once dry land. *Id.* at 59-60.

Additionally, the Sanitary & Ship Canal allows navigation between the Great Lakes and Mississippi River and provides primary transport of industrial materials such as sand, gravel, coal, cement, and fuel oils. CAWS UAA at 3-2. Development along the Sanitary & Ship Canal is primarily industrial and commercial. *Id.* at 3-3. Mr. Jirik depicted the industrial uses of the Sanitary & Ship Canal by introducing Exhibit 311,

which shows barges transporting material on the Sanitary & Ship Canal. July 28, 2009 Tr. at 69-71.

The Sanitary & Ship Canal also receives discharges from a number of significant industrial facilities. Illinois EPA Statement of Reasons, *CAWS/LDPR*, R08-9 at 103 (Ill.Pol.Control.Bd. Oct. 27, 2007). Illinois EPA acknowledges that thermal discharges are a noteworthy group of sources discharging into the Sanitary & Ship Canal, and that such discharges include electrical generation stations, grain processing facilities, and petroleum refineries. *Id.* Of note, the Fisk and Crawford Midwest Generation electric generating plants are located upstream from Corn Products and discharge heated non-contact cooling water into the Sanitary & Ship Canal and the South Branch of the Chicago River just before its confluence with the Sanitary & Ship Canal.[3] Jirik P.F. Test. at 8. Additionally, MWRDGC discharges treated wastewater from its Stickney Wastewater Treatment Plant, which is upstream from Argo. CAWS UAA at 3-3.

With an average design flow of 1.2 billion gallons per day ("BGD") and a design maximum flow of 1.4 BGD, the MWRDGC Stickney Plant is MWRDGC's largest wastewater treatment plant and one of the largest in the world. CAWS UAA at 3-3. This waterway also receives combined sewer overflow discharges, which add extreme unpredictable transient impacts. *Id.* at 3-2 – 3-3. On an annual basis, municipal treatment plants contribute seventy percent of the total flow of the Sanitary & Ship Canal. *Id.* at 1-6. The two upstream power plants can utilize up to 725.5 MGD collectively.

[3] Recent reports suggest that the Fisk and Crawford Midwest Generation electrical generation plants may discontinue operation within the next three years. Michael Hawthorne, *2 Coal Burning Power Plants to Power Down Early*, Chicago Tribune (March 1, 2012), http://articles.chicagotribune.com/2012-03-01/news/ct-met-coal-plant-shutdowns-20120301_1_crawford-plant-fisk-plant-fisk-and-crawford (last visited March 3, 2012). Since this issue surfaced within days of the due date of these comments, Corn Products has not had sufficient time to assess the situation.

Jirik P.F. Test. at 9. Therefore, a large amount of the water in the Sanitary & Ship Canal has been used, re-used, and/or recycled. *Id.* At hearing, Mr. Jirik depicted the location of Argo in Exhibit 313. July 28, 2009 Tr. at 113. He estimated the Stickney Plant to be approximately 4.1 miles upstream of Argo, Crawford to be approximately 6.8 miles upstream of Argo, and Fisk to be about 10.6 miles upstream from Argo. *Id.* at 112. As such, significant industrial and commercial uses exist on the Sanitary & Ship Canal and include thermal discharges upstream of Corn Products. It is important to recognize these uses of the Sanitary & Ship Canal, and their value to the economy of the Chicago area. Jirik P.F. Test. at 9.

Accordingly, based on the uses and characteristics described above and the testimony of Mr. Huff discussed below, existing industrial uses and physical characteristics differentiate the Sanitary & Ship Canal from other proposed Use B waterways and justify an alternative use designation.

E. Corn Products' Options for Maintaining the Current Use of the Sanitary & Ship Canal are not Economically Reasonable

Illinois EPA testified that its proposed thermal water quality standards are economically reasonable because they can be met through the use of cooling towers, which "are used extensively through the state to meet water quality standards." Testimony of Scott Twait, January 28, 2008 Tr. at 47. However, Illinois EPA's economic assessment appeared to be a general statement that did not consider the specific circumstances of dischargers participating in this rulemaking. Jirik P.F. Test. at 6. In fact, Corn Products' option for maintaining Argo's current use of the Sanitary & Ship Canal is not economically reasonable.

As summarized in more detail in the discussion of Mr. Idaszak's testimony below, Corn Products demonstrated, through a study performed by Ambitech that constructing a new cooling tower alone would be inadequate for Argo to continue its current use of the Sanitary & Ship Canal. Therefore, Illinois EPA's assumed method of compliance is not technically feasible.

