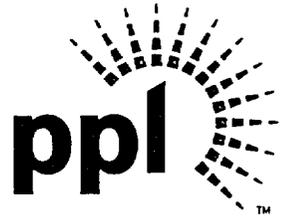


Bryce L. Shriver
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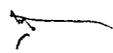


APR 28 2003

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

**SUSQUEHANNA STEAM ELECTRIC STATION
ANNUAL ENVIRONMENTAL OPERATING
REPORT (NON-RADIOLOGICAL)
PLA-5617**

Docket Nos. 50-387
and 50-388

The Susquehanna SES Annual Environmental Operating Report (Non-radiological) is hereby submitted for the calendar year 2002 in accordance with the Environmental Protection Plan. 

If you have any questions, please contact Mr. John M. Oddo at (610) 774-7596.

Sincerely,

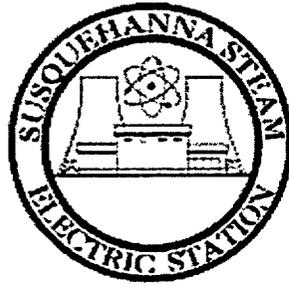


B. L. Shriver

Attachments

copy: NRC Region I
Mr. R. V. Guzman, NRC Project Manager
Mr. S. Hansell, NRC Sr. Resident Inspector
Mr. R. Janati, DEP/BRP

IE25

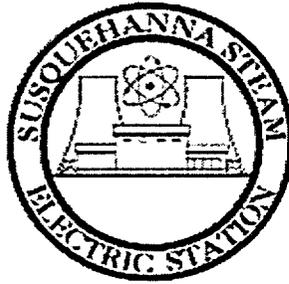


**Susquehanna Steam Electric Station
Units 1 & 2**

**2002
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NONRADIOLOGICAL)**



**PPL Susquehanna, LLC
Berwick, PA
April 2003**



**Susquehanna Steam Electric Station
Units 1 & 2**

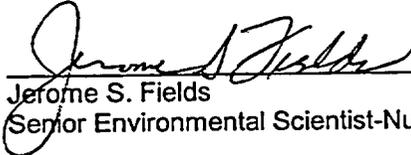
**2002
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NONRADIOLOGICAL)**

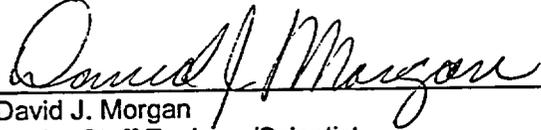
**Facility Operating License Nos. NPF-14 & NPF-22
Docket Nos. 50-387 & 50-388**

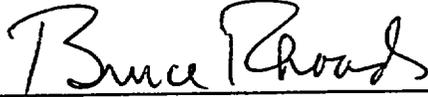
**prepared by
Nuclear Chemistry
Nuclear Operations
PPL Susquehanna, LLC
Berwick, PA
April 2003**

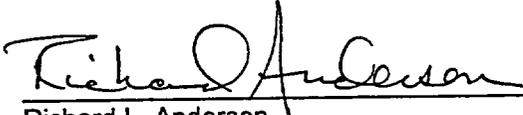
SUSQUEHANNA STEAM ELECTRIC STATION
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NONRADIOLOGICAL)

2002

Prepared by:  Date: 3/25/03
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Approved by:  Date: 04/02/03
Richard L. Anderson
VP - Nuclear Operations

FOREWORD

The Susquehanna Steam Electric Station (Susquehanna SES) consists of two boiling water reactors with Nuclear Regulatory Commission (NRC) design electrical ratings of Unit 1 is 1,115 megawatts electrical (MWE) net and Unit 2 is 1,117 MWE net. The site consists of approximately 1,700 acres located in Salem Township, Luzerne County, Pennsylvania, approximately five miles northeast of Berwick, Pennsylvania. An additional 1,600 acres of PPL recreational land are located on the east side of the Susquehanna River in Conyngham and Hollenback Townships. Under terms of an agreement finalized in January 1978, 90% of the Susquehanna SES is owned by PPL Susquehanna, LLC (Licensee) and 10% by the Allegheny Electric Cooperative, Inc.

