BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
AMEREN ASH POND CLOSURE RULES	)	**R09-21**
(HUTSONVILLE POWER STATION)	)	**(Rulemaking – Land)**
PROPOSED: 35 ILL. ADM. CODE PART	)	
840.101 AND 840.144	)	
	)	

NOTICE OF FILING

To:

John Therriault, Assistant Clerk
Illinois Pollution Control Board
James R. Thompson Center
Suite 11-500
100 West Randolph
Chicago, Illinois 60601

ATTACHED SERVICE LIST

PLEASE TAKE NOTICE that we have today electronically filed with the Office of the Clerk of the Pollution Control Board **AMEREN'S RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**, copies of which are herewith served upon you.

Joshua R. More

Dated: February 22, 2010

Kathleen C. Bassi
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312-258-5500

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In the Matter of:	)	
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AMEREN ASH POND CLOSURE RULES	)	**R09-21**
(HUTSONVILLE POWER STATION)	)	**(Rulemaking – Land)**
PROPOSED: 35 ILL. ADM. CODE PART	)	
840.101 THROUGH 840.144	)	

AMEREN'S RESPONSE TO REQUEST FOR MORE INFORMATION

On September 22, 2009, Ameren and the Illinois Environmental Protection Agency ("Agency") filed a joint statement with the Illinois Pollution Control Board ("Board") setting forth a framework for closing Ash Pond D at the Hutsonville Power Station ("Joint Statement") located in Crawford County, Illinois ("Hutsonville Site" or "Hutsonville Station").[1] The proposal, as amended jointly by Ameren and the Agency, adds a new Subchapter j, Coal Combustion Waste Surface Impoundments, to the Board's rules and new Part 840, Site-Specific Closures of Coal Combustion Waste Surface Impoundments, consisting of Subpart A, the site-specific rules applicable to Ash Pond D. As provided more fully in the statement of reasons, the proposed rule sets forth remedial requirements for a groundwater monitoring system and groundwater monitoring plan, site-specific groundwater quality standards, cap, final cover, and surface water management requirements, as well as the framework for the closure and post-closure care plans.

The Agency and Ameren agree the proposed rule provides for a closure alternative for Ash Pond D which is protective of human health and the environment. Joint Statement at 2. As indicated in the Joint Statement, all of the proposed closure

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[1] The Board docketed the Joint Statement in this proceeding as PC #1.

measures help ensure that impacts relating to Ash Pond D remain localized to the Hutsonville property and that the selected closure scenario is protective of human health and the environment. *Id.* at 3. The Agency has reviewed the various technical reports and submittals set forth in the Technical Support Document ("TSD") (hydrogeologic assessment, groundwater modeling and groundwater monitoring data) filed by Ameren and concurs that such plans and reports provide useful technical information in support of the proposed rule. *Id.* Despite the Agency's review and determination that the technical information provided by Ameren supports the joint proposal, the Board, in response to post-hearing comments filed by Prairie River Networks ("PRN") ("PC #3" and "PC #6"), asked Ameren to provide additional information pertaining to: (1) the impact of Ash Pond D on irrigation wells on adjacent property; and (2) the environmental impact of potential discharges of groundwater into the Wabash River. Ameren Ash Pond Closure Rules (Hutsonville Power Station) Proposed: 35 Ill. Adm. Code 840.101 through 840.144, R09-21 (Jan. 7, 2010) ("Order").

Impact of Ash Pond D on Irrigation Wells

First, the Board requested additional groundwater quality information concerning the irrigation wells to further evaluate the joint proposal. The Order listed three kinds of information: (1) existing data; (2) new sampling data regarding the same parameters of concern considered in Ameren's hydrogeologic assessment; or (3) sampling results from a new deep monitoring well finished in the sand and gravel aquifer along the southern edge of Ash Pond D. Order at 3. In the Order, the Board briefly discussed the location and results of monitoring well MW-7D and noted "it appears that there are no other deep monitoring wells located along the southern edge of Ash Pond D." *Id.*

In response to the Board's request, Ameren reanalyzes data already included in the record and provides additional explanation to clarify and more accurately describe the area affected.

Groundwater usage near the Station is limited and all nearby off-site uses are to the south of the property. As set forth in Appendix H of Chapter 7 of the TSD, a search of the Illinois State Geological Survey IL WATER database identified six wells within one-half mile of Ash Pond D. TSD, Ch. 7, pp. 482-484. Two of these wells are the plant production wells, and the other four are irrigation wells utilized by adjacent property owners to the south. *Id.* All six of these closer-in wells pump from the lower zone of the underlying aquifer, which, as discussed in Chapters 6 and 8 of the TSD, complies with numeric Class I groundwater quality standards. Accordingly, Ash Pond D does not threaten existing uses of down gradient wells.

Nonetheless, the Board asked Ameren for additional information regarding potential impacts to the off-site irrigation wells. PRN commented that the three irrigation wells located on the southern neighboring property are approximately fifty feet, one-half mile, and three-quarters of a mile from Ameren's property. PC#3 at 2. While the groundwater flow maps contained in Chapter 5 of the TSD do not identify all three irrigation wells, Appendix H of Chapter 7 of the TSD identifies all three. TSD, Ch. 7, pp. 482-492. Ameren has confirmed that the wells identified by PRN are in fact the wells identified on pages 482-492 of the TSD and that the wells are located approximately 50 feet, one-half mile, and three-quarters of a mile from Ameren's property. The closest irrigation well to Ash Pond D is approximately 50 feet away. That well is identified as IRR-1 on the various groundwater flow maps set forth in Chapter 5 of the TSD and well 66 on page 483 of the TSD. TSD, Ch. 5, pp. 33-48.

Well IRR-1 is the only irrigation well that is in the vicinity of Ash Pond D. The other two irrigation wells are either located up gradient of Ash Pond D or outside the potential zone of influence. These two irrigation wells are depicted on page 483 of the TSD as Wells 64 and 60. Well 64 is located approximately one-half mile from Ameren's property and is up gradient of Ash Pond D. Well 60 is located approximately three-quarters of a mile from Ameren's property boundary which is clearly beyond the zone of potential influence. *See* TSD, Ch. 8, pp. 494-536.

As discussed in Mr. Cobb's pre-filed testimony, during the growing season, the direction of the groundwater flow appears to move from the east to the southeast. The transient withdrawal of groundwater from well IRR-1, Mr. Cobb opines, causes the seasonal change in direction of the groundwater flow. Pre-filed Testimony of R. Cobb, p. 8, Attachment V; TSD, Ch. 5, p. 40, Fig. 2-9. However, as the record shows, the impact of the irrigation well on the groundwater flow, if at all, is minimal. *See* Prefiled Testimony of R. Cobb, Attachment V (illustrating the impact of the off-site irrigation well based on an analysis of the lateral area of influence and the zone of capture created by the well). In fact, none of the groundwater flow maps in Chapter 5 of the TSD show direct impact from the irrigation well. This is because the cone of depression from an intermittent irrigation well is limited to the growing season, and is not constant. A change in the groundwater flow direction, if it occurs at all, is expected to occur toward the end of the growing season. TSD, Ch. 5, p. 40. Therefore, Ash Pond D is not a constant source of contamination to the irrigation well.