Ambitech determined that chillers, in addition to a new cooling tower, would be necessary to meet the proposed Use B water quality standards, and estimated the total cost of installing a cooling tower alone at $23,645,000. This cost does not reflect additional costs necessary to meet thermal water quality standards on the warmest days of the year, operating costs, or the environmental footprint. Argo may only maintain its current use of the Sanitary & Ship Canal through the construction and operation of both a cooling tower and mechanical cooling equipment, at a probable cost of at least $43,645,000. *Id.* Illinois EPA failed to determine the appropriate method of compliance for individual dischargers to maintain their current use of the Sanitary & Ship Canal and the costs of these methods of compliance. *Id.* at 7.

III. TESTIMONY OF JAMES E. HUFF

Mr. Huff's testimony addressed the appropriateness of Illinois EPA's proposal to designate the Sanitary & Ship Canal a Use B waterway. Mr. Huff differentiated the Sanitary & Ship Canal from other proposed Use B waterways and identified unique characteristics and poor habitat qualities that justify an alternative use designation for the Sanitary & Ship Canal. Mr. Huff further identified an absence of underlying aquatic life use to justify non-summer water quality standards. Finally, Mr. Huff introduced a report

that demonstrated that thermal conditions are not a limiting factor in the Sanitary & Ship Canal.

A. Unique Uses and Characteristics of the Sanitary & Ship Canal Differentiate it from other Waterways Categorized as Use B and Justify an Alternative Use Designation

The Sanitary & Ship Canal is unique among the waterways that Illinois EPA proposes to designate as Aquatic Life Use B Waters. Exhibit 304, Pre-Filed Testimony of James E. Huff on Behalf of Corn Products International, Inc., *CAWS/LDPR*, R08-9 at 2-3 (Ill.Pol.Control.Bd. April 21, 2009) (hereinafter cited as "Huff P.F Test."). The Sanitary & Ship Canal is one of only two manmade waterways among the proposed Use B waterways. *Id.* An adequate consideration of the uniqueness of the artificially-created and physically-constrained Sanitary & Ship Canal is lost by including it in the Use B grouping. *Id.* at 3. Instead, these uses and characteristics justify an alternative use designation.

The unnatural creation of this hand-carved limestone channel and resulting steep walled geometry creates a harsh aquatic environment with limited habitat, as evidenced by its low Index of Biotic Integrity ("IBI") scores. *Id.* at 4. The physical habitat in the Sanitary & Ship Canal ranges from poor to very poor, thus limiting the diversity of aquatic life supportable within the Sanitary & Ship Canal. Edward T. Rankin, Analysis of Physical Habitat Quality and Limitations to Waterways in the Chicago Area at 11 (2005), Illinois EPA Statement of Reasons, Attachment R, *CAWS/LDPR*, R08-9 (Ill.Pol.Control.Bd. Oct. 26, 2007). Such a limitation supports the assertion that a balanced indigenous population of fish cannot be attained, as acknowledged by Illinois EPA. *See* Testimony of Roy Smoger, January 28, 2008 Tr. at 116. At hearing, Mr. Huff

explained that a balanced indigenous population is one that is able to sustain itself and is not overrepresented by very tolerant species. July 28, 2009 Tr. at 121. He concluded that the poor habitat of the Sanitary & Ship Canal precludes the attainment of such a population in the Sanitary & Ship Canal. *Id.*

Mr. Huff further explained that although other waterways in the area have been impacted by urbanization, the Sanitary & Ship Canal is unique since it was not created by natural geologic processes. *Id.* at 116. Instead, the area that the Sanitary & Ship Canal now occupies was dry land before 1900. *Id.* The manmade origin of the Sanitary & Ship Canal is a unique characteristic and differentiates if from many other waterways in the area. *Id.*

Further, since three coal-fired power plants and other industrial users add heat to the Sanitary & Ship Canal, special consideration regarding thermal issues is appropriate for this waterway. Huff P.F. Test. at 5. In addition, an electric field barrier system has been constructed in the Sanitary & Ship Canal to prevent the migration of aquatic nuisance species into Lake Michigan. CAWS UAA at 3-3. The barrier also prevents the movement of native and non-native species through the Sanitary & Ship Canal. *Id.* at 3-4. Therefore, from a biological perspective, the Sanitary & Ship Canal ends at the fish barrier. Huff P.F. Test. at 4.

