

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9704040029 DOC. DATE: 97/03/31 NOTARIZED: NO DOCKET #
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387
 50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv 05000388
 AUTH. NAME AUTHOR AFFILIATION
 BYRAM, R.G. Pennsylvania Power & Light Co. *See Enviro Rpt.*
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Forwards Susquehanna Steam Electric Station Annual Effluent & Waste Disposal Rept covering period Jan-Dec 1996.

DISTRIBUTION CODE: IE48D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 1+157
 TITLE: 50.36a(a)(2) Semiannual Effluent Release Reports

NOTES: 05000387

	RECIPIENT		COPIES			RECIPIENT		COPIES	
	ID CODE/NAME		LTR	ENCL		ID CODE/NAME		LTR	ENCL
	PD1-2 LA		1	1		PD1-2 PD		1	1
	POSLUSNY, C		1	1					
INTERNAL:	ACRS		1	1	FILE CENTER 01		1	1	
	NRR/DRPM/PERB/A		1	1	RGNI DRS/RSB		1	1	
	RGNI FILE		1	1					
EXTERNAL:	NRC PDR		1	1					
NOTES:			1	1					

NOTE TO ALL "RIDS" RECIPIENTS:
 PLEASE HELP US TO REDUCE WASTE. TO HAVE YOUR NAME OR ORGANIZATION REMOVED FROM DISTRIBUTION LISTS OR REDUCE THE NUMBER OF COPIES RECEIVED BY YOU OR YOUR ORGANIZATION, CONTACT THE DOCUMENT CONTROL DESK (DCD) ON EXTENSION 415-2083

TOTAL NUMBER OF COPIES REQUIRED: LTR 10 ENCL 10

C
A
T
E
G
O
R
Y

1

D
O
C
U
M
E
N
T

Eni





Pennsylvania Power & Light Company

Two North Ninth Street • Allentown, PA 18101-1179 • 610/774-5151

Robert G. Byram
Senior Vice President-Nuclear
610/774-7502
Fax: 610/774-5019

MAR 31 1997

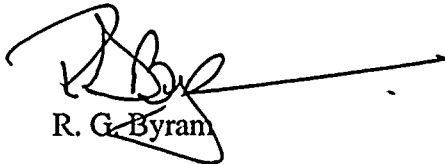
U. S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Mail Station P1-137
Washington, D. C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
ANNUAL EFFLUENT & WASTE DISPOSAL REPORT
PLA-4596 FILE R41-2A

Docket No. 50-387
and 50-388

In accordance with 10CFR50.36a(a)(2) and the Susquehanna SES Unit 1 and 2 Technical Specifications, attached is the Annual Effluent & Waste Disposal Report for SSES Units 1 and 2 covering the period January 1 through December 31, 1996.

Very truly yours,



R. G. Byram

Attachment

copy: NRC Region I
Mr. C. Poslusny, Jr., NRC Sr. Project Manager - OWFN
Mr. K. Jenison, NRC Sr. Resident Inspector - SSES

1/1
Ie 48

9704040029 970331
PDR ADOCK 05000387
R PDR





1-11

1-11

1-11

PENNSYLVANIA POWER & LIGHT COMPANY
SUSQUEHANNA STEAM ELECTRIC STATION
OFFSITE DOSE CALCULATION MANUAL

Revision 6

Prepared by: Robert K Gray

Date: 5/3/96

Reviewed by: Richard Doty
for Supervisor
Environmental Services - Nuclear

Date: 5/7/96

Reviewed by: 9/6-045
PORC/Meeting No.

Date: 5-9-96

Approved by: Richard Doty
for Manager - Nuclear Technology
per telecon discussion
w/ Mrs. Simpson

Date: 5/8/96

SUMMARY OF ODCM CHANGES

1. Maximum Dose Factor tables for Ru-103 and Te-129m have been added, in response to recommendation in CR 95-0743.
2. Water sampling location 2S7 has been added to Table 6 and Figure 5. This location was created to obtain a sampling environment that provides more representative samples.
3. Air sampling location 6G1 has been added to Table 6 and Figure 6; location 12G1 is deleted from Table 6 and Figure 6. Location 12G1 was moved to location 6G1 to improve control characteristics of this site.
4. References to R (raw) and T (treated) deleted in Figure 6 for drinking water monitoring location 12H2. Only treated water is now collected at location 12H2.
5. Air sampling location 8G1 is added to Table 6 and Figure 6. Air sampling station 7G1 is deleted. This air sampling station was moved to location 8G1 to avoid the large trees that hindered the sampling efforts at location 7G1.
6. A sentence has been added to Section A.1.2.1 to restore the context of this paragraph, in response to Audit 95-114, Observation 7.
7. This revision does not reduce the accuracy or reliability of dose calculations or setpoint determinations.