While groundwater may be flowing toward IRR-1 during a portion of the growing season, that groundwater does not pose a threat to the irrigation well. As discussed in the TSD, groundwater in the lower zone of the underlying aquifer meets numeric Class I groundwater quality standards and has been only minimally impacted by Ash Pond D. *See* TSD, Ch. 5, pp. 17-18; Ch. 6, pp. 201-207, 236. Sampling from one monitoring well screened in the lower zone, MW 14, which is approximately 50 feet from IRR-1 and immediately southeast of Ash Pond D, reflects levels of boron and sulfate above background concentrations. *See* TSD, Ch. 5, pp. 17-18, 51-52, 68-72; Ch. 6, p. 236; Ch. 7, pp. 426-428. Even so, the measured concentrations of boron and sulfate near MW 14 comply with numeric Class I groundwater quality standards. *See* Pre-filed Testimony of R. Cobb, Attachment II and TSD, Ch. 5, p. 51.

The Class I groundwater quality standard for boron is 2 mg/l. 35 Ill. Adm. Code 620.410(a). The box plots on page 51 of the TSD show what boron concentration occurs between 90, 75, and 25 percent of the time. Attachment II of Rick Cobb's testimony and page 51 of the TSD show that the boron concentration in MW 14 is at a concentration of less than or equal to 1.6 mg/l 90 percent of the time. More importantly, the data shows that, on average, boron at MW 14 is at a concentration of less than 0.8 mg/l. A comparison to the numeric Class I groundwater standards is relevant to this discussion because the boron standard was set to be protective of sensitive crops, such as citrus crops.[2] In the Matter of: Groundwater Quality Standards, R89-14, 14(b), IEPA Exhibit, Water Quality Criteria 1972, pg. 341. Since the level is below the numeric Class I

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[2] Corn and soybeans are more boron tolerant.

groundwater quality standards, the contamination, if any, is protective of human health and the environment.

Furthermore, any contamination from Ash Pond D will have to migrate approximately 50 feet through the lower zone of the underlying aquifer toward the off-site irrigation wells. As contaminants migrate hydraulically down gradient from their source (*i.e.* Ash Pond D), their concentrations tend to decline due to advection and dispersion.

In general, contaminants are transported in the direction of groundwater flow; this is called advection. As contaminants enter an aquifer they tend to spread or mix; this is called dispersion. As the groundwater continues to flow (advection) additional mixing (dispersion) occurs and the contaminant concentration decreases. Accordingly, any boron contamination from Ash Pond D that is entering the irrigation well is expected to be below 1.6 mg/l, which is well within the standard set to be protective of crops (2 mg/l). Keep in mind, 1.6 mg/l is the worst case scenario and data shows the starting concentration is less than 0.8 mg/l most of the time. Further, boron concentrations will likely be further reduced by capping Ash Pond D and utilizing the groundwater collection trench. Pre-filed Testimony of R. Cobb, p. 12.

Installing an additional monitoring well along the southern property boundary in the lower zone of the underlying aquifer is unnecessary. As discussed above, the closest irrigation well is approximately 50 feet from the southern property boundary. MW 14 is screened in the lower zone of the underlying aquifer and is located down gradient from Ash Pond D, up gradient from the nearest irrigation well during a portion of the growing season (as discussed above), and approximately 50 feet from the nearest irrigation well.

Therefore, MW 14 provides an accurate picture of what, if any, contamination might be migrating off-site in the lower zone of the underlying aquifer.

For the reasons discussed above, Ameren believes that sampling the irrigation well is not necessary because there is no reason to suspect that groundwater contaminated above the numeric Class I groundwater quality standards is entering the well. In addition, sampling an irrigation well is not expected to generate reliable data because the construction of an irrigation well often does not comply with the quality control requirements set for constructing monitoring wells. Furthermore, it would create logistic and legal issues that Ameren would like to avoid. As discussed above and as supported by the TSD, Mr. Cobb's pre-filed testimony and his testimony at the September 29, 2009 hearing, the irrigation wells are not at risk of being adversely impacted by Ash Pond D.

Impact of the Potential Discharge of Contaminated Groundwater Into the Wabash River

Next, the Board requested additional information on the environmental impacts of the potential discharge of groundwater into the Wabash River. Proposed Section 840.122 allows groundwater collected in the groundwater collection trench to be managed in accordance with a National Pollution Discharge Elimination System ("NPDES") permit or another option as approved by the Agency in the closure plan or post closure plan. If selected as part of the closure scenario, the rule also requires: (1) the Agency to approve plans for the groundwater discharge system, including a plan for operation and maintenance, in the closure plan; and (2) Ameren to construct the groundwater discharge system according to a construction quality assurance program. The proposal does not ask the Board to approve the discharge or even require Ameren to discharge the groundwater into the Wabash River. The proposal merely allows the discharge through the existing outfall as an option for managing the groundwater collected in the groundwater collection trench, if approved by the Agency.

In public comments, PRN asserts that the joint proposal is insufficient because Ameren has allegedly failed to adequately characterize the potential discharge to the Wabash River. PC #3, PC #6. PRN asserts that the joint proposal does not meet the requirements of 35 Ill. Adm. Code 102.210(d) because it "fails to describe the entire area affected by the change." *See* PC #3 at 2. In response to PRN's assertion, the Board asked Ameren to perform "an assessment of the environmental impact of discharging contaminated groundwater into the Wabash River." Order at 4.

The TSD includes an assessment of the potential impacts of the proposed discharge to the Wabash River. In Chapter 12 of the TSD, Ameren performed a mixing calculation to determine whether a discharge from the existing ash pond system that includes groundwater collected from the groundwater collection trench has the potential to cause an exceedance of the facility's NPDES effluent limit. Through the NPDES permit process, the Agency determined that a discharge limit of 10 mg/l of boron into the Wabash River is protective of the environment.[3] As set forth in Chapter 12 of the TSD, the inclusion of groundwater in the existing discharge will likely result in an average discharge of 2.0 mg/l of boron. TSD at p. 610. This is well within the permitted discharge limit set in the NPDES permit (10 mg/l) and is, therefore protective of the environment.

In response to the Board's request for additional information, Ameren has performed additional calculations to demonstrate that the potential discharge of

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[3] Relevant portions of Ameren's 2003 reapplication for an NPDES permit are attached as Exhibit 1.

groundwater from the collection trench into the Wabash River will not adversely impact human health or the environment and that the overall impact of the proposed closure scenario will benefit the environment by reducing impacts from Ash Pond D.

As discussed in the statement of reasons and the TSD, Ameren used boron to assess the scope of the impacts associated with Ash Pond D. Thus, an appropriate initial step in assessing the potential environmental impacts of discharging the groundwater collection trench to the Wabash River is to estimate the additional amount of boron in-stream following discharge. Ameren estimates the additional amount of boron in-stream at the edge of the mixing zone under worst case conditions will be 0.02 mg/l (18 mg/l boron x (0.348 cfs/(1234 cfs *0.25))). While stable (or long-range) impacts should clearly be based on average conditions, for purposes of this demonstration, Ameren used the estimated maximum value of boron in groundwater and low flow river conditions, to determine the increase in boron loading under worst case conditions.

The information used to calculate the worst case additional boron loading from the discharge was obtained from the TSD. Chapter 12 of the TSD cites a discharge flow rate for the proposed collection trench of 225,091 gallons per day ("gal/day") (which is equivalent to 0.348 cubic feed per second ("cfs")). TSD at p. 610. Chapter 12 of the TSD also estimates the average (5.4 mg/l) and maximum (18 mg/l) boron concentrations in the groundwater collected in the trench. *Id.* Again, in order to be conservative, a low river flow was selected. A so called "7 day Q 10 flow" is typically used to assess "low flow" river conditions. The 7Q10 flow for the Wabash River at Hutsonville is 1,234 cfs. TSD at p. 430; *citing* Illinois State Water Survey (1988). Because Illinois Water Quality Standards allow for a mixing zone of 25% of the river flow, for parameters which are not acutely toxic (such as boron), Ameren used a mixing zone of 25%.[4] *See* 35 Ill. Adm. Code 302.102(b)(8).

