BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

INGREDION INCORPORATED Petitioner,	)	
v.	)	PCB 19 – _____ (Time-Limited Water Quality Standard)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	)	

NOTICE OF FILING

TO: Don Brown
Clerk of the Board
Illinois Pollution Control Board
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601
(VIA ELECTRONIC MAIL)

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
(VIA ELECTRONIC 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 **Appearance of Katherine D. Hodge, Appearance of Joshua J. Houser, Appearance of Daniel L. Siegfried, and Ingredion Incorporated's Petition for a Time-Limited Water Quality Standard for Temperature**, copies of which are herewith served upon you.

Respectfully submitted,

INGREDION INCORPORATED,
Petitioner,

Dated: July 26, 2018

By: /s/ Joshua J. Houser
One of Its Attorneys

Katherine D. Hodge
Joshua J. Houser
Daniel L. Siegfried
HEPLERBROOM, LLC
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CERTIFICATE OF SERVICE

I, the undersigned, on oath state the following:

That I have served the attached **Appearance of Katherine D. Hodge, Appearance of Joshua J. Houser, Appearance of Daniel L. Siegfried, and Ingredion Incorporated's Petition for a Time-Limited Water Quality Standard for Temperature** via electronic mail upon:

Don Brown
Clerk of the Board
Illinois Pollution Control Board
100 W. Randolph Street, Suite 11-500
Chicago, Illinois 60601
Don.Brown@illinois.gov

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276
Epa.dlc@illinois.gov

That my email address is Joshua.Houser@heplerbroom.com.

That the number of pages in the email transmission is 237 pages.

That the email transmission took place before 5:00 p.m. on the date of July 26, 2018.

/s/ Joshua J. Houser
Joshua J. Houser

Date: July 26, 2018

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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v.	)	PCB 19 – _____
	)	(Time-Limited Water Quality Standard)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	))	

APPEARANCE

NOW COMES Katherine D. Hodge, of the law firm HEPLERBROOM, LLC, and hereby enters her appearance in this matter on behalf of Ingredion Incorporated.

Respectfully submitted,

Dated: July 26, 2018

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

Katherine D. Hodge
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	))	

APPEARANCE

NOW COMES Joshua J. Houser, of the law firm HEPLERBROOM, LLC, and hereby enters his appearance in this matter on behalf of Ingredion Incorporated.

Respectfully submitted,

Dated: July 26, 2018

By: /s/ Joshua J. Houser
Joshua J. Houser

Joshua J. Houser
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Joshua.Houser@heplerbroom.com
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

INGREDION INCORPORATED Petitioner,	)	
v.	)	PCB 19 – _____ (Time-Limited Water Quality Standard)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	)	

APPEARANCE

NOW COMES Daniel L. Siegfried, of the law firm HEPLERBROOM, LLC, and hereby enters his appearance in this matter on behalf of Ingredion Incorporated.

Respectfully submitted,

Dated: July 26, 2018

By: /s/ Daniel L. Siegfried
Daniel L. Siegfried

Daniel L. Siegfried
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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

INGREDION INCORPORATED Petitioner,	)	
v.	)	PCB 19 – _____ (Time-Limited Water Quality Standard)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY Respondent.	)	

INGREDION INCORPORATED'S PETITION FOR A TIME-LIMITED WATER QUALITY STANDARD FOR TEMPERATURE

Ingredion Incorporated ("Ingredion"), by and through its attorneys, HeplerBroom, LLC, pursuant to Section 38.5 of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/38.5, and 35 Ill. Adm. Code Section 104.100 *et seq.*, hereby petitions the Illinois Pollution Control Board ("Board") for a single discharger time-limited water quality standard ("TLWQS") from the temperature standard adopted by the Board at 35 Ill. Admin. Code §§ 302.408(b), (c), (d), (e), (f), and (h) (Use B temperature standards) for thermal discharges from Ingredion's Argo Plant in Bedford Park, Illinois ("Argo" or "Argo Plant") into a portion of the Chicago Area Waterway System ("CAWS") known as the Chicago Sanitary & Ship Canal ("CSSC") pursuant to the terms and conditions outlined in this Petition for a Time-Limited Water Quality Standard for Temperature ("Petition").

Ingredion's Argo Plant is a member of a class of thermal dischargers defined by the Board and the Illinois Environmental Protection Agency ("Illinois EPA" or "Agency") that may be covered by a TLWQS for temperature. *See, e.g.*, Order of the Board, PCB No. 16-19, at 1-2 (Ill.Pol.Control.Bd. Apr. 12, 2017) (establishing the class of dischargers that may be covered by a TLWQS for temperature as "heated effluent dischargers into Chicago Sanitary and Ship Canal, and Upper Dresden Island Pool . . . ."). As set forth herein, Ingredion is requesting coverage for

discharges from its Argo Plant under this temperature TLWQS for effluent limitations and water quality standards that became applicable to the CSSC on July 1, 2018. Pending resolution of this Petition, the stay provisions of 35 Ill. Adm. Code § 104.525(a)(3) apply. *See also* Order of the Board, PCB No. 16-19, at 2 (Ill.Pol.Control.Bd. Apr. 12, 2017) (establishing a deadline of 90 days after the Board adopted rules under Section 38.5(k) of the Act, i.e., up to and including July 26, 2018, for petitioners to file any amended or initial petitions for a temperature TLWQS for purposes of preserving or obtaining the stay of the temperature water quality standards).

I. STATEMENT OF FACTS

A. The Argo Plant

The Argo Plant, located at 6400 Archer Avenue in Bedford Park, Illinois, processes corn and produces a variety of food products and ingredients, including corn sweeteners, starches, edible oils, and animal feeds. Ingredion (f/k/a Corn Products) has operated continuously at this location for roughly 110 years. Argo is a unionized plant represented by the United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial, and Service Workers International Union Local 7-507, and the International Association of Machinists District No. 8. Ingredion is a major employer, and for every job at the Argo Plant, additional jobs are created in other sectors of the economy. Based on a report from the Illinois Workforce Investment Board, the Argo Plant is directly and indirectly responsible for providing approximately 3,000 jobs. *See* Illinois Workforce Investment Board, *Manufacturing Task Force Report: Findings and Recommendations*, at 5 (Dec. 14, 2006), attached as Exhibit 1. This report also found the following:

Manufacturing is a critical economic sector in Illinois because:

- Manufacturing is a large component of the state economy as measured by gross state product,
- Manufacturing continues to provide good wages and benefits to Illinois workers, and
- Manufacturing creates jobs in other sectors in Illinois because it purchases goods and services from other industries and employs workers with considerable spending power to purchase additional goods and services.

Id. at 3. Ingredion is proud of its 100-plus-year history in the Chicagoland area and looks forward to continuing contributions to the local economy.

The Argo Plant withdraws as much as 60 million gallons per day of water from the CSSC for non-contact cooling for various processes and returns the noncontact cooling water back into the CSSC under conditions specified in Ingredion's National Pollutant Discharge Elimination System ("NPDES") Permit No. IL0041009, issued September 27, 2013, attached as Exhibit 2 ("NPDES Permit"). The intake and discharge points for the cooling water at the Argo Plant are located on the CSSC at River Mile 311.7, which is generally located between Harlem Avenue and La Grange Road.

The use of non-contact cooling water from the CSSC is fundamental to the design and operation of the various processes at the Argo Plant. The cooling water provides for necessary and highly efficient heat removal in 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. Due to recently identified upstream thermal influences discussed more completely below, continuing compliance with the new Use B thermal standards is currently being jeopardized for the Ingredion Argo Plant, thereby potentially threatening the use of CSSC water for cooling purposes at the Argo Plant. The facility's continuing thermal compliance with the new Use B limits may also be

negatively impacted in the future as the result of the same type of extreme weather/drought conditions that occurred in the Chicago metropolitan area during 2012. Both of these factors are outside of Ingredion's immediate control and therefore have driven the need for submittal of this Petition for consideration by the Board.

B. Argo Plant's NPDES Permit – Temperature Limit

When the Illinois EPA issued the Argo Plant's NPDES Permit on September 27, 2013, the Agency noted that it modified Special Condition 3 to clarify that the Argo Plant currently meets the allowed mixing criteria and no reasonable potential exists for the discharge to exceed thermal water quality standards. Specifically, Special Condition 3 states, in part:

> SPECIAL CONDITION 3. The receiving waters are designated as Secondary Contact and Indigenous Aquatic Life Waters by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.408 as amended. Therefore, these waters are subject to the following standard:
>
> A. Temperatures shall not exceed 93° F (34° C) more than 5% of the time or 100° F (37.8° C) at anytime at the edge of the mixing zone which is defined by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.102 as amended.
>
> ***This facility meets the allowed mixing criteria for thermal discharges pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to exceed thermal water quality standards.***

Exhibit 2, NPDES Permit No. IL0041009, at 3 (emphasis added).

Pursuant to prior Agency approval, Ingredion uses a model (based on Cormix) to determine their mixing zone compliance temperatures, which are currently required to be reported on a weekly basis, with the monthly maximum value reported on the facility's Discharge Monitoring Report ("DMR"). This model calculation requires monitoring of intake and discharge temperatures, as well as flow. The published CSSC 7Q10 flow (seven-day low flow in a 10-year period) is also incorporated as a model input. (Ingredion has since requested to

use an updated mass balance compliance equation to determine on-going compliance as part of their recent NPDES permit renewal application submitted to Illinois EPA on April 2, 2018.)

While the Argo Plant has continued to maintain thermal compliance, to date, a review of previously submitted DMR data, as well as measured intake temperature data, has indicated that there are risks of non-compliance with the new Use B thermal limits, especially during mild winter periods. Most recently, intake temperatures measured by Ingredion in December 2017 have revealed values that were either at or higher than the current Use B thermal water quality limit of 60°F. Ambient temperatures that are already near, at, or above the stated limit do not provide sufficient assimilative capacity for Ingredion to meet its own thermal limitations.

Ingredion's ambient intake temperature is directly influenced by the large upstream flow contributed to the CSSC by the Metropolitan Water Reclamation District of Greater Chicago's ("MWRDGC") Stickney Wastewater Treatment Plant[1], especially during the winter period, when this flow accounts for 70 to 100% of the base flow in this portion of the CSSC. Ingredion is concerned that these elevated intake temperatures, which are outside of its control, could result in the Argo Plant being unable to comply with the Use B thermal standard. In addition, Ingredion is concerned about its future thermal compliance status under the new thermal limits in the event that the extreme weather and flow conditions that occurred for a large portion of 2012 were to reoccur. Both situations concern factors outside of Ingredion's immediate control and therefore pose a potential risk to the Argo Plant's long-standing thermal compliance record.

[1] Midwest Generation, LLC's Fisk and Crawford Power Generating Stations were shut down in August 2012; therefore, the only upstream source of elevated intake temperatures for the Argo Plant come from MWRDGC's Stickney plant.

C. Board Rulemaking R08-9: 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

Between 2007 and 2015, the Board conducted a major rulemaking proceeding in *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*, PCB No. R08-9, initiated by the filing of a proposal by the Agency. Generally, the proposal was intended to amend the Board's rules for Secondary Contact and Indigenous Aquatic Life Use to update the designated uses and standards necessary to protect the existing uses of the CAWS and Lower Des Plaines River ("LDPR"). Amendments were proposed to the temperature standards set forth at 35 Ill. Adm. Code Section 302.408.

Ingredion participated in the R08-9 rulemaking proceeding, offering comments and recommending changes to the thermal standards. The Board, however, ultimately declined to make the changes, stating as follows:

> Additionally, Stepan, Ingredion, and ExxonMobil recommended changes concerning thermal standards for ALU B and UDIP waters.
>
> The Board declined to adopt the alternative proposals put forth by Agency, Midwest Generation, and the Environmental Groups***. Instead, the Board decided to move forward with the temperature standards proposed at first notice with certain changes, including a three-year delayed effective date for CAWS ALU A, CAWS and Brandon Pool ALU B, and UDIP waters.***

Opinion and Order of the Board, R08-9(D), at 21 (Ill.Pol.Control.Bd. June 18, 2015) (emphasis added).

Ingredion also commented on the proposed temperature standard for winter months. The Board's Opinion and Order noted as follows:

> **Temperature Standards for Winter Months**. The Environmental Groups and the District voiced concerns regarding the proposed temperature standards during winter months from December through March. However, neither the

> Environmental Groups nor the District proposed alternative winter temperature standards for North Shore Channel and Little Calumet River. ***Additionally, Ingredion voiced concern regarding the winter temperature standards for ALU B waters. Ingredion asserted that the proposed winter standard of a 60° F daily maximum is a drastic departure from the current daily maximum temperature of 93° F with an anytime limit of 100° F. PC 1421 at 5. Ingredion recommended an ALU B daily maximum limit of 75° F for the months of December through March to allow for the occasional warm day or week would be consistent with the daily maximum proposed by IEPA. Id. at 7. Alternatively, Ingredion suggested that the Board grant relief to discharges from thermal standards for 72 hours following any time the ambient temperature rises to 55° F or higher during which time the summer daily maximum of 90° F would apply. While the Board appreciated the concerns raised by the participants regarding the proposed winter temperature, the Board declined to establish a winter temperature. As discussed below, the Board delayed the effective date of the proposed temperature standards for CAWS and LDPR by three years. This will allow sufficient time for affected discharges or IEPA to propose appropriate winter thermal standards for the affected segments of CAWS and LDPR with sufficient technical justification.***

Id. at 23 (emphasis added).

The Board's revised temperature standards were effective July 1, 2015, and the temperature standard for the CAWS included a delayed compliance deadline of July 1, 2018.[2] Specifically, Section 302.408 provides in pertinent part:

> b) ***The temperature standards in subsections (c) through (i) will become applicable beginning July 1, 2018.*** Starting July 1, 2015, the waters designated at 35 Ill. Adm. Code 303 as Chicago Area Waterway System Aquatic Life Use A, Chicago Area Waterway System and Brandon Pool Aquatic Life Use B, and Upper Dresden Island Pool Aquatic Life Use will not exceed temperature (STORET number (°F) 00011 and (°C) 00010) of 34°C (93°F) more than 5% of the time, or 37.8° C (100° F) at any time.
>
> c) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

[2] Following the Board's adoption of a Final Opinion and Order in R08-9(D), the Agency filed a Motion to Clarify and Stay the rulemaking on August 14, 2015, seeking clarification of the "effective date" of the adopted rule in light of the delayed compliance date of July 1, 2018. In ruling on the motion, the Board stated:

> The Board grants the motion to clarify, and to be clear, the rules adopted by the Board on June 18, 2015, were effective July 1, 2015. While the rules include compliance deadlines of July 1, 2018, the rules were effective July 1, 2015.

Board Order, R08-9(D) (Aug. 20, 2015).

d) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.

e) The maximum temperature rise above natural temperatures shall not exceed 2.8° C (5° F).

f) Water temperature at representative locations in the main river shall not exceed the maximum limits in the applicable table in subsections (g), (h) and (i), during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature exceed the maximum limits in the applicable table that follows by more than 1.7° C (3.0° F).

g) Water temperature in the Chicago Area Waterway System Aquatic Life Use A waters listed in 35 Ill. Adm. Code 303.235 shall not exceed the limits in the following table in accordance with subsection (f):

Months	Daily Maximum (°F)
January	60
February	60
March	60
April	90
May	90
June	90
July	90
August	90
September	90
October	90
November	90
December	60

h) Water temperature in the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 35 Ill. Adm. Code 303.240, shall not exceed the limits in the following table in accordance with subsection (f):

Months	Daily Maximum (°F)
January	60
February	60
March	60
April	90
May	90

June	90
July	90
August	90
September	90
October	90
November	90
December	60

i) Water temperature for the Upper Dresden Island Pool Aquatic Life Use waters, as defined in 35 Ill. Adm. Code 303.230, shall not exceed the limits in the following table in accordance with subsection (f):

Months	Daily Maximum (^{o}F)
January	60
February	60
March	60
April	90
May	90
June	90
July	90
August	90
September	90
October	90
November	90
December	60

35 Ill. Adm. Code §§ 302.408(b)-(i) (emphasis added).

D. Argo Plant NPDES Permit Renewal Application

On April 2, 2018, Ingredion submitted its application for the renewal of the Argo Plant's NPDES Permit (Permit No. IL0041009), attached as Exhibit 3. The NPDES permit renewal is pending. Attachment 2 to the renewal application, entitled "Thermal Addendum," addresses the same potential thermal compliance issues that Ingredion originally discussed during the R08-9 rulemaking process and that Ingredion continues to face. Specifically, Ingredion included in the Thermal Addendum a section entitled "Influence of Upstream Discharger on Ingredion's Future Compliance with the Use B Thermal Water Quality Standards," which states as follows:

> Ingredion would like to make the Agency aware of the fact that the discharge from the Metropolitan Water Reclamation [District] of Greater Chicago's (MWRDGC) Stickney Treatment plant has the potential to negatively impact its on-going compliance with the new thermal water quality standards.
>
> A recent example is from December 2017, when the Stickney discharge temperature was 60 °F for five consecutive days from December lst through December 5th (See Attachments 2B and 2C). This was concurrent with the pumping of a large component of TARP discharge. Weather conditions during early December 2017 were also warmer than normal, so the Stickney discharge temperature was likely influenced by a combination of the weather, as well as the warmer temperature of the stored TARP water that was sent through the treatment system. As the Stickney discharge flow dominates the CSSC, especially during the winter months, it has the potential to create adverse thermal compliance conditions for downstream dischargers like Ingredion. When the ambient temperature of the waterway is already at the water quality limit (in this case, the 60°F Use B limit that goes into effect on July 1, 2018), it will be difficult to maintain compliance (even with the use of the mass-balance calculation), without the potential need to halt processes to limit discharge temperatures. Since the upstream water temperature is directly influenced by the MWRDGC discharge, Ingredion should not be held accountable for thermal water quality exceedances when it can be shown that the ambient water temperature in the CSSC is being negatively impacted by upstream sources.
>
> Ingredion would like to discuss this matter further with the Agency in order to determine if any additional provisions need to be included as part of this permit renewal in order to ensure continuing compliance with the new thermal water quality standards when they go into effect.

Exhibit 3, NPDES Permit Renewal Application, at 28.

Ingredion and the Agency met on July 19, 2018 to discuss how best to proceed in light of MWRDGC's influence on the temperature in the CSSC. The Agency has requested additional Ingredion-measured intake and discharge temperatures for further review and reasonable potential analysis, and it is Ingredion's understanding that the Agency intends to evaluate how to address the issues identified by Ingredion during the meeting, potentially via Ingredion's pending NPDES permit renewal application. In the interim, Ingredion has determined that it requires further protection from the compliance risk posed by increased intake temperatures that could occur in the future, in light of the new thermal water quality standards that are now applicable as of July 1, 2018.

Although the number of potential exceedances of the temperature standard is expected to be few in any given year, Ingredion nevertheless is filing this Petition in order to protect its compliance status in the event of exceedances caused by the influence of MWRDGC's Stickney Plant discharge, as well as the potential for extreme weather/low flow events that influence the ambient conditions in the CSSC.

II. PETITION CONTENTS

In compliance with the petition content requirements of 35 Ill. Adm. Code Section 104.530, Ingredion provides the following information:

1) A statement indicating the type of TLWQS sought:

A) single discharger;
B) multiple discharger; or
C) watershed, water body, or waterbody segment;

The Board's TLWQS regulations allow for three types of TLWQS: single discharger, multiple discharger, and watershed/waterbody segment. Ingredion is petitioning as a single discharger.

Although it petitions as a single discharger, Ingredion notes that it is a member of a discharger class that includes certain facilities located upstream and downstream from the Argo Plant, including, but not limited to, the MWRDGC Stickney Treatment Plant, Midwest Generation, LLC, Flint Hills Resources Joliet, LLC, Stepan Company, and possibly also ExxonMobil Oil Corporation. In *Midwest Generation, LLC v. Illinois Environmental Protection Agency*, PCB No. 16-19, a temperature TLWQS proceeding, the Agency filed its Response to the TLWQS Petition ("Response"), attached as Exhibit 4. As part of its response to Item No. 5, the Agency identified the CSSC and Upper Dresden Island Pool as the waterbodies affected by the

water quality standard from which relief may be sought. *See* Response, at 3. Also, in its response to Item No. 4, the Agency identified the class of discharger as dischargers of heated effluent. *Id.*

In turn, the Board issued its order establishing the class of dischargers that may be covered by a TLWQS for temperature as "heated effluent dischargers into Chicago Sanitary and Ship Canal, and Upper Dresden Island Pool . . ." and establishing a deadline of 90 days after the Board adopted rules under Section 38.5(k) of the Act (which has since been established as July 26, 2018) for petitioners to file any amended or initial petitions for a temperature TLWQS for purposes of preserving or obtaining the stay of the temperature water quality standards. *See, e.g.*, Order of the Board, PCB No. 16-19, at 2 (Ill.Pol.Control.Bd. Apr. 12, 2017), attached as Exhibit 5.

Ingredion's Argo Plant is a discharger of heated effluent into the CSSC and is, therefore, a member of the class of dischargers. Moreover, Ingredion is filing this Petition by the deadline established by the Board to file an initial petition for a temperature TLWQS for purposes of obtaining a stay of the temperature water quality standards and, therefore, the stay provisions of 35 Ill. Adm. Code § 104.525(a)(3) apply.

2) Identification of the currently applicable water quality standard for the pollutant or parameter for which a TLWQS is sought;

The currently applicable water quality standard for which this TLWQS is being sought is the thermal standard set forth as follows:

Section 302.408 Temperature

*** * ***

b) ***The temperature standards in subsections (c) through (i) will become applicable beginning July 1, 2018.*** Starting July 1, 2015, the waters designated at 35 Ill. Adm. Code 303 as Chicago Area Waterway System Aquatic Life Use A***, Chicago Area Waterway System and Brandon Pool Aquatic Life Use B,*** and Upper Dresden Island Pool Aquatic Life Use will not exceed temperature (STORET number (^{o}F) 00011 and (^{o}C) 00010) of 34^{o}C (93^{o}F) more than 5% of the time, or 37.8^{o} C (100^{o} F) at any time.

c) There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions.

d) The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained.

e) The maximum temperature rise above natural temperatures shall not exceed 2.8° C (5° F).

f) Water temperature at representative locations in the main river shall not exceed the maximum limits in the applicable table in subsections (g), (h) and (i), during more than one percent of the hours in the 12-month period ending with any month. Moreover, at no time shall the water temperature exceed the maximum limits in the applicable table that follows by more than 1.7° C (3.0° F).

* * *

h) ***Water temperature in the Chicago Area Waterway System and Brandon Pool Aquatic Life Use B waters listed in 35 Ill. Adm. Code 303.240, shall not exceed the limits in the following table in accordance with subsection (f):***

Months	Daily Maximum (°F)
January	60
February	60
March	60
April	90
May	90
June	90
July	90
August	90
September	90
October	90
November	90
December	60

35 Ill. Adm. Code §§ 302.408(b)-(f), (h) (emphasis added).

The CAWS and Brandon Pool Aquatic Life Use B waters listed in the Board's rules include the CSSC:

> **Section 303.240 Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters**
>
> * * *
>
> c) The following waters are designated as Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters and must meet the water quality standards of 35 Ill. Adm. Code 302. Subpart D:
>
> 1) Chicago Sanitary and Ship Canal; and
>
> 2) Lower Des Plaines River from its confluence with Chicago Sanitary and Ship Canal to the Brandon Road Lock and Dam (Brandon Pool).

35 Ill. Adm. Code § 303.240(c).

Because Ingredion's Argo Plant discharges into the CSSC, the discharges are subject to the thermal limitations of Section 302.408, and this Petition seeks relief from those limitations.

3) The location of the petitioner's activity and the location of the points of its discharge;

Ingredion's Argo Plant is located on the Lockport Pool of the CSSC in Bedford Park, Illinois (Latitude: 41.77361, Longitude: -87.82322) at River Mile (RM) 311.8, approximately four river miles downstream of the MWRDGC's Stickney Municipal Wastewater Treatment System outfall. *See* Exhibit 3, at 77, Section 2.1 Narrative Description of the Source Waterbody. For additional information and locations of outfalls, please see Exhibit 3, Ingredion's renewal application for its NPDES Permit (Permit No. IL0041009), at 109-110, specifically Figure 1. Location of Ingredion CWIS on the CSSC, and Figure 2. Aerial Overview of Ingredion CWIS on the CSSC.

4) A map of the proposed watershed, water body or waterbody segment to which the TLWQS will apply, as well as a written description of the watershed, water body, or waterbody segment, including the associated segment code;

See Exhibit 3, Ingredion's application for the renewal of NPDES Permit (Permit No. IL0041009), at 111, Figure 3. Topographic Map Showing Location of Ingredion CWIS on the CAWS. A written description is as follows:

Ingredion is located on the Lockport Pool of the CSSC in Bedford Park, Illinois (Latitude: 41.77361, Longitude: -87.82322) at River Mile (RM) 311.8, approximately four river miles downstream of the MWRDGC's Stickney Municipal Wastewater Treatment System outfall. *See id*. at 77, Section 2.1 Narrative Description of the Source Waterbody. The CSSC is part of the CAWS, a man-made watercourse completed in 1900 to help convey treated sewage and storm water flow away from Chicago and the city's drinking water source, Lake Michigan, to the Illinois River and eventually the Mississippi River and the Gulf of Mexico. The CAWS consists of 78 miles of canals, which serve two principal purposes for the Chicago area: (1) drainage of urban stormwater runoff and treated municipal wastewater effluent and (2) support of commercial navigation. Flow in the CSSC is completely regulated by a system of locks and dams and is frequently manipulated to maintain navigational depth, as well as flood control for the Chicago metropolitan area.

5) Designated uses of the water body or waterbody segment identified in subsection (a)(4);

The designated uses of the CSSC are described in the Board's rules as:

Section 303.240 Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters

a) Waters designated as Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters are capable of maintaining, and shall have quality sufficient to protect, aquatic life populations predominated by individuals of tolerant types that are adaptive to unique physical conditions

and modifications of long duration, including artificially constructed channels consisting of vertical sheet-pile, concrete and rip-rap walls designed to support commercial navigation, flood control, and drainage functions in deep-draft, steep-walled shipping channels. Such aquatic life may include, but is not limited to, fish species, such as common carp, golden shiner, bluntnose minnow, yellow bullhead and green sunfish.

b) Waters designated as Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters are not capable of attaining an aquatic life use consistent with the section 101(a)(2) of the Clean Water Act goal (33 USC 1251(a)(2)).

35 Ill. Adm. Code 303.204(a), (b).

6) Data describing the nature and extent of the present or anticipated failure to meet the water quality standard or standards, as well as facts that support the petitioner's argument that compliance with the water quality standard or standards cannot be achieved by the required compliance date;

Data describing the nature and extent of the anticipated failure to meet the thermal limitations set forth above are included in Ingredion's renewal application for NPDES permit in Exhibit 3, which includes the following discussion:

Influence of Upstream Discharger on Ingredion's Future Compliance with the Use B Thermal Water Quality Standards

Ingredion would like to make the Agency aware of the fact that the discharge from the Metropolitan Water Reclamation [District] of Greater Chicago's (MWRDGC) Stickney Treatment plant has the potential to negatively impact its on-going compliance with the new thermal water quality standards.

A recent example is from December 2017, when the Stickney discharge temperature was 60 °F for five consecutive days from December lst through December 5th (See Attachments 2B and 2C). This was concurrent with the pumping of a large component of TARP discharge. Weather conditions during early December 2017 were also warmer than normal, so the Stickney discharge temperature was likely influenced by a combination of the weather, as well as the warmer temperature of the stored TARP water that was sent through the treatment system. As the Stickney discharge flow dominates the CSSC, especially during the winter months, it has the potential to create adverse thermal compliance conditions for downstream dischargers like Ingredion. When the ambient temperature of the waterway is already at the water quality limit (in this case, the 60°F Use B limit that goes into effect on July 1, 2018), it will be difficult to maintain compliance (even with the use of the mass-balance calculation), without the potential need to halt processes to limit discharge temperatures. Since the

> upstream water temperature is directly influenced by the MWRDGC discharge, Ingredion should not be held accountable for thermal water quality exceedances when it can be shown that the ambient water temperature in the CSSC is being negatively impacted by upstream sources.
>
> Ingredion would like to discuss this matter further with the Agency in order to determine if any additional provisions need to be included as part of this permit renewal in order to ensure continuing compliance with the new thermal water quality standards when they go into effect.

Exhibit 3, at 28.

Attachments 2B and 2C referenced above are also found in Exhibit 3 at pages 44 through 47 and contain operating data for MWRDGC's Stickney Treatment Plant for December 2017 and Ingredion's CSSC intake temperature for November 18 – December 18, 2017, which provide an example of Ingredion's concern. Specifically, during the first five days of December 2017, MWRDGC's thermal discharge from its SW Outfall exceeded 60 ^{o}F and Ingredion's intake water temperature during that time exceeded 60 ^{o}F.

7) A demonstration that attainment of the designated use or uses and criterion or criteria is not feasible throughout the term of the TLWQS because of one or more of the factors listed in Section 104.560(a);

Section 104.560(a) of the Board's rules provide:

Section 104.560 Demonstration

a) For a TLWQS to a use specified in section 101(a)(2) of the Clean Water Act or a subcategory of such a use, the petitioner must provide justification that attainment of the designated use and criterion is not feasible for the proposed term of the TLWQS because of one of the following factors:

* * *

3) Human-caused conditions or sources of pollution prevent the attainment of the designated use and either cannot be remedied or would cause more environmental damage to correct than to leave in place;

As noted above, Ingredion's compliance status is only threatened during times of thermal influence by the MWRDGC's Stickney Plant operations, which constitute human-caused conditions or sources of thermal pollution that cannot be remedied by Ingredion.

Ingredion's primary identified period of potential thermal compliance concerns, due to increased intake temperatures influenced by the identified upstream source, is during the winter months of December through March and as such, is not the time of year that would be expected to result in any significant adverse environmental impacts. However, it is also possible that prolonged adverse/unseasonal weather and low flow conditions could negatively impact the ambient temperatures in the CSSC, as what occurred during the spring and summer of 2012, which in combination with the influence from the identified upstream source, could therefore affect the Argo Plant's ability to remain in compliance with the Use B thermal limits at other times of the year. While infrequent, these types of events are also outside of Ingredion's control, but still have the potential to result in thermal exceedances of the applicable limits.

8) An identification, including the Board's docket number, of any prior TLWQS or water quality standards variances issued to the petitioner, watershed, water body, waterbody segment, and, if known, the petitioner's predecessors, concerning similar relief;

None.

9) An identification, by name of the permit holder and permit number, of the permits held by dischargers that may be affected by the adoption of the TLWQS;

Ingredion's NPDES Permit No. IL0041009, issued September 27, 2013, for the Argo Plant, attached as Exhibit 2, would be affected by the adoption of this requested TLWQS. Ingredion's pending NPDES permit renewal application, dated April 2, 2018, may also be affected.

10) An identification and description of any process, activity, or source that contributes to a violation of a water quality standard, including the material used in that process or activity;

See response to Item No. 6 above.

11) A description and copy of all Pollutant Minimization Plans that are relevant to the relief requested and are currently being implemented or were implemented in the past;

In the mid-1990s, the Argo Plant installed new equipment that increased the heat load and cooling needs of the plant. Ingredion was concerned, at that time, that adding additional thermal load to the CSSC discharge might affect compliance with the thermal limits of its NPDES permit. In order to address this concern, a cooling tower was included as part of the project to serve the new equipment. This new cooling tower represented less than 1% of the intake flow. Blowdown from this cooling tower is not returned to the canal; instead, it is discharged to MWRDGC. Thus, the cooling tower helped enable Ingredion to continue to remain in compliance with the Secondary Contact thermal limits in its NPDES permit.

The Argo Plant also uses municipal and well water for supplemental non-contact cooling needs, but this is of very limited volume and cannot be increased to off-set the existing primary cooling water flow from the CSSC.

As discussed above, Ingredion has continued to operate the Argo Plant in compliance with the thermal limits in its NPDES Permit, and will continue to do so. However, Ingredion is filing this Petition due to circumstances beyond its control, i.e., the influence of MWRDGC's thermal influence on the Argo Plant's ability to remain in compliance with the new Use B temperature standards, as well as the potential for prolonged adverse/unseasonal weather and low flow conditions to negatively impact the ambient temperatures in the CSSC.

12) The proposed highest attainable condition of the watershed, water body, or waterbody segment identified in subsection (a)(4) expressed as set forth in Section 104.565(d)(4), including projected changes in the highest attainable condition throughout the proposed term of the TLWQS;

Section 104.565(d)(4) of the Board's rules provide:

Section 104.565 Opinion and Order

* * *

d) All orders adopting a TLWQS will include:

* * *

4) The highest attainable condition of the water body or waterbody segment as a quantifiable expression of one of the following:

A) For a single discharger and a multiple discharger TLWQS:

i) The highest attainable interim criterion;

ii) The interim effluent condition that reflects the greatest pollutant reduction achievable; or

iii) If no additional feasible pollutant control technology can be identified, the interim criterion or interim effluent condition that reflects the greatest pollutant reduction achievable with the pollutant control technologies installed at the time the Board adopts the TLWQS and with the adoption and implementation of a Pollutant Minimization Program.

35 Ill. Adm. Code § 104.565(d)(4).

Ingredion proposes that the highest attainable condition be the temperature standards in 35 Ill. Adm. Code Section 302.408(b) that were applicable starting July 1, 2015, i.e., Ingredion's receiving waters will not exceed temperature (STORET number (^{o}F) 00011 and (^{o}C) 00010) of 34^{o}C (93^{o}F) more than 5% of the time, or 37.8^{o} C (100^{o} F) at any time. This temperature standard has been adequate for the past three years.

13) A demonstration of the pollutant control activities proposed to achieve the highest attainable condition, including those activities identified through a Pollutant Minimization Program;

The Argo Plant has remained in compliance with the temperature standards in 35 Ill. Adm. Code Section 302.408(b) that were applicable starting on July 1, 2015. Ingredion will continue to operate the Argo Plant in compliance with these temperature standards, which are proposed herein as the highest attainable condition.

14) The proposed term of the TLWQS, along with a justification that it is only as long as necessary to achieve the highest attainable condition and a description of the relationship between the proposed pollution control activities and the proposed term;

Ingredion seeks this TLWQS for up to five years.

15) A proposed re-evaluation schedule to re-evaluate the highest attainable condition during the term of the TLWQS if that proposed term is longer than five years (see Section 104.580);

Not applicable.

16) Any other documentation necessary to support the petitioner's demonstration under Section 104.560; and

None necessary.

17) A demonstration to assure that the proposed highest attainable condition does not conflict with the attainment of any downstream water quality standard for the pollutant or parameter for which the TLWQS is sought.

Ingredion's issue is site-specific, due to its close proximity to the MWRDGC Stickney discharge. As such, it is highly unlikely that Ingredion's requested TLWQS would have any negative impact on downstream thermal dischargers, which are all located below the confluence of the CSSC and the Cal-Sag Channel, which provides additional dilution flow. Also, under an extreme set of weather/flow events, Ingredion's discharge under the requested TLWQS is not large enough to result in any adverse influence on any downstream discharges. Moreover,

Ingredion is not requesting this TLWQS as a result of any operational changes that would result in an increase in the temperature of the Argo Plant's effluent or volume of discharge.

III. CONCLUSION

WHEREFORE, Petitioner, Ingredion Incorporated, respectfully requests that, pursuant to Section 38.5 of the Act and 35 Ill. Adm. Code Section 104.100 *et seq*., the Board grant Ingredion a time-limited water quality standard, consistent with this Petition, for the Argo Plant's thermal discharges into the CSSC.

Respectfully submitted,

INGREDION INCORPORATED,
Petitioner,

Dated: July 26, 2018

By: /s/ Joshua J. Houser
One of Its Attorneys

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Exhibit 1

Manufacturing Task Force Report: Findings and Recommendations

Illinois Workforce Investment Board
Manufacturing Task Force
Chuck Anderson, UAW, Co-Chair
James Hefti, Advanced Technology Services, Co-Chair

December 14, 2006

Introduction

The Illinois Workforce Investment Board (IWIB) established the Manufacturing Task Force on December 9, 2005 to develop recommendations for addressing the causes of worker shortages in manufacturing as documented in regional reports from the Critical Skill Shortages Initiative (CSSI). The task force was asked to focus on issues that required state level action. The IWIB requested that the task force present findings and recommendations at the September 2006 IWIB meeting.

This report summarizes the major findings and recommendations of the Manufacturing Task Force. The first section provides background information on the formation of the task force, task force meetings, and the major issues addressed. The second section summarizes the task force findings and recommendations and proposed next steps. This section begins with an overview of manufacturing and its major trends in Illinois and the most critical worker shortages. This section then presents the major recommendations on how to address these shortages in Illinois.

Background

The Manufacturing Task Force was chaired by Chuck Anderson, UAW, and James Hefti, Advanced Technology Services. The task force included representatives from employers and labor unions representing different segments of manufacturing, community colleges, universities, secondary schools, and state education, workforce development and economic development agencies. Manufacturing task force members are listed in Appendix A.

The task force met five times between March 9, 2006 and August 9, 2006 and held a conference call on August 29, 2006 to review and approve the final draft report before submitting the report to the IWIB. The task force presented interim reports to the IWIB at the March and June 2006 meetings.

At the first meeting, the task force reviewed the CSSI findings on shortages and identified the major occupational clusters to address. The task force also reviewed CSSI findings on the root causes of shortages and identified five major issues to address:

1. Image of Manufacturing—Improving the image of manufacturing focusing on the message that manufacturing is a critical industry in Illinois and that manufacturers must compete on innovation.

2. K-12 Career Awareness and Guidance—improving the student and parent awareness of career opportunities in manufacturing and expanding career guidance and exploration in K-12 schools.
3. Improving Workplace Skills---improving the basic workplace skills of entry-level production workers.
4. Improving Workforce Pipelines—improving the capacity and alignment of the workforce pipeline including P-20 alignment and integration of leading public-private training models and credentialing systems.
5. Continuous Learning—Engaging incumbent workers to recognize the need for continuous learning and training.

At the second meeting, the task force addressed each of the five major issues and discussed approaches and options in addressing these issues. The most attention was focused on the need for a statewide image and career awareness campaign and for developing improved workforce pipelines. At the third meeting, the task force reviewed draft findings and recommendations for an image campaign and building regional workforce pipelines. The task force also discussed how regional pipeline solutions must address the basic workplace skills of entry-level production workers through both foundation and bridge programs. At the fourth meeting, the task force focused on developing recommendations on K-12 career awareness and guidance based on a presentation by the Illinois State Board of Education. The task force also revised the recommendations on building regional pipelines after reviewing the U.S. Department of Labor's Advanced Manufacturing Framework of Competencies, receiving information on an Illinois Community College Board project to explore leading national manufacturing program models and receiving a brief overview of secondary programs. They also reviewed recommendations on the image campaign after being briefed on the Innovate Now initiative. The fifth meeting focused on reviewing the proposed recommendations for K-12 career awareness, the proposed themes and supporting data for an overview of manufacturing in Illinois, and the revised recommendations on improving the image of manufacturing and building regional workforce pipelines. The fifth meeting also focused on reviewing the workforce pipeline figure developed by Michael Cermak from Rock Valley College. The sixth and final meeting was conducted by conference call. The task force members reviewed the draft report including all recommendations and made final changes.

Findings and Recommendations

Manufacturing remains a large and important sector in the Illinois economy, as measured by share of gross state product, and is projected to continue to provide strong employment opportunities throughout Illinois. These current and projected trends combined with rising skills requirements and the aging of the workforce will continue to create major shortages of skilled workers. The Critical Skill Shortages Initiative (CSSI) identified significant shortages in: (1) engineering technicians, (2) machinery maintenance, (3) manufacturing production (e.g., machinists, welders, assemblers, fabricators), and (4) supervisors and managers**.**

Because of the importance of manufacturing to the state economy, Illinois must take immediate actions to address these worker shortages. The Critical Skill Shortages Initiative (CSSI) and related state and regional efforts are an important first step in addressing these shortages. However, Illinois must now build on these state and regional initiatives. Illinois must take immediate actions to: (1) improve the image of manufacturing to attract youth and adults to pursue manufacturing careers, (2) build stronger regional workforce pipelines across the state, and (3) expand K-12 career development opportunities to prepare the future Illinois workforce.

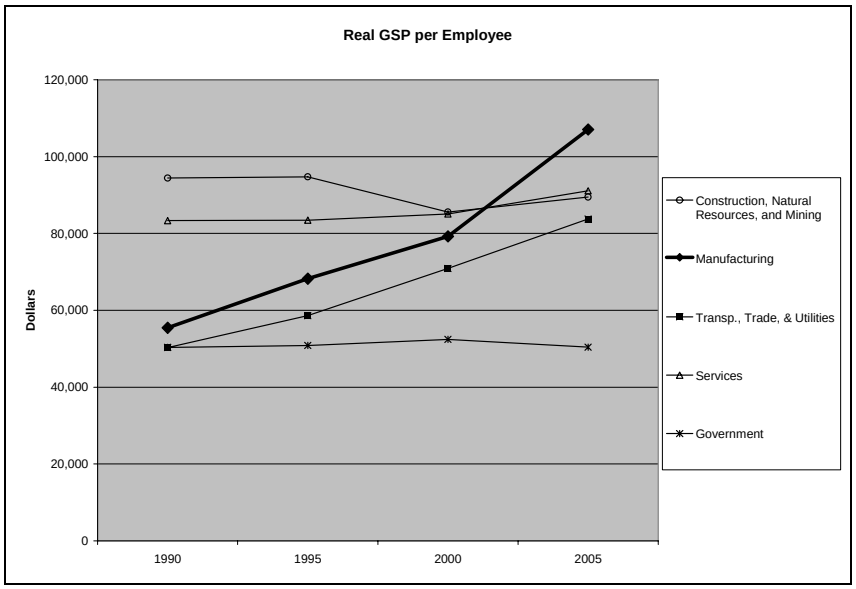
Manufacturing in Illinois

Manufacturing Still Matters in Illinois. Manufacturing is a critical economic sector in Illinois because:

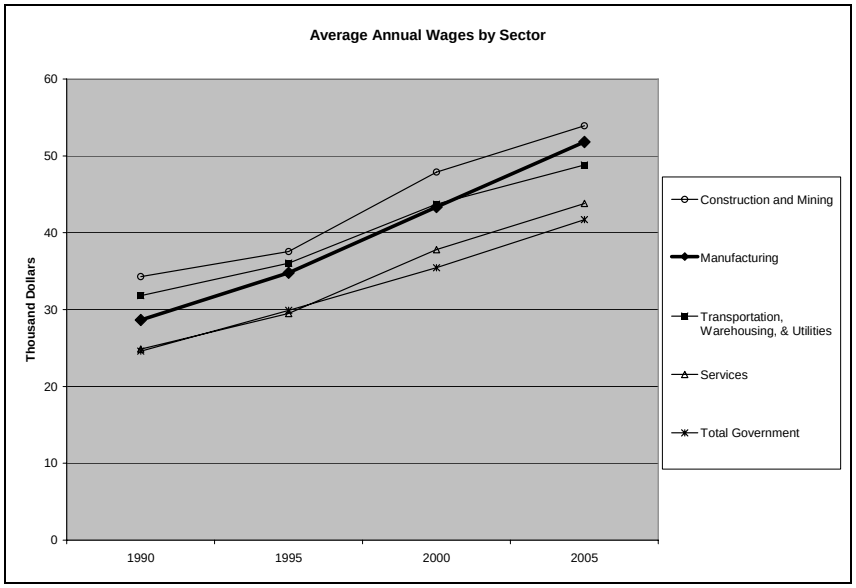
- Manufacturing is a large component of the state economy as measured by gross state product,
- Manufacturing continues to provide good wages and benefits to Illinois workers, and
- Manufacturing creates jobs in other sectors in Illinois because it purchases goods and services from other industries and employs workers with considerable spending power to purchase additional goods and services.