TABLE OF CONTENTS

	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
1.0 INTRODUCTION	1	7/14/95	7/20/95
	2	7/14/95	7/20/95
	3	11/9/93	3/11/94
2.0 SETPOINTS	4	2/5/92	2/21/92
2.1 Waterborne Effluent Monitors	4	2/5/92	2/21/92
	5	12/11/89	12/11/89
	6	2/5/92	2/21/92
	7	12/11/89	12/11/89
	8	12/11/89	12/11/89
2.2 Airborne Effluent Monitors	9	2/5/92	2/21/92
	10	12/11/89	12/11/89
	11	12/11/89	12/11/89
	12	11/21/92	11/25/92
3.0 WATERBORNE EFFLUENT CONCENTRATION MEASUREMENTS	13	2/5/92	2/21/92
4.0 AIRBORNE EFFLUENT DOSE RATES	14	2/5/92	2/21/92
	15	2/5/92	2/21/92
4.1 Noble Gases	15	1/16/95	1/20/95
4.2 Radionuclides Other Than Noble Gases	16	1/16/95	1/20/95
	17	2/11/92	2/21/92
	18	2/5/92	2/21/92
	19	12/11/89	12/11/89
	20	12/1/92	12/4/92
5.0 INDIVIDUAL DOSE DUE TO WATERBORNE EFFLUENT	21	10/29/93	3/11/94
5.1 Fish Pathway Liquid Effluent Dose Calculation Methodology	22	2/18/94	3/11/94
5.2 Potable Water Pathway Effluent Dose Calculation Methodology	23	11/9/93	3/11/94
5.3 Shoreline Exposure Pathway	24	11/9/93	3/11/94
5.4 Projected Dose From Liquid Effluent	24	11/9/93	3/11/94
	25	2/18/94	3/11/94
	26	11/9/93	3/11/94
6.0 INDIVIDUAL DOSE DUE TO AIRBORNE EFFLUENT	27	10/29/93	3/11/94
6.1 Noble Gases	27	10/29/93	3/11/94
6.2 Radionuclides Other Than Noble Gases	28	10/29/93	3/11/94
	29	10/29/93	3/11/94
7.0 TOTAL DOSE	30	1/16/95	1/20/95
	31	10/29/93	3/11/94

APPV <u>ELZ</u>
DATE <u>5/3/96</u>

Rev. 6

	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
8.0 OPERABILITY OF WASTE TREATMENT SYSTEMS	32	10/29/93	3/11/94
8.1 Liquid Waste Treatment	32	1/16/95	1/20/95
	33	1/16/95	1/20/95
8.2 Gaseous Waste Treatment	34	1/16/95	1/20/95
	35	1/16/95	1/20/95
8.3 Solid Waste Treatment	36	1/16/95	1/20/95
	37	1/16/95	1/20/95
9.0 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM	42	1/16/95	1/20/95
9.1 Definitions	42	1/16/95	1/20/95
9.2 Monitoring Program	42	1/16/95	1/20/95
9.3 Census Program	43	1/16/95	1/20/95
9.4 Interlaboratory Comparison Program	44	1/16/95	1/20/95
	45	1/16/95	1/20/95
10.0 DOSE ASSESSMENT POLICY STATEMENTS	53	7/14/95	7/20/95
10.1 Selection of Analysis Results for Dose Calculations	53	7/14/95	7/20/95
10.2 Assignment of Releases to the Reactor Units	53	7/14/95	7/20/95
10.3 Evaluation And Monitoring Criteria for Effluent Pathways	53	7/14/95	7/20/95
10.4 Flow From the Sgts Vent When the System is Not In Use	54	7/14/95	7/20/95
10.5 ODCM Setpoints Are Upper Limit Values	56	7/14/95	7/20/95
10.6 Definition of "Appropriate Treatment" for Liquid Wastes	56	7/14/95	7/20/95
10.7 Monitor Line-Loss Corrections	58	7/14/95	7/20/95
10.8 Selection of Data For Determination of Dose Rate Compliance	59	7/14/95	7/20/95
10.9 Low-Level Radioactivity In The Sewage Treatment Plant	60	7/14/95	7/20/95
11.0 ODCM REVIEW AND REVISION CONTROL	68	7/14/95	7/20/95
Appendix A - Sample Calculations of ODCM Parameters	A-1	2/5/92	2/21/92
	A-2	2/5/92	2/21/92
	A-3	5/9/96	5/3/96
	A-4	2/5/92	2/21/92
	A-5	10/29/93	3/11/94
	A-6	10/29/93	3/11/94
	A-7	10/29/93	3/11/94

APPV 1/2/96
DATE 5/3/96

	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
Appendix A - Sample Calculations of ODCM Parameters (continued)	A-8	10/29/93	3/11/94
	A-9	2/5/92	2/21/92
	A-10	2/5/92	2/21/92
	A-11	10/29/93	3/11/94
	A-12	10/29/93	3/11/94
	A-13	10/29/93	3/11/94
Appendix B - Reporting Requirements	B-1	12/11/89	12/11/89
	B-2	10/29/93	3/11/94
	B-3	12/11/89	12/11/89
	B-4	12/11/89	12/11/89
Appendix C - Site Specific Information Used by Gaspar Code	C-11	12/11/89	12/11/89
Appendix D - Site Specific Information Used by Ladtap Code	D-1	10/10/94	10/14/94

