

***Appendix E-Correspondence with PADEP Regarding Microbiological Organisms***

Letter to Joseph A. Feola, PADEP, from Michael P. Gallagher, Exelon Nuclear, dated January 19, 2011. Request for information on thermophilic microorganisms with one attachment.

Letter to Michael P. Gallagher, Exelon Nuclear, from Joseph A. Feola, PADEP, dated February 4, 2011. Reply to request for information on thermophilic microorganisms.

**Michael P. Gallagher, PE**  
Vice President  
License Renewal Projects

Telephone 610.765.5958  
www.exeloncorp.com  
michaelp.gallagher@exeloncorp.com

Exelon Nuclear  
200 Exelon Way  
KSA/2-E  
Kennett Square, PA 19348

January 19, 2011

Pennsylvania Department of Environmental Protection  
ATTN: Joseph A. Feola, Regional Director  
Southeast Regional Office  
2 East Main Street  
Norristown, PA 19401

Re: Renewal of Operating Licenses for Limerick Generating Station, Units 1 and 2  
Request for Information on Thermophilic Microorganisms

Dear Mr. Feola:

In mid-2011, Exelon Generation Company, LLC (Exelon Generation; a subsidiary of Exelon Corporation) plans to apply to the U.S. Nuclear Regulatory Commission (NRC) for renewal of the operating licenses for Limerick Generating Station, Units 1 and 2 (LGS). The existing license for Unit 1 will expire on October 26, 2024 and the existing license for Unit 2 will expire on June 22, 2029. The renewal term for each unit would be an additional twenty years beyond the existing license expiration date.

The NRC requires that license renewal applications include environmental reports assessing potential environmental impacts from license renewal activities. One such impact is described as "...the impact of the proposed action (license renewal) on public health from thermophilic organisms in the affected water" (10 CFR 51.53). Organisms of concern include the enteric pathogens *Salmonella* sp. and *Shigella* sp., as well as *Pseudomonas aeruginosa*, thermophilic fungi, *Legionella* sp. in unusually high concentrations, and the free-living amoebae of the genera *Naegleria* and *Acanthamoeba*. Of greatest concern is the *Naegleria* (*N.*) sp., four species of which have been isolated. To date, only one species, *N. fowleri*, has been determined to be pathogenic in humans. Accordingly, we are contacting you to obtain input for use in assessing in the LGS license renewal environmental report potential public health effects at the LGS discharge location (Outfall 001) from thermophilic organisms. *N. fowleri* in the Schuylkill River. Later, NRC may also request an informal consultation with your office on this topic.

Exelon Generation began operations at LGS in 1984. The LGS plant site, which hosts two generating units, is located on Exelon Generation-owned properties that are mostly situated in Limerick Township in Montgomery County, Pennsylvania (see Attachment 1). Each Limerick Unit uses a natural-draft cooling tower to dissipate waste heat from its circulating water system.

The cooling tower blowdown water from each unit's cooling tower is combined and discharged into the Schuylkill River through a submerged multi-port diffuser pipe, which is designed to rapidly diffuse the heat and limit the mixing zone size. LGS license renewal will authorize no new construction, refurbishment, or operational changes to the circulating water system.

For protection of human health, the LGS National Pollutant Discharge Elimination System (NPDES) Permit (No. PA0051926) requires weekly temperature monitoring to verify that the plant's thermal discharge to the Schuylkill River does not exceed 110°F. Several years of data from such monitoring indicate that maximum summer discharge temperatures range from 90°F to 95°F. Additionally, the LGS facility discharges sanitary sewage to the local POTW (publicly-owned treatment works) rather than to the Schuylkill River, which further reduces the potential for the facility's discharge to introduce pathogenic microorganisms that could present a threat to recreational users of the Schuylkill River.

The Delaware River Basin Commission (DRBC) recommends that recreational use of the Schuylkill River in the vicinity of LGS include only secondary contact recreation. Examples of such use are boating and fishing, in which body contact is either incidental or accidental and in which the probability of ingesting appreciable quantities of water, particularly through nasal passages, is minimal.

