



**APPLICATION FOR AN
INCIDENTAL TAKE PERMIT FOR THREATENED OR ENDANGERED
SPECIES AND CONSERVATION PLAN**

Prepared For
EXELON NUCLEAR – BRAIDWOOD STATION

May 8, 2009

INTRODUCTION

Exelon Corporation, Braidwood Generating Station (Braidwood) is proposing installation of a multiport diffuser¹ in the Kankakee River that would result in significant environmental benefits over the existing river outfall that would continue operation only as back-up to the diffuser. The proposed project will have an in-stream construction zone of approximately 132 feet by 245 feet.

The Braidwood Generating Station is a nominal 2,362 MW base load generating facility located in Will County, Illinois, approximately 20 miles south of Joliet, Illinois. The facility, which serves northeastern Illinois, consists of two Westinghouse pressurized water reactors. Unit 1 began operation on July 2, 1987, and Unit 2 began operation on May 5, 1988. Commercial operation began in May and October 1988, respectively. The license expiration date is October 17, 2026 for Unit 1, and December 18, 2027 for Unit 2.

Braidwood is owned by Exelon Corporation, and operated by one of its business units--Exelon Nuclear. Braidwood is built on a 4,457-acre site, and its 2,537-acre cooling pond was formed from scarred farming land and an old strip mine.

Braidwood has been coordinating this project with MOSTARDI PLATT ENVIRONMENTAL (MPE) as the lead consultant dealing with U.S. Army Corps of Engineers (USACE) permitting, Illinois Department of Natural Resources (IDNR) incidental take permitting, Illinois Environmental Protection Agency (IEPA) National Pollutant Discharge Elimination System (NPDES) permit modifications and 401 Water Quality Certification, and the Illinois Historic Preservation Agency (IHPA) for impact on cultural and historical resources.

¹ See the complete project description and drawings in the USACE Individual Permit Application dated May 8, 2009.

Braidwood and MPE met with representatives from IDNR on March 16, 2009, to present the river diffuser project. As a result of the meeting, Braidwood has prepared this incidental take permit application and conservation plan to address IDNR concerns.

The lead professionals are:

Braidwood Station

Mr. Bryan Risley
Project Manager
Braidwood Station – Exelon Nuclear
35100 S. Route 53
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Mostardi Platt Environmental

Mr. Joseph J. Macak III
Principal Consultant
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Project Location

The location of the existing cooling lake outfall is shown in Figures 1-3. Two recent biological surveys of the proposed in-river construction site have been conducted. HDR Engineering, Inc. (HDR) performed a survey for fish and mussels in August 2008. Ecological Specialists, Inc. (ESI) conducted a more comprehensive follow-up mussel survey in October 2008. Results of both surveys are detailed in Appendices G and H of the USACE application (provided under separate cover). The surveys identified two State listed T&E fish species and three State listed T&E mussel species and one species of special concern in the project area.

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) Braidwood is submitting application for incidental take authorization of the State threatened purple wartyback mussel (*Cyclonaias tuberculata*), State threatened spike mussel (*Elliptio dilatata*), State endangered sheepsnose mussel (*Plethobasus cyphus*) and State special concern ellipse mussel (*Venustaconcha ellipsiformis*).

Braidwood is also seeking authorization for incidental take of the following fish species: State endangered pallid shiner (*Notropis amnis*) and State threatened river redhorse (*Moxostoma carinatum*). Braidwood believes that any take of individuals is incidental to the construction of the multipoint diffuser impacting the Kankakee River in Will County, Illinois.

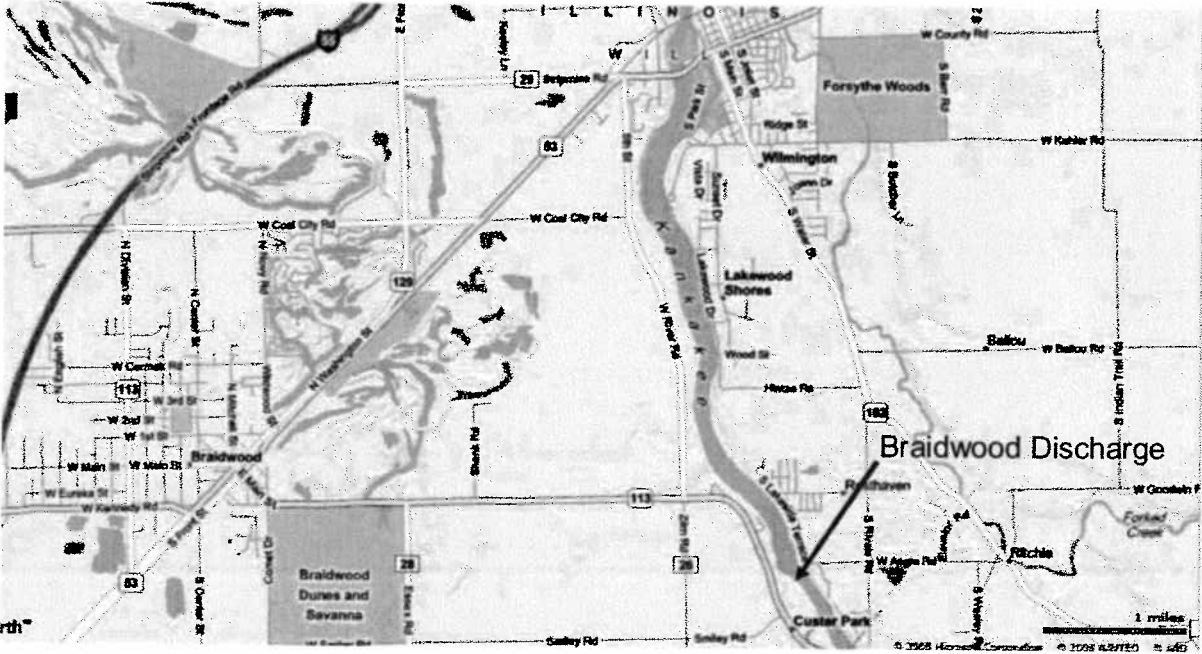


Figure 1. Braidwood River Discharge Location.

