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U. S. Nuclear Regulatory Commission
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SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 AND 50-446
TRANSMITTAL OF YEAR 2014 RADIOLOGICAL ENVIRONMENTAL OPERATING
REPORT

Dear Sir or Madam:

Enclosed is the Annual Radiological Environmental Operating Report for the Comanche Peak Radiological Environmental Monitoring Program. This report is submitted pursuant to Section 5.6.2 of the Comanche Peak Units 1 and 2 Technical Specifications (Appendix A to Operating License Nos. NPF-87 and NPF-89). The report covers the period from January 1, 2014 through December 31, 2014 and summarizes the results of measurements and analysis of data obtained from samples collected during this interval.

If there are any questions regarding this report, please contact Steve Dixon at (254) 897-5482 or Deb O'Connor at (254) 897-0151.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By:

Fred W. Madden
Director, External Affairs

IE25
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Enclosure - Comanche Peak Annual Radiological Environmental Operating Report For 2014

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Resident Inspectors, Comanche Peak

Enclosure 1

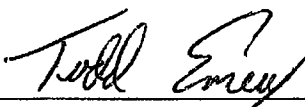
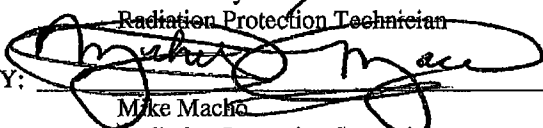

Comanche Peak Annual Radiological Environmental Operating Report For 2014

LUMINANT
COMANCHE PEAK NUCLEAR POWER PLANT

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING
REPORT FOR 2014

JANUARY 1, 2014 through DECEMBER 31, 2014

LUMINANT REVIEW and APPROVAL

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Introduction

Results of the Radiological Environmental Monitoring Program for the Comanche Peak Nuclear Power Plant (CPNPP) for the year 2014 are contained within this report. This report covers the period from January 1, 2014 through December 31, 2014 and summarizes the results of measurements and analysis of data obtained from environmental samples collected during this same timeframe.

A. Site and Station Description

CPNPP consists of two pressurized water reactor units, each designed to operate at a power level of about 1250 megawatts (electrical). The Station is located on Squaw Creek reservoir in Somervell and Hood counties, about forty miles southwest of Fort Worth, Texas. Unit 1 received a low power operating license February 8, 1990 and achieved initial criticality on April 3, 1990. A full power license for Unit 1 was issued on April 17, 1990 and commercial operation was declared on August 13, 1990. Unit 2 achieved initial criticality on March 24, 1993 and synchronized to the electrical grid on April 9, 1993.

B. Objectives and Overviews of the CPNPP Radiological Environmental Monitoring Program

The United States Nuclear Regulatory Commission (USNRC) regulations require that nuclear power plants be designed, constructed, and operated to keep levels of radioactive material in effluents to unrestricted areas as low as reasonably achievable (ALARA). To assure that these criteria are met, each license authorizing reactor operation includes technical specifications governing the release of radioactive effluents.

In-plant monitoring is used to assure that these predetermined release limits are not exceeded. However, as a precaution against unexpected and undefined processes that might allow undue accumulation of radioactivity in any sector of the environment, a program for monitoring the plant environs is also included.

Sampling locations were selected on the basis of local ecology, meteorology, physical characteristics of the region, and demographic and land use features of the site vicinity. The radiological environmental monitoring program was designed on the basis of the USNRC Branch Technical Position “An Acceptable Radiological Environmental Monitoring Program” on radiological environmental monitoring issued by the Radiological Assessment Branch, Revision 1 (November 1979), the CPNPP Technical Specification “Technical Specifications for Comanche Peak Nuclear Power Plant Units 1 and 2” and the “CPSES Offsite Dose Calculation Manual” (ODCM).

In 2014, the Radiological Environmental Monitoring Program included the following:

- The measurement of ambient gamma radiation by Thermal Luminescent dosimetry;
- The determination of airborne gross beta, gamma emitters, and Iodine-131;
- The determination of tritium and gamma emitters in surface water;
- The determination of gross beta, tritium, Iodine-131, and gamma emitters in drinking water;
- The determination of tritium and gamma emitters in ground water;
- The determination of gamma emitters in sediment and fish;
- The determination of gamma emitters in food products and;
- The determination of gamma emitters and Iodine-131 in broadleaf vegetation.

The regulations governing the quantities of radioactivity in reactor effluents allow nuclear power plants to contribute, at most, only a small percentage increase above normal background radioactivity. Background levels at any one location are not constant but vary with time as they are influenced by external events such as cosmic ray bombardment; weapons test fallout, and seasonal variations. These levels also can vary spatially within relatively short distances reflecting variations in geological composition. To differentiate between background radiation levels and increases resulting from operation of CPNPP, the radiological surveys of the plant environs were divided into pre-operational and operational phases.

The pre-operational phase of the program provided a general characterization of the radiation levels and concentrations prevalent in these areas prior to plant operation along with an indication of the degree of natural variation to be expected. The operational phase of the program obtains data which, when considered along with the data obtained in the pre-operational phase, assists in the evaluation of the radiological impact of plant operation.

Pre-operational measurements were conducted at CPNPP from 1981 to 1989. These pre-operational measurements were performed to:

- Evaluate procedures, equipment, and techniques;
- Identify potentially important pathways to be monitored after plant operation;
- Measure background levels and the variations along potentially important pathways;
- Provide baseline data for statistical comparisons with future operational analytical results.

The operational Radiological Environmental Monitoring Program is conducted to:

- Verify that measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways;
- Verify the effectiveness of in-plant measures used for controlling the release of radioactive materials;
- Identify changes in the areas at and beyond the site boundary that may impact the principal pathways of exposure.

This report documents the twenty-fourth year of operational measurements and is submitted in accordance with the requirements of the CPSES Offsite Dose Calculation Manual, Part I, Administrative Control 6.9.1.3.

Program Descriptions and Results

A. Sample Locations

Within a radius of twenty miles of the CPNPP site there are seventy-two (72) sample locations included in the monitoring program for the year 2014. The number of sample points and the specific locations for the sample points were determined by considering locations where the highest off-site environmental concentrations have been predicted from plant effluent source terms, site hydrology, and site meteorological conditions. Other factors considered were applicable regulations, population distribution, ease of access to sampling stations, availability of samples at desired locations, security and future program integrity. Additionally an annual land use census is conducted to identify changes in the areas surrounding the plant. If changes are identified that impact the principle pathways of exposure, appropriate changes to the radiological environmental monitoring program are implemented. A copy of the report “Comanche Peak Nuclear Power Plant Land Use Census 2014” is provided in Appendix A to this report.

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2014 contains a brief outline of the current program. This table specifies the sample media type, the number of locations for each media type, the sector and distance identifier for each sample location, the sample frequency, the type of analysis required and the analytical frequency required.

Table 2 – Key to Environmental Sampling Locations provides a reference that links the sampling point designations used in procedures and forms to the appropriate physical sample location (sector and distance) and to the correct sample type. This cross-reference enhances the ability to review data and tie the data to the correct sample points and to ensure all samples are collected and analyzed as specified.

Currently there are no milk sample locations within ten miles of the CPNPP site and there are no milk sample locations within twenty miles that will participate in the environmental program. CPNPP already samples extra broadleaf locations as required due to no milk locations within the ten-mile radius therefore, no changes to the program are necessary. Milk sampling will be resumed if any future annual land use census determines a dairy has been established within the specified area.

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2014

Media	Number of Locations	Identification by Sector and Distance (miles)	Sampling Frequency (a)	Analysis	Analytical Frequency (a)
Gamma Exposure	43	N-1.45; N-4.4; N-6.5; N-9.4; NNE-1.1; NNE-5.65; NE-1.7; NE-4.8; ENE-2.5; ENE-5.0; E-0.5; E-1.9; E-3.5; E-4.2; ESE-1.4; ESE-4.7; SE-1.3; SE-3.85; SE-4.6; SSE-1.3; SSE-4.4; SSE-4.5; S-1.5; S-4.2; SSW-1.1; SSW-4.4; SW-0.9; SW-4.8; SW-12.3; WSW-1.0; WSW-5.35; WSW-7.0; W-1.0; W-2.0; W-5.5; WNW-1.0; WNW-5.0; WNW-6.7; NW-1.0; NW-5.7; NW-9.9; NNW-1.35; NNW-4.6	Q, A	Thermo Luminescent (TLD) Dosimetry	Q, A
Air Particulate Air Iodine	8	N-9.4; E-3.5; SSE-4.5; SW-12.3; NW-1.0; N-1.45; SW/WSW-0.95; S/SSW-1.2	W	Gross Beta Gamma Isotopic Filter Gamma Isotopic Charcoal	W QC W
Surface Water	4	N-19.3; ESE-1.4; N-1.5; NE-7.4	M(b)	Gamma Isotopic Tritium	M QC
Surface Water/Drinking	2	NNW-0.1; N-9.9	M(c)	Gross Beta Gamma Isotopic Iodine-131 Tritium	M M M QC
Ground Water	5	SSE-4.6; W-1.2; WSW-0.1; N-9.8; N-1.45	Q	Gamma Isotopic Tritium	Q Q
Sediment	4	N-9.9; NNE-1.0; NE-7.4; SE-5.3	SA	Gamma Isotopic	SA
Fish	2	NNE-8.0; ENE-2.0	SA	Gamma Isotopic	SA
Food Products	1	ENE-9.0, E-4.2	MH	Gamma Isotopic Iodine-131	MH MH
Broadleaf Vegetation	3	N-1.45; SW-1.0; SW-13.5	M	Gamma Isotopic	M

(a) Frequency codes are: W-Weekly; M-Monthly; Q-Quarterly; QC-Quarterly Composite; MH-Monthly at Harvest; SA-Semiannual; A-Annual

(b) Surface water samples from Squaw Creek are monthly composites of weekly grab samples. Surface water samples from Lake Granbury are monthly grab samples.

(c) Surface water drinking samples are a monthly composite of weekly grab samples.

Table 2
Key to Environmental Sampling Locations

SAMPLING POINT	LOCATION (SECTOR-MILE)	SAMPLE TYPE*	SAMPLING POINT	LOCATION (SECTOR-MILE)	SAMPLE TYPE*
A1	N-1.45	A	R29	SW-12.3	R
A2	N-9.4	A	R30	WSW-1.0	R
A3	E-3.5	A	R31	WSW-5.35	R
A4	SSE-4.5	A	R32	WSW-7.0	R
A5	S/SSW-1.2	A	R33	W-1.0	R
A6	SW-12.3	A	R34	W-2.0	R
A7	SW/WSW-0.95	A	R35	W-5.5	R
A8	NW-1.0	A	R36	WNW-1.0	R
R1	N-1.45	R	R37	WNW-5.0	R
R2	N-4.4	R	R38	WNW-6.7	R
R3	N-6.5	R	R39	NW-1.0	R
R4	N-9.4	R	R40	NW-5.7	R
R5	NNE-1.1	R	R41	NW-9.9	R
R6	NNE-5.65	R	R42	NNW-1.35	R
R7	NE-1.7	R	R43	NNW-4.6	R
R8	NE-4.8	R	SW1	N-1.5	SW
R9	ENE-2.5	R	SW2	N-9.9	SW/DW
R10	ENE-5.0	R	SW3	N-19.9	SW
R11	E-0.5	R	SW4	NE-7.4	SW
R12	E-1.9	R	SW5	ESE-1.4	SW
R13	E-3.5	R	SW6	NNW-0.1	SW/DW
R14	E-4.2	R	GW1	W-1.2	GW/DW
R15	ESE-1.4	R	GW2	WSW-0.1	GW/DW
R16	ESE-4.7	R	GW3	SSE-4.6	GW/DW
R17	SE-1.3	R	GW4	N-9.8	GW/DW
R18	SE-3.85	R	GW5	N-1.45	GW/DW
R19	SE-4.6	R	SS1	NNE-1.0	SS
R20	SSE-1.3	R	SS2	N-9.9	SS
R21	SSE-4.4	R	SS3	NE-7.4	SS
R22	SSE-4.5	R	SS4	SE-5.3	SS
R23	S-1.5	R	F1	ENE-2.0	F
R24	S-4.2	R	F2	NNE-8.0	F
R25	SSW-1.1	R	FP1	ENE-9.0	FP
R26	SSW-4.4	R	FP2	E-4.2	FP
R27	SW-0.9	R	BL1	N-1.45	BL
R28	SW-4.8	R	BL2	SW-1.0	BL
			BL3	SW-13.5	BL

Sample Type*

A – AIR SAMPLE

F – FISH

SS – SHORELINE SEDIMENT

SW – SURFACE WATER

DW – DRINKING WATER

GW – GROUND WATER

R – DIRECT RADIATION

FP – FOOD PRODUCT

BL – BROADLEAF VEGETATION

B. Direct Radiation

Starting in 2013 Thermo Luminescent Dosimeters (TLDs) were used to determine the direct (ambient) radiation levels at the designated monitoring locations. The monitoring locations were chosen according to the criteria given in the USNRC Branch Technical Position on Radiation Monitoring (Revision 1, November 1979). The area around the station was divided into 16 radial sectors of 22-1/2 degrees each, corresponding to the cardinal points of the compass. TLDs were placed in each of these sectors. The TLDs were placed in two rings around the station. An inner ring was located as close as possible to the site boundary and an outer ring was located at a distance of 4 to 6 miles from the station. Eleven additional TLDs were located at points related to higher population areas and two additional control locations. For routine direct radiation measurements, two sets of the TLDs were used at each of the 43 monitoring locations. One set of TLDs was exchanged on a quarterly basis and a second set of TLDs was exchanged on a yearly basis. Additional sets of in-transit TLDs were used as control TLDs for the quarterly and annual TLDs.

In 2013 CPNPP contracted the services of Mirion Technologies to provide and process Thermo Luminescent Dosimeters (TLDs.) The TLDs are used to determine the direct (ambient) radiation levels in designated monitoring locations. Mirion Technologies is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP.)

From years 2009-2012 CPNPP contracted the services of Landauer Inc. to provide and process Optically Stimulated Luminescent dosimeters (OSLs) to determine the direct (ambient) radiation levels at the designated monitoring locations. Landauer Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP.)

From years 2001 to 2008 Thermo Luminescent Dosimeters (TLDs) were processed on-site by CPNPP National Voluntary Laboratory Accreditation Program (NVLAP) certified. Individual dosimeters were calibrated by exposure to an accurately known radiation field from a certified Cs-137 source. The year 2001 was the first year that CPNPP used the Panasonic TLD System to supply all the required direct radiation (ambient) monitoring.