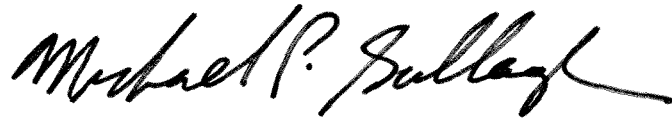
Exelon Generation has reviewed reports and studies published by such organizations as the Centers for Disease Control, Morbidity and Mortality Weekly Report, MedicineNet.com, and various other research sources. No reports of cases of primary amebic meningoencephalitis (PAM), an illness caused by *Naegleria*, were found from the Northeastern United States, which includes the area of Pennsylvania in which LGS is located.

Because (1) the temperature of the LGS discharge to the Schuylkill River is controlled by its NPDES Permit, (2) LGS does not discharge treated sanitary wastewater to the river, (3) recommended recreational use of the river does not include primary contact recreation such as swimming, and (4) no reports were found of primary amebic meningoencephalitis (PAM) cases in the Northeastern United States, Exelon Generation believes that impacts of the LGS discharge on the river's natural dynamics of thermophilic organisms are small. Furthermore, because LGS license renewal will authorize no new construction, refurbishment, or operational changes to the circulating water system, Exelon Generation expects that LGS license renewal will not adversely affect public health from *N. fowleri* or any other thermophilic organisms in the Schuylkill River. Nevertheless, we are requesting your help to identify issues we may have overlooked that need to be addressed in the LGS license renewal environmental report. We are also interested in learning of any information your staff believes could help expedite the NRC's review of the LGS license renewal application. Hence, in closing, we would appreciate receiving a response from you detailing such issues and information. We would also welcome your confirmation of our conclusion that LGS license renewal would not adversely affect public health from thermophilic organisms.

Because we plan to incorporate a copy of your response, as well as this letter, into the LGS license renewal environmental report that will be submitted to the NRC as part of the LGS license renewal application, your response will be most helpful if we receive it by March 10, 2011.

Please call Nancy Ranek (610-765-5369), our License Renewal Environmental Lead, if there are questions or you require additional information.

Sincerely,

A handwritten signature in black ink that reads "Michael P. Gallagher". The signature is written in a cursive style with a long, sweeping tail on the final letter.

Michael P. Gallagher

Enclosure:

Attachment 1: Figures Depicting LGS Site Location and Layout (Figures 1 through 3)