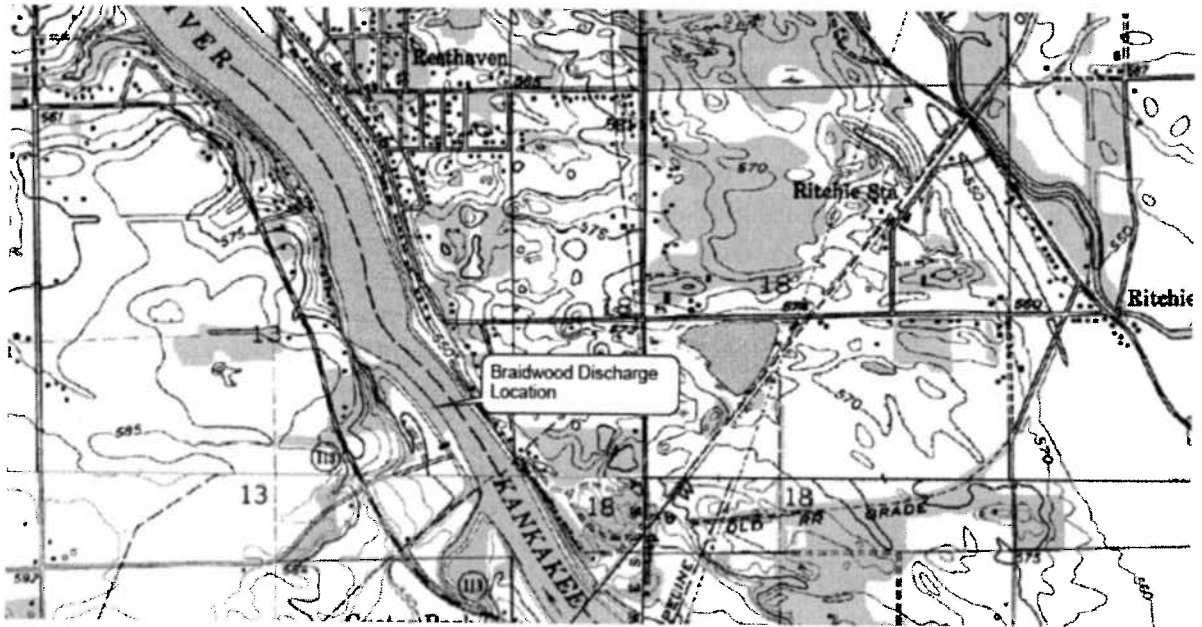


Figure 2. Braidwood River Diffuser Discharge Location Topo Map.



Figure 3. Braidwood Station River Discharge Location (photograph April 2005).

CONSERVATION PLAN

Requirements and/or criteria for authorization of incidental taking of endangered or threatened species is described in the following Illinois Administration Code that requires the development of a conservation plan:

TITLE 17: CONSERVATION; CHAPTER 1: DEPARTMENT OF NATURAL RESOURCES; SUBCHAPTER c: ENDANGERED SPECIES; PART 1080-INCIDENTAL TAKING OF ENDANGERED OR THREATENED SPECIES

In order to respond directly to the requirements, the following section lists each of the pertinent criteria followed by a response for the Braidwood Station river diffuser project.

1080.10 Conservation Plan. *Incidental taking of endangered and threatened species shall be authorized by the Department of Natural Resources (Department) only if Braidwood submits to the Department a conservation plan that satisfies all criteria established in this Part.*

1080.10(a) A conservation plan submitted to the Department's Office of Resource Conservation as the application for authorization for incidental taking of an endangered or threatened species shall, at a minimum, include:

1080.10(a)(1) A description of the impact likely to result from the proposed taking of the species that would be covered by the authorization, including but not limited to:

1080.10(a)(1)(A) legal description, if available, or detailed description including street address and map of the area to be affected by the proposed action and ownership of the affected property;

Legal Description

The legal description with parcel map (Figure 4) as provided by the Will County Tax Assessor's Office is as follows:

PIN #: 01-24-13-401-011-0000
INDUSTRIAL
W RT 113
WILMINGTON, IL 60481
http://www.willcountysoa.com/search_pin.aspx

THAT PRT OF THE SE1/4 SEC 13, T32N-R9E LYG W'LY OF THE W BANK OF THE KANKAKEE RIVER (EX THRFM THAT PRT DESC AS BEG ON THE N LN OF SD 1/4 423.5 FT E OF THE NW COR OF SD 1/4 THC S 20 DEG E 275 FT ALG THE CTRLN OF A PUBLIC RD LOCALLY KNOWN AS RT 133 HWY THC S 12 DEG E 962 FT ALG THE CTRLN OF SD HWY THC N 85 DEG E 480 FT, THC N 23 DEG W 232 FT, THC N 06 DEG W 262 FT, THC N 20 DEG 15' W 180 FT THC E TO THE W BANK OF SD RIVER, THC N'LY DIRECTION ALG SD W BANK TO THE N LN OF SD 1/4 THC W ALG THE N LN OF SD 1/4 TO THE POB) AND ALSO (EX THRFM THAT PRT OF SD 1/4 TO THE POB) AND ALSO (EX THRFM THAT PRT OF SD 1/4 SEC LYG W OF THE W OF THE W ROW LN OF SD HWY) ALSO (EX THRFM THAT PRT DESC AS BEG ON THE S LN OF SD 1/4 ON THE CTRLN OF SD HWY, THC N 32 DEG 48' 58" W 317.28 FT ALG THE CTRLN OF SD HWY, THC N 57 DEG 57' 42" E 1048.51 FT TO THE W BANK OF SD RIVER THC S'LY ALG THE W BANK OF SD RIVER TO THE CTRLN OF HORSE CREEK, THC SW'LY ALG THE CTRLN OF SD HORSE CREEK TO THE SLN OF SD 1/4 THC W ALG THE S LN OF SD 1/4 TO THE POB) ALSO (EX THAT PRT THOF LYG S AND E OF THE CTRLN OF HORSE CREEK) AND ALSO THAT PRT OF THE SE1/4 OF SEC 13, T32N-R9E LYG W'LY OF THE CTR THREAD OF THE KKK RIVER, E'LY OF THE W BANK OF THE KKK RIVER S'LY OF THE FOL DESC LN ' BEG ON THE N LN OF SE1/4 OF SEC 13, 423.5 FT E OF THE NW COR OF SD 1/4 THC S 20 DEG E 275 FT ALG THE CTRLN OF HWY (ILL RT 133 S HWY) THC S 12 DEG E 962 FT ALG THE CTRLN OF SD HWY THC N 85 DEG E 480 FT THC N 23 DEG 232 FT THC N 06 DEG W 262 FT THC N 20 DEG 15' W 180 FT, THC E TO THE CTR THREAD OF THE KKK RIVER; AND N'LY OF THE FOLL DESC LN;

BEG ON THE S LN OF THE SE1/4 OF SEC 13, ON THE CTRLN OF HWY, THC N 32 DEG 48' 58" W 317.28 FT ALG THE CTRLN OF SD HWY, THC N 57 DEG 57' 42 " E TO THE CTR THREAD OF KKK RIVER. (EX THAT PRT PER R81-029947 DAF: COMM AT THE PT OF INT OF THE S LN OF THE SE1/4 SEC 13, AND THE CNTRLN OF HWY (IL 113) THC N 32 DEG 48' 58" THC N 32 DEG 48' 58" W A DIST OF 317.28 FT ALG THE CNTRLN OF SD HWY TO A PT OF BEG, THC N 57 DEG 57' 42" E A DIST OF 208.72 FT ALG THE S LN OF PROPERTY DESC IN R73-025516 TO A PT ON A LN WHICH IS 208.701 FT NE'LY OF (MEASRD PERPEND) AND PARL WITH THE CTRLN OF SD HWY, THC NW'LY ON SD PARL LN, A DIST OF 208.72 FT TO A PT, THC S 57 DEG 57' 42" W A DIST IF 241.72 FT TO THE W ROW LN OF SD HWY, THC SE'LY A DIST OF 208.72 FT ALG THE SD W ROW LN OF HWY TO PT OF INT WITH THE W'LY EXTENSION OF SD S'LY LN OF PPTY AS DESC IN R73-025516, THC N 57 DEG 57' 42" E TO THE POB)