To summarize, the following list of uses and characteristics demonstrates the uniqueness of the Sanitary & Ship Canal for purposes of an aquatic life use designation:

- The Sanitary & Ship Canal serves an economically important role.
- An electric barrier is present in the Sanitary & Ship Canal to protect Lake Michigan and the Mississippi River prevents the movement of aquatic species.

- The Sanitary & Ship Canal is impacted by the discharge of three coal-fired power plants, which provide low cost electricity during peak energy demand periods.
- The Sanitary & Ship Canal carries wastewater effluent, which represents 70% of the flow at Lockport on an annual basis.
- Significant pollutant loading to the Sanitary & Ship Canal results from combined sewer overflows. Additionally, stormwater runoff from the highly urbanized area discharges to the Sanitary & Ship Canal.
- The Sanitary & Ship Canal is lined with industrial dischargers who rely upon the waterway for cooling water, effluent discharge, and commerce.
- The Sanitary & Ship Canal is manmade.
- Limited shallow areas exist along the shoreline of the Sanitary & Ship Canal.
- The Sanitary & Ship Canal lacks suitable physical habitat to promote a more diversified aquatic community and has frequent disturbances caused by barge traffic.
- The Sanitary & Ship Canal contains silty substrates.
- The Sanitary & Ship Canal contains poor substrate material.
- The Sanitary & Ship Canal provides little instream cover.
- The Sanitary & Ship Canal is channelized.
- The Sanitary & Ship Canal lacks sinuosity.
- No backwater areas or tributary mouths exist along the Sanitary & Ship Canal.
- The Sanitary & Ship Canal is routinely dredged.
- The Sanitary & Ship Canal has minimal slope and low water velocities, which results in sediment deposition and is not optimal for aquatic habitats.

Exhibit 285, Updated Pre-Filed Testimony of James E. Huff on behalf of Citgo Petroleum Corporation and PDV Midwest, LLC, *CAWS/LDPR*, R08-9 at 6-7

(Ill.Pol.Control.Bd. Mar. 25, 2009). These uses and characteristics differentiate the Sanitary & Ship Canal from all other waterways grouped in the proposed Use B category. Therefore, an alternative use designation is justified for the Sanitary & Ship Canal.

B. No Underlying Aquatic Life Use is Identified that adequately Justifies Illinois EPA's Non-Summer Thermal Water Quality Standards

To develop water quality standards based on the proposed aquatic uses, Illinois EPA relied heavily on data analysis by Chris Yoder. Huff P.F. Test. at 5. However, no underlying use is identified sufficiently to justify proposing non-seasonal thermal water quality standards.

Illinois EPA developed the proposed summer temperature standards based on Mr. Yoder's report entitled *Temperature Criteria Options for the Lower Des Plaines River, CAWS/LDPR*, R08-9 (Ill.Pol.Control.Bd. Dec. 21, 2007). This report was based on a literature search of laboratory temperature studies, which were then ranked by a proprietary computer model to establish growth and survival criteria of certain Representative Aquatic Species ("RAS"). Huff P.F. Test. at 5. Illinois EPA believes that the eight fish species used by Yoder are "representative of the species that would be found in water capable of maintaining aquatic life populations predominated by individuals of tolerant types that are adaptive to the unique physical conditions, flow patterns, and operational controls designed to maintain navigational use, flood control and drainage functions in deep-draft, steep-walled shipping channels." Exhibit 2, Pre-filed Testimony of Scott Twait, *CAWS/LDPR*, R08-9 at 11 (Ill.Pol.Control.Bd. Dec. 21, 2007) (hereinafter cited as "Twait P.F. Test."). Therefore, the maximum summer thermal standards appear to be based on what Illinois EPA believes is necessary to protect these eight species. Huff P.F. Test. at 6.

On the other hand, seasonal cycles were developed to "protect essential functions such as growth, gametogenesis and spawning." Yoder P.F. Test. at 11. For non-summer months, Illinois EPA used the monitoring location at Route 83 on the Sanitary & Ship Canal to develop a background temperature. Twait P.F. Test. at 13-14. However, when effluent temperatures from MWRDGC's North Side, Calumet, and Stickney facilities were higher than the background temperature, the effluent temperature was used as background. *Id.* Testimony of Mr. Twait indicates that these background temperatures were chosen to avoid requiring MWRDGC to install cooling towers. Huff P.F. Test. at 6 (referring to Twait P.F. Test.). However, no similar considerations were given to industrial dischargers. *Id.*

Mr. Huff explained that "arbitrarily setting thermal limits as background temperature has no basis for protecting the biological community." July 28 Tr. at 127. There is no biological evidence that suggests that the proposed background temperatures are necessary for the fish population that is currently in the Sanitary & Ship Canal. *Id.* Therefore, Illinois EPA provides no adequate aquatic life use justification for setting non-summer thermal water quality standards.

