

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:)	
)	
MIDWEST GENERATION, LLC)	
)	
Petitioner,)	
)	
v.)	PCB No. 20-38
)	PCB No. 20-39
)	(Thermal Demonstration)
ILLINOIS ENVIRONEMNTAL)	(Consolidated)
PROTECTION AGENCY,)	
)	
Respondent.)	

NOTICE OF FILING

To:

Don Brown, Clerk of the Board Illinois Pollution Control Board James R. Thompson Center, Suite 11-500 100 W. Randolph Street Chicago, IL 60601 don.brown@illinois.gov (via electronic mail)	Bradley P. Halloran, Hearing Officer Illinois Pollution Control Board James R. Thompson Center, Suite 11-500 100 W. Randolph Street Chicago, IL 60601 brad.halloran@illinois.gov (via electronic mail)
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PLEASE TAKE NOTICE that I have today electronically filed with the Office of the Clerk of the Pollution Control Board the RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY, a copy of which is herewith served upon you.

Respectfully submitted,

ILLINOIS ENVIORMENTAL PROTECTION
AGENCY

Date: April 29, 2020

By: /s/ Sara G. Terranova
Sara G. Terranova
Assistant Counsel
Division of Legal Counsel
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**RECOMMENDATION OF THE ILLINOIS ENVIRONMENTAL PROTECTION
AGENCY**

NOW COMES the Illinois Environmental Protection Agency (“Agency”), by and through one of its attorneys, Sara G. Terranova, and in response to the Petitions to Approve Alternative Thermal Effluent Limitations for the Joliet 9 and the Joliet 29 Generating Stations (collectively the “Petitions”) filed with the Illinois Pollution Control Board (“Board”) on December 30, 2019, by Midwest Generation, LLC (“MWGen” or “Petitioner”), pursuant to 35 Ill. Adm. Code 106.1100 et seq. (Part 106, Subpart K), submits the following recommendation.

INTRODUCTION

On December 30, 2019, MWGen filed Petitions asking the Board to approve alternative effluent limitations (“AELs”) for the discharge to the Des Plaines River from both the Joliet 9 Generating Station (“Joliet Station 9”) and the Joliet 29 Generating Station (“Joliet Station 29,” and collectively the “Joliet Stations” or “Stations”).

Section 316(a) of the Federal Clean Water Act allows for an owner or operator to demonstrate that the effluent limitations for the facility’s heated effluent are more stringent than

necessary to “assure the propagation of balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made.” *See* 33 U.S.C. 1326. The Board incorporated this Federal Clean Water Act provision into 35 Ill. Adm. Code 106.11 et seq. (“Part 106, Subpart K”), which allows the Board to determine that alternative requirements may apply to thermal discharge. The Petitions were filed pursuant to the Board’s procedures for requesting alternative thermal relief under Part 106, Subpart K to demonstrate that the effluent limitations for the facility’s heated effluent are more stringent than necessary and to request alternative thermal limitations.

BACKGROUND

The Joliet Stations discharge to the Des Plaines River at a point where 1,493.0 cubic feet per second (cfs) of flow exist upstream of the outfalls during critical 7Q10 low-flow conditions. Joliet Station 9 has a design discharge rate of 375 million gallons per day (MGD) (580cfs). *See* Petitions at 10. Joliet Station 29 has a design discharge rate of 1,325 MGD (2,050cfs.) *See* Petitions at 11. This section of the Des Plaines River is classified as the Upper Dresden Island Pool Aquatic Life Use Waters. The Des Plaines River is not listed as a biologically significant stream in the 2008 Illinois Department of Natural Resources Publication *Integrating Multiple Taxa in a Biological Stream Rating System*, however it is given an integrity rating of “D” in that document. The Des Plaines River, Waterbody Segment G-12 is listed on the draft 2016 Illinois Integrated Water Quality Report and on the Section 303(d) List as “impaired fish consumption use” with potential causes given as “mercury and polychlorinated biphenyls.” Indigenous aquatic life use is “fully supported.” The Des Plaines River is not subject to enhanced dissolved oxygen standards at the discharge locations of the Stations. Approximately 5 miles downstream of the Stations, the Des Plaines River is subject to enhanced dissolved oxygen standards.

