

Exelon Nuclear  
Limerick Generating Station  
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EPP 5.4.1

April 9, 2001

Docket Nos. 50-352  
50-353

License Nos. NPF-39  
NPF-85

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

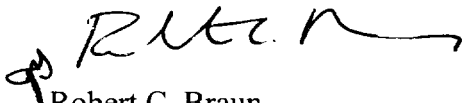
Subject: Limerick Generating Station, Units 1 and 2  
2000 Annual Environmental Operating Report  
(Non-Radiological)

Gentlemen:

In accordance with Section 5.4.1, of Appendix B of the Facility Operating Licenses, Environmental Protection Plan (EPP), this letter submits the Limerick Generating Station, Units 1 and 2, 2000 Annual Environmental Operating Report (Non-Radiological). This report describes the implementation of the EPP for 2000.

If you have any questions, please do not hesitate to contact us.

Sincerely,

  
Robert C. Braun  
Plant Manager

Attachment  
RCB/rbg

cc: H. J. Miller, Administrator, Region I, USNRC (w/attachment)  
A. L. Burritt, USNRC Senior Resident Inspector, LGS (w/attachment)

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**LIMERICK GENERATING STATION  
UNITS 1 AND 2**

**2000  
ANNUAL ENVIRONMENTAL OPERATING REPORT  
(NON-RADIOLOGICAL)**

**JANUARY 1, 2000 - DECEMBER 31, 2000**

**FACILITY OPERATING LICENSE NOS. NPF-39, NPF-85  
DOCKET NOS. 50-352, 50-353**

**EXELON GENERATION COMPANY, LLC**

## **1. Introduction**

This report describes the implementation of the Environmental Protection Plan (EPP), LGS Appendix B Technical Specifications, from January 1, 2000 through December 31, 2000.

Provided herein are summaries and results of the environmental protection activities required by Subsection 4.2 of the EPP.

### **2.0 Environmental Protection Activities**

#### **2.1 Aquatic Monitoring**

The Environmental Protection Plan states that the NRC will rely on decisions made by the Commonwealth of Pennsylvania, under the authority of the Clean Water Act, for any requirements for aquatic monitoring. Industrial waste NPDES Permit PA 0051926 provides the mechanism for protecting water quality and, indirectly, aquatic biota. In accordance with the requirements of Section 3 of the Permit, monitoring results were summarized for each month and reported on Discharge Monitoring Reports (DMR) which were submitted to the PA DEP and US EPA.

A summary of the results as reported in the monthly DMR's is presented in Table 1 for discharge points at the Limerick Station and the Bradshaw Reservoir discharge to the East Branch Perkiomen Creek.

In 2000, a monitoring program to determine if zebra mussel was present in any of the source waters for Limerick Station was performed. Sampling stations were located upstream and downstream of the Limerick Station site on the Schuylkill River, as well as on the Delaware River near the Point Pleasant Pumping Station and at the Perkiomen Creek (Graterford, PA) Pumping Station. Neither the monitoring devices employed nor inspection of the general area near the devices revealed any sign of mussel infestation. In addition, general observations were made on several occasions to determine the presence of zebra mussel at several points along the Point Pleasant water diversion route. Sites visited included the Delaware River at Point Pleasant, the diversion outfall structure on the East Branch, several locales along the

East Branch Perkiomen Creek water diversion route, the intake location on the Perkiomen Creek at Graterford, and the Schuylkill River upstream and downstream of Limerick Generating Station. No zebra mussels were found, although Asiatic clams were commonly observed at all locations.

Fish tissue samples were collected bi-annually as part of the Radiological Environmental Monitoring Program on the Schuylkill River, both upstream and downstream of Limerick Generating Station. These collection efforts allow for a descriptive assessment of the fish community in the vicinity of Limerick. Most common were spottail shiner, spotfin shiner, common shiner, carp, goldfish, white sucker, redbreast sunfish, pumpkinseed, smallmouth and largemouth bass, brown and yellow bullhead, and channel and white catfish. Smallmouth bass was one of the most common species of game fish. The species composition of the fish community upstream and downstream of Limerick appeared to be similar.

## **2.2 Terrestrial Monitoring**

No terrestrial monitoring is required.

## **2.3 Maintenance of Transmission Line Corridors**

Transmission line maintenance records concerning herbicide use are maintained by the PECO Energy Company Consumer Energy Services Group - Power Delivery Division (Electric Transmission and Distribution Department). As required by the LGS Appendix B Technical Specifications, Section 4.2.3, these records can be made available to the NRC upon request.

## **2.4 Noise Monitoring**

All noise surveys required by the LGS Final Environmental Statement, Section 5.14.4, Atomic Safety Licensing Board (ASLB) ruling LBP-83-11, dated March 8, 1983, and LGS Appendix B Technical Specifications, Sections 2.3 and 4.2.4. were completed in 1990 for

Limerick Generating Station Unit 2 operation and Bradshaw Reservoir. These studies were reported on in the 1990 Annual Environmental Operating Report (Non-radiological). No further noise monitoring is required per LGS Appendix B Technical Specifications, Section 4.2.4.1.