By way of comparison, Ameren also calculated the additional amount of boron in-stream following discharge under average river conditions and estimated maximum boron concentrations in the groundwater collected in the trench. Ameren gathered 20 years of Wabash River flow data to determine the average flow of the Wabash River.[5] While this is not a worst case scenario, it is a very conservative approach because it uses the estimated maximum boron concentrations in the groundwater collected in the trench (18 mg/l) as opposed to the estimated average boron concentrations in the groundwater collected in the trench (5.4 mg/l). Ameren's calculations estimate the increase in boron at the edge of the mixing zone under average river flow conditions with estimated maximum boron concentrations in the groundwater collected in the trench will be 0.002 mg/l (18 mg/l boron x (0.348 cfs/(14078.65 cfs *0.25)). This level is considered negligible (as this concentration is at or below common method detection limits for boron in groundwater). Therefore, the estimated additional amount of boron in-stream under average conditions (average river flow and average boron concentrations) will also be negligible.

The Illinois general use surface water quality standard for boron is 1.0 mg/l. 35 Ill. Adm. Code 302.208(g). The worst case scenario would result in a 0.02 mg/l increase in boron concentration which would increase the "ambient" boron concentration to 0.091

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[4] *See also*, Illinois Permitting Guidance for Mixing Zones, Illinois Environmental Protection Agency, pg. 3 (Mar. 15 1993).

[5] USGS data for the Wabash River at Riverton, Indiana (Station No. 03342000) is attached as Exhibit 2.

mg/l (0.02 mg/l + 0.071 mg/l).[6] Under average flow conditions, the increase in boron concentration would be difficult to distinguish from the normal variability in the ambient river concentration. Thus, Ameren expects that boron concentrations in the Wabash River, including any additional boron loading from discharging groundwater from Outfall 002, as proposed, will not even come within 89% of the regulatory standard.

Furthermore, the boron water quality standard is currently under review by the Agency. The Agency recently held public meetings to propose revision of the boron (and other) standards. At those meetings the Agency proposed two relaxed standards for the Protection of Aquatic Life use criteria (acute 38 mg/l and chronic 7.4 mg/l).[7]

The magnitude of the expected change in boron concentration in the Outfall 002 discharge is very minor compared to both the historic and current ash pond discharge concentrations as well as the ash pond outfall effluent limitations contained in Ameren's NPDES permit. As noted above, Ameren estimated that including groundwater from the collection trench in the existing discharge will likely result in an average discharge of 2.0 mg/l of boron in the Outfall 002 discharge. TSD at p. 609. This data was based on data supporting Ameren's 2003 application for a renewed NPDES permit. Based on more recent data from the Hutsonville Station (attached as Exhibit 4), the discharge from Outfall 002 has a much lower average boron concentration of 0.69 mg/l, and a greater average flow of 3,870,000 gal/day than estimated in Chapter 12 of the TSD. Ameren used these values, along with the estimated average boron concentration (rather than

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[6] Ameren's consultant, Natural Resource Technology, Inc. ("NRT") conducted a review of available data from the EPA STORET database in 1999 for the Wabash River. NRT concluded that "the closest downstream station with relevant parameters is in Hutsonville, about two river miles downstream" and that "there are no upstream data with relevant data available." *See* TSD at 608. Nonetheless, the database for this location included 113 boron values, with an average concentration of 0.071 mg/l. *Id.*

[7] *See* Illinois Environmental Protection Agency Draft Water Quality Standards Updates, Sept. 14, 2009, attached as Exhibit 3.

maximum) and flow of the groundwater collection trench, to predict the concentration of boron in the Outfall 002 discharge, assuming mixing of the two flows.[8]

((0.69 mg/l * 3,870,000 gal/day) + (5.4 mg/l * 225,091 gal/day))/(3,870,000 + 225,091) = 0.95 mg/l Expected Boron Concentration in the Outfall 002 discharge

The calculated concentration of 0.95 mg/l is an increase of 0.26 mg/l of the current concentration of 0.69 mg/l. Both Ameren's environmental assessment in the TSD and the updated estimate are increases over the existing boron concentration that are well within the NPDES permit's 10 mg/l effluent limitation. Accordingly, Ameren does not expect the minimal increase in boron concentration to adversely impact the environment.

Most importantly, Ameren's calculations show that the overall impact of the selected closure scenario, including discharge from the collection trench to Outfall 002, will have a net reduction in boron loading to the Wabash River. While the discharge of groundwater to the Wabash River will result in an increase in the quantity of water and may increase the amount of boron discharged pursuant to Ameren's NPDES permit, the joint proposal will result in a net decrease in boron loading to the river. The purpose of the groundwater collection trench is to collect groundwater that under current conditions migrates southeastward and transfer it into the Wabash River in order to prevent offsite migration of leachate in this direction. Ameren's consultant, NRT, projected (modeled) loads from leachate flowing from Ash Pond D directly to the Wabash River following removal of the pond from service but prior to initiating closure efforts, this flow contained approximately 25 lbs/day of boron. TSD at p. 535. By contrast, leachate flowing directly towards the Wabash River from Ash Pond D is projected to be 5 lbs/day,

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[8] The calculations based on the most recent data from the Hutsonville Station are attached in Exhibit 5.

or less following dewatering and installation of the cap and cover.[9] Id. Under the expected discharge scenario (which is not required by the joint proposal), water pumped from the trench will discharge through Outfall 002. Using the estimated flow from the trench and average boron concentration, Ameren estimates this discharge will result in an additional 10 lbs/day of boron.[10] Even with this estimated additional load from the collection trench, however, there is a projected overall reduction of 10 lbs/day boron associated with the closure of Pond D and, therefore, the overall impact of closure will not degrade water quality in the Wabash River.

Furthermore, any discharge or alternative groundwater management option will be approved by the Agency to ensure that it is protective of human health and the environment. As the Board is aware, the joint proposal requires the Agency to authorize any additional discharge to the Wabash River or any alternative groundwater management option. The Environmental Protection Act ("Act") grants the Agency statutory authority to act. 415 ILCS 5/4(g); *see* Granite City Division of National Steel Co. v. PCB, 155 Ill.2d 149; 613 N.E.2d 719 (1993); *citing* Landfill, Inc. v. PCB, 74 Ill.2d 541, 554, 387 N.E.2d 258 (1978) (discussing the Agency's power and authority). Part of the Act's stated purpose is to "restore, protect and enhance the quality of the environment." 415 ILCS 5/2(b). In authorizing a discharge or any alternative groundwater management option, the Agency is charged with protecting the quality of the environment. Therefore, no new discharge or any alternative groundwater

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[9] This is a conservative estimate because the 5% estimate is for an earthen cover and the geosynthetic membrane will achieve a greater reduction.

[10] 225,091 gal/day x 3.785 l/gal X 5.4 mg/l X 1 lb/453600 mg = 10 lbs/day of boron

management option could occur without Agency oversight and any approval by the Agency, and not otherwise disturbed on appeal, may be presumed protective.

Ameren and the Agency maintain that the proposed closure scenario, including the option of discharging groundwater from the collection trench to the Wabash River via Outfall 002 will result in a reduction of existing contamination. Illinois Environmental Protection Agency's Post-Hearing Comments, PC #2 at 4 ("These components will combine to effectively remediate the upper zone of the underlying aquifer and remove future contaminant recharge from the lower zone of the aquifer thereby restoring offsite groundwater for existing and future beneficial uses without negatively impacting surface water."). The proposed collection trench will simply intercept groundwater currently migrating offsite and redirect that water to Pond B, which ultimately discharges through Outfall 002 to the Wabash River. The joint proposal, with a direct discharge of groundwater to the Wabash River, will reduce boron loading to the Wabash River by approximately 10 lbs/day. Given this reduction, Ameren does not believe any further environmental assessment is necessary as the joint proposal, including implementing the optional discharge of groundwater to the Wabash River, will result in net loading reductions and an ultimate benefit to human health and the environment.