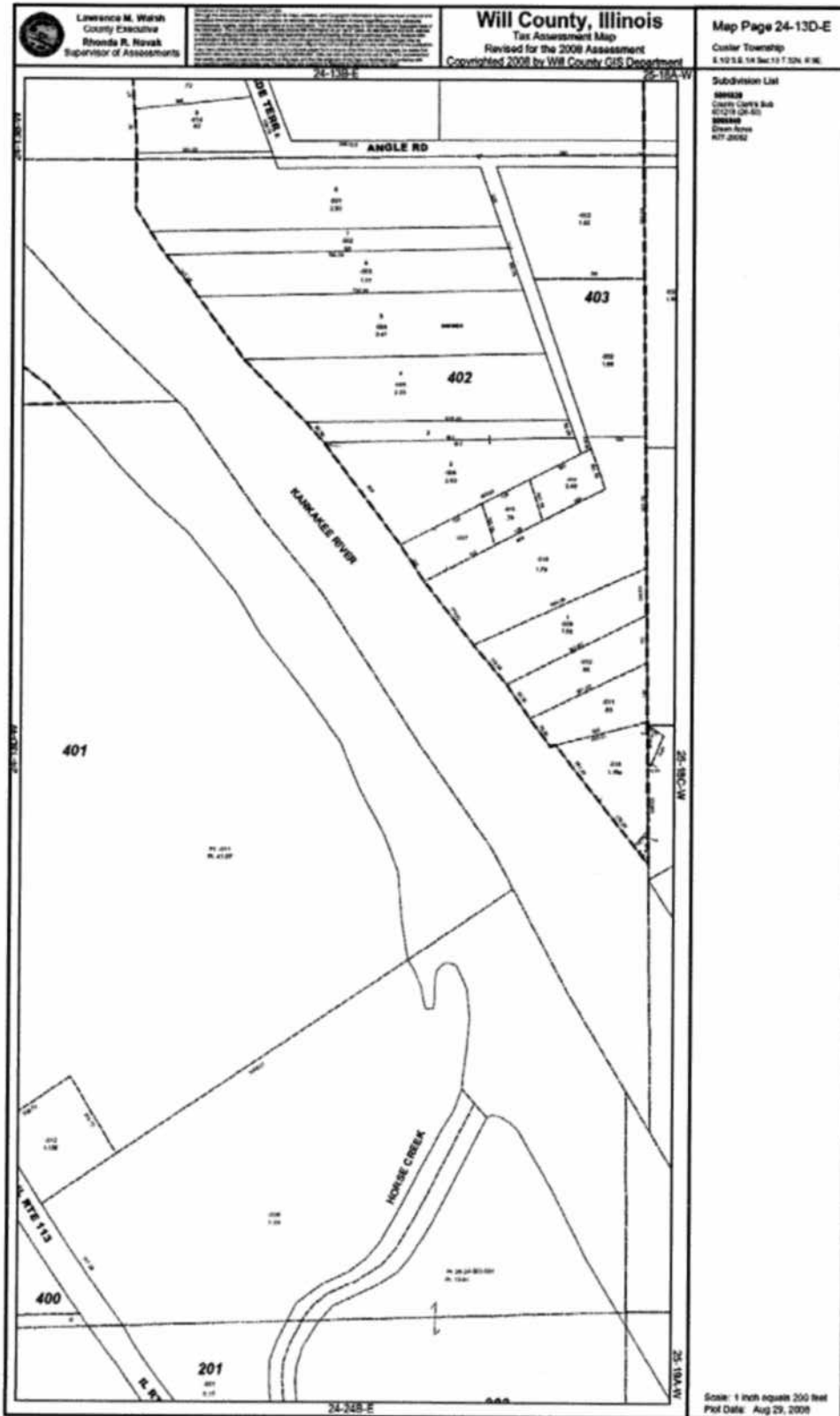


Figure 4. Will County Tax Parcel Map.

1080.10(a)(1)(B) *biological data on the affected species; on request of Braidwood, the Department shall provide biological data in the Department's possession on the affected species;*

Braidwood is proposing to replace the existing Braidwood Nuclear Station Cooling Pond discharge (shoreline discharge channel) with a diffuser pipe placed on the bottom of the Kankakee River extending across the river near the location of the current discharge channel.

A preliminary review of fish and freshwater mussel studies conducted in this general reach of the river indicated that fish monitoring, including the proposed area for diffuser pipe placement, has been conducted annually for the past 30 years (with the exception of 1980)(HDR|LMS, 2008); but that, while several freshwater mussel surveys had been conducted in the river between Kankakee and Wilmington in the past, none had been conducted at the proposed site.

The historical fisheries data indicate that pallid shiner (*Notropis amnis*) and river redhorse (*Moxostoma carinatum*), which are currently listed as endangered and threatened, respectively, by the state of Illinois, have been collected in this vicinity over the period of record. No fish species currently listed as threatened or endangered by the Federal government have been collected during the past 30 years.

The Kankakee River supports some of Illinois' most diverse and abundant mussel populations with 27 extant and 40 historical species. It was surveyed several times for mussels in the 20th century. Some regard the mussel populations of the Kankakee River to be of national importance. Several freshwater mussel species currently listed as either endangered or threatened by the state of Illinois were collected during these earlier surveys. No freshwater mussel species currently listed as threatened or endangered by the Federal government have been reported in this reach of the Kankakee River.

Fisheries Surveys

Fish field surveys were conducted during August 2008 (See HDR, 2008). Two methods of collection were employed, electrofishing and seining.

Electrofishing. A total of 1,308 fish comprised of 45 taxa (43 species) were collected by electrofishing at six sampling locations with Longear sunfish, spotfin shiner, bluntnose minnow, rock bass, smallmouth bass, and largemouth bass dominating these collections.

Two pallid shiners were collected by electrofishing about 975 feet downstream from the existing discharge channel about 650 feet downstream from the immediate impact zone of the proposed project.

One large river redhorse was collected about 3250 feet upstream of the discharge channel. Interestingly, this was the first river redhorse collected in the vicinity during the past five years.

None of the three state-listed specimens were taken in the immediate proximity of the proposed project and should not pose a regulatory effect on the permitting process.

Seining. A total of 686 fish representing 22 taxa (20 species) were collected by seining at the six sampling locations. Spottfin shiner, bluntnose minnow, striped shiner, sand shiner and Johnny darter dominated these collections.