PETITIONER’S REQUESTED RELIEF

MWGen requests that, in lieu of the General Use thermal water quality standards contained in 35 Ill. Adm. Code 302.211 and the Upper Dresden Island Pool Aquatic Life Use Waters thermal water quality standards provisions contained in 35 Ill. Adm. Code 302.408 (c)-(f), and (i), the Board find that Petitioner’s Demonstration Report (“Demonstration Report”) (See Petitions, Exhibit A, the *Joliet Generating Stations 9 and 29 §316(a) Demonstration Report*) adequately demonstrates that the following AELs will allow for the protection and propagation of a balanced, indigenous, community in the Upper Dresden Island Pool (“UDIP/Near-Field”)¹ and the Five-Mile Stretch (“Five-Mile Stretch/ Far-Field”)²:

1. Water temperature at representative locations in the UDIP/Far-Field and the Five-Mile Stretch/Near-Field shall not exceed the maximum limits listed below for more than 5% of the time in a calendar year. Moreover, at no time shall water temperature exceed the daily maximum limits by more than 1.7°C (3°F).
2. Proposed UDIP/Near-Field and the Five-Mile Stretch/Far-Field Numeric AELs for the Joliet Stations:

Month	Proposed UDIP/Near-Field AELs for Joliet Stations 9 and 29 (°F)	Proposed Five-Mile Stretch/Far-Field AELs for Joliet Stations 9 and 29 (°F)
January	65	60
February	65	60
March	70	65
April	80	73
May	85	85
June	93	90
July	93	91

¹ The UDIP/Near-Field is a portion of the Des Plaines River which extends from the Brandon Road Lock and Dam to the I-55 Bridge

² The Five-Mile Stretch/Far-Field is a portion of the Des Plaines River which extends from the I-55 Bridge to the Illinois River.

August	93	91
September	93	90
October	90	85
November	85	75
December	70	65

3. For purposes of this AEL, the Five-Mile Stretch/Far Field refers to the segment of the Lower Des Plaines River running from the I-55 Bridge (River Mile 277.9) to the Illinois River (River Mile 273.0).

The above-proposed UDIP/Near-Field thermal AEL for the Joliet Stations are effective at the edge of each Station's respective 26-acre mixing zone, as determined for compliance monitoring purposes through the continued use of the Stations UDIP/Near-Field Models under the terms of their respective NPDES Permits. These proposed seasonally-based thermal AELs will operate in lieu of the Upper Dresden Island Pool Aquatic Life Use Waters; 35 Ill. Adm. Code 302.408 (c)-(f), and (i), which will not apply to the UDIP/Near-Field under the proposed AEL. Similarly, the General Use Standard narrative criteria; 35 Ill. Adm. Code 302.211(b)-(d) will not apply to the Five-Mile Stretch/Far-Field.

AGENCY'S RECOMMENDATION

- 1) **Whether the Board should grant the petitioner's requested alternative thermal effluent limitation.**

The Agency, pursuant to 35 Ill. Adm. Code 106.1145, recommends that the Board GRANT the AELs for discharges from both Joliet Station 9 and Joliet Station 29. However, the Agency suggests that the Board consider and include the following notes and conditions:

- a. The relief should specify that the excursion hours are 5% for the UDIP/Near-Field and 2% for the Five-Mile Stretch/Far-Field. Petitioner's Statement of Requested Relief asks for an excursion rate of 5% for both the UDIP/Near-Field and the Five-Mile Stretch/Far-Field. However, Petitioner provided that the Proposed Far-Field excursion hours are limited to 2% (*See* Petitions at 24), of which are also the same as the excursion hours in Adjusted Standard AS 96-10 (*See* AS 96-10 at 5 (March 16, 2000)). Therefore, the Agency believes the granted excursion rates should be 5% for the UDIP/Near-Field and 2% for the for Five-

Mile Stretch/Far-Field.

- b. Cooling towers should be used prior to and during excursion hours when possible. The cooling towers at Joliet Station 29 are currently used to avoid or limit the excursion hours. The Agency understands that the cooling towers cannot be operated in the winter and at other times where mechanical and other issues could prevent them from operating.
- c. The Petitioner accounted for the thermal dischargers: ExxonMobil (IL0002861), INEOS (IL0001643), and Stepan Chemical Company (IL0002453) in the Demonstration Report. The Agency recommends that each of these thermal dischargers be allowed to take advantage of the AELs adopted by the Board.

2) The rationale for the Agency's position.

The Agency agrees the Petitioner has met its burden of proof and has demonstrated that the proposed AELs would not adversely affect the balanced, indigenous population of fish, shellfish, and wildlife currently inhabiting the receiving water. Petitioner performed both a prospective and retrospective analysis on the Joliet Stations. *See* Petitions, Exhibit A, Appendices B and C. The Demonstration Report uses a retrospective analysis of aquatic community monitoring data collected during the operation of the Joliet Stations facility over the past 20 years. *See* Petitions at 25. This biological database was collected during a period when the less-stringent Secondary Contact and Indigenous Aquatic Life standard applied. *See* Petitions at 25.