## **2.5 Environmental Protection Plan**

There were no Environmental Protection Plan (EPP) non-compliances identified by the Nuclear Quality Assurance Department or by Station Self-Assessment in 2000.

## **2.6 Changes in Station Design or Operation, Tests or Experiments**

There were no changes in the Limerick Generating Station design or operation and performance of tests or experiments that required an Environmental Evaluation in accordance with the requirements of Section 3.1 of the Environmental Protection Plan.

## **2.7 Non-routine Reports Submitted**

Three non-routine reports containing three incidences of non-compliance were submitted in accordance with EPP Section 5.4.2. Copies of all letters were supplied to the NRC.

1. During the month of August 2000, the Bradshaw Reservoir NPDES limit for fecal coliform concentration was not met. The permit requires five consecutive grab samples each collected on different days, and the geometric mean of the five samples must be less than or equal to 200 colonies per 100 ml. An Ozone Disinfection System is utilized for treatment at the Bradshaw Reservoir Water Processing Facility.

On August 29, 2000, the geometric mean of the fecal coliform concentration was calculated to be 276 colonies per 100 ml, thereby exceeding the NPDES permit limit.

The August 2000 non-compliance occurred in the following manner. Two of the samples taken were within the limits imposed by the NPDES permit. The other three, occurring on August 2, August 21 and August 29, were greater than the 200 colonies per 100 ml limit. During this period the ozonation system was operating at maximum capacity and the ozonation system was checked to ensure that the system was optimized. The non-compliance was attributed to high river flows due to heavy rainfall during the month. No additional sampling was performed. The first three fecal coliform samplings in September showed an average of 16 colonies per 100 ml, which are within the limits of the NPDES permit. No further actions are being taken at this time. The non-compliance is attributed to the extreme weather conditions in eastern Pennsylvania.

2. During the month of August and September, 2000, the Limerick NPDES limit for oil and grease was not met for the daily maximum at outfall 201 (Holding Pond). The permit allows a discharge with a maximum daily oil and grease level of 20 mg/l.

On August 16 and September 13, 2000, the daily maximum for oil and grease at outfall 201 was 21.1 mg/l and 21.4 mg/l, respectively. Backup samples for these two dates were analyzed for oil and grease by EPA 413.1 and 413.2 methodologies and confirmed the non-compliance. The results of these analyses were as follows:

Date	EPA 413.1	EPA 413.2
August 16, 2000	31.8 mg/l	27 mg/l
September 13, 2000	30.2 mg/l	28 mg/l

The monthly averages for the month of August and September were in compliance.

An investigation of possible sources of oil and grease revealed that the alpha oily waste interceptor (OAT703) was found to be in high flow alarm. That interceptor is one of five interceptors and two oily waste separators designed to collect oil waste prior to

industrial wastewater reaching outfall 201 (holding pond). A high flow alarm results in a bypass configuration of the interceptor. Such a configuration would normally occur during major rainfall events. As a result of the alarm, maintenance on that interceptor was scheduled for September 20, 2000. The cause of the high flow alarm was debris that clogged the flow orifice. The debris was removed and the interceptor was returned to service. The alpha oily waste interceptor was repaired and put back in service. The alpha oily waste separator was cleaned during the week of October 23, 2000.

3. On December 21, 2000 a PVC pipe between the Unit 2 Cooling Tower and pumps in the Unit 2 Acid House separated allowing Sodium Hypochlorite solution to spill into the pipe trench during the automatic injection cycles. Personnel visually confirmed that the spill was contained in the trench and that the Sodium Hypochlorite solution was isolated and no longer spilling into the trench. It was reported that the tank level had decreased 950 gallons since the last time a confirmed injection was made. It was confirmed that a reportable spill had occurred because the assumed quantity was greater than the reportable quantity, which is 82 gallons. It was confirmed that there was not a release to the environment and there was not an immediate threat to navigable waterways. Notification was then made to the PADEP and NRC resident inspector.

A cleanup plan was developed and completed within 24 hours. The system was isolated until the pipe in the pipe trench was repaired.

The apparent cause of the leak was the threaded fitting that worked loose during work on other fittings that were in close proximity. Subsequent system operation resulted in the fitting coming undone.

