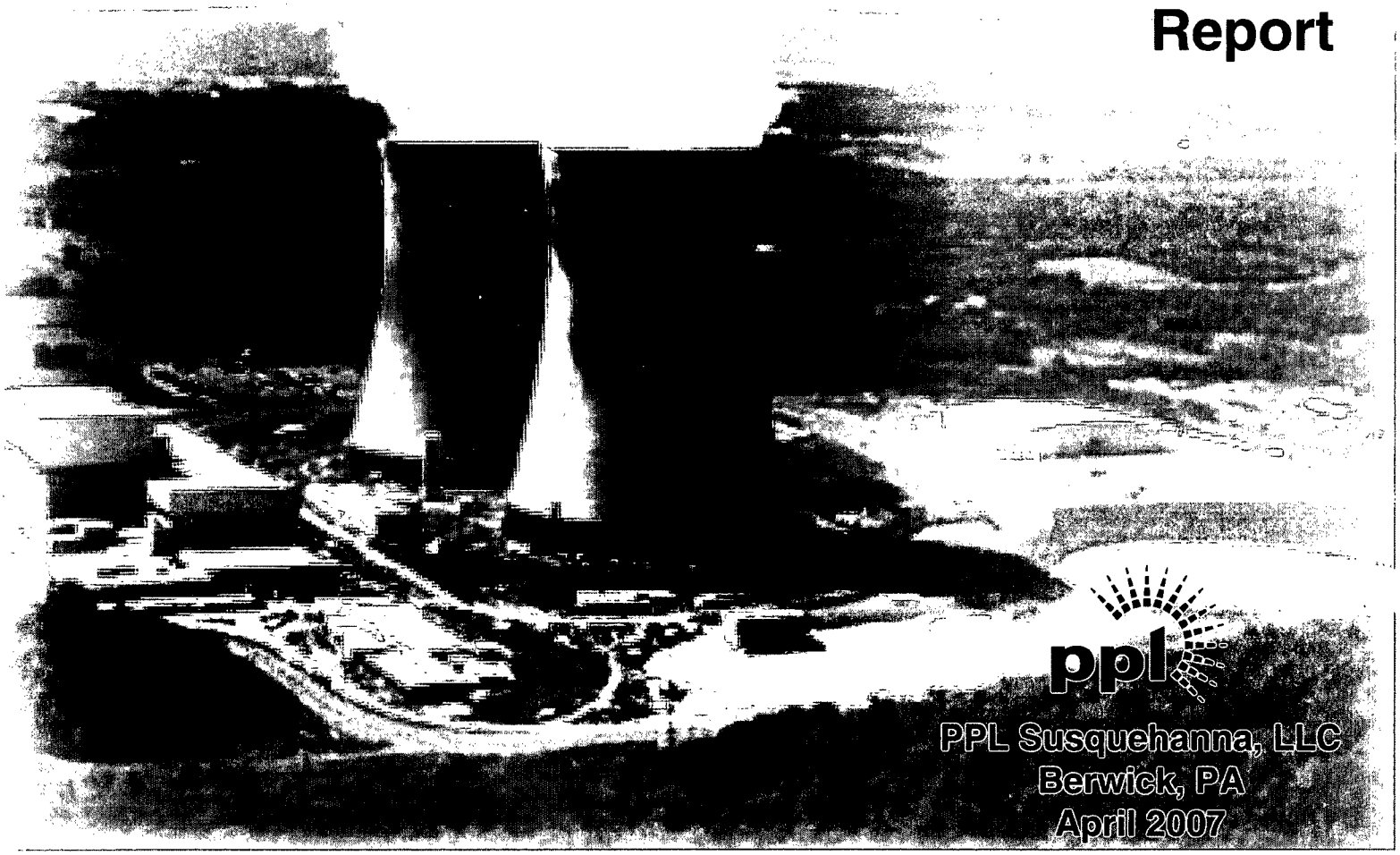
Susquehanna Steam Electric Station

Units 1 & 2

Radioactive Effluent Release Report

2006 Annual Report



PPL Susquehanna, LLC
Berwick, PA
April 2007

RADIOACTIVE EFFLUENT RELEASE REPORT

REPORT PERIOD: 01/01/06 - 12/31/06

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SECTION 1

INTRODUCTION, SUMMARY AND SUPPLEMENTAL INFORMATION

INTRODUCTION

The submittal of the 2006 Radioactive Effluent Release Report is in accordance with PPL Susquehanna, LLC Tech Spec. 5.6.3. The enclosed information is consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM) and Process Control Program (PCP). The 2006 Radioactive Effluent Release Report is in conformance with 10CFR50.36a and 10CFR50, Appendix I, Section IV.B.1.

PPL Susquehanna, LLC is located in Salem Township, Luzerne County, Pennsylvania. It is on the west bank of the Susquehanna River, 8 km northeast of Berwick. The Station consists of two boiling water reactor generating units, each with about 1,200 MW net electrical capacity. The reactor and generating units were supplied by General Electric, while the Bechtel Corporation served as architect-engineer and constructor.

Construction of the Station began in the early 1970s. Fuel load began in Unit 1 in July of 1982. Initial criticality was achieved in the Unit 1 reactor on September 10, 1982. The reactor reached 100% power for the first time on February 4, 1983. Commercial operation of Unit 1 was declared on June 8, 1983. Initial criticality of Unit 2 occurred on May 8, 1984. Unit 2 was declared commercial on February 12, 1985.

Airborne effluents are released from the Station via five rooftop vents on the reactor building (see Figure 1-1). Continuous sampling for particulates and iodines is performed at each vent as well as continuous monitoring for noble gases. A program of periodic sampling and analysis for tritium and noble gases along with periodic analysis of particulate and iodine samples is conducted as specified in the plant Technical Requirements. All waterborne effluents are released in batch mode and are sampled and analyzed prior to release. Waterborne effluents from the site are released into the cooling tower blowdown line for dilution prior to release to the Susquehanna River (see Figure 1-2). Blowdown line flow rates are at least 5,000 gpm during periods of liquid radwaste release. The diluted effluent is introduced to the river by way of a perforated diffuser pipe placed on the river bed. The diffuser serves to rapidly and uniformly mix the station discharge with the main flow of the river.

This report presents a summary of the quantities of radioactive materials which were released from the Station during the period from January 1, 2006 to December 31, 2006. In addition, this report serves as a medium for notifying the US Nuclear Regulatory Commission staff of changes to the ODCM, PCP and documentation of any exceptions to the effluent monitoring program which must be reported per Technical Requirements.

Airborne and waterborne radioactive effluent releases to the environment during the report period were sampled and analyzed in accordance with the Technical Requirements. All radioactive effluent releases were within the concentration and release limits specified in the Technical Requirements. Calculations and terms utilized in this report are those outlined in the ODCM.

Section 1 contains supplemental information pertaining to effluents from the Susquehanna plant. Included are regulatory limits (Table 1-1), sampling and analysis methods, characterization of the number and duration of batch and abnormal releases and a brief summary of the applicable year's effluents.

Section 2 contains effluent and waste disposal data for the report period. Table 2-1 contains a summation of all airborne releases, grouped into the radionuclide categories of gases, particulates, iodines, and tritium. Average release rates are presented and compared to the applicable limits. Table 2-2 presents the activity totals of specific radionuclides in airborne effluents.

Waterborne effluents are summarized in Table 2-3. Average diluted concentrations are presented and compared to the applicable limits. Table 2-4 presents the release quantities of specific radionuclides in waterborne effluents over the report period. Figures 2-1 and 2-2 present the Susquehanna River Monthly Average Flow Rates for 2006 and the Monthly Liquid Radwaste Discharge Totals for 2006, respectively.

Table 2-5 contains estimates of the errors associated with the measurements involved in quantifying effluents. Sampling errors, counting errors, and errors associated with determining effluent flow rates and volumes all contribute to the total error of effluent measurements. Error estimates are presented for each category of radionuclide detected in airborne and waterborne effluents and solid wastes during the report period.

Tables 2-7 through 2-22 present a characterization of the solid radioactive waste shipped offsite during the report period. An estimate of major nuclide composition is presented for each waste type. Also included are the volumes and curie contents associated with each type of solid waste. The number of waste shipments from the site transported directly for burial or disposal are listed in Table 2-6.

Section 3 presents meteorological data for 2006, including data recovery, joint frequency distribution of wind speed and direction, stability class distribution, and atmospheric dispersion estimates for selected locations.

Section 4 of this report contains an assessment of the calculated doses attributed to the reported radiological effluents for the calendar year. The Radioactive Effluent Tracking and Dose Assessment Software (RETDAS) computer code was used for calculation of doses from waterborne effluents. Site-specific parameters used in the calculations for the Danville receiver are shown in Table 4-1. The RETDAS code was also used for calculation of doses from airborne effluents. The calculated doses and direct radiation estimates can be used to estimate the doses to maximally exposed members of the public. Table 4-2 summarizes maximum calculated doses to members of the public from airborne and waterborne effluents. Table 4-3 presents calculated collective doses to members of the public within the Riverlands/Energy Information Center Complex. Table 4-4 summarizes the calculated doses for residences and other occupied areas within the site boundary and the nearest dairy.

Section 5 of this report documents changes to the Offsite Dose Calculation Manual, Technical Requirements Manual and the Solid Radioactive Waste Process Control Program.

Section 6 presents a listing of cases (if any) in which airborne or waterborne effluent monitoring instrumentation was declared inoperable and was not restored to operability within the time period specified in Technical Requirements 3.11.1.4, 3.11.1.5 and 3.11.2.6 Action Statements. In addition, this section presents issues (if any) with the collection of milk or fresh leafy vegetables per Technical Requirement 3.11.4.1 and changes due to the land use census per Technical Requirement 3.11.4.2.

Section 7 contains corrections (if any) to doses reported in previous Radioactive Effluent Release Reports.

Section 8 contains information on effluent and offsite dose from the systems classified as insignificant effluent pathways.

SUMMARY

Liquid and gaseous effluent releases for 2006 were similar to those of previous years. During 2006 there were one hundred three (103) liquid batch releases resulting in a total release volume of one million five hundred thirty thousand (1,530,000) gallons. The total number of liquid batch releases and total volume released in 2006 was higher than the corresponding values for 2005 (96 releases resulting in 1,470,000 gallons released in 2005). The predominant radionuclide released in liquid effluents during 2006 was tritium. Approximately eighty-nine (89) curies of tritium were released in liquid effluents in 2006, compared to seventy-four (74) curies released in 2005. When compared with all radionuclides released in liquid effluents in 2006, tritium was the main contributor to the resultant offsite dose. Consistent with previous years, the offsite dose from liquid releases in 2006 was less than one percent (1%) of the annual limits for both organ and whole body dose.

Gaseous effluents for 2006 were also comparable to those of previous years. Similar to liquid effluents in 2006, the predominant radionuclide released in gaseous effluents was tritium. When compared with all radionuclides released in gaseous effluents in 2006, tritium was the main contributor to the resultant offsite dose. Approximately fifty-nine (59) curies of tritium were released in gaseous effluents in 2006. The resultant maximum offsite organ dose due to gaseous effluents from Unit-1 for 2006 was 1.62E-01 mrem, which is 1.1 percent (1.1%) of the per unit annual limit of fifteen (15) mrem. The resultant maximum offsite organ dose due to gaseous effluents from Unit-2 for 2006 was 3.31E-01 mrem, which is 2.2 percent (2.2%) of the per unit annual limit of fifteen (15) mrem. The main source of the tritium in liquid and gaseous effluents is from control rod blades currently in each reactor's core.

FIGURE 1-1

AIRBORNE EFFLUENT RELEASE POINTS

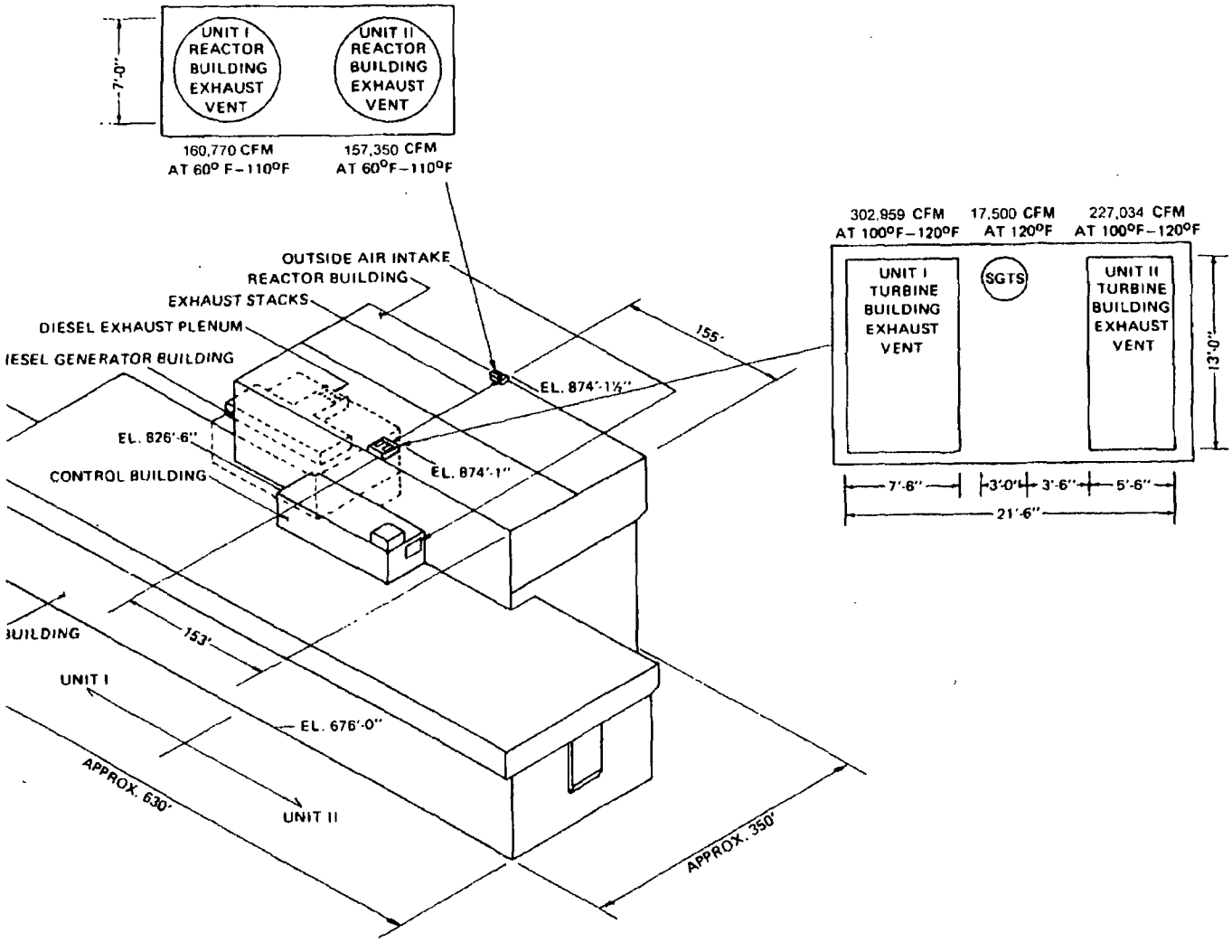
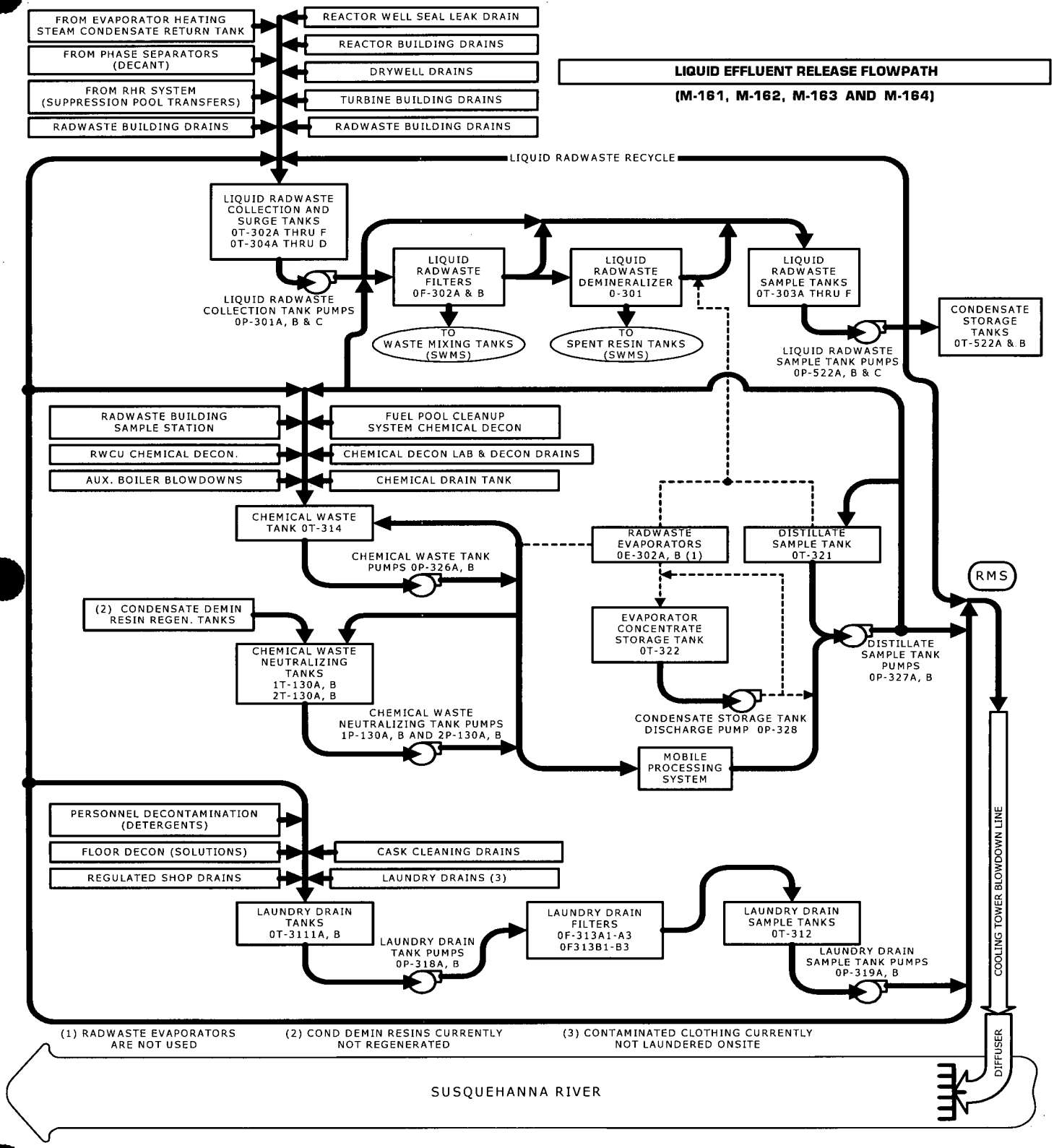


FIGURE 1-2

WATERBORNE EFFLUENT PATHWAY



SUPPLEMENTAL INFORMATION

1. Regulatory Limits

Technical Requirements 3.11.1 and 3.11.2 outline requirements for release of radioactive liquid and gaseous effluents, respectively. Concentration of radioactive materials released in liquid effluents and resulting dose are limited in unrestricted areas. Dose and dose rate due to radioactive materials released in gaseous effluents are limited in areas at or beyond the site boundary. Technical Requirement limits are listed in Table 1-1.