APPV 1-1-92
DATE 5/3/96



LIST OF TABLES

<u>Table</u>	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
1 Radiological Effluent Objectives and Standards	3	11/9/93	3/11/94
2 Dose Factors for Noble Gases	18	2/5/92	2/21/92
3 Sample Annual Average Relative Concentrations and Deposition Rates	19	11/9/93	3/11/94
4 Dose Factors for Inhalation, Ingestion and Ground Exposure Pathways: Radionuclides Other Than Noble Gases	20	5/9/96	5/3/96
5-1a Dose Factors for Fish Pathway, Maximum Hypothetical Adult (2pp)	5-1a(1,2)	10/10/94	10/14/94
5-1b Dose Factors for Fish Pathway, Maximum Hypothetical Teen (2pp)	5-1b(1,2)	10/10/94	10/14/94
5-1c Dose Factors for Fish Pathway, Maximum Hypothetical Child (2pp)	5-1c(1,2)	10/10/94	10/14/94
5-2a Dose Factors for Potable Water Pathway, Maximum Hypothetical Adult (2pp)	5-2a(1,2)	10/29/93	3/11/94
5-2b Dose Factors for Potable Water Pathway, Maximum Hypothetical Teen (2pp)	5-2b(1,2)	10/29/93	3/11/94
5-2c Dose Factors for Potable Water Pathway, Maximum Hypothetical Child (2pp)	5-2c(1,2)	10/29/93	3/11/94
5-2d Dose Factors for Potable Water Pathway, Maximum Hypothetical Infant (2pp)	5-2d(1,2)	10/29/93	3/11/94
5-3 Radioactive Decay Constants	5-3	10/29/93	3/11/94
5-4 Dilution Factors and Transit Times for SSES Effluents to Danville, PA	5-4(1,2)	10/29/93	3/11/94
5-5 Dose Factors for Shore Exposure Pathway, All Age Groups (2pp)	5-5(1,2)	10/29/93	3/11/94
5-6a Composite Dose Factors: Maximum Hypothetical Adult (2pp)	5-6a(1,2)	10/10/94	10/14/94
5-6b Composite Dose Factors: Maximum Hypothetical Teen (2pp)	5-6b(1,2)	10/10/94	10/14/94

APPV <u>1/26</u>
DATE <u>5/3/96</u>

Rev. 6



	<u>Table</u>	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
5-6c	Composite Dose Factors: Maximum Hypothetical Child (2pp)	5-6c(1,2)	2/18/94	3/11/94
5-6d	Water Ingestion Dose Factors: Maximum Hypothetical Infant (2pp)	5-6d(1,2)	2/18/94	3/11/94
6	Operational Radiological Environmental Monitoring Program	48	5/9/96	5/3/96
		49	5/9/96	5/3/96
		50	5/9/96	5/3/96
7	Detection Capabilities for Environmental Sample Analysis	51	1/16/95	1/20/95
		52	1/16/95	1/20/95
8	Systems Classified as Not an Effluent Pathway	62	7/14/95	7/20/95
9	Systems Classified as Insignificant Effluent Pathway	65	8/7/95*	7/20/95
10	Systems Classified as Significant Effluent Pathway	66	7/14/95	7/20/95
11	Systems with NRC I/E Bulletin 80-10 Applicability	67	8/7/95*	7/20/95
B-1	Radiological Environmental Monitoring Program Annual Summary	B-3	12/11/89	12/11/89
B-2	Reporting Levels for Nonroutine Operating Reports	B-4	12/11/89	12/11/89
D-1	Dilution Factors and Transit Times for SSES Effluents to Danville, PA	D-1	11/9/93	3/11/94

*Sewage Treatment Plant added in response to PORC Meeting 95-098 Action Item E05532.

APPV RLB
DATE 5/9/96

Rev. 6

v



LIST OF FIGURES

<u>Figure</u>	<u>Page</u>	<u>Approval Date</u>	<u>Revision Date</u>
1 Liquid Radwaste System Flow Diagram	38	3/23/95	3/30/95
2 Offgas and Recombiner System Flow Diagram	39	1/16/95	1/20/95
3 Solid Waste Management System Flow Diagram	40	1/16/95	1/20/95
4 SSES Dry Contaminated Waste Processing	41	1/16/95	1/20/95
5 Environmental Monitoring Locations Within One Mile of SSES	46	5/9/96	5/3/96
6 Environmental Monitoring Locations Greater than One Mile from SSES	47	5/9/96	5/3/96