C. Illinois EPA's Proposed Use B does not Support the Current Use of the Sanitary & Ship Canal as a Source for Non-Contact Cooling Water

In addition to Argo intake data discussed by Mr. Jirik, additional temperature data from the Sanitary & Ship Canal shows that Illinois EPA's proposed thermal water quality standards do not support the use of the Sanitary & Ship Canal as a non-contact cooling water source. To demonstrate, Mr. Huff introduced Exhibit 314 at hearing. Exhibit 314 shows the maximum period averages for three locations on the Sanitary & Ship Canal:

Cicero Avenue, Route 83, and the Lockport Powerhouse. Huff P.F. Test. at 7. The temperatures at Route 83 are consistently the lowest of the three locations. *Id.* At hearing, Mr. Huff explained that temperatures at Route 83 violated the proposed thermal standards. July 28, 2009 Tr. at 137. In fact, Illinois EPA's proposed thermal water quality standards are currently exceeded at all three locations. Huff P.F. Test. at 7. Exhibit 314 demonstrates that the Sanitary & Ship Canal will exceed the proposed thermal water quality standards, and this will require all dischargers whose discharge temperatures exceed the proposed water quality standards to reduce their thermal loading. *Id.* Therefore, the current use of the Sanitary & Ship Canal as a source of non-contact cooling water is not supported by Illinois EPA's proposal.

D. The Thermal Report Prepared by Mr. Huff Demonstrates that Thermal Discharges are not Limiting Aquatic Uses in the Sanitary & Ship Canal

To demonstrate the actual thermal impact on the Sanitary & Ship Canal, Mr. Huff prepared the Thermal Report, which compares the thermal regime and fisheries quality of the Sanitary & Ship Canal to the Calumet-Sag Channel. Since the Sanitary & Ship Canal and the Cal-Sag Channel have different historical temperatures, but both waterways are deep-draft waterways with limited shallow areas and a high volume of commercial traffic, a comparison between the fisheries' quality between the Sanitary & Ship Canal and the Calumet-Sag Channel would be expected to identify limitations caused by thermal stress. *Id.* at 8. Similarly, within the Sanitary & Ship Canal, comparing fish data from sampling points with different thermal characteristics would also be expected to identify limitations caused by thermal stress. *Id.*

The Sanitary & Ship Canal and Calumet-Sag Channel have similar fisheries quality. *Id.* Furthermore, within the Sanitary & Ship Canal, a higher than average species diversity was observed at the warmest sampling point. *Id.* At hearing, Mr. Huff explained further that Table 4-1 on page 26 of the Thermal Report demonstrates that temperature is not the limiting quality of the fisheries since a higher number of species were found in parts of the Sanitary & Ship Canal where the temperature was higher. July 28, 2009 Tr. at 78-80. Therefore, the existing thermal inputs into the Sanitary & Ship Canal do not appear to be a controlling or limiting factor in the fisheries quality. Huff P.F. Test. at 8. Thus, if the thermal loading in the Sanitary & Ship Canal were lowered to comply with the Use B thermal water quality standards, there is no evidence indicating that an increase in fishery quality could be expected. *Id.*

Additionally, laboratory data that forms the basis of Illinois EPA's thermal standards should be put in context. At hearing, Mr. Huff explained that the Bluntnose Minnow should not even be present in the Sanitary & Ship Canal given its thermal endpoints developed from laboratory data. July 28, 2009 Tr. at 136. However, the Bluntnose Minnow is present in the Sanitary & Ship Canal. *Id*

The most sensitive of the RAS species, the Bluntnose Minnow, and the thermally-sensitive Emerald Shiner, are already in the top five most common species collected on the Sanitary & Ship Canal, and the physical habitat is poor and not likely to improve. Huff P.F. Test. at 9. Since temperature is not limiting aquatic uses in the Sanitary & Ship Canal, Illinois EPA's proposed use designation and corresponding water quality standards are not supported and cannot be justified.