This report discusses environmental commitments and impacts from January 1, 2002 through December 31, 2002.

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Table 2.1-1
2002 Shad Impingement Monitoring Program

Figure 5.1-1
Auditing Organization Chart (2002)

1.0 OBJECTIVE

The Licensee has developed procedures and guidelines to ensure that operation of Susquehanna SES does not adversely affect the environment in the vicinity of the station. Also, these procedures allocate responsibilities and interfaces necessary to monitor environmental impacts. They include coordination of U.S. Nuclear Regulatory Commission (NRC) requirements with other federal, state, and local requirements for environmental protection.

The objective of this 2002 Annual Environmental Operating Report (Nonradiological) is to provide a summary of both environmental programs and procedures as required in the Final Environmental Statement (FES) related to the operation of the Susquehanna SES, Unit 1 and 2, NUREG-0564, June 1981, and Appendix B - Environmental Protection Plan (EPP) to Operating Licenses, No. NPF-14 and No. NPF-22. The 2002 report is the 21st Annual Environmental Operating Report (Nonradiological) submitted to meet EPP requirements.

The Licensee submitted an Environmental Report-Operating License Stage for Susquehanna SES to the NRC in May 1978. This report reviewed the results of the preoperational environmental programs and described the preoperational and proposed operational environmental monitoring programs. The NRC and other agencies reviewed this report and made recommendations for operational environmental monitoring programs which were listed in the FES.

2.0 ENVIRONMENTAL ISSUES

2.1 Aquatic Issues

The aquatic monitoring program for operation of the Susquehanna SES is divided into two parts. Part 1 includes effluent monitoring required by a National Pollutant Discharge Elimination System (NPDES) permit issued by the Pennsylvania Department of Environmental Protection (PaDEP). Monthly discharge monitoring reports are submitted to the PaDEP as part of the permitting requirements. The station's operational NPDES permit No. PA-0047325 was reissued on July 7, 2000, and expires on July 6, 2005. Part 2 of the aquatic monitoring program deals with programs listed in the FES or recommended by the PaDEP or U.S. Fish and Wildlife Service.

The PaDEP is responsible for regulating the water quality permit for the Susquehanna SES. The NPDES permit deals with discharge parameters for the Susquehanna SES Sewage Treatment Plant, Cooling Tower blowdown, and miscellaneous low volume waste discharges. The Cooling Tower blowdown also includes in-plant process streams which discharge to the Susquehanna River. Various low volume waste sumps discharge to the storm sewers which flow into Lake Took-a-while, and eventually into the Susquehanna River. NPDES permit limits were included in the 2000 Annual Report.

American Shad

The Susquehanna Anadromous Fish Restoration Committee continued to administer programs to restore American shad (*Alosa sapadissima*) to the Susquehanna River in 2002. The restoration program is a continuing commitment to return shad and other migratory fishes to historic spawning and nursery waters above the four major dams in the Susquehanna River.

This spring was characterized by relatively high river flows, which, in prior years, have been associated with relatively low numbers of American shad passed at Conowingo Dam. From late April to early June 2002, 108,001 shad were captured in the East lift (Ref.2.1-1). This was 44% fewer than last years' record catch during a similar time period, at low river flows. Lifts at Holtwood, the next dam upriver, passed 17,522 of these shad, which was substantially less than in 2001, and the poorest year on record. At the third dam upriver, Safe Harbor, 11,705 shad passed or two-thirds of the Holtwood shad. Only 1,525 of the Safe Harbor shad continued through the fourth fishway at York Haven.

The Pennsylvania Fish and Boat Commission (PFBC) continued to operate the shad culture facility along the Juniata River at the Van Dyke Research Station, at Thompsettown, Pennsylvania. Throughout May, 35.63 million (M) shad eggs were delivered to the hatchery from the Delaware River (2.04 M), Hudson River (18.51M), Conowingo Dam (7.08 M), and US Fish and Wildlife Service – Lamar (8.00 M). These eggs yielded 2.676 M fry, 97% of which were stocked in the Susquehanna River. Three of these stockings were upriver from the Susquehanna SES. One stocking of 21,000 fry occurred about 50 miles upriver at Tunkhannock, Pennsylvania and two stockings in New York of a total of 359,100 fry over 100 miles upriver, in the Susquehanna and Chemung Rivers.