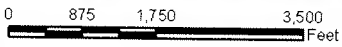
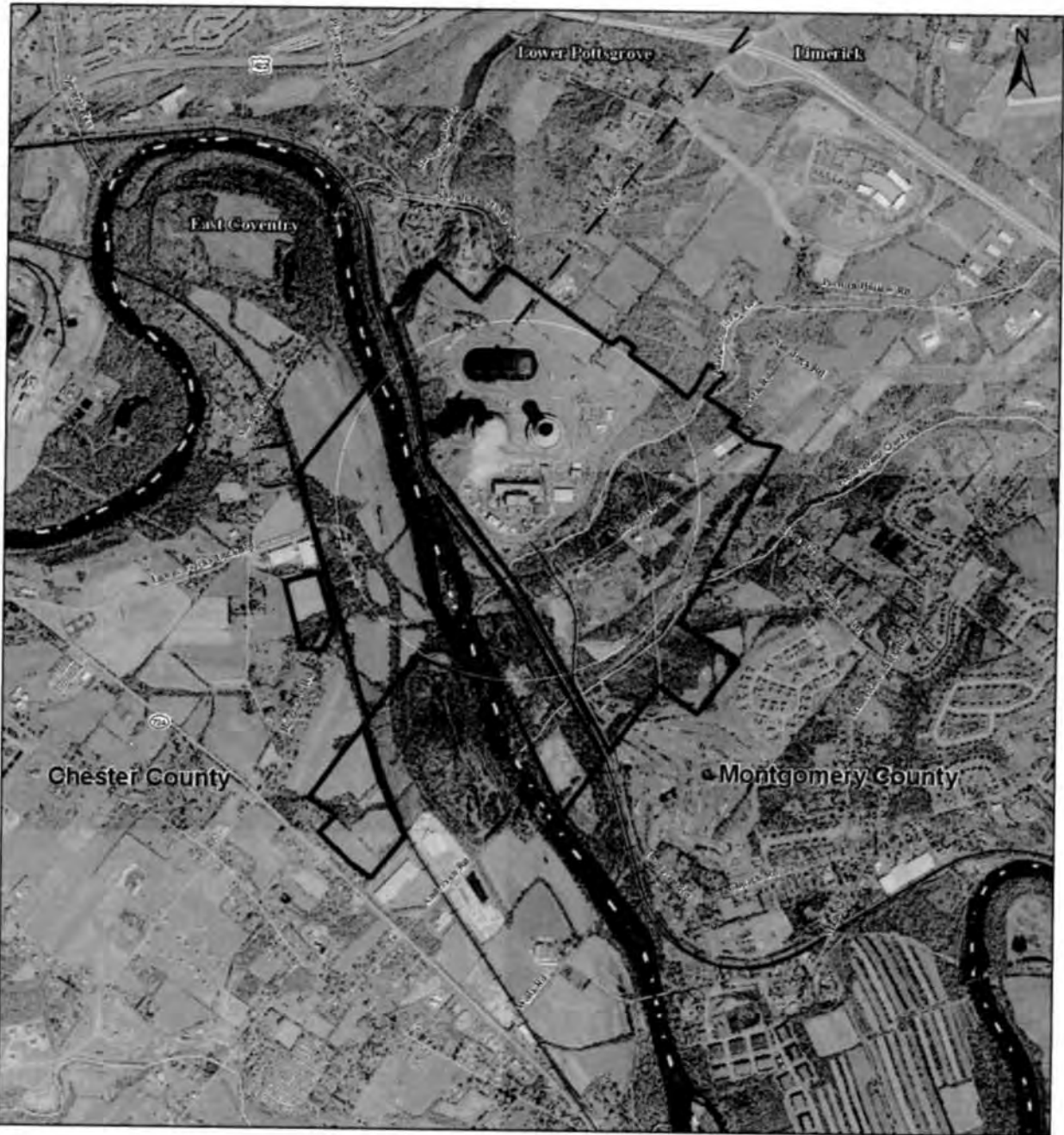
## **ATTACHMENT 1**

### **Figures Depicting LGS Project Features**

Figure 1 LGS Plant Site Property Boundaries

Figure 2 Six-Mile Vicinity Map

Figure 3 Cooling Tower Blowdown Diffuser



**Exelon.**

Reference:  
 DVRPC 2005 Aerial Imagery  
 ESRI 2009 Streets and Roads  
 NAD 1983 State Plane Pennsylvania South  
 Projection: Lambert Conformal Conic  
 Linear Unit: Foot US