APPV RLD
DATE 5/3/96

Rev. 6



O.D.C.M. MAXIMUM PATHWAY DOSE FACTORS: RADIONUCLIDES OTHER THAN NOBLE GASES*

ISOTOPE: Ru-103

PATHWAY AGE GROUP - BONE LIVER T.BODY THYROID KIDNEY LUNG G.I. SKIN

PATHWAY	AGE GROUP	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	G.I.	SKIN
GROUND	ADULT	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.25E+08
	TEEN	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.25E+08
	CHILD	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.25E+08
	INFANT	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.07E+08	1.25E+08
GOAT MILK	ADULT	5.98E+01	0.00E+00	2.58E+01	0.00E+00	2.28E+02	0.00E+00	6.98E+03	N/A
	TEEN	1.06E+02	0.00E+00	4.55E+01	0.00E+00	3.75E+02	0.00E+00	8.88E+03	N/A
	CHILD	2.52E+02	0.00E+00	9.67E+01	0.00E+00	6.33E+02	0.00E+00	6.50E+03	N/A
	INFANT	4.24E+03	0.00E+00	1.70E+02	0.00E+00	1.06E+03	0.00E+00	6.19E+03	N/A
COW MILK	ADULT	3.11E+02	0.00E+00	1.34E+02	0.00E+00	1.19E+03	0.00E+00	3.63E+04	N/A
	TEEN	5.53E+02	0.00E+00	2.37E+02	0.00E+00	1.95E+03	0.00E+00	4.62E+04	N/A
	CHILD	1.31E+03	0.00E+00	5.03E+02	0.00E+00	3.29E+03	0.00E+00	3.38E+04	N/A
	INFANT	2.65E+03	0.00E+00	8.86E+02	0.00E+00	5.51E+03	0.00E+00	3.22E+04	N/A
MEAT	ADULT	3.97E+07	0.00E+00	1.71E+07	0.00E+00	1.52E+08	0.00E+00	4.64E+09	N/A
	TEEN	3.24E+07	0.00E+00	1.38E+07	0.00E+00	1.14E+08	0.00E+00	2.70E+09	N/A
	CHILD	5.85E+07	0.00E+00	2.25E+07	0.00E+00	1.47E+08	0.00E+00	1.51E+09	N/A
	INFANT	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
VEGTBLE	ADULT	3.77E+06	0.00E+00	1.62E+06	0.00E+00	1.44E+07	0.00E+00	4.40E+08	N/A
	TEEN	5.91E+06	0.00E+00	2.53E+06	0.00E+00	2.08E+07	0.00E+00	4.94E+08	N/A
	CHILD	1.37E+07	0.00E+00	5.28E+06	0.00E+00	3.46E+07	0.00E+00	3.55E+08	N/A
	INFANT	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
TOTAL INGEST.	ADULT	4.35E+07	0.00E+00	1.87E+07	0.00E+00	1.66E+08	0.00E+00	5.08E+09	N/A
	TEEN	3.83E+07	0.00E+00	1.64E+07	0.00E+00	1.35E+08	0.00E+00	3.20E+09	N/A
	CHILD	7.22E+07	0.00E+00	2.78E+07	0.00E+00	1.82E+08	0.00E+00	1.87E+09	N/A
	INFANT	6.89E+03	0.00E+00	1.06E+03	0.00E+00	6.57E+03	0.00E+00	3.84E+04	N/A
INHAL.	ADULT	1.53E+03	0.00E+00	6.58E+02	0.00E+00	5.83E+03	5.05E+05	1.10E+05	N/A
	TEEN	2.10E+03	0.00E+00	8.96E+02	0.00E+00	7.43E+03	7.83E+05	1.09E+05	N/A
	CHILD	2.79E+03	0.00E+00	1.07E+03	0.00E+00	7.03E+03	6.62E+05	4.48E+04	N/A
	INFANT	2.02E+03	0.00E+00	6.79E+02	0.00E+00	4.24E+03	5.52E+05	1.61E+04	N/A

*Airborne pathways and tritium ingestion: units are mrem/yr/uCi/m3
 Deposition pathways: units are mrem-m2/yr/uCi/sec

MAXIMUM VALUES FOR PATHWAYS							
GROUND:	GROUND:	GOAT	COW	TOTAL			
T.B./ORG.	SKIN	MILK:	MILK:	INGEST:	INHAL.		
1.07E+08	1.25E+08	8.88E+03	4.62E+04	4.64E+09	4.94E+08	5.08E+09	7.83E+05