The manufacturing sector in Illinois continues to play a large role in shaping the economic activity of the state. Manufacturing in Illinois, as in the nation as a whole, has actually increased its share of economic activity as measured by Gross State Product (GSP) despite significant job losses. Over the last fifteen years, the manufacturing sector's share of non-farm employment and wages fell 5.5-6.0% (see Table 1 Employment in Appendix B). But during this same time period, the sector's share of Gross State Product (GSP), the measurement of all

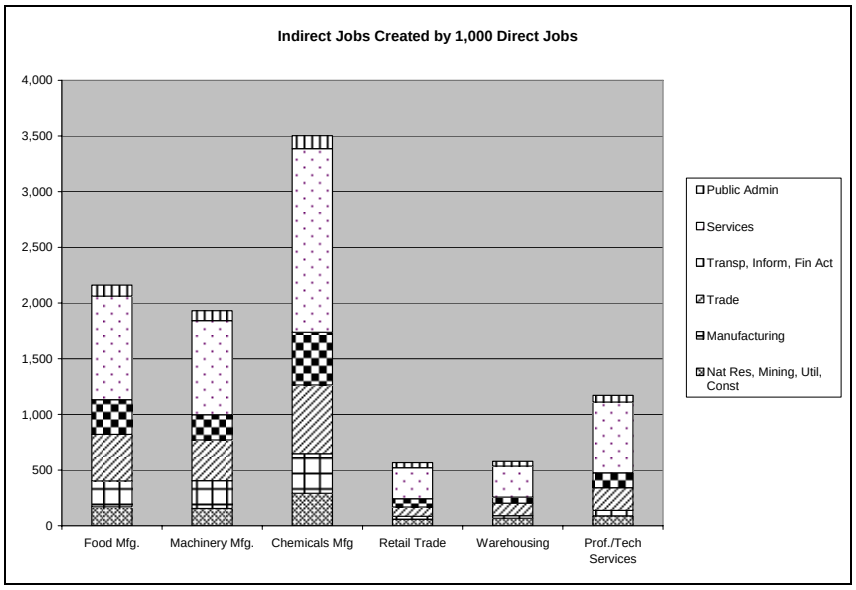
economic activity in the state's economy, actually increased (see Table 2 Gross State Product in Appendix B). The sector maintained and slightly increased its share of economic activity despite declining employment because of increased productivity. As shown in the chart below, compared to other industry sectors in the state, manufacturing experienced a rapid rise in productivity (GSP per employee)(see Table 3 Productivity in Appendix B). As shown in Appendix B, these trends in Illinois are consistent with national trends in manufacturing.



As shown in the chart below, the strong growth in productivity has contributed to substantial increases in wages. These wages have grown by 80% while the consumer price index increased by only 47% over the same period. This represents the biggest wage increase among all major industry sectors.



The large role of manufacturing in the state economy is also apparent in the numbers of jobs it creates in other sectors. For example, 1000 new chemical manufacturing jobs in Illinois would generate about 4,500 total jobs, 1000 direct jobs in the chemical industry and 3,500 indirect jobs in other industries. The chart to follow shows manufacturing sectors of Food, Machinery and Chemical provides double the indirect jobs of other sectors in the state's economy such as retail trade, warehousing, and professional and technical services. This indirect employment gained from manufacturing jobs affects the state's economy significantly in all the other of the state's industry sectors as show by chart below, the service sector gains nearly 40% of the indirect jobs created.



Manufacturing Is Changing in Illinois. The strong growth in productivity and output in face of significant job losses are the result, in part, of the major changes that are taking place in manufacturing industries and workplaces throughout Illinois and the world. To meet growing global competition and customer demands, Illinois manufacturers, like all manufacturers, are in the process of transforming themselves. They are introducing new global business strategies and business models, defining and entering new global markets, introducing new products and services, and developing and improving manufacturing processes. This transformation involves company mergers and acquisitions, global realignment and consolidation of production capacity, new business start-ups and expansions as well as plant closures, and expanded use of advanced technology and improvement approaches such as six sigma and lean manufacturing to reach world-class level quality and productivity. This transformation also involves the automation and outsourcing of low-skilled jobs and increases in the skill requirements of all workers ranging from managers, engineers, and technicians to front-line production workers.

In the future, Illinois manufacturers will increasingly compete on continuous and rapid innovation in business strategies and models, products and services, markets, and processes. This will continue to increase the skill requirements for all workers in manufacturing from managers and engineers to front-line production workers.

Manufacturing Has a Strong Future in Illinois. Manufacturing is projected to continue to grow in Illinois as measured by gross state product and will remain a significant share of the Illinois economy. In addition, manufacturing job loss is projected to level off creating strong employment opportunities for Illinois workers over the coming years.

The most recent economic projections for Illinois from Global Insight estimate that Manufacturing Gross State Product will increase annually 2.5% to 2010. Manufacturing average annual wage rate is also projected to increase by 19.5% over this period, which amounts to a 3.9% annual rate of change, which should exceed forecasted cost of living increases. Manufacturing productivity (value added per employee) is projected to increase 17.4% during this same period (see Table 9 Global Insight Projections in Appendix B).

This growth in output, wages, and productivity will be accompanied by a leveling off of jobs losses, which together will provide stronger employment opportunities for Illinois workers. The national economic recession which occurred during the early 2000s caused Illinois' manufacturing job losses to bottom out by 2002. Since then, job losses have steadily decreased and stabilized by 2005. Although there was a loss of more than 180,000 manufacturing workers between 2000 and 2005, recent government figures indicate the smallest annual number of manufacturing jobs were lost between 2004 and 2005 (8,000) representing a 1.1% loss in employment. Projections from Global Insight indicate that losses will continue to level off with projected losses of nearly 31,000 jobs forecasted between 2005 and 2010. This is 0.9% average annual loss during this five year time period.

Critical Worker Shortages

The Critical Skill Shortages Initiative (CSSI) identified manufacturing as a key sector in most regions in Illinois and identified critical worker shortages in four major occupational areas: (1) engineering technicians, (2) machinery maintenance, (3) manufacturing production (e.g., CNC operators, machinists, welders, assemblers, fabricators), and (4) supervisors and managers (See Table 1 in Appendix C). The largest shortages were found in production occupations. These shortages were the result of both new job growth and the need to replace workers who left manufacturing companies, including those workers entering retirement.

These shortages are likely to worsen in the coming years because of strong projected growth in manufacturing combined with rising skills requirements and the aging of the workforce. If projections hold, Illinois will face a major challenge in upgrading the skills of current workers and replacing the large number of skilled workers likely to retire over the next few years.

Improving the Image of Manufacturing

National studies by the National Association of Manufacturers and others have found that one of the major reasons for skill shortages in manufacturing is the poor image of the industry. The general public and potential job seekers think manufacturing is on the decline. They believe that manufacturing is not critical to the future of the national economy and will no longer provide good career opportunities. There also is a lack of knowledge about how manufacturing has changed and how this has increased skill requirements at all levels from managers and engineers to front-line production workers.

Illinois is no different. CSSI consortia in all regions of Illinois found that the poor image of manufacturing is one of the major root causes of skill shortages in manufacturing in Illinois. There is a common perception among public officials and potential job seekers that manufacturing is on the decline in Illinois and can no longer provide good career opportunities. There also is limited understanding of how manufacturing is changing and the need for higher skills.

Future efforts by employers, colleges, and schools to recruit and prepare more adults and youth to fill identified shortages will not be successful without a major change in the image of manufacturing in Illinois.

Recommendations

Illinois should launch a public-private statewide campaign to improve the image of manufacturing to the general public and potential job seekers. This image campaign should provide a realistic and balanced perspective on manufacturing that recognizes that manufacturing is undergoing major transformations but that manufacturing will continue to provide good career opportunities in the future, especially during a period in which many skilled workers will be retiring. This campaign should emphasize that Illinois manufacturers are increasingly competing on innovation---business models, markets, products and processes. And, potential job seekers will need higher skills to help Illinois manufacturers compete and to be successful in manufacturing careers of the future. This statewide campaign should be coordinated with the larger Innovate Now

campaign that will be promoting innovation across all sectors including manufacturing.

Objectives. The objectives of the image campaign should be to:

- Expand awareness among community leaders, public officials, and the general public of the continued importance of manufacturing to the Illinois economy, how manufacturing is changing, how manufacturers are competing in the global economy, and why manufacturers are facing a serious skill shortage.
- Expand awareness of career opportunities in manufacturing among youth and adults and K-12 students and their parents

Key Themes. The key themes of the image campaign should be:

- Manufacturing is undergoing a major transformation but remains a critical component of the Illinois economy in terms of both output and jobs.
- Illinois manufacturers are increasingly competing on innovation---business models, markets, products and processes. They will compete on constantly improving everything they do across the entire business.
- Illinois manufacturers need skilled workers who can work with others to continuously improve products and processes.
- Illinois manufacturers will continue to provide these skilled workers with good career opportunities at all levels from managers and engineers to front-line workers.

Key Audiences. The image campaign should target the general public as well as job seekers. The campaign should focus on state and local public and private leaders, especially public elected officials. Job seekers should include all adults and youth. The targeted youth market should include K-12 students, out-of-school youth, and others within the 18 to 35-age range as well as their parents. The targeted adult market should include displaced workers and others making career transitions.

Regional Manufacturing Consortia. The image campaign should be launched on a regional basis through regional manufacturing consortia that build from existing CSSI consortia. These consortia should have representation from employers, unions, secondary and postsecondary education, economic development, and workforce development. These consortia should be supported by regional coordinators who are dedicated to managing the regional campaigns. These regional manufacturing consortia should be part of any future regional partnerships formed in the Innovate Now initiative.

Regional Campaign Activities. The regional consortia should plan and implement the following campaign activities.

- Promote regional and local forums and meetings with media coverage
    - Chamber and economic development meetings
    - Workforce board and university/community college meetings
    - Employer-hosted open houses and events
- Promote regular manufacturing news and information in regions
    - New markets, products, processes in existing employers
    - Employer expansions
    - New employers coming to region
    - Recognition of employees
- Promote careers and employment and education opportunities
    - K-12 career development
    - Career/job fairs and events

Statewide Coordination and Resources. The image campaign in each region should be supported by a statewide coordinator and advisory group. The image campaign should be provided with sufficient resources to support a campaign website and related printed materials. The campaign web site should be linked to and supported by Illinois workNet to ensure linkage with existing career and educational information. The image campaign at the state and regional levels should link to and leverage existing national resources such as the National Association of Manufacturers' Dream It Do It campaign wherever possible.

- Develop campaign web site with state and regional information
    - Facts and figures on manufacturing in Illinois and each region.
    - Competing on innovation---examples of how manufacturers are competing on innovation across the entire business (based on innovation framework emphasizing business models, markets, products, processes
    - Profiles of employers and their employees (10-20 per region)
        - Employer overview
        - Examples of innovation based on innovation framework
        - Virtual tour of company highlighting major functions, education needed to perform these functions, and the look and feel of a modern manufacturing facility (what is inside walls)
        - Profiles of workers filling critical jobs that provide information on what they do and how they got there. These profiles should be consistent with career development materials and the career areas highlighted.
    - Career and educational opportunities (linked to Illinois workNet)

  - Career information consistent with K-12 career development materials
  - Highlighted career opportunities/jobs of employers
  - Education and training opportunities organized within a format that conveys a seamless sequence of programs within the regional pipeline model recommended by the IWIB Manufacturing Task Force.

- Develop printed campaign materials based on website content that can be customized by region. These materials should be designed for use in public forums and meetings with public and private stakeholders and in promoting careers with potential job seekers.

Building Regional Workforce Pipelines

Illinois is facing severe shortages at all levels ranging from entry-level production workers to skilled workers and technicians with specialized skills such as welding, machining, maintenance, and engineering technology.

There is a need to develop comprehensive regional workforce pipeline solutions that address the following industry needs:

Improving Basic Workplace Skills. Employers have identified major shortages in basic workplace skills for entry-level production jobs that require only short-term training. Some regions have developed bridge programs that provide non-school youth and adults with opportunities to gain basic workplace skills, improve reading and math skills, and learn about career opportunities in manufacturing. These bridge programs are designed to prepare job seekers for entry into postsecondary credit programs and/or entry-level production jobs.

Expanding Manufacturing Foundation Programs. The largest projected shortages are in manufacturing production jobs that do not require long-term specialized training. Some regions are developing foundation programs to address this need. The Illinois Department of Commerce and Economic Opportunity recently funded the development of Manufacturing Boot Camps. Rock Valley College in cooperation with other colleges in the Northern Stateline Region recently developed a Certified Manufacturing Assistant Program. The CSSI effort in the Southern Economic Development Region launched the Work Certified program to provide workers with similar foundation skills. CSSI efforts in other regions are addressing similar needs. These foundation programs generally require participants to have strong basic reading and math skills at entry to ensure that the participants can successfully achieve the necessary technical and workplace

skills upon completion of the program. As a result, many regions will need bridge programs to provide the opportunity for some job seekers to qualify to enter foundation programs.

Promoting New Approaches for Specialized Training. The CSSI identified some common shortage areas that required significant long-term training. These involve four major areas: (1) manufacturing production (2) industrial maintenance, (3) engineering technicians, and (4) managers and supervisors. To address these needs, each region must: (1) identify the specialized training areas with the highest demand and (2) develop innovative public-private approaches to provide this training. Specialized training areas could be defined in terms of both processes and products. For example, specialized training could be defined in terms of specific manufacturing processes such as machining, assembly, chemical process operations, and biotechnology operations. It also could be defined in terms of specific types of products such as furniture, communication equipment, boats and related watercraft, and industrial machinery. Some regions are developing innovative program solutions to address shortages in these specialized training areas. For example, Danville Area Community College has developed an open-entry, open-exit model that has resulted in increased enrollment in welding and machining. The college is also using on-line learning systems. Other regions are exploring how to deliver regional programs and integrate classroom and on-the-job training. Others are exploring how to better use customized and incumbent worker training. There are also national model programs and resources that should be explored to address the needs for specialized training. Future efforts should explore how to better integrate public and private resources. Comprehensive regional pipeline solutions should be designed to provide multiple access points to job seekers to enter specialized training directly or through bridge and/or foundation programs.

Linking to K-12 Career Development and Career and Technical Education Programs. This three-tier model for building regional workforce pipelines must be integrally linked to career development programs in K-12 schools that begin with career awareness and exploration and lead to enrollment in secondary career and technical education programs. Illinois has established many new manufacturing and pre-engineering programs such as Project Lead The Way and Engineering By Design that should be integrated with existing programs within a career clusters framework based on the national Manufacturing Career Clusters model which is consistent with the national Department of Labor's competency model. This framework provides a unique opportunity to align secondary and postsecondary curriculum and explore dual credit opportunities.

Recommendations

Illinois should further develop a regional workforce pipeline model that integrates and aligns bridge, foundation, and specialized training programs and provides linkages to K-12 career development and career and technical education. A model of this regional workforce pipeline is shown in Appendix D. This effort should integrate leading national models including the Advanced Manufacturing Competency Model recently developed by the U.S. Department of Labor and the Manufacturing Career Cluster model developed by the U.S. Department of Education and the state directors of career and technical education. Illinois should use the pipeline model to identify and develop leading models for manufacturing bridge programs, foundation programs, and specialized training programs and promote related programs in secondary career and technical education.

Illinois should promote the comprehensive regional implementation of these program models within regional pipeline solutions that allow regions to customize and tailor these program models to meet regional needs. However, all regions should be encouraged to develop comprehensive regional pipelines that align all three types of programs—bridge programs, foundation programs, and specialized training programs—and secondary career and technical education within a seamless system.

The implementation of these regional pipeline solutions should be guided by the regional manufacturing consortia conducting the manufacturing image campaign. These regional manufacturing consortia should use the regional workforce pipeline model and related bridge, foundation and specialized program models to conduct a systematic baseline inventory of secondary and postsecondary education programs at the statewide and regional levels and evaluate the alignment of these programs to ensure seamless transitions between programs and into the workforce. This inventory should include all types of publicly funded and regulated programs including programs offered by public and private universities, community colleges, community-based organizations, proprietary schools, and high schools. It also should include private training programs wherever possible including union apprenticeship and training programs.

These regional consortia should then use this baseline inventory to conduct a gap analysis to determine whether their regions have the right size and mix of programs to address projected demand, supply and shortages for the four identified shortage occupational areas and additional occupational areas specific to the region. This gap analysis should then be used to plan and develop new programs at all three tiers. These regional efforts also should be used to promote the exchange of information and program models between regions and

provide recommendations for expanding statewide program capacity and improving alignment.

Career Awareness and Guidance

CSSI consortia in all regions of Illinois identified the need to expand career awareness and guidance opportunities for K-12 students. Students and their parents should be given the opportunity to fully understand the career opportunities in manufacturing and how to develop career and education plans to pursue these careers. The proposed image and career awareness campaign is only the first step. Illinois must also provide structured opportunities for K-12 students to explore careers and develop career and education plans to pursue career in manufacturing as well as other career fields. Any future effort to expand career development opportunities in Illinois should be part of a larger effort to establish a comprehensive career development system in schools in which students can explore and plan for all careers.

This will be a major challenge in Illinois. Schools currently do not have the staff and resources necessary to provide these opportunities. Career guidance staff cannot be expected to provide these opportunities because of existing priorities and resources. In addition, teachers do not have the resources and support to provide these career development opportunities in classrooms. There is also no existing statewide effort by the manufacturing industry to partner with schools to provide these career development opportunities. Finally, there is limited time in the school curriculum for career development because of increased focus on academic preparation and increased graduation requirements. As a result, any effort at expanding career development must be designed so career development can be fully embedded into and linked to existing academic courses and career and technical education programs.

The Health Sciences K-12 Career Clusters model provides a promising starting point for developing a comprehensive system for career development in Illinois and a more focused effort to provide opportunities to expand career awareness and exploration opportunities in manufacturing. The Illinois State Board of Education is now developing career development materials in cooperation with other states based on the national Manufacturing Career Clusters model (See Appendix E), which is consistent with the U.S. Department of Labor's competency model. This effort also is based on the successful Health Sciences model that was endorsed by the IWIB Healthcare Task Force. These career development materials also provide the opportunities for students to strengthen their academic skills through their application in career development projects and scenarios. Illinois also has universities and community colleges who are actively engaging K-12 teachers and students in career development activities. All of

these efforts should be the foundation for expanding career development opportunities in manufacturing in Illinois.

Recommendations

Illinois should develop and implement a comprehensive career development system for K-12 education that provides students and their parents with career awareness, exploration and preparation opportunities at each critical stage of education, especially at key points of transition between elementary school and middle school, middle school and high school, and high school and postsecondary education.

As part of this effort, Illinois should develop and implement a comprehensive career development program for manufacturing. This effort should start with providing middle school and lower high school students with the opportunities to explore manufacturing careers and develop career and education plans for high school and postsecondary education and training. This effort should engage the leading manufacturers actively involved in the image campaign at the state and regional levels as well as university and community college partners. This effort should then be expanded to other critical points of transitions for students.

Illinois should continue to work with other states in creating career development curriculum materials based on the national Manufacturing Career Clusters framework and the successful Health Sciences career development model. Illinois should pilot test these materials in 2-3 regions within the next year. Illinois should then develop a plan to expand and sustain this career development expand these efforts to reach all regions in Illinois.

Conclusions and Next Steps

Manufacturing remains critical to the Illinois economy. Manufacturing is facing major problems in attracting sufficient numbers of skilled workers to meet current and future needs. The Critical Skill Shortages Initiative (CSSI) identified significant shortages in: (1) engineering technicians, (2) machinery maintenance, (3) manufacturing production (e.g., machinists, welders, assemblers, fabricators), and (4) supervisors and managers. These shortages are likely to increase over the next few years because of projected output growth in the manufacturing sector, rising skill requirements, and the need to replace a large number of workers entering retirement.

Illinois must take immediate actions to address these worker shortages. The Critical Skill Shortages Initiative (CSSI) and related state and regional efforts are an important first step in addressing these shortages. However, Illinois must

now build on these initiatives and take immediate actions to implement the Manufacturing Task Force recommendations to: (1) improve the image of manufacturing to attract youth and adults to pursue manufacturing careers as well as persuade parents to view manufacturing as a viable career for children, (2) build stronger regional workforce pipelines across the state, and (3) expand K-12 career development opportunities to prepare the future Illinois workforce.

Appendix A

Illinois Workforce Investment Board
Manufacturing Task Force

Chuck Anderson, Co-Chair
United Auto Workers
Lincolnshire, Illinois

James Hefti, Co-Chair
Advanced Technology Services
Peoria, Illinois

James Ayers
Central Illinois Manufacturing Company
Bement Illinois

Melissa Babyak
NovaPak
Paris, Illinois

Jerry Benish
Camcraft
Hanover Park

Dr. Jack Becherer
Rock Valley College
Rockford, Illinois

Frank Cavarretta
United Steel Workers
Granite City, Illinois

Michael Cermak
Rock Valley College
Rockford, Illinois

Tim Farraher
LCN
Princeton, Illinois

Frank Franzyk
North American Lighting
Salem, Illinois

Cindy Gagich
Granite City High School
Granite City, Illinois

Cynthia Garcia
Madison County Career and Technical Education System
Edwardsville, Illinois

Sally Griffith
Harper College
Palatine, Illinois

Melva Hunter
Illinois AFL/CIO
Springfield, Illinois

Bill Laycock
Granite City High School
Granite City, Illinois

Ocheng Jany
Illinois Board of Higher Education
Springfield, Illinois

Ben Johannpeter
United States Steel Corporation
Granite City, Illinois

Matt Jones
Madison County Employment and Training Department
Granite City, Illinois

Kathy Lively
Man-Tra-Con
Marion, Illinois

Jerry Ludlum
Gardner-Denver
Quincy, Illinois

Robert Mees
John A. Logan College
Carterville, Illinois

David Morgan
Illinois Machine Products
Loves Park, Illinois

Lavon Nelson
Illinois Community College Board
Springfield, Illinois

Steve Parrott
Illinois State Board of Education
Springfield, Illinois

Doug Parsons
Excel Foundry and Machine, Inc.
Pekin, Illinois

Roger Poole
Intl Assoc. of Machinists and Aerospace Workers
Bridgeton, Missouri

Darren Pulley
John A. Logan College
Carterville, Illinois

Blanche Shoup
LWA 14
Galesburg, Illinois

Mark Williams
Illinois State Board of Education
Springfield, Illinois

Mike Woley
Baldwin Manufacturing
Mcleansboro, Illinois

Appendix B

Manufacturing in Illinois

Table 1: Employment

Manufacturing Employment 1990-2005
Illinois: Global Insight
US: Moody's

	1990	1995	2000	2005
Illinois:Manufacturing Share of Nonfarm Employment %	17.3	16.0	14.4	11.8
US:Manufacturing Share of Nonfarm Employment %	16.2	14.7	13.1	10.7
Illinois:Manufacturing Employment	914772	893586	870577	689383
US:Manufacturing Employment	17695000	17244000	17266000	14234000

Table 2: Gross State Product

Manufacturing Gross State & Domestic Product 1990-2005
Illinois: Global Insight
US: Moody's

	1990	1995	2000	2005
Illinois:Manufacturing Share of Gross State Product %	14.3	15.2	14.9	14.7
US:Manufacturing Share of Gross Domestic Product %	17.8	15.9	12.4	10.7
Illinois:Manufacturing Gross State Product (millions 2000 $)	50728	60955	68990	73816
US:Gross Domestic Product (millions 2000 $)	1033280	1175660	1426240	1547600

Table 3: Productivity

Statewide Manufacturing Productivity 1990-2005
Illinois: Global Insight
US: Moody's

	1990	1995	2000	2005
Illinois:Manufacturing Productivity(GSP/Emp$)	55,454	68,213	79,246	107,075
US:Manufacturing Productivity(GDP/Emp$)	58,394	68,236	82,604	108,726

Appendix C

Manufacturing Shortage Occupations

Table 1 State CSSI Manufacturing Clusters

Table 2 Production Occupations Classified By Process Specialization

Table 1
State CSSI Manufacturing Clusters

1	Cluster	Engineering Technicians
	17-3021	Aerospace Engineering and Operations Technicians
	17-3023	Electrical and Electronic Engineering Technicians
	17-3024	Electro-Mechanical Technicians
	17-3025	Environmental Engineering Technicians
	17-3026	Industrial Engineering Technicians
	17-3027	Mechanical Engineering Technicians
2	Cluster	Machinery Maintenance
	49-2092	Electric Motor, Power Tool, and Related Repairers
	49-2093	Electrical and Electronics Installers & Reprs, Trans Equipment
	49-2094	Electrical & Electronics Reprs, Commercial & Industrial Equipment
	49-9012	Control & Valve Installers & Repairers, Exc. Mechanical Door
	49-9041	Industrial Machinery Mechanics
	49-9042	Maintenance and Repair Workers, General
	49-9043	Maintenance Workers, Machinery
	49-9044	Millwrights
3	Cluster	Manufacturing Production
	51-2021	Coil Winders, Tapers, and Finishers
	51-2022	Electrical and Electronic Equipment Assemblers
	51-2023	Electromechanical Equipment Assemblers
	51-2031	Engine and Other Machine Assemblers
	51-2041	Structural Metal Fabricators and Fitters
	51-2091	Fiberglass Laminators and Fabricators
	51-2092	Team Assemblers
	51-2093	Timing Device Assemblers, Adjusters, and Calibrators
	51-4011	Computer-Controlled Machine Tool Operators, Metal & Plastic
	51-4012	Numerical Tool and Process Control Programmers
	51-4021	Extruding & Drawing Mach Setters, Ops, & Tndrs, Metal and Plastic
	51-4022	Forging Machine Setters, Operators, & Tenders, Metal & Plastic
	51-4023	Rolling Machine Setters, Operators, & Tenders, Metal & Plastic
	51-4031	Cutting, Punching, & Press Mach Sttrs, Ops & Tndrs, Metal & Plast
	51-4032	Drilling & Boring Mach Tool Sttrs, Ops, & Tndrs, Metal & Plastic
	51-4033	Grinding, Lapping, Polishing, & Buffing Mach Tool Sttrs, Ops & Tndrs
	51-4034	Lathe & Turning Mach Tool Sttrs, Ops & Tndrs, Metal & Plastic
	51-4035	Milling & Planing Mach Sttrs, Ops & Tndrs, Metal & Plastic
	51-4041	Machinists

3	Cluster	Manufacturing Production continued
	51-4051	Metal-Refining Furnace Operators and Tenders
	51-4052	Pourers and Casters, Metal
	51-4061	Model Makers, Metal and Plastic
	51-4062	Patternmakers, Metal and Plastic
	51-4071	Foundry Mold and Coremakers
	51-4072	Molding, Coremaking, & Cstng Mach Sttrs, Ops & Tndrs, Metal & Plast
	51-4081	Multiple Machine Tool Setters, Operators, & Tenders, Metal & Plast
	51-4111	Tool and Die Makers
	51-4121	Welders, Cutters, Solderers, and Brazers
	51-4122	Welding, Soldering, & Brazing Machine Setters, Ops & Tndrs
	51-4191	Heat Treating Equipment Setters, Ops & Tndrs, Metal & Plast
	51-4192	Lay-Out Workers, Metal and Plastic
	51-4193	Plating & Coating Mach Setters, Ops & Tndrs, Metal & Plastic
	51-4194	Tool Grinders, Filers, and Sharpeners
	51-9111	Packaging and Filling Machine Operators and Tenders
	51-9121	Coating, Painting, & Spraying Machine Setters, Ops & Tndrs
	51-9122	Painters, Transportation Equipment
	51-9123	Painting, Coating, and Decorating Workers
	51-9141	Semiconductor Processors
	51-9191	Cementing and Gluing Machine Operators and Tenders
	51-9192	Cleaning, Washing, & Metal Pickling Equipment Ops & Tndrs
	51-9193	Cooling and Freezing Equipment Operators and Tenders
	51-9195	Molders, Shapers, and Casters, Except Metal and Plastic
	51-9196	Paper Goods Machine Setters, Operators, and Tenders
	51-9197	Tire Builders
4	Cluster	Supervisors and Managers
	11-3051	Industrial Production Managers
	49-1011	First-Line Supvrs/Mgrs of Mechanics, Installers, & Repairers
	51-1011	First-Line Supvrs/Mgrs of Production & Operating Wkrs

Table 2
Production Occupations Classified by Process Specialization

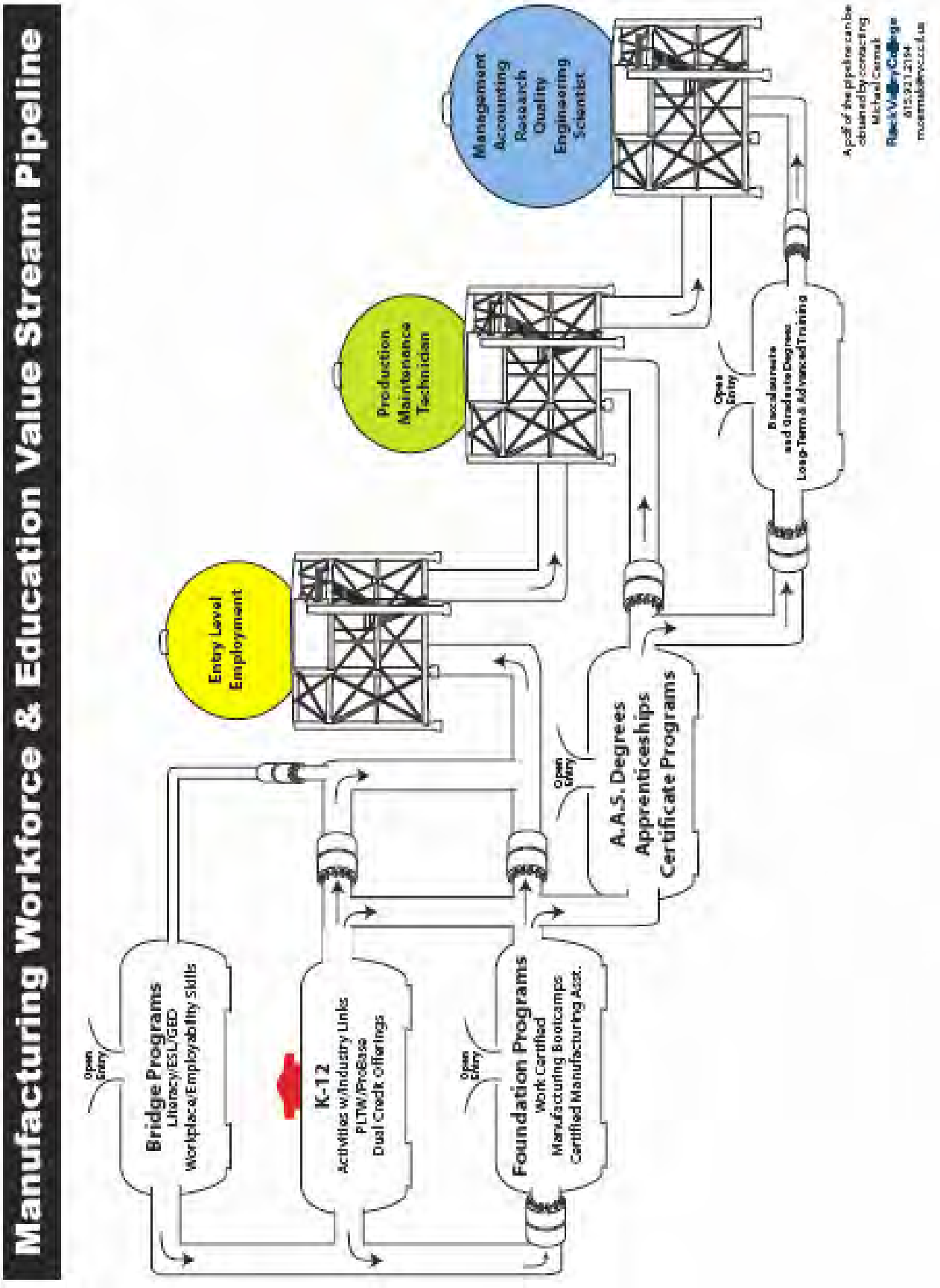
Manufacturing Production Occupations by Training Requirements & Earnings				2002 median annual earnings
Code	Occupation title	On-the-Job training	Educational Attainment	Dollars
	Assembly			
51-2022	Electrical and electronic equipment assemblers	Short-term	HS/SC	22,940
51-2023	Electromechanical equipment assemblers	Short-term	HS/SC	25,260
51-2031	Engine and other machine assemblers1	Short-term	HS/SC	29,170
51-2092	Team assemblers	Moderate-term	HS/SC	22,680
51-2041	Structural metal fabricators and fitters	Moderate-term	HS/SC	28,620
	Machining			
51-4011	Computer-controlled machine tool operators	Moderate-term	HS/SC	29,050
51-4041	Machinists	Long-term	HS/SC	32,570
51-4111	Tool and die makers	Long-term	HS/SC	42,730
51-4031	Cutting, punching, and press machine *	Moderate-term	HS/SC	24,570
51-4032	Drilling and boring machine tool setters*	Moderate-term	HS/SC	27,530
51-4033	Grinding, lapping, polishing, and buffing mach tool *	Moderate-term	HS	26,120
51-4034	Lathe and turning machine tool *	Moderate-term	HS/SC	30,270
51-4081	Multiple machine tool setters, operators & tenders	Moderate-term	HS/SC	28,690
	Welding			
51-4121	Welders, cutters, solderers, and brazers	Long-term	HS/SC	29,160
51-4122	Welding, soldering, and brazing machine setters*	Moderate-term	HS/SC	28,900
	Forming			
51-4021	Extruding and drawing machine setters, operators*	Moderate-term	HS/SC	25,870
51-4022	Forging machine setters, operators, and tenders	Moderate-term	HS/SC	26,300
51-4023	Rolling machine setters, operators, and tenders	Moderate-term	HS	28,330
51-4072	Molding, coremaking, and casting machine strs*	Moderate-term	HS/SC	23,230
51-4193	Plating and coating machine setters, operators*	Moderate-term	HS	25,420
51-9041	Extruding, forming, pressing, and compacting mach*	Moderate-term	HS/SC	26,540
	Printing			
51-5023	Printing machine operators	Moderate-term	HS/SC	29,010
51-5011	Bindery workers	Short-term	HS/SC	21,860
51-5021	Job printers	Long-term	HS/SC	30,100
51-5022	Prepress technicians and workers	Long-term	HS/SC	31,150
	Textiles			
51-6031	Sewing machine operators	Moderate-term	HS	17,440
51-6021	Pressers, textile, garment, and related materials	Short-term	HS	17,070
51-6051	Sewers, hand	Short-term	HS/SC	18,070

	Chemicals			
51-8031	Water and liquid waste treatment plant and system op	Long-term	HS/SC	33,390
51-9011	Chemical equipment operators and tenders	Moderate-term	HS/SC	37,430
	Food			
51-3011	Bakers	Long-term	HS/SC	20,580
51-3021	Butchers and meat cutters	Long-term	HS	25,500
51-3022	Meat, poultry, and fish cutters and trimmers	Short-term	HS	17,820
51-3023	Slaughterers and meat packers	Moderate-term	HS	20,370
51-3092	Food batchmakers	Short-term	HS	21,920
51-9023	Mixing and blending machine setters, operators*	Moderate-term	HS/SC	27,530

* occupations will include Operators, Setters & Tenders
Short-term on-the-job training: 1 month or Less
Moderate-term on-the-job training: 1 to 12 months
Long-term on-the-job training: 12 or more months in Classroom
[1] The job types are presented in the following categories: HS = high school occupations, HS/SC = high school/some college occupations, SC = some college cccupations, SC = some college cccupations, HS/SC/C =high school/some college/college occupations, SC/C =some college/college occupations

Appendix D

Manufacturing Workforce and Education Value Stream Pipeline


Manufacturing Workforce & Education Value Stream Pipeline
Management
Accounting
Research
Quality
Engineering
Scientist
Production
Maintenance
Technician
Entry Level
Employment
Bridge Programs
Literacy/ESL/GED
Workplace/Employability Skills
K-12
Activities w/Industry Links
PLTW/Prodess
Dual Credit Offerings
Foundation Programs
Work Certified
Manufacturing Bootcamps
Certified Manufacturing Asst.
A.A.S. Degrees
Apprenticeships
Certificate Programs
Open Entry
Open Entry
Open Entry
Open Entry
Baccalaureate and Graduate Degrees Long-Term & Advanced Training
A pdf of the pipeline can be obtained by contacting Michael Cornell
Rock Valley College
815.921.2194
mcornell@rockvalleycollege.edu

Appendix E

Manufacturing Career Clusters Model

Manufacturing Cluster

Planning, managing, and performing the processing of materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering.

Sample Career Specialties/Occupations	♦ Assemblers ♦ Calibration Technicians ♦ Electrical Installers and Repairers ♦ Electromechanical Equipment Assemblers ♦ Extruding and Drawing Machine Setters/Set-Up Operators ♦ Extrusion Machine Operators ♦ Foundry Workers ♦ Grinding, Lapping, and Buffing Machine Operators ♦ Hand Packers and Packagers ♦ Instrument Makers ♦ Large Printing Press Machine Setters and Set-Up Operators ♦ Machine Operators ♦ Managers, Supervisors ♦ Medical Appliance Makers ♦ Milling Machine Setters, Set-Up Operators ♦ Operators, Tenders, ♦ Pattern & Model Makers ♦ Precision Layout Workers ♦ Precision Optical Goods Workers ♦ Production Associates ♦ Sheet Metal Workers ♦ Solderers and Brazers ♦ Tool and Die Makers ♦ Welders	♦ Design Engineers ♦ Electrical and Electronic Technicians and Technologists ♦ Electronics Engineers ♦ Engineering and Related Technicians and Technologists ♦ Engineering Technicians ♦ Industrial Engineers ♦ Labor Relations Managers ♦ Manufacturing Engineers ♦ Manufacturing Technicians ♦ Power Generating and Reactor Plant Operators ♦ Precision Inspectors, Testers, and Graders ♦ Process Improvement Technicians ♦ Production Managers ♦ Purchasing Agents ♦ Supervisors	♦ Biomedical Equipment Technicians ♦ Boilermakers ♦ Communication System Installers/Repairers ♦ Computer Installers/Repairers ♦ Computer Maintenance Technicians ♦ Electrical Equipment Installers/Repairers ♦ Facility Electricians ♦ Industrial Electronic Installers/Repairers ♦ Industrial Facilities Managers ♦ Industrial Machinery Mechanics ♦ Industrial Maintenance Electricians ♦ Industrial Maintenance Mechanics ♦ Industrial Maintenance Technicians ♦ Instrument Calibration and Repairers ♦ Instrument Control Technicians ♦ Job/Fixture Designers ♦ Laser Systems Technicians ♦ Maintenance Repairers ♦ Major Appliance Repairers ♦ Meter Installers/Repairers ♦ Millwrights ♦ Plumbers, Pipe Fitters and Steam Fitters ♦ Security System Installers/Repairers	♦ Calibration Technicians ♦ Inspectors ♦ Lab Technicians ♦ Process Control Technicians ♦ Quality Control Technicians ♦ Quality Engineers ♦ SPC Coordinators	♦ Communications, Transportation and Utilities Managers ♦ Dispatchers ♦ Freight, Stock, and Material Movers ♦ Industrial Truck and Tractor Operators ♦ Logistical Engineers ♦ Logisticians ♦ Material Associates ♦ Material Handlers ♦ Material Movers ♦ Process Improvement Technicians ♦ Quality Control Technicians ♦ Traffic Managers ♦ Traffic, Shipping, and Receiving Clerks	♦ Environmental Engineers ♦ Environmental Specialists ♦ Health and Safety Representatives ♦ Safety Coordinators ♦ Safety Engineers ♦ Safety Team Leaders ♦ Safety Technicians
Path ways	**Production**	**Manufacturing Production Process Development**	**Maintenance, Installation & Repair**	**Quality Assurance**	**Logistics & Inventory Control**	**Health, Safety and Environmental Assurance**
Cluster K & S	**Cluster Knowledge and Skills** ♦ Academic Foundations ♦ Communications ♦ Problem Solving and Critical Thinking ♦ Information Technology Applications ♦ Systems ♦ Safety, Health and Environmental ♦ Leadership and Teamwork ♦ Ethics and Legal Responsibilities ♦ Employability and Career Development ♦ Technical Skills					

Exhibit 2

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829

PAT QUINN, GOVERNOR LISA BONNETT, DIRECTOR

217/782-0610

September 27, 2013

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, Illinois 60501

Re: Ingredion Incorporated
Ingredion Incorporated Argo Plant
NPDES Permit No. IL0041009
Final Permit

Gentlemen:

Please note that Special Condition 3 of the permit has been modified to clarify that your facility currently meets the allowed mixing criteria and no reasonable potential exists for the discharge to exceed thrmal water quality standards.

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Agency has begun a program allowing the submittal of electronic Discharge Monitoring Reports (eDMRs) instead of paper Discharge Monitoring Reports (DMRs). If you are interested in eDMRs, more information can be found on the Agency website, http://epa.state.il.us/water/edmr/index.html. If your facility is not registered in the eDMR program, a supply of preprinted paper DMR Forms for your facility will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

The attached Permit is effective as of the date indicated on the first page of the Permit. Until the effective date of any re-issued Permit, the limitations and conditions of the previously-issued Permit remain in full effect. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Brian W. Cox at 217/782-0610.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:BWC:13050801.bwc

Attachment: Final Permit

cc: Records
Compliance Assurance Section
Des Plaines Region
Billing
CMAP

4302 N. Main St., Rockford, IL 61103 (815)987-7760
595 S. State, Elgin, IL 60123 (847)608-3131
2125 S. First St., Champaign, IL 61820 (217)278-5800
2009 Mall St., Collinsville, IL 62234 (618)346-5120

9511 Harrison St., Des Plaines, IL 60016 (847)294-4000
5407 N. University St., Arbor 113, Peoria, IL 61614 (309)693-5462
2309 W. Main St., Suite 116, Marion, IL 62959 (618)993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601 (312)814-6026

NPDES Permit No. IL0041009

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date: September 30, 2018

Issue Date: September 27, 2013
Effective Date: October 1, 2013

Name and Address of Permittee:

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, Illinois 60501

Facility Name and Address:

Ingredion Incorporated Argo Plant
6400 South Archer Avenue
Bedford Park, Illinois 60501
(Cook County)

Discharge Number and Name:	Receiving Waters:
001 Non-Contact Cooling Water	Chicago Sanitary and Ship Canal
002 Stormwater Runoff	Unnamed wetland
003 Cooling Water Intake Related Discharges	Chicago Sanitary and Ship Canal

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:DEL:BWC:13050801.bwc

NPDES Permit No. IL0041009

Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 001 – Non-Contact Cooling Water (DAF = 48.0 MGD)

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week	Measurement
pH	See Special Condition 2				1/Week	Grab
Temperature	See Special Condition 3				1/Week	Single Reading
Total Residual Chlorine*				0.05	1/Week	Grab

*See Special Condition 4

Outfall(s): 002 – Stormwater Runoff

See Special Condition 14 for storm water pollution prevention plan requirements.

Outfall(s): 003 – Cooling Water Intake Related Discharges

See Special Condition 10.

NPDES Permit No. IL0041009

Special Conditions

SPECIAL CONDITION 1. Flow shall be measured in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum on the Discharge Monitoring Report.