IV. TESTIMONY OF JOSEPH V. IDASZAK

Joseph V. Idaszak of Ambitech testified on options available to Corn Products to maintain its current use of noncontact cooling water obtained from the Sanitary & Ship Canal. As described above, Corn Products would need to achieve end-of-pipe compliance in order to comply with Illinois EPA's proposed thermal water quality standards since no mixing zone would be available. Based on this analysis, Mr. Idaszak determined that costs to continue this use are unreasonable.

To achieve compliance under this scenario, Ambitech assessed the following four compliance options: 1) current use; 2) single Sanitary & Ship Canal water cooling tower; 3) unit-specific closed loop cooling with several smaller cooling towers; and, 4) mechanical cooling in conjunction with Option 2. Exhibit 305, Pre-Filed Testimony of Joseph V. Idaszak on Behalf of Corn Products International, Inc., *CAWS/LDPR*, R08-9 at 2 (Ill.Pol.Control.Bd. April 21, 2009) (hereinafter cited as "Idaszak P.F Test."). A detailed evaluation of these options was outlined in Exhibit 310, *Evaluation of Options for Continued Use of the Chicago Sanitary & Ship Canal*. Mr. Idaszak explained at hearing that the options considered are commonly used means for process cooling throughout a broad range of industries. July 29, 2009 Tr. at 51. In addition, Mr. Idaszak explained that since such a cooling system project is a retrofit, some options may be limited. July 29, 2009 Tr. at 51.

Under Option 1, Corn Products' current use of the Sanitary & Ship Canal for process cooling would exceed the proposed temperature water quality standards during some averaging periods, as well as some daily maximum periods during a typical year. Idaszak P.F. Test. at 3. At other times, the receiving waters are so close to the proposed

standards that limited, if any, assimilative capacity is available to achieve compliance. *Id.*

Under Option 2, Ambitech considered the addition of a cooling tower to cool water before it is returned to the Sanitary & Ship Canal. *Id.* at 3. This option would require the following: a suitable physical location to site a cooling tower sized for peak flow of 45,000 gallons per minute, foundations and structural steel support for the cooling tower, associated pumps and piping, and instrument air and electrical service. *Id.* Cooling towers such as this rely on evaporative cooling along with some sensible heat removal due to intimate contact with air for removal of heat. *Id.* There is a practical limit on the ability of a cooling tower to remove heat, which is based on the wet bulb temperature. *Id.* Mr. Idaszak further explained at hearing that based on temperature and humidity in the air, there is only a certain amount of heat that can be removed by cooling towers. July 29, 2009 Tr. at 38. For this assessment, Ambitech used the wet bulb temperature recorded at Midway Airport in Chicago, Illinois. Idaszak P.F. Test. at 3.

Mr. Idaszak presented Exhibit 315, which summarized the periods during the year which would have exceeded the period average limit even with the installation of a cooling tower. July 29, 2009 Tr. at 26. As summarized at hearing by Mr. Jirik, Ambitech assessed four years of historical temperature data and, based on specifications of cooling towers, determined the anticipated discharge temperature over that period if a cooling tower was in operation. *Id.* at 29. For a number of periods, the discharge would still be above the proposed period average. *Id.* Mr. Idaszak explained that Exhibit 315 summarizes all the periods during the year where exceedances would have occurred. *Id.* at 30. Out of seventeen proposed periods, Argo would have exceeded the period average

in ten periods. *Id.* Specific data was listed for the year that each period showed the greatest exceedance of the limit. *Id.* at 33-34.

Ambitech developed a probable cost to complete installation of a cooling tower based on a combination of budgetary equipment quotes, engineering material take-offs, and the use of ICARUS cost estimating database. Idaszak P.F. Test. at 4. The opinion of probable cost for this system was approximately $23,645,000. This does not include any redundancy costs for outages, maintenance, or malfunctions. *Id.* Furthermore, there are times of the year when the period average standard will still be exceeded. *Id.* at 5. Therefore, this option is not a technically feasible option since the period average standards are expected to be exceeded. *Id.*

Under Option 3, Ambitech considered a closed loop cooling system consisting of multiple cooling towers supporting closed-loop cooling systems to service existing process heat exchangers. *Id.* Capital costs under this option would be higher than costs in Option 2 due to the cost of purchasing multiple towers, installation of equipment in multiple water basins and routing of utility piping and electric service to different points throughout the plant. *Id.* In addition, site availability would likely be an issue under this option. *Id.* Since capital, operating, and maintenance costs are expected to be higher than with Option 2, along with the unstudied potential processing impacts, this option was eliminated. *Id.*