2. Maximum Permissible Concentrations in Waterborne Effluents

The concentration of radioactive material released in liquid effluents to unrestricted areas is limited to 10 times the concentrations specified in 10 CFR Part 20 Appendix B Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases.

For dissolved or entrained noble gases, the concentration is limited to 2.0E-04 µCi/ml total activity (TRO 3.11.1.1).

3. Average Energy of Fission and Activation Gas

The Calculation of Noble Gas Effluent Average Energies E-Bar Beta and Gamma for 2006 resulted in an annual E-Bar Beta value of 3.62E-01 MeV and an E-Bar Gamma value of 1.86 MeV.

4. Measurements and Approximations of Total Radioactivity

Analyses of specific radionuclides in effluent samples are used to evaluate the radioactive composition and concentration of effluents.

5. Methods of Quantifying Effluents

a. **Fission and Activation Gases**: Gas samples are routinely collected monthly and analyzed with a high resolution (HPGE) detector system which incorporates a data reduction program to determine radionuclide composition in terms of specific activity. Data from the continuous vent monitors are used to determine the average concentration of noble gases. The high resolution (HPGE) isotopic scan is used to convert the continuous vent monitor activity to actual activity based on the determined nuclide mixture. The vent and sample flow rates are continuously monitored and the average flow rates for each vent are used to calculate the total activity released in a given time period. When the continuous monitors are out of service, manual grab

samples are taken from each vent once each eight hours (once each four hours for the standby gas treatment vent).

b. **Iodines**: Iodine is continuously collected on charcoal or silver zeolite cartridges via an isokinetic sampling assembly in each vent. Filters are normally exchanged once per week and analyzed on a high resolution (HPGE) system. The daily average flow rates for the vents and sample pumps are averaged for the duration of the sampling period and a ratio of vent flow rate to sample flow rate is determined. The ratio is used to determine the total activity of each isotope released during the time period in question. When the continuous samplers are out of service, iodine is continuously collected from alternate sampling ports available on the sample lines or directly from the affected rooftop vent(s).

c. **Particulates**: Particulates are continuously collected via an isokinetic sampling assembly in each vent. Filters are normally exchanged once per week and analyzed on a high resolution (HPGE) system. Flow rate corrections are performed as for iodines. When the continuous samplers are out of service, particulates are continuously collected from alternate sampling ports available on the sample lines or directly from the affected rooftop vent(s).

d. **Tritium**: Airborne tritium is collected monthly via bubbler sampler. The sample is collected for one hour at a flow rate of approximately 1000 cc/min. Tritium activity in the bubbler sample is determined by liquid scintillation counting. The liquid sample tritium concentration is then converted to air concentration by volume proportion.

e. **Waterborne Effluents**: Each tank of liquid radwaste is sampled and analyzed for principal gamma emitters prior to release. Each sample tank is recirculated for a sufficient amount of time prior to sampling to ensure that a representative sample is obtained. Samples are analyzed on a high resolution (HPGE) system and release permits are generated based on the values obtained from the isotopic analysis and the most recent values for tritium, gross alpha, iron-55, and strontium-89 and -90. An aliquot based on release volume is saved and added to monthly and quarterly composite containers. The monthly tritium analysis is done in-house. A monthly composite is sent to a vendor laboratory for gross alpha analysis. A quarterly composite is sent to a vendor laboratory for iron-55, strontium-89 and-90 analyses.

The concentration of each radionuclide in each batch is multiplied by the volume of the batch to determine the total quantity of each nuclide released in each batch. The isotopic totals for each batch are summed to determine the total source term for the report period.

TABLE 1-1

TECHNICAL REQUIREMENT LIMITS

A. NOBLE GASES:

1. ≤500 mrem/year - TOTAL BODY
   ≤3000 mrem/year - SKIN

   - dose rate limit at and beyond the site boundary
     (TRO 3.11.2.1.I)

2. ≤5 mrad - AIR GAMMA
   ≤10 mrad - AIR BETA

   - quarterly air dose limits per reactor unit at and beyond the site boundary
     (TRO 3.11.2.2a)

3. ≤10 mrad - AIR GAMMA
   ≤20 mrad - AIR BETA

   - annual air dose limits per reactor unit at and beyond the site boundary
     (TRO 3.11.2.2.b)

B. AIRBORNE I-131, I-133, TRITIUM, PARTICULATES WITH HALF-LIVES > 8 DAYS:

1. ≤1500 mrem/year - ORGAN
   (inhalation pathways only)

   - dose rate limit at and beyond the site boundary
     (TRO 3.11.2.1.II.A)

2. ≤7.5 mrem - ORGAN

   - quarterly dose limit per reactor unit at and beyond the site boundary
     (TRO 3.11.2.3.a)

3. ≤15 mrem - ORGAN

   - annual dose limit per reactor unit at and beyond the site boundary
     (TRO 3.11.2.3.b)

C. LIQUID EFFLUENTS:

1. ≤1.5 mrem - TOTAL BODY
   ≤5.0 mrem - ORGAN
   - quarterly dose limits per unit (TRO 3.11.1.2.a)

2. ≤3.0 mrem - TOTAL BODY
   ≤10.0 mrem - ORGAN
   - annual dose limits per unit (TRO 3.11.1.2.b)

D. AIRBORNE EFFLUENT: BASES FOR PERCENT OF APPLICABLE LIMIT VALUES IN TABLE 2-1

Fission and Activation Gases

Derived release rate limits based on the Technical Requirement (TRO 3.11.2.1.I.A and B) limits of 500 mrem/yr to the total body and 3000 mrem/yr to the skin were calculated from the expected mix of noble gas radionuclides presented in Attachment A of ODCM-QA-003, Effluent Monitor Setpoints. The lower limit of 1.00E+06 µCi/min (1.67E+04 µCi/sec) based on total body dose rate is used.

Iodine-131

A derived release rate limit for I-131 based on the Technical Requirement (TRO 3.11.2.1.II.A) limit of 1500 mrem/yr from I-131, I-133, tritium and particulates with half-lives greater than 8 days was calculated based on the ratio of the expected annual release quantities of I-131 and I-133 provided in Attachment E of ODCM-QA-004, Airborne Effluent Dose Calculations. The limit is 1.04E+02 µCi/min I-131 (1.73E+00 µCi/sec).

Particulates

A derived release rate limit for particulate activity other than iodines based on the Technical Requirement (TRO 3.11.2.1.II.A) limit of 1500 mrem/yr from I-131, I-133, tritium and particulates with half-lives greater than 8 days was calculated (PPL calculation EC-ENVR-1041) based on the expected annual release quanities of particulate radionuclides provided in Attachment E of ODCM-QA-004, Airborne Effluent Dose Calculations. The limit is 3.02E+03 µCi/min (5.03E+01 µCi/sec).

Tritium

A derived release rate was calculated based on the 10 CFR 20, Appendix B, Table 2, Column 1, Effluent Concentration Limit for tritium (1.0E-07 µCi/cc) to unrestricted areas. A relative concentration of 4.1E-05 sec/m^3 was assumed (PPL calculation EC-ENVR-1040). The limit is 1.46E+05 µCi/min (2.44E+03 µCi/sec).

Radionuclide Fractional Summation

The sum of the percents of applicable limits for particulates, iodine and tritium must be less than 100%.

E. WATERBORNE EFFLUENT: BASES FOR PERCENT OF APPLICABLE LIMIT VALUES IN TABLE 2-3

Fission and Activation Products

Concentrations of fission and activation products in liquid effluent from radwaste effluent are determined for each batch prior to release. Each isotope concentration is compared to ten times the 10CFR20 Appendix B, Table 2, Column 2 Effluent Concentration Values (TRO 3.11.1.1).

Tritium

Liquid effluent quarterly tritium concentrations are compared to ten times the 10 CFR 20 Appendix B, Table 2, Column 2, Effluent Concentration value of 1.0E-03 µCi/ml to unrestricted areas.

Dissolved and Entrained Gases

Liquid effluent concentrations for dissolved and entrained gases are compared to the limiting value for total noble gas activity of 2.0E-04 µCi/ml (TRO 3.11.1.1).

Radionuclide Fractional Summation

The sum of the percents of applicable limits for fission and activation products, tritium and dissolved and entrained gases must be less than 100%.

SECTION 2

EFFLUENT AND WASTE DISPOSAL DATA

Airborne Effluents

Summaries of the radionuclide total curie activities and average release rates are included in Tables 2-1 and 2-2. If a radionuclide was not detected, zero activity was used for that isotope in dose calculations. A zero activity indicates that no activity was positively detected in any sample when samples were analyzed with techniques which achieved the required Lower Limits of Detection (LLD) as specified in the Technical Requirement (TRO) Table 3.11.2.1-1, Radioactive Gaseous Effluent Sampling and Analysis Program. In all cases, the measurement laboratory LLDs were less than the levels required by Technical Requirements. The following are typical measurement laboratory LLDs.

Typical LLDs

Radionuclide	LLD (µCi/cc)
Kr-87	4.3 E-08
Kr-88	4.6 E-08
Xe-133	3.0 E-08
Xe-133m	1.1 E-07
Xe-135	1.5 E-08
Xe-135m	8.0 E-08
Xe-138	1.5 E-07
Mn-54	2.9 E-13
Fe-59	2.8 E-13
Co-58	1.8 E-13
Co-60	3.8 E-13
Zn-65	1.0 E-13
Mo-99	1.0 E-12
Cs-134	2.4 E-13
Cs-137	1.1 E-13
Ce-141	1.0 E-13
Ce-144	5.0 E-13
I-131	4.4 E-14
Sr-89	1.1 E-13
Sr-90	1.3 E-14
H-3	1.5 E-08
Gross Alpha	2.3 E-14

Batch Releases

1. Number of Batch Releases:	0
2. Total Time Period for Batch Release:	NA
3. Maximum Time Period for a Batch Release:	NA
4. Average Time Period for a Batch Release:	NA
5. Minimum Time Period for a Batch Release:	NA

Abnormal Releases

1. Number of Releases	0
2. Total Activity Released	NA

TABLE 2-1

AIRBORNE EFFLUENT - SUMMATION OF ALL RELEASES

A. Fission and Activation Gas	Unit	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Total Release	Ci	6.94E-01	0	4.13E-02	0
Average Release Rate for Period	µCi/sec	8.93E-02	0	5.20E-03	0
Percent of Applicable Limit (1.67E+04 µCi/sec)	%	5.35E-04	0	3.11E-05	0

B. Iodines

Total I-131	Ci	0	5.02E-06	3.99E-06	5.13E-06
Average Release Rate for Period	µCi/sec	0	6.39E-07	5.02E-07	6.45E-07
Percent of Applicable Limit (1.73E+00 µCi/sec)	%	0	3.69E-05	2.90E-05	3.73E-05

C. Particulate

Particulate with Half-Life >8 Days	Ci	3.83E-04	9.46E-05	4.21E-05	2.74E-04
Average Release Rate for Period	µCi/sec	4.92E-05	1.20E-05	5.30E-06	3.44E-05
Percent of Applicable Limit (5.03E+01 µCi/sec)	%	9.85E-05	2.41E-05	1.06E-05	6.89E-05
Gross Alpha Radioactivity	Ci	0	0	0	0

D. Tritium

Total Release	Ci	9.32E+00	2.06E+01	2.81E+01	6.38E-01
Average Release Rate for Period	µCi/sec	1.20E+00	2.61E+00	3.54E+00	8.03E-02
Percent of Applicable Limit (2.44E+03 µCi/sec)	%	4.91E-02	1.07E-01	1.45E-01	3.29E-03

E. Radionuclide Fractional Summation

Sum of Percent of Applicable Limit During Period for B, C and D (Limit = 100%)	%	0.05	0.11	0.15	0.003

TABLE 2-2

AIRBORNE EFFLUENT - RADIONUCLIDES RELEASED

Nuclides Released	Unit	Releases in Continuous Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter
A. Fission and Activation Gases					
Ar-41	Ci	0	0	0	0
Kr-85	Ci	0	0	0	0
Kr-85m	Ci	0	0	0	0
Kr-87	Ci	0	0	0	0
Kr-88	Ci	6.94E-01	0	0	0
Kr-89	Ci	0	0	0	0
Xe-133	Ci	0	0	0	0
Xe-133m	Ci	0	0	0	0
Xe-135	Ci	0	0	4.13E-02	0
Xe-135m	Ci	0	0	0	0
Xe-137	Ci	0	0	0	0
Xe-138	Ci	0	0	0	0
Total for Period	**Ci**	**6.94E-01**	**0**	**4.13E-02**	**0**
B. Iodines					
I-131	Ci	0	5.02E-06	3.99E-06	5.13E-06
I-133	Ci	0	0	0	0
I-135	Ci	0	0	0	0
Total for Period	**Ci**	**0**	**5.02E-06**	**3.99E-06**	**5.13E-06**
C. Particulate					
Cr-51	Ci	1.39E-04	0	0	6.76E-05
Mn-54	Ci	1.08E-04	4.03E-05	8.16E-06	3.70E-05
Fe-59	Ci	0	0	0	0
Co-57	Ci	0	0	0	0
Co-58	Ci	6.79E-06	0	0	4.14E-06
Co-60	Ci	1.29E-04	5.43E-05	3.40E-05	1.65E-04
Zn-65	Ci	0	0	0	0
Sr-89	Ci	0	0	0	0
Sr-90	Ci	0	0	0	0
Cs-134	Ci	0	0	0	0
Cs-137	Ci	0	0	0	0
Ce-141	Ci	0	0	0	0
Ce-144	Ci	0	0	0	0
Nb-95	Ci	0	0	0	0
Ba-La-140	Ci	0	0	0	0
Total for Period	**Ci**	**3.83E-04**	**9.46E-05**	**4.21E-05**	**2.74E-04**

Waterborne Effluents

Summaries of the radionuclide total curie activities, average diluted concentrations, and percent of applicable Technical Requirement limits are included in Tables 2-3 and 2-4.

	Batch Releases*	Qtr. 1	Qtr. 2	Qtr. 3	Qtr. 4	Annual
1.	Number of Batch Releases	31	19	16	37	103
2.	Total Time Period for a Batch Release	5.16E+03	3.58E+03	2.20E+03	7.83E+03	1.88E+04
3.	Maximum Time Period for a Batch Release	3.04E+02	2.94E+02	3.00E+02	3.10E+02	3.10E+02
4.	Average Time Period for a Batch Release	1.66E+02	1.89E+02	1.38E+02	2.12E+02	1.82E+02
5.	Minimum Time Period for a Batch Release	2.50E+01	3.10E+01	3.00E+01	2.50E+01	2.50E+01
6.	Average Cooling Tower Blowdown Flow Rate During Periods of Release	7.41E+03	7.71E+03	1.17E+04	8.95E+03	8.61E+03
7.	Susquehanna River Flow Rate	1.12E+07	8.23E+06	6.96E+06	9.96E+06	9.10E+06

*Units of time and flow are expressed in minutes and gallons per minute (gpm), respectively.

If a radionuclide was not detected, zero activity was used for that isotope in dose calculations. A zero activity indicates that no activity was positively detected in any sample when samples were analyzed with techniques which achieved the required Lower Limits of Detection (LLD) as specified in the Technical Requirement 3.11.1.1-1, Radioactive Liquid Waste Sampling and Analysis Program. In all cases, the measurement laboratory LLDs were less than the levels required by Technical Requirements. The following are typical measurement laboratory LLDs.