The retrospective evaluation was conducted in two parts: First, the condition of each biotic category was analyzed by comparing available information on its abundance and species composition to what would be expected based on existing habitat, flow, and chemical characteristics of the UDIP/Near-Field and the Five-Mile Stretch/Far-Field. Second, the long-term trends abundance for each of the biotic categories within the UDIP/Near-Field and the Five-Mile

Stretch/Far-Field balanced, indigenous, community (“BIC”) were analyzed to determine whether a change in population abundance has occurred that can be attributed to the operation of Joliet Stations. *See* Petitions at 25.

The Demonstration Report also utilized predictive studies to assess whether the proposed AELs will “assure the protection and propagation of a balanced, indigenous, community of shellfish, fish, and wildlife.” *See* Petitions at 15. In addition, MWGen prepared a predictive assessment using the MIKE-3 model outputs to characterize and predict resultant hydrothermal conditions in the UDIP/Near-Field downstream of the Joliet Stations’ thermal discharges under on both typical and worst-case scenarios based on real-world data. *See* Petitions at 26. The MIKE-3 predicted thermal plume dimensions and distribution in the UDIP/Near-Field and were compared to available biothermal metric data related to survival, avoidance, spawning, and growth of fish under worst-case, typical, and typical low flow, pared with corresponding projected station operation data. *See* Petitions at 27. This approach used quantitative hydrothermal modeling to predict thermal conditions under various operating and ambient flow conditions, integrated with metrics of thermal requirements and tolerance limits identified in scientific literature for selected aquatic species representative of the BIC. *See* Petitions at 28.

Collectively, the hydrothermal model and predictive analysis were integrated with representative important species (“RIS”) life history requirements to develop proposed summer and winter thermal AELs that are protective of the UDIP/Near-Field and the Five-Mile Stretch/Far-Field BIC. *See* Petitions at 28. The RIS, selected under the criteria found in the USEPA 1977 Draft 316(a) Guidance Manual, were River Redhorse (*Moxostoma carinatum*), White Sucker (*Catostomus commersonii*), Gizzard Shad (*Dorosoma cepedianum*), Bluntnose Minnow (*Pimephales notatus*), Banded Killifish (*Fundulus diaphanous menona*), Common Carp (*Cyprinus*

carpio), Channel Catfish (*Ictalurus punctatus*), Largemouth Bass (*Micropterus salmoides*), Bluegill (*Lepomis macrochirus*), and Freshwater Drum (*Aplodinatus grunniens*). *See* Petitions, Exhibit D at 6 and Exhibit E at 6).

The data reviewed for the predictive assessment demonstrated that the Joliet Stations thermal discharges would not have an adverse effect on spawning and early development of the RIS that could potentially utilize habitat in the UDIP/Near-Field and the Five-Mile Stretch/Far-Field; water temperatures acceptable for these activities would be available outside of the Joliet Stations allowable mixing zones under typical temperature scenarios throughout most of the spawning period of these species. In addition, no unique or critical habitat for spawning and early development of RIS or threatened/endangered species exists in the UDIP/Near-Field or Five-Mile Stretch/Far-Field. *See* Petitions at 29.

The Demonstration Report indicated that there is no evidence that operation of the Joliet Stations in accordance with the former Secondary Contact Waters thermal limits, nor the identical current interim thermal limits, have caused appreciable harm to a BIC in the UDIP/Near-Field and the Five-Mile Stretch/Far-Field. *See* Petitions at 22. Additionally, the Joliet Stations were operated in a Base-Load operation prior to 2016 and will operate in peaker mode in the future. Operating in peaker mode will drastically reduce the heat load to the receiving stream. *See* Petitions at 9.

The Demonstration Report also assessed the potential for cold shock. Cold shock occurs when fish become acclimated to an elevated waterway temperature during winter months, but a sudden termination of the heat sources causes a rapid drop in temperatures that can, in extreme circumstances, result in fish kills. *See* Petitions, Exhibit A at 5-5. At ambient temperatures exceeding 45 °F, cold shock typically does not occur. *See* Petitions, Exhibit A at 5-5. Due to the mean winter temperatures that are between 40.6 °F and 48.1 °F, the risk of cold shock is reduced.

