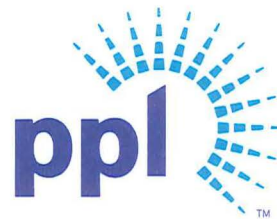


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APR 22 2015

U. S. Nuclear Regulatory Commission
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**SUSQUEHANNA STEAM ELECTRIC STATION
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NON-RADIOLOGICAL)
PLA-7312**

**Docket Nos. 50-387
and 50-388**

The Susquehanna Steam Electric Station (SSES) Annual Environmental Operating Report (Non-Radiological) is hereby submitted for the calendar year 2014 in accordance with the SSES Environmental Protection Plan (EPP).

Should you have any questions or require additional information, please contact Mr. Jeffery Grisewood, Manager – Nuclear Regulatory Affairs at (570) 542-1330.

This letter contains no new regulatory commitments.



Jon A. Franke

Attachment 1) 2014 Annual Environmental Operating Report (Non-Radiological)

Copy: NRC Region I

Ms. C. Copeyon, U. S. Dept. of Interior, Fish and Wildlife Service
Mr. J. E. Greives, NRC Sr. Resident Inspector
Mr. J. A. Whited, NRC Project Manager
Mr. L. J. Winker, PA DEP/BRP

Attachment 1 to PLA-7312

**2014 Annual Environmental Operating
Report (Non-Radiological)**

Susquehanna Steam Electric Station

Units 1 & 2

Environmental Operating Report (Nonradiological)

**2014
Annual
Report**



**PPL Susquehanna, LLC
Berwick, PA
April 2015**

2014
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NONRADIOLOGICAL)



PPL Susquehanna, LLC
Berwick, PA
April 2015

SUSQUEHANNA STEAM ELECTRIC STATION

ANNUAL ENVIRONMENTAL OPERATING REPORT (NONRADIOLOGICAL)

2014

Prepared by:



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Date:

4/10/15

Reviewed by:



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Date:

4/10/15

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Date:

4/10/15



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

**2014
ANNUAL ENVIRONMENTAL OPERATING REPORT
(NONRADIOLOGICAL)**

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

**Prepared by
Chemistry – Environmental Services
PPL Susquehanna, LLC
Berwick, PA
April 2015**

FOREWORD

PPL's Susquehanna Steam Electric Station (SSES) is a nuclear electrical generating facility with two boiling-water reactors and generators located just west of the Susquehanna River, approximately 5 miles northeast of Berwick, in Luzerne County, Pennsylvania. The station was constructed in the 1970's, with Unit 1 beginning commercial operation on June 8, 1983, and Unit 2 beginning commercial operation on February 12, 1985. Units 1 and 2 each generate a net 1,350 megawatts (MWe), for a total station output of 2,700 MWe.

In total PPL Susquehanna, LLC presently owns 2,347 acres of land on both sides of the Susquehanna River. Generally, this land is characterized by open deciduous woodlands interspersed with grasslands and orchards.

On the west side of the river, 1,605 (1670 minus 65 acre Gould Island) acres of land is jointly owned between PPL Susquehanna, LLC (90%) and Allegheny Electric Cooperative (10%). The land uses on the west side of the river include generation & associated maintenance facilities, laydown areas, parking lots, roads, a nature preserve (the Susquehanna Riverlands), and agricultural leases to local farmers.

To the north of the Station along the river, PPL Susquehanna, LLC owns 100% of the 65-acre Gould Island. On the east side of the river, and across the river from the Station, PPL Susquehanna, LLC is the 100% owner of 677 acres that are maintained as undeveloped land, natural recreational areas, wildlife areas, and leases to local farmers.

This report discusses environmental commitments and impacts from January 1, 2014 through December 31, 2014. In summary it documents that environmental commitments were met and that there was no significant adverse environmental impact from station operation.

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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 define 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 2014 Annual Environmental Operating Report (Nonradiological) is to provide a summary of both environmental programs and procedures. This report is required by the Final Environmental Statement (FES) for 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 2014 report is the 33rd 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 September 1, 2011, and currently expires on August 31, 2016. 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 station's stormwater system, which flows into Lake Took-A-While, and eventually into the Susquehanna River. A copy of the permit renewal application was provided to the NRC in 2010. (PLA-6606, March 26, 2010)

American Shad

Joshua Tryniewski, fisheries biologist with the Pennsylvania Fish and Boat Commission (PAFBC), notified Ecology III personnel on 2 June, 2014, that 308,800 American shad (*Alosa sapidissima*) fry were stocked in the Susquehanna River at Tunkhannock, PA. The stocking occurred at the Tunkhannock Park Boat Access, approximately 50 miles upriver from the Susquehanna SES. As a result, the wash-water from the trash bars and traveling screens was sampled at the intake building to determine if any shad migrating downriver were impinged.