SPECIAL CONDITION 2. The pH shall be in the range of 6.0 to 9.0 Standard Units. The minimum and maximum values for each discharge shall be reported on the DMR form.

SPECIAL CONDITION 3. The receiving waters are designated as Secondary Contact and Indigenous Aquatic Life Waters by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.408 as amended. Therefore, these waters are subject to the following standard:

A. Temperatures shall not exceed 93° F (34° C) more than 5% of the time or 100° F (37.8° C) at any time at the edge of the mixing zone which is defined by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.102 as amended.

This facility meets the allowed mixing criteria for thermal discharges pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to exceed thermal water quality standards. This determination is based a design average flow of 48.0 MGD and a maximum temperature of 92.4 ° F. The permittee shall monitor the flow and temperature of the discharge prior to entry into the receiving water body. Monitoring results shall be reported on the monthly Discharge Monitoring Report. This permit may be modified to include formal temperature limitations should the results of the monitoring show that there is reasonable potential to exceed a thermal water quality standard. Modification of this permit shall follow public notice and opportunity for comment.

There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions. The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.

The monthly maximum value shall be reported on the DMR form.

SPECIAL CONDITION 4. For the purpose of this permit Total Residual Chlorine means those substances which include combined and uncombined forms of both chlorine and bromine and which are expressed, by convention, as an equivalent concentration of molecular chlorine. All samples for Total Residual Chlorine shall be analyzed by an applicable method contained in 40 CFR 136, equivalent in accuracy to low-level amperometric titration. Any analytical variability of the method used shall be considered when determining the accuracy and precision of the results obtained.

SPECIAL CONDITION 5. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 6. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 7. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

NPDES Permit No. IL0041009

Special Conditions

Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 8. For the purposes of this permit, the discharge from Outfall 001 is limited to non-contact cooling water, free from process or any other wastewater discharge. In the event the permittee shall require the use of water treatment additives other than those previously approved by this Agency, or if the permittee increases the feed rate or quantity of the additives used beyond what has previously been approved by this Agency, the permittee shall request a modification of this permit in accordance with the Standard Conditions – Attachment H. The use of phosphorus based additives is prohibited unless the Agency has provided the permittee with a written approval letter.

SPECIAL CONDITION 9. For the purposes of this permit, the discharge from Outfall 002 is limited to stormwater runoff free from process or any other wastewater discharge.

SPECIAL CONDITION 10. For the purposes of this permit, the discharges from Outfall 003 are limited to intake protection water, intake screen backwash, pump priming siphon discharges, manual pump water pressure relief discharges, uncontaminated sump discharges, pump safety relief valve discharges, seal water leakage, and other miscellaneous pump related discharges, free from process or any other wastewater discharge. In addition, there shall be no discharge of manually collected debris from the intake screens.

SPECIAL CONDITION 11. No effluent shall contain settleable solids, floating debris, visible oil, grease, scum or sludge solids. Color, odor and turbidity must be reduced to below obvious levels.

SPECIAL CONDITION 12. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 13. In order for the Agency to evaluate the potential impacts of cooling water intake structure operations pursuant to 40 CFR 125.90(b), the permittee shall prepare and submit information to the Agency outlining current intake structure conditions at this facility, including a detailed description of the current intake structure operation and design, description of any operational or structural modifications from original design parameters, source waterbody flow information, or other information as necessary.

The information shall also include a summary of historical 316(b) related intake impingement and / or entrainment studies, if any, as well as current impingement mortality and / or entrainment characterization data; and shall be submitted to the Agency within six (6) months of the permit's effective date.

Upon the receipt and review of this information, the permit may be modified to require the submittal of additional information based on a Best Professional Judgment review by the Agency. This permit may also be revised or modified in accordance with any laws, regulations, or judicial orders pursuant to Section 316(b) of the Clean Water Act.

SPECIAL CONDITION 14.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be maintained by the permittee for the storm water associated with industrial activity at this facility. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. The permittee shall modify the plan if substantive changes are made or occur affecting compliance with this condition.

1. Waters not classified as impaired pursuant to Section 303(d) of the Clean Water Act.

Unless otherwise specified by federal regulation, the storm water pollution prevention plan shall be designed for a storm event

equal to or greater than a 25-year 24-hour rainfall event.

2. Waters classified as impaired pursuant to Section 303(d) of the Clean Water Act

   For any site which discharges directly to an impaired water identified in the Agency's 303(d) listing, and if any parameter in the subject discharge has been identified as the cause of impairment, the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event. If required by federal regulations, the storm water pollution prevention plan shall adhere to a more restrictive design criteria.

B. The operator or owner of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph H of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within 30 days of any proposed construction or operational changes at the facility, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

   1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate. Any map or portion of map may be withheld for security reasons.

   2. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

      x. Areas under items iv and ix above may be withheld from the site for security reasons.

   3. A narrative description of the following:

i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

iv. Industrial storm water discharge treatment facilities;

v. Methods of onsite storage and disposal of significant materials.

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities. Also provide a list of any pollutant that is listed as impaired in the most recent 303(d) report.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill cleanup equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff. To the maximum extent practicable storm water discharged from any area where material handling equipment or activities, raw material, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water should not enter vegetated areas or surface waters or infiltrate into the soil unless adequate treatment is provided.

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges.

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges.

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination. Minimize the quantity of storm water entering areas where material handling equipment of activities, raw material, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water using green infrastructure techniques where practicable in the areas outside the exposure area, and otherwise divert storm water away from exposure area.

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

vii. Storm Water Reduction - Install vegetation on roofs of buildings within adjacent to the exposure area to detain and evapotranspirate runoff where precipitation falling on the roof is not exposed to contaminants, to minimize storm water runoff; capture storm water in devices that minimize the amount of storm water runoff and use this water as appropriate based on quality.

6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion. The plan shall describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

G. Non-Storm Water Discharge - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharge. The certification shall include a description of any test for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible.

H. Quarterly Visual Observation of Discharges - The requirements and procedures for quarterly visual observations are applicable to all outfalls covered by this condition.

1. You must perform and document a quarterly visual observation of a storm water discharge associated with industrial activity from each outfall. The visual observation must be made during daylight hours. If no storm event resulted in runoff during daylight hours from the facility during a monitoring quarter, you are excused from the visual observations requirement for that quarter, provided you document in your records that no runoff occurred. You must sign and certify the document.

2. Your visual observation must be made on samples collected as soon as practical, but not to exceed 1 hour or when the runoff or snow melt begins discharging from your facility. All samples must be collected from a storm event discharge that is greater than 0.1 inch in magnitude and that occurs at least 72 hours from the previously measureable (greater than 0.1 inch rainfall) storm event. The observation must document: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. If visual observations indicate any unnatural color, odor, turbidity, floatable material, oil sheen or other indicators of storm water pollution, the permittee shall obtain a sample and monitor for the parameter or the list of pollutants in Part E.4.

3. You must maintain your visual observation reports onsite with the SWPPP. The report must include the observation date and time, inspection personnel, nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

4. You may exercise a waiver of the visual observation requirement at a facility that is inactive or unstaffed, as long as there are no industrial materials or activities exposed to storm water. If you exercise this waiver, you must maintain a certification with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to

storm water.

5. Representative Outfalls - If your facility has two or more outfalls that you believe discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and storm water management practices occurring within the drainage areas of the outfalls, you may conduct visual observations of the discharge at just one of the outfalls and report that the results also apply to the substantially identical outfall(s).

6. The visual observation documentation shall be made available to the Agency and general public upon written request.

I. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

J. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated there under, and Best Management Programs under 40 CFR 125.100.

K. The plan is considered a report that shall be available to the public at any reasonable time upon request.

L. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

M. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirement imposed by the operator of the municipal system

Construction Authorization

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

N. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights there under.

O. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

P. Plans and specifications of all treatment equipment being included as part of the stormwater management practice shall be included in the SWPPP.

Q. Construction activities which result from treatment equipment installation, including clearing, grading and excavation activities which result in the disturbance of one acre or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

R. The facility shall submit an electronic copy of the annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part I of this condition. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s). The annual inspection report is considered a public document that shall be available at any reasonable time upon request.

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S. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

T. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

U. The permittee shall retain the annual inspection report on file at least 3 years. This period may be extended by request of the Illinois Environmental Protection Agency at any time.

Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

V. The permittee shall notify any regulated small municipal separate storm sewer owner (MS4 Community) that they maintain coverage under an individual NPDES permit. The permittee shall submit any SWPPP or any annual inspection to the MS4 community upon request by the MS4 community.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
  (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
  (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  (d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**
  (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.
  (c) Records of monitoring information shall include:
    (1) The date, exact place, and time of sampling or measurements;
    (2) The individual(s) who performed the sampling or measurements;
    (3) The date(s) analyses were performed;
    (4) The individual(s) who performed the analyses;
    (5) The analytical techniques or methods used; and
    (6) The results of such analyses.
  (d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.
  (a) **Application.** All permit applications shall be signed as follows:
    (1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation:
    (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
    (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
  (b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    (1) The authorization is made in writing by a person described in paragraph (a); and
    (2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and
    (3) The written authorization is submitted to the Agency.
  (c) **Changes of Authorization.** If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.
  (d) **Certification.** Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

    I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements.**
  (a) **Planned changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.
  Notice is required when:
    (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or
    (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).
    (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
  (b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  (c) **Transfers.** This permit is not transferable to any person except after notice to the Agency.
  (d) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  (e) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.
    (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass.**

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset.**

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits.** Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

(b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically

transferred to a new permittee if:

(1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and

(3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.
Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).

(23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.

(28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

Exhibit 3

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, IL 60501
United States
w: ingredion.com

April 2, 2018

Illinois EPA
Division of Water Pollution Control
Permit Section
1021 N. Grand Avenue East
Springfield, IL 62794-9276

Re: Renewal of NPDES Permit IL0041009

Dear Sir or Madam:

Please find enclosed one original set and one copy of the required completed forms and attachments to renew the above referenced NDPES permit for the Ingredion Incorporated Argo Plant facility that discharges into the Chicago Sanitary and Ship Canal.

This renewal application contains supplemental information regarding the Total Chloride and Temperature water quality standards that will become effective on July 1, 2018.

Also, since Ingredion has a non-contact cooling water intake flow of greater than 2 million gallons per day (MGD) and is subject to the federal §316(b) existing facilities rule that became effective on October 14, 2014, applicable information required by 40 CFR §122.21(r)(2) through (r)(8) is also being submitted at this time.

Once the Agency has reviewed the enclosed materials Ingredion would be happy to answer any questions you may have. I can be reached at 708-563-2400 ext 5334.

Thank you in advance for your prompt attention to this permit renewal.

Sincerely,

Ingredion Incorporated Argo Plant

Rob Mead
Manager Environmental and Regulatory Affairs

Enclosures

Table of Contents

Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086.

FORM 1 GENERAL

U.S. ENVIRONMENTAL PROTECTION AGENCY
GENERAL INFORMATION
Consolidated Permits Program
(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F			D

1 2 13 14 15

LABEL ITEMS
I. EPA I.D. NUMBER
III. FACILITY NAME
V. FACILITY MAILING ADDRESS
VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of **bold-faced terms.**

SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	Mark "X" YES	NO	FORM ATTACHED
A. Is this facility a **publicly owned treatment works** which results in a **discharge** to **waters of the U.S.**? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a **concentrated animal feeding operation** or **aquatic animal production facility** which results in a **discharge** to **waters of the U.S.**? (FORM 2B)		X	
	16	17	18		19	20	21
C. Is this a facility which currently results in **discharges** to **waters of the U.S.** other than those described in A or B above? (FORM 2C)	X			D. Is this a proposed facility *(other than those described in A or B above)* which will result in a **discharge** to **waters of the U.S.**? (FORM 2D)		X	
	22	23	24		25	26	27
E. Does or will this facility treat, store, or dispose of **hazardous wastes**? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
	28	29	30		31	32	33
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
	34	35	36		37	38	39
I. Is this facility a proposed **stationary source** which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed **stationary source** which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an **attainment area**? (FORM 5)		X	
	40	41	42		43	44	45

III. NAME OF FACILITY

1 SKIP: Ingredion Incorporated Argo Plant

15 16 – 29 30 69

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*: 2 Mead, Rob, Environmental Manager

15 16 45

B. PHONE *(area code & no.)*: (708) 563-5334

45 46 48 49 51 52 55

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX: 3 6400 South Archer Avenue

15 16 45

B. CITY OR TOWN: 4 Bedford Park

15 16 40

C. STATE: IL

41 42

D. ZIP CODE: 60501

47 51

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER: 5 6400 South Archer Avenue

15 16 45

B. COUNTY NAME: Cook

45 70

C. CITY OR TOWN: 6 Bedford Park

15 16 40

D. STATE: IL

41 42

E. ZIP CODE: 60501

47 51

F. COUNTY CODE *(if known)*

52 54

EPA Form 3510-1 (8-90)

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES *(4-digit, in order of priority)*

A. FIRST	B. SECOND
2046 (specify) Corn Wet Milling	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME	B. Is the name listed in Item VIII-A also the owner?
Ingredion Incorporated	☑ YES ☐ NO

C. STATUS OF OPERATOR *(Enter the appropriate letter into the answer box: if "Other," specify.)*			D. PHONE *(area code & no.)*
F = FEDERAL S = STATE P = PRIVATE	M = PUBLIC *(other than federal or state)* O = OTHER *(specify)*	P (specify)	A (708) 563-5334

E. STREET OR P.O. BOX				IX. INDIAN LAND
6400 South Archer Avenue	F. CITY OR TOWN	G. STATE	H. ZIP CODE	Is the facility located on Indian lands?
	B Bedford Park	IL	60501	☐ YES ☑ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES *(Discharges to Surface Water)*	D. PSD *(Air Emissions from Proposed Sources)*
9 N IL0041009	9 P
B. UIC *(Underground Injection of Fluids)*	**E. OTHER** *(specify)*
9 U	9 (specify)
C. RCRA *(Hazardous Wastes)*	**E. OTHER** *(specify)*
9 R	9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS *(provide a brief description)*

Wet milling of corn to produce starches, sweeteners, edible corn oil and animal feeds

XIII. CERTIFICATION *(see instructions)*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. NAME & OFFICIAL TITLE *(type or print)*	B. SIGNATURE	C. DATE SIGNED
Ray Doogan Plant Manager		4/2/18

COMMENTS FOR OFFICIAL USE ONLY

C

EPA Form 3510-1 (8-90)

Please print or type in the unshaded areas only. | EPA ID Number (copy from Item 1 of Form 1) | Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 2E NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. RECEIVING WATERS

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number *(list)*	Latitude			Longitude			Receiving Water *(name)*
	Deg	Min	Sec	Deg	Min	Sec	
001	87.0(	49.0(	50.0(	41.0(	46.0(	29.0(	Chicago Sanitary and Ship Canal

II. DISCHARGE DATE *(If a new discharger, the date you expect to begin discharging)*

III. TYPE OF WASTE

A. Check the box(es) indicating the general type(s) of wastes discharged.

☐ Sanitary Wastes ☐ Restaurant or Cafeteria Wastes ☑ Noncontact Cooling Water ☐ Other Nonprocess Wastewater *(Identify)*

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

Sodium Bromide, 43% solution at canal intake station
Sodium Hypochlorite, 15% solution at canal intake station
Magnesium Bisulfite, 50% solution in canal return line.

IV. EFFLUENT CHARACTERISTICS

A. Existing Sources — Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. New Dischargers — Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value *(include units)*		(2) Average Daily Value *(last year)* *(include units)*		*(3)* Number of Measurements Taken *(last year)*	*(or)* *(4)* Source of Estimate *(if new discharger)*
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)						
Total Suspended Solids (TSS)						
Fecal Coliform *(if believed present or if sanitary waste is discharged)*						
Total Residual Chlorine *(if chlorine is used)*		0.05		0.02	51.00	
Oil and Grease						
*Chemical oxygen demand (COD)						
*Total organic carbon (TOC)						
Ammonia *(as N)*						
Discharge Flow	Value 65.0 mgd		32.80 mgd			
pH *(give range)*	Value 8.2		7.1		52.00	
Temperature *(Winter)*		19.40 °C		11.00 °C	52.00	
Temperature *(Summer)*		29.20 °C		25.30 °C	52.00	

*If noncontact cooling water is discharged

V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? ☑ Yes ☐ No

If yes, briefly describe the frequency of flow and duration.

The plant experiences increased intake demand in the summer months due to the warmer temperatures of the canal.

VI. TREATMENT SYSTEM *(Describe briefly any treatment system(s) used or to be used)*

The canal intake has sodium hypochlorite and sodium bromide added for biogrowth and the canal return has magnesium bisulfite added as a de-halogenation agent.

VII. OTHER INFORMATION *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

Attachment 1 addresses issues relating to total chlorides and Attachment 2 addresses issues relating to thermal as it relates to new standards that become effective on 7/1/18 pursuant to 35 IAC 302.407 (chlorides) and 302.408 (thermal).

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title	B. Phone No. *(area code & no.)*
Ray Doogan, Plant Manager	(708) 563-2400
C. Signature	D. Date Signed
	4/2/18

Please print or type in the unshaded areas only.

EPA ID Number (*copy from Item 1 of Form 1*)

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

FORM 2F NPDES

U.S. Environmental Protection Agency
Washington, DC 20460

Application for Permit to Discharge Storm Water Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (*list*)	B. Latitude			C. Longitude			D. Receiving Water (*name*)
002	41.00	46.00	13.00	87.00	49.00	33.00	Adjacent to designated wetland

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
None					

B: You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfalls(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage of disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which received storm water discharges from the facility.

6

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of imperious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
002	2 acres	71.0			

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

There are no significant materials stored in the storm water area which would be exposured to storm water runoff.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
002	See IV, B Above	

V. Nonstormwater Discharges

A. I certify under penalty of law hat the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or From 2E application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed
Ray Doogan, Plant Manager		4/2/18

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

A review of site sewer and stormwater drainage maps.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

The following is a summary of significant leaks and/or spills in the last three years:

Date	Material Spilled	Amount Spilled	Amount Recovered
12/30/16	Crude corn oil	2,500 gallons	2,500 gallons
11/4/17	Crude corn oil & Germ meal mixture	2,500 gallons	2,500 gallons

None of the above spills resulted in any material being released thru a stormwater discharge point.

Continued from Page 2

EPA ID Number *(copy from Item 1 of Form 1)*

VII. Discharge Information

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ Yes (*list all such pollutants below*) ☑ No (*go to Section IX*)

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (*list all such pollutants below*) ☑ No (*go to Section IX*)

IX. Contract Analysis Information

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☐ Yes (*list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below*) ☑ No (*go to Section X*)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (*Type Or Print*)	B. Area Code and Phone No.
Ray Doogan, Plant Manager	(708) 563-2400
C. Signature	D. Date Signed
	4/2/18

EPA ID Number (*copy from Item 1 of Form 1*)

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge information *(Continued from page 3 of Form 2F)*

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
Oil and Grease		N/A				
Biological Oxygen Demand (BOD5)						
Chemical Oxygen Demand (COD)						
Total Suspended Solids (TSS)						
Total Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		
No qualifying	storm water	sampling event				

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 20 Minutes	Flow-Weighted Composite		

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event *(gallons/minute or specify units)*	6. Total flow from rain event *(gallons or specify units)*

7. Provide a description of the method of flow measurement or estimate.

There have been no qualifying storm water events prior to the renewal. The source will conduct storm water sampling once there is a qualifying event.

Please print or type in the unshaded areas only. | EPA ID Number (copy from Item 1 of Form 1) | Form Approved. OMB No. 2040-0086. Approval expires 5-31-92.

FORM 2E NPDES

EPA Facilities Which Do Not Discharge Process Wastewater

I. RECEIVING WATERS

For this outfall, list the latitude and longitude, and name of the receiving water(s).

Outfall Number (list)	Latitude			Longitude			Receiving Water (name)
	Deg	Min	Sec	Deg	Min	Sec	
003	87.0(	49.0(	50.0(	41.0(	46.0(	29.0(	Chicago Sanitary and Ship Canal

II. DISCHARGE DATE (If a new discharger, the date you expect to begin discharging)

III. TYPE OF WASTE

A. Check the box(es) indicating the general type(s) of wastes discharged.

☐ Sanitary Wastes ☐ Restaurant or Cafeteria Wastes ☑ Noncontact Cooling Water ☐ Other Nonprocess Wastewater (Identify)

B. If any cooling water additives are used, list them here. Briefly describe their composition if this information is available.

The discharges from Outfall 003 are limited to intake protection water, intake screen backwash, pump priming siphon discharges, manual pump water pressure relief discharges, uncontaminated sump discharges, pump safety relief valve discharges, seal water leakage, other miscellaneous pump related discharges and strainer backwash, free from any biofouling chemical addition and process or any other wastewater discharge. In addition, there shall be no discharge of manually collected debris from the intake screens.

IV. EFFLUENT CHARACTERISTICS

A. Existing Sources — Provide measurements for the parameters listed in the left-hand column below, unless waived by the permitting authority *(see instructions)*.

B. New Dischargers — Provide estimates for the parameters listed in the left-hand column below, unless waived by the permitting authority. Instead of the number of measurements taken, provide the source of estimated values *(see instructions)*.

Pollutant or Parameter	(1) Maximum Daily Value (include units)		(2) Average Daily Value (last year) (include units)		(3) Number of Measurements Taken (last year)	(or) (4) Source of Estimate (if new discharger)
	Mass	Concentration	Mass	Concentration		
Biochemical Oxygen Demand (BOD)	No	monitoring	required			
Total Suspended Solids (TSS)	only	raw canal	water			
Fecal Coliform *(if believed present or if sanitary waste is discharged)*						
Total Residual Chlorine *(if chlorine is used)*						
Oil and Grease						
*Chemical oxygen demand (COD)						
*Total organic carbon (TOC)						
Ammonia *(as N)*						
Discharge Flow	Value					
pH *(give range)*	Value					
Temperature *(Winter)*		°C		°C		
Temperature *(Summer)*		°C		°C		

*If noncontact cooling water is discharged

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V. Except for leaks or spills, will the discharge described in this form be intermittent or seasonal? ☑ Yes ☐ No

If yes, briefly describe the frequency of flow and duration.

Intake screen and strainer discharges are generally consistent but can be intermittent based on backwash pressure or for screen & strainer maintenance. Other types of discharges that are intermittent include the sump discharge, which includes pump and seal leaking along with safety valve releases and other events. All of these discharges are raw canal water, free from any biofouling additives.

VI. TREATMENT SYSTEM *(Describe briefly any treatment system(s) used or to be used)*

None

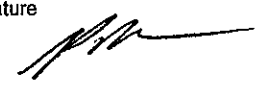
VII. OTHER INFORMATION *(Optional)*

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations. Attach additional sheets, if necessary.

None

VIII. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title	B. Phone No. *(area code & no.)*
Ray Doogan, Plant Manager	(708) 563-2400
C. Signature	**D. Date Signed**
	4/2/19

Attachment 1 – Chloride Addendum

Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

Pursuant to 35 IAC 302.407(g)(2), total chlorides shall not exceed 500 mg/I, effective beginning July 1, 2018. The ambient levels of chlorides in the Chicago Sanitary and Ship Canal (CSSC) during non-winter months are generally below this new water quality standard. However, it is during the winter months when salt application on public roads and private properties and the subsequent run-off flows into the CSSC can cause chloride concentrations to exceed this 500mg/L limitation. This has been primary driver for the creation of the Chicago Area Waterways Chloride Initiative Work Group by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) in 2015. Chloride data presented by the MWRDGC in Exhibit 10 of their pending variance petition before the Illinois Pollution Control (PCB 2016-029) demonstrates the magnitude of exceedance during the winter period—(See Attachment 1A-MWRDGC Exhibit 10).

Ingredion's source water is taken from the CSSC only 4.5 River Miles downstream of MWRDGC's Stickney Wastewater Treatment Facility discharge, which has an outflow volume that typically dominates the waterway. The non-contact cooling water withdrawn from the CSSC for the Ingredion facility has sodium hypochlorite and sodium bromide added for biofouling control and prior to discharge, magnesium bisulfite is added for dehalogenation in order to comply with the total residual chlorine (TRC) limit of 0.05 mg/l contained in the NPDES permit IL0041009. Although use of these biofouling control chemicals can result in the incidental generation of chlorides (under specific conditions), the concentration would be insignificant, especially in comparison with the upstream loading of chloride passing through the treatment plant, as well as directly from road and stormwater run-off from the entire Chicago metropolitan area. The approximate dosage rates are 360-400 gpd, 10-20 gpd and 280-350 gpd of sodium hypochlorite, sodium bromide and magnesium bisulfite, respectively. Ingredion applies road salt on its roads and walkways during the winter months and the resulting snow melt discharges through the on-site combined sanitary/process and storm drain system to the MWRDGC Stickney Plant. A small portion of the road salt application and snow melt discharges via stormwater outfall 002, which is also tributary to the MWRDGC thru the south side of the facility. There is no direct stormwater discharge into the CSSC from the Ingredion property.

Ingredion conducted sampling of its discharge in March-April 2017 before and after a snow event where road salting occurred in the Chicago Metropolitan Area and where the run-off would be discharged into the CSSC. When air temperatures rose, the resulting snow melt impact on the CSSC chloride concentrations was observed at the discharge of Ingredion's non-contact cooling water system when the biofouling control chemical addition system was not in operation, thereby showing that the high chloride concentration was coming from the ambient intake water being withdrawn from the CSSC. The results are attached as Figure 1A.

There were two days where the inlet chloride concentration would have exceeded the new water quality standard effective 7/1/18 when the intake biofouling control chemical feed was off

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

(3/11/2017-3/31/2017). In contrast, when the intake biofouling control system was on (4/1/2017-4/18/2017), there was no discernable change in chloride concentrations.

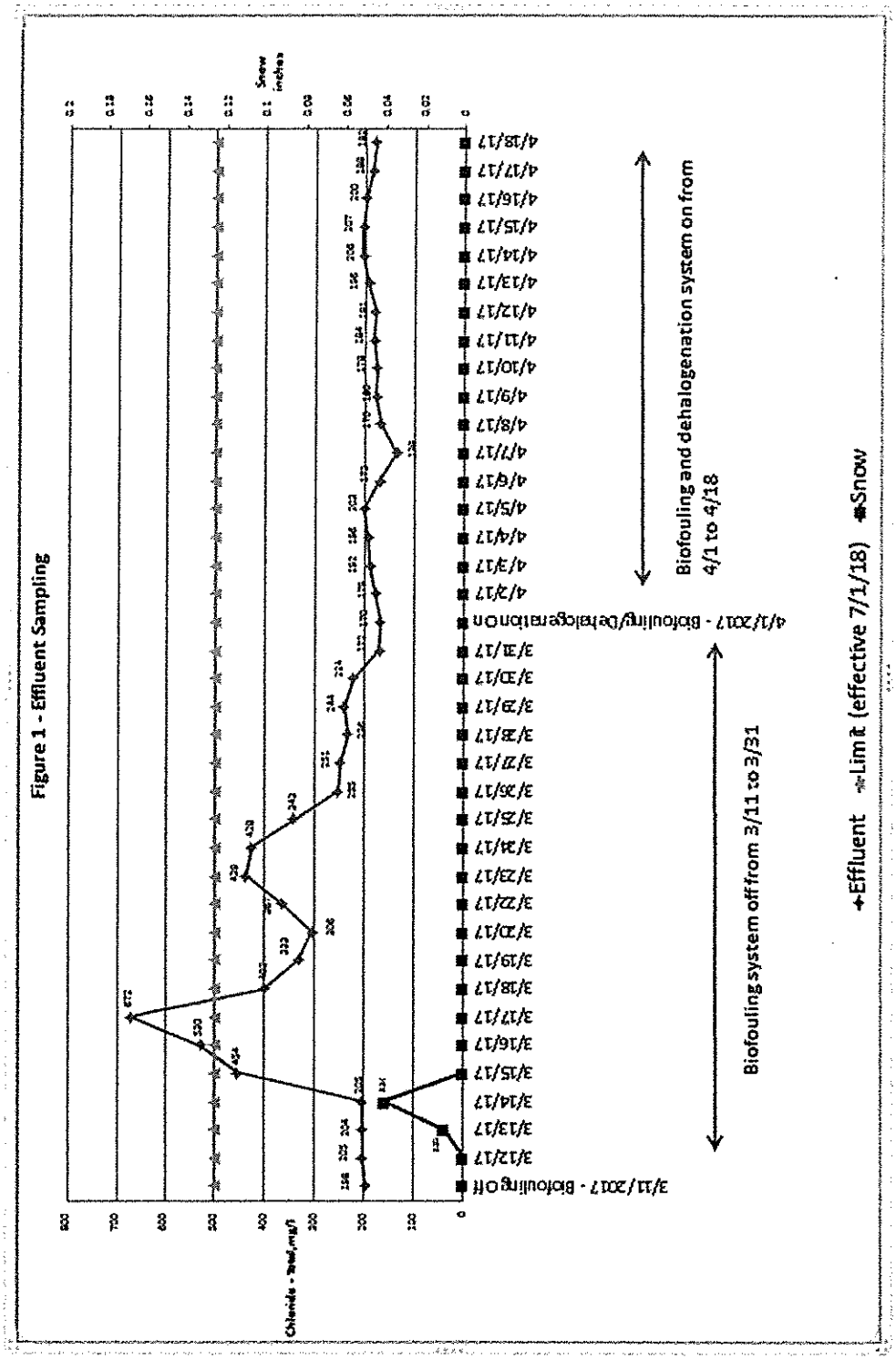
In accordance with 35 IAC 304.103, Ingredion does not believe that its intake water biofouling treatment practices have any reasonable potential to exceed the 500mg/L chloride water quality standard, and it should not be held accountable for upstream sources of this pollutant. Therefore, Ingredion requests that no specific monitoring for discharge chloride concentration be included in the renewed NPDES permit.

Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

Figure 1A—Impact of Upstream Chloride Sources on Ingredion Discharge



Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

ATTACHMENT 1A—COPY OF MWRDGC EXHIBIT 10 from PCB 2016-029

Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

EXHIBIT 10

Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

Chloride effluent concentrations November, 2014 - mid March, 2015

CALUMET WRP	Chloride mg/L	O'Brien WRP	Chloride mg/L	Stickney WRP	Chloride mg/L	4 day avg.
11/1/2014 CAOUT	119	11/1/2014 NSOUT_1	147	11/1/2014 STOUT	158	
11/2/2014 CAOUT	87	11/2/2014 NSOUT_1	142	11/2/2014 STOUT	153	
11/3/2014 CAOUT	82	11/3/2014 NSOUT_1	141	11/3/2014 STOUT	145	
11/4/2014 CAOUT	99	11/4/2014 NSOUT_1	147	11/4/2014 STOUT	152	152
11/5/2014 CAOUT	90	11/5/2014 NSOUT_1	145	11/5/2014 STOUT	154	151
11/6/2014 CAOUT	113	11/6/2014 NSOUT_1	144	11/6/2014 STOUT	159	153
11/7/2014 CAOUT	112	11/7/2014 NSOUT_1	142	11/7/2014 STOUT	153	155
11/8/2014 CAOUT	108	11/8/2014 NSOUT_1	138	11/8/2014 STOUT	160	157
11/9/2014 CAOUT	82	11/9/2014 NSOUT_1	135	11/9/2014 STOUT	150	156
11/10/2014 CAOUT	96	11/10/2014 NSOUT_1	131	11/10/2014 STOUT	138	150
11/11/2014 CAOUT	121	11/11/2014 NSOUT_1	128	11/11/2014 STOUT	145	148
11/12/2014 CAOUT	98	11/12/2014 NSOUT_1	124	11/12/2014 STOUT	139	143
11/13/2014 CAOUT	103	11/13/2014 NSOUT_1	134	11/13/2014 STOUT	141	141
11/14/2014 CAOUT	116	11/14/2014 NSOUT_1	135	11/14/2014 STOUT	141	142
11/15/2014 CAOUT	103	11/15/2014 NSOUT_1	133	11/15/2014 STOUT	142	141
11/16/2014 CAOUT	113	11/16/2014 NSOUT_1	131	11/16/2014 STOUT	137	140
11/17/2014 CAOUT	86	11/17/2014 NSOUT_1	130	11/17/2014 STOUT	133	138
11/18/2014 CAOUT	102	11/18/2014 NSOUT_1	132	11/18/2014 STOUT	137	137
11/19/2014 CAOUT	120	11/19/2014 NSOUT_1	132	11/19/2014 STOUT	142	137
11/20/2014 CAOUT	114	11/20/2014 NSOUT_1	131	11/20/2014 STOUT	145	139
11/21/2014 CAOUT	110	11/21/2014 NSOUT_1	127	11/21/2014 STOUT	146	143
11/22/2014 CAOUT	94	11/22/2014 NSOUT_1	148	11/22/2014 STOUT	156	147
11/23/2014 CAOUT	103	11/23/2014 NSOUT_1	161	11/23/2014 STOUT	163	153
11/24/2014 CAOUT	54	11/24/2014 NSOUT_1	112	11/24/2014 STOUT	105	143
11/25/2014 CAOUT	61	11/25/2014 NSOUT_1	152	11/25/2014 STOUT	118	136
11/26/2014 CAOUT	108	11/26/2014 NSOUT_1	162	11/26/2014 STOUT	133	130
11/27/2014 CAOUT	95	11/27/2014 NSOUT_1	157	11/27/2014 STOUT	135	123
11/28/2014 CAOUT	103	11/28/2014 NSOUT_1	151	11/28/2014 STOUT	128	129
11/29/2014 CAOUT	114	11/29/2014 NSOUT_1	152	11/29/2014 STOUT	134	133
11/30/2014 CAOUT	114	11/30/2014 NSOUT_1	149	11/30/2014 STOUT	140	134

Attachment 1 – Chloride Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Chloride Standards

Chloride effluent concentrations during December, 2014 - April, 2015 and Comparison to New Water Quality Standards in the Chicago Area Waterway System

CALUMET WRP	Chloride mg/L	O'Brien WRP	Chloride mg/L	Stickney WRP	Chloride mg/L	4 day avg.
12/1/2014	107	12/1/2014	142	12/1/2014	141	
12/2/2014	99	12/2/2014	144	12/2/2014	147	
12/3/2014	102	12/3/2014	143	12/3/2014	149	
12/4/2014	115	12/4/2014	140	12/4/2014	150	147
12/5/2014	114	12/5/2014	138	12/5/2014	148	149
12/6/2014	83	12/6/2014	137	12/6/2014	154	150
12/7/2014	82	12/7/2014	132	12/7/2014	144	149
12/8/2014	107	12/8/2014	148	12/8/2014	142	147
12/9/2014	107	12/9/2014	167	12/9/2014	161	150
12/10/2014	133	12/10/2014	152	12/10/2014	158	151
12/11/2014	116	12/11/2014	144	12/11/2014	157	155
12/12/2014	117	12/12/2014	140	12/12/2014	156	158
12/13/2014	131	12/13/2014	140	12/13/2014	153	156
12/14/2014	119	12/14/2014	135	12/14/2014	150	154
12/15/2014	120	12/15/2014	133	12/15/2014	143	151
12/16/2014	125	12/16/2014	149	12/16/2014	163	152
12/17/2014	133	12/17/2014	NS	12/17/2014	166	156
12/18/2014	111	12/18/2014	NS	12/18/2014	158	158
12/19/2014	127	12/19/2014	NS	12/19/2014	149	159
12/20/2014	111	12/20/2014	144	12/20/2014	144	154
12/21/2014	110	12/21/2014	133	12/21/2014	139	148
12/22/2014	110	12/22/2014	133	12/22/2014	139	143
12/23/2014	109	12/23/2014	118	12/23/2014	128	138
12/24/2014	99	12/24/2014	143	12/24/2014	135	135
12/25/2014	98	12/25/2014	144	12/25/2014	138	135
12/26/2014	99	12/26/2014	148	12/26/2014	141	136
12/27/2014	121	12/27/2014	149	12/27/2014	149	141
12/28/2014	116	12/28/2014	146	12/28/2014	152	145
12/29/2014	108	12/29/2014	143	12/29/2014	148	148
12/30/2014	133	12/30/2014	146	12/30/2014	154	151
12/31/2014	139	12/31/2014	141	12/31/2014	156	153
1/1/2015	123	1/1/2015	136	1/1/2015	152	153
1/2/2015	131	1/2/2015	134	1/2/2015	147	152
1/3/2015	150	1/3/2015	629	1/3/2015	273	182
1/4/2015	452	1/4/2015	430	1/4/2015	496	267
1/5/2015	428	1/5/2015	564	1/5/2015	649	391
1/6/2015	293	1/6/2015	263	1/6/2015	477	474
1/7/2015	294	1/7/2015	377	1/7/2015	472	524
1/8/2015	200	1/8/2015	194	1/8/2015	342	485
1/9/2015	210	1/9/2015	246	1/9/2015	307	400
1/10/2015	226	1/10/2015	310	1/10/2015	401	381
1/11/2015	180	1/11/2015	240	1/11/2015	328	345

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Compliance with the Use B Chloride Standards

1/12/2015	344	1/12/2015	723	1/12/2015	650	422
1/13/2015	404	1/13/2015	755	1/13/2015	835	554
1/14/2015	336	1/14/2015	403	1/14/2015	576	597
1/15/2015	252	1/15/2015	242	1/15/2015	401	616
1/16/2015	190	1/16/2015	327	1/16/2015	363	544
1/17/2015	198	1/17/2015	414	1/17/2015	388	432
1/18/2015	196	1/18/2015	819	1/18/2015	651	451
1/19/2015	186	1/19/2015	453	1/19/2015	527	482
1/20/2015	162	1/20/2015	302	1/20/2015	380	487
1/21/2015	158	1/21/2015	273	1/21/2015	318	469
1/22/2015	120	1/22/2015	259	1/22/2015	284	377
1/23/2015	148	1/23/2015	281	1/23/2015	262	311
1/24/2015	124	1/24/2015	215	1/24/2015	243	277
1/25/2015	120	1/25/2015	229	1/25/2015	238	257
1/26/2015	198	1/26/2015	523	1/26/2015	545	322
1/27/2015	124	1/27/2015	401	1/27/2015	504	383
1/28/2015	292	1/28/2015	362	1/28/2015	507	449
1/29/2015	184	1/29/2015	283	1/29/2015	411	492
1/30/2015	168	1/30/2015	251	1/30/2015	362	446
1/31/2015	214	1/31/2015	206	1/31/2015	288	392
2/1/2015	318	2/1/2015	641	2/1/2015	393	364
2/2/2015	416	2/2/2015	994	2/2/2015	1155	550
2/3/2015	648	2/3/2015	1065	2/3/2015	1360	759
2/4/2015	660	2/4/2015	946	2/4/2015	1116	1006
2/5/2015	720	2/5/2015	887	2/5/2015	1119	1188
2/6/2015	552	2/6/2015	534	2/6/2015	821	1104
2/7/2015	452	2/7/2015	543	2/7/2015	657	928
2/8/2015	755	2/8/2015	1045	2/8/2015	1092	922
2/9/2015	770	2/9/2015	765	2/9/2015	950	880
2/10/2015	575	2/10/2015	516	2/10/2015	673	843
2/11/2015	398	2/11/2015	406	2/11/2015	534	812
2/12/2015	326	2/12/2015	366	2/12/2015	451	652
2/13/2015	318	2/13/2015	315	2/13/2015	398	514
2/14/2015	248	2/14/2015	275	2/14/2015	347	433
2/15/2015	256	2/15/2015	233	2/15/2015	309	376
2/16/2015	222	2/16/2015	324	2/16/2015	316	343
2/17/2015	100	2/17/2015	275	2/17/2015	304	319
2/18/2015	95	2/18/2015	226	2/18/2015	275	301
2/19/2015	95	2/19/2015	201	2/19/2015	248	286
2/20/2015	90	2/20/2015	180	2/20/2015	225	263
2/21/2015	80	2/21/2015	180	2/21/2015	219	242
2/22/2015	75	2/22/2015	177	2/22/2015	211	226
2/23/2015	75	2/23/2015	166	2/23/2015	202	214
2/24/2015	70	2/24/2015	171	2/24/2015	200	208
2/25/2015	70	2/25/2015	170	2/25/2015	200	203
2/26/2015	85	2/26/2015	421	2/26/2015	285	222
2/27/2015	300	2/27/2015	939	2/27/2015	898	396

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2/28/2015	195	2/28/2015	455	2/28/2015	653	509
3/1/2015	175	3/1/2015	267	3/1/2015	452	572
3/2/2015	140	3/2/2015	220	3/2/2015	377	595
3/3/2015	165	3/3/2015	466	3/3/2015	416	475
3/4/2015	285	3/4/2015	1044	3/4/2015	974	555
3/5/2015	170	3/5/2015	445	3/5/2015	641	602
3/6/2015	130	3/6/2015	282	3/6/2015	426	614
3/7/2015	140	3/7/2015	251	3/7/2015	344	596
3/8/2015	362	3/8/2015	561	3/8/2015	462	468
3/9/2015	378	3/9/2015	528	3/9/2015	444	419
3/10/2015	398	3/10/2015	527	3/10/2015	461	428
3/11/2015	342	3/11/2015	515	3/11/2015	496	466
3/12/2015	304	3/12/2015	489	3/12/2015	473	469
3/13/2015	282	3/13/2015	448	3/13/2015	446	469
3/14/2015	308	3/14/2015	429	3/14/2015	423	460
3/15/2015	280	3/15/2015	398	3/15/2015	388	433
3/16/2015	294	3/16/2015	379	3/16/2015	365	406
3/17/2015	264	3/17/2015	362	3/17/2015	352	382
3/18/2015	230	3/18/2015	343	3/18/2015	335	360
3/19/2015	232	3/19/2015	323	3/19/2015	316	342
3/20/2015	204	3/20/2015	302	3/20/2015	304	327
3/21/2015	172	3/21/2015	286	3/21/2015	291	312
3/22/2015	160	3/22/2015	270	3/22/2015	273	296
3/23/2015	170	3/23/2015	438	3/23/2015	352	305
3/24/2015	430	3/24/2015	965	3/24/2015	1011	482
3/25/2015	332	3/25/2015	461.89	3/25/2015	575	553
3/26/2015	234	3/26/2015	404.45	3/26/2015	524	616
3/27/2015	216	3/27/2015	403.52	3/27/2015	483	648
3/28/2015	232	3/28/2015	377.71	3/28/2015	418	500
3/29/2015	194	3/29/2015	326.46	3/29/2015	350	444
3/30/2015	184	3/30/2015	324.08	3/30/2015	341	398
3/31/2015	180	3/31/2015	299.27	3/31/2015	327	359
4/1/2015	196	4/1/2015	294.04	4/1/2015	287	326
4/2/2015	222	4/2/2015	336.8	4/2/2015	316	318
4/3/2015	276	4/3/2015	344.06	4/3/2015	371	325
4/4/2015	200	4/4/2015	282.94	4/4/2015	350	331
4/5/2015	210	4/5/2015	260.78	4/5/2015	302	335
4/6/2015	196	4/6/2015	254.06	4/6/2015	274	324
4/7/2015	184	4/7/2015	252.54	4/7/2015	271	299
4/8/2015	160	4/8/2015	245.18	4/8/2015	277	281
4/9/2015	138	4/9/2015	256.59	4/9/2015	282	276
4/10/2015	158	4/10/2015	272.37	4/10/2015	275	276
4/11/2015	138	4/11/2015	309.59	4/11/2015	253	272
4/12/2015	142	4/12/2015	279.2	4/12/2015	272	271
4/13/2015	172	4/13/2015	265.79	4/13/2015	267	267
4/14/2015	156	4/14/2015	264.75	4/14/2015	269	265
4/15/2015	170	4/15/2015	256.21	4/15/2015	262	268

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Compliance with the Use B Chloride Standards

4/16/2015	168	4/16/2015	237.48	4/16/2015	244	261
4/17/2015	271	4/17/2015	249.04	4/17/2015	248	256
4/18/2015	229	4/18/2015	250.57	4/18/2015	247	250
4/19/2015	152	4/19/2015	241.52	4/19/2015	257	249
4/20/2015	140	4/20/2015	204.28	4/20/2015	197	237
4/21/2015	152	4/21/2015	253.87	4/21/2015	248	237
4/22/2015	176	4/22/2015	258.95	4/22/2015	251	238
4/23/2015	167	4/23/2015	436.02	4/23/2015	257	238
4/24/2015	206	4/24/2015	247.15	4/24/2015	255	253
4/25/2015	169	4/25/2015	230.64	4/25/2015	227	248
4/26/2015	195	4/26/2015	237.06	4/26/2015	214	238
4/27/2015	158	4/27/2015	241.43	4/27/2015	230	232
4/28/2015	179	4/28/2015	260.27	4/28/2015	236	227
4/29/2015	169	4/29/2015	251.98	4/29/2015	246	232
4/30/2015	199	4/30/2015	237.89	4/30/2015	248	240

PERCENT OF VALUES GREATER THAN NEW CHLORIDE WATER QUALITY STANDARDS DURING DECEMBER, 2014-APRIL, 2015

N>500 mg/L	7	N>500 mg/L	23	N>500 mg/L	26
N	151	N	148	N>990 mg/L	6
Percent>500	5%	Percent>500	16%	N	151
				Percent>500	17%
				Percent>990	4%

CHRONIC STANDARD IN CHICAGO SANITARY AND SHIP CANAL

N>620 mg/L	11
N	148
Percent>620	7%

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Documentation of Compliance with Applicable Thermal Water Quality Standard:

The Ingredion facility has determined compliance with the applicable in-stream thermal water quality standard through the use of an IEPA approved modeling approach for many years (See attached Agency correspondence from 2004—Attachment 2A), but model use to determine compliance has not, to-date, been specifically referenced in the NPDES permit. In order to provide clarity and ensure that the information provided on facility DMRs is appropriately interpreted, Ingredion requests formal reference to the use of a thermal compliance modeling approach as part of the Special Condition requirements in the next issued permit.