See Petitions, Exhibit A at 4-4. Additionally, when the station is shutdown, the circulating water pumps generally continue to operate resulting in a gradual (hours versus minutes) reduction in the near-field plume. *See* Petitions, Exhibit A at 5-5. Cold shock is not expected to be an issue or concern for the UDIP/Near-Field and Five-Mile Stretch/Far-Field BIC in the future. *See* Petitions at 30.

The requested numeric thermal AELs will protect the BIC in lieu of other narrative criteria found in 302.408(c)-(f) and (i) and 302.211. *See* Petitions, Exhibit A at 4-1. Additionally, the UDIP/Near-Field and General Use thermal standards provide for abrupt standard changes from March to April (60 °F to 90 °F) and from November to December (90 °F to 60 °F). *See* Petitions, Exhibit A at 4-5. The proposed thermal AELs for several of the transition months (April, May, October, and November) are more stringent than the corresponding limits under ALU B and closer to seasonal temperature expected in the Des Plaines River. *See* Petitions, Exhibit A at 4-5.

Petitioner is proposing to have 5% excursion hours in a calendar year for the UDIP/Near-Field and Five-Mile Stretch/Far-Field AELs instead of the 1% of excursion hours in any 12-month period as per 302.408(f) and 302.211(e). As mentioned previously, the relief should include only 2% excursion hours for the Five-Mile Stretch/Far-Field. The 5% excursion hours in a calendar year is similar to the former Secondary Contact water quality standard. The Demonstration Report provided that there is no evidence that operation of the Joliet Stations in accordance with the former Secondary Contact Waters thermal limits have caused appreciable harm to a BIC in the UDIP/Near-Field and the Five-Mile Stretch/Far-Field. *See* Petitions at 22.

Petitioner requests an adjustment to the thermal requirements in 35 Ill. Adm. Code 302.408 (c)-(f), and (i) for the UDIP/Near-Field and 35 Ill. Adm. Code 302.211 for the Five-Mile Stretch/Far-Field.

1. Petitioner proposes increasing the UDIP/ Near-Field temperature in the winter months (Dec. through March). *See* Petitions at 32. Additionally, Petitioner proposes increasing the temperature in the summer months (June – September) from 90 °F to 93 °F. *See* Petitions at 32. The Agency notes that the proposed temperature limits are all at or below the former Secondary Contact Standard and the Demonstration Report shows that there is no evidence that operation of the Joliet Stations in accordance with the former Secondary Contact Waters thermal limits have caused appreciable harm to a BIC in the Des Plaines River. *See* Petitions at 22.
2. Petitioner proposes increasing the Five-Mile Stretch/Far-Field temperature in the winter months (Dec. through March). *See* Petitions at 32. Additionally, Petitioner proposes increasing the temperature in the summer months (July through August) from 90 °F to 91 °F. *See* Petitions at 32. The Agency notes that the proposed temperature limits are all at or below the thermal limits in AS 96-10 (*See* AS-96, Board Order (March 16, 2000)) and the Demonstration Report shows that there is no evidence that operation of the Joliet Stations in accordance with the AS 96-10 thermal limits have caused appreciable harm to a BIC in the Des Plaines River. *See* Petitions at 22. Additionally, it should be noted that the Five-Mile Stretch/Far-Field temperature for the summer has been decreased in the shoulder months (April, May, October, and November) where the General Use Standard is set at 90 °F. *See* Petitions at 32.

The Demonstration Report successfully demonstrates that there is no evidence that operation of the Joliet Stations in accordance with the former Secondary Contact Waters and AS 96-10 thermal limits, nor the identical current interim thermal limits applicable until July 1, 2018, have caused appreciable harm to a BIC in the UDIP/Near-Field and Five-Mile Stretch/Far-Field.

See Petitions at 22. The numeric thermal AELs proposed for the Joliet Stations in the Petitions are more stringent than the prior Secondary Contact and Indigenous Aquatic Life limits and the thermal requirements of AS 96-10 and logically should also not result in any such appreciable harm. The Demonstration Report data and analysis successfully demonstrates that the UDIP/Near-Field and Five-Mile Stretch/Far-Field BIC will be protected under the proposed thermal AELs. *See* Petitions at 22.

3) Whether the plan of study sufficiently addresses the Agency's response pursuant to Section 106.1120(f).

The Agency approved Petitioner's "Detailed Plan of Study" on March 3, 2016 with no additional comments. On October 22, 2018, the Agency agreed to the delay of the winter plume survey to accommodate weather conditions and electricity demand. Additionally, the Agency agreed that three winter plume surveys (instead of the planned four plume surveys) in the winter were acceptable if the consultant believed they had enough data to define the winter thermal plume.

4) Whether the Petitions have met the requirements of Part 106, Subpart K.