The Susquehanna SES intake screens were monitored daily for impinged juvenile American shad from 20 August through 3 October 2002. Although no shad were taken, 47 other fish of 9 species were captured (Table 2.1-1). Additional juvenile shad collections downriver from the Susquehanna SES revealed that relative survival of shad from stocking site to recovery location was best for the two New York sites. All juvenile shad from both of these stocking sites had passed by the Susquehanna SES intake.

Biofouling Mollusk Monitoring

The biofouling mollusk monitoring program was continued at the Susquehanna SES in 2002. The monitoring program currently involves a biweekly schedule of artificial substrate sampling in the river near the Susquehanna SES from May through November. Artificial substrates are also maintained in side-stream samplers located in the Intake Structure and on the plant site. In addition, periodic inspections of natural substrates were performed in the river near Susquehanna SES and in the Emergency Service Water Spray Pond. Finally, natural river substrates are examined at locations 40 miles above and below the power plant during the fall.

In past years, zebra mussels (*Dreissena polymorpha*) were found in samples near Johnson City, New York, about 150 miles upriver. To date, no zebra mussels have been observed in the vicinity of Susquehanna SES.

The same, however, cannot be said for Asiatic clams (*Corbicula fluminea*). Previous to 2001, Asiatic clams had been present 40 miles downriver at Northumberland, Pennsylvania. In the fall of 2001, live clams were observed for the first time in the North Branch, near Bloomsburg, approximately 18 miles downriver from Susquehanna SES. Additionally, a live clam was collected from a heat-exchanger within Susquehanna SES

in December 2001. Asiatic clams were not found any closer to the Susquehanna SES in 2002 or in station equipment.

2.2 Terrestrial Issues

2.2.1 Studies Previously Completed

Terrestrial environmental studies completed prior to 1989 included Cooling Tower bird impaction and sound level surveys.

2.2.2 Sound Level Survey

An increase in station power generation of 5% was completed during spring 1995. A power uprate sound level survey was conducted in June 1995.

2.2.3 Maintenance of Transmission Line Corridors

Transmission line corridor vegetation maintenance and inspection records are maintained by the Asset Management Group of PPL Electric Utilities and are available upon request. There were no adverse environmental impacts to transmission corridors reported in 2002. Records will be maintained for five years.

2.3 Cultural Resources Issues

Environmental Protection Plan actions required to satisfy Title 36, Code of Federal Regulations Part 800, relating to archeological sites, were completed in 1987. The Advisory Council on Historic Preservation (ACHP), in accordance with 36 CFR 800.6 (a)(1), approved the NRC's determination of "no adverse effect" for archeological sites SES-3, SES-6, SES-8, and SES-11 located on the Licensee's property (NRC letter dated October 28, 1987; to ACHP).

As part of the determination of effect process, the Licensee committed to and is taking appropriate measures to mitigate impacts from plant maintenance and operation to sites SES-3, SES-6, SES-8 and SES-11. There was no impact to these sites from plant maintenance and operation in 2002.

REFERENCES

- 2.1-1 Restoration of American Shad to the Susquehanna River, Annual Progress Report-2002, Susquehanna River Anadromous Fish Restoration Committee, February 2003.

3.0 CONSISTENCY REQUIREMENTS

3.1 Plant Design and Operation

In accordance with the Environmental Protection Plan (EPP), the Licensee shall prepare and record an environmental evaluation of proposed changes in plant design, operation, or performance of any test or experiment which may significantly affect the environment. Before initiating such activities, the Licensee shall provide a written evaluation and obtain prior approval from the Director, Office of Nuclear Reactor Regulation. Criteria for the need to perform an environmental evaluation include: (1) a significant increase in any adverse environmental impact previously evaluated by the NRC or Atomic Safety and Licensing Board, (2) a significant change in effluent or power level, or (3) a matter not previously evaluated which may have a significant adverse environmental impact.