While Ingredion has relied upon a CORMIX-based model in the past, in order to further simplify the compliance calculation, as well as take the prior advice from IEPA to employ a mass-balance equation (per attached 2004 correspondence), Ingredion is requesting to use the mass-balance calculational approach discussed below for determining on-going compliance with the applicable thermal water quality standards for the CSSC.

In addition, it should be noted that the 2017 March-December DMRs were recently corrected to include the calculated temperature at the edge of the mixing zone, as the original DMR submittals for these months did not reflect the calculated values. The correct monthly compliance values are included below:

Original and Corrected DMR Temperatures		
Month	Original DMR Temperature F	Corrected DMR Temperature
March	77.7	55.6
April	84.3	61.4
May	91.9	70.5
June	93.8	77.6
July	96.2	78.9
August	97.6	80.1
September	99.1	79.4
October	94.6	75.9
November	84.3	61.4
December	77.7	55.6

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Suggested language is provided below for consideration by the Agency for inclusion under permit Special Condition 3:

This facility meets the allowed mixing criteria for thermal discharges from Outfall 001 pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to exceed thermal water quality standards. This is based on an annual average flow of 32.8 MGD and a maximum summer intake temperature of 80 °F and a maximum summer end-of-pipe discharge temperature of 106°F, and a maximum winter month intake temperature of 58 °F* and a maximum winter month end-of-pipe discharge temperature of 84 °F (measured maximums for 2017)[1].

DEPENDING ON WHEN THE NEW PERMIT IS ISSUED:

>>>Before July 1, 2018:

A. At the point of discharge, the receiving waters are designated as Use B waters and shall meet the following standards from Section 302.408(b) of Ill. Adm. Code Title 35, Subtitle C, Chapter I:

"...Starting July 1, 2015, the waters designated at 35 Ill. Adm. Code 303 as Chicago Area Waterway System Aquatic Life Use A, Chicago Area Waterway System and Brandon Pool Aquatic Life Use B, and Upper Dresden Island Pool Aquatic Life Use will not exceed temperature (STORET number (°F) 00011 and (°C) 00010) of 34°C (93°F) more than 5% of the time, or 37.8° C (100° F) at any time."

>>>Beginning July 1, 2018, the following standards apply:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daily Maximum	60	60	60	90	90	90	90	90	90	90	90	60

Water temperature at representative locations in the main waterway shall not exceed the maximum limits in the above table during more than one percent of the hours in the 12-month

[1] These represent daily maximum measured temperatures that **do not include** the period when the MWRDGC's Stickney Plant discharge was resulting in ambient upstream water temperatures of 60 °F—See Page 4 and Attachments 2B and 2C for further details.

period ending with any month. Moreover, at no time shall the water temperature exceed the maximum limits in the applicable table that follows by more than 1.7° C (3.0° F)

The temperature at the edge of the mixing zone shall be calculated using the mass balance equation below (which is based on Illinois EPA's Strategy for Point Source Wasteload Allocation document dated January 17, 1991). This calculation is based on the published 7Q10 flow of 1014 cfs for the CSSC near Ingredion (ISWS 2003):

$$T_{FM} = \frac{T_D Q_{CW} + T_{US}(0.25 * Q_{AV})}{Q_{CW} + (0.25 * Q_{AV})}$$

Where: T_D = Temperature of the discharge in °F

Q_{CW} = Cooling Water Flow Rate in cfs

T_{US} = Upstream (Intake) Temperature in °F

Q_{AV} = 7Q10 Flow – Cooling Water Flow Rate (both in cfs)

T_{FM} = Calculated Fully Mixed Temperature at Edge of Mixing Zone (in °F)

The permittee shall monitor parameters necessary for use in the above calculation.

***Should intake temperature monitoring indicate that an upstream source is adversely impacting the ability of Ingredion to comply with the applicable thermal limit, this situation will be brought to the Agency's attention for further evaluation. Ingredion shall not be deemed in non-compliance if it is determined that an upstream discharger is responsible for elevated ambient intake temperature.

B. There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions. The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.

C. The maximum temperature rise above natural temperatures shall not exceed 2.8° C (5° F).

D. The water temperature at the edge of the mixing zone defined above shall not exceed the maximum limits in the following table during more than one percent of the hours in the 12 month period ending with any month. Moreover, at no time shall the water temperature at the edge of the mixing zone exceed the maximum limits in the following table by more than 1.7° C (3° F).

E. The monthly maximum calculated temperature at the edge of the mixing zone (T_{FM}) shall be reported on the DMR.

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Influence of Upstream Discharger on Ingredion's Future Compliance with the Use B Thermal Water Quality Standards

Ingredion would like to make the Agency aware of the fact that the discharge from the Metropolitan Water Reclamation of Greater Chicago's (MWRDGC) Stickney Treatment plant has the potential to negatively impact its on-going compliance with the new thermal water quality standards.

A recent example is from December 2017, when the Stickney discharge temperature was 60 ^{o}F for five consecutive days from December 1st through December 5th (See Attachments 2B and 2C). This was concurrent with the pumping of a large component of TARP discharge. Weather conditions during early December 2017 were also warmer than normal, so the Stickney discharge temperature was likely influenced by a combination of the weather, as well as the warmer temperature of the stored TARP water that was sent through the treatment system. As the Stickney discharge flow dominates the CSSC, especially during the winter months, it has the potential to create adverse thermal compliance conditions for downstream dischargers like Ingredion. When the ambient temperature of the waterway is already at the water quality limit (in this case, the 60^{o}F Use B limit that goes into effect on July 1, 2018), it will be difficult to maintain compliance (even with the use of the mass-balance calculation), without the potential need to halt processes to limit discharge temperatures. Since the upstream water temperature is directly influenced by the MWRDGC discharge, Ingredion should not be held accountable for thermal water quality exceedances when it can be shown that the ambient water temperature in the CSSC is being negatively impacted by upstream sources.

Ingredion would like to discuss this matter further with the Agency in order to determine if any additional provisions need to be included as part of this permit renewal in order to ensure continuing compliance with the new thermal water quality standards when they go into effect.

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

ATTACHMENT 2A—AGENCY CORRESPONDENCE RELATED TO THE USE OF MODELING TO DETERMINE ON-GOING THERMAL COMPLIANCE

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276, 217-782-3397
JAMES R. THOMPSON CENTER, 100 WEST RANDOLPH, SUITE 11-300, CHICAGO, IL 60601, 312-814-6026

ROD R. BLAGOJEVICH, GOVERNOR RENEE CIPRIANO, DIRECTOR

217/782-0610

AUG 11 2004

RECEIVED
AUG 13 2004

Corn Products International, Inc.
6400 S. Archer Avenue
Bedford Park, Il 60501

Attention: Alan Jirik, Director of Environmental Affairs

Re: Corn Products International, Inc Argo plant
NPDES Permit No. IL0041009
NPDES Permit Renewal

Dear Mr. Jirik:

The Illinois Environmental Protection Agency has initiated a review of the documents submitted for the above NPDES permit. Based on that review, we would like to review the procedure used to determine the Mixing Zone in accordance with Section 302.102 and the method of calculation for temperature at the edge of the zone as referenced to on the Discharge Monitoring Reports (DMRs).

Our review has found no other outstanding issues and upon receipt of a satisfactory response to our request, we should be able to proceed with Public Notice.

Should you have any questions or comments, please contact Jan A. Nelle, P.E. of my staff.

Sincerely,

217 782 9891 FAX

Blaine Kinsley, P.E.
Manager, Industrial Unit
Division of Water Pollution Control

BAK:JAN:04080601.jan

cc: Records
Des Plaines Region

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

8/25/04
IEPA
JAN NELLIE
PHONE
RECORD
NPDES
RENEWAL
APPLIC
REVIEW

1014 CFS NEW 7Q10 LOW FLOW

WWW.~~S~~WS.UIUC.EDU/~~WES~~/WSS

MASS BALANCE CALC - SHOWS A LOWER TEMP
SO BETTER, THEY DO MASS BALANCE

LOWER CFS WILL NOT MAKE SUBSTANTIAL

MASS BALANCE $Q_E + Q_u = 1 + 3.4$

$Q_E T_E$ (EFFLUENT) + $Q_u T_u$ (UPSTREAM) = $Q_D T_D$ ← DOWNSTREAM MIXING ZONE TEMP

Q_E = 1 (Effluent)
Q_u = 3.4 dilution ratio
T_u = 84 Temp upstream
T_E = Effluent Temp

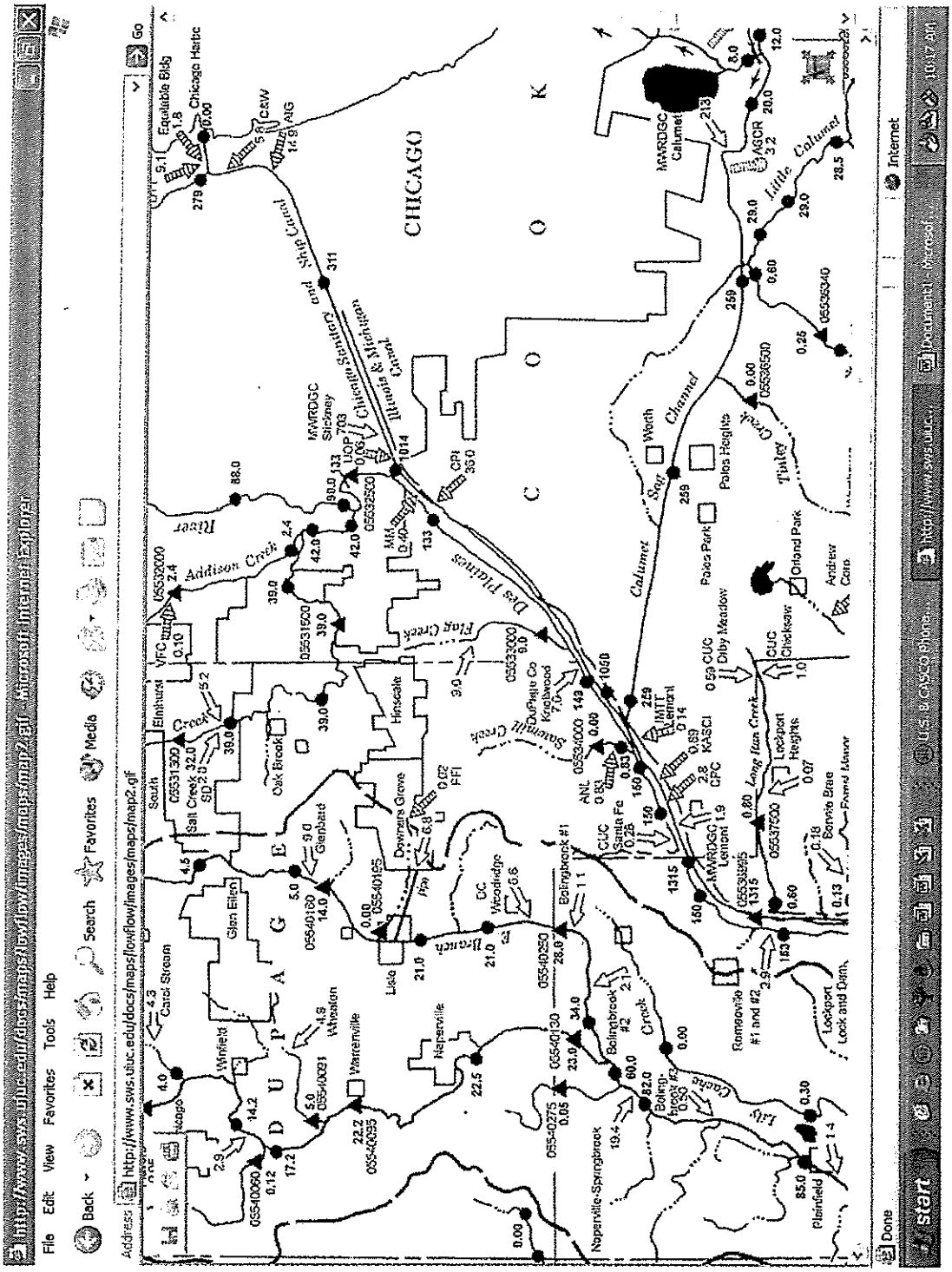
WHAT CPE Needs to do:

- RECALC/REMODEL Based on LATEST 7Q10 to come up w/ New Calc for DMRS. MIGHT WANT USE MASS BALANCE

- IEPA THINKS STILL OK, JUST WANT US TO CHANGE ALGORITHM FOR CALC MIX ZONE TEMP ~~FOR~~ FOR DMRS

NPDES Permit Renewal Addendum—IL0041009

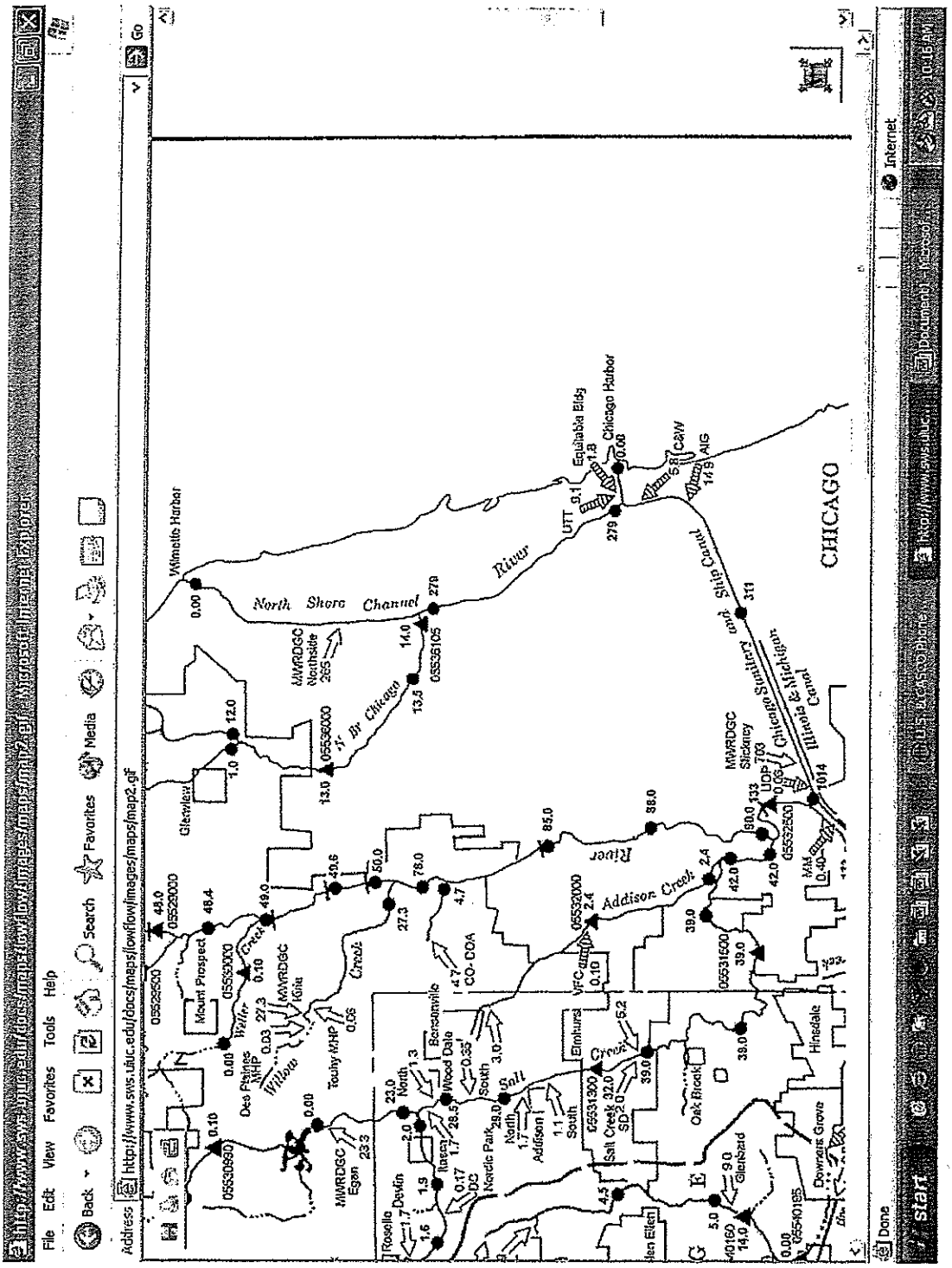
Compliance with the Use B Temperature Standards



Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards



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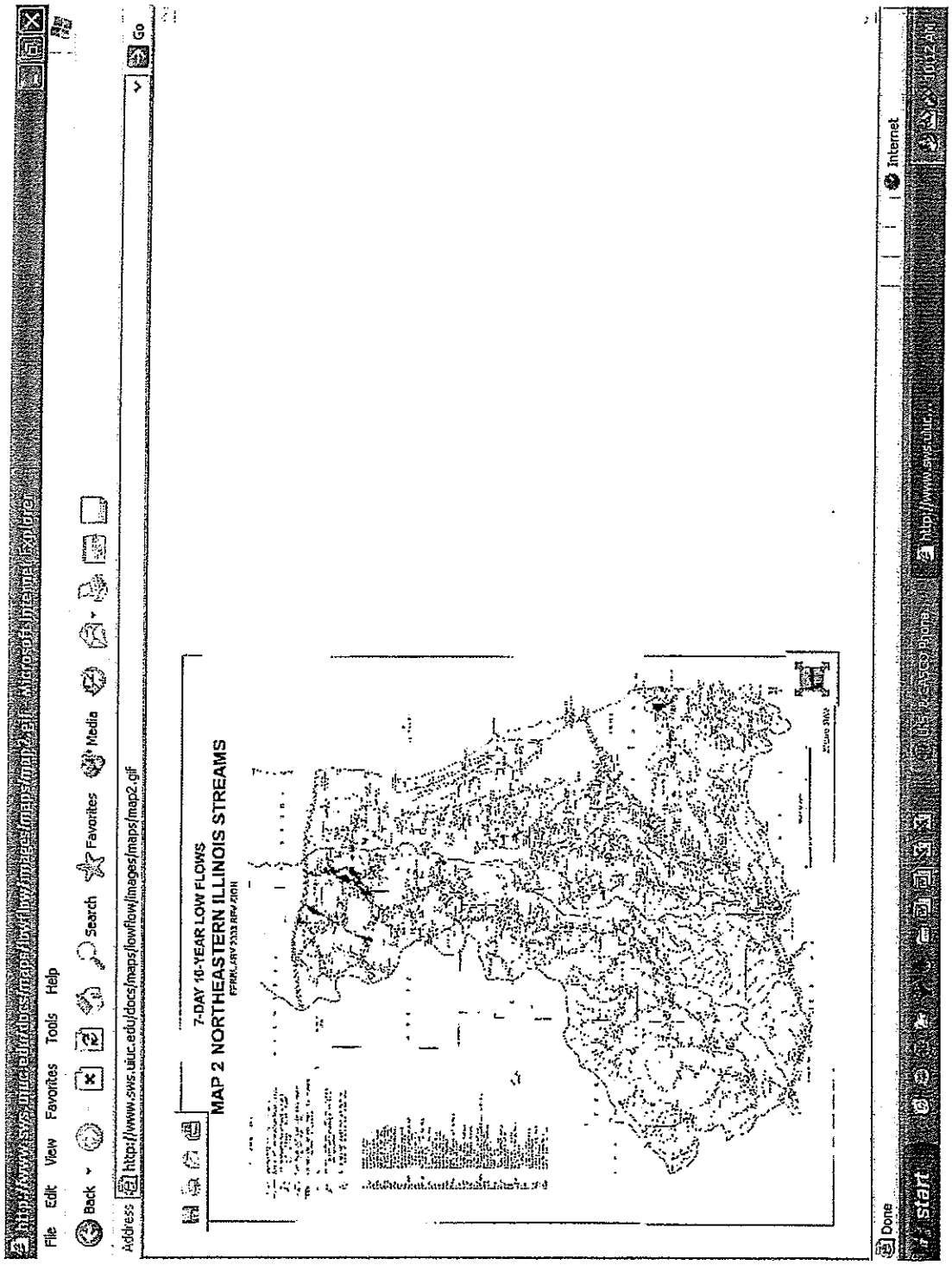
NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards



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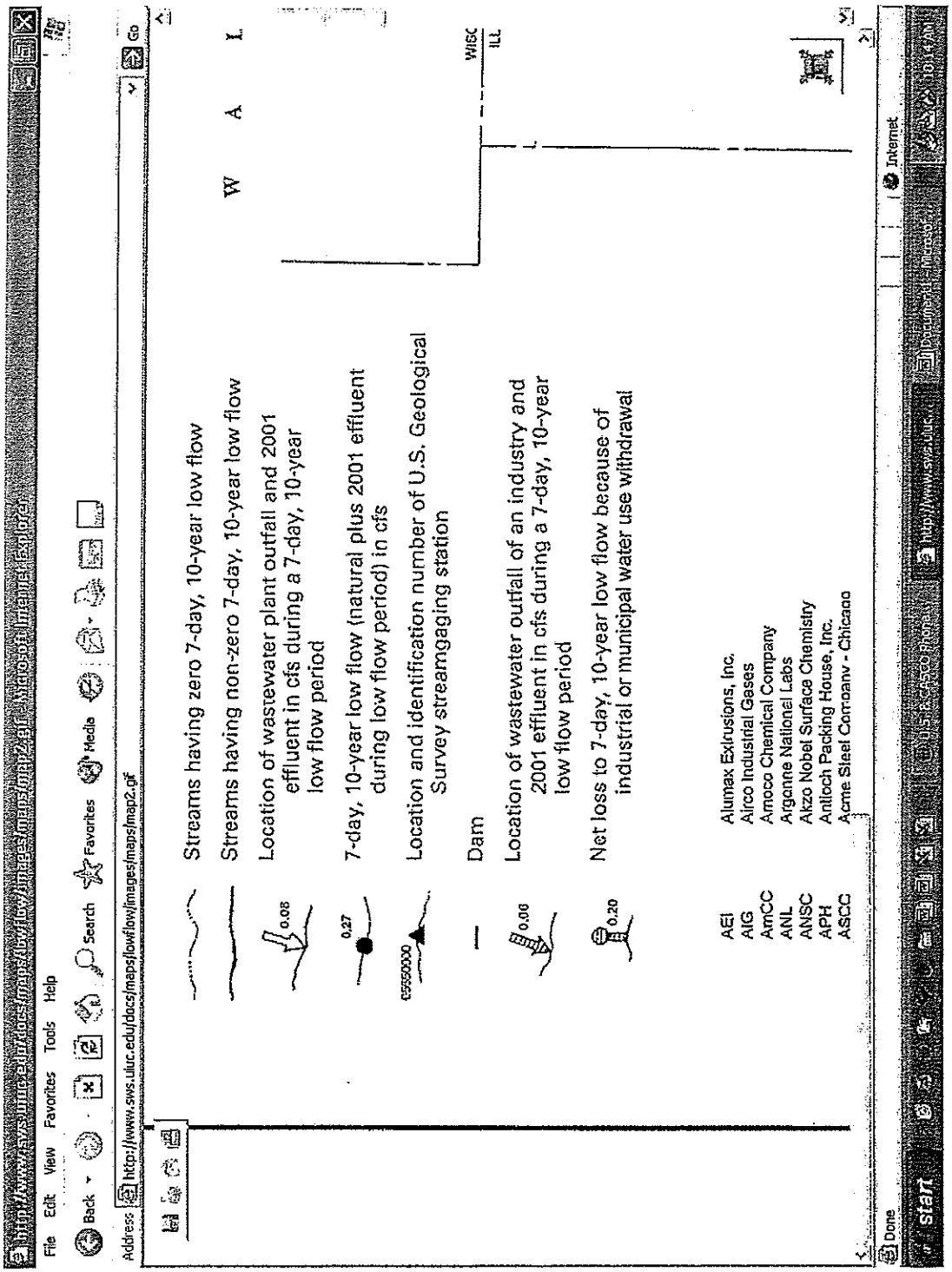
NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards



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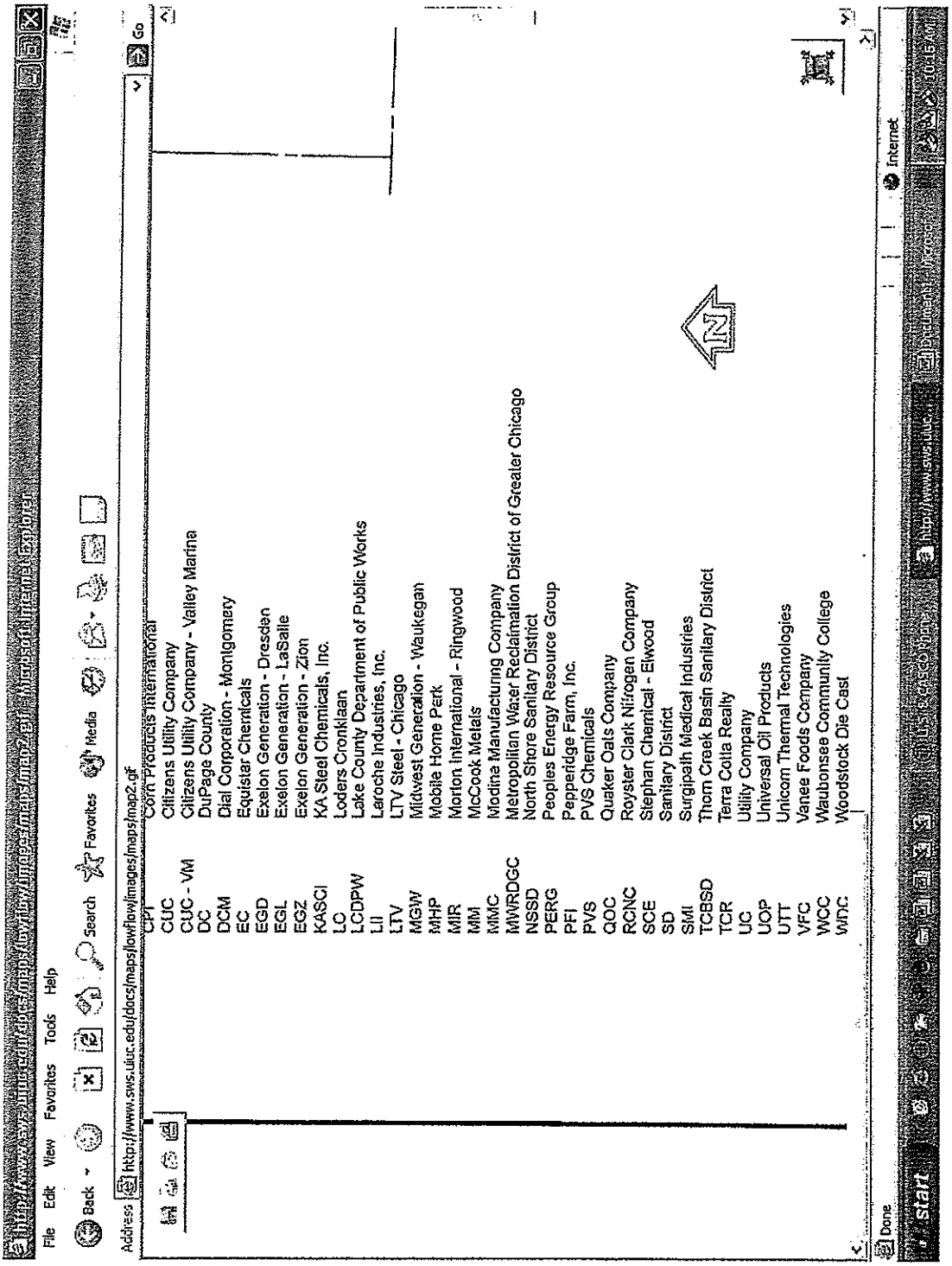
NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards



Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

08/18/04 14:24 FAX 708 563 5391 PLANT STAFF ☑001

****
*** TX REPORT ***
****

TRANSMISSION OK

TX/RX NO	3285
CONNECTION TEL	912177829891
SUBADDRESS	
CONNECTION ID	
ST. TIME	08/18 14:22
USAGE T	02'17
PGS. SENT	6
RESULT	OK

Corn Products

P.O. Box 345
Summit/Argo, IL 60501
708- 563-6751
Fax: 708-563-5391

FAX TRANSMISSION COVER SHEET

Date: 8/18/04
To: JAN NELLE, IEPA
Fax: 217 782 9891
Subje
Sender: *Mark Bosse*

YOU SHOULD RECEIVE 6 *PAGE(S), INCLUDING THIS COVER SHEET.*
IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL 708- 563-6751.

JAN, PER YOUR REQUEST
BASIS FOR DETERMINING MIXING ZONE AS REFERENCED ON DMRS

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

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P.O. Box 345
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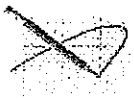

Mark Bosse/MTC/CornProducts
08/24/2000 02:50 PM

To Chanda Kerr/ARG/CornProducts@CornProducts
cc Ed Johnson/ARG/CornProducts@CornProducts, Alan Jirik/MTC/CornProducts@CornProducts
bcc
Subject how to calculate mixing zone

Chanda, I have now run about 30 different scenarios using USEPA's Cormix3 model and the worst case predicted mixing is much better than we had thought before. From now on please make the following adjustment to end of pipe temperature to account for the regulatory mixing zone (where the plume occupies 25% cross sectional area of canal). It is based on the worst case dilution ratio the model predicted at different plant discharge rates. If you apply this and still see a problem meeting 93 deg f at the regulatory mixing zone boundary please call me and I will rerun the model for the specific conditions at the time. I am attaching an excel spreadsheet which will do the calculation below for you. If you need

any help please let me know: chandaguidance.xls

Suggested guidelines:			dilution ratio
	<	50 mgd	3.90
50.1	mgd to	52.5 mgd	3.81
52.6	mgd to	55 mgd	3.72
55.5	mgd to	65 mgd	3.40

To use a dilution ratio do the following:

[(Outlet temp minus inlet temp) / dilution ratio] + inlet temp = end of mixing zone temp

Example:

110 deg f outfall temp
84 deg f inlet temp (canal temp)
3.4 dilution ratio

[(110 - 84) / 3.4] + 84 = 91.65 deg f at end of regulatory mixing zone

U.S. Environmental Protection Agency

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Water Quality Models

Cornell Mixing Zone Expert System (CORMIX)

Receive notification about future CORMIX training!

CORMIX is a water quality modeling and decision support system designed for environmental impact assessment of mixing zones resulting from wastewater discharge from point sources. The system emphasizes the role of boundary interaction to predict plume geometry and dilution in relation to regulatory mixing zone requirements. As an expert system, CORMIX is a user-friendly application which guides the water quality analysts in simulating a site-specific discharge configuration. To facilitate its use, ample instructions are provided, suggestions for improving dilution characteristics are included, and warning messages are displayed when undesirable or uncommon flow conditions occur.

Cormix contains three major subsystems. The first subsystem, **CORMIX1**, is used to predict and analyze environmental impacts of submerged single port discharges to lakes, rivers, and estuaries. The second subsystem, **CORMIX2**, may be used to predict plume characteristics of submerged multiport discharges. The third subsystem, **CORMIX3**, is used to analyze positively and neutrally buoyant surface discharges to lakes, rivers, and estuaries with a high degree of accuracy.

A *mixing zone* is a limited area where initial dilution of a discharge takes place and where numeric water quality criteria can be exceeded but acutely toxic conditions are prevented.

From the August 1994 EPA publication "Water Quality Standards Handbook: Second Edition" (EPA-823-B94-005a) (PDF format, 18MB) allowable mixing zone characteristics should be established to ensure that:

- mixing zones do not impair the integrity of the water body as a whole,
- there is no lethality to organisms passing through the mixing zone, and
- there is no significant health risk considering likely pathways of exposure.

Also mixing zones should not be permitted where they may endanger critical areas (e.g. , drinking water supplies, recreational areas, breeding grounds, areas with sensitive biota).

In contrast, the ***regulatory mixing zone*** is a definition which allows for the initial dilution of a discharge rather than imposing strict end-of-pipe concentration requirements for NPDES water quality permits for conventional and toxic discharges.

In theory, the **regulatory mixing zone** may therefore allow for efficient natural pollutant assimilation. In practice they can be used as long as the integrity of a water body as a whole is not impaired.

Lauren MacWilliams is the primary contact for CORMIX support services. The Oregon Graduate Institute of Science and Technology (OGI), under a cooperative agreement with EPA, provides CORMIX information, distribution, and technical support services to the CORMIX user community. The CORMIX home page [EXIT disclaimer] contains updated information about software releases, model applications, and tools for regulatory mixing zone decision support. The P. I. for the

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

What is a Cormix3 dilution ratio?

One output from Cormix3 is in the form of a dilution ratio (ie:3.4)

To use a dilution ratio do the following:

[(Outlet temp minus inlet temp) / dilution ratio] + inlet temp = end of mixing zone temp

Example:

110 °F outfall temp
84 °F inlet temp (canal temp)
3.4 dilution ratio

[(110 - 84) / 3.4] + 84 = 91.65 °F at end of regulatory mixing zone

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

WORST CASE RUNS

filename	Discharge mgd	Discharge deg f	Canal cfs	Canal deg f	delta T	dilution ratio	RMZ deg f	Flow regime	channel cross section	
sensit38	50	110	1405	86	24	3.90	92.2	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit39	52.5	110	1405	86	24	3.81	92.3	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit40	55	110	1405	86	24	3.72	92.5	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit29	56	106	1405	86	20	3.40	91.9	SA1	85m x 4.3 m	
sensit28	57.5	106	1405	86	20	3.40	91.9	SA1	85m x 4.3 m	
sensitv2	60	106	1405	86	20	3.40	91.9	SA1		
sensit23	62.5	110	2200	86	24	3.58	92.7	PL1	87.8m x 4.91m	x-section increased for >flow
sensit11	65	109	1405	86	23	3.40	92.8	SA1	85m x 4.3 m	

Suggested guidelines:		dilution ratio
<	50 mgd	3.90
50.1 to	52.5 mgd	3.81
52.6 to	55 mgd	3.72
56 mgd to	65 mgd	3.40

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

MODEL RUNS TO DETERMINE WORST CASE MIXING (DILUTION RATIO)

↓

ial\Waste Water\CANAL\2000 cormix update\[Mixzone calc and sensitivity analysis.xls]sensitivity run

	Discharge		Canal			dilution	Flow	channel	
filename	mgd	deg f	cfs	deg f	delta T	ratio	regime	cross section	
sensit38	50	110	1405	86	24	3.90	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit19	50	110	2200	86	24	4.22	PL1	87.8m x 4.91m	x-section increased for >flow
sensitv4	50	106	1405	86	20	5.22	FJ1	85m x 4.3 m	
sensit41	51.7	105.9	1405	79	26.9	5.44	FJ1	85m x 4.3 m	
sensit42	51.7	105.9	2200	79	26.9	4.17	PL1	87.8m x 4.91m	
sensit39	52.5	110	1405	86	24	3.81	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit21	52.5	110	2200	86	24	4.10	PL1	87.8m x 4.91m	x-section increased for >flow
sensit34	52.5	110	2400	86	24	4.14	PL1	87.8m x 4.91m	x-section increased for >flow
sensit24	52.5	110	1405	86	24	5.34	FJ1	85m x 4.3 m	
sensit40	55	110	1405	86	24	3.72	PL1	87.8m x 4.91m	avg water depth, but 7q10 flow
sensit36	55	110	1800	86	24	3.77	PL1	87.8m x 4.91m	
sensit37	55	110	1800	86	24	5.55	FJ1	85m x 4.3 m	
sensit35	55	110	2000	86	24	3.81	PL1	87.8m x 4.91m	x-section increased for >flow
sensit18	55	110	2200	86	24	3.98	PL1	87.8m x 4.91m	x-section increased for >flow
sensitv5	55	106	1405	86	20	4.09	FJ1	85m x 4.3 m	
sensit10	55	96	1405	72	24	4.91	FJ1	85m x 4.3 m	
sensit27	55	110	1405	86	24	5.18	FJ1	85m x 4.3 m	
sensit20	55	110	3500	86	24	10.51	PL1	87.8m x 4.91m	
sensit29	56	106	1405	86	20	3.40	SA1	85m x 4.3 m	
sensit30	56	110	2200	86	24	3.93	PL1	87.8m x 4.91m	x-section increased for >flow
sensit33	56	110	2400	86	24	3.97	PL1	87.8m x 4.91m	x-section increased for >flow
sensit28	57.5	106	1405	86	20	3.40	SA1	85m x 4.3 m	
sensit22	57.5	110	2200	86	24	3.87	PL1	87.8m x 4.91m	x-section increased for >flow
sensit32	57.5	110	2400	86	24	3.91	PL1	87.8m x 4.91m	x-section increased for >flow
sensit25	57.5	110	1405	86	24	5.03	FJ1	85m x 4.3 m	
sensitv2	60	106	1405	86	20	3.40	SA1		
sensit17	60	110	2200	86	24	3.67	PL1	87.8m x 4.91m	x-section increased for >flow
sensit31	60	110	2400	86	24	3.82	PL1	87.8m x 4.91m	x-section increased for >flow
sensit23	62.5	110	2200	86	24	3.58	PL1	87.8m x 4.91m	x-section increased for >flow
sensit26	62.5	110	1405	86	24	4.74	FJ1	85m x 4.3 m	
sensit13	65	106	2500	86	20	3.28	SA1	85m x 4.3 m	increase velocity but not x-section
sensit11	65	109	1405	86	23	3.40	SA1	85m x 4.3 m	
sensitv8	65	96	1405	86	10	3.40	SA1	85m x 4.3 m	
sensitv7	65	101	1405	86	15	3.40	SA1	85m x 4.3 m	
sensit14	65	106	2000	86	20	3.40	SA1	85m x 4.3 m	increase velocity but not x-section
max1	65	106	1405	86	20	3.40	SA1	85m x 4.3 m	
sensitv9	65	96	1405	72	24	3.40	SA1	85m x 4.3 m	
sensit16	65	110	2200	86	24	3.51	PL1	87.8m x 4.91m	x-section increased for >flow
sensit15	65	106	2200	86	20	3.94	FJ1	87.8m x 4.91m	x-section increased for >flow
sensit12	65	110	1405	86	24	4.60	FJ1	85m x 4.3 m	
sensitv6	65	111	1405	86	25	4.66	FJ1	85m x 4.3 m	
42idpipe	65	110	2200	86	24	7.16	H4-90A4		using pipe instead of rectang discharge channel
sensitv3	70	106	1405	86	20	3.40	SA1	85m x 4.3 m	

PL1=plume like upstream intruding, SA1= shoreline attached jet into deep water, FJ1 = Free Jet, buoyancy dominated

7Q10 low flow in Canal = 1405 cubic feet per second

Canal is controlled by locks at both ends, so flow (cfs) and stage height are not necessarily related to each other

From 1990 Versar study at 1400 cfs 7Q10 low flow, canal dimensions are 85m wide x 4.3m deep (water elevation 576 ft amsl)

At normal water level, canal dimensions are 87.8 m wide x 4.91m deep (using 578 ft amsl, really normal is 577.18 ft)

Run "sensit13": this case not realistic, using 7Q10 1405 cfs water level and 7Q10 canal width with severe increase in velocity to get higher canal fl

Run "sensit14": this case not realistic, using 7Q10 1405 cfs water level and 7Q10 canal width with severe increase in velocity to get higher canal fl

NOTE: BELOW 50mgd PLANT DISCHARGE, MIXING IS ALWAYS BETTER THAN 3.90 DILUTION RATIO

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Attachment 2B – MWRDGC Stickney Treatment Plant Operating Data for December 2017

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Attachment 2B--MWRGC Stickney Treatment Plant Operating Data for December, 2017

METROPOLITAN WATER RECLAMATION DISTRICT OF GREATER CHICAGO
STICKNEY WATER RECLAMATION PLANT
PUMPED FLOW DATA

DAVID ST. PIERRE, EXECUTIVE DIRECTOR
JOHN MURRAY, DIRECTOR OF M&O
BRETT GARELLI, DEPUTY DIRECTOR OF M&O

	PUMPED (MGD)			TARP (MGD)	BYPASS (MGD)		TREATED (MGD)			PRECIP. (in.)	INTAKE ELEV. (ft)	TEMPERATURE (°C)	
	SW	WS	TOTAL		TUNNEL	RIVER	SW	WS	TOTAL			WS RAW	SW OUTFALL
12/1/2017	220	240	460	0	0	0	214	240	454	0.00	-23.0	15.7	15.6
12/2/2017	220	237	457	0	0	0	213	237	450	0.00	-23.0	14.9	15.6
12/3/2017	322	305	627	246	0	0	314	305	619	0.00	-21.7	15.3	15.6
12/4/2017	239	327	566	77	0	0	231	327	558	0.01	-22.7	16.1	15.6
12/5/2017	230	273	503	56	0	0	222	273	495	0.15	-23.0	15.9	15.6
12/6/2017	203	186	389	0	0	0	195	186	381	0.00	-23.3	16.1	14.9
12/7/2017	224	206	430	0	0	0	216	206	422	0.00	-24.0	15.6	14.9
12/8/2017	221	168	389	0	0	0	213	168	381	0.00	-22.3	14.8	14.9
12/9/2017	204	219	423	0	0	0	195	219	414	0.00	-23.0	14.9	14.9
12/10/2017	204	180	384	0	0	0	195	180	375	0.00	-24.7	14.9	14.9
12/11/2017	222	156	378	0	0	0	213	156	369	0.02	-21.0	15.0	14.9
12/12/2017	222	237	459	0	0	0	213	237	450	0.00	-21.7	14.7	14.9
12/13/2017	222	237	459	0	0	0	213	237	450	0.00	-24.3	14.0	14.9
12/14/2017	220	174	394	0	0	0	213	174	387	0.00	-24.3	13.8	14.9
12/15/2017	219	180	399	0	0	0	211	180	391	0.00	-21.3	13.6	13.6
12/16/2017	222	236	458	0	0	0	215	236	451	0.00	-23.3	13.5	13.4
12/17/2017	225	152	377	0	0	0	218	152	370	0.00	-24.0	13.9	13.4
12/18/2017	221	164	385	0	0	0	214	164	378	0.02	-20.3	14.1	13.4
12/19/2017	226	245	471	0	0	0	219	245	464	0.00	-21.3	13.9	13.4
12/20/2017	220	240	460	0	0	0	213	240	453	0.00	-24.0	13.4	13.4
12/21/2017	218	164	382	0	0	0	212	164	376	0.00	-24.0	12.6	13.4
12/22/2017	217	212	429	87	0	0	210	212	422	0.00	-21.7	14.4	13.4
12/23/2017	222	356	578	142	0	0	214	356	570	0.00	-22.0	13.7	13.9
12/24/2017	222	320	542	96	0	0	214	320	534	0.06	-23.0	13.1	13.9
12/25/2017	222	152	374	0	0	0	214	152	366	0.00	-24.0	12.4	13.9
12/26/2017	224	163	387	0	0	0	216	163	379	0.00	-22.7	12.1	13.9
12/27/2017	223	144	367	0	0	0	214	144	358	0.00	-21.7	12.7	13.9
12/28/2017	224	236	460	0	0	0	216	236	452	0.00	-22.3	12.3	11.5
12/29/2017	222	160	382	0	0	0	214	160	374	0.00	-24.0	11.9	11.6
12/30/2017	223	167	390	0	0	0	216	167	383	0.00	-20.3	11.9	11.3
12/31/2017	223	252	475	66	0	0	216	252	468	0.00	-23.0	11.1	11.3
Total	6945	6688	13633	769	0	0	6706	6688	13394	0.26	-704.9	432.4	434.6
Average	224.0	215.7	439.8	25	0	0	216.3	215.7	432.1	0.01	-22.7	13.9	14.0
Min	203	144	367	0	0	0	195	144	358	0.00	-24.7	11.1	11.3
Max	322	356	627	246	0	0	314	356	619	0.15	-20.3	16.1	15.6

1/24/2018 TR

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

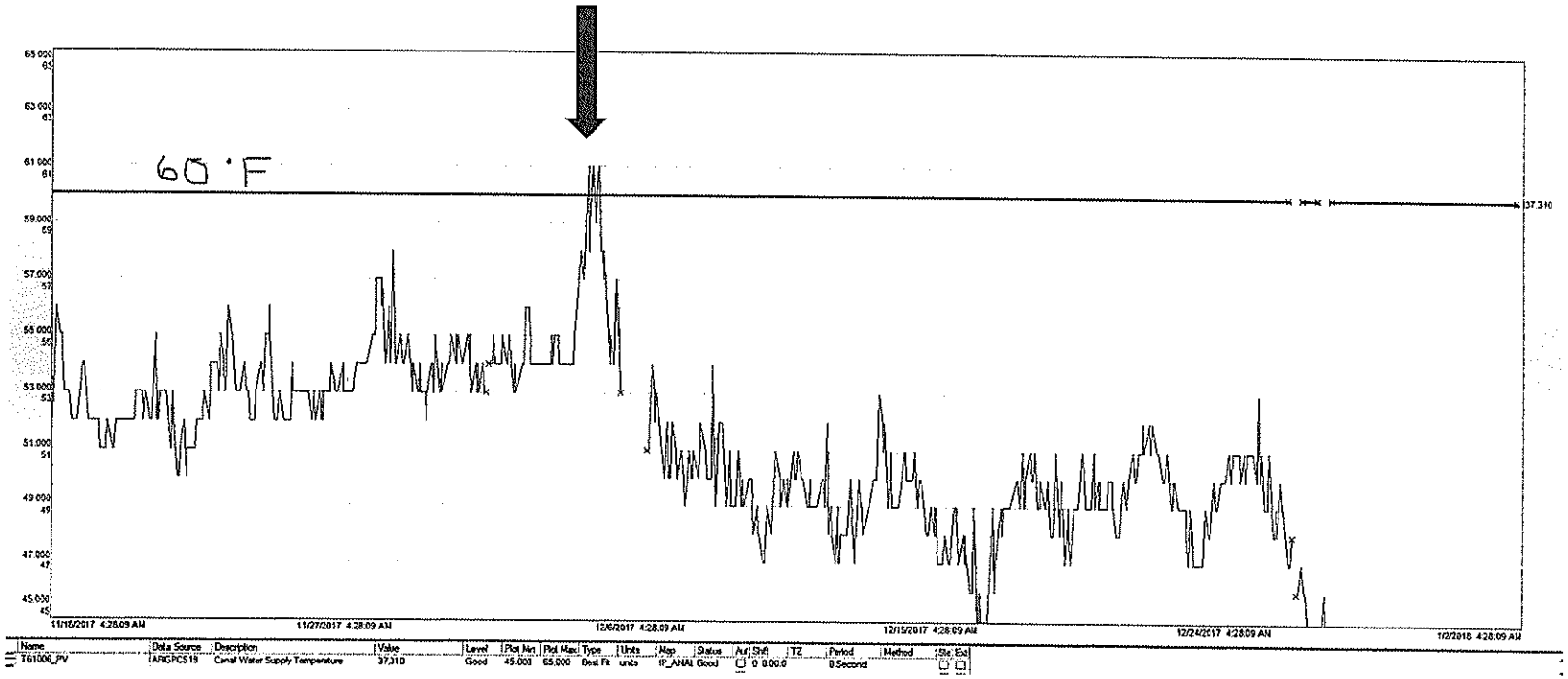
Attachment 2C –Ingredion CSSC Intake Temperature for November18-December 18, 2017

Attachment 2 – Thermal Addendum

NPDES Permit Renewal Addendum—IL0041009

Compliance with the Use B Temperature Standards

Attachment 2C--Ingredion CSSC Intake Temperatures for November 18-December 18, 2017



4h

Attachment 3 – Storm Water Description

Attachment 3 – Storm Water Description

Figure 1 in Attachment 4 shows the overall site with one storm water outfall on the south side of the plant, labeled outfall 002 and two non-contact cooling water outfalls on the western edge of the plant, labeled outfalls 001 and 003.