The Petitions include the requirements outlined in Part 106, Subpart K. *See* Petitions at Part III and attached Exhibits and Appendices.

5) Any information the Agency believes is relevant to the Board's consideration of the proposed alternative thermal effluent limitation.

The Petitioner accounted for the thermal dischargers: ExxonMobil (IL0002861), INEOS (IL0001643), and Stepen Chemical Company (IL0002453) in the Demonstration Report. With USEPA's agreement, the Agency recommends that each of these thermal dischargers be allowed to take advantage of the AELs adopted by the Board.

6) Whether the Agency communicated with or received comments from the Illinois

Department of Natural Resources, the United States Fish and Wildlife Service, or USEPA and the content of those communications.

On March 10, 2020, the Agency submitted the details regarding the Joliet Stations in IDNR's EcoCAT web-based tool. On March 27, 2020, IDNR, in consultation with the Agency, provided that EcoCAT indicated records for the state-listed killifish in the vicinity of the project. *See* Letter from Bradley Hayes, IDNR, to Scott Twait, Illinois EPA (March 27, 2020) ("Attachment A"). However, IDNR also determined that adverse impacts were "unlikely" and concurred with the Petitioner that a balanced indigenous community of shellfish, fish and wildlife will be maintained in the receiving waters (Des Plaines River) and that threatened and endangered species will be protected. *See* Attachment A. IDNR concluded by closing consultation with the Agency. *See* Attachment A.

The United States Environmental Protection Agency (USEPA) was informed that MWGen submitted the Petitions to the Board and was provided the link to the Board's website. Throughout the proceeding, the Agency and USEPA engaged in various phone calls regarding the requested relief. USEPA indicated no concern and provided it was appropriate to include downstream dischargers in the relief requested as long as the dischargers were considered in the Demonstration Report.

WHEREFORE, the Agency respectfully submits its Recommendation.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL PROTECTION
AGENCY

Dated: April 29, 2020

By: /s/ Sara G. Terranova
Sara G. Terranova
Assistant Counsel
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Attachment A



Illinois Department of Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
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JB Pritzker, Governor
Colleen Callahan, Director

March 27, 2020

Mr. Scott Twait
1021 North Grand Avenue East
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Springfield, IL 62794-9276

**RE: MWGen - Joliet Facilities
Consultation Program
EcoCAT Review #2007491
Will County**

Dear Mr. Twait:

The Department has received your submission for this project for the purposes of consultation pursuant to the *Illinois Endangered Species Protection Act* [520 ILCS 10/11], the *Illinois Natural Areas Preservation Act* [525 ILCS 30/17], and Title 17 *Illinois Administrative Code Part 1075*. Additionally, the Department may offer advice and recommendations for species covered under the *Fish & Aquatic Life Code* [515 ILCS 5, *et seq.*]; the *Illinois Wildlife Code* [520 ILCS 5, *et seq.*]; and the *Herptiles-Herps Act* [510 ILCS 69].

The proposed action consists of a review of the request for thermal alternative effluent limits indicated by the document provided, titled *Midwest Generation, LLC – Joliet Generating Stations 9 and 29*. EcoCAT has indicated records for the state-listed banded killifish (*Fundulus diaphanus*) in the vicinity of the project. However, the Department has determined adverse impacts are unlikely. After a review of the petition, the Department concurs with the petitioner that a balanced indigenous community of shellfish, fish and wildlife will be maintained in the receiving waters (Des Plaines River) and that threatened and endangered species will be protected.

Given the above recommendations are adopted, the Department has determined that impacts are unlikely. In accordance with 17 Ill. Adm. Code 1075.40(h), please notify the Department of your decision regarding these recommendations.

Consultation on the part of the Department is closed, unless the applicant desires additional information or advice related to this proposal. Consultation for Part 1075 is valid for two years unless new information becomes available which was not previously considered; the proposed

Attachment A

MWGen - Joliet Facilities, Consultation #2007491

action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the action has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal and should not be regarded as a final statement on the project being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are unexpectedly encountered during the project's implementation, the applicant must comply with the applicable statutes and regulations.

Please contact me with any questions about this review.

Sincerely,

A handwritten signature in cursive script that reads "Bradley Hayes".

Bradley Hayes
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CERTIFICATE OF SERVICE

I, Sara G. Terranova, Assistant Counsel for the Illinois EPA, herein certifies that I have served a copy of the foregoing Notice of Filing, Appearance for Sara G. Terranova, and the Recommendation of the Illinois Environmental Protection Agency, via electronic mail upon:

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Dated: April 29, 2020

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