APPV RPS
 DATE 5/3/96

O.D.C.M. MAXIMUM PATHWAY DOSE FACTORS: RADIONUCLIDES OTHER THAN NOBLE GASES*

ISOTOPE: Te-129m

PATHWAY	AGE GROUP	BONE	LIVER	T.BODY	THYROID	KIDNEY	LUNG	G.I.	SKIN
GROUND	ADULT	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	2.29E+07
	TEEN	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	2.29E+07
	CHILD	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	2.29E+07
	INFANT	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	1.96E+07	2.29E+07
GOAT MILK	ADULT	3.47E+06	1.29E+06	5.49E+05	1.19E+06	1.45E+07	0.00E+00	1.75E+07	N/A
	TEEN	6.34E+06	2.35E+06	1.00E+06	2.05E+06	2.65E+07	0.00E+00	2.38E+07	N/A
	CHILD	1.56E+07	4.37E+06	2.43E+06	5.04E+06	4.59E+07	0.00E+00	1.91E+07	N/A
	INFANT	2.68E+08	1.10E+07	4.94E+06	1.23E+07	8.03E+07	0.00E+00	1.92E+07	N/A
COW MILK	ADULT	1.76E+07	6.58E+06	2.79E+06	6.06E+06	7.36E+07	0.00E+00	8.88E+07	N/A
	TEEN	3.22E+07	1.20E+07	5.10E+06	1.04E+07	1.35E+08	0.00E+00	1.21E+08	N/A
	CHILD	7.95E+07	2.22E+07	1.23E+07	2.56E+07	2.33E+08	0.00E+00	9.69E+07	N/A
	INFANT	1.63E+08	5.60E+07	2.51E+07	6.27E+07	4.08E+08	0.00E+00	9.74E+07	N/A
MEAT	ADULT	4.15E+08	1.55E+08	6.57E+07	1.43E+08	1.73E+09	0.00E+00	2.09E+09	N/A
	TEEN	3.48E+08	1.29E+08	5.51E+07	1.12E+08	1.46E+09	0.00E+00	1.31E+09	N/A
	CHILD	6.56E+08	1.83E+08	1.02E+08	2.11E+08	1.93E+09	0.00E+00	8.00E+08	N/A
	INFANT	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
VEGTBLE	ADULT	1.92E+08	7.16E+07	3.04E+07	6.59E+07	8.01E+08	0.00E+00	9.66E+08	N/A
	TEEN	3.06E+08	1.14E+08	4.85E+07	9.89E+07	1.28E+09	0.00E+00	1.15E+09	N/A
	CHILD	7.39E+08	2.06E+08	1.15E+08	2.38E+08	2.17E+09	0.00E+00	9.01E+08	N/A
	INFANT	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N/A
TOTAL INGEST.	ADULT	6.28E+08	2.34E+08	9.94E+07	2.16E+08	2.62E+09	0.00E+00	3.16E+09	N/A
	TEEN	6.93E+08	2.57E+08	1.10E+08	2.24E+08	2.90E+09	0.00E+00	2.60E+09	N/A
	CHILD	1.49E+09	4.16E+08	2.31E+08	4.80E+08	4.37E+09	0.00E+00	1.82E+09	N/A
	INFANT	4.31E+08	6.70E+07	3.01E+07	7.50E+07	4.88E+08	0.00E+00	1.17E+08	N/A
INHAL.	ADULT	9.76E+03	4.67E+03	1.58E+03	3.44E+03	3.66E+04	1.16E+06	3.83E+05	N/A
	TEEN	1.39E+04	6.58E+03	2.25E+03	4.58E+03	5.19E+04	1.98E+06	4.05E+05	N/A
	CHILD	1.92E+04	6.85E+03	3.04E+03	6.33E+03	5.03E+04	1.76E+06	1.82E+05	N/A
	INFANT	1.41E+04	6.09E+03	2.23E+03	5.47E+03	3.18E+04	1.68E+06	6.90E+04	N/A

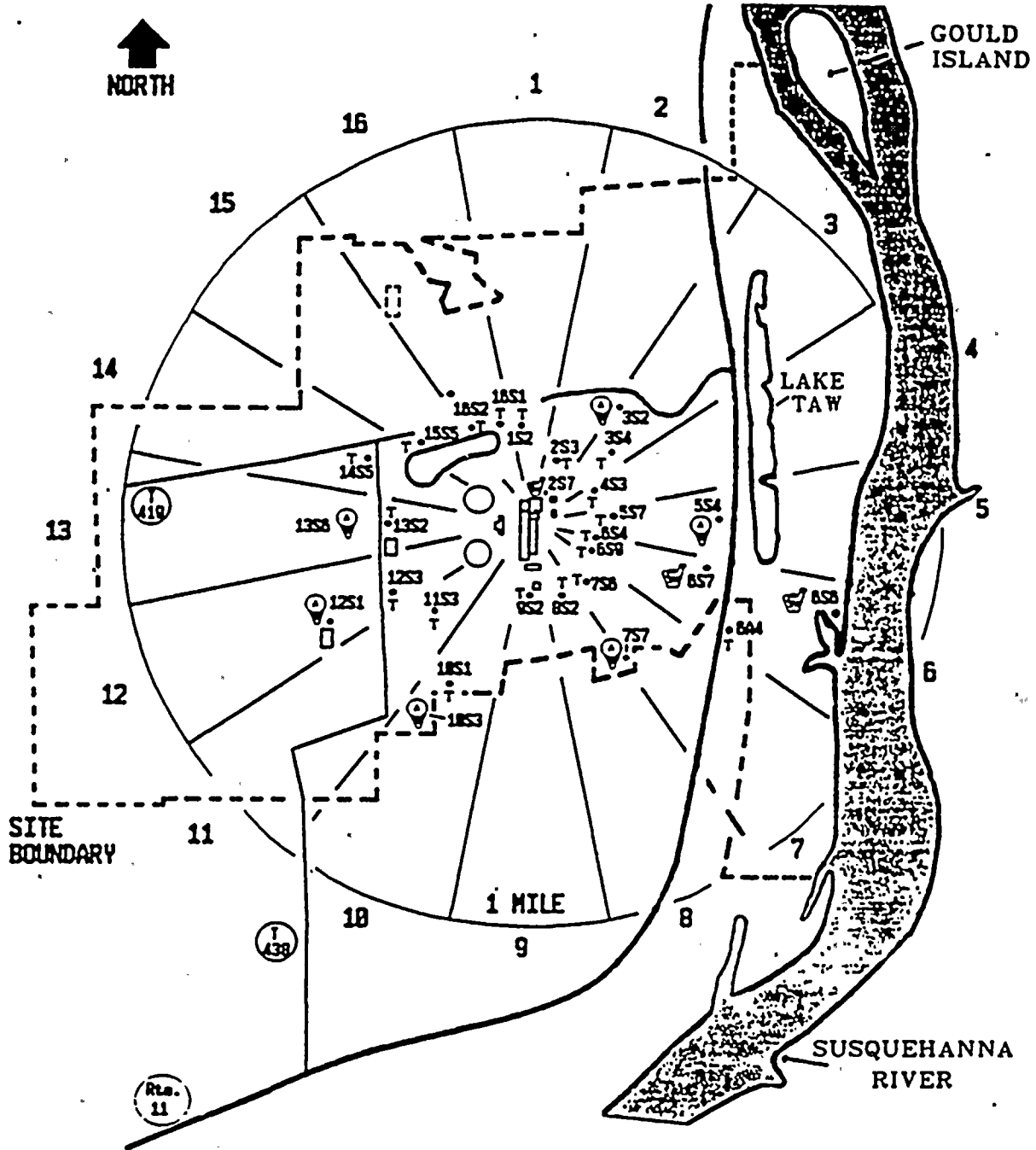
*Airborne pathways and tritium ingestion: units are mrem/yr/uCi/m3
 Deposition pathways: units are mrem-m2/yr/uCi/sec