**Table 1**  
**SUMMARY OF 2000 LGS NPDES MONITORING RESULTS**

	Location: Bradshaw	LGS Site	NO DISCH LGS Site	LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	NO DISCH LGS Site
Permit Number:	0052221	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926
	001	001	101	201	301	003	005	020	021	023	All Others
<b>Ave. Monthly Flow, MGD</b>											
Maximum	39.64	9.44	0	0.4191	0.0117	0.0000	0.0000	3.6	0.0000	0.0000	0
Mean	27.66	8.08	0	0.2567	0.0066	0.0000	0.0000	3.6	0.0000	0.0000	0
Std Dev	13.23	0.85	0	0.0544	0.0026	0.0000	0.0000	0	0.0000	0.0000	0
<b>Max Daily Flow, MGD</b>											
Maximum	41.00	11.60	0	0.7952	0.0916	0.0000	0.0000	3.6	0.0000	0.0000	0
Mean	32.62	10.11	0	0.5672	0.0482	0.0000	0.0000	3.6	0.0000	0.0000	0
Std Dev	11.66	0.95	0	0.1213	0.0205	0.0000	0.0000	0	0.0000	0.0000	0
<b>TSS, mg/l</b>											
Maximum	NR	NR	NR	16	NR	NR	NR	12.57	NR	NR	NR
Mean	NR	NR	NR	8	NR	NR	NR	12.57	NR	NR	NR
Std Dev	NR	NR	NR	4	NR	NR	NR	0	NR	NR	NR
<b>Discharge Temperature, Deg F</b>											
Maximum	NR	86.0	NR	NR	NR	NR	NR	59.3	NR	NR	NR
Mean	NR	74.2	NR	NR	NR	NR	NR	59.3	NR	NR	NR
Std Dev	NR	10.1	NR	NR	NR	NR	NR	0	NR	NR	NR
<b>Total residual Oxidants, mg/l</b>											
Maximum	NR	0.18	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	0.11	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	0.05	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Zinc, mg/l</b>											
Maximum	0.01	0.30	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	0.01	0.27	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.00	0.05	NR	NR	NR	NR	NR	NR	NR	NR	NR



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	Location: Bradshaw	LGS Site	NO DISCH LGS Site	LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	NO DISCH LGS Site
Permit Number:	0052221	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926
	001	001	101	201	301	003	005	020	021	023	All Others
<b>Copper, mg/l</b>											
Maximum	NR	0.060	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	0.049	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	0.007	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Inlet Temperature</b>											
Maximum	NR	77	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	62	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	12.45	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Hydrothol 191, mg/l</b>											
Maximum	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Betz - 3625, mg/l</b>											
Maximum	NR	0.09	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	0.05	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	0.03	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Clamtrol, CT-1</b>											
Maximum	NR	0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	0	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>pH, Min</b>											
Minimum	7.30	8.21	NR	NR	NR	NR	NR	8.57	NR	NR	NR
Mean	7.08	8.14	NR	NR	NR	NR	NR	8.57	NR	NR	NR
Std Dev	0.20	0.08	NR	NR	NR	NR	NR	0	NR	NR	NR

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**SUMMARY OF 2000 LGS NPDES MONITORING RESULTS**

	Location: Bradshaw	LGS Site	NO DISCH LGS Site	LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	NO DISCH LGS Site
Permit Number:	0052221	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926
	001	001	101	201	301	003	005	020	021	023	All Others
<b>pH, Max</b>											
Maximum	7.90	8.40	NR	NR	NR	NR	NR	8.57	NR	NR	NR
Mean	7.64	8.30	NR	NR	NR	NR	NR	8.57	NR	NR	NR
Std Dev	0.22	0.05	NR	NR	NR	NR	NR	0	NR	NR	NR
<b>Phosphorous, mg/l</b>											
Maximum	NR	1.23	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	0.96	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	0.21	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Dissolved Oxygen, mg/l</b>											
Maximum	13.40	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	12.30	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.67	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Aluminum, mg/l</b>											
Maximum	0.0300	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	0.0300	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.0000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Cadmium, mg/l</b>											
Maximum	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Iron, Total mg/l</b>											
Maximum	0.0700	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	0.0700	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.0000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

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**SUMMARY OF 2000 LGS NPDES MONITORING RESULTS**

			NO DISCH			NO DISCH	NO DISCH		NO DISCH	NO DISCH	NO DISCH
Location:	Bradshaw	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site	LGS Site
Permit Number:	0052221	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926
	001	001	101	201	301	003	005	020	021	023	All Others
<b>Iron, Dissolved mg/l</b>											
Maximum	0.04	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	0.04	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Nitrogen, Kjeldahl, mg/l</b>											
Maximum	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Mercury, mg/l</b>											
Maximum	<0.0002	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.0002	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.00000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Nickel, mg/l</b>											
Maximum	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.00000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Fecal Coliform, #/100 ml</b>											
Maximum	276	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	71	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	103	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Phenolics, mg/l</b>											
Maximum	0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0.00	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

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	Location: Bradshaw	LGS Site	NO DISCH LGS Site	LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	LGS Site	NO DISCH LGS Site	NO DISCH LGS Site	NO DISCH LGS Site
Permit Number:	0052221	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926	0051926
	001	001	101	201	301	003	005	020	021	023	All Others
<b>Oil &amp; Grease, mg/l</b>											
Maximum	NR	NR	NR	9.7	NR	NR	NR	NR	NR	NR	NR
Mean	NR	NR	NR	3.6	NR	NR	NR	NR	NR	NR	NR
Std Dev	NR	NR	NR	2.9	NR	NR	NR	NR	NR	NR	NR
<b>Chromium-Hex, mg/l</b>											
Maximum	<0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.01	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Copper, mg/l</b>											
Maximum	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Lead, mg/l</b>											
Maximum	<0.05	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.05	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Silver, mg/l</b>											
Maximum	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
<b>Cyanide, Free mg/l</b>											
Maximum	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mean	<0.005	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Std Dev	0	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR