Exelon Generation LLC's Petition to Approve
Alternative Thermal Effluent Limitations

Exhibit 2

Letter from Alan Bielawski to Stephanie Flowers,
dated April 14, 2014

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April 14, 2014

VIA U.S. MAIL

Stephanie Flowers
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Illinois Environmental Protection Agency
1021 North Grand Avenue
P.O. Box 19276
Springfield, Illinois 62794-9276

Re: Exelon Generation's Thermal Assessment Plans for Dresden Station

Dear Ms. Flowers:

This letter is submitted on behalf of Exelon Generation Company, LLC ("Exelon") regarding Exelon's Dresden Nuclear Power Station ("Dresden Station").

BACKGROUND

The Dresden Station National Pollution Discharge Elimination System ("NPDES") Permit (No. IL0002224) was re-issued by the Illinois Environmental Protection Agency ("IEPA") on November 3, 2011, with an effective date of December 1, 2011. The NPDES Permit, which is set to expire on November 30, 2016, contains the following condition:

> Special Condition 18 - Exelon Generation Company, LLC has complied with 35 IAC Code 302.211(f) and Section 316(a) of the Clean Water Act in demonstrating that the thermal discharge from its Dresden Nuclear Power Station has not caused and cannot be reasonably expected to cause significant ecological damage to receiving waters as approved by the Illinois Pollution Control Board in PCB Order 73-359 dated January 17, 1974 and PCB Order 79-134 dated July 9, 1981.
>
> Pursuant to 40 CFR 125.72(c), permittee shall submit an updated 316(a) demonstration with the next permit renewal application which will be six months prior to the November 30, 2016 NPDES Permit expiration date.

In 2013, in response to the requirement of Special Condition 18 that Exelon update its Section 316(a) demonstration for Dresden Station, Exelon commenced a hydrothermal modeling study of the plant's thermal discharge. During Spring and Summer 2014, Exelon is planning to

continue the hydrothermal modeling study and to conduct biological sampling and monitoring activities related to the Dresden Station thermal discharge.

On February 26, 2014, the Illinois Pollution Control Board issued new rules establishing procedures for obtaining alternative effluent limitations pursuant to Section 316(a) of the Clean Water Act. (35 Ill. Adm. Code 106, Subpart K) Sections 106.1115 and 106.1120 of the new rules require that an applicant for alternate thermal limits under Section 316(a) submit to IEPA screening information and plans for studies the applicant intends to conduct to support the issuance of alternate thermal limits for its facility. Exelon is submitting the information presented in this letter pursuant to these new procedural rules.

PROPOSED ALTERNATIVE EFFLUENT LIMITS

Exelon is updating its Section 316(a) demonstration for Dresden Station to support the alternative thermal limits in the current NPDES Permit. Exelon also plans to use the data and studies it obtains in updating the 316(a) demonstration to evaluate whether different alternative limits are justified for the Station. As a follow-up to an April 10, 2014 meeting between Sanjay Sofat and Darin LeCrone of IEPA and Zigmund Karpa and Roland Beem of Exelon to review Dresden Station's plans, this letter provides both the screening information and proposed study plans for initiating the 316 (a) process for Dresden Station. Exelon requests a meeting with IEPA within the next 30 days so that the study plans can be finalized to allow the required field work to commence.

PROPOSED STUDIES

The two primary elements of the 316(a) studies for Dresden Station are hydrothermal modeling and biological sampling. The hydrothermal studies will combine historic and current hydrological and Station operating data with field-collected bathymetric and thermal survey data to evaluate various hydrothermal scenarios. The biological studies will analyze historical information and fisheries, benthic macroinvertebrate, and freshwater mussel data obtained during the 2014 sampling effort to evaluate protection of a balanced indigenous community.

HYDROTHERMAL MODELING STUDY

The hydrothermal modeling study will contain four elements: 1) development of a river model with preliminary calibration to refine data collection and analysis, 2) assessment of compliance with the preliminary model for a range of operating and flow conditions, 3) conducting supplemental thermal surveys to provide additional data to finalize the model calibration, and 4) with finalized model, performing scenarios for a range of operating and flow

conditions in order to examine relationships between the discharge temperature, thermal plume behavior, and a biological zone of passage.

The Danish Hydraulic Institute's MIKE3 model will be used to evaluate operational and compliance scenarios. MIKE3 is a state-of-art, three-dimensional hydrodynamic model. For the Dresden site, there will be an upstream model boundary on both the lower Des Plaines and Kankakee Rivers. The downstream model boundary will be in the Illinois River at the Dresden Island Lock and Dam. A finer cell grid will be used in the vicinity of the Unit 2/3 discharge to the Illinois River to provide increased resolution in the initial mixing region. Each cell is typically divided into 8-10 vertical layers. The model grid will include the Dresden Station intake and discharge structures. The upstream model boundaries are parameterized by providing temperature and flow time-series files. The temperature boundary file can incorporate vertical stratification. The downstream boundary at the dam is parameterized by a time-series file of flow and/or elevation.