D. C. Oakley's report "National Radiation Exposure in the United States", published in 1972, calculated a background radiation dose rate equivalent of 0.22 mR/day for the area surrounding Fort Worth, Texas. This calculated value varies widely with changes in location but represents an appropriate reference value to compare with actual measured TLD doses.

Using data from the pre-operational program for the two years prior to the startup of Unit 1, the quarterly TLDs averaged a calculated dose rate of 0.14 mR/day while the yearly TLDs averaged a calculated dose rate of 0.16 mR/day. The range of measured values from this same two-year period varied from a minimum of 0.11 mR/day to a maximum of 0.22 mR/day.

Table 3 – 2014 Environmental Direct Radiation Results contains the measured dose (mR) for each quarterly TLD from each of the 43 monitoring locations. The corresponding quarterly calculated dose rate (mR/day) values are listed as well. The statistical average doses (mR) and dose rate (mR/day) values for each set of quarterly TLDs is also displayed. Additionally, the table includes the total dose (mR) of all four quarters for each specific location. The table also includes the measured dose (mR) for each annual TLD from each of the 43 monitoring locations. The corresponding annual calculated dose rate (mR/day) values are listed as well. The statistical annual average dose (mR) for the entire set of annual TLDs is reported along with the average dose rate (mR/day) for the entire set of annual TLDs.

For the year 2014, the measured dose rates of all the quarterly TLDs ranged from a minimum of **0.075 mR/day** to a maximum of **0.177 mR/day** with an average dose rate of **0.126 mR/day**. This resulted in an average quarterly dose of **11 mR** and a total annual dose of **43.00 mR** for all of the forty three monitoring stations.

The measured dose rates of all the annual TLD's ranged from a minimum of **0.084 mR/day** to a maximum of **0.164 mR/day** with an average dose rate of **0.126 mR/day**. This resulted in an average quarterly dose of **10.8 mR** and a total annual dose of **43.0 mR** for all of the forty three monitoring stations.

Comparing the pre-operational data and operational data collected through the year 2014 did not produce any anomalies. The direct radiation dose data for 2014 was consistent with previous years of data during the pre-operational program. Table 14 – TLD Trend Quarterly Average contains the average quarterly OSL/TLD for the five most current years from each of the 43 monitoring locations. The implementation of the Mirion TLDs and the method to calculate direct radiation results by subtraction of shipping transient dose from the TLDs accounts for the lower/accurate values and account for consistent response from each location's total quarterly TLDs to the Annual TLDs.

[See CR-2013-004934 for additional clarification on the background subtraction method].

The 2012 CPNPP Annual Direct Radiation results were reported using personnel OSLs packaged as environmental OSL field badges. The difference between the two is the chips under copper filters. The environmental OSLs use the average of two chips and the personnel OSLs use one to calculate the direct radiation results. Condition Report CR-2012-003122 can be referenced.

In 2013 CPNPP performed a Background TLD Study which improved the reporting accuracy of Direct Radiation Results. In summary, this study incorporated calculating the daily average in mR/Day of the background TLDs stored in the lead storage container during the monitoring period. This Background Study provided the necessary data to determine the transient dose during shipping to and from Mirion in Irvine, California. Details of this study can be found in Condition Report 2013-0004934.

No abnormal quarterly results were obtained by either CPNPP or by the State of Texas, Bureau of Radiation Control.

***CR-2014-005489**

The Quarterly Environmental TLD for location #34 was not exchanged until 4/21/14. All other quarterly Environmental TLDs were exchanged on 3/27/14.

**Table 3 – 2014 Environmental Direct Radiation Results
(Units of mR dose and mR/day dose rate)**

		1ST QTR	Average	2ND QTR	Average	3RD QTR	Average	4TH QTR	Average	AVG QTR TLD	Annual TLD	Annual Average TLD
Location		Total	mR/Day	Total	mR/Day	Total	mR/Day	Total	mR/Day	Total	Total	mR/day
N-1.45	R1	10	0.123	11	0.117	10	0.115	14	0.146	11	47	0.128
N-4.4	R2	12	0.142	13	0.138	12	0.138	15	0.157	13	50	0.136
N-6.5	R3	10	0.120	10	0.106	12	0.138	14	0.146	12	44	0.120
N-9.4	R4	11	0.126	11	0.119	11	0.124	14	0.146	12	48	0.131
NNE-1.1	R5	7	0.084	8	0.085	8	0.092	9	0.095	8	32	0.087
NNE-5.65	R6	11	0.134	12	0.127	12	0.138	14	0.146	12	49	0.134
NE-1.7	R7	7	0.084	8	0.085	7	0.081	10	0.105	8	32	0.087
NE-4.8	R8	12	0.143	13	0.138	12	0.138	15	0.157	13	55	0.150
ENE-2.5	R9	12	0.138	13	0.138	13	0.150	15	0.157	13	53	0.145
ENE-5.0	R10	13	0.159	15	0.159	15	0.173	17	0.177	15	60	0.164
E-0.5	R11	12	0.137	12	0.130	13	0.146	14	0.146	13	50	0.136
E-1.9	R12	8	0.100	9	0.096	10	0.115	12	0.126	10	42	0.114
E-3.5	R13	10	0.118	10	0.106	10	0.115	13	0.136	11	46	0.125
E-4.2	R14	12	0.138	12	0.127	12	0.138	14	0.146	13	50	0.136
ESE-1.4	R15	10	0.116	11	0.117	14	0.161	13	0.136	12	47	0.128
ESE-4.7	R16	11	0.125	12	0.127	12	0.138	14	0.146	12	50	0.136
SE-1.3	R17	11	0.128	10	0.106	12	0.138	14	0.146	12	50	0.136
SE-3.85	R18	10	0.114	11	0.117	11	0.127	11	0.115	11	45	0.123
SE-4.6	R19	10	0.116	11	0.116	10	0.104	13	0.136	11	44	0.120
SSE-1.3	R20	10	0.116	11	0.117	10	0.115	13	0.136	11	44	0.120
SSE-4.4	R21	11	0.128	11	0.119	11	0.124	13	0.136	12	47	0.128
SSE-4.5	R22	10	0.120	12	0.130	11	0.124	14	0.146	12	47	0.128
S-1.5	R23	9	0.106	10	0.106	10	0.115	12	0.126	10	42	0.114
S-4.2	R24	10	0.122	12	0.130	13	0.146	15	0.157	13	49	0.134
SSW-1.1	R25	11	0.130	12	0.127	11	0.127	14	0.146	12	48	0.131
SSW-4.8	R26	10	0.123	11	0.119	11	0.124	14	0.146	12	46	0.125
SW-0.9	R27	10	0.113	11	0.117	11	0.127	14	0.146	12	44	0.120
SW-4.8	R28	10	0.118	10	0.108	10	0.113	12	0.126	11	43	0.117
SW-12.3 (C)	R29	10	0.123	11	0.119	11	0.124	13	0.136	11	47	0.128
WSW-1.0	R30	11	0.130	11	0.117	11	0.127	14	0.146	12	49	0.134
WSW-5.35	R31	11	0.126	11	0.119	11	0.124	14	0.146	12	45	0.123
WSW-7.0 (C)	R32	12	0.137	12	0.130	13	0.146	14	0.146	13	51	0.139
W-1.0	R33	9	0.104	9	0.096	10	0.115	11	0.115	10	40	0.109
W-2.0	R34	11	0.102	9	0.133	9	0.102	11	0.115	10	39	0.106
W-5.5	R35	10	0.114	10	0.108	10	0.113	12	0.126	11	42	0.114
WNW-1.0	R36	11	0.135	11	0.119	12	0.135	14	0.146	12	51	0.139
WNW-5.0	R37	11	0.132	11	0.119	11	0.124	14	0.146	12	48	0.131
WNW-6.7	R38	10	0.119	11	0.119	11	0.124	13	0.136	11	46	0.125
NW-1.0	R39	10	0.124	11	0.119	10	0.113	13	0.136	11	46	0.125
NW-5.7	R40	10	0.124	12	0.130	12	0.135	14	0.146	12	48	0.131
NW-9.9	R41	10	0.114	10	0.108	10	0.113	12	0.126	11	42	0.114
NNW-1.35	R42	7	0.079	7	0.075	7	0.081	9	0.095	8	31	0.084
NNW-4.6	R43	12	0.138	12	0.127	12	0.138	15	0.157	13	52	0.142
AVERAGES		10	0.122	11	0.119	11	0.127	13	0.139	11	43	0.126

Table 14 – TLD Trend Quarterly Average (Five most current years)

Location	2010	2011	2012	2013	2014	% Diff 2014 to 2013	2010-2014 mR Avg	% Diff 2014 to Average
R1	22	23	26	11	11	0%	18.60	-51%
R2	23	22	26	13	13	0%	19.40	-40%
R3	22	20	25	11	12	9%	18.00	-40%
R4	22	22	26	12	12	0%	18.80	-44%
R5	17	17	20	8	8	0%	14.00	-55%
R6	23	23	27	12	12	0%	19.40	-47%
R7	19	17	21	7	8	13%	14.40	-57%
R8	25	24	25	13	13	0%	20.00	-42%
R9	24	23	27	13	13	0%	20.00	-42%
R10	24	26	30	14	15	7%	21.80	-37%
R11	23	21	25	12	13	8%	18.80	-36%
R12	20	21	23	9	10	11%	16.60	-50%
R13	22	21	25	12	11	-9%	18.20	-49%
R14	25	23	27	13	13	0%	20.20	-43%
R15	22	21	24	11	12	9%	18.00	-40%
R16	23	23	26	12	12	0%	19.20	-46%
R17	23	24	26	12	12	0%	19.40	-47%
R18	21	22	22	11	11	0%	17.40	-45%
R19	22	21	24	11	11	0%	17.80	-47%
R20	23	21	24	12	11	-9%	18.20	-49%
R21	23	21	24	11	12	9%	18.20	-41%
R22	23	21	27	11	12	9%	18.80	-44%
R23	21	19	21	11	10	-10%	16.40	-48%
R24	20	21	24	11	13	17%	17.80	-31%
R25	21	22	25	12	12	0%	18.40	-42%
R26	22	22	26	12	12	0%	18.80	-44%
R27	20	22	25	11	12	9%	18.00	-40%
R28	22	21	24	11	11	0%	17.80	-47%
R29	23	21	25	11	11	0%	18.20	-49%
R30	22	20	26	12	12	0%	18.40	-42%
R31	22	22	25	10	12	18%	18.20	-41%
R32	24	21	26	13	13	0%	19.40	-40%
R33	20	19	23	10	10	0%	16.40	-48%
R34	22	18	22	9	10	11%	16.20	-47%
R35	20	19	23	10	11	10%	16.60	-41%
R36	23	24	26	13	12	-8%	19.60	-48%
R37	24	23	25	12	12	0%	19.20	-46%
R38	23	22	25	11	11	0%	18.40	-50%
R39	23	21	23	11	11	0%	17.80	-47%
R40	23	22	24	11	12	9%	18.40	-42%
R41	21	19	23	11	11	0%	17.00	-43%
R42	18	17	20	7	8	13%	14.00	-55%
R43	24	21	26	13	13	0%	19.40	-40%

Legend:	< 50%
	> 25%

C. Airborne Program

Air particulate and air iodine samples were collected each week from the eight monitoring locations described in Table 1 – Comanche Peak Nuclear Power Plant Radiological Monitoring Program for 2014. Each air particulate sample was collected by drawing air through a 47 millimeter-diameter glass-fiber filter. Air iodine was collected by drawing air through a TEDA impregnated charcoal cartridge which was connected in series behind the air particulate filter. Shipped to an independent laboratory, air particulate filters were analyzed weekly for gross beta activity and were composited quarterly for gamma spectrometry analysis. Charcoal cartridges were analyzed weekly for Iodine-131.

For the year 2014, a total of 416 air particulate filters were collected and analyzed for gross beta activity. The reported gross beta activity ranged from a minimum value of $1.8\text{E-}02 \text{ pCi/m}^3$ to a maximum value of $1.79\text{E-}01 \text{ pCi/m}^3$. Table 4 – 2014 Environmental Airborne Particulate Gross Beta Results contains the reported values of all samples. There were no anomalies noted in the data reported for 2014 when compared to pre-operational and previous operational data. Graph 1 – 2014 Environmental Air Sample Gross Beta Results – Maximum and Minimum trends the weekly high and low gross beta values to show the seasonal variation of the results as well as providing indication of consistency between the individual monitoring locations.

A total of 416 charcoal cartridges were analyzed for airborne Iodine-131. Table 5 – 2011 Environmental Air Sample Iodine-131 Results contains the reported values of each Iodine-131 analysis, all of which are less than the required lower limit of detection (LLD).

All air particulate filters were collected and composited quarterly and then analyzed by gamma spectrometry. The gamma isotopic data is presented in Table 6 – 2014 Environmental Air Particulate Composite Gamma Isotopic Results. Typical of pre-operational and previous operational data results, the only radioactive nuclide identified in all the samples was cosmogenic Beryllium-7, a naturally occurring isotope. Several Air Particulate Composite results were positive for Potassium-40. However, results indicate both were below the reporting levels,

A review of all the State of Texas air sample data indicated no anomalies.

During the year 2014, there were two exceptions to the Airborne Program.

CR-2014-13683- A-2 Filter Cartridge for the period 12/9/14 to 12/16/14 not sent to GEL Laboratories (on 12/16/14) until 12/23/14.

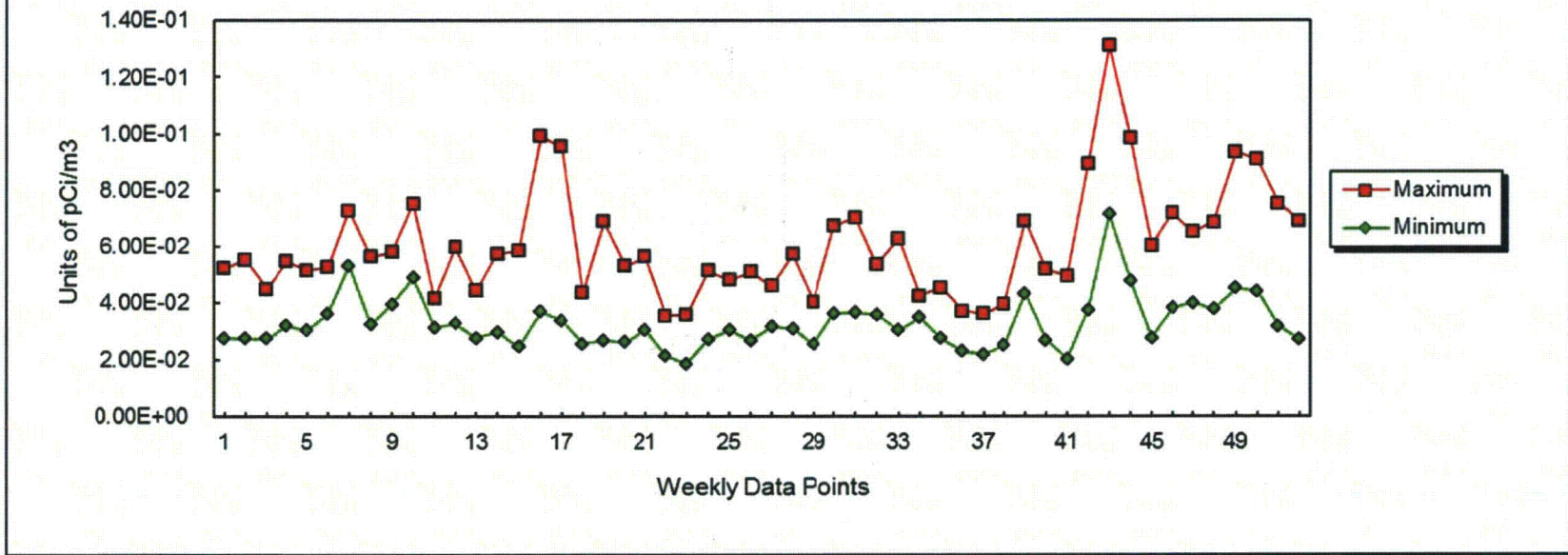
CR-2014-10743- Environmental Air Sampler A-1 at Squaw Creek Park lost power on 10/3/14 at 17:59. An RP technician investigated power loss and found/reset the GFI. No apparent cause for the tripped GFI could be identified. CR generated for tracking potential conditions which could affect Environment Air sampling collection and the subsequent GEL Laboratory analysis results. This loss of power occurred over a short duration and had no effect on the analysis.

**Table 4 -- 2014 Environmental Airborne Particulate Gross Beta Results
(Units of pCi/m3)**

	A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2
	Location							
	NW-1.0	SW/WSW-0.95	S/SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4
Date				Control				Control
01-07-14	4.96E-02	3.82E-02	5.23E-02	5.19E-02	5.09E-02	7.54E-02	3.05E-02	2.77E-02
01-14-14	3.03E-02	3.64E-02	2.94E-02	3.68E-02	3.22E-02	5.54E-02	3.47E-02	2.75E-02
01-21-14	2.73E-02	2.86E-02	3.51E-02	4.51E-02	3.13E-02	4.07E-02	2.75E-02	3.09E-02
01-28-14	3.20E-02	4.31E-02	4.26E-02	5.13E-02	3.73E-02	5.48E-02	3.23E-02	4.49E-02
02-04-14	3.91E-02	4.18E-02	4.38E-02	4.64E-02	5.05E-02	4.85E-02	5.17E-02	3.03E-02
02-11-14	3.62E-02	4.53E-02	4.64E-02	4.51E-02	4.85E-02	4.96E-02	5.26E-02	3.99E-02
02-18-14	5.33E-02	6.46E-02	6.34E-02	6.09E-02	6.44E-02	6.90E-02	7.28E-02	5.86E-02
02-25-14	3.51E-02	3.99E-02	4.04E-02	3.87E-02	4.18E-02	4.94E-02	5.65E-02	3.23E-02
03-04-14	4.69E-02	4.98E-02	5.71E-02	5.50E-02	5.03E-02	5.65E-02	5.80E-02	3.96E-02
03-11-14	5.15E-02	5.45E-02	6.38E-02	5.46E-02	6.11E-02	6.42E-02	7.52E-02	4.90E-02
03-18-14	2.52E-02	3.05E-02	2.78E-02	2.82E-02	3.65E-02	3.45E-02	4.16E-02	3.14E-02
03-25-14	3.83E-02	4.25E-02	4.20E-02	4.44E-02	5.99E-02	5.05E-02	4.97E-02	3.27E-02
04-01-14	3.27E-02	2.76E-02	3.40E-02	3.22E-02	4.45E-02	3.44E-02	3.81E-02	4.07E-02
04-08-14	2.96E-02	3.19E-02	3.52E-02	3.54E-02	5.74E-02	3.62E-02	3.58E-02	4.57E-02
04-15-14	3.26E-02	2.44E-02	2.98E-02	3.32E-02	5.84E-02	3.77E-02	3.45E-02	3.14E-02
04-22-14	4.09E-02	3.69E-02	4.74E-02	5.34E-02	9.92E-02	5.45E-02	5.63E-02	5.42E-02
04-29-14	3.38E-02	4.29E-02	4.38E-02	4.32E-02	9.55E-02	4.73E-02	4.31E-02	4.77E-02
05-06-14	2.55E-02	3.36E-02	3.36E-02	3.65E-02	4.35E-02	3.80E-02	4.05E-02	4.29E-02
05-13-14	2.68E-02	3.90E-02	3.20E-02	6.89E-02	5.01E-02	4.10E-02	4.08E-02	5.01E-02
05-20-14	2.61E-02	3.22E-02	3.67E-02	4.15E-02	4.61E-02	3.82E-02	5.31E-02	4.65E-02
05-27-14	3.05E-02	3.43E-02	3.49E-02	3.60E-02	5.65E-02	4.23E-02	4.24E-02	3.66E-02
06-03-14	2.41E-02	3.12E-02	2.11E-02	2.69E-02	3.54E-02	2.72E-02	2.61E-02	2.99E-02
06-10-14	2.03E-02	2.34E-02	2.32E-02	2.35E-02	3.57E-02	1.85E-02	2.46E-02	2.86E-02
06-17-14	3.40E-02	2.72E-02	3.26E-02	3.17E-02	5.14E-02	3.34E-02	3.94E-02	3.93E-02
06-24-14	3.04E-02	3.95E-02	3.15E-02	3.27E-02	4.81E-02	3.88E-02	4.45E-02	3.43E-02
07-01-14	2.67E-02	3.54E-02	3.61E-02	3.18E-02	5.11E-02	4.12E-02	4.41E-02	3.94E-02
07-08-14	3.72E-02	3.16E-02	3.54E-02	4.38E-02	4.61E-02	3.77E-02	4.34E-02	4.26E-02
07-15-14	3.58E-02	4.57E-02	3.10E-02	3.29E-02	5.73E-02	4.28E-02	5.24E-02	5.09E-02
07-22-14	2.53E-02	3.30E-02	2.82E-02	2.99E-02	3.83E-02	2.88E-02	4.04E-02	3.62E-02
07-29-14	3.63E-02	4.81E-02	4.05E-02	3.65E-02	6.72E-02	4.46E-02	4.91E-02	5.11E-02
08-05-14	3.65E-02	5.21E-02	5.75E-02	4.56E-02	7.03E-02	4.79E-02	5.63E-02	5.15E-02
08-12-14	4.00E-02	4.27E-02	3.59E-02	3.73E-02	5.36E-02	3.97E-02	4.63E-02	4.73E-02
08-19-14	3.02E-02	3.92E-02	3.67E-02	4.01E-02	6.29E-02	4.04E-02	5.51E-02	4.85E-02
08-26-14	4.11E-02	3.65E-02	4.26E-02	3.79E-02	4.91E-02	3.49E-02	4.21E-02	4.12E-02
09-02-14	3.58E-02	3.86E-02	3.53E-02	3.54E-02	4.54E-02	2.75E-02	4.40E-02	4.35E-02
09-09-14	2.41E-02	2.69E-02	2.83E-02	3.05E-02	3.72E-02	2.29E-02	2.93E-02	3.40E-02
09-16-14	3.00E-02	3.17E-02	2.84E-02	2.48E-02	3.62E-02	2.17E-02	2.32E-02	2.92E-02
09-23-14	3.73E-02	3.31E-02	2.96E-02	3.02E-02	3.97E-02	3.88E-02	3.23E-02	2.50E-02
09-30-14	6.10E-02	4.34E-02	4.41E-02	5.56E-02	6.90E-02	5.11E-02	4.82E-02	4.93E-02
10-07-14	3.78E-02	2.67E-02	3.07E-02	5.18E-02	4.74E-02	3.82E-02	4.12E-02	3.29E-02
10-14-14	4.10E-02	3.07E-02	2.01E-02	3.91E-02	4.96E-02	2.75E-02	3.85E-02	3.36E-02
10-21-14	8.92E-02	4.67E-02	3.76E-02	7.44E-02	8.00E-02	6.82E-02	5.52E-02	5.81E-02
10-28-14	1.34E-01	7.14E-02	6.98E-02	9.69E-02	1.31E-01	8.05E-02	9.57E-02	7.89E-02
11-04-14	9.85E-02	4.88E-02	4.80E-02	7.19E-02	8.08E-02	5.48E-02	5.77E-02	5.24E-02
11-11-14	3.70E-02	3.39E-02	3.01E-02	3.64E-02	6.04E-02	3.58E-02	3.15E-02	2.76E-02
11-18-14	4.59E-02	4.12E-02	3.81E-02	6.07E-02	7.19E-02	4.05E-02	4.87E-02	5.05E-02
11-25-14	4.24E-02	4.24E-02	4.01E-02	4.71E-02	6.52E-02	5.54E-02	4.66E-02	4.23E-02
12-02-14	3.90E-02	3.96E-02	4.03E-02	4.72E-02	6.87E-02	3.78E-02	3.91E-02	3.91E-02
12-09-14	5.61E-02	5.10E-02	4.53E-02	6.67E-02	9.36E-02	5.31E-02	5.04E-02	4.60E-02
12-16-14	6.20E-02	4.82E-02	4.41E-02	7.21E-02	9.09E-02	6.15E-02	5.26E-02	5.96E-02
12-23-14	5.77E-02	4.22E-02	3.74E-02	5.73E-02	7.52E-02	4.54E-02	4.25E-02	3.18E-02
12-30-14	3.79E-02	2.70E-02	2.85E-02	4.21E-02	6.90E-02	2.97E-02	4.22E-02	3.34E-02

Required LLD 1.00E-02

Graph 1 -- 2014 Environmental Air Sample
Gross Beta Results - Maximum and Minimum



**Table 5 -- 2014 Environmental Air Sample Iodine-131 Results
(Units of pCi/m3)**

	A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2
	NW-1.0	SW/WSW-0.95	S/SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4
Date				Control				Control
01-07-14	<1.43E-02	<1.21E-02	<1.58E-02	<2.78E-02	<1.39E-02	<1.32E-02	<1.60E-02	<1.51E-02
01-14-14	<1.81E-02	<2.01E-02	<1.62E-02	<1.81E-02	<1.50E-02	<1.42E-02	<1.80E-02	<1.22E-02
01-21-14	<3.93E-02	<3.59E-02	<1.57E-02	<2.96E-02	<2.64E-02	<2.45E-02	<3.07E-02	<3.65E-02
01-28-14	<2.39E-02	<3.51E-02	<2.46E-02	<4.49E-02	<3.38E-02	<3.29E-02	<1.96E-02	<4.07E-02
02-04-14	<1.88E-02	<2.50E-02	<2.71E-02	<6.63E-02	<2.21E-02	<2.99E-02	<2.77E-02	<4.94E-02
02-11-14	<2.44E-02	<3.31E-02	<3.59E-02	<3.57E-02	<3.30E-02	<2.29E-02	<2.75E-02	<2.70E-02
02-18-14	<1.34E-02	<1.63E-02	<1.45E-02	<1.77E-02	<1.36E-02	<1.03E-02	<1.01E-02	<1.12E-02
02-25-14	<4.25E-02	<3.28E-02	<2.68E-02	<3.81E-02	<4.33E-02	<4.14E-02	<5.48E-02	<3.11E-02
03-04-14	<1.77E-02	<4.58E-02	<5.52E-02	<3.66E-02	<3.18E-02	<2.63E-02	<2.48E-02	<2.60E-02
03-11-14	<1.39E-02	<1.96E-02	<2.44E-02	<3.73E-02	<3.17E-02	<3.79E-02	<2.99E-02	<2.83E-02
03-18-14	<5.71E-02	<3.90E-02	<2.13E-02	<1.71E-02	<2.67E-02	<2.36E-02	<3.32E-02	<2.74E-02
03-25-14	<3.41E-02	<6.48E-02	<3.23E-02	<2.85E-02	<2.78E-02	<4.63E-02	<2.30E-02	<3.93E-02
04-01-14	<3.65E-02	<2.60E-02	<2.02E-02	<2.52E-02	<1.49E-02	<3.34E-02	<3.30E-02	<2.09E-02
04-08-14	<1.79E-02	<1.54E-02	<1.40E-02	<1.26E-02	<1.42E-02	<1.49E-02	<1.59E-02	<1.83E-02
04-15-14	<4.32E-02	<4.11E-02	<3.00E-02	<2.58E-02	<2.69E-02	<3.13E-02	<4.21E-02	<2.86E-02
04-22-14	<4.03E-02	<2.83E-02	<2.74E-02	<3.48E-02	<1.77E-02	<1.86E-02	<2.04E-02	<5.28E-02
04-29-14	<2.27E-02	<3.15E-02	<2.76E-02	<3.28E-02	<3.71E-02	<2.82E-02	<4.01E-02	<2.06E-02
05-06-14	<2.41E-02	<4.66E-02	<1.58E-02	<3.70E-02	<3.22E-02	<3.01E-02	<2.09E-02	<1.99E-02
05-13-14	<1.58E-02	<1.33E-02	<1.23E-02	<1.52E-02	<1.60E-02	<1.53E-02	<1.39E-02	<2.35E-02
05-20-14	<5.47E-02	<3.00E-02	<2.83E-02	<3.38E-02	<4.19E-02	<3.67E-02	<3.63E-02	<3.98E-02
05-27-14	<1.08E-02	<1.76E-02	<1.76E-02	<1.46E-02	<1.40E-02	<3.18E-02	<2.33E-02	<3.29E-02
06-03-14	<5.89E-02	<4.98E-02	<3.65E-02	<3.50E-02	<3.84E-02	<3.71E-02	<4.62E-02	<3.78E-02
06-10-14	<3.42E-02	<1.86E-02	<4.36E-02	<2.83E-02	<3.48E-02	<3.49E-02	<2.53E-02	<2.20E-02
06-17-14	<1.29E-02	<4.03E-02	<3.40E-02	<2.96E-02	<2.67E-02	<3.27E-02	<4.42E-02	<2.44E-02
06-24-14	<1.97E-02	<1.80E-02	<3.59E-02	<2.32E-02	<2.01E-02	<2.51E-02	<2.07E-02	<2.01E-02
07-01-14	<2.97E-02	<1.07E-02	<2.49E-02	<1.91E-02	<1.65E-02	<2.16E-02	<1.99E-02	<1.66E-02
07-08-14	<3.08E-02	<2.94E-02	<3.50E-02	<1.32E-02	<3.26E-02	<3.45E-02	<3.84E-02	<4.09E-02
07-15-14	<2.10E-02	<2.90E-02	<2.03E-02	<2.19E-02	<2.15E-02	<1.86E-02	<1.82E-02	<2.01E-02
07-22-14	<5.31E-02	<2.24E-02	<2.66E-02	<3.53E-02	<1.93E-02	<3.12E-02	<2.72E-02	<1.71E-02
07-29-14	<5.06E-02	<4.57E-02	<4.47E-02	<3.64E-02	<3.21E-02	<3.28E-02	<4.40E-02	<3.44E-02
08-05-14	<3.43E-02	<2.17E-02	<2.76E-02	<2.90E-02	<2.94E-02	<5.94E-02	<2.47E-02	<4.52E-02
08-12-14	<1.95E-02	<2.60E-02	<3.84E-02	<2.89E-02	<4.82E-02	<2.10E-02	<2.63E-02	<3.43E-02
08-19-14	<2.37E-02	<2.69E-02	<2.54E-02	<2.69E-02	<2.79E-02	<3.16E-02	<1.94E-02	<2.84E-02
08-26-14	<2.55E-02	<2.88E-02	<4.03E-02	<4.19E-02	<4.00E-02	<4.88E-02	<3.64E-02	<3.35E-02
09-02-14	<2.88E-02	<2.63E-02	<3.73E-02	<3.63E-02	<2.43E-02	<2.37E-02	<1.38E-02	<1.86E-02
09-09-14	<3.33E-02	<2.28E-02	<3.32E-02	<2.65E-02	<2.54E-02	<3.13E-02	<3.13E-02	<2.70E-02
09-16-14	<2.50E-02	<2.41E-02	<3.35E-02	<1.65E-02	<2.24E-02	<3.12E-02	<2.06E-02	<4.30E-02
09-23-14	<1.36E-02	<1.60E-02	<1.96E-02	<1.40E-02	<1.26E-02	<9.03E-03	<1.46E-02	<1.27E-02
09-30-14	<1.88E-02	<2.46E-02	<1.79E-02	<3.99E-02	<1.59E-02	<4.26E-02	<4.04E-02	<6.59E-02
10-07-14	<1.74E-02	<1.20E-02	<2.27E-02	<1.72E-02	<1.53E-02	<1.60E-02	<2.01E-02	<1.16E-02
10-14-14	<2.68E-02	<1.81E-02	<2.32E-02	<2.10E-02	<2.18E-02	<1.89E-02	<2.74E-02	<1.99E-02
10-21-14	<2.34E-02	<3.37E-02	<3.47E-02	<2.43E-02	<3.32E-02	<3.49E-02	<2.03E-02	<3.51E-02
10-28-14	<4.63E-02	<4.56E-02	<3.97E-02	<4.38E-02	<4.53E-02	<4.04E-02	<4.57E-02	<3.65E-02
11-04-14	<2.33E-02	<3.77E-02	<4.80E-02	<3.04E-02	<3.02E-02	<2.82E-02	<3.29E-02	<3.36E-02
11-11-14	<2.81E-02	<3.52E-02	<5.14E-02	<2.38E-02	<4.47E-02	<2.75E-02	<4.30E-02	<4.61E-02
11-18-14	<3.62E-02	<1.96E-02	<1.80E-02	<2.92E-02	<3.17E-02	<2.86E-02	<2.68E-02	<2.14E-02
11-25-14	<3.87E-02	<4.66E-02	<2.56E-02	<4.69E-02	<2.34E-02	<5.58E-02	<4.60E-02	<4.04E-02
12-02-14	<2.63E-02	<3.47E-02	<2.70E-02	<1.48E-02	<2.63E-02	<1.93E-02	<4.06E-02	<2.47E-02
12-09-14	<5.59E-02	<3.64E-02	<5.21E-02	<3.39E-02	<4.82E-02	<4.09E-02	<3.76E-02	<4.22E-02
12-16-14	<5.06E-02	<3.73E-02	<3.63E-02	<3.14E-02	<5.12E-02	<5.00E-02	<5.55E-02	<2.52E-02
12-23-14	<2.40E-02	<3.18E-02	<3.34E-02	<1.88E-02	<5.96E-02	<3.67E-02	<2.81E-02	<2.85E-02
12-30-14	<4.02E-02	<3.15E-02	<4.96E-02	<3.62E-02	<3.57E-02	<8.91E-03	<6.07E-02	<4.43E-02

**Table 6 -- 2014 Environmental Air Particulate Composite Gamma Isotopic Results
(Units of pCi/m3)**

		A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2	
	Location	NW-1.0	SWWSW-0.95	SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4	
	Nuclides				Control				Control	
	Ba-140	<1.01E-01	<1.26E-01	<1.35E-01	<7.94E-02	<2.02E-01	<1.11E-01	<1.12E-01	<1.37E-01	
	Be-7	1.27E-01	1.83E-01	1.84E-01	1.64E-01	1.82E-01	1.95E-01	1.55E-01	1.41E-01	
	Co-57	<4.65E-04	<4.03E-04	<3.74E-04	<4.38E-04	<6.18E-04	<6.56E-04	<3.90E-04	<5.86E-04	
	Co-58	<1.65E-03	<1.41E-03	<1.59E-03	<1.28E-03	<1.71E-03	<2.73E-03	<1.34E-03	<1.61E-03	
Composite Dates	Co-60	<6.60E-04	<8.00E-04	<1.01E-03	<1.02E-03	<1.75E-03	<1.42E-03	<1.20E-03	<6.48E-04	
1ST QTR	Cs-134	<8.80E-04	<8.74E-04	<8.50E-04	<8.02E-04	<1.63E-03	<1.27E-03	<9.95E-04	<9.47E-04	Required LLD 5.0E-2
12/31/13 – 3/25/14	Cs-137	<8.54E-04	<7.30E-04	<7.82E-04	<5.31E-04	<1.42E-03	<1.17E-03	<7.57E-04	<1.03E-03	Required LLD 6.0E-2
	Fe-59	<5.55E-03	<4.95E-03	<4.88E-03	<5.46E-03	<1.39E-02	<6.31E-03	<7.03E-03	<5.67E-03	
	K-40	<8.11E-03	<4.98E-03	<7.25E-03	<4.73E-03	<2.59E-02	<9.79E-03	<1.69E-02	<1.89E-02	
	La-140	<1.01E-01	<1.26E-01	<1.35E-01	<7.94E-02	<2.02E-01	<1.11E-01	<1.12E-01	<1.37E-01	
	Mn-54	<8.79E-04	<9.52E-04	<1.10E-03	<1.08E-03	<1.45E-03	<1.37E-03	<9.46E-04	<8.84E-04	
	Nb-95	<1.29E-03	<1.94E-03	<1.27E-03	<1.88E-03	<4.14E-03	<2.47E-03	<2.00E-03	<1.88E-03	
	Zn-65	<2.11E-03	<2.35E-03	<1.78E-03	<2.10E-03	<4.19E-03	<4.22E-03	<2.43E-03	<1.44E-03	
	Zr-95	<3.78E-03	<2.81E-03	<2.00E-03	<3.20E-03	<4.70E-03	<6.67E-03	<3.28E-03	<2.95E-03	
	Ba-140	<1.55E-01	<2.88E-01	<1.99E-01	<1.96E-01	<1.74E-01	<2.57E-01	<2.49E-01	<2.55E-01	
	Be-7	1.28E-01	1.66E-01	7.64E-02	1.64E-01	2.86E-01	1.46E-01	1.02E-01	1.70E-01	
	Co-57	<4.92E-04	<8.07E-04	<6.81E-04	<6.31E-04	<5.14E-04	<8.08E-04	<6.57E-04	<5.50E-04	
	Co-58	<1.67E-03	<2.85E-03	<3.04E-03	<1.70E-03	<1.65E-03	<3.54E-03	<2.49E-03	<2.63E-03	
Composite Dates	Co-60	<1.02E-03	<1.91E-03	<1.24E-03	<4.78E-04	<1.01E-03	<1.82E-03	<1.36E-03	<1.30E-03	
2ND QTR	Cs-134	<9.11E-04	<1.60E-03	<1.72E-03	<1.28E-03	<8.25E-04	<1.58E-03	<1.32E-03	<1.06E-03	Required LLD 5.0E-2
3/26/14 – 6/24/14	Cs-137	<7.45E-04	<1.23E-03	<1.24E-03	<7.31E-04	<6.92E-04	<1.48E-03	<1.17E-03	<9.76E-04	Required LLD 6.0E-2
	Fe-59	<8.69E-03	<1.46E-02	<7.51E-03	<4.20E-03	<6.07E-03	<1.32E-02	<1.15E-02	<6.68E-03	
	K-40	<1.70E-02	<1.72E-02	<2.32E-02	<1.33E-02	<9.48E-03	<9.93E-03	<2.11E-02	<9.42E-03	
	La-140	<1.55E-01	<2.88E-01	<1.99E-01	<1.96E-01	<1.74E-01	<2.57E-01	<2.49E-01	<2.55E-01	
	Mn-54	<9.01E-04	<1.98E-03	<1.75E-03	<9.21E-04	<7.80E-04	<1.89E-03	<1.15E-03	<8.02E-04	
	Nb-95	<2.01E-03	<4.14E-03	<2.37E-03	<2.41E-03	<1.25E-03	<2.87E-03	<3.64E-03	<2.47E-03	
	Zn-65	<2.97E-03	<4.05E-03	<3.51E-03	<3.06E-03	<2.42E-03	<3.24E-03	<2.90E-03	<2.43E-03	
	Zr-95	<2.11E-03	<5.25E-03	<3.83E-03	<3.28E-03	<3.31E-03	<5.80E-03	<7.16E-03	<3.92E-03	

Table 6 – 2014 Environmental Air Particulate Composite Gamma Isotopic Results (continued)
(Units of pCi/m3)

		A-8	A-7	A-5	A-6	A-4	A-3	A-1	A-2	
	Location	NW-1.0	SW/WSW-0.95	SSW-1.2	SW-12.3	SSE-4.5	E-3.5	N-1.45	N-9.4	
	Nuclides				Control				Control	
	Ba-140	<1.58E-01	<1.68E-01	<1.01E-01	<1.74E-01	<2.08E-01	<1.22E-01	<1.12E-01	<1.51E-01	
	Be-7	1.62E-01	1.53E-01	1.13E-01	1.14E-01	1.94E-01	1.37E-01	1.46E-01	1.54E-01	
	Co-57	<4.60E-04	<4.34E-04	<3.27E-04	<3.66E-04	<3.62E-04	<3.71E-04	<3.10E-04	<3.74E-04	
	Co-58	<1.78E-03	<1.70E-03	<1.28E-03	<9.38E-04	<1.39E-03	<1.26E-03	<1.22E-03	<1.27E-03	
Composite Dates	Co-60	<5.99E-04	<7.19E-04	<5.67E-04	<6.21E-04	<6.48E-04	<6.42E-04	<5.92E-04	<5.45E-04	
3RD QTR	Cs-134	<6.03E-04	<7.52E-04	<5.31E-04	<5.60E-04	<6.90E-04	<5.43E-04	<4.96E-04	<7.07E-04	Required LLD 5.0E-2
6/25/14 – 9/30/14	Cs-137	<5.71E-04	<7.40E-04	<5.33E-04	<4.47E-04	<5.71E-04	<4.90E-04	<5.89E-04	<6.20E-04	Required LLD 6.0E-2
	Fe-59	<4.52E-03	<4.63E-03	<5.85E-03	<4.06E-03	<4.44E-03	<3.14E-03	<3.91E-03	<4.12E-03	
	K-40	<4.42E-03	<7.64E-03	1.07E-02	<6.49E-03	9.94E-03	<5.21E-03	8.69E-03	9.39E-03	
	La-140	<1.58E-01	<1.68E-01	<1.01E-01	<1.74E-01	<2.08E-01	<1.22E-01	<1.12E-01	<1.51E-01	
	Mn-54	<7.73E-04	<9.55E-04	<4.97E-04	<6.55E-04	<5.40E-04	<5.79E-04	<5.56E-04	<4.95E-04	
	Nb-95	<1.92E-03	<1.86E-03	<1.47E-03	<1.46E-03	<1.67E-03	<1.41E-03	<1.61E-03	<1.56E-03	
	Zn-65	<2.00E-03	<1.43E-03	<1.02E-03	<1.47E-03	<1.49E-03	<1.38E-03	<6.09E-04	<1.49E-03	
	Zr-95	<2.80E-03	<2.79E-03	<1.93E-03	<2.17E-03	<3.08E-03	<2.64E-03	<2.01E-03	<2.51E-03	
	Ba-140	<1.93E-01	<1.30E-01	<1.26E-01	<1.23E-01	<1.04E-01	<1.52E-01	<2.02E-01	<1.29E-01	
	Be-7	1.62E-01	1.15E-01	1.08E-01	1.45E-01	1.91E-01	1.25E-01	1.12E-01	1.20E-01	
	Co-57	<5.48E-04	<4.17E-04	<4.72E-04	<4.39E-04	<4.92E-04	<5.91E-04	<4.46E-04	<4.44E-04	
	Co-58	<1.14E-03	<1.43E-03	<1.36E-03	<1.34E-03	<1.42E-03	<1.66E-03	<1.97E-03	<1.27E-03	
Composite Dates	Co-60	<6.77E-04	<7.30E-04	<8.35E-04	<8.98E-04	<8.43E-04	<8.09E-04	<7.75E-04	<7.81E-04	
4TH QTR	Cs-134	<9.55E-04	<7.44E-04	<9.66E-04	<8.67E-04	<5.82E-04	<1.12E-03	<1.34E-03	<9.61E-04	Required LLD 5.0E-2
10/01/14- 12/30/14	Cs-137	<8.98E-04	<8.09E-04	<7.36E-04	<6.76E-04	<6.32E-04	<8.63E-04	<1.12E-03	<7.11E-04	Required LLD 6.0E-2
	Fe-59	<5.27E-03	<2.48E-03	<3.12E-03	<4.93E-03	<4.74E-03	<5.13E-03	<6.38E-03	<4.24E-03	
	K-40	<1.57E-02	<0.00E+00	<4.46E-03	<1.72E-02	<1.26E-02	<1.70E-02	<1.81E-02	<1.39E-02	
	La-140	<6.52E-02	<6.51E-02	<0.00E+00	<5.12E-02	<2.50E-02	<6.55E-02	<9.34E-02	<4.63E-02	
	Mn-54	<8.24E-04	<6.79E-04	<6.84E-04	<7.11E-04	<6.93E-04	<1.15E-03	<1.24E-03	<8.72E-04	
	Nb-95	<1.79E-03	<1.76E-03	<1.42E-03	<1.18E-03	<1.45E-03	<1.40E-03	<1.89E-03	<1.37E-03	
	Zn-65	<2.76E-03	<2.04E-03	<1.53E-03	<1.56E-03	<1.67E-03	<1.84E-03	<2.19E-03	<2.03E-03	
	Zr-95	<2.72E-03	<3.35E-03	<2.42E-03	<2.44E-03	<2.03E-03	<2.80E-03	<3.52E-03	<2.40E-03	

D. Surface Water Program

Surface water monitoring stations are found at four locations as detailed in Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program. Location N-1.5 provides samples representative of Squaw Creek reservoir surface water at a location beyond significant influence of the plant discharge. Location ESE-1.4 provides samples representative of discharges from Squaw Creek reservoir downstream to Squaw Creek and to Lake Granbury via an installed return line. [*NOTE: The installed return line to Lake Granbury has never been used to send water back to Lake Granbury.*] Location NE-7.4 provides samples of Lake Granbury surface water downstream of the discharge from the return line from Squaw Creek reservoir. A control sample is obtained from the Brazos River, upstream of Lake Granbury at location N-19.3. Surface water samples from Squaw Creek reservoir locations were collected weekly and composited for monthly gamma isotopic analysis. Samples from Lake Granbury locations were collected monthly and analyzed by gamma spectrometry. All surface water samples were also composited quarterly by location for tritium analysis.

For the year 2014 all surface water samples were collected as required. Table 7 -- 2014 Environmental Surface Water Tritium and Gamma Isotopic Results contains the reported values. Forty-eight samples were analyzed by gamma spectrometry. All results for the required radionuclides were reported as less than the required LLDs. Sixteen quarterly composited samples were analyzed for tritium. The results of the reported tritium values for Squaw Creek reservoir were in line with expected concentrations. The tritium values ranged from a high of **2.02E+04** pCi/l to a low of **1.63E+04** pCi/l. The results from Lake Granbury were all less than the required LLDs as expected. The tritium concentration reported in Squaw Creek is well below the action level of **3.0E+4** pCi/l and is following the expected concentration variations based on fuel cycles, power histories and reservoir makeup due to rain and pump transfers from Lake Granbury. Graph 2 – 2014 Environmental Surface Water Tritium Results indicates the current results and the short-term trend of the tritium concentration in Squaw Creek reservoir. Graph 3 – Squaw Creek Maximum Tritium Values trends the reservoir tritium concentration since it was first detected in 1990 after Unit 1 startup and is located on page 29. This long-term graph also indicates that a slow steady increase in the

concentration of Tritium. **Squaw Creek reservoir tritium is a direct product of the operation of CPNPP and is the only consistent indicator detectable in the environment surrounding Comanche Peak.**

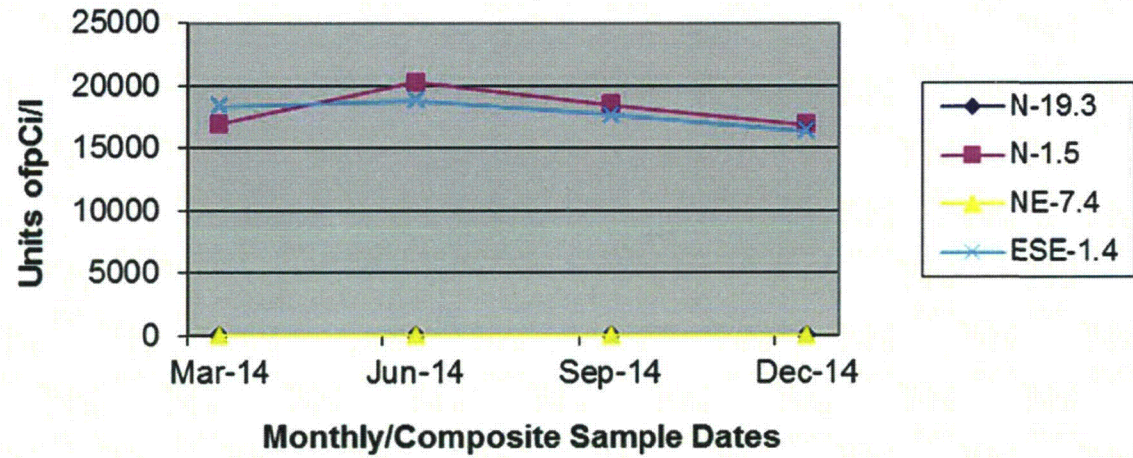
There should not be any significant changes in the tritium concentrations in the near future and no action levels are anticipated. A review of pre-operational and operational data indicated the 2014 results were both expected and consistent with previous data and that no anomalies had occurred.

During the year 2014, there were no exceptions to the Surface Water Program.

**Table 7 -- 2014 Environmental Surface Water Tritium and Gamma Isotopic Results
(Units of pCi/l)**

Date	SW-5 Location	H-3	Nuclides													
			Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-28-14	ESE-1.4		<7.06E+00	<3.91E+01	<4.80E+00	<5.61E+00	<3.90E+00	<3.77E+00	<1.05E+01	<1.31E+01	<3.57E+01	<7.06E+00	<4.63E+00	<4.22E+00	<8.41E+00	<6.79E+00
02-25-14	ESE-1.4		<1.37E+01	<4.06E+01	<4.43E+00	<3.84E+00	<4.11E+00	<5.33E+00	<9.70E+00	<1.77E+01	<6.10E+01	<1.37E+01	<4.15E+00	<4.20E+00	<1.08E+01	<7.82E+00
03-25-14	ESE-1.4	1.83E+04	<7.53E+00	<2.72E+01	<2.95E+00	<2.83E+00	<2.88E+00	<3.18E+00	<5.69E+00	<1.28E+01	6.23E+01	<7.53E+00	<2.87E+00	<2.83E+00	<6.22E+00	<5.20E+00
04-23-14	ESE-1.4		<4.85E+00	<1.48E+01	<1.74E+00	<1.57E+00	<1.69E+00	<1.55E+00	<3.80E+00	<6.78E+00	<1.55E+01	<4.85E+00	<1.75E+00	<1.88E+00	<2.51E+00	<3.10E+00
05-27-14	ESE-1.4		<4.44E+00	<1.41E+01	<1.44E+00	<1.46E+00	<1.52E+00	<1.43E+00	<3.25E+00	<7.17E+00	4.65E+01	<4.44E+00	<1.39E+00	<1.32E+00	<2.81E+00	<3.04E+00
06-24-14	ESE-1.4	1.88E+04	<5.31E+00	<1.76E+01	<1.90E+00	<1.80E+00	<1.95E+00	<1.81E+00	<4.24E+00	<9.39E+00	<1.76E+01	<5.31E+00	<1.77E+00	<2.18E+00	<3.69E+00	<3.61E+00
07-25-14	ESE-1.4		<6.88E+00	<1.74E+01	<1.86E+00	<1.75E+00	<1.77E+00	<1.64E+00	<4.61E+00	<1.20E+01	<1.59E+01	<6.88E+00	<1.72E+00	<2.08E+00	<3.36E+00	<3.65E+00
08-26-14	ESE-1.4		<6.49E+00	<1.91E+01	<2.18E+00	<1.88E+00	<1.93E+00	<1.88E+00	<4.60E+00	<1.15E+01	<2.92E+01	<6.49E+00	<1.76E+00	<2.08E+00	<4.16E+00	<3.59E+00
09-30-14	ESE-1.4	1.76E+04	<5.42E+00	<1.62E+01	<1.91E+00	<1.68E+00	<1.79E+00	<2.06E+00	<4.30E+00	<1.04E+01	2.69E+01	<5.42E+00	<1.50E+00	<1.91E+00	<3.43E+00	<3.23E+00
10-28-14	ESE-1.4		<8.23E+00	<2.15E+01	<2.27E+00	<2.03E+00	<2.42E+00	<2.17E+00	<5.34E+00	<1.39E+01	2.07E+01	<8.23E+00	<1.98E+00	<2.44E+00	<4.52E+00	<4.38E+00
11-25-14	ESE-1.4		<6.24E+00	<1.82E+01	<2.05E+00	<1.99E+00	<1.97E+00	<2.03E+00	<4.93E+00	<1.03E+01	3.25E+01	<6.24E+00	<1.89E+00	<2.31E+00	<4.04E+00	<3.92E+00
12-30-14	ESE-1.4	1.63E+04	<1.26E+01	<3.25E+01	<3.75E+00	<3.98E+00	<3.57E+00	<3.38E+00	<8.61E+00	<2.08E+01	<1.90E+01	<1.26E+01	<3.52E+00	<3.75E+00	<6.07E+00	<5.69E+00
	SW-1		Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-28-14	N-1.5		<9.83E+00	<4.29E+01	<4.18E+00	<4.63E+00	<4.98E+00	<3.67E+00	<9.33E+00	<1.31E+01	<2.96E+01	<9.83E+00	<3.62E+00	<4.25E+00	<9.38E+00	<7.25E+00
02-25-14	N-1.5		<1.35E+01	<5.88E+01	<7.47E+00	<8.83E+00	<4.93E+00	<5.16E+00	<1.27E+01	<2.43E+01	<7.72E+01	<1.35E+01	<5.06E+00	<8.08E+00	<1.22E+01	<1.12E+01
03-25-14	N-1.5	1.69E+04	<8.02E+00	<2.85E+01	<2.98E+00	<3.37E+00	<3.68E+00	<2.65E+00	<6.24E+00	<1.23E+01	<2.81E+01	<8.02E+00	<2.91E+00	<2.99E+00	<6.09E+00	<5.15E+00
04-23-14	N-1.5		<5.52E+00	<1.79E+01	<1.85E+00	<1.99E+00	<1.96E+00	<2.07E+00	<4.18E+00	<7.67E+00	<1.76E+01	<5.52E+00	<1.78E+00	<2.19E+00	<3.90E+00	<3.57E+00
05-27-14	N-1.5		<8.11E+00	<2.03E+01	<2.28E+00	<2.29E+00	<2.47E+00	<1.99E+00	<5.47E+00	<1.02E+01	<2.10E+01	<8.11E+00	<1.93E+00	<2.18E+00	<4.19E+00	<4.21E+00
06-24-14	N-1.5	2.02E+04	<6.33E+00	<1.78E+01	<1.90E+00	<1.80E+00	<1.94E+00	<1.69E+00	<4.57E+00	<1.01E+01	<2.61E+01	<6.33E+00	<1.64E+00	<2.03E+00	<3.77E+00	<3.48E+00
07-25-14	N-1.5		<5.89E+00	<1.45E+01	<1.43E+00	<1.43E+00	<1.50E+00	<1.44E+00	<3.53E+00	<1.14E+01	3.52E+01	<5.89E+00	<1.37E+00	<1.80E+00	<2.77E+00	<3.09E+00
08-26-14	N-1.5		<5.29E+00	<1.62E+01	<1.68E+00	<1.72E+00	<1.65E+00	<1.76E+00	<4.04E+00	<9.53E+00	2.72E+01	<5.29E+00	<1.68E+00	<1.84E+00	<3.28E+00	<3.30E+00
09-30-14	N-1.5	1.84E+04	<7.06E+00	<1.98E+01	<2.13E+00	<1.96E+00	<2.14E+00	<2.10E+00	<4.90E+00	<1.31E+01	4.21E+01	<7.06E+00	<1.88E+00	<2.23E+00	<3.84E+00	<3.79E+00
10-28-14	N-1.5		<9.22E+00	<2.14E+01	<2.71E+00	<2.36E+00	<2.65E+00	<2.49E+00	<6.74E+00	<1.38E+01	2.90E+01	<9.22E+00	<2.46E+00	<2.93E+00	<5.04E+00	<4.85E+00
11-25-14	N-1.5		<6.82E+00	<2.12E+01	<2.10E+00	<2.15E+00	<2.17E+00	<2.19E+00	<4.87E+00	<1.16E+01	<1.80E+01	<6.82E+00	<1.92E+00	<2.50E+00	<3.87E+00	<4.11E+00
12-30-14	N-1.5	1.68E+04	<1.14E+01	<3.76E+01	<3.75E+00	<3.43E+00	<3.13E+00	<3.71E+00	<8.87E+00	<2.23E+01	<6.22E+01	<1.14E+01	<3.28E+00	<3.94E+00	<6.64E+00	<6.84E+00
	SW-4		Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-28-14	NE-7.4		<8.29E+00	<4.38E+01	<4.67E+00	<4.88E+00	<7.17E+00	<6.02E+00	<1.23E+01	<7.07E+00	<4.20E+01	<8.29E+00	<4.20E+00	<6.10E+00	<1.44E+01	<7.89E+00
02-25-14	NE-7.4		<7.82E+00	<3.68E+01	<4.42E+00	<4.14E+00	<5.97E+00	<4.37E+00	<9.13E+00	<7.42E+00	<7.81E+01	<7.82E+00	<4.83E+00	<4.33E+00	<7.67E+00	<7.52E+00
03-25-14	NE-7.4	<3.81E+02	<5.11E+00	<2.59E+01	<3.23E+00	<2.90E+00	<2.89E+00	<3.00E+00	<5.44E+00	<5.26E+00	5.20E+01	<5.11E+00	<2.49E+00	<2.92E+00	<5.12E+00	<5.58E+00
04-23-14	NE-7.4		<2.13E+00	<1.25E+01	<1.53E+00	<1.72E+00	<1.67E+00	<1.79E+00	<2.92E+00	<2.02E+00	<1.72E+01	<2.13E+00	<1.48E+00	<1.59E+00	<3.24E+00	<2.69E+00
05-27-14	NE-7.4		<2.84E+00	<1.33E+01	<1.53E+00	<1.62E+00	<1.84E+00	<1.56E+00	<3.41E+00	<2.75E+00	<2.69E+01	<2.84E+00	<1.62E+00	<1.63E+00	<3.63E+00	<2.85E+00
06-24-14	NE-7.4	<4.31E+02	<4.81E+00	<2.45E+01	<2.56E+00	<2.32E+00	<2.99E+00	<2.90E+00	<5.48E+00	<4.81E+00	<3.09E+01	<4.81E+00	<2.55E+00	<2.47E+00	<5.32E+00	<4.46E+00
07-25-14	NE-7.4		<2.63E+00	<1.31E+01	<1.39E+00	<1.45E+00	<1.42E+00	<1.89E+00	<2.93E+00	<3.48E+00	<1.40E+01	<2.63E+00	<1.35E+00	<1.57E+00	<2.75E+00	<2.59E+00
08-26-14	NE-7.4		<3.71E+00	<1.57E+01	<1.86E+00	<2.09E+00	<2.08E+00	<1.96E+00	<4.06E+00	<4.08E+00	<2.59E+01	<3.71E+00	<1.70E+00	<1.99E+00	<3.75E+00	<3.21E+00
09-30-14	NE-7.4	<5.68E+02	<3.42E+00	<1.73E+01	<1.83E+00	<2.10E+00	<2.04E+00	<1.99E+00	<4.01E+00	<3.62E+00	<2.52E+01	<3.42E+00	<1.91E+00	<2.05E+00	<3.87E+00	<3.51E+00
10-28-14	NE-7.4		<3.48E+00	<1.58E+01	<2.02E+00	<2.11E+00	<2.01E+00	<1.85E+00	<4.32E+00	<3.56E+00	<1.89E+01	<3.48E+00	<1.86E+00	<2.02E+00	<3.75E+00	<3.46E+00
11-25-14	NE-7.4		<5.77E+00	<3.34E+01	<3.80E+00	<4.24E+00	<3.29E+00	<3.72E+00	<9.00E+00	<9.87E+00	<5.16E+01	<5.77E+00	<3.71E+00	<4.36E+00	<7.74E+00	<6.62E+00
12-30-14	NE-7.4	<3.93E+02	<1.00E+01	<4.35E+01	<3.96E+00	<5.48E+00	<4.91E+00	<5.05E+00	<1.23E+01	<8.40E+00	<7.91E+01	<1.00E+01	<5.59E+00	<5.29E+00	<1.18E+01	<8.30E+00
	SW-3		Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-28-14	N-19.3		<5.80E+00	<3.41E+01	<4.13E+00	<5.90E+00	<5.10E+00	<3.59E+00	<9.77E+00	<5.49E+00	<4.28E+01	<5.80E+00	<4.16E+00	<3.99E+00	<1.08E+01	<7.55E+00
02-25-14	N-19.3		<8.82E+00	<4.43E+01	<4.41E+00	<5.68E+00	<6.53E+00	<6.56E+00	<1.12E+01	<8.10E+00	<7.26E+01	<8.82E+00	<4.76E+00	<5.74E+00	<1.07E+01	<8.54E+00
03-25-14	N-19.3	<3.91E+02	<7.31E+00	<3.46E+01	<3.07E+00	<4.31E+00	<4.20E+00	<4.43E+00	<7.59E+00	<6.04E+00	<5.29E+01	<7.31E+00	<4.12E+00	<4.25E+00	<1.09E+01	<7.80E+00
04-23-14	N-19.3		<1.86E+00	<1.18E+01	<1.25E+00	<1.57E+00	<1.51E+00	<1.47E+00	<1.86E+00	<1.83E+00	2.68E+01	<1.86E+00	<1.29E+00	<1.41E+00	<2.71E+00	<2.57E+00
05-27-14	N-19.3		<2.91E+00	<1.36E+01	<1.63E+00	<1.76E+00	<1.68E+00	<1.69E+00	<3.31E+00	<2.54E+00	5.46E+01	<2.91E+00	<1.66E+00	<1.78E+00	<3.45E+00	<2.88E+00
06-24-14	N-19.3	<4.26E+02	<6.07E+00	<2.47E+01	<2.70E+00	<3.49E+00	<3.10E+00	<2.80E+00	<5.66E+00	<5.70E+00	<2.87E+01	<6.07E+00	<2.71E+00	<2.88E+00	<5.09E+00	<4.58E+00
07-25-14	N-19.3		<2.58E+00	<1.20E+01	<1.36E+00	<1.34E+00	<1.46E+00	<1.47E+00	<2.73E+00	<3.44E+00	<2.17E+01	<2.58E+00	<1.30E+00	<1.48E+00	<2.62E+00	<2.59E+00
08-26-14	N-19.3		<4.15E+00	<1.95E+01	<2.11E+00	<2.17E+00	<2.35E+00	<2.26E+00	<4.53E+00	<4.68E+00	<2.89E+01	<4.15E+00	<1.97E+00	<2.01E+00	<4.25E+00	<3.71E+00
09-30-14	N-19.3	<5.74E+02	<2.68E+00	<1.47E+01	<1.56E+00	<1.08E+00	<1.74E+00	<1.62E+00	<3.07E+00	<2.89E+00	2.76E+01	<2.68E+00	<1.47E+00	<1.64E+00	<3.32E+00	<2.73E+00
10-28-14	N-19.3		<2.88E+00	<1.44E+01	<1.59E+00	<1.62E+00	<1.74E+00	<1.72E+00	<3.42E+00	<3.06E+00	<1.39E+01	<2.88E+00	<1.58E+00	<1.67E+00	<2.98E+00	<2.81E+00
11-25-14	N-19.3		<6.15E+00	<2.88E+01	<3.89E+00	<3.66E+00	<4.34E+00	<3.77E+00	<9.19E+00	<7.86E+00	<4.44E+01	<6.15E+00	<3.30E+00	<3.88E+00	<6.86E+00	<7.69E+00
12-30-14	N-19.3	<3.99E+02	<7.04E+00	<3.32E+01	<3.37E+00	<3.34E+00	<3.89E+00	<4.95E+00</								