Radionuclide	LLD (µCi/ml)
Mn-54	4.5 E-08
Fe-59	5.0 E-08
Co-58	4.0 E-08
Co-60	5.4 E-08
Zn-65	4.9 E-08
Mo-99	1.7 E-07
I-131	2.0 E-08
Cs-134	2.2 E-08
Cs-137	2.6 E-08
Ce-141	3.2 E-08
Ce-144	1.3 E-07
Sr-89	4.4 E-08
Sr-90	1.6 E-08
Fe-55	8.2 E-07
H-3	3.6 E-06
Gross Alpha	3.7 E-09

Abnormal Releases

1.	Number of releases	0	0	0	0
2.	Volume Released	N/A	N/A	N/A	N/A
3.	Total Activity Released	N/A	N/A	N/A	N/A

TABLE 2-3

WATERBORNE EFFLUENT - SUMMATION OF ALL RELEASES

A. Fission and Activation Products	Unit	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1. Total Release (excluding: Tritium, Ent. Gases, Alpha)	Ci	5.26E-04	5.55E-05	7.20E-05	6.68E-04
2. Average Diluted Concentration During Period	µCi/ml	3.64E-09	5.31E-10	7.38E-10	2.52E-09
3. Sum of Average Diluted C_n/L_n Ratio During Period	Unitless	5.10E-05	1.36E-05	2.80E-05	1.84E-05
4. Percent of Applicable Limit (Ratio < 1.0)	%	0.005	0.001	0.003	0.002
B. Tritium					
1. Total Release	Ci	2.52E+01	1.56E+01	8.17E+00	4.02E+01
2. Average Diluted Concentration During Period	µCi/ml	1.75E-04	1.49E-04	8.38E-05	1.52E-04
3. Percent of Applicable Limit (1.0E-2 µCi/ml)	%	1.75	1.49	0.838	1.52
C. Dissolved and Entrained Gases					
1. Total Release	Ci	3.26E-05	9.88E-06	2.42E-05	6.31E-05
2. Average Diluted Concentration During Period	µCi/ml	2.26E-10	9.44E-11	2.48E-10	2.38E-10
3. Percent of Applicable Limit (2.0E-4 µCi/ml)	%	1.13E-04	4.72E-05	1.24E-04	1.19E-04
D. Radionuclide Fractional Summation					
1. Sum of Percent of Applicable Limit During Period for A, B and C (Limit = 100%)	%	1.76	1.49	0.84	1.52
E. Gross Alpha Radioactivity					
1. Total Release	Ci	0	0	0	0
F. Volume of Water Released (Prior to Dilution)	Gallons	4.17E+05	2.93E+05	1.74E+05	6.45E+05
	Liters	1.58E+06	1.11E+06	6.59E+05	2.44E+06
G. Volume of Dilution Water Used During Period of Release	Gallons	3.78E+07	2.72E+07	2.56E+07	6.95E+07
	Liters	1.43E+08	1.03E+08	9.69E+07	2.63E+08
H. Volume of Dilution Water Used Over Entire Period	Gallons	8.12E+08	1.13E+09	1.52E+09	1.13E+09
	Liters	3.07E+09	4.28E+09	5.75E+09	4.27E+09

TABLE 2-4

WATERBORNE EFFLUENT - RADIONUCLIDES RELEASED

Nuclides Released	Unit	Releases in Batch Mode			
		First Quarter	Second Quarter	Third Quarter	Fourth Quarter
A. Fission and Activation Products					
F-18	Ci	0	0	0	0
Na-24	Ci	0	0	0	0
Cr-51	Ci	1.68E-04	2.81E-06	0	5.37E-04
Mn-54	Ci	1.01E-04	1.65E-05	1.41E-05	8.26E-06
Fe-55	Ci	0	0	0	0
Co-58	Ci	2.47E-05	1.19E-06	0	6.62E-06
Fe-59	Ci	1.16E-05	7.74E-07	0	0
Co-60	Ci	1.73E-04	2.65E-05	3.10E-05	3.68E-05
Zn-65	Ci	4.19E-05	1.88E-06	1.30E-05	4.09E-05
Sr-89	Ci	0	0	0	0
Sr-90	Ci	0	0	0	0
Tc-99m	Ci	0	0	0	1.17E-06
Sb-124	Ci	0	0	0	1.22E-05
Cs-137	Ci	1.32E-06	4.23E-06	1.39E-05	2.50E-05
Ce-141	Ci	0	1.61E-06	0	0
Ta-182	Ci	4.38E-06	0	0	0
Total for Period	**Ci**	**5.26E-04**	**5.55E-05**	**7.20E-05**	**6.68E-04**
B. Tritium					
Total for Period	**Ci**	**2.52E+01**	**1.56E+01**	**8.17E+00**	**4.02E+01**
C. Dissolved and Entrained Gases					
Ar-41	Ci	0	0	0	0
Kr-85	Ci	0	0	0	0
Kr-85m	Ci	0	0	0	0
Kr-87	Ci	0	0	0	0
Kr-88	Ci	0	0	0	0
Xe-131m	Ci	0	0	0	0
Xe-133m	Ci	0	0	0	0
Xe-133	Ci	8.11E-06	0	4.74E-06	1.74E-05
Xe-135m	Ci	0	0	0	0
Xe-135	Ci	2.45E-05	9.88E-06	1.95E-05	4.57E-05
Total for Period	**Ci**	**3.26E-05**	**9.88E-06**	**2.42E-05**	**6.31E-05**

Figure 2-1

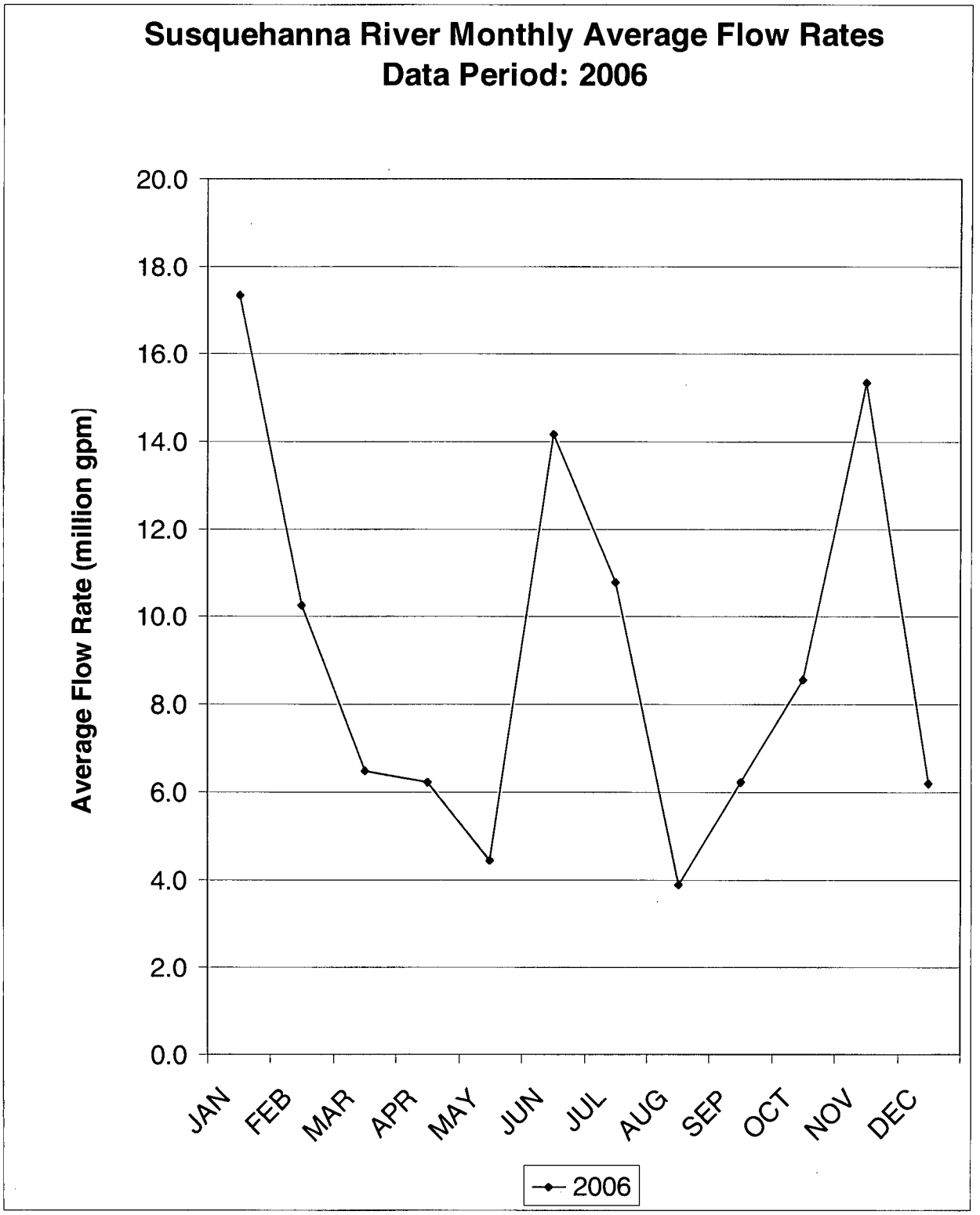

Susquehanna River Monthly Average Flow Rates
Data Period: 2006
Average Flow Rate (million gpm)
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
2006

Figure 2-2

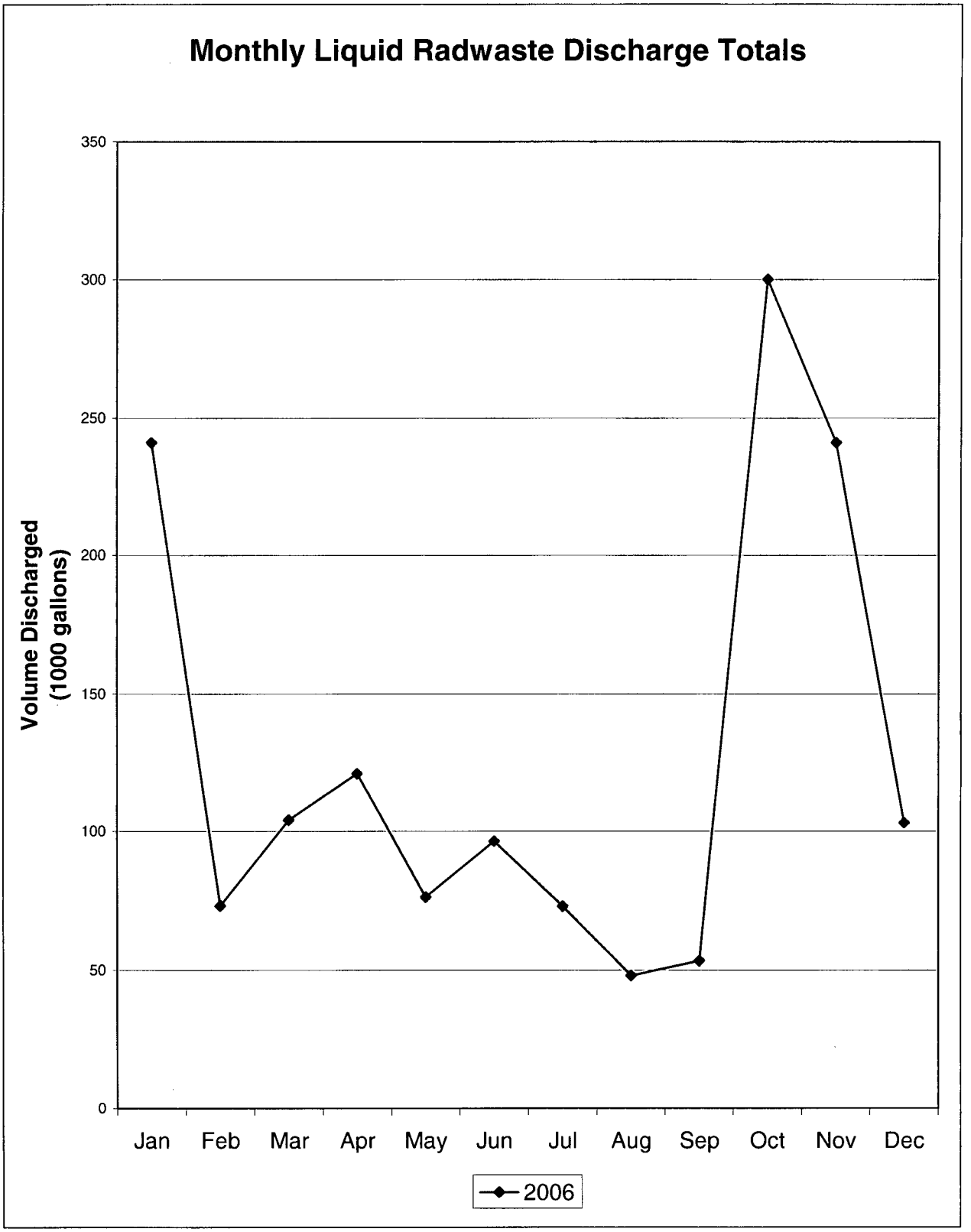

Monthly Liquid Radwaste Discharge Totals
Volume Discharged (1000 gallons)
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2006

TABLE 2-5

ESTIMATED TOTAL ERRORS ASSOCIATED WITH EFFLUENTS MEASUREMENTS

	MEASUREMENT	ESTIMATED TOTAL ERROR
1.	**Airborne Effluents**	
a.	Fission and Activation Gases	15.9%
b.	I-131	13.3%
c.	Particulates (incl. Gross Alpha)	15.8%
d.	Tritium	13.6%
2.	**Waterborne Effluents**	
a.	Fission and Activation Products	5.0%
b.	Tritium	3.3%
c.	Dissolved and Entrained Gases	8.4%
d.	Gross Alpha Activity	6.0%
e.	Volume of Waste Released (Prior to Dilution)	5.0%
f.	Volume of Dilution Water Used During Period	15.0%
		ESTIMATED MAXIMUM MEASUREMENT ERROR
3.	**Solid Wastes**	
a.	Condensate Demineralizer/RadwasteDemineralizer– Class A Steel Liner HIC (Dewatered)	±25%
b.	Liquid Radwaste Filter Media– Class A HIC (Dewatered)	±25%
c.	Non-Processed DAW – Class A Steel Liner (Non-Processed)	±25%
d.	RWCU Filter Media – Class A HIC (Dewatered)	±25%
e.	Ash – Class A Strong Tight Container (Incineration)	±25%
f.	CFS Backwash Media – Class A HIC (Pyrolysis)	±25%
g.	Condensate Demineralizer/Radwaste Demineralizer – Class A HIC (Pyrolysis)	±25%
h.	Contaminated Waste Oil – Class A (Fuel Blending for Co-Generation)	±25%
i.	Liquid Radwaste Filter Media – Class A HIC (Pyrolysis)	±25%

		ESTIMATED MAXIMUM MEASUREMENT ERROR
3.	**Solid Wastes (cont.)**	
j.	Processed DAW – Class A Strong Tight Container (Compacted)	±25%
k.	Sump Sludge – Class A HIC (Pyrolysis)	±25%
l.	Irradiated Components – Class B Steel Liner	±25%
m.	CFS Backwash Media – Class B HIC (Pyrolysis)	±25%
n.	Condensate Demineralizer/Radwaste Demineralizer – Class B HIC (Pyrolysis)	±25%
o.	Irradiated Components – Class C Steel Liner	±25%
p.	Condensate Demineralizer/Radwaste Demineralizer – Class C HIC (Pyrolysis)	±25%

SUSQUEHANNA STEAM ELECTRIC STATION

RADIOACTIVE WASTE REPORT

RADIOACTIVE EFFLUENT RELEASE REPORT

SOLID RADIOACTIVE WASTE

DATA PERIOD: JANUARY 1, 2006 - DECEMBER 31, 2006

PREPARED BY: _____

MICHAEL C. MICCA
HEALTH PHYSICIST

APPROVED BY: _____

RAY T. HOCK
RADIOLOGICAL OPERATIONS SUPERVISOR

REPORT NOTES

1. All activities reported in Milli-Curies (mCi) unless otherwise noted.

2. Reported activities, as indicated with the (<) sign, are comprised in whole or part of MDL values.

3. Estimated maximum measurement error is ±25%.

TABLE 2-6

WASTE DISPOSITION

Data Period: January 1, 2006 - December 31, 2006

A. SOLID WASTE SHIPPED OFF-SITE FOR BURIAL OR DISPOSAL

Number of Shipments	Mode of Transportation	Destination
11	Truck	Barnwell, SC

B. IRRADIATED FUEL SHIPMENTS

Number of Shipments	Mode of Transportation	Destination
NONE		

NOTE: The number of shipments listed in A include only the shipments from PPL Susquehanna, LLC to a disposal site. It does not include shipments made to or from volume reduction vendors.

Table 2-7

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: No
Source: Condensate Demineralizer / Radwaste Demineralizer
Container: Steel Liner
Process: Dewatered

Nuclides	Activity (mCi)	% of Total
C-14	1.510E+02	16.60 %
CO-58	5.780E+01	6.35 %
CO-60	1.750E+02	19.23 %
CR-51	1.570E+01	1.73 %
CS-137	1.860E-01	0.02 %
FE-55	2.010E+02	22.09 %
FE-59	8.750E+00	0.96 %
H-3	7.840E+01	8.62 %
I-129	< 4.640E-06	0.00 %
MN-54	1.770E+02	19.45 %
NB-95	1.580E+00	0.17 %
SR-90	3.950E-01	0.04 %
TC-99	< 1.370E-04	0.00 %
ZN-65	4.310E+01	4.74 %
Total Activity (Ci)	0.910	100.00 %
Container Volume	199.400 ft3	5.646 m3

Table 2-8

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: No
Source: Liquid Radwaste Filter Media
Container: HIC (High Integrity Container)
Process: Dewatered

Nuclides	Activity (mCi)	% of Total
BA-131	4.050E+01	0.04 %
C-14	2.840E-01	0.00 %
CE-144	7.160E+00	0.01 %
CO-58	8.060E+02	0.75 %
CO-60	5.070E+03	4.73 %
CR-51	2.990E+03	2.79 %
CS-137	2.360E+00	0.00 %
FE-55	9.240E+04	86.25 %
FE-59	4.880E+02	0.46 %
H-3	4.670E+01	0.04 %
I-129	< 2.080E-06	0.00 %
MN-54	4.000E+03	3.73 %
NB-95	6.390E+01	0.06 %
NI-63	2.750E+02	0.26 %
PU-241	1.110E+01	0.01 %
SB-124	5.050E+01	0.05 %
SB-125	8.630E+00	0.01 %
SR-89	2.020E+00	0.00 %
SR-90	4.660E-02	0.00 %
TC-99	3.000E-01	0.00 %
ZN-65	8.540E+02	0.80 %
ZR-95	1.040E+01	0.01 %
Total Activity (Ci)	107.127	100.00 %
Container Volume	132.400 ft3	3.749 m3

Table 2-9

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: No
Source: Non-Processed DAW
Container: Steel Liner
Process: Non-Processed