The model will be calibrated using thermal field survey data. A calibration model run is typically started a day prior to the thermal survey to allow build-up to conditions present at the time of the survey. Hourly Station intake and discharge flow, and discharge temperature will be used as provided by the Station. The upstream boundary temperatures will be based on thermographs deployed during the surveys. Stratification as observed during the survey's vertical profiles in the vicinity of the upstream boundaries will be incorporated into the model. The downstream boundary will be configured using the elevation/flow data available at the Dresden Lock and Dam. Surface heat exchange is calculated from hourly meteorological data provided to the model. Model calibration primarily consists of adjusting horizontal and vertical dispersion, and bottom friction coefficients.

During 2013, a bathymetric survey and two thermal plume surveys were conducted. In addition, historical Station operational, thermal, and hydrological data were compiled. The 2014 hydrothermal modeling effort will be a continuation of the 2013 study. A final model calibration will be completed in 2014 following the performance of two additional thermal plume surveys by the end of summer 2014. Historical Station operational data as well as river flow and temperature data will be updated using 2014 information. Various model scenarios will be executed with the final calibrated model. The output files from the model scenarios will be processed with particular attention given to plume behavior and zone-of-passage as a function of operations and flow.

BIOLOGICAL STUDIES

Representative Important Species (RIS)

Appendix A presents the candidate RIS to be studied and the bases for their selection.

Fisheries

The Dresden Station fisheries study will determine and compare the composition, distribution, abundance, condition, and incidence of anomalies of fish within and among the segments above and below the Dresden discharge and upstream and downstream of the Dresden Island Lock and Dam. The 2014 results will be compared with sampling data obtained since 1993 above and below the Dresden discharge (where available/appropriate) to evaluate spatial and temporal trends within the fish community.

Field Work

Fish sampling will be conducted at 11 locations that have been sampled historically (from upstream to downstream): Location 501 - mouth of Des Plaines River; Location 502 - mouth of Kankakee River above intake; Location 503 - Kankakee River above County Line Bridge; Location 506 - discharge canal; Location 507 - south shore Illinois River below discharge canal; Location 509 - south shore Illinois River below discharge canal; Location 510 - north shore Illinois River across from discharge; Location 512 - both banks in Dresden Dam tailwater downstream of Dresden Island Lock and Dam; Location 513 - south shore Illinois River at the downstream end of the Dresden Island Lock canal; Location 514 – north shore of the Illinois River downstream of Dresden Island Lock and Dam; and Location 515 - south shore Illinois River downstream of Dresden Island Lock and Dam (Figure 1).

Fish will be sampled by electrofishing and seining. Electrofishing will be conducted using a boat-mounted electrofishing system energized by a 230-volt, 5,000-watt three-phase AC generator. Electrofishing will be conducted at 10 locations, 501, 502, 503, 506, 507A (507 and 509 combined due to short length of historic electrofishing zones), 510, 512, 513, 514, and 515. Each electrofishing zone is 500 m long, except at Location 506 (Dresden Station discharge canal), which is 310 m long. Electrofishing will be conducted in a downstream direction at all locations except Location 506, which will be sampled by a combination of upstream and downstream electrofishing runs due to the very fast current within that zone. Electrofishing will begin no earlier than 0.5 hours after sunrise and will finish no later than 0.5 hours before sunset. The sampling crew will consist of a driver and a netter. Both crew members will have long-handled dip nets for catching stunned fish.

Seining will be conducted at nine locations (501, 502, 503, 507, 509, 512, 513, 514, and 515) using a straight 25x6-ft seine with 3/16-inch Ace mesh. The sampling distance will depend on the area available at each location and, to the extent possible, will be kept constant during each sampling period. If electrofishing and seining are to be conducted in the same area on the same day, seining will be conducted first and at least one hour elapsed before electrofishing is conducted.

Sampling will be conducted once in mid-May, once in June before the 15th (start of Dresden Station's indirect-open cycle operations), and twice monthly in July, August, and September; for a total of eight sampling events.

Physicochemical Measurements

Water temperature, dissolved oxygen concentration, percent oxygen saturation, specific conductance, and Secchi disk depth will be measured at each electrofishing location during each trip. Sampling techniques and calibration procedures/frequencies will be the same as those used historically.

Sample Processing

All fish will be held in source water immediately after collection and until processing. All fish will be counted and identified to the lowest practical taxonomic level, usually species. For each location and gear, a maximum of 30 specimens of each species collected will be measured for total length (mm) and weighed (g). If over 30 individuals of a species are collected at any location, then 30 representative individuals will be measured and weighed. The remaining individuals of that species will be counted and a group (batch) weight recorded. Minnows (excluding all carp species, goldfish, and their hybrids) will be identified, counted, and batch weighed. After processing, all live fish will be returned to the river. All fish not processed in the field will be preserved in formalin, labeled, and returned to the laboratory for processing. In the laboratory, fish will be processed in the same manner as in the field.

A voucher collection of unusual or taxonomically difficult species will be compiled. All observed threatened or endangered species will be returned live, if possible, and will not be included in the voucher collection.

All fish encountered will be examined for external anomalies. External anomalies will be classified as DELT anomalies (Deformities, Erosions, Lesions, and Tumors), parasites, or "other" abnormalities. The following is a review of DELT anomalies and their causes in freshwater fishes:

1. Deformities - These anomalies can affect the head, spine, fins, and have a variety of causes including toxic chemicals, viruses, bacteria (e.g., *Mycobacterium* sp.), and protozoan parasites (e.g., *Myxosoma cerebalis*).

2. Eroded fins - These are the result of chronic disease principally caused by flexibacteria invading the fins causing a necrosis of the tissue. Necrosis of the fins may also be caused by gryodactylids, a small trematode parasite. For this study, fin erosion will be separated into three categories: slight erosion <1/3 of fin eroded; moderate erosion 1/3 to 2/3 of fin eroded, and severe erosion >2/3 of fin eroded.

3. Lesions and Ulcers - These appear as open sores or exposed tissue and can be caused by viral (e.g., *Lymphocystis* sp.) or bacterial (e.g., Flexibacter columnaris, *Aeromonas* spp., *Vibrio* sp.) infections.

4. Tumors - Tumors result from the loss of carefully regulated cellular proliferative growth in tissue and are generally referred to as neoplasia. In wild fish populations tumors can be the result of exposure to toxic chemicals such as polynuclear aromatic hydrocarbons (PAHs). Viral infections (e.g., Lymphocystis) can also cause tumors. Parasites (e.g., *Glugea anomala* and *Ceratomyxa shasta*) may cause tumor-like masses, but are not considered tumors. Parasite masses can be squeezed and broken between the thumb and forefinger whereas true tumors are firm and not easily broken.

An external anomaly will be defined as the presence of externally visible skin or subcutaneous disorders, and is expressed as percent of affected fish among all fish processed. Only those anomalies visible to the naked eye will be recorded. The exact counts of anomalies present (e.g., the number of tumors or lesions per fish) will not be recorded.

Data Analysis and Interpretation

Data from electrofishing and seining will be reported as number, catch-per-unit-effort (No./km for electrofishing and No./haul for seining), and percent abundance for each species. Index of Well-Being (IWB) and modified IWB (IWBmod) scores will be calculated for the electrofishing data and species richness will be calculated for both gears.

Electrofishing and seining data will be segregated by location, segment, and trip. Mean electrofishing and seining community parameters (i.e., CPEs, species richness, and IWBmod scores [electrofishing only]) will be compared on intra-year (segment vs. segment by year) and inter-year (year vs. year by segment) basis. Statistical testing (ANOVA and Tukey's Studentized Range Test) will be conducted on the electrofishing data. Analyses of relative weight and DELT

anomaly data will also be on inter-year and intra-year basis. Physicochemical data collected in 2014 will be compared on a spatial basis (e.g., location vs. location and segment vs. segment).

Benthos

The objectives of the Dresden Station benthos study will be to determine/compare the composition, distribution, and abundance of the benthic community within/among segments above and below the Dresden discharge and upstream and downstream of the Dresden Island Lock and Dam. The 2014 results will be compared with those obtained since 1999 above and below the Dresden Station discharge (where available/appropriate) to evaluate spatial and temporal trends within the benthic macroinvertebrate community.

Benthos Field Work

Benthos sampling will be conducted at six locations (501A, 502, 509, 510, 512, and 515) where fish sampling will be conducted. Due to the lack of historic data, benthic sampling will not be conducted at Locations 513 or 514 (Figure 1).

Sampling will be conducted at each station using Hester-Dendy (HD) artificial substrate samplers and a Ponar grab sampler. Each modified HD artificial substrate sampler will consist of eight 3x3-inch plates constructed from 1/8-inch tempered hardboard and twelve 1/8-inch plastic spacers. The plates and spacers will be arranged on a 1/4 inch eyebolt so that each sampler has three 1/8 inch spaces, three 1/4 inch spaces, and one 3/8 inch space among the plates. The total surface area of a single sampler, excluding the eyebolt, will be 1.01 square feet. A single sample will consist of five HDs suspended approximately 30-50 cm below the water surface. Duplicate HD sets will be deployed at each location to minimize the loss of samplers (e.g., vandalism). The HD samplers will remain in place for at least a six-week colonization period. Retrieval of the HDs will be accomplished by enclosing the samplers in a fine-mesh sweep-net and then carefully lifting the sampler array and net to the surface. The HDs will be disassembled from the array, placed into a single labeled container, and preserved with 10% formalin.