Respectfully submitted,

AMEREN ENERGY GENERATING COMPANY

by:

Joshua R. More

Dated: February 22, 2010

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Exhibit 1

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (Copy from Item 1 of Form 1)] ILD000672972

Form Approved.
OMB No. 2040-0086
Approval expires 841-98.

FORM 2C ,PDES

IEPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

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)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2 MIN.	3. SEC	
002	39	07	53	87	39	18	Wabash River

11. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The eve" flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional shoots if necessary.

1. OUT-FALLING (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATING (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
002	Ash Pond Discharge	1.68 MGD	Discharge to surface water, sedimentation, neutralization	4A	1U, 2K
	Subsystems:				
	Fly ash sluice water	0.74 MGD			
	Bottom ash sluice water	0.68 MGD			
	Water softener blowdown	0.005 MGD			
	Sewage treatment plant effluent	0.0017 MGD	Activated sludge	3A	
	Water treatment filter backwash	0.005 MGD			
	Demineralizer regenerant waste	0.002 MGD			
	Boiler blowdown	0.010 MGD			
	Miscellaneous cooling water	0.108 MGD			
	Pyrites from coal pulverizer	0.0025 MGD			
	Ash hopper overflow	0.10 MGD			
	Plant floor drains & sump discharges	0.02 MGD			
	Coal yard storm water runoff	Intermittent			
	Roof drain storm water runoff	Intermittent			
	Deep well rehabilitation wastewater	Intermittent			
	Fly ash pond "D" dewatering	Intermittent			
	Air heater wash	Intermittent			
	Emergency diesel fire pump coolers	Intermittent			

OFFICIAL USE ONLY (effluent guidelines sub-categories)

Please print or type in the unshaded areas only.

EPA I.D. NUMBER (Copy from Item 1 of Form 1)
ILD000672972

Form Approved.
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Approval expires 841-98.

FORM 2C NPDES

IEPA

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

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 1. DEG.	2. MIN.	3. SEC.	C. LONGITUDE 1. DEG.	2. MIN.	3. SEC.	D. RECEIVING WATER (name)
A02	39	07	53	87	39	18	Wabash River
003	39	07	59	87	39	46	Wabash River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The eve" flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUT-FALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW a. OPERATING (list)	b. AVERAGE FLOW (include units)	3. TREATMENT a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
A03	Sewage treatment plant effluent	0.0017 MGD	Activated sludge	3A	
003	Storm water from access roads used for	Intermittent			
	coal delivery				

OFFICIAL USE ONLY (effluent guidelines sub-categories)

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use *the same* format) instead of completing these pages.
SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*
ILD000672972

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from* **page 3 of Form 2-C)**

OUTFALL NO.
002

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.

1. POLLUTANT	2. EFFLUENT							3. UNITS *(specify if blank)*		4. INTAKE (optional)		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand *(BOD)*	12	163	---	---	---	---	1	mg/L	lbs/day	4	56	1
b. Chemical Oxygen Demand *(COD)*	7	95	---	---	---	---	1	mg/L	lbs/day	19	266	1
c. Total Organic Carbon (TOC)	3.5	48	---	---	---	---	1	mg/L	lbs/day	6.1	85	1
d. Total Suspended Solids (TSS)	7.6	103	18	557	7	98	53	mg/L	lbs/day	67	938	1
e. Ammonia (as N)	<0.20	<3	---	---	---	---	1	mg/L	lbs/day	<0.20	<3	1
f. FLOW	VALUE 1.63		VALUE 3.71		VALUE 1.68		53	MGD	---	VALUE 1.68		53
g. Temperature (winter)	VALUE ---		VALUE ---		VALUE ---		---	0C		VALUE ---		---
h. Temperature (summer)	VALUE 27		VALUE ---		VALUE ---		1	0C		VALUE ---		---
i. PH	MINIMUM 8.07	MAXIMUM 8.07	MINIMUM 7.5	MAXIMUM 8.6			53	STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVE PRESENT	b. BELIEVE ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE *(if available)*		c. LONG TERM AVRG. VALUE *(if available)*		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
a. Bromide (24959-67-9)	X		<0.10	<1					1	mg/L	lbs/day	<0.10	<1	1
b. Chlorine, Total Residual	X		<0.02	<0.3					1	mg/L	lbs/day	<0.02	<0.3	1
c. Color		X	<5.0	---					1	units	---	<5.0	---	1
d. Fecal Coliform	X		<10	---					1	CFUs/100mL	---	30	---	1
e. Fluoride (16984-48-8)		X	<0.25	<3.4					1	mg/L	lbs/day	0.27	3.8	1
f. Nitrate-Nitrite (as N)	X		0.86	12					1	mg/L	lbs/day	2.1	29	1

EPA Form 3510-2C: (8-90)

CONTINUE ON REVERSE

ITEM V-B, C UED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVE PRESENT	b. BELIEVE ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)		X	1.3	18					1	mg/L	lbs/day	1.4	20	1
h. Oil Grams		X	<6	<82			<5	<70	3	mg/L	lbs/day	<6.0	<84	1
i. Phosphorus (as P), Total (7723-14-0)	X		0.044	0.60					1	mg/L	lbs/day	0.30	4.2	1
j. Radioactivity														
(1) Alpha, Total		X	No analysis performed	---					0	---	---	No analysis performed	---	0
(2) Beta, Total-		X	No analysis performed	---					0	---	---	No analysis performed	---	0
(3) Radium, Total		X	No analysis performed	---					0	---	---	No analysis performed	---	0
(4) Radium 226, Total		X	No analysis performed	---					0	---	---	No analysis performed	---	0
k. Sulfate (as SO4) (14808-79-8)	X		200	2700					1	mg/L	lbs/day	32	450	1
l. Sulfide (as S)		X	8.2	111					1	mg/L	lbs/day	<2.0	<28	1
m. Sulfite (as SO3) (14265-45-3)		X	<2.0	<27					1	mg/L	lbs/day	<2.0	<28	1
n. Surfactants		X	<0.10	<1.4					1	mg/L	lbs/day	<0.10	<1.4	1
o. Aluminum, Total (7429-90-5)	X		0.59	8.0					1	mg/L	lbs/day	1.2	17	1
p. Barium, Total (7440-39-3)	X		0.11	1.5					1	mg/L	lbs/day	0.06	0.9	1
q. Boron, Total (7440-42-8)	X		1.2	16	0.95	29	1.5	21	12	mg/L	lbs/day	0.05	0.7	1
r. Cobalt, Total (7440-48-4)		X	0.012	0.16					1	mg/L	lbs/day	<0.005	<0.07	1
s. Iron Total (7439-89-6)	X		0.27	3.7					1	mg/L	lbs/day	1.9	26	1
t. Magnesium, Total (7439-95-4)	X		18	245					1	mg/L	lbs/day	18	252	1
u. Molybdenum, Total (7439-98-7)	X		<0.01	<0.1					1	mg/L	lbs/day	<0.01	<0.1	1
v. Manganese, Total (7439-96-5)	X		0.13	1.8					1	mg/L	lbs/day	0.23	3.2	1
w. Tin Total (7440-31-5)		X	<0.06	<0.8					1	mg/L	lbs/day	<0.06	<0.8	1
x. Titanium, Total (7440-32-6)	X		<0.005	<0.07					1	mg/L	lbs/day	0.02	0.3	1

CONTINUE ON PAGE V.3

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
ILD000672972	002

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C- If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)	X		X	<20	<0.3					1	ug/L	lbs/day	<20	<0.3	1
2M. Arsenic, Total (7440-38-2)	X		X	<20	<0.3					1	ug/L	lbs/day	<20	<0.3	1
3M. Beryllium Total, 7440-41-7)	X		X	<5.0	<0.07					1	ug/L	lbs/day	<5.0	<0.07	1
4M. Cadmium Total (7440-43-9)	X		X	<2.0	<0.03					1	ug/L	lbs/day	<2.0	<0.03	1
5M. Chromium, Total (7440-47-3)	X		X	<4.0	<0.05					1	ug/L	lbs/day	<4.0	<0.06	1
6M Coper, Total (7440-50-8)	X		X	29	0.39					1	ug/L	lbs/day	14	0.20	1
7M Lead, Total (7439-92-1)	X		X	<10	<0.14					1	ug/L	lbs/day	<10	<0.14	1
8M Mercury, Total (7439-97-6)	X		X	<0.2	<0.003					1	ug/L	lbs/day	<0.2	<0.003	1
9M Nickel Total (7440-02-0)	X		X	84	1.1					1	ug/L	lbs/day	<10	<0.14	1
10M. Selenium Total (7782-49-2)	X		X	<20	<0.27					1	ug/L	lbs/day	<20	<0.28	1
11M Silver Total (7440-22-4	X		X	<10	<0.14					1	ug/L	lbs/day	<10	<0.14	1
12M Thallium Total (7440-28-0)	X		X	11	0.15					1	ug/L	lbs/day	<10	<0.14	1
13M Zinc (7440-66-6)	X		X	36	0.49					1	ug/L	lbs/day	<10	<0.14	1
14M. Cyanide Total (57-12-5)	X		X	<5.0	<0.07					1	ug/L	lbs/day	<5.0	<0.07	1
15M. Phenols, Total	X		X	<5.0	<0.07					1	ug/L	lbs/day	<5.0	<0.07	1
DIOXIN															
2,3,7,8-Tetra-chlorodibenzo-P-Dioxin (1764-01-6)			X	*DESCRIBE RESULTS* No peak detected.											

Exhibit 2

USGS Data for the Wabash River at Riverton, IN
Station No. 03342000

Year	Flow (cfs)	
1988	7820	
1989	12120	
1990	19060	
1991	22730	
1992	11170	
1993	9041	
1994	13080	
1995	13890	
1996	18350	
1997	11800	13906.1
1998	18350	
1999	11800	
2000	6762	
2001	13810	
2002	15270	
2003	16250	
2004	15670	
2005	13620	
2006	15130	
2007	15850	14251.2
Avg =	14078.65	

Exhibit 3

SUBPART B: GENERAL USE WATER QUALITY STANDARDS

Section 302.208 Numeric Standards for Chemical Constituents

a) The acute standard (AS) for the chemical constituents listed in subsection (e) shall not be exceeded at any time except ~~as provided in subsection (d)~~ for those waters for which the Agency has approved a zone of initial dilution (ZID) pursuant to 35 IAC 302.102.

b) The chronic standard (CS) for the chemical constituents listed in subsection (e) shall not be exceeded by the arithmetic average of at least four consecutive samples collected over any period of at least four days, except ~~as provided in subsection (d)~~ for those waters in which the Agency has approved a mixing zone or allowed mixing pursuant to Section 302.102. The samples used to demonstrate attainment or lack of attainment with a CS must be collected in a manner that assures an average representative of the sampling period. For the ~~metals~~ chemical constituents that have water quality based standards dependent upon hardness, the chronic water quality standard will be calculated according to subsection (e) using the hardness of the water body at the time the ~~metals~~ sample was collected. To calculate attainment status of chronic ~~metals~~ standards, the concentration of the ~~metal~~ chemical constituent in each sample is divided by the calculated water quality standard for the sample to determine a quotient. The water quality standard is attained if the mean of the sample quotients is less than or equal to one for the duration of the averaging period.

c) The human health standard (HHS) for the chemical constituents listed in subsection (f) shall not be exceeded when the stream flow is at or above the harmonic mean flow pursuant to Section 302.658 nor shall an annual average, based on at least eight samples, collected in a manner representative of the sampling period, exceed the HHS except ~~as provided in subsection (d)~~ for those waters in which the Agency has approved a mixing zone or allowed mixing pursuant to Section 302.102. However, no mixing zones or allowed mixing shall be approved for mercury.

~~d) In waters where mixing is allowed pursuant to Section 302.102, the following apply:~~

- ~~1) The AS shall not be exceeded in any waters except for those waters for which the Agency has approved a zone of initial dilutions (ZID) pursuant to Section 302.102.~~
- ~~2) The CS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.~~
- ~~3) The HHS shall not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102.~~

d) The standard for the chemical constituents of subsections (g) and (h) shall not be exceeded at any time except for those waters in which the Agency has approved a mixing zone or allowed mixing pursuant to Section 302.102.

e) Numeric Water Quality Standards for the Protection of Aquatic Organisms

Constituent	~~STORET Number~~	AS (µg/L)	CS (µg/L)
Arsenic (trivalent, dissolved)	~~22680~~	$360 \times 1.0^* = 360$	$190 \times 1.0^* = 190$
Boron (dissolved)		38,000 X 1.0* = 38,000	7,400 X 1.0* = 7,400
Cadmium (dissolved)	~~01025~~	$e^{A+B\ln(H)} \times \begin{Bmatrix} 1.138672 - \\ [(\ln H)(0.041838)] \end{Bmatrix}^*,$ where $A = -2.918$ and $B = 1.128$	$e^{A+B\ln(H)} \times \begin{Bmatrix} 1.101672 - \\ [(\ln H)(0.041838)] \end{Bmatrix}^*,$ where $A = -3.490$ and $B = 0.7852$
Chromium (hexavalent, total)	~~01032~~	16	11
Chromium (trivalent, dissolved)	~~80357~~	$e^{A+B\ln(H)} \times 0.316^*,$ where $A = 3.688$ and $B = 0.8190$	$e^{A+B\ln(H)} \times 0.860^*,$ where $A = 1.561$ and $B = 0.8190$
Copper (dissolved)	~~01040~~	$e^{A+B\ln(H)} \times 0.960^*,$ where $A = -1.464$ and $B = 0.9422$	$e^{A+B\ln(H)} \times 0.960^*,$ where $A = -1.465$ and $B = 0.8545$
Cyanide (Weak acid dissociable or available)	~~00718~~	22	5.2
Fluoride (Total)		$\frac{e^{A+B\ln(H)}}{}$	$\frac{e^{A+B\ln(H)}}{}$

		where $A = 6.8160$ And $B = 0.4233$	where $A = 5.7765$ And $B = 0.4233$
Lead (dissolved)	~~01049~~	$e^{A+B\ln(H)} \times \left\{\begin{matrix}1.46203 - \\ [(\ln H)(0.145712)]\end{matrix}\right\}^*,$	$e^{A+B\ln(H)} \times \left\{\begin{matrix}1.46203 - \\ [(\ln H)(0.145712)]\end{matrix}\right\}^*,$
		where $A = -1.301$ and $B = 1.273$	where $A = -2.863$ and $B = 1.273$
Manganese (dissolved)		$\underline{e^{A+B\ln(H)}}\ \mathrm{X}\underline{\qquad}$ where $A = 6.6635$ And $B = 0.3262$	$\underline{e^{A+B\ln(H)}}\ \mathrm{X}\underline{\qquad}$ where $A = 5.5146$ And $B = 0.3262$
Mercury (dissolved)	~~71890~~	$2.6 \times 0.85^* = 2.2$	$1.3 \times 0.85^* = 1.1$
Nickel (dissolved)	~~01065~~	$e^{A+B\ln(H)} \times 0.998^*,$ where $A = 0.5173$ and $B = 0.8460$	$e^{A+B\ln(H)} \times 0.997^*,$ where $A = -2.286$ and $B = 0.8460$
TRC	~~500600~~	19	11
Zinc (dissolved)	~~01090~~	$e^{A+B\ln(H)} \times 0.978^*,$ where $A = 0.9035$ and $B = 0.8473$	$e^{A+B\ln(H)} \times 0.986^*,$ where $A = -0.8165$ and $B = 0.8473$
Benzene	~~78124~~	4200	860
Ethyl-benzene	~~78113~~	150	14
Toluene	~~78131~~	2000	600
Xylene(s)	~~81551~~	920	360

where: µg/L = microgram per liter
e^x = base of natural logarithms raised to the x- power
$\ln(H)$ = natural logarithm of Hardness (STORET 00900)
* = conversion factor multiplier for dissolved metals

f) Numeric Water Quality Standard for the Protection of Human Health

Constituent	~~STORET Number~~	(µg/L)
Mercury	~~71900~~	0.012
Benzene	~~78124~~	310

where: µg/L = micrograms per liter

g) ~~Concentrations of the following chemical constituents shall not be exceeded except in waters for which mixing is allowed pursuant to Section 302.102.~~ Single-value standards apply at the following concentrations for these substances:

Constituent	Unit	~~STORET Number~~	Standard
Barium (total)	mg/L	~~01007~~	5.0
~~Boron (total)~~	~~mg/L~~	~~01022~~	~~1.0~~
Chloride (total)	mg/L	~~00940~~	500
~~Fluoride~~	~~mg/L~~	~~00951~~	~~1.4~~
Iron (dissolved)	mg/L	~~01046~~	1.0
~~Manganese (total)~~	~~mg/L~~	~~01055~~	~~1.0~~
Phenols	mg/L	~~32730~~	0.1
Selenium (total)	mg/L	~~01147~~	1.0
Silver (total)	µg/L	~~01077~~	5.0

where: mg/L = milligram per liter and
µg/L = microgram per liter

h) ~~The following concentrations for sulfate must not be exceeded except in receiving waters for which mixing is allowed pursuant to Section 302.102~~ Water quality standards for sulfate are as follows:

1) At any point where water is withdrawn or accessed for purposes of livestock watering, the average of sulfate concentrations must not exceed 2,000 mg/L when measured at a representative frequency over a 30 day period.

2) The results of the following equations provide sulfate water quality standards in mg/L for the specified ranges of hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) and must be met at all times:

A) If the hardness concentration of receiving waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 25 mg/L but less than or equal to 500 mg/L, then:

$$C = [1276.7 + 5.508 (\text{hardness}) - 1.457 (\text{chloride})] * 0.65$$

where, C = sulfate concentration

B) If the hardness concentration of waters is greater than or equal to 100 mg/L but less than or equal to 500 mg/L, and if the chloride concentration of waters is greater than or equal to 5 mg/L but less than 25 mg/L, then:

$$C = [-57.478 + 5.79 (\text{hardness}) + 54.163 (\text{chloride})] * 0.65$$

where C = sulfate concentration

3) The following sulfate standards must be met at all times when hardness (in mg/L as $CaCO_3$) and chloride (in mg/L) concentrations other than specified in (h)(2) are present:

A) If the hardness concentration of waters is less than 100 mg/L or chloride concentration of waters is less than 5 mg/L, the sulfate standard is 500 mg/L.

B) If the hardness concentration of waters is greater than 500 mg/L and the chloride concentration of waters is 5 mg/L or greater, the sulfate standard is 2,000 mg/L.

C) If the combination of hardness and chloride concentrations of existing waters are not reflected in subsection (h)(3)(A) or (B), the sulfate standard may be determined in a site-specific rulemaking pursuant to section 303(c) of the Federal Water Pollution Control Act of 1972 (Clean Water Act), 33 USC 1313, and Federal Regulations at 40 CFR 131.10(j)(2).

(Source: Amended at 32 Ill. Reg. 14978, effective September 8, 2008)

Section 302.303 Finished Water Standards

Water shall be of such quality that with treatment consisting of coagulation, sedimentation, filtration, storage and chlorination, or other equivalent treatment processes, the treated water shall meet in all respects the requirements of Part ~~604~~ 611.
(Note: Prior to codification, Table I, Rule 304 of Ch 6: Public Water Supplies.)

SUBPART C: PUBLIC AND FOOD PROCESSING WATER SUPPLY STANDARDS

Section 302.304 Chemical Constituents

The following levels of chemical constituents shall not be exceeded:

CONSTITUENT	~~STORET NUMBER~~	CONCENTRATION (mg/l)
Arsenic (total)	~~01002~~	0.05
Barium (total)	~~01007~~	1.0
Boron (total)		1.0
Cadmium (total)	~~01027~~	0.010
Chloride	~~00940~~	250.
Chromium	~~01034~~	0.05
Fluoride (total)		1.4
Iron (dissolved)	~~01046~~	0.3
Lead (total)	~~01051~~	0.05
Manganese (total)	~~01055~~	~~0.15~~ 1.0
Nitrate-Nitrogen	~~00620~~	10.
Oil (hexane-solubles or equivalent)	~~00550, 00556 or 00560~~	0.1
Organics		
Pesticides		
Chlorinated Hydrocarbon Insecticides		
Aldrin	~~39330~~	0.001
Chlordane	~~39350~~	0.003
DDT	~~39370~~	0.05

Dieldrin	~~39380~~	0.001
Endrin	~~39390~~	0.0002
Heptachlor	~~39410~~	0.0001
Heptachlor Epoxide	~~39420~~	0.0001
Lindane	~~39782~~	0.004
Methoxychlor	~~39480~~	0.1
Toxaphene	~~39400~~	0.005
Organophosphate Insecticides Parathion	~~39540~~	0.1
Chlorophenoxy Herbicides		
2,4-Dichlorophenoxyacetic acid (2,4-D)	~~39730~~	0.1
2-(2,4,5-Trichlorophenoxy)-propionic acid (2,4,5- TP or Silvex)	~~39760~~	0.01
Phenols	~~32730~~	0.001
Selenium (total)	~~01147~~	0.01
Sulfates	~~00945~~	250.
Total Dissolved Solids	~~70300~~	500.