Nuclides	Activity (mCi)	% of Total
C-14	2.730E+00	0.01 %
CE-144	3.420E+00	0.01 %
CO-58	4.600E+01	0.18 %
CO-60	1.050E+03	4.22 %
CR-51	1.190E+02	0.48 %
CS-137	9.880E-01	0.00 %
FE-55	2.270E+04	91.23 %
FE-59	2.910E+01	0.12 %
H-3	1.980E+00	0.01 %
I-129	< 4.900E-05	0.00 %
MN-54	7.770E+02	3.12 %
NB-95	8.140E+00	0.03 %
NI-63	7.050E+01	0.28 %
PU-241	3.230E+00	0.01 %
SB-124	1.870E+00	0.01 %
SB-125	6.260E+00	0.03 %
TC-99	< 1.030E-04	0.00 %
ZN-65	6.180E+01	0.25 %
Total Activity (Ci)	24.882	100.00 %
Container Volume	170.200 ft3	4.820 m3

Table 2-10

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: No
Source: RWCU Filter Media
Container: HIC (High Integrity Container)
Process: Dewatered

Nuclides	Activity (mCi)	% of Total
AM-241	3.610E-03	0.00 %
C-14	1.852E+03	0.20 %
CE-144	3.671E+02	0.04 %
CM-242	3.510E-03	0.00 %
CM-244	5.700E-03	0.00 %
CO-57	5.160E+01	0.01 %
CO-58	2.388E+04	2.64 %
CO-60	1.992E+05	22.01 %
CR-51	4.909E+04	5.42 %
CS-137	4.626E+02	0.05 %
FE-55	4.550E+05	50.28 %
FE-59	3.910E+03	0.43 %
H-3	8.494E+02	0.09 %
I-129	< 8.530E-06	0.00 %
MN-54	1.020E+05	11.27 %
NB-95	6.591E+03	0.73 %
NI-63	3.500E+03	0.39 %
SB-124	2.800E+02	0.03 %
SR-89	6.233E+02	0.07 %
SR-90	5.810E+00	0.00 %
TC-99	5.860E+00	0.00 %
ZN-65	5.430E+04	6.00 %
ZR-95	2.978E+03	0.33 %
Total Activity (Ci)	904.946	100.00 %
Container Volume	264.800 ft3	7.498 m3

Table 2-11

Annual Waste Release Summary Report

Year: 2006
Class: A
Source: Ash
Container: Strong Tight Container
Process: Incineration
Volume Reduction Vendor: Yes

Nuclides	Activity (mCi)	% of Total
C-14	4.485E-03	0.00 %
CE-141	4.836E-01	0.00 %
CE-144	1.125E+00	0.01 %
CO-58	9.690E-01	0.00 %
CO-60	1.229E+03	5.99 %
CS-137	2.072E+00	0.01 %
FE-55	1.862E+04	90.81 %
H-3	0.000E+00	0.00 %
I-129	0.000E+00	0.00 %
MN-54	5.747E+02	2.80 %
NI-63	6.811E+01	0.33 %
PU-241	1.740E+00	0.01 %
SR-89	9.350E-02	0.00 %
TC-99	9.900E-02	0.00 %
ZN-65	7.082E+00	0.03 %
Total Activity (Ci)	20.505	100.00 %
Container Volume	21.630 ft3	0.613 m3

Table 2-12

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: Yes
Source: CFS Backwash Media
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	5.990E-02	0.00 %
CE-144	5.530E-01	0.05 %
CM-244	7.780E-05	0.00 %
CO-58	1.170E+00	0.10 %
CO-60	2.050E+02	16.85 %
CR-51	1.140E-01	0.01 %
CS-137	5.670E-01	0.05 %
FE-55	8.860E+02	72.83 %
FE-59	4.490E-01	0.04 %
H-3	2.470E+00	0.20 %
I-129	5.570E-04	0.00 %
MN-54	1.140E+02	9.37 %
NB-95	9.630E-02	0.01 %
NI-59	9.540E-03	0.00 %
NI-63	1.420E+00	0.12 %
PU-241	4.210E-03	0.00 %
SB-124	8.790E-02	0.01 %
SR-90	5.130E-03	0.00 %
TC-99	6.590E-03	0.00 %
ZN-65	4.280E+00	0.35 %
ZR-95	3.140E-01	0.03 %
Total Activity (Ci)	1.217	100.00 %
Container Volume	1.450 ft3	0.041 m3

Table 2-13

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: Yes
Source: Condensate Demineralizer / Radwaste Demineralizer
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	4.621E+02	19.53 %
CO-58	5.614E+01	2.37 %
CO-60	5.039E+02	21.29 %
CR-51	2.847E+01	1.20 %
CS-137	5.495E-01	0.02 %
FE-55	5.792E+02	24.48 %
FE-59	9.140E+00	0.39 %
H-3	2.381E+02	10.06 %
I-129	1.133E-01	0.00 %
MN-54	3.270E+02	13.82 %
NB-95	2.180E+01	0.92 %
NI-63	6.530E-02	0.00 %
SR-90	1.134E+00	0.05 %
TC-99	3.071E+00	0.13 %
ZN-65	1.188E+02	5.02 %
ZR-95	1.682E+01	0.71 %
Total Activity (Ci)	2.366	100.00 %
Container Volume	90.280 ft3	2.556 m3

Table 2-14

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: Yes
Source: Contaminated Waste Oil
Container: None
Process: Fuel Blending for Co-Generation

Nuclides	Activity (mCi)	% of Total
C-14	7.480E-05	0.00 %
CE-144	9.330E-05	0.00 %
CO-58	1.240E-03	0.05 %
CO-60	2.880E-02	1.27 %
CR-51	3.110E-03	0.14 %
CS-137	2.710E-05	0.00 %
FE-55	6.200E-01	27.43 %
FE-59	7.720E-04	0.03 %
H-3	1.600E+00	70.79 %
I-129	< 2.290E-09	0.00 %
MN-54	2.070E-03	0.09 %
NB-95	2.150E-04	0.01 %
NI-63	1.930E-03	0.09 %
PU-241	8.840E-05	0.00 %
SB-124	5.000E-05	0.00 %
SB-125	1.710E-04	0.01 %
TC-99	< 4.800E-09	0.00 %
ZN-65	1.690E-03	0.07 %
Total Activity (Ci)	0.002	100.00 %
Container Volume	0.000 ft3	0.000 m3

Table 2-15

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: Yes
Source: Liquid Radwaste Filter Media
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	8.390E-01	0.00 %
CE-144	1.938E+01	0.01 %
CO-58	6.880E+02	0.23 %
CO-60	1.476E+04	5.02 %
CR-51	9.650E+02	0.33 %
CS-137	6.960E+00	0.00 %
FE-55	2.660E+05	90.50 %
FE-59	4.490E+02	0.15 %
H-3	5.050E+01	0.02 %
I-129	1.356E-01	0.00 %
MN-54	7.930E+03	2.70 %
NB-95	6.250E+01	0.02 %
NI-63	8.120E+02	0.28 %
PU-241	3.260E+01	0.01 %
SB-124	5.120E+01	0.02 %
SR-90	1.375E-01	0.00 %
TC-99	8.850E-01	0.00 %
ZN-65	2.060E+03	0.70 %
ZR-95	4.970E+01	0.02 %
Total Activity (Ci)	293.939	100.00 %
Container Volume	29.320 ft3	0.830 m3

Table 2-16

Annual Waste Release Summary Report

Year: 2006
Class: A Volume Reduction Vendor: Yes
Source: Processed DAW
Container: Strong Tight Container
Process: Compacted

Nuclides	Activity (mCi)	% of Total
AG-110M	0.000E+00	0.00 %
AM-241	7.150E-03	0.00 %
BA-133	1.220E-01	0.00 %
C-14	8.973E-01	0.00 %
CD-109	1.340E-02	0.00 %
CE-139	6.500E-06	0.00 %
CE-141	1.775E+00	0.00 %
CE-144	4.673E+00	0.01 %
CM-244	0.000E+00	0.00 %
CO-57	8.150E-05	0.00 %
CO-58	2.042E+01	0.03 %
CO-60	4.552E+03	5.82 %
CR-51	1.758E+01	0.02 %
CS-134	2.930E-04	0.00 %
CS-137	7.917E+00	0.01 %
FE-55	7.108E+04	90.85 %
FE-59	8.330E+00	0.01 %
H-3	2.465E+01	0.03 %
HG-203	4.770E-10	0.00 %
I-129	2.241E-03	0.00 %
I-131	1.400E-10	0.00 %
MN-54	2.175E+03	2.78 %
NB-95	2.049E+00	0.00 %
NI-59	0.000E+00	0.00 %
NI-63	2.546E+02	0.33 %
PU-238	4.610E-04	0.00 %
PU-241	6.919E+00	0.01 %
SB-124	8.990E-01	0.00 %
SB-125	1.230E+00	0.00 %
SN-113	3.780E-06	0.00 %
SR-85	6.670E-09	0.00 %
SR-89	3.187E-01	0.00 %
SR-90	4.500E-03	0.00 %
TC-99	2.898E-01	0.00 %
Y-88	3.960E-06	0.00 %
ZN-65	7.561E+01	0.10 %
ZR-95	7.456E-01	0.00 %
Total Activity (Ci)	78.236	100.00 %
Container Volume	6827.700 ft3	193.343 m3

Table 2-17

Annual Waste Release Summary Report

Year: 2006
Class: A
Volume Reduction Vendor: Yes
Source: Sump Sludge
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	5.780E+02	1.92 %
CO-60	1.720E+03	5.72 %
CS-137	1.200E+01	0.04 %
FE-55	2.750E+04	91.38 %
H-3	4.270E+00	0.01 %
I-129	6.610E-03	0.00 %
MN-54	2.050E+02	0.68 %
NI-63	7.590E+01	0.25 %
TC-99	4.860E-02	0.00 %
Total Activity (Ci)	30.095	100.00 %
Container Volume	12.160 ft3	0.344 m3

Table 2-18

Annual Waste Release Summary Report

Year: 2006
Class: B Volume Reduction Vendor: No
Source: Irradiated Components
Container: Steel Liner
Process: N/A

Nuclides	Activity (mCi)	% of Total
AM-241	1.070E-06	0.00 %
AM-243	7.640E-11	0.00 %
C-14	1.400E+01	0.00 %
CM-242	9.840E-08	0.00 %
CM-243	8.490E-12	0.00 %
CM-244	1.710E-05	0.00 %
CO-60	1.430E+05	47.03 %
FE-55	1.460E+05	48.02 %
H-3	2.020E+01	0.01 %
I-129	< 4.340E-06	0.00 %
MN-54	4.880E+03	1.60 %
NB-94	2.700E-01	0.00 %
NI-59	5.280E+01	0.02 %
NI-63	1.010E+04	3.32 %
NP-237	8.810E-07	0.00 %
PU-238	1.980E-04	0.00 %
PU-239	9.790E-05	0.00 %
PU-240	1.100E-05	0.00 %
PU-241	3.980E-04	0.00 %
TC-99	6.210E-02	0.00 %
U-235	6.500E-05	0.00 %
Total Activity (Ci)	304.067	100.00 %
Container Volume	125.200 ft3	3.545 m3

Table 2-19

Annual Waste Release Summary Report

Year: 2006
Class: B Volume Reduction Vendor: Yes
Source: CFS Backwash Media
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	6.470E-01	0.00 %
CE-141	1.799E+01	0.02 %
CE-144	4.850E+00	0.01 %
CO-58	1.472E+02	0.16 %
CO-60	5.300E+03	5.89 %
CR-51	2.480E+02	0.28 %
CS-137	8.970E+00	0.01 %
FE-55	8.050E+04	89.48 %
FE-59	1.324E+02	0.15 %
H-3	3.860E+01	0.04 %
I-129	4.500E-02	0.00 %
MN-54	2.899E+03	3.22 %
NB-95	1.880E+01	0.02 %
NI-63	2.950E+02	0.33 %
PU-241	7.510E+00	0.01 %
SB-124	9.670E+00	0.01 %
TC-99	4.280E-01	0.00 %
ZN-65	3.401E+02	0.38 %
Total Activity (Ci)	89.969	100.00 %
Container Volume	43.830 ft3	1.241 m3

Table 2-20

Annual Waste Release Summary Report

Year: 2006
Class: B Volume Reduction Vendor: Yes
Source: Condensate Demineralizer / Radwaste Demineralizer
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	6.495E+02	19.82 %
CO-57	5.472E-01	0.02 %
CO-58	9.347E+01	2.85 %
CO-60	6.726E+02	20.52 %
CR-51	2.321E+01	0.71 %
CS-137	7.519E-01	0.02 %
FE-55	7.723E+02	23.56 %
FE-59	1.820E+01	0.56 %
H-3	2.603E+02	7.94 %
I-129	1.017E-01	0.00 %
LA-140	7.514E-07	0.00 %
MN-54	5.115E+02	15.61 %
NA-24	0.000E+00	0.00 %
NB-95	8.410E+00	0.26 %
NI-63	1.700E-01	0.01 %
SB-124	1.049E+00	0.03 %
SB-125	4.658E+00	0.14 %
SR-90	1.502E+00	0.05 %
TC-99	2.241E+00	0.07 %
ZN-65	2.475E+02	7.55 %
ZR-95	9.600E+00	0.29 %
Total Activity (Ci)	3.278	100.00 %
Container Volume	121.640 ft3	3.445 m3

Table 2-21

Annual Waste Release Summary Report

Year: 2006
Class: C Volume Reduction Vendor: No
Source: Irradiated Components
Container: Steel Liner
Process: N/A

Nuclides	Activity (mCi)	% of Total
AM-241	1.472E-02	0.00 %
AM-243	6.860E-04	0.00 %
C-14	4.502E+03	0.01 %
CM-242	2.629E-01	0.00 %
CM-243	7.260E-04	0.00 %
CM-244	1.356E-01	0.00 %
CO-58	2.040E+05	0.23 %
CO-60	3.460E+07	39.02 %
CR-51	1.237E+05	0.14 %
FE-55	3.423E+07	38.60 %
FE-59	1.986E+04	0.02 %
H-3	5.097E+03	0.01 %
HF-181	7.800E+05	0.88 %
I-129	7.370E-06	0.00 %
MN-54	1.261E+06	1.42 %
NB-94	1.043E+02	0.00 %
NB-95	2.239E+06	2.52 %
NI-59	1.302E+04	0.01 %
NI-63	2.529E+06	2.85 %
NP-237	1.935E-03	0.00 %
PU-238	2.428E+01	0.00 %
PU-239	1.775E-02	0.00 %
PU-240	2.413E-02	0.00 %
PU-241	3.282E+00	0.00 %
SB-125	3.033E+06	3.42 %
SN-113	1.841E+05	0.21 %
SN-119M	4.483E+06	5.06 %
SN-123	8.761E+04	0.10 %
TA-182	2.767E+06	3.12 %
TC-99	1.437E+01	0.00 %
U-235	8.710E-05	0.00 %
ZR-95	2.118E+06	2.39 %
Total Activity (Ci)	88682.036	100.00 %
Container Volume	287.000 ft3	8.127 m3

Table 2-22

Annual Waste Release Summary Report

Year: 2006
Class: C Volume Reduction Vendor: Yes
Source: Condensate Demineralizer / Radwaste Demineralizer
Container: HIC (High Integrity Container)
Process: Pyrolysis

Nuclides	Activity (mCi)	% of Total
C-14	1.298E+02	16.57 %
CO-58	2.291E+01	2.92 %
CO-60	1.496E+02	19.10 %
CR-51	2.380E+01	3.04 %
CS-137	1.601E-01	0.02 %
FE-55	1.706E+02	21.78 %
FE-59	6.040E+00	0.77 %
H-3	9.220E+01	11.77 %
I-129	5.310E-02	0.01 %
MN-54	9.621E+01	12.28 %
NB-95	1.330E+00	0.17 %
SR-90	3.400E-01	0.04 %
TC-99	1.566E+00	0.20 %
ZN-65	8.866E+01	11.32 %
Total Activity (Ci)	0.783	100.00 %
Container Volume	54.470 ft3	1.542 m3

SECTION 3

METEOROLOGICAL DATA AND DISPERSION ESTIMATES

METEOROLOGY AND DISPERSION DATA

Meteorological data have been collected at the PPL Susquehanna, LLC site since the early 1970s. At the present time, the meteorological system is based on a 300-foot high tower located approximately 1,000 feet to the southeast of the plant. Wind sensors are mounted at the 10m and 60m elevations on this tower. Vertical temperature differential is measured with redundant sensor pairs between the 10m and 60m levels. Sigma theta (the standard deviation of horizontal wind direction) is calculated from wind direction at both levels. Dew point and ambient temperature sensors are present at the 10m level. Precipitation is measured at ground level.

A back-up meteorological tower was erected in 1982. It is a 10m tower providing alternate measurements of wind speed, wind direction, and sigma theta. A 10m supplemental downriver meteorological tower is also available. This tower measures wind speed, wind direction, sigma theta, temperature and dew point.

Meteorological data are transmitted to the plant Control Room, Technical Support Center, Emergency Operations Facility for emergency response availability, and ABSG Consulting, Inc. ABSG Consulting, Inc., located in Rockville, Maryland, provides meteorological consulting services to PPL Susquehanna, LLC.

Regulatory Guide 1.23 (Safety Guide 23) requires at least 90% data recovery for meteorological instrumentation. During 2006, all meteorological instrumentation met the 90% data recovery requirement. Table 3-1 lists the percent valid data recovery values for the parameters monitored as part of the PPL Susquehanna Meteorological Monitoring Program.

Dispersion modeling for effluents from normal operation is done using the MIDAS system XDCALC program, a straight-line Gaussian plume model designed to estimate average relative concentration. The model was developed in accordance with Regulatory Guide 1.111. For periods when the wind speed is calm, the actual wind direction that last occurred is used.

XDCALC and the XQINTR program that interpolates X/Q values to exact locations both use terrain correction factors to account for the temporal and spatial variations in the airflow in the region. A straight-line trajectory model assumes that a constant mean wind transports and diffuses effluents in the direction of airflow at the release point within the entire region of interest. The terrain correction factors were taken from FSAR Table 2.3-128.

Tables 3-2 and 3-3 provide the joint frequency distribution of wind speed and direction (as a function of delta temperature) at the 10 and 60 meter elevations of the primary meteorological tower. Table 3-4 lists no decay, undepleted X/Q values at various distances from the site. Table 3-5 lists 2.26 day decay, undepleted X/Q values at various distances from the site. Table 3-6 lists 8-day decay, undepleted X/Q values at various distances from the site and Table 3-7 is a listing of D/Q (relative deposition) values at various distances from the site.