Duplicate Ponar grab samples will be collected at each station using a full-sized (9x9-inch) Ponar dredge sampler. Ponar samples will be collected upon retrieval of the HD samplers. Each sample will be sieved in the field using an U.S. Standard No. 35 (500 μm) mesh sieve and preserved. Substrate material will be examined qualitatively to determine substrate characteristics and percent composition.

Laboratory

Prior to analysis, each sample will be rinsed on an U.S. No. 35 mesh sieve to remove preservative. The sample material will be sorted, a small portion at a time, under a dissecting microscope at 10X magnification. All benthic macroinvertebrates found will be sorted by major taxonomic group (e.g., Oligochaeta and Chironomidae). Specimens will be preserved in 70 percent ethyl alcohol. All benthic macroinvertebrates will be identified to the lowest practical taxon using the latest taxonomic keys. Oligochaetes and chironomids will be mounted on glass slides using CMC-10 mounting media prior to examination under a compound binocular microscope at 40-1000X magnification.

Data Analysis and Interpretation

Due to inherent differences between the river upstream and downstream of Dresden Island Lock and Dam, the benthic data will be segregated spatially into two areas, Dresden Pool (Locations 501, 502, 509, and 510) and downstream of Dresden Island Lock and Dam (Locations 512 and 515). Spatial and temporal comparisons will be made using density (#/m^2), relative abundance (percentage), and total taxa richness. In addition, an analysis of variance (ANOVA) will be performed using the replicate data to statistically compare taxa richness, total density, Oligochaeta (aquatic worm) density, Chironomidae (midge) density, and Ephemeroptera (mayfly) density among the sample areas in Dresden Pool.

Freshwater Mussels

A mussel survey of approximately 1,300 meters of the Illinois River will be conducted from the Dresden Station discharge to the Dresden Island Lock and Dam and from below Dresden Island Lock and Dam to Little Dresden Island. The purpose of the survey is to characterize the unionid mussel assemblage and/or habitat that may occur within areas potentially affected by the Dresden Station discharge.

Mussel Field Work

The primary survey method will be through diving operations. All diving will be conducted in accordance with OSHA 1910 Subpart T for Commercial Diving and the crew will include a permitted malacologist to oversee implementation of the mussel survey work plan as well as sample processing, identification of all mussels collected, and recording all mussel and habitat data.

The survey will be conducted in coordination with the U.S. Fish and Wildlife Service and Illinois Department of Natural Resources. The freshwater mussel work plan must be approved

prior to conducting the survey; therefore, notification to these agencies will be made at least 30 days prior to implementing the survey. The survey will be conducted during the agency-preferred mussel sampling season of May through October. Ultimate scheduling will be based on favorable river conditions for safe diving (i.e., near-normal flow and visibility).

The survey will use a systematic sampling design using semi-quantitative transect sampling and qualitative timed visual searches. Semi-quantitative sampling will occur upstream and downstream of the Dresden Island Lock and Dam (Figure 2). Transect lines will start from the bank and extend from 50 to 100 meters perpendicular to river flow and will be spaced no greater than 100-meters apart. Approximately 18 transects will be located along the left and right descending banks between the Dresden Station discharge and approximately 200 meters upstream of the Dresden Island Lock and Dam. Approximately eight transects will be located between Big Dresden Island and the right descending bank downstream of the dam. Each transect will be sub-divided into 10-meter segments, with each segment to be searched for a minimum of five minutes. Divers will search within one meter of the transect line, sifting through the upper five centimeters of substrate using visual and tactile cues to find mussels. If unsuitable habitat such as bedrock is dominant within a 10-meter segment, the condition will be noted and the diver will not expend the five-minute search effort.

A minimum of the following data will be recorded for each segment: substrate information (Wentworth size scale), depth, unique conditions (e.g., scour, deposition, and debris), and number of mussels encountered. All mussels encountered within one meter of the transect line, for each 10-meter segment, will be sent to the surface for identification to species by a permitted malacologist.

The qualitative survey will be completed to supplement semi-quantitative sampling data and to ensure no significant concentrations of mussels are missed between transects. Each qualitative search area will consist of a diver searching for approximately 15 minutes in the direction of highest probability for finding unionid mussels (e.g. preferred substrate, presence of additional mussels). Timed searches will occur in areas identified during the semi-quantitative sampling effort as having relatively high concentrations of mussels. Divers will begin their search in a location where suitable habitat is likely to occur, as inferred from the mussel and habitat data obtained from the transect sampling. All mussels encountered during each of the qualitative searches will be brought to the boat and identified by a permitted malacologist. In addition to timed searches, the river shoreline and banks within the study area will be visually searched for relic shells.

All mussels collected during the semi-quantitative and qualitative searches will be sent to the surface to be identified to species by a permitted malacologist. All unionid mussels will be

measured for total length and height, and digital photographs will be taken. Live unionid mussels will be returned close to the area from which they were collected.