Graph 2 -- 2014 Environmental Surface Water Tritium Results



E. Surface Drinking Water Program

Surface drinking water was collected at two monitoring locations. Table 1 -- Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2014 details the location and types of analysis required. Samples of water from Squaw Creek reservoir were collected at the monitoring location NNW-0.1 and analyzed at detection levels required for drinking water standards even though the water is not allowed to be used as potable water. There is not a surface water drinking source within a mile of CPNPP. Monitoring location N-9.9 was used as a surface drinking water location based on the proximity of the City of Granbury intake to the Granbury potable water system. All surface drinking water samples were collected weekly and then composited for Iodine-131 analysis, gamma isotopic analysis, and gross beta analysis on a monthly basis. Tritium analysis was performed on a quarterly basis.

For the year 2014, all samples were analyzed for gamma emitting radionuclides. The results are reported in Table 8 – Environmental Surface Drinking Water Tritium, Gross Beta and Gamma Isotopic Results. There were no gamma emitting radionuclides identified in any of the twenty-four composite samples. Tritium reported in Squaw Creek reservoir ranged from **2.00E+04 pCi/l to 1.43E+04 pCi/l** and **averaged 1.67E+04 pCi/l**. Tritium reported from all Lake Granbury water samples indicated less than the required LLD as expected. Graph 4 – 2014 Environmental Surface Drinking Water Tritium Results trends the results reported for the year 2014. Gross Beta results at the indicator location NNW-0.1 ranged from **<2.48+01 pCi/l to 1.23E+01 pCi/l** with an average of **1.85+01 pCi/l**. Gross Beta results at the control location N-9.9 ranged from **<3.69E+00 pCi/l to 1.04E+01 pCi/l** with an average of **8.63E+00 pCi/l**. Graph 5 – 2014 Environmental Surface Drinking Water Gross Beta Results trends the gross beta results for the two monitor locations and indicates no influence from Comanche Peak in the levels detected in the two different bodies of water. The gross beta results received are within values previously reported and there is no reportable level for gross beta so no action is required at this time.

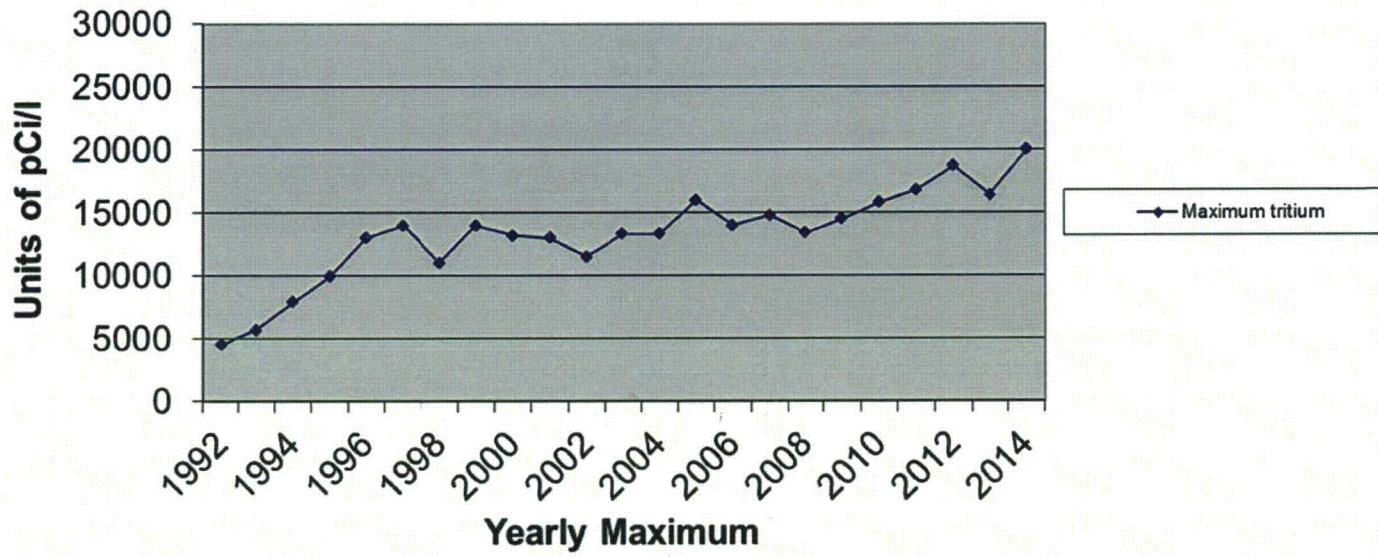
During the year 2014, there was one exception to the Surface Drinking Water Program.

CR-2014-013378- Quarterly Squaw Creek Lake water Tritium results from Gel Laboratories indicated an observable decrease from the 2nd quarter to the 3rd and 4th quarters of 2014. Contacted Gel Laboratories to re-analysis the 2nd quarter SW-6, H-3 on 09-30-14. The new results are posted below. Results also attached to CR. The SW-6, H-3 results will continue to be monitored for any changes by the normal routine station procedure process.

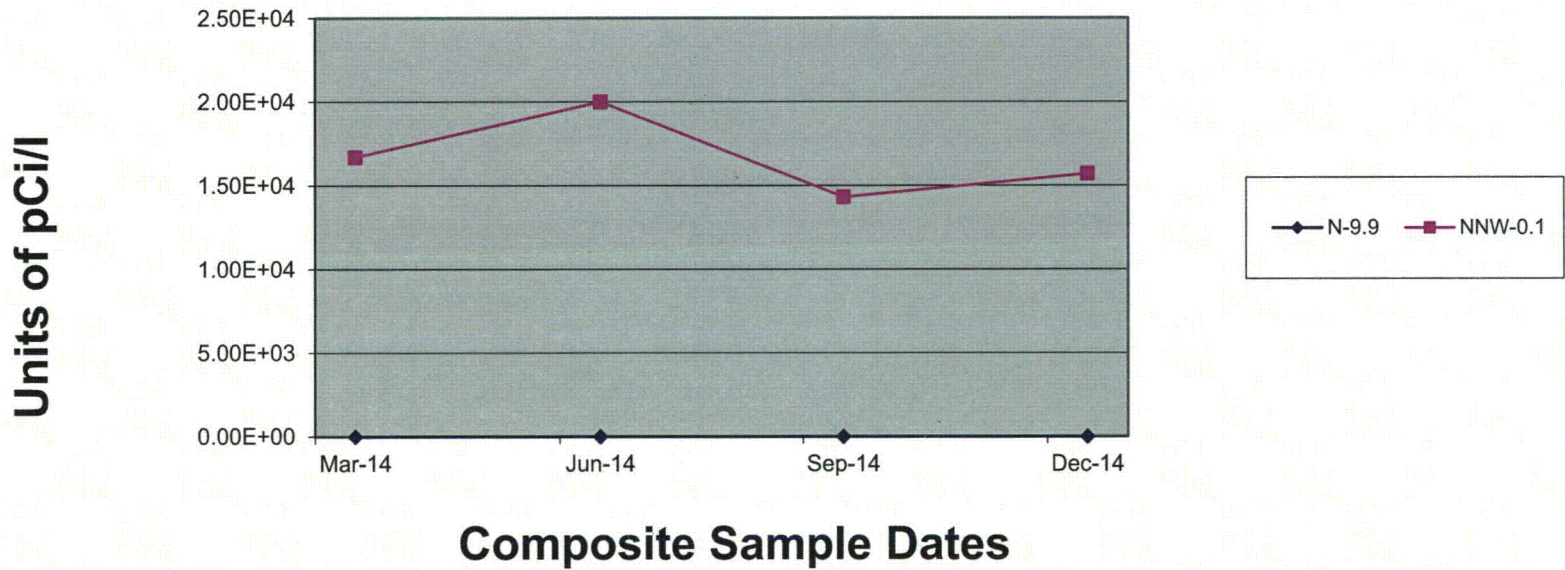
**Table 8 -- 2014 Environmental Surface Drinking Water Tritium, Gross Beta and Gamma Isotopic Results
(Units of pCi/l)**