TABLE 3-1

METEOROLOGICAL DATA RECOVERY FOR 2006

PARAMETER	PERCENT VALID DATA RECOVERY
Wind Speed 10m – Primary [1]	99.6
Wind Speed 60m – Primary	99.5
Wind Speed 10m – Backup[2]	99.9
Wind Speed 10m – Downriver[3]	99.8
Wind Direction 10m – Primary	99.6
Wind Direction 60m – Primary	99.6
Wind Direction 10m – Backup	99.9
Wind Direction 10m – Downriver	99.5
Temperature 10m – Primary	99.5
Dew Point 10m – Primary	98.6
Delta Temperature 60m – Primary	99.3
Sigma Theta 10m – Primary	99.6
Sigma Theta 60m – Primary	99.6
Sigma Theta 10m- Backup	99.9
Sigma Theta 10m - Downriver	99.5
Precipitation – Primary	100.0[4]
Composite Parameters	
Wind Speed and Direction 10m, Delta Temperature 60-10m	99.3
Wind Speed and Direction 60m, Delta Temperature 60-10m	99.3

[1] "Primary" meteorological tower
[2] "Backup" meteorological tower
[3] "Downriver" meteorological tower
[4] "Data supplemented with data from the National Weather Service for the period of September 5 through October 31, 2006

TABLE 3-2

Joint Frequency Distribution of Wind Speed
and Direction 10m Versus Delta Temperature 60-10m
for the Period of
January 1, 2006 through December 31, 2006

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: Speed: 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Stability Class A Delta Temperature Extremely Unstable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	1	17	11	0	0	0	29
NNE	4	31	7	0	0	0	42
NE	11	17	0	0	0	0	28
ENE	15	3	0	0	0	0	18
E	11	8	0	0	0	0	19
ESE	12	3	1	0	0	0	16
SE	10	13	1	0	0	0	24
SSE	13	3	1	0	0	0	17
S	16	11	4	0	0	0	31
SSW	11	51	6	0	0	0	68
SW	10	106	85	2	0	0	203
WSW	4	22	33	0	0	0	59
W	1	4	5	0	0	0	10
WNW	0	2	1	0	0	0	3
NW	1	1	5	0	0	0	7
NNW	1	9	5	0	0	0	15
Total	121	301	165	2	0	0	589

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	589
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: Speed: 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Stability Class B Delta Temperature Moderately Unstable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	5	5	9	0	0	0	19
NNE	0	15	6	0	0	0	21
NE	1	6	2	0	0	0	9
ENE	6	4	1	0	0	0	11
E	5	1	3	0	0	0	9
ESE	2	0	1	0	0	0	3
SE	2	3	2	0	0	0	7
SSE	5	2	0	0	0	0	7
S	1	4	3	0	0	0	8
SSW	5	7	4	0	0	0	16
SW	4	29	31	3	0	0	67
WSW	0	4	8	1	0	0	13
W	0	3	5	0	0	0	8
WNW	1	2	8	0	0	0	11
NW	0	2	1	0	0	0	3
NNW	0	2	8	0	0	0	10
Total	37	89	92	4	0	0	222

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	222
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Stability Class C Delta Temperature Slightly Unstable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	2	20	20	2	0	0	44
NNE	3	20	6	0	0	0	29
NE	2	13	0	0	0	0	15
ENE	0	4	1	0	0	0	5
E	5	2	0	0	0	0	7
ESE	8	1	2	0	0	0	11
SE	4	4	2	0	0	0	10
SSE	2	5	0	0	0	0	7
S	4	7	7	0	0	0	18
SSW	5	10	7	0	0	0	22
SW	0	24	33	5	0	0	62
WSW	0	15	19	2	0	0	36
W	0	7	4	1	0	0	12
WNW	1	1	2	0	0	0	4
NW	0	1	9	0	0	0	10
NNW	0	2	12	3	0	0	17
Total	36	136	124	13	0	0	309

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	309
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Stability Class D Delta Temperature Neutral

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	20	158	79	2	0	0	259
NNE	47	192	46	0	0	0	285
NE	71	116	2	0	0	0	189
ENE	59	33	8	0	0	0	100
E	56	34	10	2	0	0	102
ESE	68	59	21	4	0	0	152
SE	70	63	19	5	1	0	158
SSE	55	46	10	1	0	0	112
S	60	74	29	2	2	0	167
SSW	71	160	18	2	0	0	251
SW	35	188	157	50	1	0	431
WSW	14	70	112	50	13	0	259
W	8	74	88	30	1	0	201
WNW	8	86	135	34	0	0	263
NW	8	99	180	43	0	0	330
NNW	3	111	145	40	0	0	299
Total	653	1563	1059	265	18	0	3558

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	3558
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Stability Class E Delta Temperature Slightly Stable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	53	60	2	0	0	0	115
NNE	136	96	10	0	0	0	242
NE	214	54	7	0	0	0	275
ENE	296	14	6	0	0	0	316
E	170	7	4	0	0	0	181
ESE	130	11	4	0	0	0	145
SE	119	17	3	2	0	0	141
SSE	132	21	7	1	0	0	161
S	164	68	17	2	0	0	251
SSW	105	139	10	1	0	0	255
SW	50	84	20	1	0	0	155
WSW	12	30	5	1	0	0	48
W	11	16	3	0	0	0	30
WNW	3	8	1	0	0	0	12
NW	9	12	4	0	0	0	25
NNW	8	20	7	0	0	0	35
Total	1612	657	110	8	0	0	2387

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	2387
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 10M WD **Lapse:** DT60-10
Stability Class F Delta Temperature Moderately Stable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	8	1	0	0	0	0	9
NNE	46	8	0	0	0	0	55
NE	174	9	0	0	0	0	183
ENE	407	6	0	0	0	0	413
E	148	1	0	0	0	0	149
ESE	48	0	0	0	0	0	48
SE	42	0	0	0	0	0	42
SSE	44	0	0	0	0	0	44
S	37	3	0	0	0	0	40
SSW	17	5	0	0	0	0	22
SW	3	1	0	0	0	0	4
WSW	2	1	0	0	0	0	3
W	0	0	0	0	0	0	0
WNW	2	0	0	0	0	0	2
NW	3	0	0	0	0	0	3
NNW	1	0	0	0	0	0	1
Total	982	35	0	0	0	0	1018

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	1017
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 0M WD **Lapse:** DT60-10

Stability Class G Delta Temperature Extremely Stable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	2	1	0	0	0	0	3
NNE	11	0	0	0	0	0	11
NE	137	7	0	0	0	0	144
ENE	345	6	0	0	0	0	351
E	61	0	0	0	0	0	61
ESE	25	0	0	0	0	0	25
SE	10	1	0	0	0	0	11
SSE	6	0	0	0	0	0	6
S	5	0	0	0	0	0	5
SSW	0	0	0	0	0	0	0
SW	1	0	0	0	0	0	1
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	0	0	0	0	0	0	0
NW	0	0	0	0	0	0	0
NNW	1	0	0	0	0	0	1
Total	604	15	0	0	0	0	619

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	619
Total Hours for the Period	8760

TABLE 3-2
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 10M SPD **Direction:** 10M WD **Lapse:** DT60-10

Summary of All Stability Classes Delta Temperature

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	91	262	121	4	0	0	478
NNE	247	362	75	0	0	0	685
NE	610	222	11	0	0	0	843
ENE	1128	70	16	0	0	0	1214
E	456	53	17	2	0	0	528
ESE	293	74	29	4	0	0	400
SE	257	101	27	7	1	0	393
SSE	257	77	18	2	0	0	354
S	287	167	60	4	2	0	520
SSW	214	372	45	3	0	0	634
SW	103	432	326	61	1	0	923
WSW	32	142	177	54	13	0	418
W	20	104	105	31	1	0	261
WNW	15	99	147	34	0	0	295
NW	21	115	199	43	0	0	378
NNW	14	144	177	43	0	0	378
Total	4045	2796	1550	292	18	0	8702

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	58
Number of Valid Hours for this Table	8701
Total Hours for the Period	8760

TABLE 3-3

Joint Frequency Distribution of Wind Speed
and Direction 60m Versus Delta Temperature 60-10m
for the Period of
January 1, 2006 through December 31, 2006

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class A Delta Temperature Extremely Unstable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	0	14	24	0	0	0	38
NNE	3	16	15	5	0	0	39
NE	9	21	5	0	0	0	35
ENE	10	10	0	0	0	0	20
E	12	7	0	0	0	0	19
ESE	3	7	0	1	0	0	11
SE	3	5	0	1	0	0	9
SSE	1	10	2	1	0	0	14
S	11	9	4	3	0	0	27
SSW	16	21	14	3	0	0	54
SW	5	58	93	33	0	0	189
WSW	0	15	53	32	1	0	101
W	0	1	10	1	0	0	12
WNW	0	0	6	0	0	0	6
NW	1	2	3	1	0	0	7
NNW	0	1	6	1	0	0	8
Total	74	197	235	82	1	0	589

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	589
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class B Delta Temperature Moderately Unstable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	2	4	9	1	0	0	16
NNE	1	10	13	1	0	0	25
NE	1	4	7	0	0	0	12
ENE	2	3	1	0	0	0	6
E	2	1	1	2	0	0	6
ESE	3	1	0	1	0	0	5
SE	0	1	1	2	0	0	4
SSE	2	2	1	0	0	0	5
S	3	1	3	0	0	0	7
SSW	2	3	4	4	0	0	13
SW	2	9	22	13	0	0	46
WSW	2	3	15	22	2	0	44
W	0	1	9	0	0	0	10
WNW	0	1	9	0	0	0	10
NW	0	0	1	0	0	0	1
NNW	0	2	9	1	0	0	12
Total	22	46	105	47	2	0	222

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	222
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class C Delta Temperature Slightly Unstable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	3	6	19	8	0	0	36
NNE	0	13	22	2	0	0	37
NE	1	8	6	0	0	0	15
ENE	3	3	0	1	0	0	7
E	5	1	1	0	0	0	7
ESE	4	0	2	1	0	0	7
SE	1	0	2	1	0	0	4
SSE	0	2	3	0	0	0	5
S	5	3	1	3	0	0	12
SSW	2	4	6	6	1	0	19
SW	2	8	26	13	0	0	49
WSW	0	9	27	21	3	2	62
W	0	1	12	2	0	0	15
WNW	0	2	3	1	0	0	6
NW	0	1	2	4	0	0	7
NNW	1	1	15	4	0	0	21
Total	27	62	147	67	4	2	309

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	309
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10
Stability Class D Delta Temperature Neutral

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	11	67	147	22	1	0	248
NNE	33	93	155	37	1	0	319
NE	41	63	69	9	0	0	182
ENE	32	31	21	4	1	0	89
E	16	21	26	5	1	0	69
ESE	17	26	41	25	5	2	116
SE	21	40	30	16	5	1	113
SSE	32	21	33	10	1	0	97
S	25	36	25	16	0	2	104
SSW	30	62	48	29	10	2	181
SW	33	162	138	65	4	2	404
WSW	10	79	138	170	75	19	491
W	2	39	123	87	25	9	285
WNW	1	39	125	100	11	0	276
NW	0	44	175	92	8	0	319
NNW	2	24	160	67	12	0	265
Total	306	847	1454	754	160	37	3558

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	3558
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class E Delta Temperature Slightly Stable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	37	86	21	0	0	0	144
NNE	104	212	68	3	0	0	387
NE	123	108	33	10	9	0	283
ENE	55	41	14	4	2	0	116
E	54	26	5	2	0	0	87
ESE	38	20	7	5	0	0	70
SE	47	27	22	2	1	1	100
SSE	62	33	14	7	2	1	119
S	50	46	33	11	3	0	143
SSW	49	90	100	28	7	2	276
SW	38	132	100	12	1	0	283
WSW	17	53	114	38	2	0	224
W	6	30	10	3	0	0	49
WNW	4	15	6	1	0	0	26
NW	2	11	19	5	0	0	37
NNW	15	14	11	3	0	0	43
Total	701	944	577	134	27	4	2387

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	2387
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class F Delta Temperature Moderately Stable

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	26	78	6	0	0	0	110
NNE	77	199	13	0	0	0	289
NE	119	57	4	0	0	0	181
ENE	44	5	0	0	0	0	49
E	46	7	0	0	0	0	53
ESE	36	2	1	0	0	0	39
SE	34	7	1	0	0	0	42
SSE	19	3	0	0	0	0	22
S	17	17	4	0	0	0	38
SSW	11	38	9	0	0	0	58
SW	5	31	25	1	0	0	62
WSW	2	12	35	1	0	0	50
W	3	2	0	0	0	0	5
WNW	0	2	0	0	0	0	2
NW	2	7	1	0	0	0	10
NNW	4	2	1	0	0	0	7
Total	445	469	100	2	0	0	1017

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	1016
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Stability Class G Delta Temperature Extremely Stable

	Wind Speed (mph)						
Wind Direction	1 - 4	4 - 8	8 - 13	13 - 19	19 - 25	≥ 25	Total
N	12	60	3	0	0	0	75
NNE	53	134	0	0	0	0	187
NE	65	54	0	0	0	0	119
ENE	39	7	0	0	0	0	46
E	29	5	0	0	0	0	34
ESE	13	4	0	0	0	0	17
SE	13	5	0	0	0	0	18
SSE	12	4	2	0	0	0	18
S	9	14	1	0	0	0	24
SSW	5	21	7	0	0	0	33
SW	1	21	4	0	0	0	26
WSW	1	6	5	0	0	0	12
W	0	2	0	0	0	0	2
WNW	2	1	0	0	0	0	3
NW	2	2	0	0	0	0	4
NNW	0	1	0	0	0	0	1
Total	256	341	22	0	0	0	619

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	619
Total Hours for the Period	8760

TABLE 3-3
(continued)

Hours at Each Wind Speed and Direction

Period of Record = 01/01/06 0:00 12/31/06 23:00 Total Period

Elevation: **Speed:** 60M SPD **Direction:** 60M WD **Lapse:** DT60-10

Summary of All Stability Classes Delta Temperature

	Wind Speed (mph)						
Wind Direction	**1 - 4**	**4 - 8**	**8 - 13**	**13 - 19**	**19 - 25**	**≥ 25**	**Total**
N	91	315	229	31	1	0	667
NNE	271	677	286	48	1	0	1283
NE	359	315	124	19	9	0	827
ENE	185	100	36	9	3	0	333
E	164	68	33	9	1	0	275
ESE	114	60	51	33	5	2	265
SE	119	85	56	22	6	2	290
SSE	128	75	55	18	3	1	280
S	120	126	71	33	3	2	355
SSW	115	239	188	70	18	4	634
SW	86	421	408	137	5	2	1059
WSW	32	177	387	284	83	21	984
W	11	76	164	93	25	9	378
WNW	7	60	149	102	11	0	329
NW	7	67	201	102	8	0	385
NNW	22	45	202	76	12	0	357
Total	1831	2906	2640	1086	194	43	8701

Number of Calm Hours for this Table	1
Number of Variable Direction Hours for this Table	0
Number of Invalid Hours	59
Number of Valid Hours for this Table	8700
Total Hours for the Period	8760

TABLE 3-4

2006 SSES ANNUAL RELATIVE CONCENTRATIONS
NO DECAY, UNDEPLETED X/Q (sec/m^3)

	MILES									
DIRECTION FROM	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 10	10 - 20	20 - 30	30 - 40	40 - 50
N	1.91E-06	3.76E-07	1.73E-07	1.01E-07	7.01E-08	3.45E-08	1.29E-08	6.30E-09	3.98E-09	2.83E-09
NNE	3.86E-06	7.71E-07	3.64E-07	2.16E-07	1.52E-07	7.63E-08	2.96E-08	1.47E-08	9.36E-09	6.72E-09
NE	1.00E-05	1.88E-06	9.20E-07	5.75E-07	4.13E-07	2.14E-07	8.76E-08	4.44E-08	2.87E-08	2.10E-08
ENE	2.01E-05	3.69E-06	1.84E-06	1.17E-06	8.42E-07	4.41E-07	1.83E-07	9.36E-08	6.07E-08	4.46E-08
E	8.03E-06	1.55E-06	7.62E-07	4.73E-07	3.39E-07	1.75E-07	7.11E-08	3.61E-08	2.33E-08	1.70E-08
ESE	4.40E-06	8.65E-07	4.14E-07	2.50E-07	1.78E-07	9.02E-08	3.58E-08	1.79E-08	1.15E-08	8.30E-09
SE	3.55E-06	7.13E-07	3.39E-07	2.03E-07	1.43E-07	7.21E-08	2.82E-08	1.41E-08	8.99E-09	6.48E-09
SSE	3.07E-06	6.23E-07	2.97E-07	1.78E-07	1.25E-07	6.32E-08	2.48E-08	1.23E-08	7.91E-09	5.69E-09
S	3.53E-06	7.25E-07	3.41E-07	2.02E-07	1.42E-07	7.15E-08	2.77E-08	1.37E-08	8.78E-09	6.31E-09
SSW	3.09E-06	6.30E-07	2.91E-07	1.70E-07	1.18E-07	5.87E-08	2.23E-08	1.09E-08	6.91E-09	4.92E-09
SW	2.34E-06	4.51E-07	2.05E-07	1.19E-07	8.24E-08	4.02E-08	1.49E-08	7.27E-09	4.59E-09	3.25E-09
WSW	9.65E-07	1.85E-07	8.38E-08	4.83E-08	3.32E-08	1.59E-08	5.79E-09	2.78E-09	1.74E-09	1.22E-09
W	7.00E-07	1.36E-07	6.09E-08	3.48E-08	2.39E-08	1.13E-08	4.05E-09	1.91E-09	1.18E-09	8.21E-10
WNW	7.24E-07	1.37E-07	6.14E-08	3.52E-08	2.40E-08	1.12E-08	3.94E-09	1.84E-09	1.12E-09	7.71E-10
NW	9.65E-07	1.86E-07	8.37E-08	4.82E-08	3.29E-08	1.55E-08	5.50E-09	2.58E-09	1.59E-09	1.10E-09
NNW	9.48E-07	1.81E-07	8.17E-08	4.71E-08	3.23E-08	1.53E-08	5.51E-09	2.61E-09	1.61E-09	1.12E-09