Outfall 002 as shown on Figure 2 in Attachment 4 drains a large vegetated area as well as a graveled area used for parking and a construction laydown area, an undeveloped heavily vegetated area that is not associated with industrial activity and a corn oil processing area. A corn oil processing facility is located in the storm water area with its process water discharged to the MWRDGC. Storm water run-off from the corn oil processing area drains to a retention pond.

Railcar coopering (bottom railcar hopper remains open and residual material falls out) occurs east of the MPL and onto a paved surface. This area is on a cleaning schedule to remove accumulated material. The corn oil processing facility handles various raw materials and processing aids that are managed in closed containers or under building roofs. Structural controls designed to prevent storm water contamination from the corn oil processing facility include perimeter draining to a concrete retention pond. The retention pond is visually inspected prior to manual pumping to the Pond 2. Should the retention pond show any signs of contamination, it can be diverted to the Germ Safety Sump for processing prior to being discharged to the MWRDGC.

Attachment 4 – Site Drainage and TOPO Maps

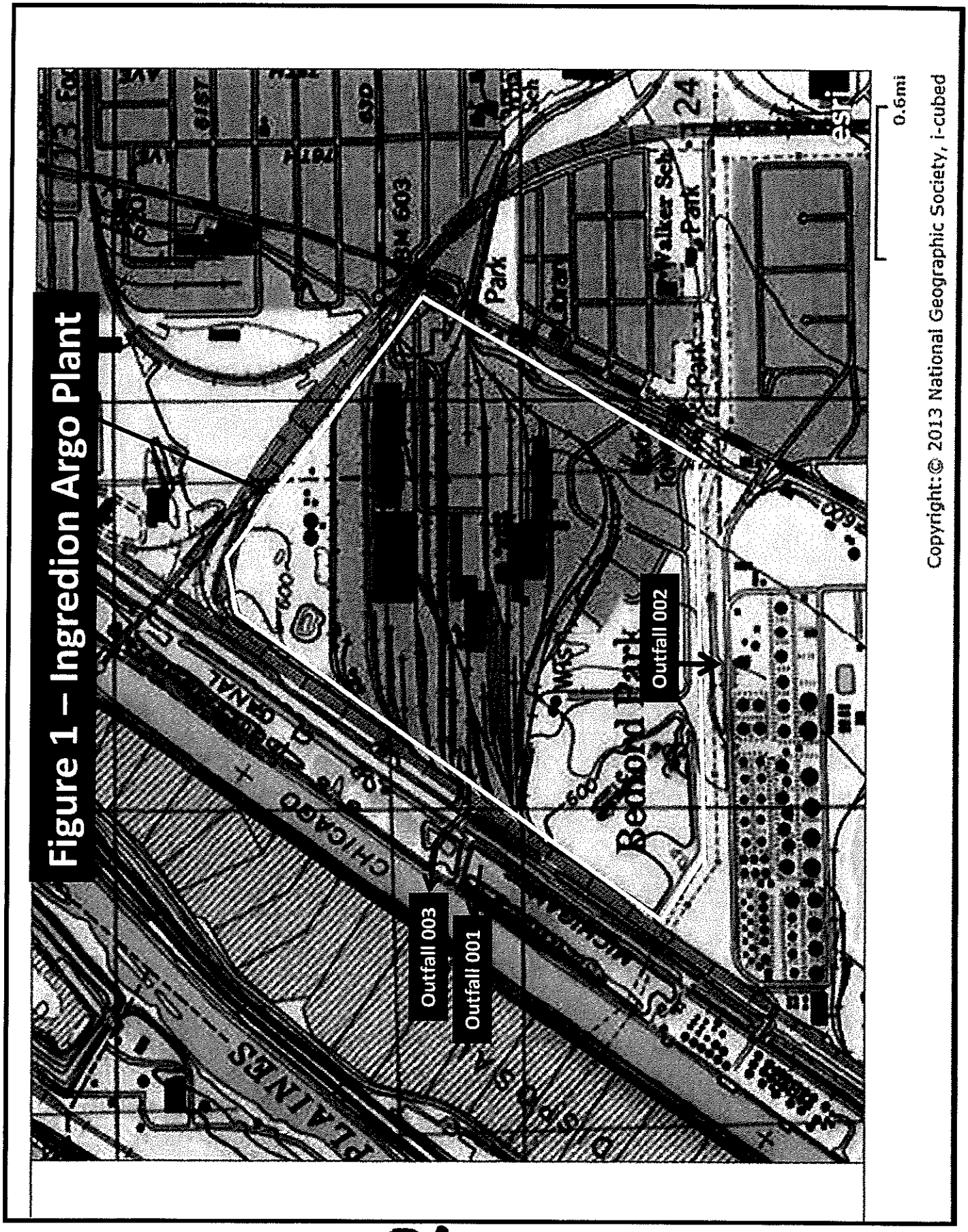
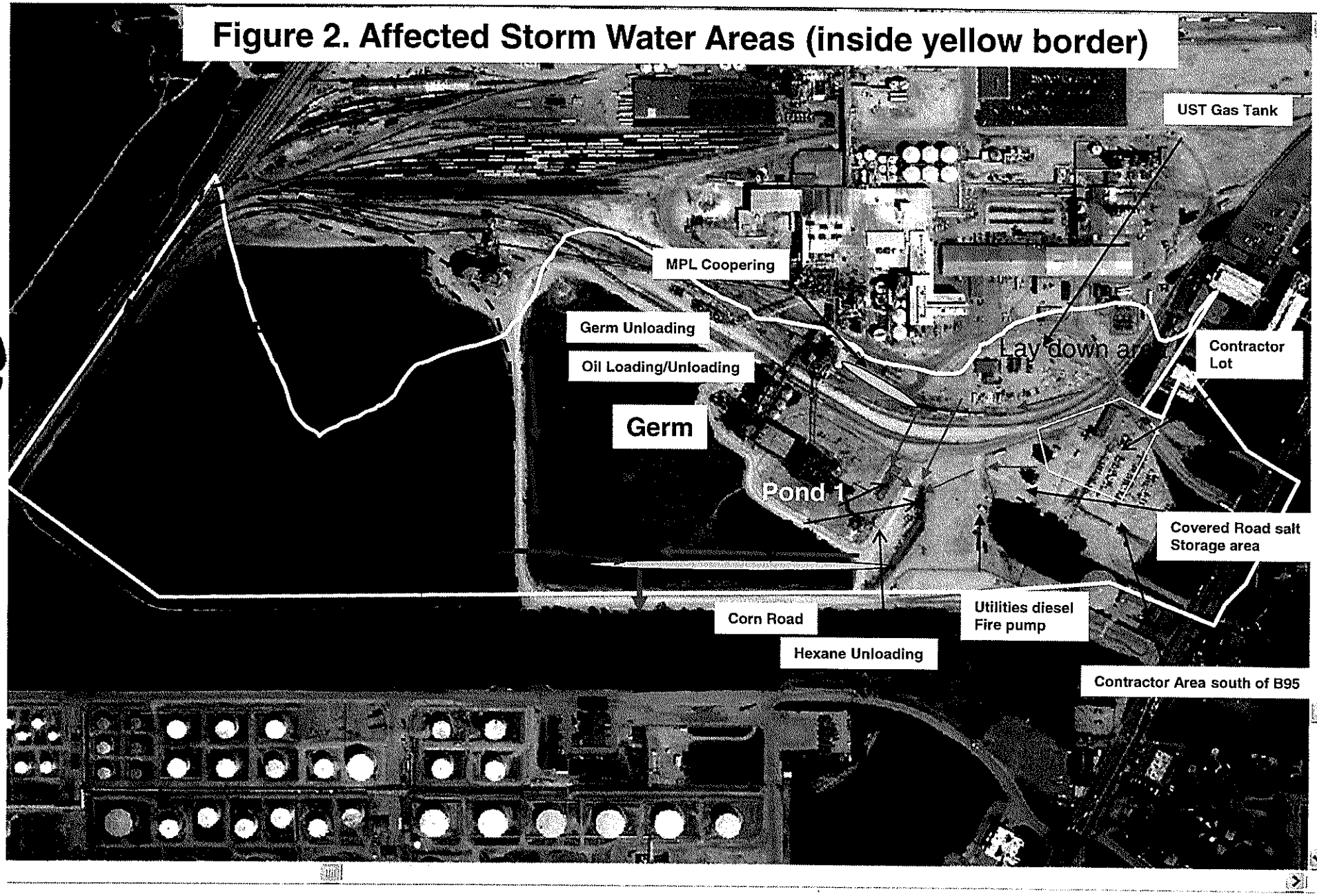


Figure 1 – Ingredion Argo Plant
Outfall 003
Outfall 001
Outfall 002
Bedford Park
CHICAGO
PLAINES
Walker Sch
Park
0.6mi
Copyright:© 2013 National Geographic Society, i-cubed

Figure 2. Affected Storm Water Areas (inside yellow border)



Attachment 5 – Canal Water Use Process Flow Diagram

Attachment 6 – Storm Water Sampling Data

Attachment 6 – Storm Water Sampling Data

There have been no qualifying storm water events in 2018. We have contracted with a company to setup equipment to sample a qualifying storm water event and will provide those results when the tests have been conducted.

Attachment 7 – Cool Water Intake Information – 316(b) Requirements

Ingredion Incorporated
Bedford Park, Illinois Facility
316(b) §122.21(r) Information

Prepared for

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, Illinois 60501

Prepared by

EA Engineering, Science, and Technology, Inc., PBC
444 Lake Cook Road, Suite 18
Deerfield, IL 60015

March 2018
Version: FINAL
EA Project No. 15565.01

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Ingredion Incorporated
Bedford Park, Illinois Facility
316(b) §122.21(r) Information

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March 2018
Version: FINAL
EA Project No. 15565.01

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LIST OF ACRONYMS AND ABBREVIATIONS

ACRCC	Asian Carp Regional Coordinating Committee
AIF	Actual Intake Flow
AOI	Area of Influence
°C	Degrees Celsius
BTA	Best Technology Available
CAWS	Chicago Area Waterway System
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CPUE	Catch per Unit of Effort
CSO	Combined Sewer Overflow
CSSC	Chicago Sanitary and Ship Canal
CWIS	Cooling Water Intake Structure(s)
DAF	Design Average Flow
DIF	Design Intake Flow
EA	EA Engineering, Science, and Technology, Inc., PBC
°F	Degrees Fahrenheit
fps	Feet per second
IDNR	Illinois Department of Natural Resources
INHS	Illinois Natural History Survey
IEPA	Illinois Environmental Protection Agency
USEPA	U.S. Environmental Protection Agency
ft	Foot (feet)
in.	Inch(es)
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
MGD	Million gallon(s) per day
UIW	Upper Illinois Waterway
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
ZHI	Zone of Hydraulic Influence

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EXECUTIVE SUMMARY

This document is submitted in compliance with U.S. Environmental Protection Agency (USEPA) §316(b) regulations (Rule) for existing facilities that became effective on October 14, 2014 for the Ingredion Incorporated Bedford Park, Illinois facility (Ingredion) (USEPA 2014). The Rule requires all facilities using a surface water intake flow greater than two million gallons per day (MGD) to employ or install best technology available (BTA) to reduce entrainment and impingement mortality. All facilities are required to submit the §122.21(r)(2) and (3) information and applicable provisions of the (r)(4) through (8) information that includes:

(r)(2) – Source Water Physical Data
(r)(3) – Cooling Water Intake Structure Data
(r)(4) – Source Water Baseline Biological Characterization Data
(r)(5) – Cooling Water System Data
(r)(6) – Chosen Method of Compliance with the Impingement Mortality Standard
(r)(7) – Entrainment Performance Studies
(r)(8) – Operational Status

All required information is provided in this document. The Rule's entrainment information at §122.21(r)(9) through (12) is not included as this information is only required for facilities with an actual intake flow (AIF) that exceeds 125 MGD. Ingredion's maximum design intake flow (65.6 MGD) is well below the threshold which would require submittal of entrainment-related information.

Specific details and supporting information regarding (r)(2) through (r)(8) are provided in the corresponding numbered sections of this report. The following provides an overview of the key points contained herein:

- Prior to the issuance of the existing facilities §316(b) Rule, Ingredion was not subject to any regulations that would have required facility-specific impingement, entrainment or other biological monitoring at its two cooling water intake structures (CWIS) located on the Chicago Sanitary and Ship Canal (CSSC), a highly impacted, man-made water conveyance. Therefore, site-specific information is not available to characterize either impingement or entrainment at the site. The biological information contained in this report is therefore taken from existing data for the CSSC from other available sources.

- Over the past seven years (2011-2017), the annual average actual intake flow (AIF) of Ingredion's CWIS is approximately 51.7 cfs (33.4 MGD). This is approximately 51% of the design intake flow (DIF) of 101.5 cfs (65.6 MGD). The DIF accounts for only 10% of the 7Q10 flow of the CSSC near the Ingredion CWIS, while the AIF for this seven-year period accounts for only 5% of the 7Q10 CSSC flow (1,014 cfs).

- Although there are no site-specific impingement or entrainment data for the Ingredion CWIS, available data from studies of the CSSC provided adequate information to both

characterize the aquatic community, as well as identify those fish species which would be more likely to be susceptible to impingement and/or entrainment.

- Review of the previously conducted Phase II impingement data collected at nearby facility[1] on the CSSC in 2004-2005 shows that the most abundant species were: Gizzard Shad (69%), Bluntnose Minnow (7.3%), Spotfin Shiner (4.0%), White Perch (3.6%), and Round Goby (2.5%), with 34 additional species comprising the remaining 13.6% (most of them represented by very few specimens). By weight, Gizzard Shad also dominated, followed by Common Carp and White Perch. Eleven of the 39 species collected were nonnative or invasive. Gizzard Shad is considered a fragile species under § 125.92(m) of the Final Rule, defined as a species of fish or shellfish that has an impingement survival rate of less than 30 percent.

- At the same nearby facility, an entrainment study was conducted from 26 April-28 August 2005. Entrainment samples were dominated by four main taxa groups: unidentified Cyprinid/Cyprinid Type (82%), Gizzard Shad/unidentified Clupeidae (9.8%), *Lepomis* sp. (0.8%), and Common Carp (0.5%), with the remaining four taxa types representing the remaining 6.8% of the total collection.

- More recent fisheries surveys of the CSSC by the Metropolitan Water Reclamation District of Greater Chicago (MWRDCG) at locations near the Ingredion CWIS corroborate the species found during the prior impingement and entrainment studies performed at a nearby facility in 2004-2005. The fish species found are reflective of those listed in the current Use Designation for this waterbody, as defined in Ill. Adm. Code, Title 35, Subtitle C, Chapter I, Section 303.240(a), and are those expected to be found under the limited habitat conditions of the CSSC. The waterway adjacent to Ingredion has a long-standing fish consumption advisory and is not designated for primary human contact use, as defined in 35 Ill. Adm. Code 301.282

- The U.S. Fish and Wildlife Service (USFWS) maintains a list of federally listed threatened and endangered species by Illinois County (USFWS 2017). The 9 May 2017 list for Cook County shows no listed aquatic species, nor any which rely on aquatic food resources. Therefore, the operation of the Ingredion CWIS does not, and is not expected to result in any adverse effects on Federally-listed species.

- Of the fish listed as Threatened in Cook County by the Illinois Department of Natural Resources (IDNR), only the Banded Killifish has been consistently found in various aquatic monitoring programs in the CSSC and adjacent downstream waters. In recent years, there have been an increasing number of Banded Killifish found throughout the Upper Illinois Waterway, which demonstrates that they are not being negatively impacted by current facility operations, including, but not limited to those of the Ingredion CWIS. None of the remaining eight state-listed fish species have been found in recent fisheries

[1] Full reference information for this nearby facility is available upon request.

surveys of the CSSC performed by the MWRDGC or the Asian Carp Regional Coordinating Committee (ACRCC) programs.

- There are no federally listed mussel species identified by the USFWS as being present in Cook County, Illinois. There are three state-listed mussel species for Cook County: Slippershell, (*Alasmidonta viridis),* Spike (*Elliptio dilatata*), and Black Sandshell (*Ligumia recta*). These are also considered threatened throughout the state. Based on their scarcity, as well as their life history requirements and the physical conditions of the CSSC, it is unlikely that these mussel species would be found near the Ingredion CWIS. The benthic sampling performed by MWRDGC in the CSSC has not encountered these species.

- The overall aquatic species assemblage near the Ingredion CWIS has been, and will continue to be, dictated by the physical habitat constraints of the CSSC, as well as its anthropogenically altered flow regime and urban inputs. The operation of Ingredion's CWIS has no adverse influence on the CSSC aquatic community.

- The CSSC waterway is subject to intensive monitoring pressure by the ACRCC programs, to detect the presence of aquatic invasive species and eradicate them. This monitoring also likely impacts the aquatic community of the CSSC far more than any potential effects from the Ingredion CWIS.

- Ingredion employs standard through-flow traveling water screens that do not have specifically designed and integrated fish protection features. However, the facility does employ measures to limit the entry of debris (which could also include aquatic organisms) from entering the CWIS, and diverts materials from entering the intake areas, as well as subsurface fencing installed in front of the intake structure to prevent entry of floating and submerged materials. Thus, Ingredion's CWIS debris control system may also function as a deterrent to fish impingement. This system is necessary to reduce the considerable debris loading in the CSSC (due to urban inputs, run-off and combined sewer overflows) from entering the Ingredion intakes and either blocking flow or damaging the intake screens. The debris control system is run continuously while any intake pump is operating and functions to deflect debris downstream, rather than being drawn into the CWIS.

- The actual combined intake flow for the Ingredion facility over the past seven years has been an average of 51% of the design intake flow (DIF); therefore, the operation of the Ingredion CWIS effectively reduces potential impingement and/or entrainment effects by 49% or more over maximum design operating flow conditions.

- Based on current physical and operational controls in place at the Ingredion facility, which serve, among other functions, to minimize CWIS impacts on aquatic life (already limited by the harsh physical attributes of the CSSC and unrelated to Ingredion operations), as well as the facility's on-going commitment to closely manage cooling

water use, Ingredion should be deemed in compliance for site-specific BTA for Impingement Mortality under §125.94(c)(6) of the Rule.

- Ingredion understands that IEPA will still be required to make a site-specific Entrainment BTA determination for the Bedford Park, IL facility based on existing information. The Rule at §125.94(c) and Rule preamble (p. 48358 FR Vol.79, No, 158, August 14, 2014) allows facility owners to request deferral of the §122.21(r)(6) chosen method of compliance for impingement until after the permitting authority makes the entrainment BTA determination. After issuance of a final NPDES permit that establishes any IEPA-determined entrainment requirements under §125.94(d), compliance with the impingement mortality standard in §125.94(c) would be effected as soon as practicable. Interim compliance milestones may be established in the permit, based on identified requirements. Ingredion hereby requests this deferral.

The debris control system currently in place at Ingredion effectively prevents the entry of both urban debris, and likely fish as well, thereby providing acceptable control, especially given the nature and function of the canal system. All materials that do reach the traveling screens are continuously removed with a water spray that directs them back into the canal, similar in function to a fish return system. There have been no federal or state threatened or endangered species documented near the Ingredion CWIS. The effective intake velocity has also been shown to be less than 0.5 fps at distances of from 6 to 7 ft in front of each CWIS, an area protected by a fenced barrier and/or associated deterrents. Moreover, the combined AIF for the Ingredion facility over the past seven years has been an average of 51% of the DIF; thus, the operation of the Ingredion CWIS reduces IM&E by 49% or more over maximum design operating flow conditions. Therefore, given the existing physical and operational controls in place, as well as the additional site-specific circumstances of the location of the facility on the CSSC, Ingredion should be determined by IEPA to be fully compliant with the intent of the impingement mortality standard under Option 6 of §125.94(c).

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1. INTRODUCTION

The purpose of this document is to provide the Illinois Environmental Protection Agency (IEPA) with §122.21(r) information for the Ingredion Incorporated Bedford Park, Illinois facility (Ingredion). EA Engineering, Science, and Technology, Inc., PBC (EA) was selected to prepare this report on Ingredion's behalf due to its long-standing experience and expertise regarding 316(b) issues, as well as its extensive knowledge regarding the Chicago Sanitary Ship Canal (CSSC), the source waterbody for Ingredion.

The introduction consists of three sections that include a general overview of the §316(b) regulations, a discussion of the compliance approach for Ingredion, and a summary of the organization of the remainder of this document.

1.1 GENERAL §316(b) RULE OVERVIEW

The U.S. Environmental Protection Agency (USEPA) issued §316(b) regulations (Rule) for existing facilities that became effective October 14, 2014[2]. These regulations require all facilities using surface water intake of greater than two million gallons per day (MGD) to install best technology available (BTA) to reduce entrainment and impingement mortality. All facilities are required to submit the §122.21(r)(2) and (3) information and applicable provisions of the (r)(4) through (8) information that includes:

(r)(2) – Source Water Physical Data
(r)(3) – Cooling Water Intake Structure Data
(r)(4) – Source Water Baseline Biological Characterization Data
(r)(5) – Cooling Water System Data
(r)(6) – Chosen Method of Compliance with the Impingement Mortality Standard
(r)(7) – Entrainment Performance Studies
(r)(8) – Operational Status

The BTA determination for entrainment is site-specific and is based on information provided to the National Pollutant Discharge Elimination System (NPDES) permitting authority by each affected facility. At a minimum, all facilities using >125 MGD actual intake flow (AIF) are required to submit the following entrainment-related §122.21(r)(9) - (12) information:

(r)(9) – Entrainment Characterization Study
(r)(10) – Comprehensive Technical Feasibility and Cost Evaluation Study
(r)(11) – Benefits Valuation Study
(r)(12) – Non-water Quality Environmental and Other Impacts Study

The §122.21(r)(10) – (12) information must be peer reviewed as required at §122.21(r)(13) of the Rule. Based on the results of the information provided, the permitting authority must make site-specific BTA entrainment determination that could range from a requirement to retrofit with a

[2] https://www.federalregister.gov/d/2014-12164

closed-cycle recirculating system (CCRS) to a determination that the existing cooling water intake structure (CWIS) is BTA. Once the BTA determination for entrainment is made, the facility must select from one of seven alternatives to reduce impingement mortality. The seven impingement mortality BTA alternatives include:

1. Closed-Cycle Cooling Recirculating System
2. 0.5 fps Through-Screen Design Velocity
3. 0.5 fps Through-Screen Actual Velocity
4. Existing Offshore Velocity Cap
5. Modified Traveling Screens
6. System of Technologies as the BTA for Impingement Mortality
7. Impingement Mortality Performance Standard

However, the Rule includes several potential exemptions that include:

- an exemption for de minimis levels of impingement,
- a provision for less stringent standards for low-capacity utilization,
- an exemption for some or all the §122.21(r) information for facilities that withdraw cooling water from manmade lakes and reservoirs and have stocked or managed fisheries, and
- an exemption from use of technologies at nuclear facilities that conflict with federal nuclear safety requirements.

The Rule provides broad discretionary authority to Illinois EPA to deny exemptions or even impose additional requirements, especially if federally protected threatened or endangered species or their designated critical habitat are at risk.

The Rule at §125.94(c) allows facility owners to request deferral of the §122.21(r)(6) chosen method of compliance for impingement information until after the permitting authority makes the entrainment BTA determination.

1.2 BACKGROUND

Prior to the issuance of the existing facilities §316(b) Rule, Ingredion was not subject to prior regulations that would have required facility-specific impingement, entrainment, or other biological monitoring at its two CWIS located on the Chicago Sanitary and Ship Canal (CSSC), a highly impacted, man-made water conveyance. Therefore, site-specific information is not available to characterize either impingement or entrainment at the site. The biological information contained in this report is therefore taken from existing data available for the CSSC from other sources.

Prior site-specific information describing Ingredion's CWIS was provided to IEPA in March 2014, in fulfillment of NPDES permit No. IL 0041009 Special Condition 13 (included as Appendix A). Ingredion did not receive any notification from IEPA to provide additional

information subsequent to this submittal, nor has it had any permit modifications since that time to further specify any additional §316(b) requirements. In a discussion with IEPA (Darin LeCrone on September 29, 2017), Ingredion was directed to submit the required §122.21(r) report information, using existing available information and data, with their next NPDES permit renewal. As was also discussed, no new studies have been performed by Ingredion to meet this submittal requirement.

1.3 COMPLIANCE APPROACH FOR INGREDION

As documented in the §122.21(r)(5) information (see Section 5), Ingredion withdraws cooling water from the CSSC at well below 125 MGD AIF and is therefore not required to submit the §122.21(r)(9) through (12) information.[3] The §122.21(r)(7) information (i.e., Entrainment Performance Studies) is also not considered applicable for Ingredion since the entrainment information is not required, and it is not listed as required for the impingement mortality BTA determination in the Rule (see Table VIII-2 of the Rule preamble on page 48362 of the Rule).

Ingredion understands that IEPA will still be required to make a site-specific Entrainment BTA determination for the Bedford Park, IL facility based on existing information. After issuance of a final NPDES permit that establishes any IEPA-determined entrainment requirements under § 125.94(d), compliance with the impingement mortality standard in § 125.94(c) would be effected as soon as practicable. Interim compliance milestones may be established in the permit.

Based on current physical and operational controls in place at the Ingredion facility, which serve, among other functions, to minimize CWIS impacts on aquatic life (already limited by the harsh physical attributes of the CSSC and unrelated to Ingredion operations), as well as the facility's on-going commitment to closely manage cooling water use, Ingredion should be deemed in compliance for site-specific BTA for Impingement Mortality under §125.94(c)(6) of the Rule.

Section 6 of this report provides information to support use of this compliance alternative.

1.4 REPORT ORGANIZATION

The report is organized such that the §122.21(r)(2) through (6) information are presented in Sections 2 through 6 of this report, respectively. Section 7 briefly discusses the §122.21(r)(7) information; Section 8 provides the §122.21(r)(8) facility operational status information; All citations referenced in this report are found in the Reference section.

[3] Discussed in the Final §316(b) Rule (FR Vol. 79, No. 158, October 14, 2014) at p. 48309

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2. §122.21(r)(2) SOURCE WATERBODY PHYSICAL DATA

The Rule at §122.21(r)(2) requires that Ingredion provide the following source waterbody physical data for the Bedford Park, Illinois facility:

> (i) A narrative description and scaled drawings showing the physical configuration of all source water bodies used by your facility, including areal dimensions, depths, salinity and temperature regimes, and other documentation that supports your determination of the water body type where each cooling water intake structure is located;
>
> (ii) Identification and characterization of the source waterbody's hydrological and geomorphological features, as well as the methods you used to conduct any physical studies to determine your intake's area of influence within the waterbody and the results of such studies; and
>
> (iii) Locational maps.

The following source water physical data are being provided to characterize the waterbody adjacent to Ingredion. This information is used to provide an understanding of the hydrology of the source waterbody near the intake. The information includes a description of the CSSC dimensions, key physical and chemical characteristics, and provides the graphics and maps required under 40 CFR 122.21(r)(2).

2.1 NARRATIVE DESCRIPTION OF THE SOURCE WATERBODY

Ingredion is located on the Lockport Pool of the CSSC in Bedford Park, Illinois (Latitude: 41.77361, Longitude: -87.82322) at River Mile (RM) 311.8, approximately four RM downstream of the Metropolitan Water Reclamation District of Greater Chicago's (MWRDGC) Stickney Municipal Wastewater Treatment System outfall (Figure 1). The CSSC is part of the Chicago Area Waterway System (CAWS), a man-made watercourse completed in 1900 to help convey treated sewage and storm water flow away from Chicago and the city's drinking water source, Lake Michigan, to the Illinois River and eventually the Mississippi River and the Gulf of Mexico. The CAWS consists of 78 miles of canals, which serve two principal purposes for the Chicago area: (1) drainage of urban stormwater runoff and treated municipal wastewater effluent and (2) support of commercial navigation. Flow in the CSSC is completely regulated by a system of locks and dams and is frequently manipulated to maintain navigational depth, as well as flood control for the Chicago Metropolitan area.

2.2 AERIAL DIMENSIONS

The width of the CSSC at Ingredion is approximately 312 ft, as measured from the U.S. Army Corps of Engineers (USACE) Map of the Illinois Waterway (Chart no. 105-106)[4].

[4] http://www.mvr.usace.army.mil/Portals/48/docs/Nav/NavigationCharts/ILW/CHART_105_106.pdf

2.3 DEPTH

Average water depth of the CSSC near Ingredion is approximately 18-22 ft (Duncker and Johnson 2015) at normal pool elevation, but can change by as much as 8 ft, depending on canal level. The Ingredion CWIS are designed to operate at lower water depths.

2.4 FLOW

The CSSC flows south/southwest from its origin in the City of Chicago (RM 322.4) to its confluence with Cal-Sag Channel at RM 303.5 and further downstream, to its confluence with the Des Plaines River just below the Lockport Lock and Dam at RM 290.0 (Figure 3).

Flow and water level of the canal system is regulated by the Lockport Lock and Dam, which is controlled by the USACE, in coordination with the MWRDGC. Approximately 75% of the length of the CAWS consists of man-made canals and the remainder consists of natural streams that have been deepened, straightened, and/or widened to accommodate industrial, municipal and flood control uses. On an average annual basis, over 70% of the base flow of the CSSC is from the discharge of treated municipal wastewater treatment system effluents from facilities owned and operated by the MWRDGC. During the winter months, these effluents comprise virtually 100% of the flow, while during the summer months, approximately 50% of the CSSC flow comes from these treatment works (MWRDGC 2008). The CAWS is part of the Upper Illinois Waterway (UIW).

Flow in the CSSC is recorded at the USGS gaging station located approximately 9.6 miles downstream in Lemont, Illinois at RM 302.2 (USGS Gage 05536890). This gaging station records the combined flow from the CSSC and the Cal-Sag Channel, and these data are therefore not representative solely of the flow near the Ingredion CWIS. There is no other flow gaging station located upstream of the USGS Lemont site on the CSSC, nor on the Cal-Sag Channel. The CSSC flow at Ingredion is primarily influenced by the upstream MWRDGC Stickney Water Reclamation Plant discharge, especially during the non-summer months. The design maximum discharge flow of the Stickney POTW is 1,440 MGD (2,228 cfs), while the average annual flow for years 2011-2016 was 691 MGD (1,069 cfs).[5] The published 7-day, 10-year low flow for the CSSC near Ingredion is 655 MGD (1,014 cfs) (ISWS 2003), which is primarily based on the long-term average of treated wastewater discharges from the two POTWs (O'Brien, formerly known as North Side, and Stickney) that provide the base flow of the canal system, either directly or indirectly.

During the summer, the discretionary diversion of water from Lake Michigan, tightly regulated by Consent Decree[6] provides additional dilution flow to improve water quality conditions in the CSSC on an as-needed basis. Direct diversions are also performed to ensure safe navigational

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5 http://www.mwrd.org/irj/go/km/docs/documents/MWRD/internet/reports/Monitoring_and_Research/docs/WRP_Data/WRP_Effluents/WRP_Outfall_2011-2020/Stickney_Outfall_2011-2020.xls

6 Lake Michigan Diversion Supreme Court Consent Decree 388 U.S. 426 (1967) Modified 449 U.S. 48 (1980).

depth in the CSSC. Annual flow accounting is performed by USACE using data from the USGS Lemont gaging station.

The monthly CSSC flow recorded at this gage was reviewed for the years 2011-2016. The flow ranges between a low average monthly discharge of 1,344 cfs in November 2012, to a high of 4,257 cfs in July 2014. The average annual flow of the CSSC for this six-year period, as measured at the Lemont gaging station, is 2,604 cfs. The monthly mean canal flows are provided in Table 1. As discussed above, these flows are all higher than what would be expected for the CSSC immediately adjacent to Ingredion.

2.5 SALINITY

The CSSC is an inland freshwater canal; therefore, salinity is negligible.

2.6 TEMPERATURE

Long term monitoring of water temperatures has been performed by MWRDGC at several locations in the CSSC. Data for the locations in proximity to Ingredion are included in Table 2. In addition, Ingredion also measures intake temperatures, which are summarized in Table 3. Overall, the temperature regime in the CSSC is not comparable to that in a natural waterway, especially during periods when the POTW effluents predominate, as they are warmer during the winter months and cooler during the summer months than typical water temperatures found in undisturbed natural systems.

Seasonal intake water temperatures measured at Ingredion averaged 50°F during the winter months (December through March) and 75°F during the summer months (June through September). The maximum mean winter temperature was 62°F in March 2012, and the maximum summer mean was 86°F in July 2012 (Table 3).

2.7 AREA OF INFLUENCE

A simple desktop model was used to determine the hydraulic area of influence (AOI) for Ingredion's CWIS. The goal was to define the approximate area within the 0.5 ft per second (fps) velocity contour. The USEPA considers this velocity to be a *de minimis* value and is one of the seven impingement BTA compliance alternatives. That is, a fish can swim freely in a flow at this velocity and ostensibly avoid impingement. Accurately defining the AOI at cooling water intake structures requires a detailed understanding of the intake and the surrounding waterbody environment and would involve the use of hydrodynamic modeling. However, as a facility with a relatively small intake flow, several basic and common assumptions were made for Ingredion to define the approximate AOI using simplified calculations.

These assumptions are:

1. The maximum AOI occurs at the lowest through-screen water level.

2. Canal currents at low flow conditions do not affect flow patterns near Ingredion's CWIS; and
3. The flow field extends out in approximately the same direction both horizontally and vertically from the face of each CWIS.

The AOI for each of the two Ingredion CWIS was calculated based on maximum pump flow. Values used to calculate the AOI for Ingredion are provided below:

Location	Design Flow (cfs)	Assumed Low Water Depth (ft)
CWIS #1 (Pumps 1-4)	74.9*	8
CWIS #2 (Pump 5)	26.7	8

*The AOI calculation assumes the maximum design flow and therefore provides a worst-case estimate; AOI flow rate would be lower with the use of fewer pumps.

Desktop calculations of the AOI of a cooling water intake are based on the principles of conservation of mass and continuity and require simplifying assumptions. A low water elevation and zero ambient velocity provide a conservative estimate of AOI. Below are shown the calculation steps that were used for estimating the worst-case AOI for Ingredion's CWIS #1, assuming all four pumps are operating at design flow.

Area of Influence (AOI) or Hydraulic Zone of Influence (HZI) is the location where the velocity induced by the intake is equal to a specified threshold velocity. In the case of impingement, the threshold velocity is assumed to be 0.5 fps. The radius of AOI (R_{AOI}) for an arc angle of 180 degrees (i.e. a shoreline intake structure, as Ingredion's CWIS #1) can be estimated from a continuity equation:

$$Qi = \pi \times R_{AOI} \times d \times V \qquad \text{Eq. 1}$$

Where, Q_i = Design Intake Flow (in cfs)

R_{AOI} = Radius of Area of Influence (in ft)

d = Minimum water depth (in ft) at R_{AOI}

V = Threshold velocity (i.e., 0.5 fps for impingement AOI).

Rearranging terms in Equation 1 gives:

$$R_{AOI} = Qi / (\pi \times d \times V) \qquad \text{Eq. 2}$$

For Ingredion's CWIS #1, the maximum estimated R_{AOI} (based on a maximum flow rate of 33,600 gpm (74.9 cfs) is calculated as follows:

$$R_{AOI} = 74.9 \text{ cfs} / (\pi \times 8 \text{ ft.} \times 0.5 \text{ fps}) = 5.96 \text{ ft}$$

Therefore, the semi-circular contour at which the effective intake velocity is 0.5 fps is approximately 6 ft away from the face of CWIS #1 under full four pump operations. At this CWIS, the CSSC is approximately 312 ft wide; therefore, the calculated AOI extends across the canal less than 2% of the total CSSC width.

The table below summarizes the run time of the four pumps that make up CWIS #1. Since all four pumps are seldom used concurrently, the actual AOI is likely to be much smaller most of the time. This AOI is also well within the confines of Ingredion's debris management system, which deters floating and submerged materials from the CSSC from entering the two CWIS.

CWIS #1 Pump Operation			
CWIS #1 Pump Operation Period	**Total Days**	**Days where more than 3 pumps were in operation**	**Percent**
6/11/15 to 2/17/18	983	97	9.9

Ingredion CWIS #2 has a similar design to CWIS #1, but contains only a single traveling screen array and a single 12,000 gpm (26.7 cfs) pump. In addition, this CWIS is offset from the CSSC shoreline at the end of a small intake embayment. Since the CWIS is not flush with the shoreline, a slightly different calculation is used, still based on the same principal of conservation of mass and continuity of flowing water. The same assumptions used above regarding maximum flow and low water level were applied.

The basic equation which reflects CWIS #2 is: $Q = Av$

Where: Q = maximum intake flow (in cfs)
A = area (minimum depth in ft * width across intake forebay in ft)
v = Threshold velocity (i.e., 0.5 fps for impingement AOI)

Based on the above information, and solving for width, the 0.5 fps velocity contour occurs where the intake forebay width is approximately 6.7 ft. Based on the geometry of the CWIS intake forebay, the 0.5 fps AOI under low water level conditions occurs directly in front of the face of CWIS #2, which is well within the CWIS#2 intake embayment (Figure 4). Since the width of the intake forebay increases at distances closer to the CSSC shoreline, this means that the effective intake velocity at the CSSC interface would be substantially less than 0.5 fps and therefore would exert no appreciable influence on aquatic assemblage in the CSSC.