MAXIMUM VALUES FOR PATHWAYS							
GROUND:	GROUND:	GOAT	COW	MEAT:	VEGTBLE:	TOTAL	INHAL.
T.B./ORG.	SKIN	MILK:	MILK:			INGEST:	
1.96E+07	2.29E+07	2.68E+08	4.08E+08	2.09E+09	2.17E+09	4.37E+09	1.98E+06

APPV PLS
 DATE 5/3/96



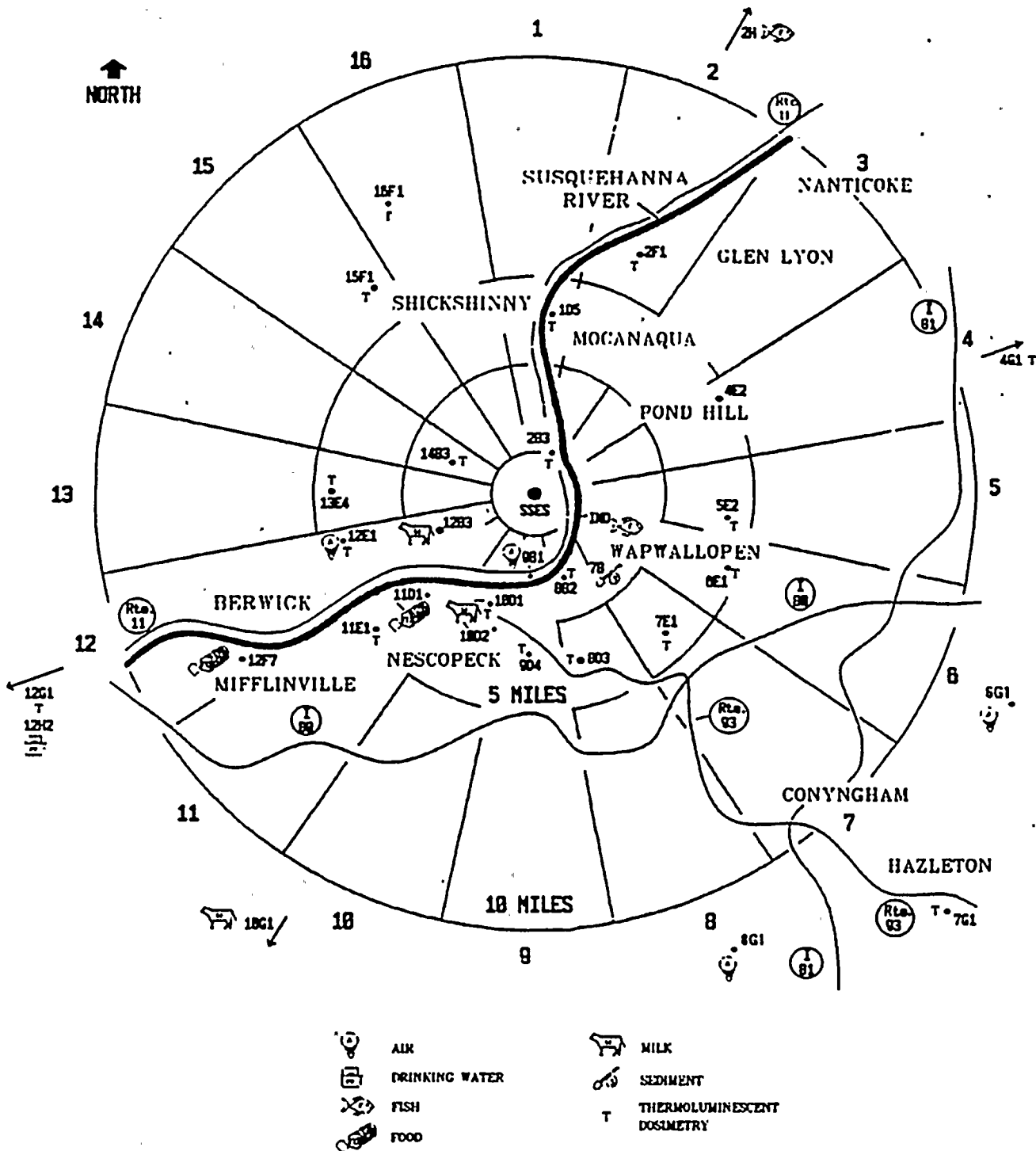
FIGURE 5
 ENVIRONMENTAL MONITORING LOCATIONS
 WITHIN ONE MILE OF THE SSES



-  AIR
-  SURFACE WATER
- T** THERMOLUMINESCENT DOSIMETRY

APPRV K/LS
 DATE 5/3/96

FIGURE G
 ENVIRONMENTAL MONITORING LOCATIONS
 GREATER THAN ONE MILE FROM THE SSES



APPV 1205
 DATE 5/3/96

TABLE 6

OPERATIONAL RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

<u>Exposure Pathways and/or Sample</u>	<u>Number of Samples and Locations*</u>	<u>Sampling and Collection Frequency</u>	<u>Type and Frequency of Analysis</u>
<u>Airborne</u>			
Radioiodine and Particulates*	12S1 0.4 mi WSW EOF Building	Continual sampler operation with sample collection weekly.**	Radioiodine Canister: analyze weekly for I-131
	9B1 1.3 mi S Transmission Line		
	5S4 0.8 mi E Environmental Laboratory		
	12E1 4.7 mi WSW Berwick Hospital		
	3S2 0.5 mi NE SSES Backup Met. Tower		
	7S7 0.4 mi SE End of Kline's Road		
	10S3 0.6 mi SSW East of Confer's Lane, South of Towers Club		
	13S6 0.4 mi W Former Laydown Area, West of Confer's Lane		
	6G1 13.5 mi ESE Freeland Substation		
	8G1 12.2 mi SSE PP&L System Facilities Center, Humbolt Industrial Park		
	<u>Direct Radiation</u>		
1S2 Perimeter Fence - 0.2 mi N	Quarterly	Gamma Dose: Quarterly.	
1D5 Mocanaqua Sewage Treatment Plant - 4.0 mi N			
2S3 Perimeter Fence - 0.2 mi NNE			
2B3 Durabond Corporation - 1.3 mi NNE			
2F1 St. Adalberts Cemetery - 5.9 mi NNE			
3S4 Perimeter Fence - 0.3 mi NE			