TABLE 3-5

2006 SSES ANNUAL RELATIVE CONCENTRATIONS
2.26-DAY DECAY, UNDEPLETED X/Q (sec/m^3)

	MILES									
DIRECTION FROM	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 10	10 - 20	20 - 30	30 - 40	40 - 50
N	1.90E-06	3.74E-07	1.71E-07	9.93E-08	6.88E-08	3.34E-08	1.21E-08	5.66E-09	3.42E-09	2.33E-09
NNE	3.85E-06	7.66E-07	3.59E-07	2.13E-07	1.49E-07	7.36E-08	2.76E-08	1.30E-08	7.92E-09	5.43E-09
NE	1.00E-05	1.86E-06	9.06E-07	5.63E-07	4.01E-07	2.04E-07	8.00E-08	3.81E-08	2.32E-08	1.59E-08
ENE	2.00E-05	3.65E-06	1.81E-06	1.14E-06	8.17E-07	4.19E-07	1.66E-07	7.94E-08	4.82E-08	3.32E-08
E	8.00E-06	1.53E-06	7.47E-07	4.60E-07	3.27E-07	1.64E-07	6.31E-08	2.96E-08	1.77E-08	1.19E-08
ESE	4.38E-06	8.56E-07	4.06E-07	2.44E-07	1.72E-07	8.52E-08	3.19E-08	1.48E-08	8.80E-09	5.90E-09
SE	3.54E-06	7.05E-07	3.33E-07	1.98E-07	1.39E-07	6.84E-08	2.54E-08	1.18E-08	7.01E-09	4.70E-09
SSE	3.06E-06	6.17E-07	2.92E-07	1.74E-07	1.22E-07	6.02E-08	2.25E-08	1.05E-08	6.32E-09	4.28E-09
S	3.52E-06	7.19E-07	3.37E-07	1.98E-07	1.39E-07	6.86E-08	2.55E-08	1.20E-08	7.24E-09	4.92E-09
SSW	3.08E-06	6.26E-07	2.88E-07	1.67E-07	1.16E-07	5.69E-08	2.09E-08	9.79E-09	5.94E-09	4.06E-09
SW	2.33E-06	4.49E-07	2.04E-07	1.18E-07	8.12E-08	3.92E-08	1.42E-08	6.68E-09	4.08E-09	2.80E-09
WSW	9.63E-07	1.85E-07	8.32E-08	4.78E-08	3.28E-08	1.56E-08	5.55E-09	2.59E-09	1.57E-09	1.07E-09
W	6.99E-07	1.35E-07	6.04E-08	3.45E-08	2.36E-08	1.11E-08	3.88E-09	1.78E-09	1.07E-09	7.17E-10
WNW	7.23E-07	1.37E-07	6.11E-08	3.49E-08	2.37E-08	1.10E-08	3.80E-09	1.73E-09	1.03E-09	6.90E-10
NW	9.64E-07	1.85E-07	8.32E-08	4.77E-08	3.25E-08	1.52E-08	5.28E-09	2.41E-09	1.44E-09	9.65E-10
NNW	9.46E-07	1.80E-07	8.11E-08	4.67E-08	3.19E-08	1.50E-08	5.27E-09	2.42E-09	1.45E-09	9.79E-10

TABLE 3-6

2006 SSES ANNUAL RELATIVE CONCENTRATIONS
8-DAY DECAY, DEPLETED X/Q (sec/m^3)

	MILES									
DIRECTION FROM	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 10	10 - 20	20 - 30	30 - 40	40 - 50
N	1.74E-06	3.19E-07	1.40E-07	7.80E-08	5.25E-08	2.39E-08	7.96E-09	3.38E-09	1.91E-09	1.23E-09
NNE	3.52E-06	6.53E-07	2.94E-07	1.67E-07	1.14E-07	5.30E-08	1.82E-08	7.84E-09	4.47E-09	2.91E-09
NE	9.16E-06	1.59E-06	7.43E-07	4.44E-07	3.08E-07	1.48E-07	5.35E-08	2.35E-08	1.35E-08	8.92E-09
ENE	1.84E-05	3.12E-06	1.48E-06	9.01E-07	6.29E-07	3.05E-07	1.12E-07	4.94E-08	2.85E-08	1.88E-08
E	7.33E-06	1.31E-06	6.14E-07	3.65E-07	2.52E-07	1.20E-07	4.31E-08	1.88E-08	1.08E-08	7.07E-09
ESE	4.02E-06	7.32E-07	3.34E-07	1.93E-07	1.32E-07	6.22E-08	2.17E-08	9.37E-09	5.33E-09	3.46E-09
SE	3.24E-06	6.03E-07	2.73E-07	1.57E-07	1.07E-07	4.98E-08	1.72E-08	7.38E-09	4.19E-09	2.72E-09
SSE	2.80E-06	5.27E-07	2.40E-07	1.37E-07	9.35E-08	4.37E-08	1.51E-08	6.52E-09	3.72E-09	2.41E-09
S	3.23E-06	6.13E-07	2.76E-07	1.56E-07	1.06E-07	4.95E-08	1.70E-08	7.30E-09	4.16E-09	2.70E-09
SSW	2.82E-06	5.34E-07	2.35E-07	1.31E-07	8.87E-08	4.08E-08	1.37E-08	5.84E-09	3.31E-09	2.14E-09
SW	2.14E-06	3.82E-07	1.66E-07	9.21E-08	6.17E-08	2.80E-08	9.23E-09	3.92E-09	2.22E-09	1.43E-09
WSW	8.82E-07	1.57E-07	6.78E-08	3.74E-08	2.49E-08	1.11E-08	3.58E-09	1.50E-09	8.46E-10	5.41E-10
W	6.39E-07	1.15E-07	4.93E-08	2.70E-08	1.79E-08	7.91E-09	2.51E-09	1.04E-09	5.75E-10	3.63E-10
WNW	6.61E-07	1.16E-07	4.97E-08	2.73E-08	1.80E-08	7.83E-09	2.44E-09	9.98E-10	5.49E-10	3.43E-10
NW	8.82E-07	1.57E-07	6.78E-08	3.74E-08	2.47E-08	1.08E-08	3.40E-09	1.40E-09	7.74E-10	4.86E-10
NNW	8.66E-07	1.53E-07	6.61E-08	3.65E-08	2.42E-08	1.07E-08	3.41E-09	1.41E-09	7.83E-10	4.95E-10

TABLE 3-7

2006 SSES ANNUAL RELATIVE DEPOSITION
D/Q (meters^{-2})

	MILES									
DIRECTION FROM	0 - 1	1 - 2	2 - 3	3 - 4	4 - 5	5 - 10	10 - 20	20 - 30	30 - 40	40 - 50
N	1.12E-08	1.71E-09	7.77E-10	4.07E-10	2.60E-10	1.09E-10	3.54E-11	1.30E-11	6.95E-12	4.37E-12
NNE	1.60E-08	2.45E-09	1.11E-09	5.82E-10	3.72E-10	1.55E-10	5.06E-11	1.86E-11	9.94E-12	6.24E-12
NE	1.97E-08	3.01E-09	1.37E-09	7.16E-10	4.57E-10	1.91E-10	6.22E-11	2.29E-11	1.22E-11	7.68E-12
ENE	2.83E-08	4.34E-09	1.96E-09	1.03E-09	6.58E-10	2.75E-10	8.95E-11	3.29E-11	1.76E-11	1.10E-11
E	1.23E-08	1.89E-09	8.54E-10	4.48E-10	2.86E-10	1.20E-10	3.89E-11	1.43E-11	7.65E-12	4.80E-12
ESE	9.34E-09	1.43E-09	6.47E-10	3.40E-10	2.17E-10	9.06E-11	2.95E-11	1.09E-11	5.79E-12	3.64E-12
SE	9.18E-09	1.40E-09	6.36E-10	3.34E-10	2.13E-10	8.90E-11	2.90E-11	1.07E-11	5.69E-12	3.58E-12
SSE	8.27E-09	1.26E-09	5.73E-10	3.01E-10	1.92E-10	8.01E-11	2.61E-11	9.61E-12	5.13E-12	3.22E-12
S	1.21E-08	1.86E-09	8.41E-10	4.41E-10	2.82E-10	1.18E-10	3.83E-11	1.41E-11	7.53E-12	4.73E-12
SSW	1.48E-08	2.26E-09	1.03E-09	5.38E-10	3.44E-10	1.44E-10	4.67E-11	1.72E-11	9.18E-12	5.77E-12
SW	2.16E-08	3.30E-09	1.49E-09	7.84E-10	5.00E-10	2.09E-10	6.80E-11	2.50E-11	1.34E-11	8.40E-12
WSW	9.76E-09	1.49E-09	6.76E-10	3.55E-10	2.27E-10	9.46E-11	3.08E-11	1.13E-11	6.05E-12	3.80E-12
W	6.09E-09	9.32E-10	4.22E-10	2.22E-10	1.41E-10	5.91E-11	1.92E-11	7.08E-12	3.78E-12	2.38E-12
WNW	6.89E-09	1.05E-09	4.77E-10	2.50E-10	1.60E-10	6.68E-11	2.17E-11	8.01E-12	4.27E-12	2.68E-12
NW	8.85E-09	1.35E-09	6.13E-10	3.22E-10	2.05E-10	8.58E-11	2.79E-11	1.03E-11	5.49E-12	3.45E-12
NNW	8.85E-09	1.35E-09	6.13E-10	3.22E-10	2.05E-10	8.58E-11	2.79E-11	1.03E-11	5.49E-12	3.45E-12

TABLE 3-8

2006 ATMOSPHERIC DISPERSION ESTIMATES FOR RETDAS INPUT AT SELECTED LOCATIONS

AFFECTED SECTOR	LOCATION	MILES	X/Q[1]	X/Q DEC[2]	X/Q DEC+DEP[3]	DEPOSITION[4]
11/SW	Maximum (X/Q) Site Boundary	0.61	1.52E-05	1.51E-05	1.37E-05	2.88E-08
9/S	Closest (X/Q) Site Boundary	0.38	6.67E-06	6.66E-06	6.21E-06	4.18E-08
12 / WSW	Maximum (X/Q) Residence	1.3	1.07E-05	1.06E-05	9.12E-06	1.28E-08
7 / SE	Maximum (D/Q) Residence	0.5	2.34E-06	2.34E-06	2.14E-06	2.15E-08
7 / SE	Maximum (D/Q) Garden	0.6	1.79E-06	1.79E-06	1.61E-06	1.58E-08
12 / WSW	Maximum (D/Q) Dairy	1.7	7.30E-06	7.22E-06	6.11E-06	8.38E-09
12 / WSW	Maximum (D/Q) Meat Producer	1.7	7.30E-06	7.22E-06	6.11E-06	8.38E-09
3 / NE	Riverlands / EIC	0.7	3.26E-06	3.25E-06	2.91E-06	2.80E-08
12 / WSW	Tower's Club	0.5	3.66E-05	3.64E-05	3.34E-05	5.15E-08
5 / E	East Gate	0.5	1.62E-06	1.62E-06	1.48E-06	1.41E-08

NEAREST RESIDENCE WITHIN A 5-MILE RADIUS BY SECTOR

SECTOR NUMBER	AFFECTED SECTOR	NAME	MILES	X/Q	X/Q DEC	X/Q DEC+DEP	DEPOSITION
1	N	H.Burd	1.3	1.91E-06	1.90E-06	1.64E-06	5.09E-09
2	NNE	E.Ashbridge III	1	2.83E-06	2.82E-06	2.47E-06	1.13E-08
3	NE	W.Tuggle	0.9	2.26E-06	2.25E-06	1.98E-06	1.84E-08
4	ENE	D.Barberi	2.1	2.89E-07	2.87E-07	2.38E-07	2.33E-09
5	E	L.Kozlowski/ W. Witts	1.4	3.15E-07	3.14E-07	2.68E-07	2.20E-09
6	ESE	R.Panetta	0.5	1.86E-06	1.86E-06	1.70E-06	1.77E-08
7	SE	J.Futoma	0.5	2.34E-06	2.34E-06	2.14E-06	2.15E-08
8	SSE	J.Naunczek	0.6	1.95E-06	1.95E-06	1.76E-06	1.75E-08
9	S	S.Slusser	1	1.69E-06	1.68E-06	1.47E-06	8.43E-09
10	SSW	S.Molnar	0.9	3.89E-06	3.88E-06	3.42E-06	1.40E-08
11	SW	F.Michael	1.5	4.02E-06	3.99E-06	3.40E-06	6.46E-09
12	WSW	F.Michael	1.3	1.07E-05	1.06E-05	9.12E-06	1.28E-08
13	W	F. Hummel	1.2	4.71E-06	4.66E-06	4.04E-06	6.02E-09
14	WNW	R.Orlando	0.8	6.01E-06	5.97E-06	5.31E-06	1.15E-08
15	NW	B. Kramer	0.8	5.89E-06	5.85E-06	5.21E-06	1.36E-08
16	NNW	G. John	0.6	5.96E-06	5.93E-06	5.37E-06	1.53E-08

NEAREST GARDEN WITHIN A 5-MILE RADIUS BY SECTOR

SECTOR NUMBER	AFFECTED SECTOR	NAME	MILES	X/Q	X/Q DEC	X/Q DEC+DEP	DEPOSITION
1	N	J.Wojcik	3.2	5.08E-07	4.99E-07	3.98E-07	1.15E-09
2	NNE	R.Chapin	2.3	8.41E-07	8.33E-07	6.85E-07	2.97E-09
3	NE	F. Kremski	2.6	4.79E-07	4.74E-07	3.85E-07	3.44E-09
4	ENE	G.Dennis	2.4	2.41E-07	2.39E-07	1.96E-07	1.95E-09
5	E	W.Daily	1.8	2.11E-07	2.10E-07	1.76E-07	1.46E-09
6	ESE	L.Travelpiece	2.5	1.23E-07	1.22E-07	9.93E-08	9.53E-10
7	SE	F.Scholl	0.6	1.79E-06	1.79E-06	1.61E-06	1.58E-08
8	SSE	H.Roinick	2.9	1.47E-07	1.46E-07	1.17E-07	1.06E-09
9	S	T. Stemrich	2.5	3.80E-07	3.76E-07	3.07E-07	1.71E-09
10	SSW	S.Bodnar	1.2	2.51E-06	2.50E-06	2.16E-06	8.43E-09
11	SW	R. Broody	1.9	2.85E-06	2.81E-06	2.36E-06	4.41E-09
12	WSW	F.Michael	1.3	1.07E-05	1.06E-05	9.12E-06	1.28E-08
13	W	F.Hummel	1.2	4.71E-06	4.66E-06	4.04E-06	6.02E-09
14	WNW	P.Moskaluk	1.3	2.77E-06	2.74E-06	2.37E-06	4.72E-09
15	NW	R.Reider	4.5	3.66E-07	3.55E-07	2.73E-07	5.45E-10
16	NNW	P.Culver	4	3.53E-07	3.44E-07	2.68E-07	5.67E-10

TABLE 3-8
(continued)

NEAREST ANIMAL RAISED FOR MEAT CONSUMPTION WITHIN A 5-MILE RADIUS BY SECTOR

SECTOR NUMBER	AFFECTED SECTOR	NAME	MILES	X/Q	X/Q DEC	X/Q DEC+DEP	DEPOSITION
2	NNE	R.Chapin	2.3	8.41E-07	8.33E-07	6.85E-07	2.97E-09
4	ENE	G.Dennis	2.4	2.41E-07	2.39E-07	1.96E-07	1.95E-09
5	E	W.Daily	1.8	2.11E-07	2.10E-07	1.76E-07	1.46E-09
10	SSW	R. & C. Ryman	3	5.77E-07	5.69E-07	4.56E-07	1.65E-09
12	WSW	T. & M Berger	1.7	7.30E-06	7.22E-06	6.11E-06	8.38E-09

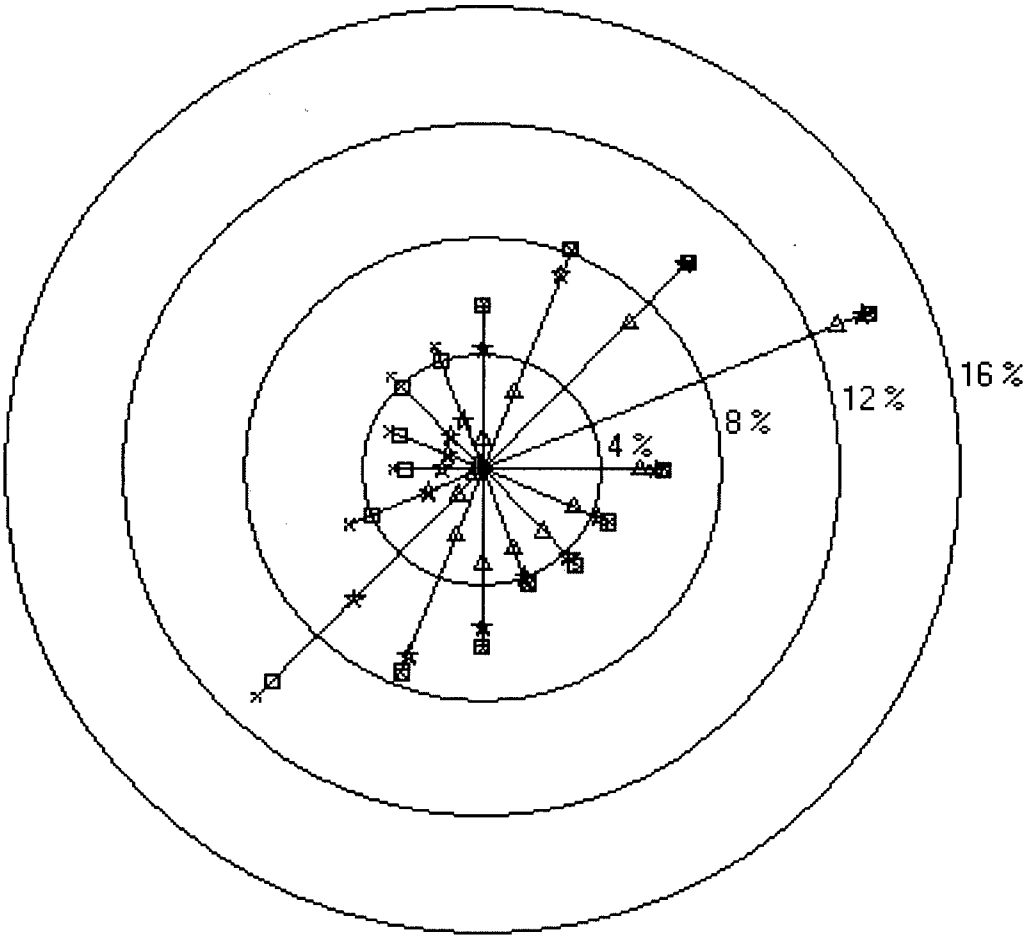
ALL DAIRY LOCATIONS

SECTOR NUMBER	AFFECTED SECTOR	NAME	MILES	X/Q	X/Q DEC	X/Q DEC+DEP	DEPOSITION
5	E	W.Bloss	4.5	4.29E-08	4.24E-08	3.22E-08	2.54E-10
6	ESE	F.Rinehimer	4.2	4.22E-08	4.18E-08	3.19E-08	2.86E-10
10	SSW	R. & C. Ryman	3	5.77E-07	5.69E-07	4.56E-07	1.65E-09
10	SSW	R.Ryman	3.1	5.37E-07	5.29E-07	4.22E-07	1.51E-09
10	SSW	K.Davis	14.0	3.36E-08	3.14E-08	2.09E-08	5.84E-11
12	WSW	T. & M. Berger	1.7	7.30E-06	7.22E-06	6.11E-06	8.38E-09
13	W	J. Dent	5	4.29E-07	4.12E-07	3.15E-07	3.47E-10
16	NNW	H.Shoemaker	4.2	3.31E-07	3.22E-07	2.49E-07	5.21E-10