Fish sampling containers (wooden-framed boxes sided with wire mesh) were located at the ends of each of the wash-water canals from the trash bars and traveling screens. The sampling containers were deployed from 7 August through 30 September. No American shad were collected during this period or during any previous sampling year. However, 122 fish of 10 other species were collected (Table 2.1-1). Most of these fish were juvenile channel catfish or smallmouth bass. Additionally, 173 Allegheny crayfish (*Orconectes obscurus*) were also collected, along with two yellow

lampmussels (*Lampsilis cariosa*) and one hellgrammite (*Corydalis cornutus*).

It is possible that the location of the River Intake building deters migrating juvenile shad from approaching the intake. PAFBC personnel reported that juvenile shad avoid slow currents when migrating downriver. The intake structure is located on the west river bank in relatively slow current; therefore, the position of the intake could be a determining factor in not having observed American shad in any samples to date.

Biofouling Mollusk Monitoring

The biofouling mollusk monitoring program continued at the Susquehanna SES in 2014. The focus of this monitoring is to survey the Susquehanna River and the ESSW Spray Pond for the presence of live Asian Clams and Zebra Mussels. This work is generally done by a combination of scuba diving, wading, and examination of removed structures so that substrates in the river and the pond can be inspected.

Asian clams are now abundant in the Susquehanna River near the Susquehanna SES, but no zebra mussels have yet been observed in the river in the immediate vicinity of the plant. There have been reports of a few zebra mussels observed in areas along the river, including an island a couple of miles below the plant, but none of these observations yet suggest an established adult population.

Unlike previous years, none of the ESSW pump house screens were removed this year for cleaning; therefore, these substrates were not inspected for zebra mussels. A scuba inspection for biofoulers present in the ESSW Spray Pond was done on 14 July 2014 by Ecology III divers; however, no living biofoulers were observed.

Since the scuba inspection did not detect the presence of biofoulers, the station did not conduct a biocide treatment of the Spray Pond in 2014.

2.2 Terrestrial Issues

2.2.1 Studies Previously Completed

Terrestrial environmental studies including Cooling Tower bird impaction were completed prior to 1989.

2.2.2 Sound Level Survey

Sound level surveys were conducted during pre-operation and operational periods and are completed. There were no noise complaints received during 2014.

2.2.3 Maintenance of Transmission Line Corridors

Transmission line corridor vegetation maintenance and inspection records are maintained by PPL-EU Vegetation Management and are available upon request. There were no adverse environmental impacts to transmission corridors reported in 2014. 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 (36LU15), SES-6 (36LU16), SES-8 (36LU49), and SES-11 (36LU51) 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 36LU15, 36LU16, 36LU49, 36LU51, and 36LU43. There was no impact to these sites from plant maintenance and operation in 2014. Furthermore, station activities did not impact any previously unknown cultural resources in 2014.

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 2014, there were proposed activities that the Licensee reviewed as part of the Unreviewed Environmental Question program. None of these activities were determined to involve an Unreviewed Environmental Question or require prior NRC notification. The activities reviewed were:

1. Construction of Flex Building
2. Buried Pipe Inspection program Excavations / Inspections
3. Tree Removals to Support Stormwater Maintenance
4. 2014 Paving Projects
5. River Intake Structure Gate
6. 500 kV Yard Perimeter Fence Replacement Project
7. Fire Protection System Modification
8. Flex Building Utility Tie-ins
9. West Bldg. Parking Lot Repairs
10. New Pavement at Base of Security Tower 4
11. Paving in South Gatehouse Egress Lane
12. Installation of Temporary Security Cameras
13. Excavation & Repair of Septic System Leaks

3.2 Reporting Related to NPDES Permits and State Certifications

On 12/17/14 the station discovered leaks from a portion of buried septic line located offsite on PPL property, running between the PPL Susquehanna Environmental Lab and the station's Sewage Treatment Plant. As required by the station's NPDES Permit, PaDEP was immediately notified. Additionally, a 4 hour ENS notification to the NRC was made, and the station provided written notifications to the PaDEP (PLE-25589, PLE-25607) and to the NRC (PLA-7277). These leaks were repaired. NOTE: This event did not release any sewage into a waterway; therefore, a Significant Environmental Event Evaluation was not required.

There were no other significant noncompliances or special reporting requirements associated with implementation of NPDES Permit No. PA0047325.