Under Option 4, Ambitech considered the addition of a mechanical cooling system to the cooling tower considered in Option 2. *Id.* at 6. Such mechanical cooling would be accomplished with the addition of a refrigerant compressor and evaporator system. *Id.* In addition to the investment in the cooling tower installation, significant

capital would be required for this type of refrigeration system. *Id.* The equipment would also require construction of a building to provide shelter from the weather. *Id.* Based on analysis of heat balance calculations, Ambitech anticipated that approximately 12,375 tons of mechanical cooling would be required to meet period average temperature standards. *Id.* While detailed engineering was not performed on this option, based on Mr. Idaszak's experience, mechanical cooling would cost approximately $20,000,000. *Id.* While this option is technically feasible as it provides for the continued use of cooling water, the probable cost is not reasonable given the limited use during only those times of the year when the period average standard would be exceeded. *Id.*

Therefore, Mr. Idaszak determined that none of the technologies evaluated individually reasonably provide for the continuation for the existing use of cooling water in compliance with the proposed Use Designation. *Id.* The current use may be maintained using a combination of a cooling tower and mechanical cooling system, and providing redundancy to provide secure plant operations at a probable cost of at least $43,645,000.

Mr. Idaszak further opined that this cost is unreasonable based on the high cost of installing and operating a cooling tower and mechanical cooling system in conjunction with testimony offered by Mr. Huff that aquatic ecosystems would receive negligible environmental benefits if Argo cooled its discharge to meet the proposed standards. Joseph V. Idaszak Response to Question Raised at Hearing, *CAWS/LDPR*, R08-9 (Ill.Pol.Control.Bd. Jan. 19, 2010). Mr. Idaszak explained that a cost that neither improves production nor meaningfully benefits environmental conditions is unreasonable. *Id.*

IV. CONCLUSION AND PROPOSED LANGUAGE

In conclusion, the Sanitary & Ship Canal uniquely combines the attributes of artificial creation, waste water domination, and significant reuse of water. It serves important social and industrial purposes. The record clearly demonstrates the substantial existing industrial uses and unique characteristics that differentiate the Sanitary & Ship Canal from other waterways.

As demonstrated by Mr. Huff, the Sanitary & Ship Canal fisheries are not limited by the current thermal environment, and thus, the proposed Use B designation and accompanying thermal water quality standards will have no meaningful benefit on fisheries, but will impose an extreme financial hardship if applied to the Sanitary & Ship Canal. The impact of the proposed Use B on Argo's existing use of the Sanitary & Ship Canal is substantial.

Illinois EPA did not properly evaluate how its proposal to upgrade the existing use designation would result in any actual improvements to fisheries in the Sanitary & Ship Canal. Moreover, Illinois EPA did not properly evaluate the economic impact to dischargers, or the economic impact to the environment as a whole, when proposing to designate the Sanitary & Ship Canal a Use B waterway. Similarly, Illinois EPA did not meaningfully consider the technical feasibility of compliance.

Corn Products' testimony demonstrates that applying a Use B designation to the Sanitary & Ship Canal is both inappropriate and unwarranted. In order to recognize the unique features of the Sanitary & Ship Canal, Corn Products suggests the creation of a "Use C" designation as outlined below.

303.236 Chicago Area Waterway System Aquatic Life Use C Waters

Waters designated as Chicago Area Waterway System Aquatic Life Use C Waters are capable of maintaining aquatic-life populations predominated by individuals of tolerant types that are adaptive to the unique thermal regime, physical conditions, flow patterns, and operational controls present in waterways with elevated temperatures, significant industrial discharges, heavy industrial navigational use, numerous flood control discharges, and important drainage functions. These waterways are manmade, deep-draft, steep-walled shipping channels. The Chicago Sanitary and Ship Canal is designated as a Chicago Area Waterway System Aquatic Life Use C waterway.

WHEREFORE, CORN PRODUCTS INTERNATIONAL, INC. respectfully requests that the Board consider testimony and comments and adopt the Use C designation for the Sanitary & Ship Canal, as supported by the record.

Respectfully submitted,

CORN PRODUCTS
INTERNATIONAL, INC.,

By: /s/ Katherine D. Hodge
One of Its Attorneys

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