1	X/Q	RELATIVE CONCENTRATION (SEC/M^3)
2	X/Q DEC	DECAYED AND UNDEPLETED, HALF-LIFE 2.26 DAYS (SEC/M^3)
3	X/Q DEC+DEP	DECAYED AND DEPLETED, HALF-LIFE 8 DAYS (SEC/M^3)
4	DEPOSITION	RELATIVE DEPOSITION RATE ($1/M^2$)

FIGURE 3-1

2006 ANNUAL WIND ROSE 10M LEVEL – PRIMARY TOWER



WIND ROSE
(WINDS FROM)
N

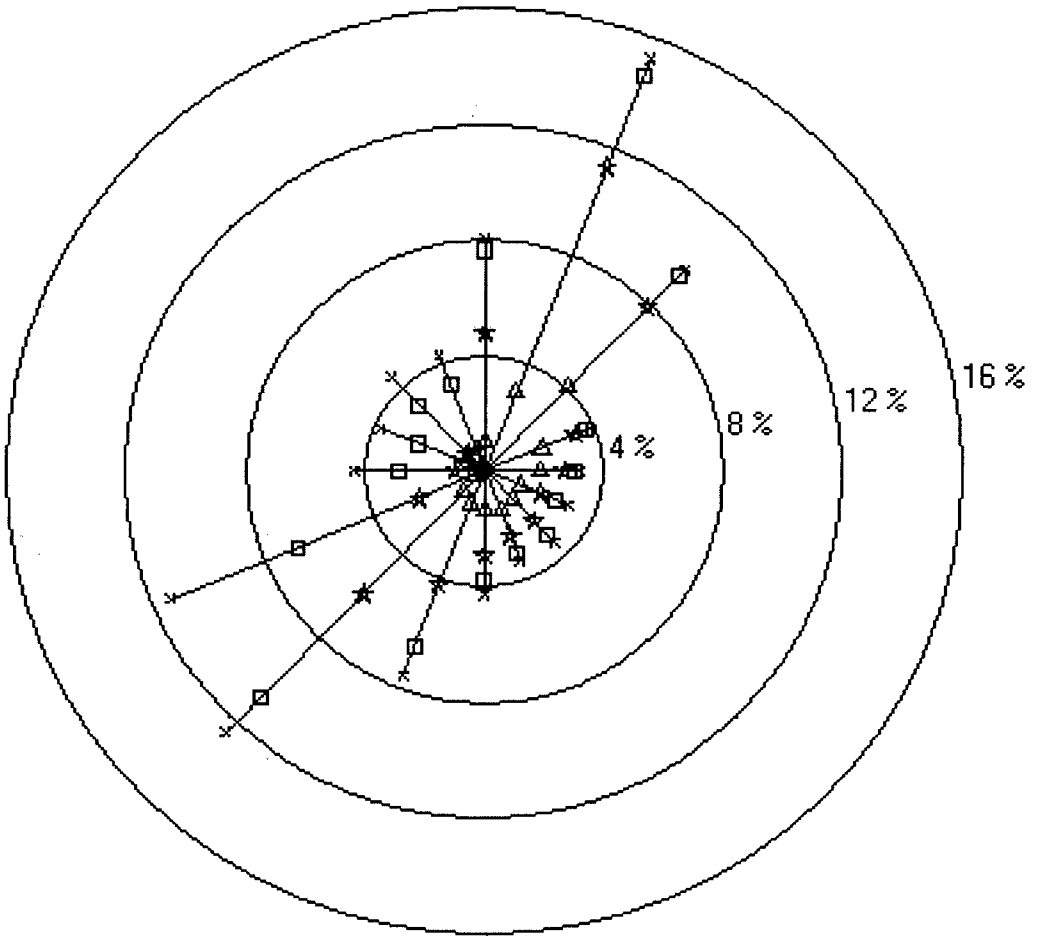
0.01% PERCENT CALMS
(NOT INCLUDED IN PLOT)

△	WIND SPEED LESS THAN 3.5 MPH
☆	WIND SPEED LESS THAN 7.5 MPH
□	WIND SPEED LESS THAN 12.5 MPH
×	WIND SPEED GREATER THAN 12.5 MPH

This wind rose displays the frequency of hourly average wind direction from a given sector. In 2006, the predominant wind direction occurred 14 % of the time from the ENE sector. The average wind speed was 5.0 mph and the average wind speed for the predominant sector (ENE) was 2.4 mph. The sector with the highest average wind speed was WSW (8.8 mph).

FIGURE 3-2

2006 ANNUAL WIND ROSE 60M LEVEL – PRIMARY TOWER



WIND ROSE
(WINDS FROM)
N

0.01% PERCENT CALMS
(NOT INCLUDED IN PLOT)

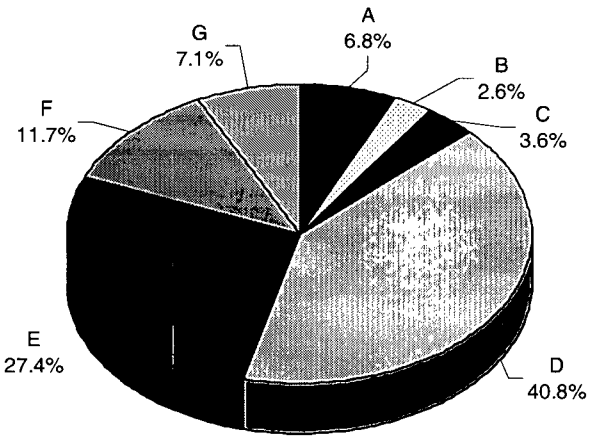
△	WIND SPEED LESS THAN 3.5 MPH
☆	WIND SPEED LESS THAN 7.5 MPH
□	WIND SPEED LESS THAN 12.5 MPH
×	WIND SPEED GREATER THAN 12.5 MPH

This wind rose displays the frequency of hourly average wind direction from a given sector. In 2006, the predominant wind direction occurred 14.7% of the time from the NNE sector. The average wind speed was 7.8 mph and the average wind speed for the predominant sector (NNE) was 6.0 mph. The sector with the highest average wind speed was WSW (11.8 mph.).

FIGURE 3-3

PASQUIL STABILITY CLASS PREVALENCES DATA
Period: 2006

Joint Frequency Distributions at 10 Meters
Wind Speed and Direction 10M vs. Delta Temperature 60-10M
(Based on 8,702 Valid Hours)



SECTION 4

DOSE MEASUREMENTS AND ASSESSMENTS

Radiological Impact on Man

Sampling and analysis of airborne and waterborne effluents were performed in accordance with the frequencies, types of analysis, and Lower Limit of Detection (LLD) outlined in the PPL Susquehanna, LLC Technical Requirements Manual.

Radioactive material was detected in some of the airborne and waterborne effluent samples analyzed. Dose calculations using measured effluent activity levels, meteorological data from the current reporting period and average river flow dilution factors resulted in estimated doses to individuals at levels below 10 CFR 20 and 10 CFR 50, Appendix I limits. Direct radiation resulting from plant operation (reported in the 2006 Annual Radiological Environmental Operating Report) contributed a maximum of 3.28E-2 mrem (measured at TLD Location 9S2) at the Protected Area Boundary south of the plant. The maximum organ (including thyroid)/total body dose from all airborne effluent is 4.92E-1 mrem (CHILD, THYROID Table 4-4). The maximum organ/total body dose from all liquid effluent is 2.14E-3 mrem (ADULT, Liver Table 4-2). Conservatively adding the maximum organ (including thyroid)/total body dose from liquid and gaseous effluent (even though different age groups) and the maximum total body dose determined from direct radiation bounds the dose that any member of the public receives from station operations. The result (5.27E-1 mrem) is 2.1% of the 40CFR190 limit of 25 mrem to total body/organ (except thyroid) and 0.7% of the 40CFR190 limit of 75 mrem to the thyroid.

Doses to a maximally exposed member of the public from waterborne effluents are calculated for fish ingestion and shoreline exposure at the plant outfall, and drinking water ingestion at Danville, PA. Site specific parameters used in the calculations for the Danville receiver, specific for actual average blowdown and river level for the entire year are shown in Table 4-1.

TABLE 4-1

SITE-SPECIFIC PARAMETERS USED FOR RETDAS CALCULATIONS (DANVILLE RECEIVER) FOR 2006

PARAMETER	ENTIRE YEAR
Cooling Tower Blowdown (CFS)	19.5
Average Net River Level (ft.)	7.9
Dilution Factor at Danville[1]	813.3
Transit time to Danville (hr.)[1]	17.2

[1]From ODCM-QA-005, Att. E

Summaries of maximum individual doses resulting from airborne and waterborne radioactive effluent releases from each unit are given in Table 4-2. Meteorological data from Section 3 were used to calculate the dose from airborne effluents.

The Radioactive Effluent Release Report includes an assessment of the radiation dose from radioactive effluents to members of the public within the site boundary. Within the Site Boundary there are several areas frequented by members of the public. There are no significant exposure pathways from waterborne effluents in these areas. Doses from airborne effluent are calculated for members of the public for the following locations: Riverlands Energy Information Center, the Towers Club, and residence with the maximum X/Q value; the garden, dairy and meat producing farm with the maximum D/Q value; and the site boundary with the maximum X/Q value. Summaries of the calculated maximum doses within the site boundary and selected locations resulting from airborne effluents are presented in Table 4-4. The above referenced locations are shown on Figure 4-1.

In the area comprising the Riverlands recreation area, which surrounds the Energy Information Center, three pathways of radiation exposure can be identified: plume, ground, and inhalation. There are no significant exposure pathways from waterborne effluents in this area. There are approximately 100,000 visitors to the Riverlands/Energy Information Center complex each year. For dose calculations, it is assumed the visitor stays in the area for one hour. The calculated dose rate and collective dose for visitors to the Riverlands/Energy Information Center during 2006 are shown on Table 4-3.

Use of the RETDAS code yields calculated doses for the Riverlands area for the report period. These doses assume an occupancy factor of 100% for a member of the public during 2006. These calculated dose values are shown on Table 4-4.

TABLE 4-2

SUMMARY OF MAXIMUM INDIVIDUAL DOSES TO MEMBERS OF THE PUBLIC
DATA PERIOD: 1/1/06 TO 12/31/06

UNIT	EFFLUENT	AGE GROUP	APPLICABLE ORGAN	ESTIMATED MAXIMUM DOSE (MREM/MRAD)	LOCATION		PERCENT OF LIMIT	LIMIT (MREM/ MRAD)[2]
					DIST (MILES)	AFFECTED SECTOR		
1	Liquid[1]	Adult	Total Body	8.80E-04	(3)		0.03	3
1	Liquid[1]	Adult	Liver	1.07E-03	(3)		0.01	10
1	Noble Gas	N/A	Air Dose (Gamma-MRAD)	1.22E-02	0.5	WSW	0.12	10
1	Noble Gas	N/A	Air Dose (Beta-MRAD)	2.36E-03	0.5	WSW	0.01	20
1	Airborne Iodine, Tritium and Particulates	Child	Thyroid	1.62E-01	0.5	WSW	1.1	15
2	Liquid[1]	Adult	Total Body	8.80E-04	(3)		0.03	3
2	Liquid[1]	Adult	Liver	1.07E-03	(3)		0.01	10
2	Noble Gas	N/A	Air Dose (Gamma-MRAD)	9.20E-05	0.5	WSW	0.001	10
2	Noble Gas	N/A	Air Dose (Beta-MRAD)	1.18E-04	0.5	WSW	0.001	20
2	Airborne Iodine, Tritium and Particulates	Child	Thyroid	3.31E-01	0.5	WSW	2.2	15

[1]Estimated dose is based on a site total activity release equally divided between Unit 1 and Unit 2.

[2]10 CFR 50, Appendix I limits are in terms of mrad or mrem/reactor-year for airborne and waterborne effluent from each unit.

[3]Doses from liquid effluent are estimated from fish ingestion and shoreline exposure at the site outfall and from the drinking water pathway at Danville, PA.

TABLE 4-3

CALCULATED COLLECTIVE DOSES TO MEMBERS OF THE PUBLIC WITHIN THE RIVERLANDS/ENERGY INFORMATION CENTER COMPLEX
DATA PERIOD: 1/1/06 TO 12/31/06

EFFLUENT	AGE GROUP	APPLICABLE ORGAN	DOSE RATE[1] (MREM/HR)	COLLECTIVE DOSE[2] (PERSON-REM)
Noble Gas	N/A	Total Body	1.26E-07	1.26E-05
Noble Gas	N/A	Skin	2.50E-08	2.50E-06
Iodine, Tritium and Particulates	Child	Thyroid	6.02E-06	6.02E-04

[1]Estimated dose and dose rate is based on annual site total activity release.

[2]Collective dose is based on 100,000 person-hours.

TABLE 4-4

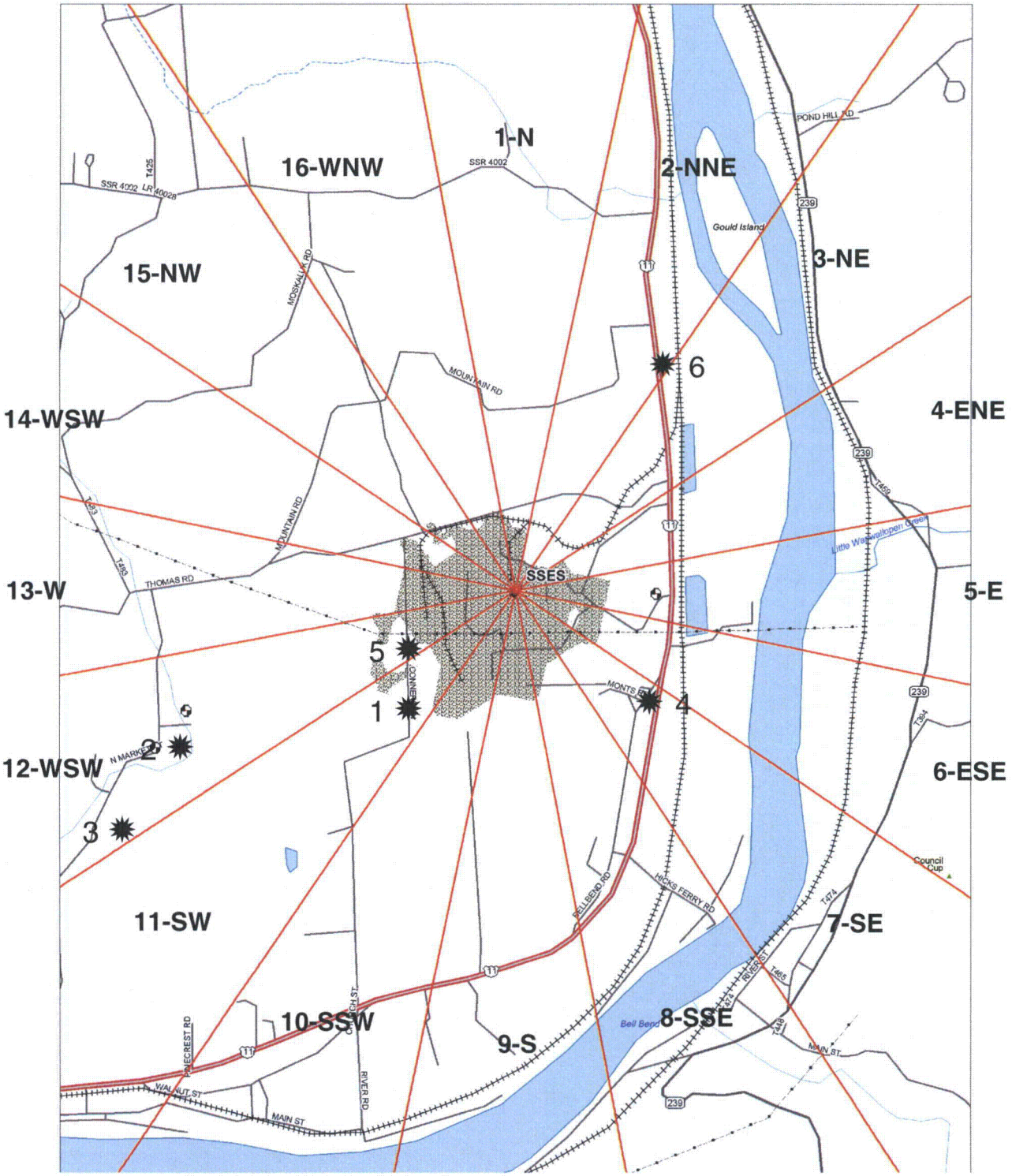
SUMMARY OF MAXIMUM INDIVIDUAL DOSES FROM AIRBORNE EFFLUENT

LOCATION	PATHWAY	MAXIMUM TOTAL BODY DOSE (MREM)		MAXIMUM ORGAN DOSE (MREM)		MAXIMUM THYROID DOSE (MREM)	
1. Maximum site boundary X/Q	Total (All)	2.04E-01	(CHILD)	2.07E-01	(CHILD, THYROID)	2.07E-01	(CHILD)
2. Maximum X/Q Residence	Total (All)	1.42E-01	(CHILD)	1.43E-01	(CHILD, THYROID)	1.43E-01	(CHILD)
3. Maximum D/Q Dairy + Maximum D/Q Meat	Total (All)	9.66E-02	(CHILD)	9.74E-02	(CHILD, THYROID)	9.74E-02	(CHILD)
4. Maximum D/Q Garden	Total (All)	2.76E-02	(CHILD)	2.91E-02	(CHILD, THYROID)	2.91E-02	(CHILD)
5. Tower's Club	Total (All)	4.87E-01	(CHILD)	4.92E-01	(CHILD, THYROID)	4.92E-01	(CHILD)
6. Riverland/EIC	Total (All)	5.01E-02	(CHILD)	5.27E-02	(CHILD, THYROID)	5.27E-02	(CHILD)

Note: The doses shown above are based on 100% occupancy at the indicated locations. They are based on a composite of all applicable pathways resulting in a total dose to the maximally exposed individual due to airborne effluents from both Unit-1 and Unit-2 operations.