4S3 West of SSES APF - 0.2 mi ENE			
4E2 Ruckles Hill & Pond Hill Roads Intersection: 4.7 mi ENE			
4G1 Crestwood Industrial Park - 14 mi ENE*			
5S7 Perimeter Fence - 0.3 mi E			
5E2 Bloss Farm - 4.5 mi E			
6S4 Perimeter Fence - 0.2 mi ESE			
6A4 Restaurant - 0.6 mi ESE			
6E1 St. James Church - 4.7 mi ESE			

48

APPV RHS
DATE 5/3/96

Rev. 6



Exposure Pathways
and/or SampleNumber of Samples
and Locations^aSampling and
Collection FrequencyType and
Frequency of Analysis

6S9 Perimeter Fence - 0.2 mi ESE
 7S6 Perimeter Fence - 0.2 mi SE
 7E1 Harwood Transmission Line Pole #2 - 4.2 mi SE
 7G1 PP&L Hazleton Complex - 14 mi SE^a
 8S2 Perimeter Fence - 0.2 mi SSE
 8B2 LaWall Residence - 1.4 mi SSE
 8D3 Mowry Residence - 4.0 mi SSE
 9S2 Security Fence - 0.2 mi S
 9D4 Country Folk Store - 3.6 mi S
 10S1 Post South of Switching Station - 0.4 mi SSW
 10D1 Ross Ryman Farm - 3.0 mi SSW
 11S3 Security Fence - 0.3 mi SW
 11E1 Thomas Residence - 4.7 mi SW
 12S3 Perimeter Fence - 0.4 mi WSW
 12E1 Berwick Hospital - 4.7 mi WSW
 12G1 PP&L Bloomsburg Service Center - 15 mi WSW^a
 13S2 Perimeter Fence - 0.4 mi W
 13E4 Kessler Farm - 4.1 mi W
 14S5 Beach Grove Rd. & Confer's Lane Intersection 0.5
 mi WNW
 14B3 Moskaluk Residence - 1.3 mi WNW
 15F1 Zawatski Farm - 5.4 mi NW
 15S5 Perimeter Fence - 0.4 mi NW
 16S1 Perimeter Fence 0.3 mi NNW
 16S2 Perimeter Fence - 0.3 mi NNW
 16F1 Hidlay Residence - 7.8 NNW

Waterborne

Surface

2S7 Cooling Tower Blowdown discharge line (restricted area)^d
 6S6 river water intake line^a
 6S7 cooling tower blowdown discharge line (STP)

Monthly composite
 Monthly composite
 Monthly composite

Gamma isotopic analysis.
 Composite tritium analysis at
 least quarterly.