If a federally-listed species is encountered, the mussel will be aged and sexed in addition to the standard measurements described above. Any federally-listed species will be returned to the substrate by a diver, hand-placed as close to the point of capture, and a GPS location will be recorded.

Data Analysis and Interpretation

Data analysis will include a characterization of the available habitat as it relates to mussels and visual representations of the location and extent of mussels and potential mussel habitat within the project area using GIS.

REPORTS

Dresden Station operational data, thermal modeling results, and data from the field biology studies will be compiled into a series of reports. These reports will then be used, in part, to develop a separate 316(a) demonstration. Current and historical biological data will describe the community of fish and shellfish while the hydrothermal modeling results will describe conditions to which the aquatic community will be exposed (e.g., temperature range, aerial extent, and zone of passage). Part of this overall evaluation will be based on the selected RIS. Collectively, the reports will determine whether the Dresden Station thermal discharge has caused appreciable harm to a balanced indigenous community in the Station's receiving waters and whether alternate thermal effluent limitations proposed for Dresden Station will assure the protection and propagation of a balanced indigenous community.

As previously mentioned, Exelon is planning to conduct the additional studies and investigations described above to assist in the assessment of whether alternate thermal limits under Section 316(a) are appropriate for Dresden Station, and, if so, what form such alternate limits should take. This letter serves as both a screening and study plan for Dresden's 316 (a) Demonstration. In view of IEPA's review responsibilities regarding 316(a) matters, please feel free to circulate this letter to those individuals that eventually may be involved in reviewing 316(a) relief for the Station; we would appreciate receiving any input you receive regarding Exelon's planned studies. As previously mentioned, Exelon would appreciate meeting with IEPA within the next 30 days so that it can finalize its plans.

Thank you for your assistance. If you have any questions, please feel free to contact me.