CWIS #2 Pump Operation			
CWIS #2 Pump Operation Period	**Total Days**	**Number of days when pump was in operation**	**Percent**
6/11/15 to 2/17/18	983	365	37.1

CWIS #2 is also separated from the main channel by fencing to prevent submerged and floating debris from entering, and contains bar racks to prevent floating and submerged material from entering the intake as well as and a spray arm used to redirect and/or minimize the inflow of floating and submerged materials from the main channel. This fence is located beyond the calculated AOI. Both factors serve to minimize the potential entry of aquatic organisms into the CWIS.

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3. §122.21(r)(3) COOLING WATER INTAKE STRUCTURE DATA

The Rule at §122.21(r)(3) requires that Ingredion provide the following cooling water intake information for the Bedford Park, Illinois facility:

> (i) A narrative description of the configuration of each of your cooling water intake structures and where it is located in the water body and in the water column;
>
> (ii) Latitude and longitude in degrees, minutes and seconds for each of your cooling water structures;
>
> (iii) A narrative description of the operation of each of your cooling water intake structures, including design intake flows, daily hours of operation, number of days of the year in operation and seasonal changes, if applicable;
>
> (iv) A flow distribution and water balance diagram that includes all sources of water to the facility, recirculating flows, and discharges; and
>
> (v) Engineering drawings of the cooling water intake structure.

The following cooling water intake structure data are being provided to characterize the Ingredion CWIS and evaluate the potential for impingement and entrainment of aquatic organisms.

3.1 CWIS LOCATION AND CONFIGURATION

Ingredion has two separate intake structures located adjacent to each other on the CSSC. CWIS #1 is located at lat. 41.776120 / long. -87.832081 and CWIS #2 is located at lat. 41.775808/long. -87.832016 (Figure 3). The first houses four canal pumps (designated #1-#4), while the second houses pump #5. The daily maximum design flow for all five pumps is 45,600 gpm (65.6 MGD/101.5 cfs). Each intake structure is equipped with a sump that collects minor water leakage, which is returned directly to the CSSC.

Floating debris, which can be extremely prevalent in this waterway from both runoff, as well as combined sewer overflow (CSO) discharges, can cause fouling or damage if drawn into the cooling water system. Ingredion manages this debris through use of a spray bar supplied with water from four 2-in. lines. This spray bar is located approximately 2 ft from the face of the CWIS. Water is supplied by a 50 hp spray pump at 60 psi and can push water out 8 -10f t from the face of the CWIS. The canal water then passes through bar racks (1.25 in. diameter, spaced 4 in. apart) located in front of each intake structure. The purpose of these bars is to keep logs and other large floating and submerged debris from entering and damaging the traveling screens.

There is a total of four traveling screens: screen #1 protects pump #1, screen #2 protects pump #2, screen #3 protects both pumps #3 and #4, and screen #4, protects pump #5. These traveling screens collect material not managed by the spray bar or the bar racks described above. The

individual traveling screen panel dimensions are 25 in. x 42 in. The traveling screens are in continuous rotation unless differential pressure drops. They are constructed from stainless steel and have 3/8 in. mesh. Each of the four screen arrays have the same dimensions: 3 ft-3.5 in. wide, and 17 ft deep. The design through-screen velocity at 12,000 gpm with 100% clean screen at a low water level of 8 ft is 2.1 fps.[7] Pumps #1, #2 and #5 have their own traveling screens, while Pumps #3 and #4 share traveling screen #3. Design through-screen velocity for a single 4,800 gpm pump flow was not available, but is assumed to be approximately 0.84 fps, based on the consistent geometry of the traveling screen arrays. Through-screen velocity for both pumps on traveling screen array #3 would be 1.68 fps, based on the same assumptions.

Water is used to free any material that collects on the screens as part of an automated system that is actuated by a pressure differential. This spray wash water and material from the screens is immediately and directly returned to the canal via a chute, as allowed by NPDES Permit Special Condition No. 10. The debris return system operates whenever an intake pump is operating. Pump #5 is a stand-alone unit housed in its own building. There is a 3 ft tall chain-link fence in front of pump #5, which is used to manage material submerged or floating on the surface of the water, while providing clearance for varying water levels. The fence also manages large debris. In front of the fence, there is a blower attached to a 2-in. pipe that is used to form a bubble wall that assists with keeping the cyclone fence unobstructed.

Pumps #1 and #2 are horizontal pumps that have the capacity to pump 12,000 gpm each with 20-in. inlets reduced to 10-in. inlets at the canal. Pumps #3 and #4 are three stage vertical pumps with a capacity of 4,800 gpm each with the same inlets as pumps #1 and #2. Pump #5 is a horizontal 12,000 gpm pump, with the same inlet as pumps #1 and #2. Flow from all pumps goes into a common 24 in. header and is sent to rotary strainers.

There are five rotary strainers that run off the common header that protect the plant cooling infrastructure from clogging and fouling. Only three of the larger units are used at any given time. These units have disk strainers installed with 1/16th in. diameter filtering orifices. There are 4-in. discharge lines used to remove collected material that are supplied from the header pressure for backwashing these units. This material enters a common header and is routed back into the canal. The other two smaller strainers are used when maintenance is needed on the larger units and work similarly, except with a 3-in. outlet. From there, the water runs through a common 24-in. header into the plant.

The canal pumps are operated to satisfy the plant cooling needs by maintaining a header pressure in the plant of 22 to 28 psi. Use of the larger and smaller pumps is rotated to maintain the desired header pressure.

The general layout of the two Ingredion CWIS is provided in Figures 4 through 6.

[7] Information from traveling screen specification document

3.2 CWIS OPERATION AND INTAKE FLOWS

Ingredion is engaged in wet milling of corn to produce starch, sweeteners, corn oil and animal feeds (SIC Code 2046, NAICS 311221). Wastewater generated from non-contact cooling water, stormwater runoff, and discharges related to the cooling water intake is regulated under NPDES Permit No. IL 0041009. According to the information contained in the most recent NPDES permit fact sheet[8], plant operation requires an average intake flow of 48.0 MGD (74.3 cfs) of non-contact cooling water sourced from the CSSC. The design intake flow (DIF) of the facility is 65.6 MGD (101.5 cfs), which includes flow withdrawn from the CSSC and does not include any supplemental flow from other sources.

Over the past seven years (2011-2017), the annual average actual intake flow (AIF) of Ingredion's CWIS is approximately 51.7 cfs (33.4 MGD). This is approximately 51% of the design intake flow (DIF) of 101.5 cfs (65.6 MGD). The DIF accounts for only 10% of the 7Q10 flow of the CSSC near the Ingredion CWIS, while the AIF for this seven-year period accounts for only 5% of the 7Q10 CSSC flow (1014 cfs) (Table 5).

Both of Ingredion's CWIS operate on a year-round basis, at varying flow rates, depending upon plant cooling needs. There is a seasonal component to cooling water use, with slightly more used during the summer months than the winter months. Ingredion does not have the flexibility to further limit cooling water intake flow from the CSSC, as it is necessary for all critical plant production process cooling needs at the facility.

3.3 FLOW DISTRIBUTION AND WATER BALANCE DIAGRAM

This information is included in Figure 7.

[8] www.epa.state.il.us/public-notices/2013/**ingredion**-argo/index.pdf

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4. §122.21(r)(4) SOURCE WATER BASELINE BIOLOGICAL CHARACTERIZATION DATA

The Rule at §122.21(r)(4) requires Ingredion to provide the source water biological baseline characterization data for the CSSC and the specific information required is as follows:

122.21(r)(4)(i) Unavailable Data—requires a list of data required in paragraphs (r)(4)(ii) through (r)(4)(vi) that were not available and efforts made to identify sources of that data.

122.21(r)(4)(ii) Species in the Vicinity of the Cooling Water Intake Structure—requires a list of species (or relevant taxa) for all life stages and their relative abundance in the vicinity of the cooling water intake structure (CWIS).

122.21(r)(4)(iii) Species Most Susceptible to Impingement and Entrainment—requires the identification of species and life stages that would be most susceptible to impingement and entrainment. Species evaluated should include the forage base as well as those important in terms of significance to commercial and recreational fisheries.

122.21(r)(4)(iv) Reproduction, Recruitment and Peak Abundance—requires identification and evaluation of the primary period of reproduction, larval recruitment, and period of peak abundance for relevant taxa.

122.21(r)(4)(v) Data on Seasonal and Daily Activities—requires data representative of the seasonal and daily activities (e.g., feeding and water column migration) of biological organisms in the vicinity of the cooling water intake structure.

122.21(r)(4)(vi) Identification of Threatened and Endangered Species—requires identification of all threatened, endangered and other protected species that might be susceptible to impingement or entrainment at your cooling water intake structures.

122.21(r)(4)(vii) Public Participation and Agency Consultation—requires documentation of any public participation or consultation with Federal or State agencies undertaken in development of the plan.

122.21(r)(4)(viii) Methods and Quality Assurance for New Field Studies—requires that if the information requested in paragraph (r)(4)(i) of this section is supplemented with data collected using field studies, supporting documentation for the Source Water Baseline Biological Characterization must include a description of all methods and quality assurance procedures for sampling, and data analysis including a description of the study area; taxonomic identification of sampled and evaluated biological assemblages (including all life stages of fish and shellfish); and sampling and data analysis methods. The sampling and/or data analysis methods you use must be appropriate for a quantitative survey and based on consideration of methods used in other biological studies performed within the same source water body. The study area should include, at a minimum, the area of influence of the cooling water intake structure.

122.21(r)(4)(ix) Information Requirements—this part clarifies that the Source Water Baseline Characterization Data for owners/operators of existing facilities or new units at existing facilities is the information required in 122.21(r)(4)(i) through (r)(4)(xii).

122.21(r)(4)(x) Protective Measures and Stabilization Activities—requires identification of protective measures and stabilization activities that have been implemented, and a description of how these measures and activities affected the baseline water condition in the vicinity of the intake.

122.21(r)(4)(xi) List of Fragile Species—requires a list of fragile species, as defined at 40 CFR 125.92(m), at the facility. The applicant need only identify those species not already identified as fragile at 40 CFR 125.92(m). New units at an existing facility are not required to resubmit this information if the cooling water withdrawals for the operation of the new unit are from an existing intake.

122.21(r)(4)(xii) Incidental Take—requires owners/operators of existing facilities that has obtained incidental take exemption or authorization for its cooling water intake structure(s) from the U.S. Fish and Wildlife Service or the National Marine Fisheries Service, any information submitted in order to obtain that exemption or authorization may be used to satisfy the permit application information requirement of paragraph 40 CFR 125.95(f) if included in the application.

4.1 §122.21(r)(4)(i) UNAVAILABLE DATA

Source water biological data required in paragraphs (r)(4)(ii) through (r)(4)(xii) were generally available for the CSSC near Ingredion. Fish community data was supplied by the studies conducted by the MWRDGC in this waterway, along with supplemental information from IEPA, IDNR, and other natural resources agency sources. There have been no prior impingement or entrainment studies performed at the Ingredion facility. However, data from an entrainment and impingement study conducted at another facility located upstream on the CSSC as part of the 316(b) Phase II requirements has been obtained. [9] Although these data are over ten years old, they remain representative of the aquatic community in the waterway based on more recent MWRDGC adult fish monitoring data, and therefore provide a basis from which to develop the list of species most susceptible to impingement/entrainment at Ingredion. Use of this "other facility" data has also been supplemented with prior knowledge of species susceptible to impingement and/or entrainment from other CWIS studies.

No scientific sampling has been conducted near Ingredion's hydrological zone of influence to characterize the adult, juvenile, young-of-the-year (YOY) or larval fish in the vicinity of the CWIS. Readily available monitoring and related waterbody specific data was reviewed from the following sources:

1. MWRDGC—Annual Fish Monitoring Data (various reports)

[9] Further information regarding this study is available upon request.

2. Illinois Administrative Code. Title 35, Subtitle C, Chapter I. Section 303.240 Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters
3. Asian Carp Regional Coordinating Committee (ACCRC) Monitoring and Research Group studies
4. Phase II Impingement and Entrainment Data collected by an upstream facility on the CSSC[10]

4.2 §122.21(r)(4)(ii) SPECIES IN THE VICINITY OF THE COOLING WATER INTAKE STRUCTURE

Fishery surveys or scientific studies of the CSSC near Ingredion that provide data on the life stages and relative abundance of fish in the vicinity of the CWIS are limited. The most comprehensive record comes from the MWRDGC, as they have conducted adult fish monitoring at several fixed locations in the CSSC since 1974. Fish species known to occur in the CSSC near the Ingredion CWIS are provided in Table 6. MWRDGC Sampling results for the two locations immediately upstream of Ingredion are presented for years 2010 through 2012 (most recent information available) in Table 7 (MWRDGC 2014a, 2014b, and 2014c). Relative abundance information is provided for these same two locations in Table 8, as well as graphically depicted in Figures 8 and 9.

The current Aquatic Life Use designation of the CSSC near Ingredion is "Use B" waters, which are characterized by specific physical characteristics and expected aquatic species. Use B waters are defined in Ill. Adm. Code, Title 35, Subtitle C, Chapter I, Section 303.240(a) as follows:

> *Waters designated as Chicago Area Waterway System and Brandon Pool Aquatic Life Use B Waters are capable of maintaining, and shall have quality sufficient to protect, aquatic life populations predominated by individuals of tolerant types that are adaptive to unique physical conditions and modifications of long duration, including artificially constructed channels consisting of vertical sheet-pile, concrete and rip-rap walls designed to support commercial navigation, flood control, and drainage functions in deep-draft, steep-walled shipping channels. Such aquatic life may include, but is not limited to, fish species, such as* ***common carp, golden shiner, bluntnose minnow, yellow bullhead and green sunfish.***[11] *(Emphasis added).*

The MWRDGC fisheries monitoring data (Tables 6 through 8) is fully reflective of the types of species expected, according to the Aquatic Life Use designation description above. The overall species assemblage is, and will continue to be, dictated by the physical habitat constraints of the CSSC, as well as its anthropogenically altered flow regime and urban inputs.

Aquatic monitoring overseen by the ACRCC has also provided additional information regarding the aquatic species assemblage in the CSSC near Ingredion. In the most recent interim summary

[10] Further information regarding this study is available upon request.
[11] http://www.ipcb.state.il.us/documents/dsweb/Get/Document-33353

report on 2016 monitoring activities, Gizzard Shad, Common Carp and Bluegill dominated the catch during the Illinois Natural History Survey's (INHS) Seasonal Intensive Monitoring program conducted on the South Branch of the Chicago River and CSSC (ACRCC 2017). These data are summarized in Tables 9 and 10. While this monitoring is not specific to the Ingredion CWIS location, it encompasses the entire CSSC both upstream and downstream of Ingredion and therefore provides a useful assessment of the current fisheries assemblage within this waterway.

4.3 122.21(r)(4)(iii) SPECIES MOST SUSCEPTIBLE TO IMPINGEMENT AND ENTRAINMENT

Although there is no site-specific impingement or entrainment data for the Ingredion CWIS, available data from studies of the CSSC provided adequate information to both characterize the aquatic community, as well as identify those fish species which would be more likely to be susceptible to impingement and/or entrainment. Review of the previously conducted Phase II impingement data collected at nearby facility[12] on the CSSC in 2004-2005 shows that the most abundant species were: Gizzard Shad (69%), Bluntnose Minnow (7.3%), Spotfin Shiner (4.0%), White Perch (3.6%), and Round Goby (2.5%), with 34 additional species comprising the remaining 13.6% (most of them represented by very few specimens). By weight, Gizzard Shad also dominated, followed by Common Carp and White Perch. Eleven of the 39 species collected were nonnative or invasive (Table 11).

At the same nearby facility, an entrainment study was conducted from 26 April-28 August 2005. Entrainment samples were dominated by four main taxa groups: Unidentified Cyprinid/Cyprinid[13] Type (82%), Gizzard Shad/Unidentified Clupeidae (9.8%), Lepomis sp. (0.8%), and Common Carp (0.5%), with the remaining four taxa types representing the remaining 6.8% of the total collection (Figure 10 and Table 12).

Comparing this historical impingement and entrainment data from a nearby facility, along with more recently collected adult fish data in the CSSC, the likely species in the vicinity of Ingredion's CWIS and most likely subject to impingement and/or entrainment include:

Species	Impingement	Entrainment
Gizzard Shad	X	X
Common Carp	--	X
Bluntnose Minnow	X	X
Pumpkinseed/*Lepomis* sp.	--	X
Spotfin Shiner	X	--
White Perch	X	--

[12] Full reference information for this nearby facility is available upon request.
[13] Draft study results referenced "Unid. Cyprinid/Catostomid Type", however, these ichthyoplankton were most likely Cyprinid Type, based on available information on the predominant species assemblage in the CSSC. (Catostomids were either rare or completely absent in the MWRDGC monitoring data from the CSSC near Ingredion).

4.4 §122.21(r)(4)(iv) REPRODUCTION, RECRUITMENT AND PEAK ABUNDANCE

Ichthyoplankton studies have not been conducted in the CSSC in the immediate vicinity of Ingredion's CWIS. However, based on data collected at a nearby facility in 2005 as part of the 316(b) Phase II monitoring effort, the primary period for larval recruitment is from April through August for the more common species found in the CSSC. No ichthyoplankton occurred in the initial samples collected in late April 2005 or in the final set of samples collected late August 2005. The majority of ichthyoplankton were entrained from mid-May through July. This timeframe is consistent with other entrainment studies performed at other facilities in the northern Illinois area.

4.5 122.21(r)(4)(v) DATA ON SEASONAL AND DAILY ACTIVITIES

Site-specific data on the spatial and temporal variation in the density and composition of larval, YOY, and adult fish in the immediate vicinity of Ingredion's CWIS is not known.

Seasonal and daily activities such as feeding and migration for the fish identified above as being most susceptible to impingement and/or entrainment in the CSSC are summarized in Appendix B, along with information regarding their egg characteristics and reproductive strategies.

4.6 122.21(r)(4)(vi) IDENTIFICATION OF THREATENED AND ENDANGERED SPECIES

This part specifically requires that Federally-listed threatened and endangered species and/or critical habitat be identified. The Rule also references state protected species under requirements of the Entrainment Characterization Study at §122.21(r)(9). Although completion of the (r)(9) study is not required for Ingredion, both Federally-listed and state-listed threatened and endangered species have been identified that are known to or believed to occur in Cook County, Illinois where Ingredion is located.

The USFWS maintains a list of federally listed threatened and endangered species by Illinois County (USFWS 2017). The 9 May 2017 list for Cook County shows no listed aquatic species, nor any which rely on aquatic food resources (Table 13). Therefore, the operation of the Ingredion CWIS does not, and is not expected to result in any adverse effects on Federally-listed species.

The Illinois Endangered Species Protection Board provides two checklists of endangered and threatened species in Illinois; one for the State (IDNR 2015) and the other by county (IDNR 2016). The Cook County list includes 128 species, most of which are plants, but does list nine fish and three mussel species (Table 14).

Of the fish listed as state-threatened in Cook County by the IDNR, only the Banded Killifish has been consistently found in various aquatic monitoring programs in the CSSC and adjacent downstream waters. In recent years, there have been an increasing number of Banded Killifish found throughout the Upper Illinois Waterway, which demonstrates that they are not being

negatively impacted by current facility operations, including, but not limited to those of the Ingredion CWIS. None of the remaining eight state-listed fish species has been found in any recent fisheries surveys of the CSSC performed by MWRDGC or ACRCC (Tables 6 through 8 and Table 9, respectively).

There are no federally listed mussel species identified by USFWS as being present in Cook County, Illinois (Table 13). There are three state-listed mussel species for Cook County: Slippershell, (*Alasmidonta viridis),* Spike (*Elliptio dilatata*), and Black Sandshell (*Ligumia recta*) (Table 14). These are also considered threatened throughout the state (IDNR 2015). Based on their scarcity in the state, as well as their life history requirements and the physical conditions of the CSSC, it is unlikely that these mussel species would be found near the Ingredion CWIS. The benthic sampling performed by MWRDGC in the CSSC has not encountered these species. INHS has found relic shells of two of these three species in their study of the Des Plaines River and Lake Michigan tributaries, in locations far removed from the CSSC (Price, et.al. 2012).

The operation of Ingredion's CWIS is not expected to have any adverse impact on any Federally- or State-listed species.

4.7 122.21(r)(4)(vii) PUBLIC PARTICIPATION AND AGENCY CONSULTATION

Ingredion has not engaged in consultations with Federal fish and wildlife agencies or public agencies relative to the Rule.

4.8 122.21(r)(4)(viii) METHODS AND QUALITY ASSURANCE FOR NEW FIELD STUDIES

No new source waterbody field studies were conducted by Ingredion. The data available for characterizing the biology near Ingredion's CWIS was limited and sourced from a Phase II draft impingement/entrainment report from a nearby facility, publicly available monitoring data from the MWRDGC, information from IEPA and IDNR, and pertinent information from the on-going Asian Carp monitoring activities in the CSSC. Prior biological studies referenced in this report were performed using sampling and/or data analysis methods appropriate for a quantitative survey and provide all the appropriate information discussed above regarding methodology and analysis. See individual citations for study-specific details.

4.9 122.21(r)(4)(ix) INFORMATION REQUIREMENTS

This provision simply contains a statement of clarification and does not call for any specific information. This report does provide the information required under §122.21(r)(4)(i-xii).

4.10 122.21(r)(4)(x) PROTECTIVE MEASURES AND STABILIZATION ACTIVITIES

Ingredion's CWIS is equipped with a debris control system that may also function as a deterrent to fish impingement. This system is necessary to prevent the considerable debris loading in the

CSSC (due to urban inputs, run-off and combined sewer overflows) from entering the Ingredion intakes and either blocking flow or damaging the intake screens. The debris control system is run at continuously while any intake pump is operating and functions to deflect debris downstream, rather than being drawn into the CWIS.

The primary source of non-contact cooling water for the Ingredion facility is and will remain the CSSC. Additional small volumes of municipal (0.1 MGD maximum) and well water (5.72 MGD maximum) are utilized for specific non-contract cooling water process needs within the facility, but neither of these sources are capable of effectively replacing or supplementing the non-contact cooling water flow from the CSSC.

4.11 122.21(r)(4)(xi) LIST OF FRAGILE SPECIES

EPA defines a fragile species of fish or shellfish at §125.92(m) as either one of 14 listed species or as those that have an impingement survival rate of less than 30 percent. One of the listed fragile species, Gizzard Shad (*Dorosoma cepedianum*), comprised 69% percent of the total number of fish impinged during a one-year study conducted at this nearby facility (Table 11). Based on more recent monitoring efforts by MWRGC and ACRCC, Gizzard Shad remains a dominant species in the CSSC.

4.12 122.21(r)(4)(xii) INCIDENTAL TAKE

This part is not applicable to Ingredion because it does not hold a Section 10 Incidental Take exemption or authorization from the USFWS, nor does it require such an authorization, based on all available information concerning the unlikelihood of adversely impacting listed species as the result of its normal business operations.

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5. §122.21(r)(5) COOLING WATER SYSTEM DATA

The Rule at §122.21(r)(5) requires Ingredion to provide the following cooling water system data:

> (i) A narrative description of the operation of the cooling water system and its relationship to cooling water intake structures; the proportion of the design intake flow that is used in the system; the number of days of the year the cooling water system is in operation and seasonal changes in the operation of the system, if applicable; the proportion of design intake flow for contact cooling, non-contact cooling, and process uses; a distribution of water reuse to include cooling water reused as process water, process water reused for cooling, and the use of gray water for cooling; a description of reductions in total water withdrawals including cooling water intake flow reductions already achieved through minimized process water withdrawals; a description of any cooling water that is used in a manufacturing process either before or after it is used for cooling, including other recycled process water flows; the proportion of the source waterbody withdrawn (on a monthly basis);
>
> (ii) Design and engineering calculations prepared by a qualified professional and supporting data to support the description required by paragraph (r)(5)(i) of this section; and
>
> (iii) Description of existing impingement and entrainment technologies or operational measures and a summary of their performance, including but not limited to reductions in impingement mortality and entrainment due to intake location and reductions in total water withdrawals and usage.

The data presented in this section will be used in determining the appropriate BTA standards that would apply to Ingredion.

5.1 COOLING WATER SYSTEM OPERATION

Ingredion operates a once-through cooling system. Both CWIS withdraw water from the CSSC, which goes to a common header for use in Ingredion's non-contact process cooling system. The warmed water is discharged back into the CSSC approximately 104 ft downstream of CWIS #2. All the water withdrawn through both Ingredion CWIS are used for non-contact cooling, to supply the debris control and washing systems for the traveling screens or to use as cooling tower makeup. Small amounts of canal water are also used for cooling tower makeup, which gets either evaporated or discharged to the MWRDGC (see Attachment 5). Ingredion also uses municipal and well water for supplemental non-contact cooling needs, but this is of very limited volume and cannot be increased to limit the existing primary cooling water flow from the CSSC.

The annual CWIS pump hours of operation since 6/11/15 provided in table below:

Period	CWIS	Maximum Hours	Actual Hours	Percentage of Time in Operation
6/11/2015 to 12/31/15	1	19,584	12,397	63.3
2016	1	35,136	23,545	67.0
2017	1	35,040	22,255	63.5
1/1/18 to 2/17/18*	1	4,608	2,764	60.0
6/11/15 to 12/31/15	2	4,896	4,674	95.5
2016	2	8,784	1,723	19.6
2017	2	8,760	1,716	19.6
1/1/18 to 2/17/18*	2	1,152	2	0.17

*Data through February 17, 2018 for the current year.

When any of the circulating water pumps are operating, the cooling water system is considered to be operating.

5.2 PROPORTION OF DESIGN INTAKE FLOW FOR CONTACT COOLING, NON-CONTACT COOLING, AND PROCESS USES

All the water withdrawn through Ingredion's two CWIS located on the CSSC is used for non-contact cooling and associated CWIS intake system equipment, including the debris control systems. Some components of the manufacturing process rely on well water and domestic water (Village of Bedford Park) for non-contact cooling water needs

5.3 PROPORTION OF SOURCE WATERBODY WITHDRAWN

Ingredion has five intake cooling water pumps with a combined capacity of 65.6 MGD (101.5 cfs) that withdraw water from the CSSC. The processes and manufacturing activities at the Ingredion facility operate on a near-continuous basis, although actual intake flows vary throughout the year based on plant cooling needs (Table 4). The actual intake flow as a proportion of low canal flow from 2011 through 2017 is provided in Table 5. The maximum percent of 7Q10 CSSC flow withdrawn by Ingredion based on AIF was 5.5% in 2011. The average percentage of AIF flow, in comparison to the CSSC 7Q10 flow at Ingredion, was 5.1% for this same period.

Even at maximum combined CWIS DIF (101.5 cfs) [14], Ingredion takes only 10% of the 7Q10 flow (1014 cfs) of the CSSC. Combined AIF has been up to only 55% of the DIF, so the actual percentage of CSSC 7Q10 flow taken in by Ingredion, based on AIF data from 2011-2017, is 5% (Table 5).

It should be noted that CSSC flow, as evidenced by the USGS data presented in Table 1, is often far greater than the 7Q10, which would make Ingredion's CWIS flow an even smaller proportion of the overall flow volume of the canal much of the time.

5.4 INTAKE VELOCITIES

The design through-screen velocity at low water depth with 100% clean screen was found in the original Ingredion CWIS equipment specifications as summarized below:

Location	Design Flow (cfs)—per traveling screen array	Total Design Intake Flow per CWIS (cfs)	Number of Traveling Screen Arrays per CWIS	Assumed Low Water Depth (ft.)	Design Through - Screen Velocity (fps) at low water depth with 100% clean screen*
CWIS #1	26.7	74.9	3	8	2.21
CWIS #2	26.7	26.7	1	8	2.21

*The maximum design flow through each traveling screen array is based on the flow from each 12,000 gpm pump, and therefore provides a worst-case estimate. Through-screen flow rate would be lower with the use of the lower volume pumps (4,800 gpm). Pump usage is determined by plant cooling needs, and pumps are cycled on and off to meet a specified pressure differential.

AOI velocity is determined and discussed in Section 2.7.

5.5 EXISTING IM&E REDUCTION MEASURES

Ingredion employs standard through-flow traveling water screens that do not have integrated fish protection features. However, the facility does employ measures to limit the entry of debris (which could also exclude aquatic organisms) from entering the CWIS, through the use of a 60-psi spray bar system that diverts materials from entering the intake areas, as well as subsurface fencing installed in front of CWIS #2 intake structure to prevent entry of floating and submerged materials. The actual combined intake flow for the Ingredion facility over the past seven years has averaged 51% of the DIF (Table 5); therefore, the operation of the Ingredion CWIS reduces IM&E by 49% or more over maximum design operating flow conditions.

[14] Includes the combined flow of CWIS #1 and CWIS #2.

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6. §122.21(r)(6) CHOSEN METHOD OF COMPLIANCE WITH IMPINGEMENT MORTALITY IMPINGEMENT STANDARD

The Rule at §122.21(r)(6) requires Ingredion to discuss the chosen method of compliance with the impingement mortality standard. Facilities must either select one of the seven alternatives at §125.95(c)(1) through (7), unless the facility qualifies for an exemption for low levels of impingement or less stringent standards. The owner/operator must identify the chosen compliance method for the entire facility; alternatively, the applicant must identify the chosen compliance method for each cooling water intake structure at its facility.

For impingement mortality reduction BTA for the Ingredion CWIS, the facility may qualify for an exemption based on having a "de minimis rate of impingement" as discussed in §125.94(c)(11) of the Rule, which states *"In limited circumstances, rates of impingement may be so low at a facility that additional impingement controls may not be justified. The Director, based on review of site-specific data submitted under 40 CFR 122.21(r), may conclude that the documented rate of impingement at the cooling water intake is so low that no additional controls are warranted. For threatened or endangered species, all unauthorized take is prohibited by the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.). Notice of a determination that no additional impingement controls are warranted must be included in the draft or proposed permit and the Director's response to all comments on this determination must be included in the record for the final permit."*

As stated previously, Ingredion has not performed impingement studies. The Ingredion facility (and its predecessors located on the same site) have used cooling water from the CSSC since shortly after the canal system was first constructed in the early 1900s. At that time, this was considered a beneficial use for this water. There have been no observed or document instances in the history of the facility in which a significant number of fish have been observed in or near the CWIS. The debris control system currently in place at the site effectively reduces the entry of both urban debris, and likely fish as well, thereby providing acceptable control, especially given the nature and function of the canal system. All materials that do reach the traveling screens are continuously removed with a water spray that directs them back into the canal, similar in function to a fish return system. There have been no federal or state threatened or endangered species documented near the Ingredion CWIS. The effective intake velocity has also been shown to be less than 0.5 fps at distances of from 6 to 7 ft in front of each CWIS, and the entire AOI is protected by the existing debris deterrent system. Moreover, the combined AIF for the Ingredion facility over the past seven years has been an average of 51% of the DIF (Table 5); thus, the operation of the Ingredion CWIS reduces IM&E by 49% or more over maximum design operating flow conditions. Therefore, given the existing physical and operational controls in place, and with due consideration of the unique characteristics of the source water, Ingredion should be determined by IEPA to be fully compliant with the intent of the impingement mortality control requirements under either §125.94(c)(6) or §125.94(c)(11).

Ingredion understands that any further impingement mortality controls or related studies, if deemed necessary, would not be required until after IEPA makes a site-specific determination regarding the need for entrainment controls.

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7. §122.21(r)(7) ENTRAINMENT PERFORMANCE STUDIES

This section covers the availability of §122.21(r)(7) entrainment performance studies that could be used by the Director for making an entrainment BTA determination at §125.98(f) of the Rule.

7.1 ENTRAINMENT PERFORMANCE STUDIES

The Rule at §122.21(r)(7) requires Ingredion to discuss the results of entrainment performance studies, if applicable. This requirement is not considered applicable to Ingredion, since entrainment information is not required to be provided when the AIF is <125 MGD.[15] This information is also not listed as required for the impingement mortality BTA determination in the Rule (see Table VIII-2 of the Rule preamble on page 48362 of the Rule).

As stated previously, Ingredion has not been required to perform biological studies related to their CWIS, including, but not limited to entrainment performance studies. Available information on entrainment from a nearby facility has been reviewed and summarized in Section 4.3 to provide an estimate of relative abundance of fish species likely to be susceptible to entrainment. It may be possible to use this nearby facility data to provide of rough estimate of site-specific numeric entrainment for the Ingredion facility, but this analysis is not required as part of this submittal because Ingredion's DIF is less than 125 MGD.

[15] Ingredion's DIF is 65.6 MGD, and the long-term average AIF is 48 MGD, as documented in Ingredion's current NPDES permit (IL0041109)

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8. §122.21(r)(8) OPERATIONAL STATUS

The Rule at §122.21(r)(8) requires a discussion of Ingredion's operational status. Specifically, "the owner or operator of an existing facility must submit a description of the operational status of each generating, production, or process unit that uses cooling water, including but not limited to:

(i) For power production or steam generation, descriptions of individual unit operating status, including age of each unit, capacity utilization rate (or equivalent) for the previous 5 years, as well as any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, including identification of any operating unit with a capacity utilization rate of less than 8 percent averaged over a 24-month block contiguous period, and any major upgrades completed within the last 15 years, including but not limited to boiler replacement, condenser replacement, turbine replacement, or changes to fuel type;

(ii) Descriptions of completed, approved, or scheduled uprates and Nuclear Regulatory Commission relicensing status of each unit at nuclear facilities;

(iii) For process units at your facility that use cooling water other than for power production or steam generation, if you intend to use reductions in flow or changes in operations to meet the requirements of 40 CFR 125.94(c), descriptions of individual production processes and product lines, operating status including age of each line, seasonal operation, including any extended or unusual outages that significantly affect current data for flow, impingement, entrainment, or other factors, any major upgrades completed within the last 15 years, and plans or schedules for decommissioning or replacement of process units or production processes and product lines;

(iv) For all manufacturing facilities, descriptions of current and future production schedules; and

(v) Descriptions of plans or schedules for any new units planned within the next 5 years."

This section provides information on the operation of the Ingredion facility as required by §122.21(r)(8) that are applicable to the facility.

8.1 OPERATING STATUS

Ingredion is engaged in wet milling of corn to produce starches, sweeteners, corn oil, and animal feeds (SIC Code 2046, NAICS 21146). The original facility was built in the early 1900's and has maintained a presence on this site (under the former company name of Corn Products International) since that time.

The facility operates year-round on a 24/7 basis, apart from service and maintenance-related shutdowns. Two CWIS are in operation throughout the year to provide non-contact cooling water for a variety of plant cooling needs. During the manufacturing process, various products are subject to thermal loads and this thermal loading must be dissipated through a cooling process employing heat exchangers, where the non-contact cooling water is utilized. Other non-contact cooling water applications include compressors and mechanical draft cooling towers.

8.2 MAJOR UPGRADES

There have been no structural upgrades on the Ingredion CWIS since the #5 pump and associated pumphouse/intake structure was constructed 1986. No major structural or operational changes are planned for the next five years.

8.3 OTHER COOLING WATER USES

Ingredion uses water withdrawn from the CSSC strictly for non-contact cooling purposes. Municipal and/or well water is used for primarily for service water and some small process water needs. A portion of the CSSC non-contact cooling water is used for intake structure screen and pump backwashes along with the debris deterrent system as described in Sections 3.1 and 4.1 above, and in accordance with the water balance diagram provided in Figure 7.

8.4 PLANS OR SCHEDULES FOR NEW UNITS WITHIN FIVE YEARS

This section is not applicable to Ingredion since it is not a power generating facility. There are no plans to install any other equipment that would require additional cooling water from the CSSC.

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FIGURES

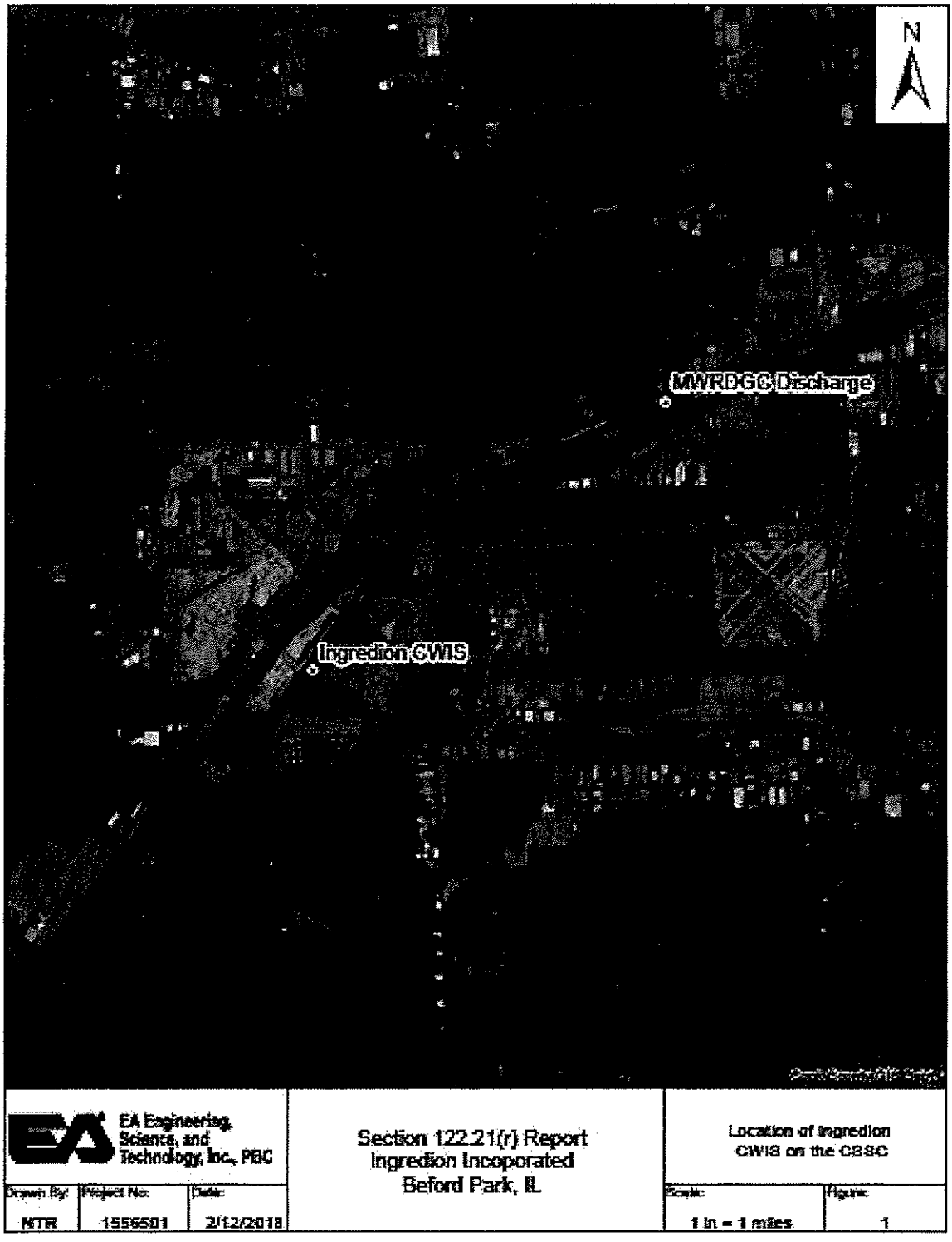

Figure 1. Location of Ingredion CWIS on the CSSC

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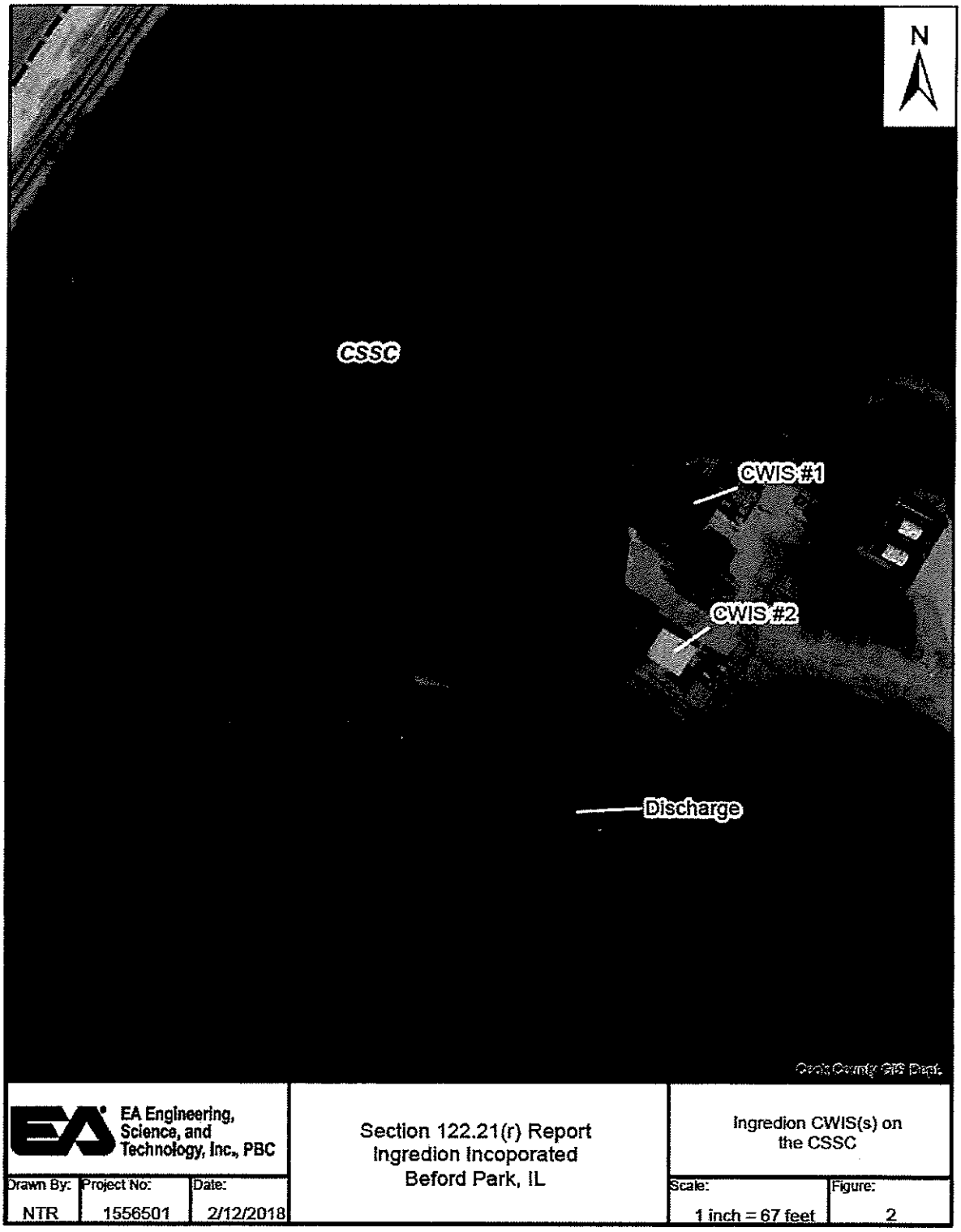