The Susquehanna SES has an NPDES permit; 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

PERMIT	NO.
Air; GP-11 General Plan Approval for one 1,093 bhp Diesel Generator to support Supplemental Decay Heat Removal	GP-11-40-004
Air; GP-11 General Plan Approval for six temporary diesel fired gen sets: (4) 316 bhp gen sets, (1) 165 bhp gen set, and (1) 36 bhp gen set. These gen sets were intended to provide temporary power for a contingency Sequester Area.	GP-11-40-006

Township and County Permits were issued during the year to support the construction of the station's new Flex Building.

4.0 ENVIRONMENTAL CONDITIONS

4.1 Unusual or Important Environmental Events

During 2014 there were two operating occurrences reviewed as part of the Significant Environmental Event evaluation program. Both Significant Environmental Event reviews were initiated to document evaluations prior to and following the removal of trees / branches located on SSES property that were determined to pose a safety risk to station personnel between April 1st and November 15th.

- In the first case, a qualified biologist determined that trees in question qualified as Indiana bat habitat; therefore, the station contacted the US Fish and Wildlife Service (USFWS) to obtain authorization prior to removing the trees.
- In the second case, a qualified biologist determined that the fallen branch in question did not qualify as Indiana bat habitat; therefore, USFWS authorization was not required to remove the branch in question.

In both cases a qualified biologist inspected the impacted areas after the tree and branch removals and determined that the removals were completed without negatively impacting an Indiana bat; therefore, there were no significant or adverse environmental effects related to station operation and there were no EPP noncompliances.

4.2 Environmental Monitoring

4.2.1 General Monitoring

With the exception of ongoing aquatic monitoring required for compliance with the NPDES permit, all monitoring of station operational impacts on aquatic and terrestrial biota listed in the FES and Appendix B of the operating license have been completed.

4.2.2 Maintenance of Transmission Line Corridors

In 2014, PPL EU Vegetation Management 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 Site VP – Susquehanna is responsible for environmental monitoring and for providing any related support concerning licensing. The Manager – Plant Chemistry / Environmental is responsible for day-to-day environmental monitoring.

The Auditing Organization Chart (Fig. 5.1-1) lists the groups utilized in reviewing and auditing of the Susquehanna SES environmental programs as well as those responsible for managing these programs. PPL's Senior Director of Environmental Management is available to provide auditing support as necessary.

An audit of compliance with the EPP program was conducted during 2014 as part of a regularly scheduled Chemistry Program Audit. There were no findings or noncompliances identified as a result of this effort. The program was determined to be effective and well implemented.

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 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. Transmission line corridor vegetation maintenance records are maintained by PPL Electrical Utilities per section 2.2.3 of this report.

5.3 Changes in Environmental Protection Plan

No changes were made to the EPP during 2014.

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 2014. 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

As identified previously under Section 3.2, the discovery of leaks from the station's buried septic line located offsite on PPL property required a non-routine immediate phone notification to PaDEP, a 4 hour ENS notification to the NRC, and formal written notifications to PaDEP (PLE-25589, PLE-25607) and to the NRC (PLA-7277).

Otherwise, there were no Unusual or Important Environmental Events as defined by the Environmental Protection Plan that required reporting in 2014.

6.0 ATTACHMENTS

Table 2.1-1

America Shad Impingement Monitoring (2014)

Figure 5.1-1

Auditing Organization Chart (2014)