No threatened or endangered species were collected during the seining phase of the survey.

Mussel Surveys

As with other areas of the Kankakee River, the area in the immediate vicinity of the Braidwood Station discharge channel supports a diverse and abundant fauna. Field surveys were conducted during August and October 2008 (HDR, 2008 and ESI, 2009) to characterize the existing unionid community and determine the mussel distribution in the potential impact area.

A total of 212 live individuals from 15 species were collected alive during the survey conducted August 2008. Included in this total were three live purple wartybacks (*C. tuberculata*), which is state-threatened. An additional eight species were collected as shell only, including fresh-dead Sheepnose (*P. cyphus*), which is state-endangered, relict spike (*E. dilatata*) and Black sandshell (*L. recta*), both of which are state-threatened.

The majority of live individuals collected were found while brailling in the channel portion of the river or while hand-picking the south shore upstream of the effluent pipe. No individuals were found on the north shore, and only 36 individuals from five species were found on the south shore downstream of the discharge channel. The fresh-dead sheepnose was found on the south shore upstream of the discharge channel while the relict spike and black sandshell were found on the south shore both upstream and downstream of the discharge channel. Methods employed in the HDR study were generally qualitative, not quantitative, necessitating the need for further study.

The October 2008 (ESI 2009) survey was conducted to supplement the previous survey and specifically characterize the unionid community and distribution within the potential impact area.

Habitat with the survey area is not typically ideal for unionids within the Kankakee River. Run habitats within the Kankakee River, like the habitat within this study's survey area, are not known to harbor abundant and species-rich unionid communities. In a 1978 unionid survey of 13 sites within the Kankakee River, unionid communities in pools or runs generally ranked low in abundance and diversity compared to areas with riffles and areas below dams (Suloway, 1981). A unionid study at two sites on the Kankakee River conducted by ESI in 2002 showed that of the two sites sampled, the site with the riffle/run habitat resulted in twice as many species and 17 times more live unionids than the site with a run habitat (ESI, 2003). Although this study's survey area appears to harbor a relatively moderate to high species richness, unionid abundance (density) was relatively low and unionids were scattered throughout the site.

Although the survey area harbors a relatively species-rich unionid community, unionid density is relatively low and no recruitment was observed. The low abundance of unionids may be due to the general lack of suitable substrate. By and large, substrate throughout the site appeared stable but did not contain much area with finer particles (i.e., sand and gravel) into which the unionids can burrow. Also, no juvenile unionids were observed suggesting little or no recruitment occurring within the survey area. Therefore, it is likely a denser, stable, and reproducing unionid community upstream, probably in a riffle habitat, seeds the study area. However, Illinois listed unionid species were present, and therefore impacts to unionids by construction and operation of the diffuser within the area should be minimized.

Description of Potential Impact

1080.10(a)(1)(C) description of the activities that will result in taking of an endangered or threatened species; and 1080.10(a)(1)(D) explanation of the anticipated adverse effects on listed species.

The river diffuser project will require the construction of a temporary cofferdam approximately 132 feet by 245 feet. The cofferdam will consist of sheet pile with rock backfill as shown in Figures 5 and 6. After the cofferdam is constructed, the area will be dewatered to allow for construction of the river diffuser beneath the river bottom. Upon completion of the construction program, the sheet pile and temporary rock backfill will be removed from the river and the area will return to its natural state.

In the absence of any conservation plan, there would be the potential for mussel and fish species to be adversely impacted or killed since the area would be temporarily drained and filled (gravel).

Fisheries

Two state protected species of fish, pallid shiner and river redhorse, were taken during the survey conducted August 2008. None of the state-listed specimens were taken in the immediate proximity of the proposed project and are not expected to pose a regulatory effect on the permitting process. Fish are motile and often occupy different areas under varying flow and environmental conditions. Project related effects to state-listed fish species are expected to be minimal if any. Fish would not be attracted to the construction activity and daytime noise associated with sheet pile driving.

Mussels

Two Illinois protected species (*C. tuberculata*, *E. dilitata*) and one Illinois Special Concern species (*V. ellipsiformis*) and the Federal Candidate species *P. cyphus* were present. Habitat within the survey area is not typically ideal for unionids within the Kankakee River (see Appendices G and H of the USACE application). Run habitats within the Kankakee River, like the habitat within the survey area, are not known to foster abundant and species-rich unionid communities. Other Kankakee River surveys have shown that unionid communities in pools or

runs generally ranked low in abundance and diversity compared to areas with riffles or dam tail waters. Although the survey area appears to contain a relatively moderate to high species richness, unionid density was relatively low and unionids were scattered throughout the survey site.

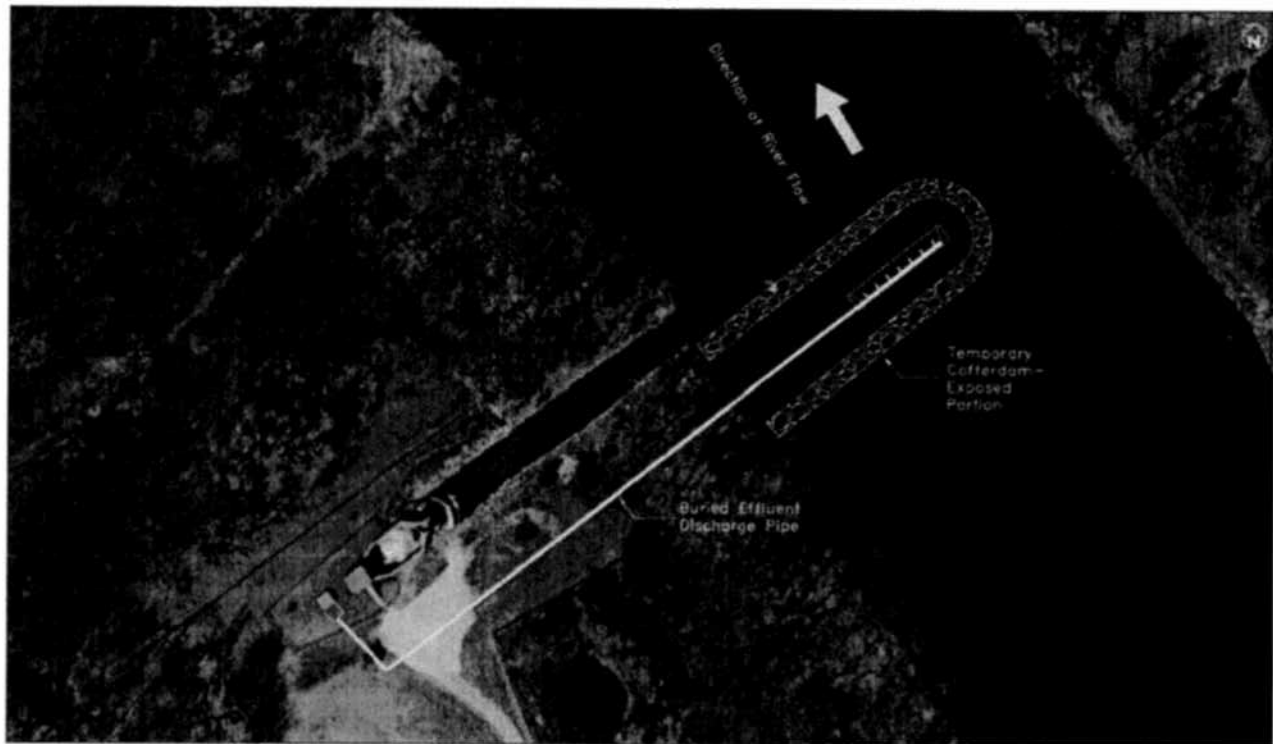


Figure 5. Proposed Cofferdam Installation in River.