Sincerely,

/s/ Alan Bielawski

Enclosures

CC: Steve Pescitelli, Illinois DNR
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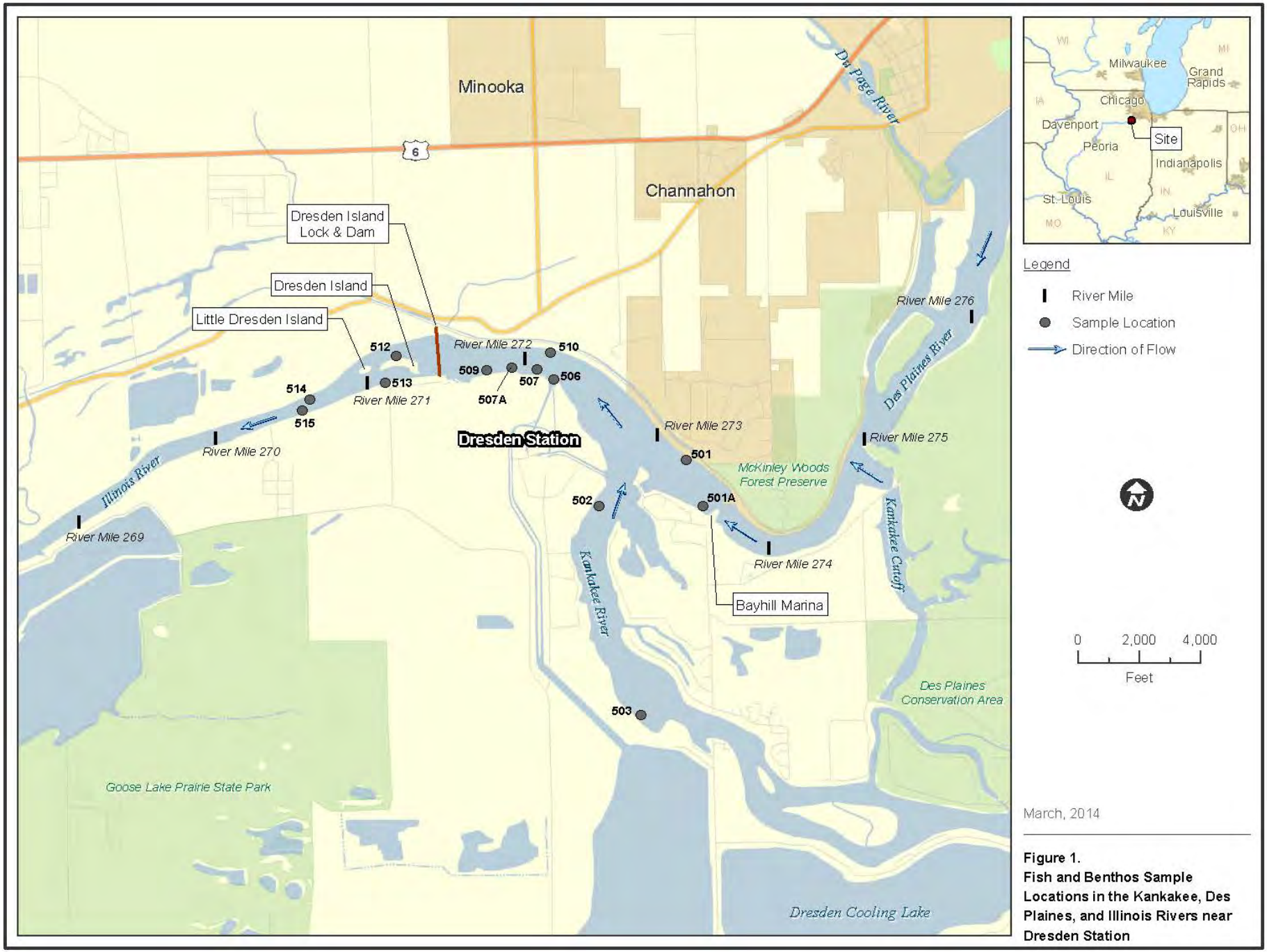
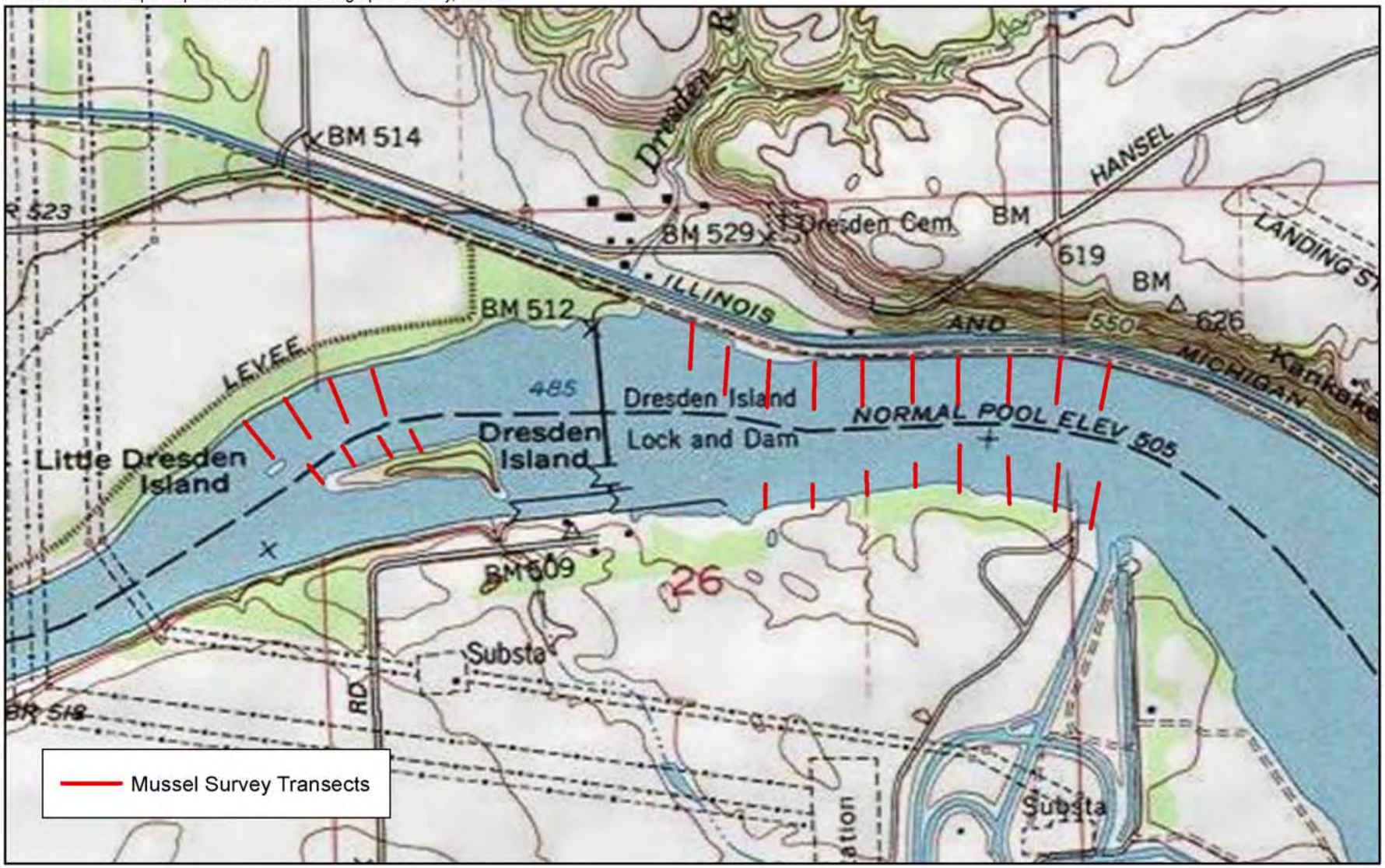