TABLE 2.1-1

**SUSQUEHANNA STEAM ELECTRIC STATION
2014 AMERICAN SHAD IMPINGEMENT PROGRAM
7 August – 30 September 2014**

Date	Time	Items Found on Trash Bar/Traveling Screen				
2014		Shad	Fish	Crayfish	Other	Comments
7 Aug	1630	Baskets installed. Operational status uncertain.				
8 Aug	1620	Water flow restored.				
9 Aug	1700	0	0	1		
10 Aug	1245	0	0	0		Debris
11 Aug	1145	0	1 smallmouth bass	0		Debris
12 Aug	1115	0	1 channel catfish	0		Basket lost in traveling screen
13 Aug	Baskets not checked.					
14 Aug	1000	0	0	0		Debris
15 Aug	Baskets out of service for maintenance.					
16 Aug						
17 Aug	1400	Baskets replaced.				
18 Aug	0900	0	1 channel catfish 1 smallmouth bass 1 spotfin shiner 1 margined madtom	3		Debris
19 Aug	1730	0	2 channel catfish 2 smallmouth bass	1		Heavy debris
20 Aug	1700	0	1 smallmouth bass 1 spotfin shiner	1		Heavy debris
21 Aug	1630	0	1 channel catfish	4		Debris
22 Aug	1430	0	0	2		Heavy debris
23 Aug	1000	0	1 channel catfish	3		Heavy debris
24 Aug	1700	0	0	3		Heavy debris
25 Aug	1730	0	3 channel catfish 3 smallmouth bass	2		Heavy debris
26 Aug	1745	0	1 common carp 3 channel catfish 2 smallmouth bass	1	2 yellow lampmussels	Heavy debris
27 Aug	0900	0	2 smallmouth bass 1 bluegill	1	1 hellgrammite	Heavy debris
28 Aug	1930	0	1 smallmouth bass	2		Heavy debris
29 Aug	1000	0	1 bluegill	2		Heavy debris
30 Aug	1030	0	1 channel catfish 1 smallmouth bass	4		Heavy debris
31 Aug	0800	0	2 channel catfish 1 smallmouth bass	6		Heavy debris

TABLE 2.1.1 (cont.)

Date		Time				Items Found on Trash Bar/Traveling Screen				
2014		Shad	Fish	Crayfish	Other	Comments				
1 Sep	1100	0	2 channel catfish 1 smallmouth bass	10		Heavy debris				
2 Sep	0830	0	3 channel catfish	6		Heavy debris				
3 Sep	1030	0	1 channel catfish	5		Heavy debris				
4 Sep	1930	0	4 channel catfish 2 smallmouth bass 1 spottail shiner	9		Heavy debris				
5 Sep	1030	0	4 channel catfish 2 smallmouth bass 1 walleye	9		Heavy debris				
6 Sep	1030	0	5 channel catfish 1 margined madtom	8		Heavy debris				
7 Sep	1330	0	0	4		Heavy debris				
8 Sep	1030	0	1 channel catfish	6		Heavy debris				
9 Sep	1730	0	1 channel catfish	3		Heavy debris				
10 Sep	1830	0	2 channel catfish	3		Heavy debris				
11 Sep	1930	0	5 channel catfish 2 smallmouth bass 1 spotfin shiner	3		Heavy debris				
12 Sep	1045	0	3 channel catfish	5		Debris				
13 Sep	1045	0	4 channel catfish 1 smallmouth bass	7		Debris				
14 Sep	1025	0	2 channel catfish 1 smallmouth bass 1 spottail shiner 1 pumpkinseed 1 margined madtom	5		Debris				
15 Sep	1620	0	3 channel catfish 1 smallmouth bass	7		Debris				
16 Sep	1800	0	3 channel catfish 1 smallmouth bass 1 bluegill	6		Debris				
17 Sep	0845	0	3 channel catfish 1 smallmouth bass 1 spottail shiner	3		Debris				
18 Sep	1930	0	1 channel catfish 1 smallmouth bass 1 shiner spp.	7		Debris				
19 Sep	1930	0	1 smallmouth bass	3		Debris				
20 Sep	1050	0	1 channel catfish 1 bluegill	4		Debris				

TABLE 2.1.1 (cont.)

Date		Time	Items Found on Trash Bar/Traveling Screen			
2014		Shad	Fish	Crayfish	Other	Comments
21 Sep	1645	0	1 channel catfish 1 bluegill	3		Heavy debris
22 Sep	1100	0	0	1		Heavy debris
23 Sep	1015	0	0	3		Heavy debris causing water overflow
24 Sep	1000	0	1 channel catfish	3		Heavy debris causing water overflow
25 Sep	1000	0	3 channel catfish	1		Heavy debris causing water overflow
26 Sep	1000	0	0	1		Heavy debris causing water overflow
27 Sep	1100	0	1 channel catfish	3		Heavy debris causing water overflow
28 Sep	1630	0	2 rock bass 1 bluegill	5		Heavy debris causing water overflow
29 Sep	1000	0	1 rock bass	3		Heavy debris causing water overflow
30 Sep	1730	0	1 smallmouth bass 1 rock bass	1		Heavy debris causing water overflow
30 Sep	Baskets removed.					
TOTALS		0	122 fish - 10 species	173*	3	
			69 channel catfish 30 smallmouth bass 6 bluegill 4 rock bass 3 spotfin shiner 3 spottail shiner 3 margined madtom 1 pumpkinseed 1 common carp 1 walleye 1 shiner spp.		2 yellow lampmussels 1 hellgrammite	

*All crayfish collected were *Orconectes obscurus*.

FIGURE 5.1-1

AUDITING ORGANIZATION CHART

(2014)