In-stream construction activity may disrupt the substrate and, consequently, the animals living in the substrate. Unionids within the area directly affected by construction could be crushed by equipment or permanently buried under excavation spoil. Disruption of the substrate could result in displacement of unionids to unsuitable habitat, which could lead to reduced fitness or death. Construction activities could also lead to altered flow patterns that may increase sedimentation, which is a putative source of unionid declines throughout North America. Construction impacts to unionids have successfully been mitigated by minimizing the area used for constructing and relocating unionids from areas of unavoidable impact.

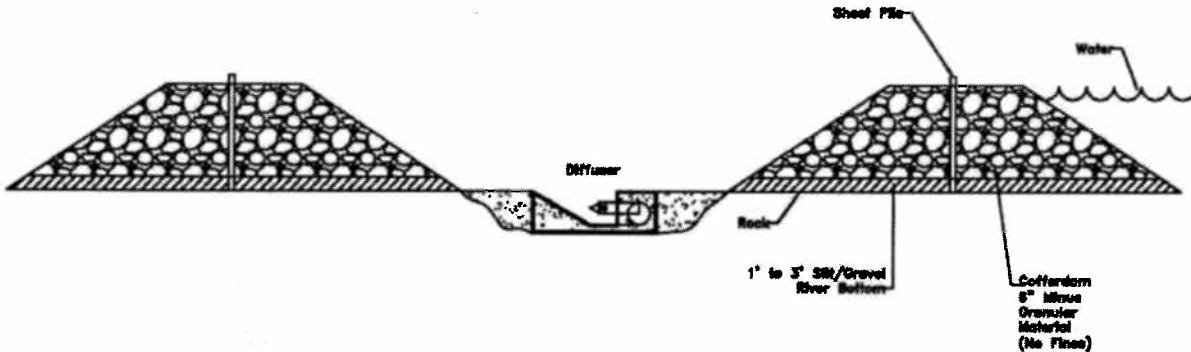


Figure 6. Proposed Cofferdam Cross Section.

Conservation Measures

1080.10(a)(2) Measures Braidwood will take to minimize and mitigate that impact and the funding that will be available to undertake those measures, including, but not limited to:

1080.10(a)(2)(A) plans to minimize the area affected by the proposed action, the estimated number of individuals of an endangered or threatened species that will be taken and the amount of habitat affected;

To limit impact on the unionid community, the multiport diffuser will be placed in an area of the river known to be nearly devoid of mussels and from which no specimens representing State-listed species were taken. Because the diffuser will only traverse a nominal 60% of the Kankakee River, there will be no impact on the unionid population known to inhabit the near-shoreline opposite and downstream of the existing outfall and new diffuser installation site.

Early diffuser designs studied by Braidwood included diffusers crossing the entire width of the river. The final design minimized the width by locating the multiport diffuser in a 20 meter section of the deepest, middle portion of the river. By minimizing the width, the diffuser could be constructed with one single cofferdam installation and avoid the area on the opposite shoreline where mussel species had a higher density.

1080.10(a)(2)(B) plans for management of the area affected by the proposed action that will enable continued use of the area by endangered or threatened species;

The area affected by the proposed installation of the multiport diffuser is comprised of habitat conditions not conducive to abundant and diverse unionid population development. Therefore, long term plans are not being made for population management and conservation.

The river diffuser was modeled by a Braidwood consultant (see HydroQual report, Appendix C) and the results demonstrated that the diffuser results in a very significant improvement in mixing as compared to the side canal discharge, thereby reducing thermal impacts to the aquatic environment. With that being said, it is expected that fisheries and unionid populations will find the area downstream of the river diffuser spillway to be more suitable for their habitat.

1080.10(a)(2)(C) description of all measures to be implemented to minimize or mitigate the effects of the proposed action on endangered or threatened species;

Fisheries

The mitigation of incidental take of fish during construction will be fairly simple. The IDNR fisheries specialists will be notified (per their request) of the dewatering of the cofferdam area following its construction. The water contained within the cofferdam will be pumped back to the river. As the water level recedes, fish retained within the cofferdam will be netted and returned to the river. No construction will take place during the spawning season of the last three weeks of May, and first week of June. This activity will be photographed and documented in a formal diffuser construction report.

Mussels

Although no threatened and endangered mussel species were identified within the 132 feet x 245 feet cofferdam area, IDNR requests assurances that no mussels will be impacted during the cofferdam construction process. In order to accomplish this goal, Braidwood has agreed to perform a pre-construction mussel survey by a qualified diver(s) to locate and move any mussels within the impact area in the deeper portions of the river, or through wading in the shallower portions of the river. This survey would be performed within 30 days of the start of construction.

Mussels in the construction area will be relocated to areas of suitable habitat. The relocation site will be located in the Kankakee River, relatively close to the project site upstream of the construction activities. It will contain similar or better water quality and substrate. An area has been identified approximately 1000 feet upstream of the proposed construction area known to contain a relatively dense mussel population. This area will be considered for the relocation site.

The IDNR would be notified 14 days prior to the start of this survey activity.

The mussel survey and relocation activity would also be documented in a formal diffuser construction report. The report will discuss the methods of the mussel relocations, and include a quantification of the relative number and species of mussels relocated. The report will also identify any state-listed species that are relocated, if any.

To minimize the extent and duration of project-related disturbance to the Kankakee River and any potential for indirect impacts on mussels or mussel habitat, Braidwood will implement sediment control and construction management measures during construction. These measures will include use of the cofferdam, plus silt fencing or other sediment control measures to limit downstream sedimentation during construction.

The in-stream construction will take approximately 150 days and any potential short-term effects will be limited to this time period.

1080.10(a)(2)(D) plans for monitoring the effects of measures implemented to minimize or mitigate the effects of the proposed action on endangered or threatened species;

Braidwood will continue to perform their annual fisheries surveys, and will perform follow-up mussel survey of the river diffuser area (300 feet upstream to 300 feet downstream) in the 5th year following operation of the river diffuser. These studies are expected to document that the river diffuser project had no adverse impact on the aquatic environment.