Figure 1.
Fish and Benthos Sample Locations in the Kankakee, Des Plaines, and Illinois Rivers near Dresden Station

SOURCE: USA Topo Maps© 2013 National Geographic Society, i-cubed



		DRESDEN GENERATING STATION 316(a) STUDY PLAN GRUNDY COUNTY, ILLINOIS	PROPOSED MUSSEL SURVEY TRANSECTS	
DRAWN BY BJO	PROJECT NO	DATE 3/27/2014	SCALE 1 inch = 1,000 feet	FIGURE 2

Appendix A

Candidate Representative Important Species for the Dresden Generating Station 316(a)

Candidate RIS were selected from a checklist of native fish species collected during electrofishing surveys of Dresden Pool (DP) near Dresden Station and downstream of the Dresden Lock and Dam (DDD). Surveys of the DP were conducted during 15 years between 1994 and 2011 and surveys in DDD were conducted during 13 years between 1994 and 2011 (EA 2012). Sixty-four native species were collected over the long-term monitoring period, of which 46 were common between the two areas. Thirteen native species were collected during each of the 15 DP surveys and 12 species were collected during each of the 13 DDD surveys. Thirty of the 56 species collected from DP were considered incidental because they were encountered during only one to six of the 15 annual surveys (Table 1). Similarly, 29 of the 54 native species collected during the DDD surveys were collected during only one to six of the 13 annual surveys. Species for which catches totaled less than 200 fish for the monitored years were considered "occasional" species that were encountered during seven to 12 of the respective monitored years.

RIS are those species that are representative, in terms of their biological requirements, of a balanced indigenous community of shellfish, fish, and wildlife in the body of water into which a permitted discharge is made. U.S. EPA's §316(a) guidelines (U.S. EPA 1977) list six categories of fish that may be considered RIS:

1. Commercially or recreationally important species;
2. Threatened or endangered species;
3. Species critical to the structure and function of the receiving water body;
4. Species potentially capable of becoming a localized nuisance;
5. Species necessary in the food chain; and
6. Species representative of thermal requirements, but which themselves may not be important.

Federally-listed fish species are not known to occur in the Des Plaines River or the Kankakee River in the vicinity of Dresden Station or in the Illinois River immediately downstream of the Dresden Lock and Dam. Two species listed by the Illinois Endangered Species Protection Board (2011) have been collected near Dresden Station. Pallid shiner (*Hybopsis aminis*), listed as endangered in Illinois, was encountered each year surveys were conducted from 2000 through 2011. During this period, a total of 740 were collected near the Dresden Station. They were typically collected upstream of Dresden Station from the Kankakee River (EA 2012). Two river redhorse (*Moxostoma carinatum*), listed as threatened in Illinois, were collected in 2000 and 2002. Neither listed species was selected as RIS because their thermal endpoints are not known, so congeneric species (i.e., emerald shiner and golden redhorse) were selected. Several species representing the other five categories are known to occur near the Dresden Station (Table 1).

The RIS selected for the Dresden Station thermal evaluation included commercially and recreationally important species (i.e., channel catfish, bluegill, and largemouth bass), forage species that are critical to

the structure and function of the aquatic community (i.e., gizzard shad and emerald shiner); species that could potentially become a nuisance (common carp); and others representative of thermal requirements of important species (golden redhorse, logperch, and freshwater drum).

Only fish species are proposed as candidate RIS for the Dresden Station thermal evaluation because fish represent the top of the food chain, are important to the public because of their recreational and/or commercial value, and their overall wellbeing demonstrates that the lower trophic levels are supporting the trophic levels occupied by the RIS. Lower trophic levels (e.g., phytoplankton, zooplankton, periphyton, and benthic macroinvertebrates) are not proposed as candidate species because of a general lack of thermal toxicity data and historical 316(a) studies have shown only localized thermal effects on lower trophic levels that have not resulted in adverse harm (Duke/Fluor Daniel 1992).

Nine fish species were selected as candidate RIS for the Dresden Station thermal evaluation. These species represent one or more of the categories listed above from the U.S. EPA (1977) guidance. In order to be a candidate, species had to have published thermal tolerance endpoints in order to conduct the required thermal evaluation. Except for common carp, hybrids and exotic species were excluded, as were incidental and occasional species (e.g., most darters, Table 1). Congeneric species were eliminated so that only one representative species was selected. For example, of the abundant minnows collected near the Dresden Station (emerald shiner, spotfin shiner, bluntnose minnow, and bullhead minnow); only emerald shiner was chosen as it has slightly lower thermal endpoints than the other three species.