Figure 2. Aerial Overview of Ingredion CWIS on the CSSC

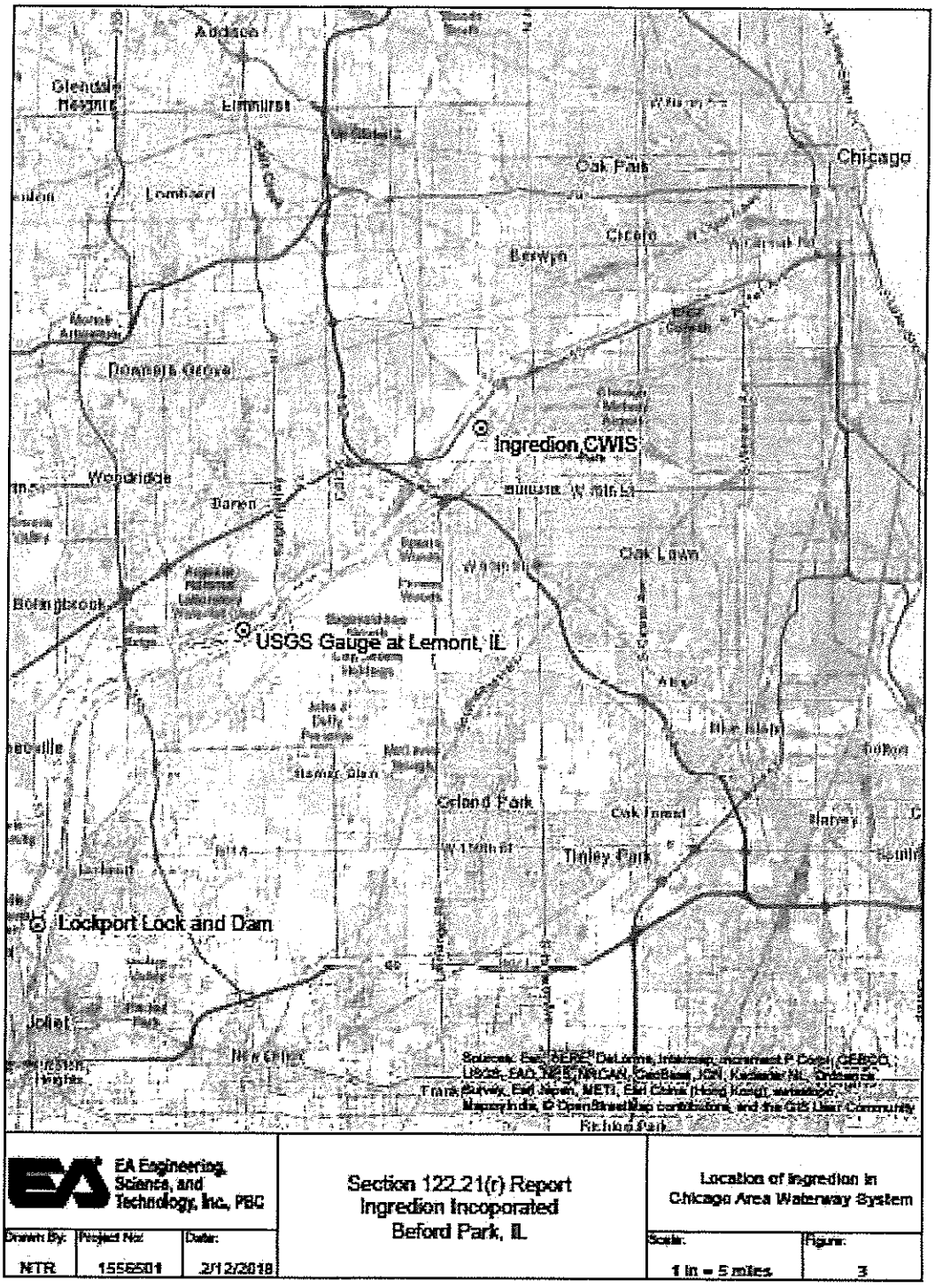

Figure 3. Topographic Map Showing Location of Ingredion CWIS on the CAWS

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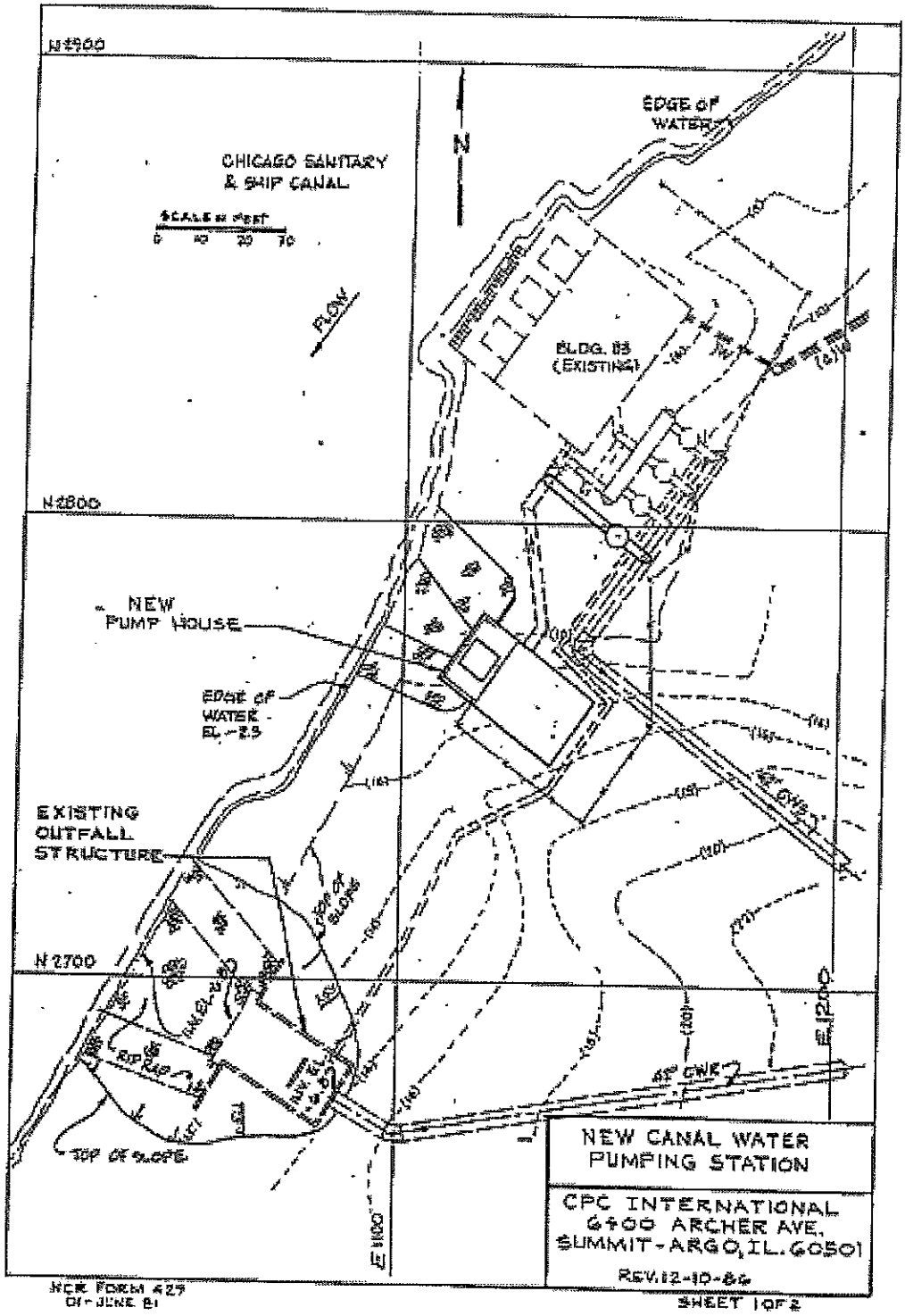

Figure 4: General Layout of Ingredion's CWIS

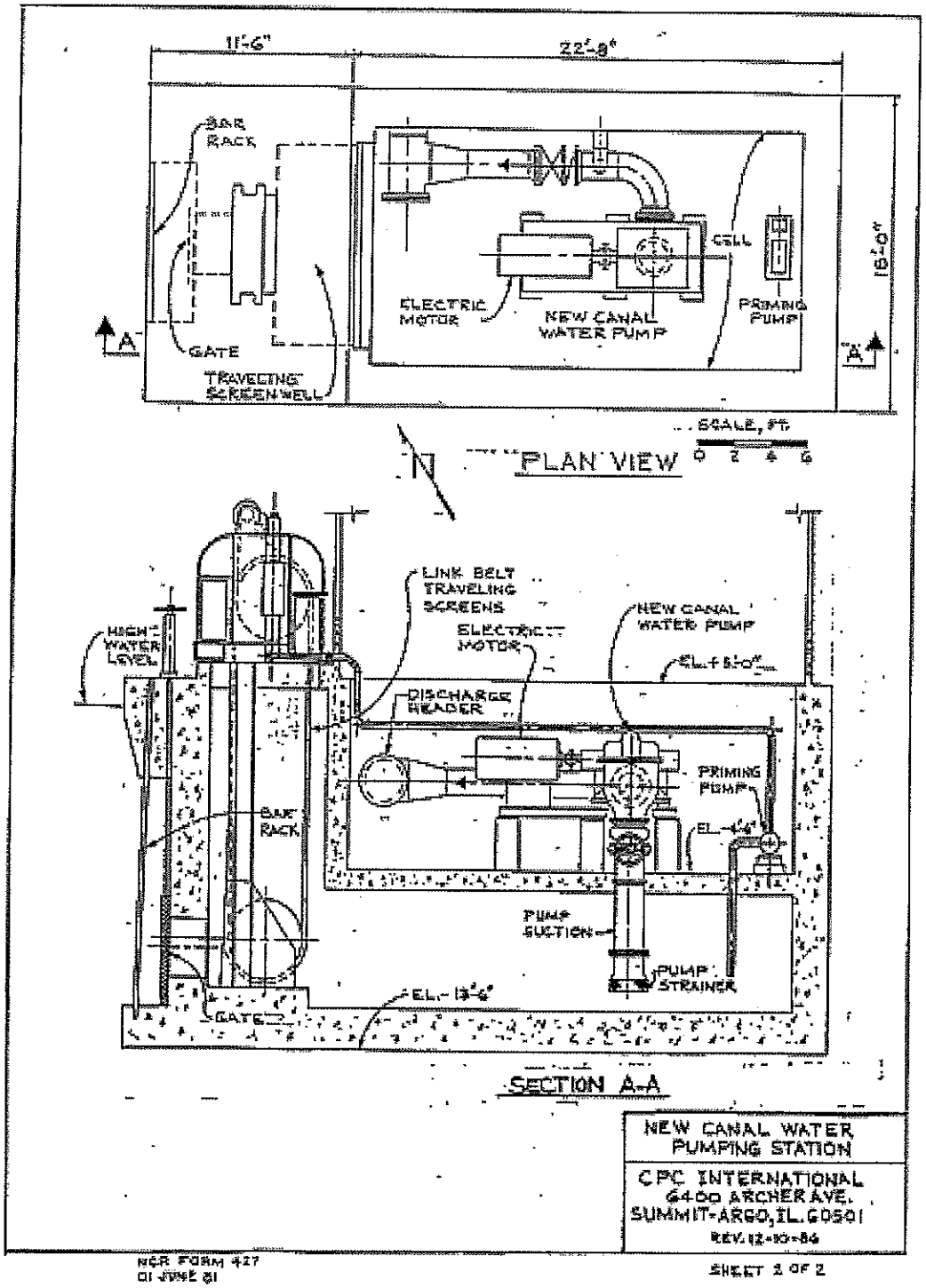

Figure 5: Plan View of Ingredion's CWIS Showing Traveling Screen Configuration

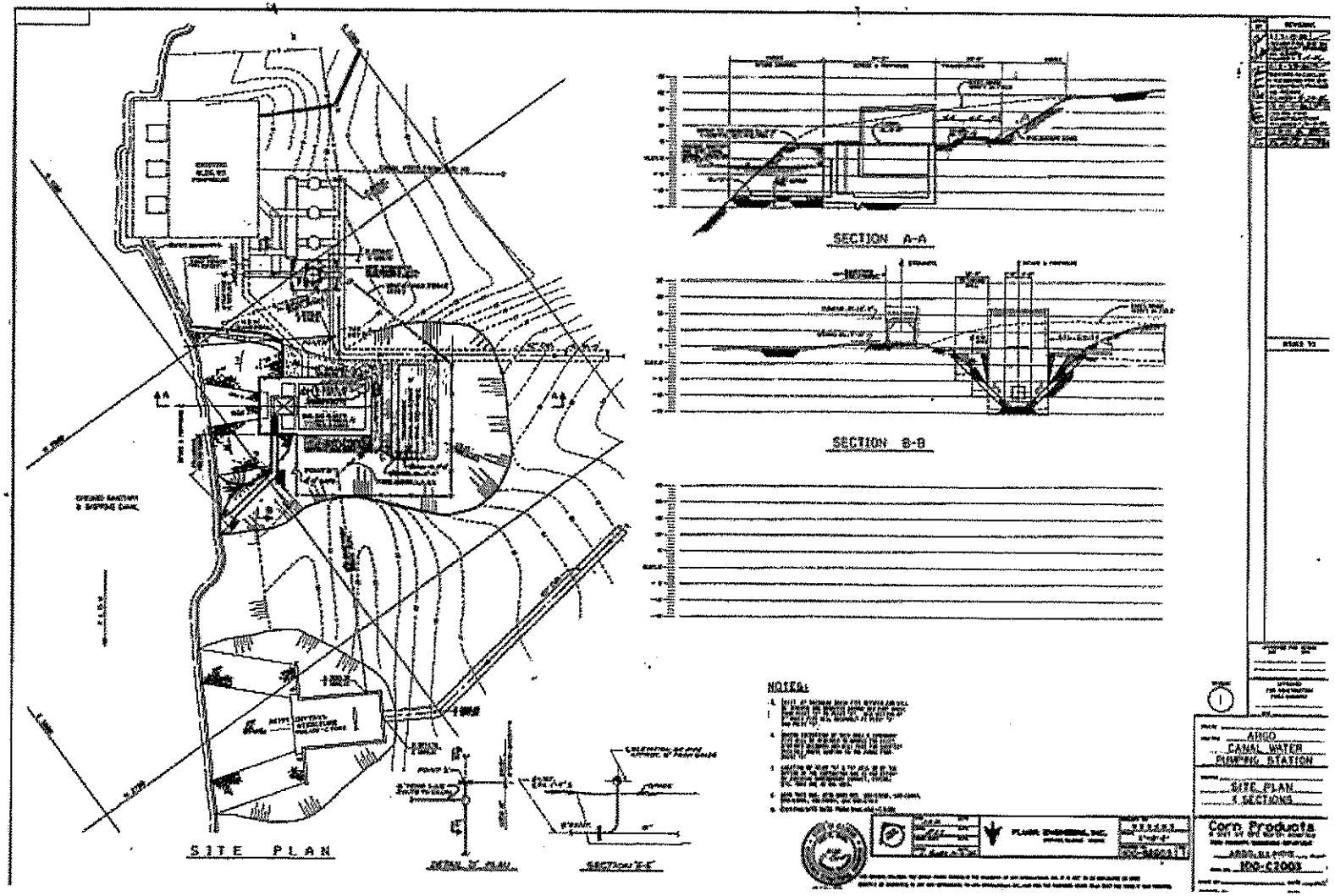

Figure 6: Ingredion CWIS Site Plan

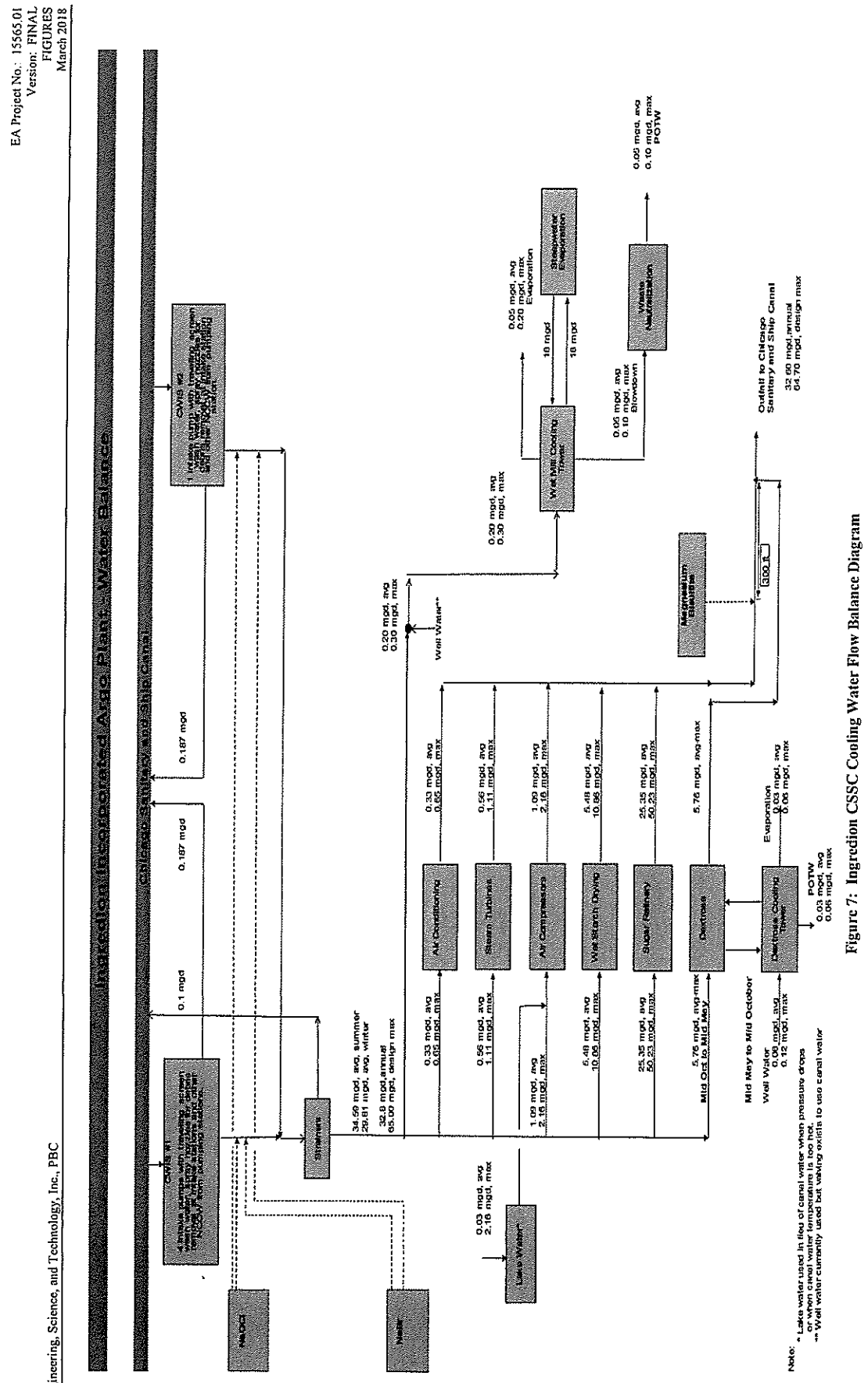

Figure 7: Ingredion CSSC Cooling Water Flow Balance Diagram

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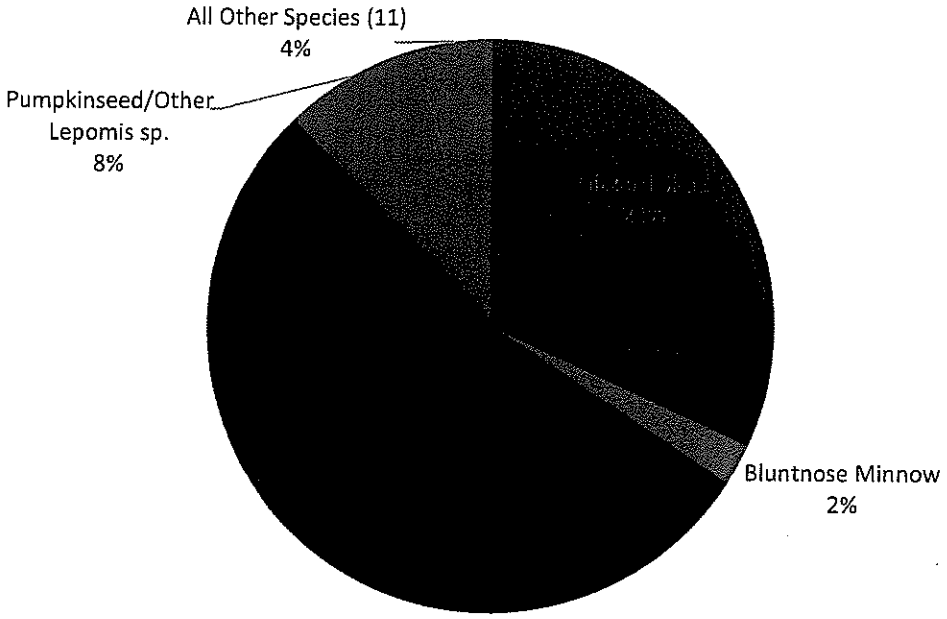

Figure 8. Relative Abundance Data from MWRDGC Fish Surveys Near Ingredion, Location 75--Cicero Avenue, 2010-2012

Source: MWRDGC 2014a, 2014b, and 2014c

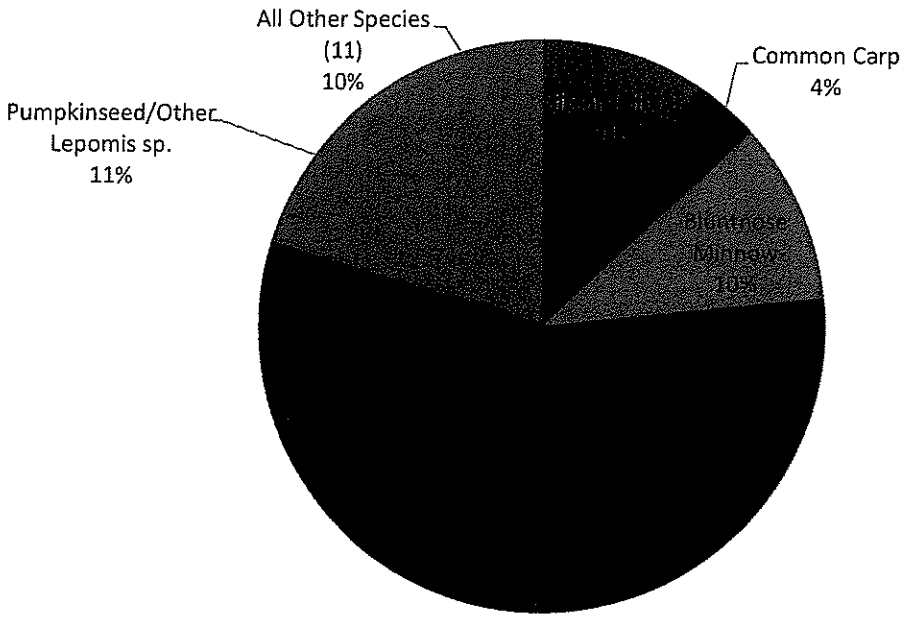

Figure 9. Relative Abundance Data from MWRDGC Fish Surveys Near Ingredion Location 41--Harlem Avenue, 2010-2012

Source: MWRDGC 2014a, 2014b, and 2014c

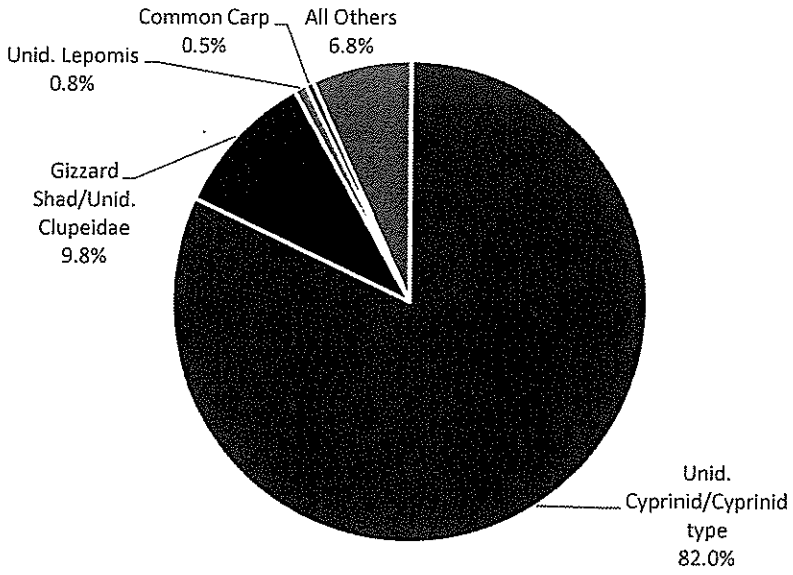

Figure 10. Relative Abundance of Ichthyoplankton Collected During a 28 April-26 August 2005 Study at a Nearby Facility*

Note: All Unidentified Cyprinid/Cyprinid Types were combined for this graphic

*Further information regarding source study available upon request

TABLES

Table 1. USGS Chicago Sanitary and Ship Canal Flows Near Lemont, IL*, 2011-2016

	Monthly mean in cfs											
YEAR	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
2011	1,763	2,827	2,899	3,808	3,732	4,290	3,850	3,666	2,799	2,209	2,339	2,270
2012	2,171	1,899	2,202	1,857	2,488	2,138	2,633	2,700	2,225	1,869	1,344	1,624
2013	1,945	2,343	2,837	4,855	3,099	3,419	2,239	2,188	2,205	2,123	2,182	1,633
2014	2,257	2,352	3,127	2,633	3,563	3,588	4,257	3,621	2,721	2,499	1,615	1,501
2015	1,776	1,546	2,227	2,365	2,743	4,220	2,670	2,686	3,396	1,452	2,377	3,533
2016	2,463	2,192	2,495	2,284	3,573	2,343	3,380	3,291	2,090	2,348	1,786	1,814

*Gaging Station Number 05536890; this location is downstream of the confluence of the CSSC and Cal-Sag Channel, and therefore provides higher flows than would be expected at Ingredion's CWIS.

Note: 7Q10 Flow for the CSSC at Ingredion is 1,014 cfs (ISWS 2003).

Table 2. CSSC Mean Annual Water Temperatures (°F) Near Ingredion

	2011	2012	2013	2014	2015*
MWRGC Loc. 75--Cicero	65.1	64.0	57.7	57.7	57.2
MWRDGC Loc. 41--Harlem	61.9	65.1	58.6	60.3	60.3
Ingredion CWIS	65.3	67.3	60.8	60.1	60.3

*2015 is the most recent year of published data available from MWRDGC
Source: MWRDGC 2016

Table 3. Measured Water Temperatures at Ingredion's CWIS, 2011-2017

Month	Daily Intake Temperature (°F)*																				
	2011			2012			2013			2014			2015			2016			2017		
	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max
Jan	47	52	55	46	53	57	45	49	53	38	42	47	39	45	49	41	47	51	40	46	48
Feb	45	51	58	51	53	58	43	46	49	41	43	48	39	43	47	43	47	53	45	50	56
Mar	48	54	64	52	62	73	44	48	55	40	46	55	42	48	53	48	52	56	48	51	56
Apr	54	58	62	61	64	73	50	54	62	48	55	60	53	56	59	51	58	67	49	60	66
May	58	65	73	64	73	84	59	65	72	57	63	72	58	63	71	55	61	70	52	60	67
Jun	67	73	81	71	80	85	65	69	74	66	70	74	63	68	71	67	72	77	66	71	76
Jul	76	81	87	81	86	90	69	76	83	69	72	77	69	74	78	74	76	80	70	75	78
Aug	78	81	83	77	83	89	74	77	82	73	74	78	68	75	80	74	77	83	74	76	80
Sep	68	77	86	67	75	80	70	74	80	68	73	78	68	72	77	72	76	79	73	76	79
Oct	63	71	77	60	66	73	59	67	73	61	66	71	61	66	71	na	na	na	57	66	75
Nov	57	63	69	55	59	65	50	57	62	61	66	71	53	60	67	55	57	59	53	56	59
Dec	55	58	63	48	54	62	44	49	54	48	51	55	48	54	59	44	50	56	43	51	61

*Based on a single maximum daily measurement per day

Table 4. Ingredion CWIS Flow in cfs, 2011-2017#

	2011			2012			2013			2014			2015			2016			2017		
Month	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
January	43.0	49.7	56.8	41.4	48.6	54.6	34.9	45.4	53.7	0.0	46.0	59.4	28.4	44.3	55.1	0.0	29.1	43.1	0.0	37.4	56.0
February	47.5	51.1	54.9	41.5	45.5	52.3	34.9	40.5	47.5	51.0	54.5	56.8	16.0	44.1	48.6	0.0	22.5	36.6	18.5	45.1	50.9
March	46.9	53.4	56.1	44.3	54.1	60.1	33.7	45.6	53.1	51.5	57.2	60.2	14.6	45.2	55.5	25.7	32.8	37.6	30.5	49.5	53.5
April	47.6	55.4	60.9	7.5	53.0	60.3	41.2	50.3	59.4	47.7	52.9	58.6	46.2	53.1	63.8	8.9	48.7	58.6	45.6	53.2	56.9
May	11.5	50.0	63.8	48.6	54.6	59.9	45.9	51.9	55.2	50.9	53.0	56.8	50.4	59.3	65.8	51.5	54.8	60.6	50.5	53.9	58.3
June	57.9	61.2	64.8	56.1	59.2	63.6	49.1	52.6	57.5	49.4	55.9	62.6	51.1	57.1	63.8	52.3	55.7	62.2	53.2	56.0	58.6
July	54.5	67.8	72.9	61.1	62.8	65.6	50.7	55.5	58.7	55.3	63.2	67.3	54.3	60.9	66.4	55.9	58.3	60.9	44.6	52.8	59.0
August	59.3	61.6	66.5	55.9	60.9	66.1	52.7	56.7	59.7	50.3	53.7	59.1	54.2	60.1	64.4	53.3	58.6	61.8	49.7	51.8	53.0
September	52.9	58.4	65.5	44.5	54.5	61.2	50.6	52.2	53.6	48.0	54.0	58.1	51.8	57.1	60.8	55.4	57.1	58.2	50.0	53.1	59.3
October	47.5	53.1	62.3	35.4	45.2	51.2	50.5	52.4	56.8	48.0	53.3	56.9	39.6	53.8	59.9	n/a	n/a	n/a	33.2	52.2	55.7
November	49.8	55.3	63.2	41.7	46.3	49.3	41.6	50.4	56.7	48.0	53.2	56.9	30.3	53.2	57.1	50.4	51.5	55.1	37.9	47.0	53.0
December	47.4	53.7	60.6	40.0	43.3	49.6	35.9	46.5	53.3	46.8	50.4	52.6	21.3	51.3	57.2	23.5	48.9	60.5	5.6	39.4	51.5
Average:	47.1	55.9	62.4	43.2	52.3	57.8	43.5	50.0	55.4	45.6	53.9	58.8	38.2	53.3	59.9	34.3	47.1	54.1	34.9	49.3	55.5

#Includes flow from both Ingredion CWIS

Table 5. Actual versus Design CWIS Flow Rate for Ingredion

	Year						
	2011	2012	2013	2014	2015	2016	2017
Actual Annual Average Intake Flow (cfs)[#]	55.9	52.3	50.0	53.9	53.3	47.1	49.3
Maximum Design Intake Flow (cfs)[#]	101.5	101.5	101.5	101.5	101.5	101.5	101.5
Percent of Maximum Design Intake Flow[#]	55%	52%	49%	53%	53%	46%	49%
Compared to CSSC 7Q10 Flow:							
Percent of 7Q10 Flow[*] (Actual Annual Average)	5.5%	5.2%	4.9%	5.3%	5.3%	4.6%	4.9%
Percent of 7Q10 Flow[*] (Maximum)	10%	10%	10%	10%	10%	10%	10%

[#]Based on combined flow for both CWIS.

[*]Published 7Q10 flow for the CSSC near Ingredion is 1,014 cfs (ISWS 2003).

Table 6. Fish Species Found by MWRDGC* Monitoring Near Ingredion, 2010-2012

Common Name	Scientific Name
Gizzard Shad	*Dorosoma cepedianum*
Goldfish	*Carassius auratus*
Common Carp	*Cyprinus carpio*
Golden Shiner	*Notemigonus crysoleucas*
Spotfin Shiner	*Cyprinella spiloptera*
Bluntnose Minnow	*Pimephales notatus*
Emerald Shiner	*Notropis atherinoides*
Oriental Weatherfish	*Misgurnus anguillicaudatus*
Channel Catfish[1]	*Ictalurus punctatus*
Yellow Bullhead[1]	*Ameiurus natalis*
Mosquitofish	*Gambusia affinis*
Yellow Bass	*Morone mississippiensis*
White Perch	*Morone americana*
White Crappie	*Pomoxis annularis*
Largemouth Bass[1]	*Micropterus salmoides*
Green Sunfish[1]	*Lepomis cyanellus*
Bluegill[1]	*Lepomis macrochirus*
Pumpkinseed[1]	*Lepomis gibbosus*
Total Number of Species = 18	

*MWRDGC Report Nos. 14-10, 14-17, and 14-55 (MWRDGC 2014a, 2014b, and 2014c)
[1] Sportfish species

Note: MWRDGC fish data is collected only once per year (during July or August), but the sampling area(s) and protocol (DC electrofishing) is consistent from year to year.

Table 7. Number of Fish Collected from MWRDGC Monitoring Locations Near Ingredion, 2010-2012

Fish Species	Station 75/Cicero Ave 2010	Station 41/Harlem Ave 2010	Station 75/Cicero Ave 2011	Station 41/Harlem Ave 2011	Station 75/Cicero Ave 2012	Station 41/Harlem Ave 2012
Gizzard Shad	157	51	136	3	17	108
Goldfish[2]	10	16	5	0	0	1
Common Carp[2]	85	29	10	18	5	21
Golden Shiner	7	42	1	0	0	1
Spotfin Shiner	3	23	1	0	0	2
Bluntnose Minnow	29	128	1	49	1	4
Emerald Shiner	0	14	0	0	0	0
Oriental Weatherfish[2]	1	0	0	0	0	0
Channel Catfish[1]	0	4	2	3	0	1
Yellow Bullhead[1]	10	23	1	8	1	16
Mosquitofish	234	661	202	4	255	330
Yellow Bass	8	0	0	0	0	0
White Perch	4	0	0	0	0	0
White Crappie	0	1	0	0	0	0
Largemouth Bass[1]	0	12	2	0	0	0
Green Sunfish[1]	4	10	15	5	13	22
Bluegill[1]	21	11	12	18	0	3
Pumpkinseed[1]	16	78	13	29	8	14
Total Number of Species	14	15	13	9	7	12
Number of Game Species	4	6	6	5	3	5
Total Number of Fish	589	1,103	401	137	300	523
Total Weight of Fish (kg)	na	na	32.8	89.5	6.9	81.8

[1] Sport fish
[2]Non-native/introduced species

Table 8. Relative Abundance of Fish Species Found Near Ingredion by MWRDGC

Fish Species	Relative Abundance --Station 75/Cicero Ave. (2010-2012)	Relative Abundance --Station 41/Harlem Ave. (2010-2012)
Gizzard Shad	24.0%	9.2%
Goldfish[2]	1.2%	1.0%
Common Carp[2]	7.8%	3.9%
Golden Shiner	0.6%	2.4%
Spotfin Shiner	0.3%	1.4%
Bluntnose Minnow	2.4%	10.3%
Emerald Shiner	0.0%	0.8%
Oriental Weatherfish[2]	0.1%	0.0%
Channel Catfish[1]	0.2%	0.5%
Yellow Bullhead[1]	0.9%	2.7%
Western Mosquitofish[2]	53.6%	56.4%
Yellow Bass	0.6%	0.0%
White Perch	0.3%	0.0%
White Crappie	0.0%	0.1%
Largemouth Bass[1]	0.2%	0.7%
Green Sunfish[1]	2.5%	2.1%
Bluegill[1]	2.6%	1.8%
Pumpkinseed[1]	2.9%	6.9%
Total:	100.0%	100.0%

Note: Highlighted species are those which were consistently had a 2% or greater relative abundance (rounded value) at both monitoring locations.
[1] Sport fish
[2]Nonnative/introduced species

Table 9. Total Number of Fish Captured with Electrofishing and Trammel/Gill nets in the CAWS Upstream of the Electric Dispersal Barrier during Seasonal Intensive Monitoring, 2016. (Source: ACRCC 2017).

Monitoring Locations:	S. Branch Chicago River/CSSC	
Species	Electrofishing	Trammel/Gill Net
Gizzard Shad < 6 in	1,347	--
Common Carp[I]	1,016	253
Gizzard Shad	177	--
Yellow Perch	6	--
Largemouth Bass	35	--
Channel Catfish	11	2
White Sucker	14	--
Pumpkinseed	52	--
Bluegill	141	--
Smallmouth Buffalo		1
Golden Shiner	122	--
Black Bullhead	16	--
Smallmouth Bass	25	--
Bluntnose Minnow	4	--
Emerald Shiner	34	--
Yellow Bullhead	46	--
Green Sunfish	4	--
Western Mosquitofish	93	--
Brook Silverside	5	--
Goldfish[I]	8	--
Spotfin Shiner	5	--
White Bass	2	--
Banded Killifish[ST]	4	--
Oriental Weatherfish[I]	1	--
Carp x Goldfish[I] hybrid	1	1
Hybrid sunfish	5	--
Total fish	3,174	257
Species (*N*)	23	4
Hybrids (*N*)	2	1

[I]Introduced species
[ST]State threatened species

Table 10. Effort and Catch Information for 2016 Seasonal Intensive Sampling Upstream of Electric Barrier --S. Branch Chicago River/CSSC.

Electrofishing Effort	
Estimated person-hours	142.5
Samples (transects)	58
Electrofishing hours	14.5
Electrofishing Catch (#)	
All fish	3,174
Species	24
Hybrids	2
Bighead Carp	0
Silver Carp	0
CPUE (fish/hr)	218.9
Netting Effort	
Estimated person-hours	260
Samples (net sets)	120
Miles of net	13.3
Netting Catch (#)	
All fish	257
Species	5
Hybrids	1
Bighead Carp	0
Silver Carp	0
CPUE (fish/100 yds of net)	1.1

(Source: ACRCC 2017).

Table 11. Number and Biomass of Fish Collected During Impingement Sampling at a Nearby Facility on the CSSC, July 2004 - June 2005.

	Number Caught (Ranked Listing)		Weight Caught		Frequency of Occurrence	
Common Name	No.	%	KG	%	No. of Events	%
Gizzard Shad	5,350	68.98	190.541	73.31	51	98.1%
Bluntnose Minnow	563	7.26	1.600	0.62	26	50.0%
Spotfin Shiner	308	3.97	1.202	0.46	22	42.3%
White Perch	283	3.65	14.548	5.60	32	61.5%
Round Goby	193	2.49	0.618	0.24	16	30.8%
Bluegill	144	1.86	3.752	1.44	11	21.2%
Emerald Shiner	138	1.78	0.631	0.24	9	17.3%
Channel Catfish	75	0.97	2.769	1.07	18	34.6%
Golden Shiner	72	0.93	1.216	0.47	13	25.0%
Yellow Bass	69	0.89	2.372	0.91	12	23.1%
Rainbow Smelt	64	0.83	0.129	0.05	13	25.0%
Spottail Shiner	62	0.80	0.296	0.11	19	36.5%
Nile Tilapia	52	0.67	2.925	1.13	11	21.2%
Alewife	45	0.58	0.470	0.18	14	26.9%
Yellow Bullhead	45	0.58	1.975	0.76	8	15.4%
Pumpkinseed	43	0.55	2.159	0.83	11	21.2%
Redear Sunfish	40	0.52	2.272	0.87	1	1.9%
Freshwater Drum	38	0.49	3.714	1.43	15	28.8%
Common Carp	37	0.48	17.882	6.88	21	40.4%
Largemouth Bass	24	0.31	2.840	1.09	1	1.9%
Green Sunfish	21	0.27	1.537	0.59	5	9.6%
Threadfin Shad	16	0.21	0.069	0.03	6	11.5%
White Bass	16	0.21	1.248	0.48	2	3.8%
Longear Sunfish	9	0.12	0.055	0.02	3	5.8%
White Sucker	8	0.10	0.048	0.02	1	1.9%
White Crappie	8	0.10	0.320	0.12	1	1.9%
Yellow perch	8	0.10	0.087	0.03	5	9.6%
Goldfish	6	0.08	1.919	0.74	5	9.6%
Orangespotted Sunfish	3	0.04	0.123	0.05	3	5.8%
Hybrid sunfish	3	0.04	0.215	0.08	2	3.8%
Fathead Minnow	2	0.03	0.006	0.00	2	3.8%
Black Bullhead	2	0.03	0.111	0.04	2	3.8%
Western Mosquitofish	2	0.03	0.002	0.00	2	3.8%
Black Crappie	2	0.03	0.245	0.09	2	3.8%
SkipjackHherring	1	0.01	0.001	0.00	1	1.9%
Unidentfied *Notropis*	1	0.01	0.005	0.00	1	1.9%
Tadpole Madtom	1	0.01	0.007	0.00	1	1.9%
Threespine Stickleback	1	0.01	0.001	0.00	1	1.9%
Ninespine Stickleback	1	0.01	0.001	0.00	1	1.9%
Total Fish	7,756	100.00	259.911	100.00		
Total Fish Species	39					

Note: 0.00 denotes values less than 0.005.

Table 12. Relative Abundance of Ichthyoplankton Entrained During a 28 April-26 August 2005 Study Performed at a Nearby Facility on the CSSC.

Taxa	Life Stage	%(1)
UNID CLUPEIDAE	YOLK-SAC	2.25
	POST YOLK-SAC	4.89
	LARVAE	16.34
ALEWIFE	POST YOLK-SAC	0.36
UNID *ALOSA*	POST YOLK-SAC	0.31
GIZZARD SHAD	POST YOLK-SAC	3.14
	JUVENILE	0.04
COMMON CARP	EGG	0.54
	YOLK-SAC	0.90
	POST YOLK-SAC	1.26
BLUNTNOSE MINNOW type	YOLK-SAC	0.09
	POST YOLK-SAC	0.04
UNID CYPRINID type	EGG	0.09
UNID CYPRINID	EGG	0.04
	YOLK-SAC	0.27
	POST YOLK-SAC	1.35
	LARVAE	0.09
CYPRINID/CATOSTOMID*	EGG	11.90
CYPRINID/CATOSTOMID type*	EGG	48.63
CHANNEL CATFISH	JUVENILE	0.04
UNID *LEPOMIS*	YOLK-SAC	0.81
	POST YOLK-SAC	0.94
UNID *POMOXIS*	YOLK-SAC	0.04
	POST YOLK-SAC	0.18
UNID CENTRARCHID	POST YOLK-SAC	0.04
	LARVAE	0.22
FRESHWATER DRUM	POST YOLK-SAC	0.09
FRESHWATER DRUM type	EGG	0.09
FRESHWATER DRUM/CYPRINID type	EGG	0.22
UNIDENTIFIED	LARVAE	4.76
TOTAL ICHTHYOPLANKTON		100.00
TOTAL DISTINCT TAXA		8

*Most likely unidentified Cyprinid/Cyprinid type, due to relative absence of catostomids in the CSSC.