Drinking

12H2 Danville Water Company
 (Approximately 30 miles downstream)

Monthly composite^b

Gross beta and gamma isotopic
 analyses monthly. Composite
 for tritium analysis at least
 quarterly.

APPV FGS
 DATE 5/3/96

Rev. 6

<u>Exposure Pathways and/or Sample</u>	<u>Number of Samples and Locations*</u>	<u>Sampling and Collection Frequency</u>	<u>Type and Frequency of Analysis</u>
Sediment from Shoreline	7B Bell Bend - 1.2 mi SE	Semi-annually	Gamma isotopic analysis semi-annually.
Milk***	12B3 Young Farm - 2.0 mi WSW 10G1 Davis Farm - 14.0 mi. SSW* 10D2 Ray Ryman Farm - 3.5 mi. SSW 10D1 R&C Ryman Farm - 3.0 mi. SSW	Semi-monthly when animals are on pasture, monthly otherwise	Gamma isotopic and I-131 analysis of each sample
Fish and Invertebrates	Outfall area 2H Falls, Pa* (Approximately 30 mi NNE)	Semi-annually. One sample ^c from each of two recreationally important species from any of the following families: bullhead catfish, sunfish, pikes, or perches.	Gamma isotopic on edible portions.
Food Products	11D1 Zehner Farm - 3.3 mi SW vegetable 12F7 Lupini Farm - 8.3 mi WSW vegetable	At time of harvest	Gamma isotopic on edible portions.

*The location of samples and equipment were designed using the guidance in the Branch Technical Position to NRC Rev. Guide 4.8, Rev. 1, Nov. 1979, Reg. Guide 48.1975 and ORP/SID 72-2 Environmental Radioactivity Surveillance Guide. Therefore, the airborne sampler locations were based upon X/Q and/or D/Q.

**A dust loading study (RMC-TR-81-01) concluded that the assumption of 1 for the transmission correction factor for gross beta analysis of air particulate samples is valid. Air particulate samples need not be weighed to determine a transmission correction factor.

***If a milk sample is unavailable for more than two sampling periods from one or more of the locations, a vegetation sample shall be substituted until a suitable milk location is evaluated. Such an occurrence will be documented in the REMP annual report.

^aControl sample location.

^bTwo-week composite if calculated doses due to consumption of water exceed one millirem per year. In these cases, I-131 analyses will be performed.

^cThe sample collector will determine the species based upon availability, which may vary seasonally and yearly.

^dA sample from either or both locations 2S7 and 6S7 will be collected and analyzed according to the required frequencies.



DOWNSCALE Setpoint = Background - 0.5 (2E-5)/Cal. Factor
= 1400 cps - 0.5 (2E-5)/1.5E-8)
= 1400 cps - 667 cps = 733 cps

A.1.1.3 RHR Service Water Monitor

Sample Data A: Background = 160 cpm
Calibration Factor = 3.9E-9 uCi/ml per cpm

(2E-5)/Cal. Factor = 5128 cpm

Because 160 cpm is less than 5128 cpm:

HI RAD Setpoint = 0.5 Background + (2E-5)/Cal. Factor
= 0.5 (160 cpm) + (2E-5)/(3.9E-9)
= 80 cpm + 5128 cpm = 5208 cpm

LOW RAD Setpoint = 0.5 Background
= 0.5 (160 cpm) = 80 cpm

ALERT Setpoint = 0.8 HI RAD Setpoint = 4166 cpm

Sample Data B: Background = 6000 cpm
Calibration Factor = 3.9E-9 uCi/ml per cpm

(2E-5)/Cal. Factor = 5128 cpm

Because 6000 cpm is greater than 5128 cpm:

HI RAD Setpoint = Background + (0.5)(2E-5)/Cal. Factor
= 6000 cpm + (1E-5)/(3.9E-9)
= 6000 cpm + 2564 cpm
= 8564 cpm

LOW RAD Setpoint = Background - 0.5 (2E-5)/Cal. Factor
= 6000 cpm - 0.5 (2E-5)/(3.9E-9)
= 6000 cpm - 2564 cpm = 3436 cpm

ALERT Setpoint = 0.8 HI RAD Setpoint = 6851 cpm

A.1.2 Gaseous Effluent Monitors

A.1.2.1 Noble Gas Monitor

To determine the release rate limit for noble gases, an isotopic mixture representative of plant effluents is selected. For example, the following mixture from Table 4.4 of the SSES Final Environmental Statement (FES) can be used:

APPV 1200
DATE 5/3/96