Date	SW-6	H-3	Gross	Nuclides	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	La-140	Mn-54	Nb-95	Zn-65	Zr-95
	Location		Beta	I-131											
01-28-14	NNW-0.1		<1.41E+01	<1.05E+01	<1.10E+01	<4.90E+00	<3.86E+00	<5.24E+00	<5.06E+00	<7.82E+00	<1.10E+01	<5.05E+00	<5.08E+00	<9.18E+00	<9.94E+00
02-25-14	NNW-0.1		2.15E+01	<1.22E+01	<7.54E+00	<2.98E+00	<3.20E+00	<3.73E+00	<3.26E+00	<7.29E+00	<7.54E+00	<3.19E+00	<3.49E+00	<6.14E+00	<7.16E+00
03-25-14	NNW-0.1	1.67E+04	<2.08E+01	<1.30E+01	<1.24E+01	<4.20E+00	<3.49E+00	<3.81E+00	<3.35E+00	<6.98E+00	<1.24E+01	<3.73E+00	<3.88E+00	<7.27E+00	<5.34E+00
04-29-14	NNW-0.1		2.48E+01	<9.02E-01	<5.18E+00	<1.93E+00	<1.87E+00	<1.85E+00	<1.67E+00	<4.49E+00	<5.18E+00	<1.63E+00	<1.95E+00	<3.25E+00	<3.38E+00
05-27-14	NNW-0.1		1.69E+01	<7.46E+00	<4.93E+00	<1.62E+00	<1.49E+00	<1.55E+00	<1.56E+00	<3.62E+00	<4.93E+00	<1.47E+00	<1.67E+00	<3.24E+00	<3.00E+00
06-24-14	NNW-0.1	2.00E+04	2.21E+01	<9.08E-01	<4.06E+00	<1.50E+00	<1.48E+00	<1.56E+00	<1.59E+00	<3.35E+00	<4.06E+00	<1.39E+00	<1.69E+00	<2.95E+00	<2.63E+00
07-29-14	NNW-0.1		<1.89E+01	<1.29E+00	<6.35E+00	<1.65E+00	<1.54E+00	<1.51E+00	<1.52E+00	<3.86E+00	<6.35E+00	<1.43E+00	<1.83E+00	<3.09E+00	<2.88E+00
08-26-14	NNW-0.1		<2.09E+01	<8.29E-01	<5.40E+00	<1.71E+00	<1.50E+00	<1.54E+00	<1.60E+00	<3.67E+00	<5.40E+00	<1.48E+00	<1.69E+00	<3.09E+00	<3.07E+00
09-30-14	NNW-0.1	1.43E+04	1.23E+01	<9.03E-01	<4.61E+00	<1.58E+00	<1.52E+00	<1.62E+00	<1.44E+00	<3.53E+00	<4.61E+00	<1.48E+00	<1.66E+00	<3.01E+00	<2.75E+00
10-28-14	NNW-0.1		<1.77E+01	<8.70E-01	<6.22E+00	<1.76E+00	<1.68E+00	<1.61E+00	<1.76E+00	<3.64E+00	<6.22E+00	<1.58E+00	<1.77E+00	<3.22E+00	<3.25E+00
11-25-14	NNW-0.1		1.58E+01	<8.57E-01	<7.82E+00	<2.50E+00	<2.31E+00	<2.39E+00	<2.22E+00	<5.19E+00	<7.82E+00	<2.04E+00	<2.29E+00	<4.16E+00	<4.13E+00
12-30-14	NNW-0.1	1.57E+04	<1.32E+01	<8.63E-01	<6.65E+00	<2.16E+00	<1.86E+00	<1.99E+00	<1.83E+00	<5.23E+00	<6.65E+00	<1.74E+00	<2.15E+00	<3.76E+00	<3.89E+00
SW-2															
01-28-14	N-9.9		<3.69E+00	<1.24E+01	<9.82E+00	<4.85E+00	<5.48E+00	<5.29E+00	<5.92E+00	<9.27E+00	<9.82E+00	<4.94E+00	<5.08E+00	<1.10E+01	<7.40E+00
02-25-14	N-9.9		<4.94E+00	<1.89E+01	<7.68E+00	<4.94E+00	<4.21E+00	<5.05E+00	<4.02E+00	<7.95E+00	<7.68E+00	<3.76E+00	<4.20E+00	<8.48E+00	<7.27E+00
03-25-14	N-9.9	<3.88E+02	<7.03E+00	<1.30E+01	<7.98E+00	<2.95E+00	<3.75E+00	<3.03E+00	<3.48E+00	<8.56E+00	<7.98E+00	<2.98E+00	<3.38E+00	<6.17E+00	<6.65E+00
04-29-14	N-9.9		4.53E+00	<8.41E-01	<3.77E+00	<1.44E+00	<1.52E+00	<1.56E+00	<1.31E+00	<3.01E+00	<3.77E+00	<1.39E+00	<1.61E+00	<2.77E+00	<2.51E+00
05-27-14	N-9.9		6.29E+00	<1.05E+01	<6.53E+00	<2.27E+00	<2.04E+00	<2.42E+00	<2.11E+00	<5.22E+00	<6.53E+00	<2.11E+00	<2.51E+00	<4.21E+00	<4.48E+00
06-24-14	N-9.9	<4.24E+02	8.84E+00	<9.15E-01	<4.47E+00	<1.55E+00	<1.43E+00	<1.61E+00	<1.62E+00	<3.47E+00	<4.47E+00	<1.50E+00	<1.69E+00	<3.07E+00	<3.01E+00
07-29-14	N-9.9		4.33E+00	<1.10E+00	<7.27E+00	<1.88E+00	<1.58E+00	<1.74E+00	<1.69E+00	<4.40E+00	<7.27E+00	<1.57E+00	<1.88E+00	<3.39E+00	<3.22E+00
08-26-14	N-9.9		<5.43E+00	<7.89E-01	<4.81E+00	<1.47E+00	<1.56E+00	<1.62E+00	<1.51E+00	<3.50E+00	<4.81E+00	<1.39E+00	<1.84E+00	<3.17E+00	<3.07E+00
09-30-14	N-9.9	<5.64E+02	1.04E+01	<8.56E-01	<4.32E+00	<1.50E+00	<1.43E+00	<1.47E+00	<1.52E+00	<3.18E+00	<4.32E+00	<1.32E+00	<1.58E+00	<2.68E+00	<2.65E+00
10-28-14	N-9.9		<5.86E+00	<8.38E-01	<4.91E+00	<1.60E+00	<1.54E+00	<1.77E+00	<1.52E+00	<4.03E+00	<4.91E+00	<1.53E+00	<1.69E+00	<3.27E+00	<3.25E+00
11-25-14	N-9.9		<5.18E+00	<8.57E-01	<6.52E+00	<1.81E+00	<1.91E+00	<1.78E+00	<1.64E+00	<4.15E+00	<6.52E+00	<1.56E+00	<1.85E+00	<3.47E+00	<3.31E+00
12-30-14	N-9.9	<3.99E+02	1.02E+01	<8.50E-01	<6.11E+00	<1.92E+00	<1.74E+00	<2.03E+00	<1.86E+00	<4.23E+00	<6.11E+00	<1.66E+00	<2.12E+00	<3.45E+00	<3.62E+00
Required LLD's															
		2.00E+03	4.00E+00	1.00E+00	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.80E+01	3.00E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01	1.50E+01
Reportable Level															
		2.00E+04	None	2.00E+00	2.00E+02	1.00E+03	3.00E+02	3.00E+01	5.00E+01	4.00E+02	2.00E+02	1.00E+03	4.00E+02	3.00E+02	4.00E+02

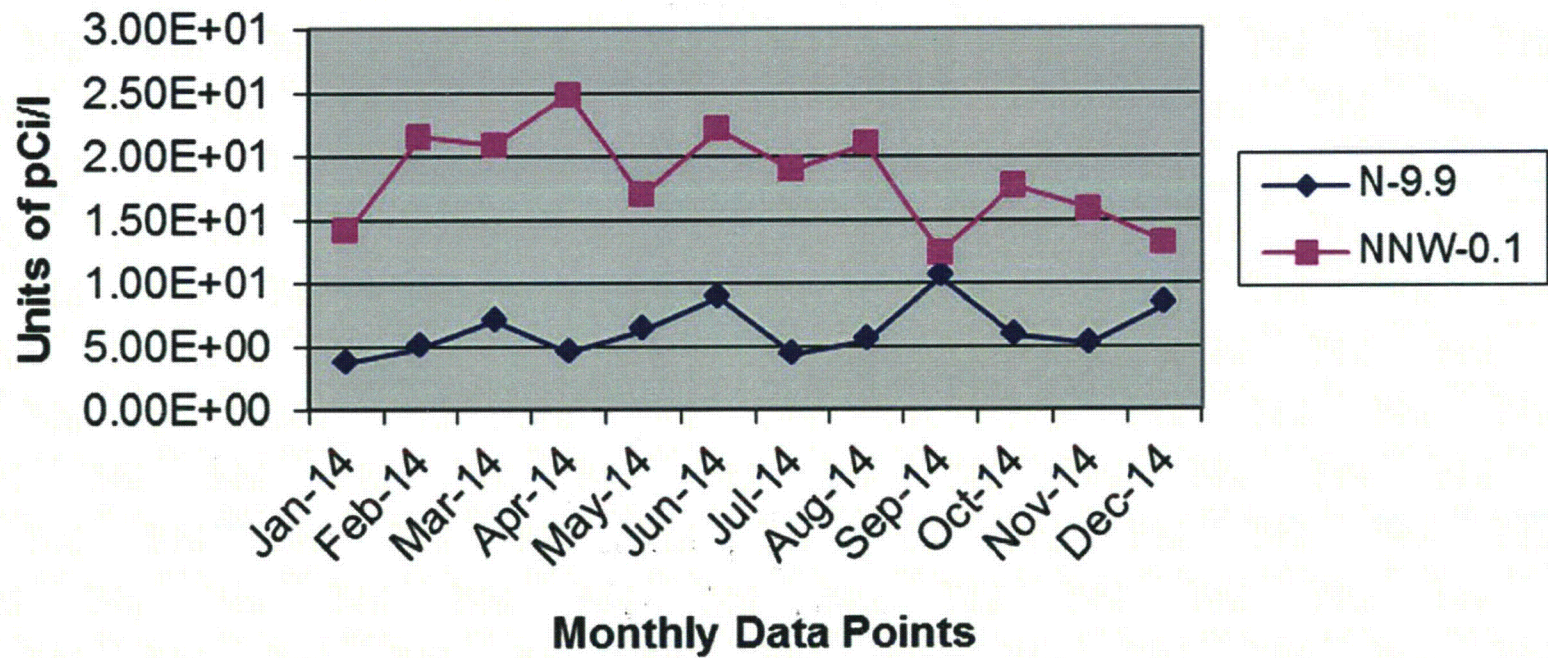
Graph 3 -- Squaw Creek Maximum Tritium Values



Graph 4 -- 2014 Environmental Surface Drinking Water Tritium Results



Graph 5 -- 2014 Environmental Surface Drinking Water Gross Beta Results



F. Groundwater Program

Table 1 – Comanche Peak Nuclear Power Plant Radiological Environmental Monitoring Program for 2014 specifies the five groundwater monitoring locations. Groundwater supplies in the site area are not affected by plant effluents and are sampled only to provide confirmation that groundwater is not affected by plant discharges. Groundwater samples were collected quarterly and analyzed for gamma isotopes and tritium at each location.

For the year 2014 a total of twenty groundwater samples were collected from the five different monitoring locations. There were no radionuclides identified in any of the samples. All required LLDs were met for each required gamma emitting radionuclide. Tritium analysis was performed on twenty samples, all indicated less than the required LLD. Results for all the groundwater analyses are reported in Table 9 - 2014 Environmental Groundwater Tritium and Gamma Isotopic Results. These results confirm that plant discharges are having no effect on groundwater in the area surrounding Comanche Peak.

For 2014 seventeen (17) sample locations of perched groundwater were taken quarterly in accordance with STA-654, “Groundwater Protection Program”. Results from these samples are included in the Annual Radioactive Effluent Release Report.

During the year 2014, there were no exceptions to the Groundwater Program.