Table 13. IDNR State-Listed Threatened and Endangered for Cook County, IL*

Scientific Name	Common Name	State Status
Mussels		
Alasmidonta viridis	Slippershell	Threatened
Elliptio dilatata	Spike	Threatened
Ligumia recta	Black Sandshell	Threatened
Fishes		
Anguilla rostrata	American Eel	Threatened
Catostomus catostomus	Longnose Sucker	Threatened
Coregonus artedi	Cisco	Threatened
Etheostoma exile	Iowa Darter	Threatened
Fundulus diaphanus	Banded Killifish	Threatened
Fundulus dispar	Starhead Topminnow	Threatened
Hybognathus hankinsoni	Brassy Minnow	Threatened
Moxostoma carinatum	River Redhorse	Threatened
Notropis heterodon	Blackchin Shiner	Threatened
Reptiles and Amphibians		
Clonophis kirtlandi	Kirtland's Snake	Threatened
Emydoidea blandingii	Blanding's Turtle	Endangered
Necturus maculosus	Mudpuppy	Threatened
Sistrurus catenatus	Massasauga	Endangered

* https://www.dnr.illinois.gov/ESPB/Documents/ET_by_County.pdf (last updated October 2016)

Table 14. USFWS Federally Listed Threatened and Endangered Species* for Cook County, IL

Species	Status	Habitat
Northern long-eared bat *Myotis septentrionalis*	Threatened Key to 4(d) Rule	Hibernates in caves and mines - swarming in surrounding wooded areas in autumn. Roosts and forages in upland forests and woods.
Piping plover *Charadrius melodus*	Endangered	Lakeshore beaches
Eastern massasauga *Sistrurus catenatus*	Threatened	Graminoid dominated plant communities (fens, sedge meadows, peatlands, wet prairies, open woodlands, and shrublands)
Rufa Red knot *(Calidris canutus rufa)*	Threatened	Only actions that occur along coastal areas or large wetland complexes during migratory window of May 1 - September 30
Hine's emerald dragonfly *Somatochlora hineana*	Endangered	Spring fed wetlands, wet meadows and marshes
Hine's emerald dragonfly *Somatochlora hineana*	Critical Habitat Designated	Map and written description of the areas designated as Critical Habitat (PDF)
Rattlesnake-master borer moth *(Papaipema eryngii)*	Candidate	Undisturbed prairie and woodland openings that contain their only food plant, rattlesnake-master (*Eryngium yuccifolium*).
Rusty patched bumble bee *Bombus affinis*	Endangered	Grasslands with flowering plants from April through October, underground and abandoned rodent cavities or clumps of grasses above ground as nesting sites, and undisturbed soil for hibernating queens to overwinter.
Eastern prairie fringed orchid *Platanthera leucophaea* Go here for specific guidance on how to determine whether this species is present on a site.	Threatened	Moderate to high quality wetlands, sedge meadow, marsh, and mesic to wet prairie
Leafy-prairie clover (Dalea foliosa)	Endangered	Prairie remnants on thin soil over limestone
Mead's milkweed (Asclepias meadii)	Threatened	Late successional tallgrass prairie, tallgrass prairie converted to hay meadow, and glades or barrens with thin soil
Prairie bush clover *Lespedeza leptostachya*	Threatened	Dry to mesic prairies with gravelly soil

*List last updated May 9, 2017

Appendix A

Ingredion NPDES Permit and Associated Correspondence

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829
PAT QUINN, GOVERNOR LISA BONNETT, DIRECTOR

217/782-0610

September 27, 2013

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, Illinois 60501

Re: Ingredion Incorporated
Ingredion Incorporated Argo Plant
NPDES Permit No. IL0041009
Final Permit

Gentlemen:

Please note that Special Condition 3 of the permit has been modified to clarify that your facility currently meets the allowed mixing criteria and no reasonable potential exists for the discharge to exceed thrmal water quality standards.

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

The Agency has begun a program allowing the submittal of electronic Discharge Monitoring Reports (eDMRs) instead of paper Discharge Monitoring Reports (DMRs). If you are interested in eDMRs, more information can be found on the Agency website, http://epa.state.il.us/water/edmr/index.html. If your facility is not registered in the eDMR program, a supply of preprinted paper DMR Forms for your facility will be sent to you prior to the initiation of DMR reporting under the reissued permit. Additional information and instructions will accompany the preprinted DMRs upon their arrival.

The attached Permit is effective as of the date indicated on the first page of the Permit. Until the effective date of any re-issued Permit, the limitations and conditions of the previously-issued Permit remain in full effect. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Brian W. Cox at 217/782-0610.

Sincerely,

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:BWC:13050801.bwc

Attachment: Final Permit

cc: Records
Compliance Assurance Section
Des Plaines Region
Billing
CMAP

4302 N. Main St., Rockford, IL 61103 (815)987-7760
595 S. State, Elgin, IL 60123 (847)608-3131
2125 S. First St., Champaign, IL 61820 (217)278-5800
2009 Mall St., Collinsville, IL 62234 (618)346-5120
9511 Harrison St., Des Plaines, IL 60016 (847)294-4000
5407 N. University St., Arbor 113, Peoria, IL 61614 (309)693-5462
2309 W. Main St., Suite 116, Marion, IL 62959 (618)993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601 (312)814-6026

NPDES Permit No. IL0041009

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Reissued (NPDES) Permit

Expiration Date: September 30, 2018

Issue Date: September 27, 2013
Effective Date: October 1, 2013

Name and Address of Permittee:

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, Illinois 60501

Facility Name and Address:

Ingredion Incorporated Argo Plant
6400 South Archer Avenue
Bedford Park, Illinois 60501
(Cook County)

Discharge Number and Name:	Receiving Waters:
001 Non-Contact Cooling Water	Chicago Sanitary and Ship Canal
002 Stormwater Runoff	Unnamed wetland
003 Cooling Water Intake Related Discharges	Chicago Sanitary and Ship Canal

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

Alan Keller

Alan Keller, P.E.
Manager, Permit Section
Division of Water Pollution Control

SAK:DEL:BWC:13050801.bwc

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Effluent Limitations and Monitoring

1. From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall(s): 001 – Non-Contact Cooling Water (DAF = 48.0 MGD)

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/l			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week	Measurement
pH	See Special Condition 2				1/Week	Grab
Temperature	See Special Condition 3				1/Week	Single Reading
Total Residual Chlorine*				0.05	1/Week	Grab

*See Special Condition 4

Outfall(s): 002 – Stormwater Runoff

See Special Condition 14 for storm water pollution prevention plan requirements.

Outfall(s): 003 – Cooling Water Intake Related Discharges

See Special Condition 10.

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Special Conditions

SPECIAL CONDITION 1. Flow shall be measured in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum on the Discharge Monitoring Report.

SPECIAL CONDITION 2. The pH shall be in the range of 6.0 to 9.0 Standard Units. The minimum and maximum values for each discharge shall be reported on the DMR form.

SPECIAL CONDITION 3. The receiving waters are designated as Secondary Contact and Indigenous Aquatic Life Waters by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.408 as amended. Therefore, these waters are subject to the following standard:

A. Temperatures shall not exceed 93° F (34° C) more than 5% of the time or 100° F (37.8° C) at any time at the edge of the mixing zone which is defined by Title 35 of Ill. Adm. Code, Chapter 1, Subtitle C, Section 302.102 as amended.

This facility meets the allowed mixing criteria for thermal discharges pursuant to 35 IAC 302.102. No reasonable potential exists for the discharge to exceed thermal water quality standards. This determination is based a design average flow of 48.0 MGD and a maximum temperature of 92.4 ° F. The permittee shall monitor the flow and temperature of the discharge prior to entry into the receiving water body. Monitoring results shall be reported on the monthly Discharge Monitoring Report. This permit may be modified to include formal temperature limitations should the results of the monitoring show that there is reasonable potential to exceed a thermal water quality standard. Modification of this permit shall follow public notice and opportunity for comment.

There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions. The normal daily and seasonal temperature fluctuations which existed before the addition of heat due to other than natural causes shall be maintained.

The monthly maximum value shall be reported on the DMR form.

SPECIAL CONDITION 4. For the purpose of this permit Total Residual Chlorine means those substances which include combined and uncombined forms of both chlorine and bromine and which are expressed, by convention, as an equivalent concentration of molecular chlorine. All samples for Total Residual Chlorine shall be analyzed by an applicable method contained in 40 CFR 136, equivalent in accuracy to low-level amperometric titration. Any analytical variability of the method used shall be considered when determining the accuracy and precision of the results obtained.

SPECIAL CONDITION 5. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 6. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 7. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) Forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee may choose to submit electronic DMRs (eDMRs) instead of mailing paper DMRs to the IEPA. More information, including registration information for the eDMR program, can be obtained on the IEPA website, http://www.epa.state.il.us/water/edmr/index.html.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 15th day of the following month, unless otherwise specified by the permitting authority.

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Permittees not using eDMRs shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

Attention: Compliance Assurance Section, Mail Code # 19

SPECIAL CONDITION 8. For the purposes of this permit, the discharge from Outfall 001 is limited to non-contact cooling water, free from process or any other wastewater discharge. In the event the permittee shall require the use of water treatment additives other than those previously approved by this Agency, or if the permittee increases the feed rate or quantity of the additives used beyond what has previously been approved by this Agency, the permittee shall request a modification of this permit in accordance with the Standard Conditions – Attachment H. The use of phosphorus based additives is prohibited unless the Agency has provided the permittee with a written approval letter.

SPECIAL CONDITION 9. For the purposes of this permit, the discharge from Outfall 002 is limited to stormwater runoff free from process or any other wastewater discharge.

SPECIAL CONDITION 10. For the purposes of this permit, the discharges from Outfall 003 are limited to intake protection water, intake screen backwash, pump priming siphon discharges, manual pump water pressure relief discharges, uncontaminated sump discharges, pump safety relief valve discharges, seal water leakage, and other miscellaneous pump related discharges, free from process or any other wastewater discharge. In addition, there shall be no discharge of manually collected debris from the intake screens.

SPECIAL CONDITION 11. No effluent shall contain settleable solids, floating debris, visible oil, grease, scum or sludge solids. Color, odor and turbidity must be reduced to below obvious levels.

SPECIAL CONDITION 12. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

SPECIAL CONDITION 13. In order for the Agency to evaluate the potential impacts of cooling water intake structure operations pursuant to 40 CFR 125.90(b), the permittee shall prepare and submit information to the Agency outlining current intake structure conditions at this facility, including a detailed description of the current intake structure operation and design, description of any operational or structural modifications from original design parameters, source waterbody flow information, or other information as necessary.

The information shall also include a summary of historical 316(b) related intake impingement and / or entrainment studies, if any, as well as current impingement mortality and / or entrainment characterization data; and shall be submitted to the Agency within six (6) months of the permit's effective date.

Upon the receipt and review of this information, the permit may be modified to require the submittal of additional information based on a Best Professional Judgment review by the Agency. This permit may also be revised or modified in accordance with any laws, regulations, or judicial orders pursuant to Section 316(b) of the Clean Water Act.

SPECIAL CONDITION 14.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

A. A storm water pollution prevention plan shall be maintained by the permittee for the storm water associated with industrial activity at this facility. The plan shall identify potential sources of pollution which may be expected to affect the quality of storm water discharges associated with the industrial activity at the facility. In addition, the plan shall describe and ensure the implementation of practices which are to be used to reduce the pollutants in storm water discharges associated with industrial activity at the facility and to assure compliance with the terms and conditions of this permit. The permittee shall modify the plan if substantive changes are made or occur affecting compliance with this condition.

   1. Waters not classified as impaired pursuant to Section 303(d) of the Clean Water Act.

      Unless otherwise specified by federal regulation, the storm water pollution prevention plan shall be designed for a storm event

equal to or greater than a 25-year 24-hour rainfall event.

2. Waters classified as impaired pursuant to Section 303(d) of the Clean Water Act

   For any site which discharges directly to an impaired water identified in the Agency's 303(d) listing, and if any parameter in the subject discharge has been identified as the cause of impairment, the storm water pollution prevention plan shall be designed for a storm event equal to or greater than a 25-year 24-hour rainfall event. If required by federal regulations, the storm water pollution prevention plan shall adhere to a more restrictive design criteria.

B. The operator or owner of the facility shall make a copy of the plan available to the Agency at any reasonable time upon request.

   Facilities which discharge to a municipal separate storm sewer system shall also make a copy available to the operator of the municipal system at any reasonable time upon request.

C. The permittee may be notified by the Agency at any time that the plan does not meet the requirements of this condition. After such notification, the permittee shall make changes to the plan and shall submit a written certification that the requested changes have been made. Unless otherwise provided, the permittee shall have 30 days after such notification to make the changes.

D. The discharger shall amend the plan whenever there is a change in construction, operation, or maintenance which may affect the discharge of significant quantities of pollutants to the waters of the State or if a facility inspection required by paragraph H of this condition indicates that an amendment is needed. The plan should also be amended if the discharger is in violation of any conditions of this permit, or has not achieved the general objective of controlling pollutants in storm water discharges. Amendments to the plan shall be made within 30 days of any proposed construction or operational changes at the facility, and shall be provided to the Agency for review upon request.

E. The plan shall provide a description of potential sources which may be expected to add significant quantities of pollutants to storm water discharges, or which may result in non-storm water discharges from storm water outfalls at the facility. The plan shall include, at a minimum, the following items:

   1. A topographic map extending one-quarter mile beyond the property boundaries of the facility, showing: the facility, surface water bodies, wells (including injection wells), seepage pits, infiltration ponds, and the discharge points where the facility's storm water discharges to a municipal storm drain system or other water body. The requirements of this paragraph may be included on the site map if appropriate. Any map or portion of map may be withheld for security reasons.

   2. A site map showing:

      i. The storm water conveyance and discharge structures;

      ii. An outline of the storm water drainage areas for each storm water discharge point;

      iii. Paved areas and buildings;

      iv. Areas used for outdoor manufacturing, storage, or disposal of significant materials, including activities that generate significant quantities of dust or particulates.

      v. Location of existing storm water structural control measures (dikes, coverings, detention facilities, etc.);

      vi. Surface water locations and/or municipal storm drain locations

      vii. Areas of existing and potential soil erosion;

      viii. Vehicle service areas;

      ix. Material loading, unloading, and access areas.

      x. Areas under items iv and ix above may be withheld from the site for security reasons.

   3. A narrative description of the following:

i. The nature of the industrial activities conducted at the site, including a description of significant materials that are treated, stored or disposed of in a manner to allow exposure to storm water;

ii. Materials, equipment, and vehicle management practices employed to minimize contact of significant materials with storm water discharges;

iii. Existing structural and non-structural control measures to reduce pollutants in storm water discharges;

iv. Industrial storm water discharge treatment facilities;

v. Methods of onsite storage and disposal of significant materials.

4. A list of the types of pollutants that have a reasonable potential to be present in storm water discharges in significant quantities. Also provide a list of any pollutant that is listed as impaired in the most recent 303(d) report.

5. An estimate of the size of the facility in acres or square feet, and the percent of the facility that has impervious areas such as pavement or buildings.

6. A summary of existing sampling data describing pollutants in storm water discharges.

F. The plan shall describe the storm water management controls which will be implemented by the facility. The appropriate controls shall reflect identified existing and potential sources of pollutants at the facility. The description of the storm water management controls shall include:

1. Storm Water Pollution Prevention Personnel - Identification by job titles of the individuals who are responsible for developing, implementing, and revising the plan.

2. Preventive Maintenance - Procedures for inspection and maintenance of storm water conveyance system devices such as oil/water separators, catch basins, etc., and inspection and testing of plant equipment and systems that could fail and result in discharges of pollutants to storm water.

3. Good Housekeeping - Good housekeeping requires the maintenance of clean, orderly facility areas that discharge storm water. Material handling areas shall be inspected and cleaned to reduce the potential for pollutants to enter the storm water conveyance system.

4. Spill Prevention and Response - Identification of areas where significant materials can spill into or otherwise enter the storm water conveyance systems and their accompanying drainage points. Specific material handling procedures, storage requirements, spill cleanup equipment and procedures should be identified, as appropriate. Internal notification procedures for spills of significant materials should be established.

5. Storm Water Management Practices - Storm water management practices are practices other than those which control the source of pollutants. They include measures such as installing oil and grit separators, diverting storm water into retention basins, etc. Based on assessment of the potential of various sources to contribute pollutants, measures to remove pollutants from storm water discharge shall be implemented. In developing the plan, the following management practices shall be considered:

i. Containment - Storage within berms or other secondary containment devices to prevent leaks and spills from entering storm water runoff. To the maximum extent practicable storm water discharged from any area where material handling equipment or activities, raw material, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water should not enter vegetated areas or surface waters or infiltrate into the soil unless adequate treatment is provided.

ii. Oil & Grease Separation - Oil/water separators, booms, skimmers or other methods to minimize oil contaminated storm water discharges.

iii. Debris & Sediment Control - Screens, booms, sediment ponds or other methods to reduce debris and sediment in storm water discharges.

iv. Waste Chemical Disposal - Waste chemicals such as antifreeze, degreasers and used oils shall be recycled or disposed of in an approved manner and in a way which prevents them from entering storm water discharges.

v. Storm Water Diversion - Storm water diversion away from materials manufacturing, storage and other areas of potential storm water contamination. Minimize the quantity of storm water entering areas where material handling equipment of activities, raw material, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water using green infrastructure techniques where practicable in the areas outside the exposure area, and otherwise divert storm water away from exposure area.

vi. Covered Storage or Manufacturing Areas - Covered fueling operations, materials manufacturing and storage areas to prevent contact with storm water.

vii. Storm Water Reduction - Install vegetation on roofs of buildings within adjacent to the exposure area to detain and evapotranspirate runoff where precipitation falling on the roof is not exposed to contaminants, to minimize storm water runoff; capture storm water in devices that minimize the amount of storm water runoff and use this water as appropriate based on quality.

6. Sediment and Erosion Prevention - The plan shall identify areas which due to topography, activities, or other factors, have a high potential for significant soil erosion. The plan shall describe measures to limit erosion.

7. Employee Training - Employee training programs shall inform personnel at all levels of responsibility of the components and goals of the storm water pollution control plan. Training should address topics such as spill response, good housekeeping and material management practices. The plan shall identify periodic dates for such training.

8. Inspection Procedures - Qualified plant personnel shall be identified to inspect designated equipment and plant areas. A tracking or follow-up procedure shall be used to ensure appropriate response has been taken in response to an inspection. Inspections and maintenance activities shall be documented and recorded.

G. Non-Storm Water Discharge - The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharge. The certification shall include a description of any test for the presence of non-storm water discharges, the methods used, the dates of the testing, and any onsite drainage points that were observed during the testing. Any facility that is unable to provide this certification must describe the procedure of any test conducted for the presence of non-storm water discharges, the test results, potential sources of non-storm water discharges to the storm sewer, and why adequate tests for such storm sewers were not feasible.

H. Quarterly Visual Observation of Discharges - The requirements and procedures for quarterly visual observations are applicable to all outfalls covered by this condition.

1. You must perform and document a quarterly visual observation of a storm water discharge associated with industrial activity from each outfall. The visual observation must be made during daylight hours. If no storm event resulted in runoff during daylight hours from the facility during a monitoring quarter, you are excused from the visual observations requirement for that quarter, provided you document in your records that no runoff occurred. You must sign and certify the document.

2. Your visual observation must be made on samples collected as soon as practical, but not to exceed 1 hour or when the runoff or snow melt begins discharging from your facility. All samples must be collected from a storm event discharge that is greater than 0.1 inch in magnitude and that occurs at least 72 hours from the previously measureable (greater than 0.1 inch rainfall) storm event. The observation must document: color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. If visual observations indicate any unnatural color, odor, turbidity, floatable material, oil sheen or other indicators of storm water pollution, the permittee shall obtain a sample and monitor for the parameter or the list of pollutants in Part E.4.

3. You must maintain your visual observation reports onsite with the SWPPP. The report must include the observation date and time, inspection personnel, nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

4. You may exercise a waiver of the visual observation requirement at a facility that is inactive or unstaffed, as long as there are no industrial materials or activities exposed to storm water. If you exercise this waiver, you must maintain a certification with your SWPPP stating that the site is inactive and unstaffed, and that there are no industrial materials or activities exposed to

storm water.

5. Representative Outfalls - If your facility has two or more outfalls that you believe discharge substantially identical effluents, based on similarities of the industrial activities, significant materials, size of drainage areas, and storm water management practices occurring within the drainage areas of the outfalls, you may conduct visual observations of the discharge at just one of the outfalls and report that the results also apply to the substantially identical outfall(s).

6. The visual observation documentation shall be made available to the Agency and general public upon written request.

I. The permittee shall conduct an annual facility inspection to verify that all elements of the plan, including the site map, potential pollutant sources, and structural and non-structural controls to reduce pollutants in industrial storm water discharges are accurate. Observations that require a response and the appropriate response to the observation shall be retained as part of the plan. Records documenting significant observations made during the site inspection shall be submitted to the Agency in accordance with the reporting requirements of this permit.

J. This plan should briefly describe the appropriate elements of other program requirements, including Spill Prevention Control and Countermeasures (SPCC) plans required under Section 311 of the CWA and the regulations promulgated there under, and Best Management Programs under 40 CFR 125.100.

K. The plan is considered a report that shall be available to the public at any reasonable time upon request.

L. The plan shall include the signature and title of the person responsible for preparation of the plan and include the date of initial preparation and each amendment thereto.

M. Facilities which discharge storm water associated with industrial activity to municipal separate storm sewers may also be subject to additional requirement imposed by the operator of the municipal system

Construction Authorization

Authorization is hereby granted to construct treatment works and related equipment that may be required by the Storm Water Pollution Prevention Plan developed pursuant to this permit.

This Authorization is issued subject to the following condition(s).

N. If any statement or representation is found to be incorrect, this authorization may be revoked and the permittee there upon waives all rights there under.

O. The issuance of this authorization (a) does not release the permittee from any liability for damage to persons or property caused by or resulting from the installation, maintenance or operation of the proposed facilities; (b) does not take into consideration the structural stability of any units or part of this project; and (c) does not release the permittee from compliance with other applicable statutes of the State of Illinois, or other applicable local law, regulations or ordinances.

P. Plans and specifications of all treatment equipment being included as part of the stormwater management practice shall be included in the SWPPP.

Q. Construction activities which result from treatment equipment installation, including clearing, grading and excavation activities which result in the disturbance of one acre or more of land area, are not covered by this authorization. The permittee shall contact the IEPA regarding the required permit(s).

REPORTING

R. The facility shall submit an electronic copy of the annual inspection report to the Illinois Environmental Protection Agency. The report shall include results of the annual facility inspection which is required by Part I of this condition. The report shall also include documentation of any event (spill, treatment unit malfunction, etc.) which would require an inspection, results of the inspection, and any subsequent corrective maintenance activity. The report shall be completed and signed by the authorized facility employee(s) who conducted the inspection(s). The annual inspection report is considered a public document that shall be available at any reasonable time upon request.

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S. The first report shall contain information gathered during the one year time period beginning with the effective date of coverage under this permit and shall be submitted no later than 60 days after this one year period has expired. Each subsequent report shall contain the previous year's information and shall be submitted no later than one year after the previous year's report was due.

T. If the facility performs inspections more frequently than required by this permit, the results shall be included as additional information in the annual report.

U. The permittee shall retain the annual inspection report on file at least 3 years. This period may be extended by request of the Illinois Environmental Protection Agency at any time.

Annual inspection reports shall be mailed to the following address:

Illinois Environmental Protection Agency
Bureau of Water
Compliance Assurance Section
Annual Inspection Report
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

V. The permittee shall notify any regulated small municipal separate storm sewer owner (MS4 Community) that they maintain coverage under an individual NPDES permit. The permittee shall submit any SWPPP or any annual inspection to the MS4 community upon request by the MS4 community.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L. 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
  (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
  (b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
  (c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
  (d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**
  (a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
  (b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.
  (c) Records of monitoring information shall include:
    (1) The date, exact place, and time of sampling or measurements;
    (2) The individual(s) who performed the sampling or measurements;
    (3) The date(s) analyses were performed;
    (4) The individual(s) who performed the analyses;
    (5) The analytical techniques or methods used; and
    (6) The results of such analyses.
  (d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement.** All applications, reports or information submitted to the Agency shall be signed and certified.
  (a) **Application.** All permit applications shall be signed as follows:
    (1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;
    (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
    (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
  (b) **Reports.** All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    (1) The authorization is made in writing by a person described in paragraph (a); and
    (2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and
    (3) The written authorization is submitted to the Agency.
  (c) **Changes of Authorization.** If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.
  (d) **Certification.** Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

  I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements.**
  (a) **Planned changes.** The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when:
    (1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or
    (2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).
    (3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.
  (b) **Anticipated noncompliance.** The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
  (c) **Transfers.** This permit is not transferable to any person except after notice to the Agency.
  (d) **Compliance schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.
  (e) **Monitoring reports.** Monitoring results shall be reported at the intervals specified elsewhere in this permit.
    (1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting.** The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass.**

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset.**

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits.** Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

(b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically

transferred to a new permittee if:

(1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and

(3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(Rev. 7-9-2010 bah)

(19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both. Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).

(23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.

(28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

Ingredion

Ingredion Incorporated
6400 South Archer Avenue
Bedford Park, IL 60501
United States
www.ingredion.com

March 4, 2014

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794

RE: NPDES Permit No. IL0041009
Ingredion Incorporated Argo Plant

Dear Sir or Madam:

Pursuant to the above referenced permit Special Condition 13, we have attached the required information.

If you should have any questions regarding the information provided, or need anything further, please feel free to contact me at (708) 563-5334.

Sincerely,

INGREDION INCORPORATED

Rob Mead
Manager Environmental and Regulatory Affairs

Enclosure

Attachment 1 – Cooling Water Intake Structure

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Attachment 1 – Cooling Water Intake Structure
Ingredion Incorporated Argo Plant Permit IL0041009

Intake Structure Description

The Ingredion Incorporated Argo Plant uses canal water for once-thru non-contact cooling. Water is withdrawn from and returned to the Sanitary & Ship Canal.

The site has two separate pump houses. One pump house is for canal pumps #1 – #4 and another pump house for pump #5. The daily maximum design flow is 45,600 gpm or 65.6 mgd. Each pump house is equipped with a sump that collects any minor water leakage. This water is returned directly to the canal.

Floating debris in the canal could clog, foul or cause damage were it to be drawn into the system. This debris is managed with a spray bar supplied with water from three, two inch lines. Water is supplied by a 50hp spray pump at 60psi.

The canal water passes through cage bars. These bars are 1 ¼" diameter spaced 4" apart and keep logs and other debris from entering and damaging the traveling screens.

Next the water passes through traveling screens. Screen #1 protects pump #1, screen #2 protects pump #2, screen #3 protects pumps #3 and #4, and screen #4 protects pump #5. These traveling screens collect material not managed by the spray bar or cage bars described above. The screen dimensions are 25"x 42" and have 3/8" holes in them and are made out of stainless steel. Water is used to free any material that impinges on the screen. This water and collected material is immediately and directly returned to the canal via a chute. Pump #5 is a stand-alone unit with its own building. In front of pump #5 there is a cyclone fence that is three feet tall. The fence is used to manage materials floating on the surface of the water while providing clearance for varying canal levels. The fence also manages large and other debris. In front of the fence there is a blower attached to a 2" pipe that is used to form a bubble wall that assists with keeping the cyclone fence unobstructed. The rest of the process for pump #5 is the same as pump #1 and pump #2.

Pumps #1 and #2 are horizontal pumps that have a capacity to pump 12,000 gpm each with 20" inlets reduced to 18" inlets at the canal. Pumps #3 and #4 are three stage vertical pumps with a capacity to pump 4,800 gpm each with the same inlet as pumps #1 and #2. Pump #5 is a horizontal pump with a capacity to pump 12,000 gpm with the same inlet as pumps #1 and #2. These pumps all go into a common 24" header and then to the rotary strainers.

In order to protect our plant cooling infrastructure from clogging and fouling there are five rotary strainers that run off the common header. Only three of the larger units are used at any given time. These units are disk strainers installed with 1/16" diameter filtering orifices. There are 4" discharge lines for back washing collected material that is supplied from the header pressure for backwashing these units. This material enters into a common header and is routed back into the canal. The other two smaller strainers are used when maintenance is needed on the larger units and work the same except with a 3" outlet for collected materials. From here the water runs through a 24" header

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Attachment 1 – Cooling Water Intake Structure
Ingredion Incorporated Argo Plant Permit IL0041009

The canal pumps are operated to satisfy the plant cooling needs by maintaining a header pressure in the plant of 22 – 28 psi. The larger and smaller pumps are rotated to maintain the desired header pressure.

Source Waterbody Flow Information:

The non-contact cooling water discharges to the Chicago Sanitary and Ship Canal at approximately river mile 311. 7. The 7Q10 is 1014 CFS.

Historical/Current 316(b) Studies

The plant has not conducted any impingement and/or entrainment studies of the canal intake structure. The plant does not have any current impingement and/or entrainment characterization data on the canal intake structure.

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Appendix B

Fish Life History Information

Appendix B. Life History Characteristics of Species Most Likely to be Impinged/Entrained at Ingredion

Species (Common Name)	Spawn/Larval Recruitment	Habitat and Food Preferences	Spawning Habit	Egg Characteristics
Gizzard Shad	Early April-May through June	YOY school near shorelines; adults found in deeper waters. Young Gizzard Shad are carnivores, visually feeding on individual zooplankton. YOY larger than 30 mm are omnivores, feeding predominantly as filter-feeders on both phytoplankton, zooplankton, and detritus.	At the surface in protected bays and inlets-calm water	Adhesive eggs sink and attach to bottom; for two days after hatch, fry alternately swim upward then sink
Common Carp*	Throughout spring and summer in IL	YOY in vegetation in shallow water over sand, clay, or silt substrates; adults in deeper waters. Common carp are omnivorous. They scavenge the bottom for insects, crustaceans (including zooplankton), crawfish, and benthic worms, can consume plants.	Group spawning in shallow waters; spawning intermitted, lasting several days to several weeks	Extremely adhesive and demersal when first deposited. Eggs adhere to debris or plants, or sink to the substrate, either singly or in clusters
Bluntnose Minnow	Spawn repeatedly, starting in May and continuing into August	YOY found in shallow, clear water, where they feed on algae, aquatic insects larvae, diatoms, small crustaceans, and other invertebrates. Adult preferred habitats range from headwater bogs, swamps, and springs to rivers, ponds, and lakes. Sometimes, up to a dozen species of minnows can be found in a single stream of moderate size. They can be found swimming in large groups or alone.	Females deposit their adhesive eggs on the cleared underside of an overhanging stone, log, broken tile or other area chosen by the male. After spawning, males aggressively guard the nesting area	Adhesive eggs are guarded by male until hatched
Pumpkinseed/*Lepomis* sp.	Late spring to early summer. (Because of overlapping spawning habitat and behavior, it is not unusual for sunfishes, especially of the genus *Lepomis*, to hybridize)	Can reproduce in a variety of habitat types including pools and backwaters or streams, rivers, ponds and reservoirs over a variety of bottoms. Both YOY and adults prefer the vegetated areas of these habitat types. Pumpkinseed and other sunfish in general feed primarily on insects and other invertebrates.	Males construct nests in shallow water either singularly or in loose groups. Females produce 2,000-3,000 adhesive eggs at one time in the bottom of their nests. The male fertilizes the eggs, then guards them.	Adhesive eggs are guarded by male throughout incubation and early development

Appendix B (continued). Life History Characteristics of Species Most Likely to be Impinged/Entrained at Ingredion

Species (Common Name)	Spawn/Larval Recruitment	Habitat and Food Preferences	Spawning Habit	Egg Characteristics
Spotfin Shiner	Spawning takes place throughout the warmer months of the year, starting in late May or early June.	Typically found near riffles with sand, gravel, mud, or rubble substrates in creeks or small to medium (sometimes large) rivers. Spotfin Shiner consume stream drift composed of adult and immature aquatic insects, plant material, occasional small fish, and terrestrial insects	Spawn in crevices between rocks or in bark on submerged fallen trees.	Adhesive eggs laid in crevices chosen by male; no parental care
White Perch*	Early May or early June	Prefer areas with level bottoms of silt, mud, sand or clay. As juveniles they will feed on zooplankton until large enough for larger prey. As adults they will eat aquatic insects, crustaceans, fish eggs and fishes.	Spawn in water that is clear or turbid, fast or slow, and on any substrate; Eggs and sperm are released at the same time. A female can release 20,000 eggs during each spawning period and they can spawn up to three times a year.	Demersal, adhesive eggs attach to a substrate. Newly hatched larvae will drift downstream if hatched in rivers

*nonnative/invasive species

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Species	Egg Characteristics[1]				
	Demersal	Semi-buoyant	Buoyant	Adhesive	Non-adhesive
Gizzard Shad	X	--	--	X	--
Common Carp	X			X	
Bluntnose Minnow	X	--	--	X	--
Pumpkinseed/*Lepomis* sp.	X	--	--	X	--
Spotfin Shiner	X	--	--	X	--
White Perch	X	--	--	X	--

[1] Auer 1982, EA 1995, Wallus et al. 1990, Kay et al. 1994, Simon and Wallus 2003 and 2006, and Wallus and Simon 2006 and 2008.

Appendix B Reference Information

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Spotfin Shiner References:

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White Perch References:

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Exhibit 4

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

MIDWEST GENERATION LLC,	)	
	)	PCB 2016-019
	)	
Petitioner,	)	(Variance -Water)
	)	
v.	)	
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.		

NOTICE OF FILING

To: Don Brown, Clerk of the Board
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
Via Electronic Mail

Brad Halloran, Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601
Via Electronic Mail

See attached Service List

PLEASE TAKE NOTICE that I have today filed with the Office of the Pollution Control Board a RESPONSE TO THE VARIANCE PETITION for the Illinois Environmental Protection Agency, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

By: /s/ Stefanie Diers
Stefanie Diers
Assistant Counsel
Division of Legal Counsel

DATED: March 16, 2017
1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

MIDWEST GENERATION LLC,	)	
	)	PCB 2016-019
	)	
Petitioner,	)	(Variance -Water)
	)	
v.	)	
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
	)	
Respondent.	)	

ILLINOIS EPA'S RESPONSE TO THE VARIANCE PETITION

The Illinois Environmental Protection Agency ("Illinois EPA" or "Agency"), by and through its attorney, hereby submits its Response to the Variance Petition pursuant to 415 ILCS 5/38.5(e)(1-4). In support thereof, the Illinois EPA states as follows:

1. On July 21, 2015, the Petitioner filed its Variance Petition from the temperature water quality standards recently adopted by the Illinois Pollution Control Board ("Board") in *In the Matter of: Water Quality Standards and Effluent Limitations for the Chicago Area Waterway System and Lower Des Plaines River: Proposed Amendments to 301, 302 and 304,* R-08-09 (Subdocket D)(June 18, 2015).

2. Since the filing of the Petition, legislative changes have been made with respect to water quality standard variances. On February 24, 2017, P.A. 99-937 was signed into law. This legislation creates a new Section 5/38 of the Illinois Environmental Protection Act, which gives the Illinois Pollution Control Board ("Board") the authority to adopt time-limited water quality standards.

3. Under Section 38.5(e), the Agency is required to submit a response to the Petition that identifies the discharger or classes of dischargers, identifies the watershed, water bodies, or

waterbody segments affected, identifies the appropriate type of time-limited water quality standard, and recommends prompt deadlines. 415 ILCS 5/38.5

4. The Agency identifies the discharger or classes of dischargers affected by the water quality standard from which relief is being sought as:

The original petition was filed as an individual variance for Midwest Gen (Will County, Joliet 9, and Joliet 29) under 415 ILCS 5/35(a) and (b). Flint Hills filed an individual variance as well. (PCB 16-24). These petitions were atomically converted to petition for a time limited water quality standards on the effective date if P.A. 99-937. If the time-limited water quality standards are amended as individual variances, then the stay pursuant to Section 38(b) of the Illinois Environmental Protection Act, only affects Midwest Gen (Will County, Joliet 9, and Joliet 29) and Flint Hills.

Based on the Agency's understanding and the review of initial data , the requested time-limited water quality standards relief by Midwest Gen and Flint Hills will affect Stepan Chemical and possibly, but not likely, Exxon Mobil, both of which are located further downstream from the Midwest Gen and Flint Hills discharges. Until additional and sufficient data is collected and evaluated, the Agency suggests including Exxon Mobil.

If the discussions between the petitioners, USEPA, and the Agency determine that and multi-discharge variance or waterbody segment are appropriate, the stay would affect Midwest Gen (Will County, Joliet 9, and Joliet 29), Flint Hills, as well as potentially Stepan, and Exxon Mobil.

The class of discharger is for dischargers of heated effluent.

5. The Agency identifies the watershed, water bodies, or waterbody segments affected by the water quality standard from which relief is sought as:

Midwest Gen – Will County discharges to the Chicago Sanitary and Ship Canal. Midwest Gen (Joliet 9 and Joliet 29), Flint Hills, Stepan Chemical, and Exxon Mobil discharge to the Upper Dresden Island Pool.

The petitioner(s) should provide a map with their petition(s) identifying the outfalls and impacted segment(s).

6. The Agency identifies the appropriate type of time-limited water quality standard, based on factors, such as the nature of the pollutant, the conditions of the affected water body, and the number of and type of dischargers:

The Agency suggests that the relief could be an individual, waterbody segment, or multi-discharger time-limited water quality standard. The Agency or Midwest Gen will update the Board once a decision is reached as to what the appropriate relief should be.

7. The Agency recommends, for purposes of 415 ILCS 5/38.5(h), prompt deadlines for the classes of dischargers to file a substantially compliant petition as:

The Agency suggests that an amended petition should be filed with Board no later than 90 days after the adoption of the rules the Agency will be proposing pursuant to 415 ILCS 5/38.5(k).

WHEREFORE, the Agency respectfully submits its Response.

Respectfully submitted,

IILINOIS ENVIROMENTAL
PROTECTION AGENCY,

By:/s/Stefanie N. Diers
Stefanie N. Diers
Assistance Counsel
Division of Legal Counsel

DATED: March 16, 2017

1021 N. Grand Ave. East
P.O. Box 19276
Springfield, IL 62794-9276
(217) 782-5544

CERTIFICATE OF SERVICE

I, the undersigned, an attorney, state that I have served the attached the NOTICE OF FILING and a RESPONSE TO THE VARIANCE PETITION for the Illinois Environmental Protection Agency upon the person to whom it is directed by electronic email to the following persons:

Don Brown, Clerk of the Board
Brad Halloran, Hearing Officer
Illinois Pollution Control Board
James R. Thompson Center
100 West Randolph, Suite 11-500
Chicago, Illinois 60601-3218

Susan M. Franzetti
Vincent R. Angermeier
Nijman Franzetti LLP
10 South LaSalle Street
Suite 3600
Chicago, Illinois 60603

Albert Ettinger
53 W. Jackson
Suite 1664
Chicago, IL 60604

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: /s/ Stefanie Diers
Stefanie Diers
Assistant Counsel
Division of Legal Counsel

DATED: March 16, 2017
1021 N. Grand Ave. East
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ILLINOIS POLLUTION CONTROL BOARD
April 12, 2017

MIDWEST GENERATION, LLC,	)	
	)	
Petitioner,	)	
	)	
v.	)	PCB 16-19
	)	(Time-Limited Water Quality Standard)
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	
	)	
Respondent.	)	

ORDER OF THE BOARD (by K. Papadimitriu):

Public Act 99-937 took effect on February 24, 2017, creating new Section 38.5 of the Environmental Protection Act (Act), which authorizes the Board to adopt "time-limited water quality standards." 415 ILCS 5/38.5(a). On that date, any pending petition for a variance from a water quality standard, including Midwest Generation's petition for a variance from the temperature water quality standards, was converted, by operation of law, into a petition for a time-limited water quality standard. 415 ILCS 5/38.5(a), (c). Accordingly, the variance provisions in Section 38 of the Act, including the Board's 120-day deadline for taking final action, no longer apply. 415 ILCS 5/38 (2014).

In this order, the Board reviews the Illinois Environmental Protection Agency's (Agency) filing under new Section 38.5; establishes the dischargers and class of dischargers that may be covered by the requested time-limited water quality standard; and sets a petition-filing deadline.

Section 38.5(e) of the Act requires the Agency to file a response to Midwest Generation's petition within 21 days after the effective date of the Act, which the Agency did on March 16, 2017. 415 ILCS 5/38.5(e). The Agency identified the Chicago Sanitary and Ship Canal, Upper Dresden Island Pool as affected by the temperature water quality standards from which relief is sought and suggested that petitioners provide a map identifying the outfalls and impacted segments. Agency Res. at 3. The Agency identified heated effluent dischargers as the class of dischargers affected, as well as Midwest Generation and Flint Hills Resources Joliet, LLC.[1] as affected dischargers. *Id*. The Agency also suggests including Stepan Company and "possibly, but not likely" ExxonMobil Oil Corporation, subject to additional Agency data collection and

[1] Flint Hills has a petition pending in Flint Hills Resources, Joliet, LLC v. IEPA, PCB 16-24, which is the subject of a separate order today.

evaluation. *Id.*[2] The Agency suggests that the relief could be an individual, waterbody segment, or multi-discharger time-limited water quality standard. *Id.* at 4.

Section 38.5(h) stays the effectiveness of water quality standards for some petitioners. 415 ILCS 5/38.5(h). The Agency suggested a deadline of "90 days after the adoption of the rules the Agency will be proposing pursuant to 415 ILCS 5/38.5(k)" for any petitions to be filed for purposes of preserving or obtaining the stay of the temperature water quality standards. Agency Res. at 4; 415 ILCS 5/38.5(h).

Section 38.5(f) requires the Board, within 30 days after receiving the Agency's response, to enter an order establishing the discharger or class of dischargers that may be covered by the requested time-limited water quality standard along with a deadline for amended or initial petitions. 415 ILCS 5/38.5(f). Based on the Agency's response, within this order the Board establishes:

a) heated effluent dischargers into Chicago Sanitary and Ship Canal, and Upper Dresden Island Pool, including Flint Hills, Midwest Generation (Will County Station, Joliet 9 Station, and Joliet 29 Station), and Stepan Chemical as the class of dischargers that may be covered by a time-limited water quality standard for temperature under Section 38.5(f) of the Act; Exxon Mobil as a potentially-affected discharger, subject to the Agency's further evaluation; and

b) a deadline of 90 days after the Board adopts rules under Section 38.5(k) of the Act for petitioners to file any amended or initial petitions under Section 38.5(h). 415 ILCS 5/38.5(f), (h), (k).[3]

Section 38.5(g) requires the Board, as soon as practicable after today's order, to evaluate each petition to determine whether it is in substantial compliance with 40 C.F.R. § 131.14, Section 38.5 of the Act, and rules adopted under Section 38.5 (not yet in place). If the Board finds that a currently-pending petition does not substantially comply, it will enter an interim order identifying the petition's deficiencies. 415 ILCS 5/38.5(h)(3). Petitioners must file an amended petition curing any deficiencies identified by the Board before the deadline above. *Id.* Any member of the class established by this order seeking a stay of the chloride water quality standard who does not have a petition pending with the Board must file an initial petition by the same deadline. 415 ILCS 5/38.5(h)(1)(C). Under Section 38.5(f), this is a final order. 415 ILCS 5/38.5(f).

IT IS SO ORDERED.

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[2] ExxonMobil Oil Corporation filed comments in this docket on March 31, 2017 (ExxonMobile Comm.), in response to Agency's March 16th response, stating that its status and path forward regarding time-limited water quality standards relief is uncertain until additional data is collected and evaluated. *See* ExxonMobile Comm. at 3.

[3] The Act requires the Agency to propose the rules pursuant to 415 ILCS 5/38.5(k) not later than August 24, 2017. 415 ILCS 5/38.5(f). The Board must adopt such rules not later than nine months thereafter. *Id.*

Section 38.5(j) of the Environmental Protection Act states that any person who is adversely affected or threatened by this final order may appeal directly to the Illinois Appellate Court within 35 days after the Board serves the order. P.A. 99-937, eff. Feb. 24, 2017 (added 415 ILCS 5/38.5). For purposes of this judicial review, a person is considered to have been served with the Board's final order on the date on which the Board first publishes the order on its website. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. In addition, the Board's procedural rules state that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902.

I, Don A. Brown, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above order on April 12, 2017, by a vote of 5-0.

Don A. Brown, Assistant Clerk
Illinois Pollution Control Board