The EPP requires that if an activity meets any of the criteria to perform an environmental evaluation, the NRC will be notified. If the change, test, or experiment does not meet any of these criteria, the Licensee will document the evaluation and allow the activity to occur.

During operation of the Susquehanna SES in 2002, there were two proposed activities that the Licensee reviewed as part of the unreviewed environmental question program. Neither of these activities was determined to be an unreviewed environmental question or required NRC notification. These activities were:

1. Removal of trees from an area of less than four acres outside the exclusion area was evaluated. The purpose of this activity was to enable Susquehanna SES security to comply with NRC requirements. Licensee, PPL Forestry Services provided recommendations to prevent runoff and ground water contamination, as well as a method to avoid cutting trees in wetlands. These recommendations were followed.
2. Notification to inject zinc oxide into the reactor coolant system was provided to the PaDEP in accordance with requirements in their "Permitting Guidance on Conditioned Water Discharges and Use of Chemical Additives". Even with zinc injection the total zinc NPDES limit for Cooling Tower blowdown (Outfall 071) should not be exceeded. In accordance with this permitting guidance the Licensee was able to inject zinc after the PaDEP 60-day review period was completed.

3.2 Reporting Related to NPDES Permits and State Certifications

There were no NPDES permit noncompliant sampling events in 2002. Pennsylvania is an NPDES Permitting Agreement State with the U.S. Environmental Protection Agency, therefore, state certification pursuant to Section 401 of the Clean Water Act is not required.

3.3 Changes Required for Compliance with Other Environmental Regulations

Three air quality control permits were renewed and also a joint water obstruction and encroachment permit was obtained from the PaDEP and Army Corps of Engineers (COE). They were:

<u>PERMIT</u>	<u>NO.</u>
Air Blasting Operation	40-399-024
"E" Emergency Diesel Generator	40-306-004
"A-D" Emergency Diesel Generators	40-306-005
Water Obstruction and Encroachment Permit	E40-609/APS 457878

4.0 ENVIRONMENTAL CONDITIONS

4.1 Unusual or Important Environmental Events

During 2002, 10 operating occurrences were reviewed as part of the significant environmental event evaluation program. There were no significant or adverse environmental effects caused by these occurrences. There were no EPP noncompliances.

The 10 operating occurrences are as follows:

1. Control Structure Chiller 'A' received an inadvertent start signal and ran without oil for approximately eight minutes before tripping. It was determined that no chlorofluorocarbons were released to the atmosphere as a result of this event. There were no environmental reporting requirements.
2. An oil sheen has been observed in a stormwater outlet adjacent to the North Gatehouse parking lot. This oil sheen has been observed to occur after storm events. The source of the sheen was attributed to oil from the oil mist eliminator vents located on the Turbine Building roof. Upon inspection, an oil residue was observed near the Unit 2 oil mist eliminator vent. Temporary measures were taken to absorb the oil prior to it entering the waterways of the Commonwealth of Pennsylvania including placement of oil booms at the outlet of the north stormwater drainage. Preventative and corrective maintenance was conducted on the mist eliminator system. An engineering review was initiated to prepare recommendations for permanent system improvements to remove aerosol droplets from vent discharge. Interim corrections will remain in place until a permanent fix is completed. The NRC site inspector is aware of this concern and will be contacted once this issue is resolved.
3. A fire protection pipe sprinkler head was broken off when a container of tools was being lowered from level 719 to 670 in the Unit 1 Reactor Building train bay. Fire protection water sprayed into the train bay and some of the water seeped outside. Radiological analysis of the water indicated that radioactivity was less than detectable. The NPDES permit application includes occasional discharges of fire protection water. This event was not reportable.
4. Concerns about potential noise generated from start-up testing of two auxiliary boilers were addressed by conducting a sound-level survey. Each boiler was run for approximately one-hour to check

operability. Sound-levels from steam venting into the atmosphere increased onsite during the tests in the vicinity of the boilers, however, this increase was negligible at the closest offsite location (approximately 1,500 feet from the boilers). In addition, we are not aware of any complaints from the public.