1080.10(a)(2)(E) adaptive management practices that will be used to deal with changed or unforeseen circumstances that affect the effectiveness of measures instituted to minimize or mitigate the effects of the proposed action on endangered or threatened species; and

1080.10(a)(2)(F) verification that adequate funding exists to support and implement all mitigation activities described in the conservation plan. This may be in the form of bonds, certificates of insurance, escrow accounts or other financial instruments adequate to carry out all aspects of the conservation plan.

The river diffuser project is a part of the Braidwood Environmental Excellence program that has been funded at by Exelon Nuclear. The mussel survey and relocation has been included in the approved project budget.

Alternatives Analysis

1080.10(a)(3) A description of alternative actions Braidwood considered that would not result in take, and the reasons that each of those alternatives was not selected. A “no-action” alternative shall be included in this description of alternatives.

The project alternatives include the no action alternative (continue with current operation), or the installation of two larger multipoint diffusers that traverse a greater width of the river. The modeling of the existing outfall and the three river diffuser configurations is included in the HydroQual report (see Appendix C of the USACE application).

The consideration of moving the river outfall and/or the river diffuser to another section of the river was ruled out for several reasons, including:

- River outfall is on Exelon property and has been in operation for over 20 years. Moving the outfall would require the acquisition of land not available.
- The Kankakee River near the current outfall is relatively consistent and moving the outfall would provide no benefit in terms of enhanced mixing and reduction in thermal impacts.

- Construction of a new river outfall and moving the discharge location would require extensive construction in a floodplain area and wetlands, with significant environmental impacts as compared the the project alternatives evaluated.

Species Survival

1080.10(a)(4) Data and information to indicate that the proposed taking will not reduce the likelihood of the survival of the endangered or threatened species in the wild within the State of Illinois, the biotic community of which the species is a part or the habitat essential to the species existence in Illinois.

Construction and operation of the proposed project will not reduce the likelihood of survival of State endangered or threatened mussels or fish in Illinois. The project location was surveyed for mussels and fish and state-listed species were not found. If state-listed fish or mussels are present at the construction site, they will be relocated to appropriate habitat along with any other fish or mussels found during the preconstruction survey. The use of strict sedimentation control measures will limit any short-term construction related impacts.

Once the river diffuser is operational, the significant improvements in mixing and reduction in thermal plume size (as compared to the existing outfall) will enhance the aquatic environment at the Braidwood discharge.

IMPLEMENTING AGREEMENT

1080.10(a)(5) An implementing agreement, which shall include, but not be limited to:

- A) The names and signatures of all participants in the execution of the conservation plan;*
- B) The obligations and responsibilities of each of the identified participants with schedules and deadlines for completion of activities included in the conservation plan and a schedule for preparation of progress reports to be provided to the Department;*
- C) Certification that each participant in the execution of the conservation plan has the legal authority to carry out their respective obligations and responsibilities under the conservation plan;*
- D) Assurance of compliance with all other federal, State and local regulations pertinent to the proposed action and to execution of the conservation plan; and*
- E) Copies of any final federal authorizations for a taking already issued to Braidwood, if any.*

The implementing agreement will be signed by the following authorized individuals:

Mr. Lawrence Coyle
Plant Manager
Braidwood Station – Exelon Nuclear
35100 S. Route 53
Braceville, IL 60407
Phone: 815-417-3700
Email: lawrence.coyle@exeloncorp.com

and/or

Mr. Bryan Risley
Project Manager
Braidwood Station – Exelon Nuclear
35100 S. Route 53
Braceville, IL 60407
Phone: (815) 417-4009
Email: bryan.risley@exeloncorp.com

1080.10(b) *The Department, after review and public comment, may require additional measures as necessary or appropriate to the success of the conservation plan. Requirements for additional measures shall be based on the life history needs of the species involved.*

Braidwood will address any issues with IDNR, if necessary.

1080.10(c) *A Habitat Conservation Plan approved by the U.S. Fish and Wildlife Service pursuant to Section 10 of the Endangered Species Act of 1973 [26 USC 1539], and amendments thereto, may be submitted in lieu of the conservation plan described in this Section.*

Not applicable.

1080.10(d) *Authorization to take an endangered or threatened species under the terms of a biological opinion issued by the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act of 1973 [26 USC 1536], and amendments thereto, or regulations implementing Section 7 [50 CFR 402] may be submitted in lieu of the conservation plan described in this Section.*

Not applicable. No Federally listed threatened or endangered species were found in the Kankakee River at the Braidwood discharge.

REFERENCES

Ecological Specialists, Inc. 2003. *Unionid Mussel Survey of the Kankakee River at Two Proposed Water Intake Sites for the City of Joliet, Illinois*. Prepared for EA Engineering, Science, and Technology. 19pp.

Ecological Specialists, Inc. 2009. *Final Report: Characterization of Unionid Communities near the Braidwood Nuclear Station Kankakee River Discharge Location*. Prepared for Exelon Nuclear, Braidwood, Illinois. 15pp.

HDR Engineering, Inc. 2008. *Investigations to Determine Presence of State-Listed Species of Fish and Freshwater Mussels in the Kankakee River near the Braidwood Nuclear Station Warmwater Discharge Channel*. Prepared for Exelon Nuclear, Braidwood, Illinois. 21pp.

HDR/LMS 2008. *Braidwood Station Kankakee River Fish Monitoring Program, 2007*. Annual Report submitted to Exelon Nuclear February 2008.

HydroQual 2009. *Thermal Impact and Mixing Zone Analysis*, Letter Report dated May 4, 2009 from Mr. Andy Thuman, P.E. to Bryan Risley, Project Manager, Exelon Nuclear.

Suloway, L. 1981. *The Unionid (Mollusca: Bivalvia) Fauna of the Kankakee River in Illinois*. *The American Midland Naturalist* 105 (2):233-239.

Exhibit A -- DRAFT INCIDENTAL TAKE AND IMPLEMENTING AGREEMENT

Pursuant to the Illinois Endangered Species Protection Act (520 ILCS 10/5.5) Exelon's Braidwood Generating Station (wastewater treatment plant outfall and multiport diffuser project) authorization for the incidental take of the State threatened black sandshell mussel (*Ligumia recta*), purple wartyback mussel (*Cyclonaias tuberculata*), sheepnose mussel (*Plethobasus cyphus*), spike mussel (*Elliptio dilatata*), pallid shiner fish (*Hybopsis amnis*), river redhorse fish (*Moxostoma carinatum*), and the western sand darter fish (*Ammocrypta clarum*) impacting the Kankakee River in Will County, Illinois (as described/shown in the conservation plan received by the Department on _____) is hereby granted, subject to the terms and conditions described in the attached Authorization and Implementing Agreement. The Illinois Department of Natural Resources has determined that this authorized take is incidental to the construction of a multiport diffuser impacting the Kankakee River in Will County, Illinois.

Procedural History

Exelon Corporation, Braidwood Generating Station (Braidwood) is proposing installation of a multiport diffuser² in the Kankakee River that would result in significant environmental benefits over the existing river outfall that would continue operation only as back-up to the diffuser. The proposed project will have an in-stream construction zone of approximately 132 feet by 245 feet.