(Source: Amended at 14 Ill. Reg. 11974, effective July 9, 1990)

SUBPART E: LAKE MICHIGAN BASIN WATER QUALITY STANDARDS

Section 302.504 Chemical Constituents

The following concentrations of chemical constituents must not be exceeded, except as provided in Sections 302.102 and 302.530:

a) The following standards must be met in all waters of the Lake Michigan Basin. Acute aquatic life standards (AS) must not be exceeded at any time except for those waters for which the Agency has approved a zone of initial dilution (ZID) pursuant to Sections 302.102 and 302.530. Chronic aquatic life standards (CS) and human health standards (HHS) must not be exceeded outside of waters in which mixing is allowed pursuant to Section 302.102 and 302.530 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the CS or HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	~~STORET Number~~	Unit	AS	CS	HHS
Arsenic (Trivalent, dissolved)	~~22680~~	µg/L	340 X 1.0*=340	148 X 1.0*= 148	NA
Boron (dissolved		mg/L	38 X 1.0* = 38	7.4 X 1.0* =	NA

Constituent	~~STORET Number~~	Unit	AS	CS	HHS
				7.4	
Cadmium (dissolved)	~~01025~~	µg/L	exp[A +Bln(H)] X {1.138672-[(lnH)(0.041838)]}*, where A=-3.6867 and B=1.128	exp[A +Bln(H)] X {1.101672-[(lnH)(0.041838)]}*, where A=-2.715 and B=0.7852	NA
Chromium (Hexavalent, total)	~~01032~~	µg/L	16	11	NA
Chromium (Trivalent, dissolved)	~~80357~~	µg/L	exp[A +Bln(H)] X 0.316*, where A=3.7256 and B=0.819	exp[A +Bln(H)] X 0.860*, where A=0.6848 and B=0.819	NA
Copper (dissolved)	~~01040~~	µg/L	exp[A +Bln(H)] X 0.960*, where A=-1.700 and B=0.9422	exp[A +Bln(H)] X 0.960*, where A=-1.702 and B=0.8545	NA
Cyanide (Weak acid dissociable or available)	~~00718~~	µg/L	22	5.2	NA
Fluoride (total)		µg/L	$e^{A+B\ln(H)}$ where A = 6.8587 And B = 0.4295	$e^{A+B\ln(H)}$ where A = 5.8153 And B = 0.4295	NA
Lead (dissolved)	~~01049~~	µg/L	exp[A +Bln(H)] X {1.46203-[(lnH)(0.145712)]}*, where	exp[A +Bln(H)] X {1.46203-[(lnH)(0.145712)]}*, where	NA

Constituent	~~STORET Number~~	Unit	AS	CS	HHS
			A=-1.055 and B=1.273	A=-4.003 and B=1.273	
Manganese (dissolved)		ug/L	$e^{A+B\ln(H)}$ X where A = 6.6635 And B = 0.3262	$e^{A+B\ln(H)}$ X where A = 5.5146 And B = 0.3262	NA
Nickel (dissolved)	~~01065~~	µg/L	exp[A +Bln(H)] X 0.998*, where A=2.255 and B=0.846	exp[A +Bln(H)] X 0.997*, where A=0.0584 and B=0.846	NA
Selenium (dissolved)	~~01145~~	µg/L	NA	5.0	NA
TRC	~~50060~~	µg/L	19	11	NA
Zinc (dissolved)	~~01090~~	µg/L	exp[A +Bln(H)] X 0.978*, where A=0.884 and B=0.8473	exp[A +Bln(H)] X 0.986*, where A=0.884 and B=0.8473	NA
Benzene	~~78124~~	µg/L	3900	800	310
Chlorobenzene	~~34301~~	mg/L	NA	NA	3.2
2,4-Dimethylphenol	~~34606~~	mg/L	NA	NA	8.7
2,4-Dinitrophenol	~~03756~~	mg/L	NA	NA	2.8
Endrin	~~39390~~	µg/L	0.086	0.036	NA
Ethylbenzene	~~78113~~	µg/L	150	14	NA
Hexachloroethane	~~34396~~	µg/L	NA	NA	6.7

Constituent	~~STORET Number~~	Unit	AS	CS	HHS
Methylene chloride	~~34423~~	mg/L	NA	NA	2.6
Parathion	~~39540~~	μg/L	0.065	0.013	NA
Pentachlorophenol	~~03761~~	μg/L	exp B ([pH] +A), where A=-4.869 and B=1.005	exp B ([pH] +A), where A=-5.134 and B=1.005	NA
Toluene	~~78131~~	μg/L	2000	610	51.0
Trichloroethylene	~~39180~~	μg/L	NA	NA	370
Xylene(s)	~~81551~~	μg/L	1200	490	NA

Where:

NA = Not Applied

Exp[x] = base of natural logarithms raised to the x-power

ln(H) = natural logarithm of Hardness (STORET 00900)

* = conversion factor multiplier for dissolved metals

b) The following water quality standards must not be exceeded at any time in any waters of the Lake Michigan Basin, unless a different standard is specified under subsection (c) of this Section.

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Barium (total)	~~01007~~	mg/L	5.0
~~Boron (total)~~	~~01022~~	~~mg/L~~	~~1.0~~
Chloride (total)	~~00940~~	mg/L	500
~~Fluoride~~	~~00951~~	~~mg/L~~	~~1.4~~
Iron (dissolved)	~~01046~~	mg/L	1.0

Constituent	~~STORET Number~~	Unit	Water Quality Standard
~~Manganese (total)~~	~~01055~~	~~mg/L~~	~~1.0~~
Phenols	~~32730~~	mg/L	0.1
Sulfate	~~00945~~	mg/L	500
Total Dissolved Solids	~~70300~~	mg/L	1000

c) In addition to the standards specified in subsections (a) and (b) of this Section, the following standards must not be exceeded at any time in the Open Waters of Lake Michigan as defined in Section 302.501.

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Arsenic (total)	~~01002~~	μg/L	50.0
Boron (total)		mg/L	1.0
Barium (total)	~~01007~~	mg/L	1.0
Chloride	~~00940~~	mg/L	12.0
Iron (dissolved)	~~01046~~	mg/L	0.30
Fluoride (total)		mg/L	1.4
Lead (total)	~~01051~~	μg/L	50.0
Manganese (total)	~~01055~~	mg/L	~~0.15~~ 1.0
Nitrate-Nitrogen	~~00620~~	mg/L	10.0
Phosphorus	~~00665~~	μg/L	7.0
Selenium (total)	~~01147~~	μg/L	10.0
Sulfate	~~00945~~	mg/L	24.0

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Total Dissolved Solids	~~70300~~	mg/L	180.0
Oil (hexane solubles or equivalent)	~~00550, 00556 or 00560~~	mg/L	0.10
Phenols	~~32730~~	μg/L	1.0

d) In addition to the standards specified in subsections (a), (b) and (c) of this Section, the following human health standards (HHS) must not be exceeded in the Open Waters of Lake Michigan as defined in Section 302.501 by the arithmetic average of at least four consecutive samples collected over a period of at least four days. The samples used to demonstrate compliance with the HHS must be collected in a manner which assures an average representation of the sampling period.

Constituent	~~STORET Number~~	Unit	Water Quality Standard
Benzene	~~34030~~	μg/L	12.0
Chlorobenzene	~~34301~~	μg/L	470.0
2,4-Dimethylphenol	~~34606~~	μg/L	450.0
2,4-Dinitrophenol	~~03757~~	μg/L	55.0
Hexachloroethane (total)	~~34396~~	μg/L	5.30
Lindane	~~39782~~	μg/L	0.47
Methylene chloride	~~34423~~	μg/L	47.0
Toluene	~~78131~~	mg/L	5.60
Trichloroethylene	~~39180~~	μg/L	29.0

e) For the following bioaccumulative chemicals of concern (BCCs), acute aquatic life standards (AS) must not be exceeded at any time in any waters of the Lake Michigan Basin and chronic aquatic life standards (CS), human health standards

(HHS), and wildlife standards (WS) must not be exceeded in any waters of the Lake Michigan Basin by the arithmetic average of at least four consecutive samples collected over a period of at least four days subject to the limitations of Sections 302.520 and 302.530. The samples used to demonstrate compliance with the HHS and WS must be collected in a manner that assures an average representation of the sampling period.