5. About 4,800 gallons of number 5 fuel oil spilled into the Susquehanna River near Falls, PA about 40 miles upriver. A tanker truck carrying waste oil for recycling failed to negotiate a curve in the road, therefore, causing the spill. As a precaution oil and grease samples were collected upstream and in the station's River Intake Structure to make certain that fuel oil was not withdrawn from the river. Oil absorbent booms were placed in front of the intake and make-up to the Emergency Spray Pond was isolated. Results of all oil and grease samples were determined to be less than sample analysis reporting limits.
6. Approximately 5,000 gallons of diesel fuel spilled into the Susquehanna River about five-miles north of the station just north of Shickshinny, PA from a train derailment. Oil absorbing booms were placed in front of the River Intake Structure and the make-up to the Emergency Spray Pond was isolated similar to the previous spill. Samples of oil and grease collected in front of the intake were below the reporting limit of 5 mg/l in US EPA Method 1664. There were no adverse impacts to station operation.
7. Approximately 15-20 gallons of diesel fuel leaked from a tank standing on a filter skid parked in the scaffold yard at the station. The diesel fuel discharged onto stones and soil in the vicinity of the tank. The area impacted was approximately 120 square feet. The spill was determined not to be reportable and the area was restored by removing contaminated stones and soil for offsite disposal.
8. A fire and over pressurization resulting from a failure in the T-20 start-up transformer released an estimated 300 gallons of mineral oil outside the emergency spill containment area. The area impacted (stones and soil) was less than 1,800 square feet. The oil-contaminated stones and soil were cleaned up expeditiously and disposed of offsite in an environmentally approved manner. It was determined that the spill was not reportable, however, the NRC was notified and the PaDEP was called due to the significance of this event adversely impacting Unit 2 start-up.

9. While pumping out the T-20 transformer sump, 20 to 30 gallons of mineral oil and water mixture were inadvertently discharged to the station storm drain system instead of an oil-water separator as required by procedure. This discharge was mitigated by oil pads located at the storm drain discharge and by an immediate spill response which prevented oil from entering the waterways of the Commonwealth. The details of this incident were provided to the PaDEP for their information.
10. The Unit 1 Turbine Building Low Volume Waste sump (NPDES, Outfall 073) overflowed and overflowed prior to recirculation and sample analysis. The sample analysis result for oil and grease from an overflow grab sample was 16.9 mg/l. This analytical result for oil and grease when averaged with other quarterly Outfall 073 discharge oil and grease analyses was below both the NPDES average limit of 15 mg/l and the daily maximum limit of 20 mg/l. NPDES permit limits were not exceeded.

4.2 Environmental Monitoring

4.2.1 General Monitoring

With the exception of aquatic monitoring discussed in Section 2.1 of this report, all other monitoring of station operational impacts on aquatic and terrestrial biota listed in the FES and Appendix B of the operating license has been completed.

4.2.2 Maintenance of Transmission Line Corridors

In 2002, the Asset Management group of PPL Electric Utilities maintained transmission line vegetation maintenance and inspection records.

5.0 ENVIRONMENTAL PROTECTION PLAN REPORTING REQUIREMENTS

5.1 Review and Audit

The Licensee has established procedures for an independent group to review and audit compliance with the EPP. Audits of EPP compliance are conducted by Quality Assurance. The Manager-Quality Assurance is responsible for verifying compliance with the EPP. The Vice President-Nuclear Operations is responsible for environmental monitoring and for providing any related support concerning licensing. The Chemistry Supervisor-SSES manages day-to-day offsite monitoring. The Auditing Organization Chart (Fig. 5.1-1) lists the groups utilized in environmental reviewing and auditing of the Susquehanna SES environmental monitoring programs as well as those responsible for managing these programs. Also, the Manager-Environmental Management Department can provide auditing support, as needed.

There are periodic audits of the EPP program. The last audit of the EPP was conducted in 2001. There were no findings or recommendations reported.