The Braidwood Generating Station is a nominal 2,362 MW base load generating facility located in Will County, Illinois, approximately 20 miles south of Joliet, Illinois.

Braidwood is owned by Exelon Corporation, and operated by one of its business units—Exelon Nuclear. Braidwood is built on a 4,457-acre site, and its 2,537-acre cooling pond was formed from scarred farming land and an old strip mine.

Mostardi Platt Environmental (MPE), acting as environmental consultant for Braidwood prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and MPE's request for authorization for incidental take of black sandshell mussel (*Ligumia recta*), purple wartyback mussel (*Cyclonaias tuberculata*), sheepnose mussel (*Plethobasus cyphus*), spike mussel (*Elliptio dilatata*), pallid shiner fish (*Hybopsis amnis*), river redhorse fish (*Moxostoma carinatum*), and western sand darter fish (*Ammocrypta clarum*) were received by the Illinois Department of Natural Resources (Department) on _____.

Public notice of MPE's request for authorization of incidental take was published in the _____ and _____ on _____, 2009. Public comments on Braidwood's Incidental Take Application

² See the complete project description and drawings in the USACE Individual Permit Application dated May 8, 2009.

and Habitat Conservation Plan were accepted by the Department until _____, 2009. No comments were received by the public during the period of _____.

Compliance with the Endangered Species Protection Act

The Illinois Endangered Species Protection Act includes six criteria which must be met for the authorization of incidental take of an endangered or threatened species. These criteria and the Department's determination for each criteria are listed below.

The taking will not be the purpose of, but will only be incidental to, the carrying out of an otherwise lawful activity:

The stated and apparent purpose of this proposed action is to construct a new wastewater outfall and multiport diffuser for Braidwood impacting a portion of the Kankakee River in Will County, Illinois. This portion of the Kankakee River potentially contains habitat for freshwater mussels and fish, including State listed species. In the course of these construction activities, *name of subcontractor* (acting as subcontracting environmental consultants) will relocate all observed mussels and fish (listed or non-listed species) disturbed by construction, hence a technical "taking" of these species. Such taking is not the purpose of the activities proposed by Braidwood but is incidental to the carrying out of a lawful activity.

The parties to the conservation plan will, to the maximum extent practicable, minimize and mitigate the impact caused by the taking.

The Braidwood conservation plan stated that freshwater mussel and fish surveys, and subsequent relocations, would be conducted prior to initiation of in-stream construction and most likely during the spring/summer while water temperatures are at or above 50 degrees Fahrenheit. All mussels and fish observed (listed or non-listed species) are to be relocated in order to minimize impacts. Mussel surveys will be conducted using standard survey techniques including searching by feel to methodically cover the area to be disturbed by the project (viewing boxes, wading in shallow water, SCUBA in deeper water-if applicable). All mussels found will be identified to species. Mussels will be relocated into areas of suitable habitat, in the same stream/river, preferably upstream of the construction site. Specifically, the transplant site will be close to the collection area and have similar to better water quality and substrate. The proposed contractor is Ecological Specialists, Inc. (ESI) that has worked on several similar projects and have extensive experience with Midwestern mussels. Braidwood will provide the Department with a report detailing the results of all mussel surveys and relocation efforts within 45 days of completing all surveys/relocations.

In addition, all fish retained within the cofferdam during dewatering will be netted and returned to the river as addressed in the Conservation Plan.

In summary, mussel and fish surveys and related relocations will occur only after Department authorization and prior to any construction activities.

The parties to the conservation plan will ensure that adequate funding for the conservation plan will be provided:

Braidwood Station confirms that adequate funding exists to support and implement all (mitigation) activities described in the official Conservation Plan. Braidwood has committed to budget and authorize, during their Fiscal Year 2009-2010 budget appropriation ordinance, adequate funding to provide for project construction activities and implementation of all mitigation activities required and described in the official conservation plan.

Based on the best available scientific data, the taking will not reduce the likelihood of the survival or recovery of the endangered species or threatened species in the wild in Illinois, the biotic community of which the species is a part, or the habitat essential to the species' existence in Illinois:

Construction and operation of Braidwood's multiport diffuser project in Will County, Illinois will not reduce the likelihood of the survival of state-listed threatened or endangered mussels in Illinois.

For the purposes of biological comparison, HDR Engineering, Inc. (HDR) completed an investigation of fish and freshwater mussel studies in the river and proposed diffuser area in August 2008. In addition, Ecological Specialists, Inc. (ESI) completed a characterization of unionid communities near Braidwood's diffuser project to investigate freshwater mussels in the proposed diffuser area in October 2008.

For the purposes of biological comparison, it should be noted that the freshwater mussel and fish fauna of the Kankakee River, HDR identified 212 live mussels from 15 species in August 2008 and ESI identified 126 live mussels and 13 species in October 2008. Three (3) purple wartyback mussels were collected upstream of the discharge channel with one fresh dead sheepnose shell and relic spike and black sandsheel mussels by HDR.

HDR identified 1,308 fish consisting of 45 taxa (43 species) dominated by longear sunfish (26.5%), spotfin shiner (13.1%), bluntnose minnow (11.7%), rock bass (5.3%), smallmouth bass (4.8%) and largemouth bass (4.8%) from electroshocking. HDR also completed seining which included 686 fish comprised of 22 taxa (20 species) dominated by spotfin shiner (36.2%), bluntnose minnow (15.3%), striped shiner (11.7%), sand shiner (9.0%), and Johnny darter (8.3%). According to HDR, none of the three (3) state listed fish species were taken within the immediate proximity of the proposed diffuser. A total of 3,585 live individuals comprised of 23 species were collected from 96 sampling stations. Of this total, 60 spike mussels (*Elliptio dilatata*) and four (4) black sandshell mussels (*Ligumia recta*) were collected.

The black sandshell mussel (*Ligumia recta*) is listed as threatened in Illinois because its range and it was formerly widespread in the state where it was found in medium to large river systems. Although it is possible that live individuals of the black sandshell are present in the project area, it is unlikely due to the fact that only one (1) was found alive in August 2008 and one (1) was found dead in October 2008.

The purple wartyback mussel (*Cyclonaias tuberculata*) is listed as threatened in Illinois and was once widespread in Illinois including the Kankakee River. It is possible that live individuals of the purple wartyback are present in the project area, since three (3) were found alive in August 2008 and one (1) alive in October 2008.

The sheepnose mussel (*Plethobasus cyphus*) is listed as endangered in Illinois because its range and abundance have declined in recent decades. It was formerly widespread in the state where it was found medium to large river systems. Currently found in small, isolated populations in rivers including the Kankakee River. Although it is possible that live individuals of the sheepnose are present in the project area, it is unlikely due to the fact one (1) was found dead in August 2008 and none (0) were found dead in October 2008.