FIGURE 4-1

AIRBORNE-DOSE CALCULATION LOCATIONS



✸ Indicates airborne-dose calculation location per Table 4-4

SECTION 5

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL (ODCM), TECHNICAL REQUIREMENTS MANUAL (TRM) AND THE SOLID RADIOACTIVE WASTE PROCESS CONTROL PROGRAM

CHANGES TO THE OFFSITE DOSE CALCULATION MANUAL

The PPL Susquehanna, LLC ODCM consists of nine (9) individual procedures.

ODCM-QA-007, Radioactive Waste Treatment Systems, was revised on October 30, 2006. The revision deleted reference to performing vent evaluations in connection with inoperable ventilation exhaust treatment systems.

ODCM-QA-008, Radiological Environmental Monitoring Program, was revised on May 3 (revision 8) and July 12 (revision 9) 2006. The revisions: 1) added monitoring locations for surface water, groundwater and food product sampling; 2) clarified direct radiation monitoring location "Special Interest Areas"; 3) added guidance to clarify that some REMP monitoring locations may represent multiple exposure pathways; 4) updated milk sampling locations due to changes in dairy farm participation in the REMP and added guidance to clarify the requirements for milk sampling

CHANGES TO THE TECHNICAL REQUIREMENTS MANUAL

Section 3.11 and 3.6.1 of the Unit-1 and Unit-2 Technical Requirements Manual (TRM) by reference are part of the ODCM. The following limits and requirements are contained in Section 3.11: liquid and gaseous effluent dose limits, liquid and gaseous effluent treatment system operability criteria (based on effluent dose), liquid and gaseous effluent radiation monitor operability criteria and the conduct of the Radiological Environmental Monitoring Program. Section 3.6.1 contains requirements for venting or purging of primary containment.

Unit-1 and Unit-2 TRM sections 3.11.1.1, 3.11.1.2, 3.11.1.3, 3.11.2.1, 3.11.2.2, 3.11.3, 3.11.4.1, 3.11.4.2 and 3.11.4.3 were revised March 31, 2006 to add a clarifying note to requirements which are applicable at all times.

Unit-1 and Unit-2 TRM section 3.11.2.5 Condition B was revised on November 14, 2006 to clarify the dose projection limit described by the referenced Condition.

There were no changes to the Unit-1 or Unit-2 TRM Section 3.6.1 during 2006.

PROCESS CONTROL PROGRAM CHANGES

The following changes were made to the Process Control Program and implementing procedures during 2006. None of the changes reduce the overall conformance of the solidified waste product to existing criteria for solid wastes. All changes were reviewed and approved by PORC (as necessary) as documented on the attached summary of procedure changes. The following procedures were changed:

1. NDAP-QA-0646, Process Control Program

2. CH-TP-055, Solid Radwaste 10CFR61 Correlation Factor Determination – Sample Collection and Preparation

3. WM-PS-100, Shipment of Radioactive Waste

4. WM-PS-110, General Shipment of Radioactive Material

5. WM-PS-155, 10CFR61 Sample Shipping and Correlation Factor Determination

6. WM-PS-160, Radwaste Curie Calculations

7. WM-PS-180, Advanced Notification of Applicable States

8. WM-RP-012, Handling and use of Steel Liners and High Integrity Containers

9. WM-RP-105, Cartridge Filter Processing and Packaging

10. ME-EO-051, Fuel Pool Cleanout of Duratek Shielded Transfer Bell and Verification of NO FREE Standing Water IN FEXM High Integrity Container

11. ME-ORF-165, Fuel Pool Cleanout – Duratek – Handling Procedure for 3-55 Cask C of C #5805 at PPL Susquehanna LLC

NDAP-QA-0646 continues to fully implement the requirements and intent of the following:

1. Sections 11.4 and 13.5 of the FSAR
2. Section 3.7.4 of the Technical Requirements Manual
3. 10 CFR 20, 10 CFR 61, 10 CFR 71, 49 CFR 100-177, and 40 CFR 261

Compliance with all applicable regulatory requirements listed above continues to be met as the result of these changes to the program. These changes to the Process Control Program will not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes.

PROCEDURE REVISION SUMMARY
NDAP-QA-0646, Revision 11

1. Added CR 613944 to the reference section and added additional responsibilities to the Health Physicist – Radwaste and Solidification/Dewatering/Services Vendor in the Responsibilities Section.

2. Clarified Part 4, Step 6 of FORM NDAP-QA-0646-2.

3. Added procedure WM-RP-301 to Attachment C.

4. Various minor administrative changes.

PROCEDURE REVISION SUMMARY
CH-TP-055, Revision 5

1. Correct typo error on page 4 of 10.

2. Deleted specific waste type information and reference NDAP-QA-0646 for information on page 5 of 10.

3. Deleted prerequisite and changed to None on page 5 of 10. Procedure adherence is now on Title page.

4. Added clarification about performing isotopic analyses based on deadtime criteria in section 7.1.

5. Updated sample frequency and quantity requirements in section 7.1.

6. Step 7.1.6 now requires saving remaining original composite until vendor results are evaluated.

7. Revised Attachment A to correct waste types and specify how dose rate is to be performed.

8. Added Form Number in step 7.1.11.

9. All these changes are administrative corrections.

PROCEDURE REVISION SUMMARY
WM-PS-100, Revision 10

1. Modified the procedure to require compliance with WM-PS-180 if transporting RAMQC in accordance with NRC Additional Security Measures for Transportation of Radioactive Material Quantities of Concern.

2. Updated Form WM-PS-100-1.

PROCEDURE REVISION SUMMARY
WM-PS-110, Revision 6

1. Added note to allow the Designated Radioactive Material Shipper to determine what procedure steps (Section 6) are required to transship a radioactive material package from Susquehanna. 49CFR171.2(b) allows transshippers use of information provided by another offeror.

2. Minor administrative enhancements.

3. Modified the procedure to require compliance with WM-PS-180 if transporting RAMQC in accordance with NRC Additional Security Measures for Transportation of Radioactive Material Quantities of Concern.

PROCEDURE REVISION SUMMARY
WM-PS-155, Revision 4

1. Added AR 733318 to the Reference Section.

2. Added requirement to compare the reported minimum detectable activities of nuclides in 10CFR61 samples with the nuclide activities listed in 10CRF61.55 to ensure compliance.

3. Added Attachment G, Isotopic Data Screening, to provide guidance for screening the isotopic data.

4. Added Adherence Level to the Procedure Coversheet.

5. Made miscellaneous administrative changes.

PROCEDURE REVISION SUMMARY
WM-PS-160, Revision 4

1. Several minor administrative changes were made.

2. AR 713346 was referenced.

3. Described the normal method (by utilizing the Radman computer program) for characterizing radioactive material for shipment.

4. Deleted Attachment B Current Correlation Factors since the factors are incorporated into the Radman computer program. Attachment B had a PCAF (2002-1093) which was not incorporated due to the factors being incorporated into the Radman Computer Program.

PROCEDURE REVISION SUMMARY
WM-PS-180, Revision 8

1. Modified the procedure to comply with EA-05-007, NRC Additional Security Measures for Transportation of Radioactive Material Quantities of Concern.

PROCEDURE REVISION SUMMARY
WM-RP-012, Revision 7

1. Incorporated PCAF 2006-1051 and made administrative changes. The PCAF changed the following.

   a. Added reference to CR 721330.

   b. Updated steel liner inspection to account for reusable containers.

   c. Added inspection for water in open top liners being returned from a waste processing vendor.

   d. Updated FORM WM-RP-012-1 and FORM WM-RP-012-2 and generated new FORM WM-RP-012-4.

PROCEDURE REVISION SUMMARY
WM-RP-105, Revision 6

1. Clarified what information is needed on Form WM-RP-105-1.

2. Added requirement to weigh filters that are surveyed.

3. Added reference to AR 584318 and AR 733322.

PROCEDURE REVISION SUMMARY
MT-EO-051, Revision 2

1. Added INPO OE and Procedure information under REFERENCE section.

2. Changed additional verification steps and QC sign off's to body of procedure.

3. Added additional verification steps and QC sign off's to body of procedure.

4. Performed required administrative changes.

PROCEDURE REVISION SUMMARY
ME-ORF-165, Revision 2

1. Corrected ME-ORD number in step 8.21.4.

2. Incorporate 3-55 Cask Loading Verification Checklist per new Attachment G. Attachment G also referenced in the body of the procedure.

3. Various administrative changes.

SECTION 6

MISCELLANEOUS TECHNICAL REQUIREMENTS MANUAL (TRM), FSAR, 40CFR190 AND NEI GROUNDWATER PROTECTION INITIATIVE REPORTING

1. TRM Action 3.11.1.4.F.2 requires the reporting of Liquid Radwaste Effluent Monitoring Instrumentation inoperability not corrected in a timely manner.

   None to report for 2006.

2. TRM Action 3.11.1.5.C.1 requires the reporting of Radioactive Liquid Process Effluent Monitoring Instrumentation inoperability not corrected in a timely manner.

   None to report for 2006.

3. TRM Action 3.11.2.6.K requires an explanation for Radioactive Gaseous Effluent Monitoring Instrumentation required actions and completion times not met.

   None to report for 2006.

4. TRM Action 3.11.4.1.F.2 requires reporting the cause of the unavailability of milk or fresh leafy vegetable samples and identify the new locations for obtaining replacements.

   4/3/06 – Milk sample not available from Berger Farm (location 12B2, 1.7 miles WSW) due to owner no longer participating in Radiological Environmental Monitoring Program (REMP) milk sampling program. The Shoemaker Farm (location 16E1, 4.2 miles NNW) had the next highest relative deposition rate for the remaining dairy farms but they were not willing to participate in the REMP milk sampling program. The Berger Farm was replaced with the Moyer Farm (location 6C1, 2.7 miles ESE). The first milk sample was taken from the Moyer Farm on 4/17/06. The Berger Farm is an operating dairy farm (per 2006 Land Use Census) but not an active participant in the REMP milk sampling program.

   6/12/06 – Milk sample not available from Moyer Farm (location 6C1, 2.7 miles ESE) due to owner no longer participating in milk sampling program. The Moyer Farm was replaced with the Dent Farm (location 13E3, 5.0 miles W). The first milk sample was taken from the Dent Farm on 6/12/06. The Moyer Farm is no longer an operating dairy farm (all dairy cows sold by owner).

5. TRM Action 3.11.4.2.A requires reporting when land use census identifies a new location which yields a calculated dose or dose commitment greater than the values currently being calculated in Requirement 3.11.2.3 (Gaseous Effluent Dose due to Iodine, Tritium, and Radionuclides in Particulate Form).

   None to report for 2006.

6. TRM Action 3.11.4.2.B requires reporting when land use census identifies locations that yield a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Requirement 3.11.4.1 (Radiological Environmental Monitoring Program).

   None to report for 2006.

7. The 40CFR190.10 standard for normal operation for the uranium fuel cycle including annual dose equivalent and total quantities of radioactive material limits was not exceeded by Station operation. Refer to Page 4-2 for specific values.

8. FSAR Section 11.6.11 requires the reporting of airborne radioactivity detected in the Low Level Radwaste Holding Facility.

   None detected in 2006.

9. The PPL Susquehanna station has implemented an Action Plan in response to the NEI Initiative on Groundwater Protection. Part of the Action Plan includes the assessment of the current groundwater monitoring program. Groundwater is sampled and analyzed quarterly as part of the Radiological Environmental Monitoring Program (REMP). REMP groundwater sampling locations are defined in ODCM-QA-008 Attachment G. In August 2006, additional groundwater sampling was initiated at locations which are not listed in the ODCM. The additional locations are three manholes which collect water from a perimeter drain system. The perimeter drain system consists of perforated piping installed just above the footing along the exterior base of the vertical walls of the reactor, turbine and radwaste buildings. Outlined below are the tritium analysis results for the perimeter drain manhole sampling during 2006. No gamma emitting radionuclides were identified above analysis LLD's for the perimeter drain manhole samples. The tritium results reported below did not exceed any Reporting Level thresholds in the PPL Susquehanna Technical Requirements Manual or any reporting criteria established in response to the NEI Groundwater Protection Initiative.

PERIMETER DRAIN SAMPLING 2006

SAMPLE DATE	MANHOLE	LOCATION CODE	TRITIUM RESULTS (pCi/L)
8/23/2006	FD-1	7S9 (E of U2 CST)	424
8/23/2006	FD-2	16S3 (NW corner of RW Bldg.)	358
8/23/2006	FD-3	9S3 (inside U2 TB Bldg.)	328
11/13/2006	FD-1	7S9 (E of U2 CST)	179
11/13/2006	FD-2	16S3 (NW corner of RW Bldg.)	410
11/13/2006	FD-3	9S3 (inside U2 TB Bldg.)	344

SECTION 7

CORRECTIONS TO DOSES REPORTED IN PREVIOUS RADIOACTIVE EFFLUENT RELEASE REPORTS

CORRECTIONS TO DOSES REPORTED IN PREVIOUS RADIOACTIVE EFFLUENT RELEASE REPORTS

No corrections to previous Radioactive Effluent Release Reports are submitted for this report period.

SECTION 8

EFFLUENT FROM SYSTEMS CLASSIFIED AS INSIGNIFICANT EFFLUENT PATHWAYS

EFFLUENT FROM SYSTEMS CLASSIFIED AS INSIGNIFICANT EFFLUENT PATHWAYS

Insignificant Effluent Pathways are: 1) evaporation from the Unit 1 and Unit 2 Condensate Storage Tanks (CST's); 2) evaporation from the common Refueling Water Storage Tank (RWST); 3) gaseous effluent from the Hydrogen Seal Oil, Main Turbine and RFPT lubrication oil mist eliminators which vent to the turbine building roofs.

These pathways are not continuously monitored. The CSTs and RWST are sampled monthly to determine the concentration of radionuclides present in these tanks. Tritium analysis on these samples is performed quarterly. Airborne release to the environment from the tanks is estimated based on conservative estimates of the evaporation rates from each of the tanks using a modified method established within Chapter 7 of EPA AP-42. A conservative carry-over fraction of radionuclides from the water to the evaporated liquid is then assumed. Airborne release to the environment from the demisters conservatively assumes the maximum moisture (condensate) concentration of the lubrication oil as measured via sampling during 2006. The calculation also assumes immediate removal of 100% of the water by the oil mist eliminators as it passes through the turbines. The annual release of tritium, iodines and particulates with half-lives greater than 8 days was calculated based on these conservative assumptions. The calculated releases are shown in Table 8-1. All nuclides, except for tritium, released from insignificant effluent pathways are negligible compared to the airborne release data shown in Tables 2-1 and 2-2. The maximum dose to the public from a release of 2.81 Ci of tritium is calculated to be 2.26E-2 mrem (child). This is a small fraction of the maximum dose from airborne effluent reported in Section 4.

TABLE 8-1

ANNUAL RELEASE FROM SYSTEMS CLASSIFIED AS INSIGNIFICANT EFFLUENT PATHWAYS

Nuclide	RWST (Ci)	U1-CST and Main Turbine/RFPT Lube Oil Systems (Ci)	U2-CST and Main Turbine/RFPT Lube Oil Systems (Ci)	Total (Ci)
H-3	6.47E-02	1.35E+00	1.39E+00	2.81E+00
Mn-54	3.60E-08	6.42E-08	1.05E-07	2.05E-07
Co-60	1.21E-07	1.50E-07	1.61E-07	4.30E-07
Cs-137	0.00E+00	1.38E-09	0.00E+00	1.38E-09
Xe-135	0.00E+00	6.29E-07	2.36E-06	3.16E-06
Co-58	4.80E-09	4.38E-08	5.17 E-08	1.00E-07
Zn-65	3.02E-09	1.84E-08	2.25E-08	4.39E-08
Xe-135m	0.00E+00	0.00E+00	7.67E-10	7.67E-10
Cr-51	1.31E-08	1.08E-08	0.00E+00	2.38E-08
Fe-59	3.56E-09	0.00E+00	0.00E+00	3.56E-09
Sb-124	9.39E-11	0.00E+00	0.00E+00	9.39E-11
Ba-131	1.12E-10	1.38E-09	6.13E-09	7.62E-09
Nb-95	4.90E-10	0.00E+00	0.00E+00	4.90E-10
Zr-95	4.52E-10	0.00E+00	0.00E+00	4.52E-10