5.2 Records Retention

Records and logs relative to environmental aspects of plant operation and audit activities are retained in the Nuclear Records System. This system provides for a convenient review and inspection of environmental documents which are available to the NRC upon request.

All records concerning modifications of plant structures, systems and components which are determined to potentially affect the continued protection of the environment, are retained for the life of the plant. All other records, data, and logs relating to the environmental programs and monitoring are retained for at least five years or, where applicable, in accordance with the requirements of other agencies.

5.3 Changes in Environmental Protection Plan

No changes were made to the EPP during 2002.

5.4 Plant Reporting Requirements

5.4.1 Routine Reports

This Annual Environmental Operating Report (Nonradiological) was prepared to meet routine reporting requirements of the EPP for 2002. It provides summaries and analyses of environmental protection activities required in Subsection 4.2 of the EPP for the reporting period.

5.4.2 Nonroutine Reports

There were no Unusual or Important Environmental Events as identified in the Environmental Protection Plan that required reporting in 2002.

6.0 ATTACHMENTS

Table 2.1-1

2002 Shad Impingement Monitoring Program

Figure 5.1-1

Auditing Organization Chart (2002)

TABLE 2.1-1

2002 SHAD IMPINGEMENT PROGRAM

Date		Time	Items Found on Trash Bar/Traveling Screen		
2002			Shad	Fish	Other
20 Aug	1000	0	1 carp, 1 muskellunge		
21 Aug	1030	0	0		
22 Aug	1045	0	1 carp		1 juvenile turtle
23 Aug	No monitoring performed				
24 Aug	1130	0	0		1 juvenile turtle
25 Aug	1400	0	3 channel catfish		
26 Aug	1330	0	0		
27 Aug	1030	0	2 channel catfish		
28 Aug	1330	0	3 channel catfish		
29 Aug	1330	0	3 channel catfish		
30 Aug	1015	0	2 channel catfish		1 crayfish
31 Aug	1230	0	1 channel catfish		1 crayfish
1 Sep	1100	0	1 channel catfish, 1 walleye		
2 Sep	1000	0	0		1 crayfish
3 Sep	1300	0	2 channel catfish		
4 Sep	1430	0	0		
5 Sep	1000	0	1 rock bass, 1 channel catfish		
6 Sep	1230	0	1 smallmouth bass, 1 channel catfish		
7 Sep	1230	0	0		
8 Sep	1130	0	1 channel catfish		
9 Sep	1330	0	1 channel catfish		
10 Sep	1330	0	0		
11 Sep	1300	0	1 channel catfish		
12 Sep	1130	0	1 spottail shiner		
13 Sep	0800	0	1 channel catfish		
14 Sep	1115	0	0		
15 Sep	1400	0	1 channel catfish		
16 Sep	1115	0	0		
17 Sep	1315	0	0		1 crayfish
18 Sep	1430	0	0		
19 Sep	1100	0	1 channel catfish		
20 Sep	1130	0	1 spotfin shiner		1 crayfish
21 Sep	1100	0	2 channel catfish		
22 Sep	1130	0	0		
23 Sep	1330	0	1 rock bass		
24 Sep	1330	0	1 channel catfish		
25 Sep	1315	0	1 rock bass		

TABLE 2.1-1 (continued)

Date		Time	Items Found on Trash Bar/Traveling Screen	
2002		Shad	Fish	Other
26 Sep	1330	0	1 channel catfish	
27 Sep	1230	0	0	
28 Sep	1200	0	0	
29 Sep	1230	0	0	
30 Sep	1430	0	1 rock bass	
1 Oct	1230	0	0	
2 Oct	No monitoring performed			
3 Oct	1400	0	4 channel catfish, 2 rock bass, 1 bluegill	
TOTAL				
		0	47 fish – 9 species 33 channel catfish, 6 rock bass, 2 carp, 1 smallmouth bass, 1 bluegill, 1 walleye, 1 muskellunge, 1 spotfin shiner, 1 spottail shiner	2 juvenile turtles, 5 crayfish

FIGURE 5.1-1 AUDITING ORGANIZATION CHART (2002)