The spike mussel (*Elliptio dilatata*) is listed as threatened in Illinois because it was formerly wide spread in Illinois, including the Kankakee River. Although it is possible that live individuals of the spike are present in the project area, it is unlikely due to the fact that a relic shell was in August 2008 and two (2) were collected alive in October 2008.

The pallid shiner fish (*Hybopsis amnis*) is listed as threatened in Illinois and found in medium to large rivers and streams. Commonly found in sand and mud in shallow, slow-moving, moderately clear, warm, and well-oxygenated waters. Two (2) were identified by HDR in 2008 downstream from the discharge channel by a sand bar drop off.

The river redhorse fish (*Moxostoma carinatum*) is listed as threatened in Illinois and is found in swift waters of large rivers, lower portions of main tributaries, reservoirs and pools over clean gravel and rubble. One (1) was identified by HDR in 2008 collected upstream from the discharge channel.

The western sand darter fish (*Ammocrypta clarum*) is listed as threatened in Illinois and is found in medium to large streams with sandy areas and moder current. HDR identified no (0) western sand darter fish in August 2008.

Any live animals that are overlooked during the relocation effort could be at risk of injury or death as a result of construction activities. The relocation of all mussels and fish encountered will make it unlikely that a significant number of individuals will be exposed to threats related to the wastewater treatment plant outfall and multipoint diffuser project in Braidwood, Illinois. Relocation can be used to recolonize areas where previous populations were extirpated, to remove mussels from proposed construction sites, to

boost numbers of endangered species. The survival of relocated mussels is closely linked to habitat quality.

As stated in the official conservation plan, Braidwood will implement sediment control and construction management measures to minimize the extent and duration of project related disturbance to the Kankakee River and any potential for direct/indirect impacts on mussels and/or mussel habitat. These measures may include the use of cofferdams, silt fencing, or other sediment control measures to limit downstream sedimentation during construction. The in-stream construction will take approximately 150 days and any potential short-term effects will most likely be limited to this time period. All mussels will be relocated from the outfall mixing zone limiting long-term operational effects.

Any measures required under Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], will be performed:

Additional measures are listed below under "Authorization." This authorization is, by definition, subject to those terms and conditions and official Braidwood signature(s) on this authorization indicates their commitment to performing those measures.

The public has received notice of the application and has had the opportunity to comment before the Department made any decision regarding the application:

MPE, acting as environmental consultant for Braidwood, prepared a conservation plan as described by the Illinois Endangered Species Protection Act (520 ILCS 10/5.5). That plan and MPE's request for authorization for incidental take of black sandshell, purple wartyback, sheepsnose, and spike mussels and pallid shiner, river readhorse, and western sand darter fish were received by the Illinois Department of Natural Resources (Department) on _____. Public notice of MPE's request for authorization of incidental take of black sandshell, purple wartyback, sheepsnose, and spike mussels was published in the *Edwardsville Intelligencer (Official State newspaper) and the Daily Gazette (Whiteside County) on February 27, 2004, as well as on March 5, and March 13, 2004.* Public comments on MPE's conservation plan were accepted by the Department until _____. No comments were received by the public during the period of _____.

Authorization

It is the determination of the Department that the measures to be implemented by Braidwood would adequately minimize and mitigate for the anticipated taking (relocation) of a small number of black sandshell, purple wartyback, sheepsnose, and spike mussels and pallid shiner, river redhorse, and western sand darter fish due to the construction of a new wastewater outfall and multipoint diffuser impacting the Kankakee River in Will County, Illinois. Further, it is our opinion that the take (relocation) authorized herein would not diminish the likelihood of the survival of the black sandshell, purple wartyback, sheepsnose, and spike mussels and pallid shiner, river redhorse, and

western sand darter fish in the wild within the State of Illinois, the biotic community of which the species is a part or the habitat essential to the species' existence in Illinois.

Pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.40(b)], this authorization is issued subject to the following additional terms and conditions:

1. This authorization is effective upon signature by the Department and shall remain in effect for a period of five (5) years after completion of the construction of a multiport diffuser impacting the Kankakee River in Will County, Illinois, unless terminated as pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80].
2. Freshwater mussel surveys shall be conducted prior to construction activities (related to a new wastewater outfall and multiport diffuser impacting the Kankakee River) in the area(s) of direct impact, as well as the immediate downstream reaches (100 feet downstream). All mussels observed and fish (listed or non-listed species) are to be relocated in order to minimize impacts. Mussel surveys will be conducted using standard survey techniques including searching by feel to methodically cover the area to be disturbed by the project (viewing boxes, wading in shallow water, SCUBA in deeper water-if applicable). All mussels found will be identified to species. Mussels shall be relocated into areas of suitable habitat, in the same stream, preferably upstream of the construction site. Specifically, the transplant site will be close to the collection area and have similar to better water quality and substrate. MPE shall provide the Department with a report detailing the results of all mussel surveys and relocation efforts within 45 days of completing all surveys/relocations.
3. **If, and only if,** live black sandshell (*Ligumia recta*), purple wartyback (*Cyclonaias tuberculata*), sheepsnose (*Plethobasus cyphus*), and/or spike (*Elliptio dilatata*) live mussels and/or any other live Federal or State endangered or threatened mussels are removed and relocated within the construction zone (approximately 132 feet by 245 feet) at Braidwood, either solely and/or through a qualified environmental consultant(s), shall perform (or cause to be performed) a survey of the entire construction zone +/- 300 feet. The purpose of the survey is to determine if these listed species have recolonized areas directly impacted by the river diffuser construction and operation. The survey shall be conducted at five (5) years after the start of operation for the river diffuser. Braidwood, either solely or through its environmental consultant, shall provide a copy of these survey reports to the Department within 45 days of survey completion.
4. All mussels encountered within the State of Illinois during this project shall be subject to the general U.S. Fish and Wildlife Service handling protocol for determining presence/absence of species as found in "Section H" of the attached Federal Fish and Wildlife document.

5. The effective period of this authorization may be altered by mutual agreement between Braidwood and the Department.

6. This authorization may be revoked pursuant to Section 5.5 of the Illinois Endangered Species Protection Act [520 ILCS 10/5.5 - 17 IL. Adm. Code Part 1080.80] if the Department finds that the Braidwood has failed to comply with any of these terms and conditions or has been responsible for the relocation of purple wartyback, sheepnose, spike, and black sandshell mussels and pallid shiner, river redhorse, and western sand darter fish beyond that which is incidental to the construction of a new wastewater outfall and multipoint diffuser for the Braidwood, impacting a portion of the Kankakee River in Will County, Illinois.

7. The Braidwood, Official identified below is authorized to execute this agreement. Execution by Braidwood Official(s) indicates acceptance of all terms and conditions described in this agreement.

For the IL Dept. Natural Resources

For Braidwood Nuclear Generating Station

Mike Conlin, Acting Director
Office of Resource Conservation

Lawrence Coyle, Plant Manager
Braidwood Nuclear Generating Station

Date Signed

Date Signed