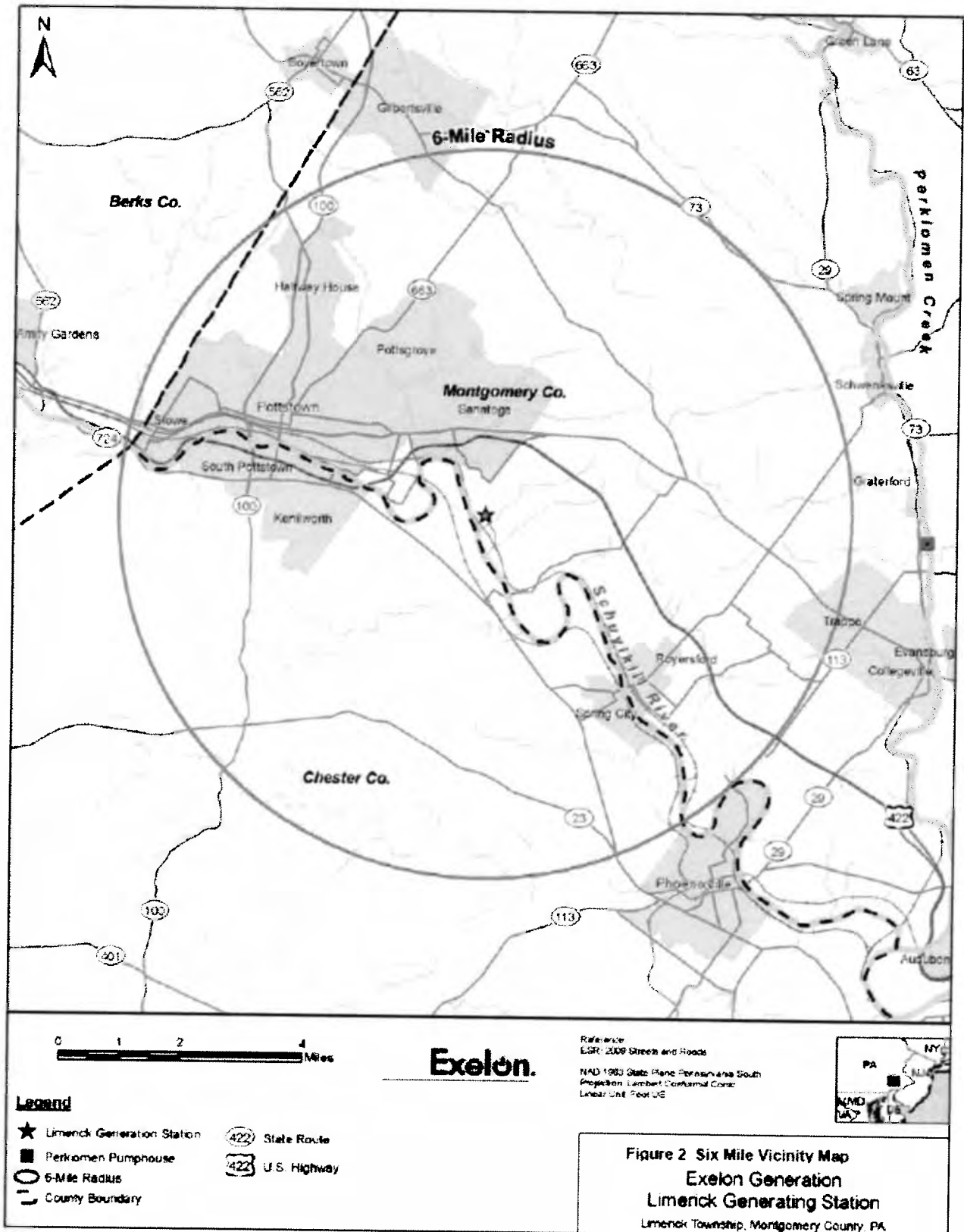
Total Exelon Generation-owned property:  
 645 acres.