Gizzard Shad (*Dorosoma cepedianum*)

Gizzard shad is a key forage species collected near the Dresden Station. Its average biomass over ten survey years has ranked second highest since 2000 accounting for 15 percent of the mean biomass (Table 2). Gizzard shad catches have comprised 28 percent of the total numerical catch since 1994 in DP and 12 percent of the DDD catch (Table 1). Gizzard shad is a prolific warmwater species that produces abundant forage used by top predators such as largemouth bass.

Common Carp (*Cyprinus carpio*)

Common carp is a warmwater species introduced to Illinois in the 1800s (Fuller et. al 1999). Its average biomass has ranked highest since 2000 accounting for 16 percent of the ten-year mean biomass but only one percent of the numerical catch (Table 2). The disparity between the numerical and biomass catch reflects the large average size of common carp routinely collected. Common carp catches have comprised from 0.4 to 1.3 percent of the total numerical catch since 2000 and, except in 2001, fewer than 100 were collected annually.

Emerald Shiner (*Notropis atherinoides*)

Emerald shiner is a native forage species that occurs nearshore in shallow water. It was collected during all except one year from the DP and all years from DDD (Table 1). It was the most abundant minnow species collected near the Dresden Station accounting for 14 percent of the DP electrofishing catch and 40 percent of the DDD electrofishing catch over the 15-year monitoring period (Table 1).

Golden Redhorse (*Moxostoma erythrurum*)

Golden redhorse is a native riverine species that prefers clear rivers and medium-sized streams with gravelly riffles and permanent pools. It was collected each year from the DP and DDD and was the most abundant of five redhorse species near the Dresden Station accounting for 83 percent of the redhorse in the DP electrofishing catch and 63 percent of the DDD electrofishing redhorse catch over the 15-year monitoring period. Its average biomass ranked seventh highest since 2000 accounting for 4 percent of the ten-year mean biomass (Table 2). Golden redhorse accounted for two to three percent of the numerical electrofishing catch over the 15-year monitoring period (Table 1).

Channel Catfish (*Ictalurus punctatus*)

Channel catfish is a widely distributed native species that usually reaches its greatest abundance in fast-flowing, medium to large rivers with sand and gravel-substrates, but can tolerate a wide range of conditions as occurs near the Dresden Station. It was collected each year from the DP and DDD and was the most abundant of four catfish species collected near Dresden Station accounting for 88 percent of the catfish in the DP electrofishing catch and 96 percent of the DDD electrofishing catfish catch over the 15-year monitoring period (Table 1). Its average biomass ranked third highest since 2000 accounting for 12 percent of the ten-year mean biomass (Table 2).

Bluegill (*Lepomis macrochirus*)

Bluegill is a widely distributed native species that is usually most abundant in clear lakes with aquatic vegetation, but can tolerate a wide range of conditions as occur near the Dresden Station. It was collected each year from the DP and DDD and was the most abundant of six sunfish species collected near Dresden Station accounting for 56 percent of the sunfish in the DP electrofishing catch and 53 percent of the DDD electrofishing sunfish catch over the 15-year monitoring period (Table 1). Its average biomass ranked ninth since 2000 accounting for 3 percent of the ten-year mean biomass (Table 2).

Largemouth Bass (*Micropterus salmoides*)

Largemouth bass is a popular recreational species that occurs throughout Illinois and is the most widely distributed of the black basses. It prefers shallow weedy lakes and river backwaters, the type of habitat preferred by bluegill. It was collected each year from the DP and DDD and was slightly more abundant than smallmouth bass (*M. dolomieu*) accounting for 59 percent of the black bass in the DP electrofishing catch and 58 percent of the DDD electrofishing catch over the 15-year monitoring period (Table 1). Its average biomass ranked fifth since 2000 accounting for 10 percent of the ten-year mean biomass (Table 2).

Logperch (*Percina caprodes*)

Logperch is a widely distributed darter species that occurs throughout Illinois where streams are large and stable enough to provide habitat. It is particularly common in the sluggishly flowing and sand-bottomed Illinois River and its associated lakes. It is a demersal species that is associated with preferred bottom substrates. It was collected during all but one year from the DP and DDD and was the most abundant of five darter species collected near Dresden Station accounting for 92 percent of the darters in the DP and DDD electrofishing catches over the 15-year monitoring period (Table 1). The catch of other darter species totaled 15 individuals compared to 173 logperch collected from the two areas. Logperch catches were low relative to the other candidate RIS as they contributed less than one percent of the total numerical catch during the 15-year monitoring period (Table 1).

Freshwater Drum (*Aplodinotus grunniens*)

Freshwater drum is a native species that prefers large rivers, but also occurs in large lakes and may ascend small rivers. It is a bottom-dwelling species, most abundant in turbid water over a bottom of mixed sand and silt. It was collected each year from the DP and DDD accounting for 2.9 percent of the DP electrofishing catch and 1.3 percent of the DDD electrofishing catch over the 15-year monitoring period (Table 1). Its average biomass ranked fourth highest since 2000 accounting for 11 percent of the ten-year mean biomass (Table 2).