Constituent	~~STORET Number~~	Unit	AS	CS	HHS	WS
Mercury (total)	~~71900~~	ng/L	1,700	910	3.1	1.3
Chlordane	~~39350~~	ng/L	NA	NA	0.25	NA
DDT and metabolites	~~39370~~	pg/L	NA	NA	150	11.0
Dieldrin	~~39380~~	ng/L	240	56	0.0065	NA
Hexachlorobenzene	~~39700~~	ng/L	NA	NA	0.45	NA
Lindane	~~39782~~	µg/L	0.95	NA	0.5	NA
PCBs (class)	~~79819~~	pg/L	NA	NA	26	120
2,3,7,8-TCDD	~~03556~~	fg/L	NA	NA	8.6	3.1
Toxaphene	~~39400~~	pg/L	NA	NA	68	NA

Where:

mg/L = milligrams per liter (10^{-3} grams per liter)

µg/L = micrograms per liter (10^{-6} grams per liter)

ng/L = nanograms per liter (10^{-9} grams per liter)

pg/L = picograms per liter (10^{-12} grams per liter)

fg/L = femtograms per liter (10^{-15} grams per liter)

NA = Not Applied

(Source: Amended at 27 Ill. Reg. 166, effective December 20, 2002)

Section 302.648 Determining the Human Threshold Criterion

The HTC is calculated according to the equation:

$$HTC = ADI/[W + (F \times BCF)]$$

Where:

HTC = Human health protection criterion in milligrams per liter (mg/L);

ADI = Acceptable daily intake of substance in milligrams per day (mg/d) as specified in Section 302.645;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.~~201~~102(b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic organism Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Sections 302.660 through 302.666.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.657 Determining the Human Nonthreshold Criterion

The HNC is calculated according to the equation:

$$HNC = RAI/[W + (F \times BCF)]$$

Where:

HNC = Human Nonthreshold Protection Criterion in milligrams per liter (mg/L);

RAI = Risk Associated Intake of a substance in milligrams per day (mg/d) which is associated with a lifetime cancer risk level equal to a ratio of one to 1,000,000 as derived in Section 302.654;

W = Per capita daily water consumption equal to 2 liters per day (L/d) for surface waters at the point of intake of a public or food processing water supply, or equal to 0.01 liters per day (L/d) which represents incidental exposure through contact or ingestion of small volumes of water while swimming or during other recreational activities for areas which are determined to be public access areas pursuant to Section 302.~~201~~102(b)(3), or 0.001 liters per day (L/d) for other General Use waters;

F = Assumed daily fish consumption in the United States equal to 0.020 kilograms per day (kg/d); and

BCF = Aquatic Life Bioconcentration Factor with units of liter per kilogram (L/kg) as derived in Section 302.663.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Section 302.595 Listing of Bioaccumulative Chemicals of Concern, Derived Criteria and Values

a) The Agency shall maintain a listing of toxicity criteria and values derived pursuant to this Subpart. This list shall be made available to the public and updated periodically but no less frequently than quarterly, and shall be published when updated ~~in the Illinois Register~~ on the Agency's website.

b) A criterion or value published pursuant to subsection (a) of this Section may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion or value listed pursuant to subsection (a) of this Section until adopted by the Board as a numeric water quality standard.

(Source: Added at 21 Ill. Reg.1356, effective December 24, 1997.)

Section 302.669 Listing of Derived Criteria

a) The Agency shall develop and maintain a listing of toxicity criteria pursuant to this Subpart. This list shall be made available to the public and updated periodically but no less frequently than quarterly, and shall be published when updated ~~in the Illinois Register~~ on the Agency's website.

b) A criterion published pursuant to subsection (a) may be proposed to the Board for adoption as a numeric water quality standard.

c) The Agency shall maintain for inspection all information including, but not limited to, assumptions, toxicity data and calculations used in the derivation of any toxicity criterion listed pursuant to subsection (a) until adopted by the Board as a water quality standard.

(Source: Added at 14 Ill. Reg. 2899, effective February 13, 1990)

Exhibit 4

Hutsonville Discharge Monitoring Report Data Summary for Outfall 002: Boron Concentration and Flow Rate

Date	Boron (mg/l)	Flow (mgd)
12/09	0.57	2.66
11/09	1.3	2.24
10/09	0.57	2.62
9/09	0.34	1.6
8/09	0.46	2.8
7/09	0.67	2.62
6/09	0.58	2.42
5/09	0.8	2.01
4/09	0.36	3.3
3/09	0.48	1.6
2/09	0.38	2.37
1/09	0.57	3.07
12/08	0.31	3.16
10/08	0.61	3.04
9/08	0.8	2.9
8/08	0.37	3.21
7/08	0.52	3.09
6/08	0.44	2.62
5/08	0.5	2.8
4/08	0.54	2.5
3/08	0.65	2.8
2/08	0.41	3.44
1/08	0.27	3.09
12/07	0.36	3.26
11/07	0.35	2.63
10/07	0.39	2.8
9/07	0.58	2.76
8/07	0.83	3.07
7/07	0.52	2.82
6/07	1.5	3.87
5/07	0.72	2.15
4/07	0.45	2.14
3/07	4.1	2.28
2/07	0.89	2.53
1/07	0.88	2.1
Avg	0.69	2.70
Max	4.10	3.87

Note: 11/08 DMR not in file

Exhibit 5

Hutsonville Outfall 002 Discharge Calculations

DATA SOURCES

Flows	Discharge Source	Type	gal/day	cfs	Reference
1	Wabash River	"Minimum"		1234	ISWS (1988) per TSD p. 430
2	Wabash River	Average		14080	USGS data from the Riverton, IN station, 20 year avg of annual avgs 1988-200
3	Interceptor Drain Trench (IDT)	---	225091	0.3483	NRT Estimate per TSD p. 610
4	Ash pond discharge, outfall 002	Average	3870000	5.988	Summary of last three years of Discharge Monitoring Report data

Boron concentration	Discharge Source	Type	mg/l	Reference
A	Interceptor Drain Trench	Average	5.4	NRT Estimate per TSD p. 610
B	Interceptor Drain Trench	Maximum	18	NRT Estimate per TSD p. 610
C	Ash pond discharge, outfall 002	Average	0.69	Summary of last three years of Discharge Monitoring Report data
D	Ash pond discharge, outfall 002	Maximum	4.1	Pending NPDES Permit Re-application, 2003
E	Wabash River at Station intake	---	0.05	Pending NPDES Permit Re-application, 2003
F	Wabash River at Hutsonville	Average	0.071	EPA STORET data per NRT review per TSD p. 608

Allowed Mixing Zone = 25% of available flow

CALCULATIONS

Edge of Mixing Zone increase in boron

IDT during low river flow and average trench concentration = 0.0061 mg/l
IDT during low river flow and maximum trench concentration = 0.0203 mg/l
IDT during average river flow and average trench concentration = 0.0005 mg/l
IDT during average river flow and maximum trench concentration = 0.0018 mg/l

Ash pond discharge boron concentration

Average ("existing") = 0.69 mg/l
Average with addition of IDT, with average concentration = 0.95 mg/l
Average with addition of IDT, with maximum concentration = 1.64 mg/l
Maximum with addition of IDT, with maximum concentration = 4.86 mg/l

Edge of Mixing Zone calculated actual boron concentration

Average ("existing") = 0.0634 mg/l
Average with addition of IDT, with average concentration = 0.0695 mg/l
Average with addition of IDT, with maximum concentration = 0.0837 mg/l
Maximum with addition of IDT, with maximum concentration = 0.1499 mg/l

CERTIFICATE OF SERVICE

I, the undersigned, certify that on this 22nd day of February, 2010, I have served electronically the attached **AMEREN'S RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION** upon the following persons:

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and by first class mail, postage affixed, to the persons on the **ATTACHED SERVICE LIST**.

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