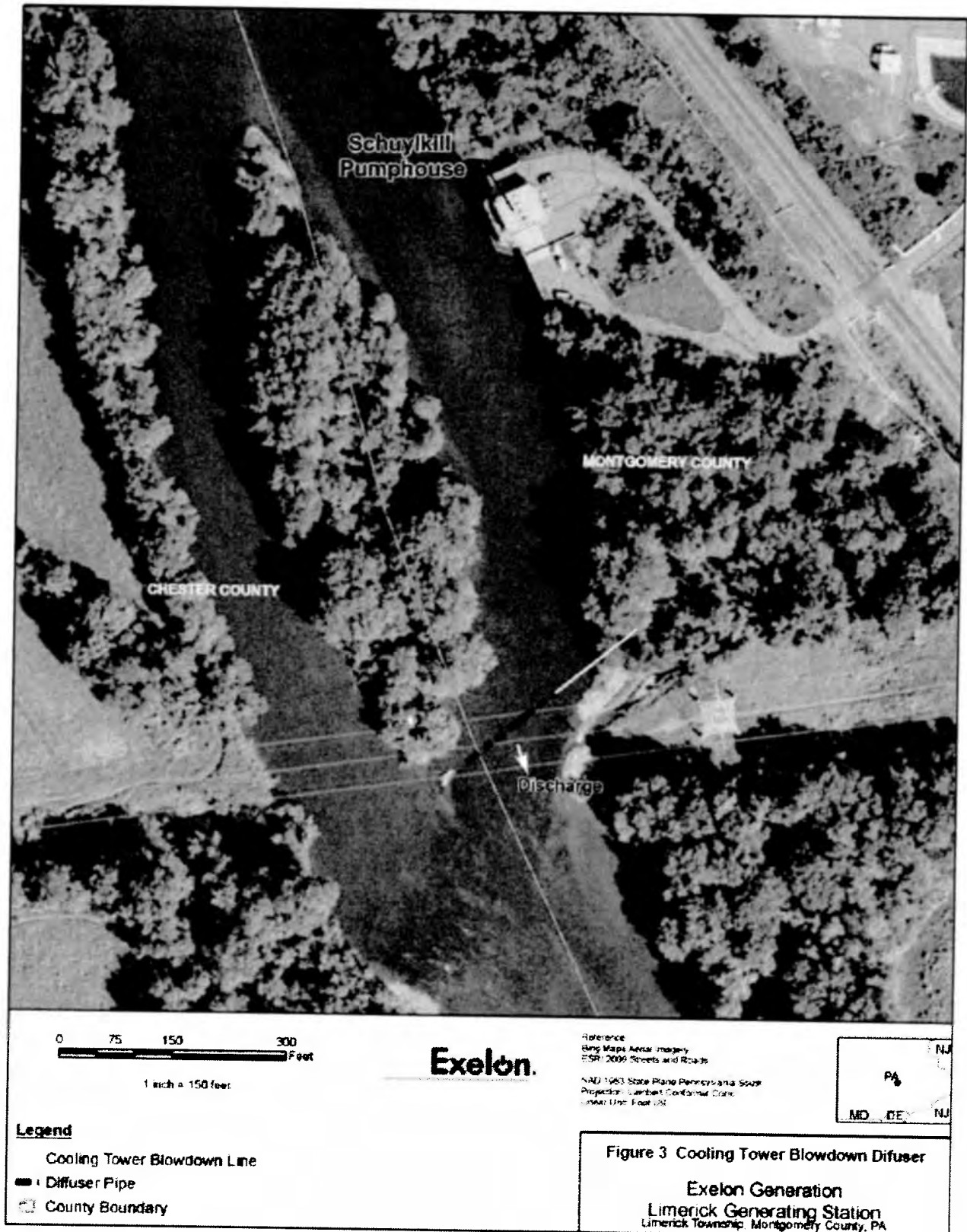
**Legend**

- Exelon Generation Property Boundary
- County Boundary
- Municipal Boundary
- 2500 Ft Radius Exclusion Area
- Conrail Line

**Figure 1 LGS Plant Site Property Boundaries**  
 Exelon Generation  
 Limerick Generating Station

Limerick Township, Montgomery County, PA









# pennsylvania

DEPARTMENT OF ENVIRONMENTAL PROTECTION

SOUTHEAST REGIONAL OFFICE

MPA 2.16.11

February 4, 2011

Mr. Michael P. Gallagher, P.E.  
Vice President  
License Renewal Projects  
Exelon Nuclear  
200 Exelon Way  
KSA/2-E  
Kennett Square, PA 19348

Dear Mr. Gallagher:

I received your January 19, 2011, request for information on thermophilic organisms as part of your information gathering for the renewal application for the operating license for Limerick Generating Station (LGS). Unfortunately, the Department of Environmental Protection does not have any information responsive to your request. We do not have any data associated with *N. fowleri* in the Schuylkill River nor have we conducted any investigations on the impact or potential impact of the LGS discharge in thermophilic organisms in the river. As a result, we cannot make any conclusions regarding the affect on public health from *N. fowleri* or any other thermophilic organisms in the Schuylkill River.

Thank you for your interest in this matter. I hope this information is helpful. If you have any questions, please contact me at the phone number located in the footer below or by e-mail at [jfeola@state.pa.us](mailto:jfeola@state.pa.us).

Sincerely,

Joseph A. Feola  
Southeast Regional Director

Re 30 (joh11rdo)035