**Table 9 -- 2014 Environmental Groundwater Tritium and Gamma Isotopic Results
(Units of pCi/l)**

		Nuclides												
	Location	H-3	Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	GW-3													
03-25-14	SSE-4.6	<4.17E+02	<5.25E+00	<3.55E+00	<3.25E+00	<3.78E+00	<3.60E+00	<6.54E+00	<4.97E+00	<5.25E+00	<3.60E+00	<3.49E+00	<7.17E+00	<6.04E+00
06-24-14	SSE-4.6	<4.30E+02	<5.01E+00	<2.63E+00	<2.94E+00	<3.05E+00	<3.48E+00	<6.31E+00	<6.12E+00	<5.01E+00	<2.77E+00	<2.89E+00	<6.24E+00	<5.14E+00
09-30-14	SSE-4.6	<5.61E+02	<3.20E+00	<1.83E+00	<2.03E+00	<2.04E+00	<1.98E+00	<3.82E+00	<3.23E+00	<3.20E+00	<1.81E+00	<2.01E+00	<3.69E+00	<3.18E+00
12-30-14	SSE-4.6	<5.54E+02	<1.08E+01	<4.69E+00	<5.63E+00	<5.25E+00	<5.11E+00	<1.03E+01	<8.29E+00	<1.08E+01	<5.47E+00	<5.70E+00	<1.08E+01	<9.06E+00
	GW-5													
03-25-14	N-1.45	<4.12E+02	<5.34E+00	<2.77E+00	<3.00E+00	<2.85E+00	<2.89E+00	<5.71E+00	<5.23E+00	<5.34E+00	<2.62E+00	<3.04E+00	<3.92E+00	<4.61E+00
06-24-14	N-1.45	<4.24E+02	<4.95E+00	<2.70E+00	<2.89E+00	<2.82E+00	<2.91E+00	<5.52E+00	<5.29E+00	<4.95E+00	<2.53E+00	<2.71E+00	<5.31E+00	<4.89E+00
09-30-14	N-1.45	<5.61E+02	<2.51E+00	<1.60E+00	<1.59E+00	<1.79E+00	<1.69E+00	<3.22E+00	<2.86E+00	<2.51E+00	<1.40E+00	<1.67E+00	<3.14E+00	<3.05E+00
12-30-14	N-1.45	<5.58E+02	<6.53E+00	<5.07E+00	<5.38E+00	<4.88E+00	<5.95E+00	<1.17E+01	<1.05E+01	<6.53E+00	<3.56E+00	<5.29E+00	<1.02E+01	<8.39E+00
	GW-4													
03-25-14	N-9.8	<4.14E+02	<4.50E+00	<2.66E+00	<3.49E+00	<3.43E+00	<2.79E+00	<5.51E+00	<5.26E+00	<4.50E+00	<2.65E+00	<3.17E+00	<5.59E+00	<5.05E+00
06-24-14	N-9.8	<4.15E+02	<4.96E+00	<2.44E+00	<2.58E+00	<2.77E+00	<3.02E+00	<5.96E+00	<6.13E+00	<4.96E+00	<2.59E+00	<3.13E+00	<5.86E+00	<4.90E+00
09-30-14	N-9.8	<5.67E+02	<2.63E+00	<1.48E+00	<1.62E+00	<1.68E+00	<1.62E+00	<3.04E+00	<3.12E+00	<2.63E+00	<1.54E+00	<1.82E+00	<3.36E+00	<2.82E+00
12-30-14	N-9.8	<5.73E+02	<8.51E+00	<5.59E+00	<4.61E+00	<5.14E+00	<5.02E+00	<1.17E+01	<7.67E+00	<8.51E+00	<4.36E+00	<6.16E+00	<7.02E+00	<9.02E+00
	GW-1													
03-25-14	W-1.2	<4.17E+02	<4.86E+00	<3.11E+00	<3.76E+00	<3.54E+00	<3.32E+00	<7.02E+00	<5.51E+00	<4.86E+00	<3.08E+00	<3.42E+00	<7.37E+00	<5.40E+00
06-24-14	W-1.2	<4.30E+02	<4.45E+00	<2.39E+00	<2.52E+00	<2.55E+00	<2.93E+00	<4.22E+00	<5.10E+00	<4.45E+00	<2.27E+00	<2.66E+00	<5.31E+00	<4.38E+00
09-30-14	W-1.2	<5.66E+02	<2.56E+00	<1.55E+00	<1.68E+00	<1.60E+00	<1.62E+00	<3.00E+00	<2.98E+00	<2.56E+00	<1.45E+00	<1.45E+00	<3.30E+00	<2.58E+00
12-30-14	W-1.2	<5.87E+02	<8.03E+00	<3.60E+00	<4.62E+00	<4.66E+00	<4.21E+00	<9.37E+00	<6.93E+00	<8.03E+00	<3.41E+00	<4.46E+00	<9.28E+00	<6.54E+00
	GW-2													
03-25-14	WSW-0.1	<4.07E+02	<4.10E+00	<2.77E+00	<3.33E+00	<2.71E+00	<3.26E+00	<4.81E+00	<4.75E+00	<4.10E+00	<2.58E+00	<2.68E+00	<5.05E+00	<5.23E+00
06-24-14	WSW-0.1	<4.26E+02	<5.54E+00	<3.16E+00	<3.37E+00	<3.45E+00	<3.76E+00	<5.93E+00	<4.90E+00	<5.54E+00	<3.15E+00	<3.18E+00	<5.68E+00	<5.53E+00
09-30-14	WSW-0.1	<5.74E+02	<2.39E+00	<1.38E+00	<1.67E+00	<1.63E+00	<1.48E+00	<2.78E+00	<2.65E+00	<2.39E+00	<1.59E+00	<1.52E+00	<2.13E+00	<2.69E+00
12-30-14	WSW-0.1	<5.69E+02	<1.19E+01	<6.00E+00	<5.61E+00	<5.98E+00	<6.02E+00	<1.23E+01	<1.02E+01	<1.19E+01	<5.65E+00	<6.53E+00	<1.31E+01	<1.31E+01
	Required LLD's	3.00E+03	1.50E+01	1.50E+01	1.50E+01	1.50E+01	1.80E+01	3.00E+01	1.50E+01	1.50E+01	1.50E+01	1.50E+01	3.00E+01	1.50E+01
	Reportable Levels	2.00E+04	2.00E+02	1.00E+03	3.00E+02	3.00E+01	5.00E+01	4.00E+02	2.00E+01	2.00E+02	1.00E+03	4.00E+02	3.00E+02	4.00E+02

G. Sediment Program

Shoreline sediments were collected at four different monitoring locations. One sample location is along the shore of Squaw Creek Reservoir, one sample location is on Squaw Creek downstream of the dam discharge and two locations are along Lake Granbury's shores. Each sample is collected on a six-month frequency and sent to the contract laboratory for analysis by gamma spectrometry.

The process of shoreline sedimentation is a complex evolution whereby potential radionuclides and stable elements may concentrate in the bottom sediment of particular bodies of water. The concentrations are effected by such things as colloidal particles combining with chelating agents and biological action of bacteria and other benthic organisms. Monitoring of the area shorelines provides one of the first and best indicators of radionuclide deposition.

For the year 2014 results from the gamma isotopic analysis of shoreline sediments is reported in Table 10 – 2014 Environmental Sediment Gamma Isotopic Results. As expected and in agreement with previous results from both the pre-operational and operational programs, naturally occurring Potassium-40 was detected in all eight samples and Beryllium-7 was detected in one sample. All required radionuclide results were reported as less than the required LLDs. During previous years, both pre-operational and operational, positive indications occasionally had been noted for Cesium-137 and during 2014 there was one positive Cesium-137 result reported. There is not a reportable level for Cesium-137 for Sediment. As expected, there were no results in any sediment sample that indicated any direct influence from CPNPP discharges to the local environment.

During the year 2014, there were no exceptions to the Sediment Program.

**Table 10 -- 2014 Environmental Sediment Gamma Isotopic Results
(Units of pCi/kg)**

		Nuclides													
Date	Location	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-14-14	SE-5.3	<1.63E+02	<2.37E+02	<1.91E+01	<2.38E+01	<3.97E+01	<3.62E+01	<6.59E+01	<4.39E+01	3.98E+03	<3.78E+01	<3.07E+01	<3.64E+01	<6.62E+01	<5.42E+01
01-14-14	NNE-1.0	<2.26E+02	<4.53E+02	<4.48E+01	<5.28E+01	<5.46E+01	<6.00E+01	<1.03E+02	<7.63E+01	3.11E+03	<7.12E+01	<4.39E+01	<5.88E+01	<1.04E+02	<9.24E+01
01-14-14	NE-7.4	<1.53E+02	<2.49E+02	<3.06E+01	<3.84E+01	<3.93E+01	<3.30E+01	<6.95E+01	<5.07E+01	4.04E+03	<3.76E+01	<3.59E+01	<3.95E+01	<6.59E+01	<6.04E+01
01-14-14	N-9.9	<1.53E+02	<2.77E+02	<2.55E+01	<3.34E+01	<3.94E+01	<3.38E+01	<6.24E+01	<4.96E+01	9.75E+03	<4.08E+01	<3.26E+01	<3.66E+01	<7.15E+01	<5.90E+01
07-08-14	SE-5.3	<1.18E+02	<7.64E+02	<7.07E+01	<7.66E+01	<8.94E+01	<8.43E+01	<1.75E+02	<1.25E+02	2.80E+03	<1.18E+02	<7.73E+01	<8.82E+01	<1.75E+02	<1.58E+02
07-08-14	NNE-1.0	<7.99E+01	4.18E+02	<3.26E+01	<3.73E+01	<4.49E+01	5.26E+01	<9.15E+01	<5.46E+01	3.94E+03	<7.99E+01	<3.25E+01	<3.76E+01	<6.66E+01	<6.79E+01
07-08-14	NE-7.4	<7.59E+01	<3.68E+02	<4.16E+01	<4.67E+01	<5.23E+01	<4.63E+01	<9.79E+01	<7.60E+01	7.59E+03	<7.59E+01	<4.30E+01	<5.40E+01	<1.17E+02	<7.54E+01
07-08-14	N-9.9	<7.89E+01	<4.04E+02	<5.19E+01	<4.26E+01	<5.70E+01	<5.20E+01	<1.02E+02	<9.17E+01	1.88E+03	<7.89E+01	<4.67E+01	<5.27E+01	<1.07E+02	<9.22E+01
Required LLD's						1.50E+02	1.80E+02								
Reportable Levels						None	None								

NOTE: During previous years, both pre-operational and operational, positive indications occasionally had been noted for Cesium-137 and during 2014 there was one positive Cesium-137 results reported.

H. Fish Program

Fish samples were collected at two locations during the year 2014. One monitoring location is an area approximately two miles east-northeast of the site on Squaw Creek Reservoir. The second location is on Lake Granbury approximately eight miles north-northeast of the site. Fish sampling is scheduled for the months of April and October. The collected fish are frozen and shipped to the independent laboratory where the edible portions are analyzed for gamma emitting radio-nuclides.

For the year 2014, the results of the analysis performed on the collected fish samples are reported in Table 11 -- 2014 Environmental Fish Gamma Isotopic Results. Catfish and Bass samples were analyzed as indicated in the table. There were no positive results reported except for the expected Potassium-40, which is naturally occurring in all living organisms. All required radionuclide results were reported as less than the required LLDs. As a result of the fish-sampling program, there were no anomalies noted and no indication of any influence on the surrounding environment from Comanche Peak plant discharges.

No abnormal results were reported by CPNPP or by the State of Texas. As expected, Potassium-40 was the only positive isotope found.

CR-2014-13335 Fish are currently analyzed for gamma in accordance with the ODCM for Radiological Environmental Monitoring. An evaluation of the 2/26/2010 cooked fish sample tritium results was performed and the following was the conclusion: According to the Regulatory Guide 1.109, "a pathway is considered significant if a conservative evaluation yields an additional dose increment equal to or more than 10 percent of the total from all pathways considered in this guide. Based on the 2013 CPNPP Annual Effluent Report, our total dose contribution to the public from liquid and gaseous effluents was 0.235 mRem and the limit for a member of the public from radioactive releases is 25 mrem. Based on the effluent data, the data from "cooked fish" and conservative assumptions made in the calculations, tritium in fish are not considered a significant dose pathway. The 10% criteria can only be exceeded when the fish is eaten raw and still does not exceed 10% of the public exposure monitoring limit. However, due to the current public sensitivity toward tritium ingestion, Tritium in fish consumption will be included in the analyzed results reported starting in the 2015 Annual Environmental Report. Future results will be compared and trended in future REMP reports.

During the year 2014 there was one exception to the Fish Program.

CR-2014-10928- This condition report was generated when no Catfish Environmental Samples were available for collection at location NNE-8.0, F-2, Lake Granbury. Personnel at Squaw Creek Lake were able to collect the environmental monitoring catfish samples 3 weeks later for analysis by GEL Laboratory and included within this report.

**Table 11 -- 2014 Environmental Fish Gamma Isotopic Results
(Units of pCi/kg wet)**

Date	Location	Nuclides												Fish Type	
		Ba-140	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65		Zr-95
04-15-14	Squaw Creek	<5.13E-03	<5.74E-03	<6.80E-03	<6.73E-03	<6.47E-03	<1.40E-02	<9.45E-03	3.53E+00	<5.13E-03	<5.55E-03	<5.97E-03	<1.54E-02	<1.07E-02	Catfish
04-15-14	Squaw Creek	<8.20E-03	<9.39E-03	<1.12E-02	<8.26E-03	<9.31E-03	<2.19E-02	<1.30E-02	3.29E+00	<8.20E-03	<8.76E-03	<8.59E-03	<2.46E-02	<1.87E-02	Bass
10-07-14	Squaw Creek	<4.27E-03	<3.83E-03	<4.59E-03	<4.57E-03	<3.66E-03	<8.49E-03	<4.30E-03	2.32E+00	<4.27E-03	<3.68E-03	<4.00E-03	<1.02E-02	<6.85E-03	Catfish
10-07-14	Squaw Creek	<5.27E-03	<4.49E-03	<5.09E-03	<4.90E-03	<4.72E-03	<1.07E-02	<5.27E-03	2.81E+00	<5.27E-03	<4.44E-03	<4.87E-03	<1.13E-02	<7.66E-03	Bass
04-15-14	Lake Granbury	<8.45E-03	<5.57E-03	<5.48E-03	<6.56E-03	<6.36E-03	<1.42E-02	<9.82E-03	3.08E+00	<8.45E-03	<5.81E-03	<6.11E-03	<1.49E-02	<1.05E-02	Catfish
04-29-14	Lake Granbury	<8.13E-03	<4.84E-03	<6.58E-03	<6.68E-03	<6.01E-03	<1.47E-02	<7.13E-03	2.56E+00	<8.13E-03	<6.52E-03	<6.31E-03	<1.51E-02	<1.08E-02	Bass
10-28-14	Lake Granbury	<6.72E-03	<4.48E-03	<4.82E-03	<5.01E-03	<4.66E-03	<1.10E-02	<8.66E-03	3.27E+00	<6.72E-03	<4.11E-03	<4.57E-03	<1.15E-02	<8.22E-03	Catfish
10-07-14	Lake Granbury	<5.78E-03	<3.93E-03	<4.70E-03	<4.58E-03	<4.27E-03	<9.05E-03	<5.24E-03	1.56E+00	<5.78E-03	<3.90E-03	<3.92E-03	<8.41E-03	<7.05E-03	Bass
Required LLD's			1.30E+02	1.30E+02	1.30E+02	1.50E+02	2.60E+02				1.30E+02		2.60E+02		
Reportable Levels			3.00E+04	1.00E+04	1.00E+03	2.00E+03	1.00E+04				3.00E+04		2.00E+04		

I. Food Products Program

Food products (pecans) were collected at the time of harvest. The samples are obtained at monitoring location ENE-9.0 at the time of harvest and are shipped to the contract laboratory for gamma isotopic analysis. There were no food products produced that required monitoring for location E-4.2 in 2014.

For the year 2014, results of the gamma isotopic analyses are reported in Table 12 -- 2014 Environmental Food Products Gamma Isotopic Results. Naturally occurring Potassium 40 was detected in the samples as expected.

During the year 2014, there were no exceptions to the Food Products Program.

**Table 12 -- 2014 Environmental Food Products Gamma Isotopic Results
(Units of pCi/kg wet)**

		Food Type -- Pecans/Fruit & Vegetables													
		Nuclides													
Date	Location	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	I-131	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
06-28-14	ENE-9.0	<1.13E+01	<8.13E+01	<9.47E+00	<1.25E+01	<1.23E+01	<1.01E+01	<2.18E+01	<1.24E+01	3.13E+03	<1.13E+01	<9.61E+00	<1.22E+01	<2.33E+01	<2.00E+01
	Location														
	E-4.2														
N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Required LLD's						6.00E+01	8.00E+01		6.00E+01						
Reportable Levels						1.00E+03	2.00E+03		1.00E+02						

J. Broadleaf Program

Broadleaf sample collection is conducted in accordance with the requirements of the Radiological Environmental Monitoring Program. The program specifies the sampling based on the absence of milk monitoring locations. One broadleaf control location is located at SW-13.5 in the vicinity of the previous control milk location. The two indicator locations, N-1.45 and SW-1.0, are located near the site boundaries. The broadleaf samples consist of mainly native grasses and cedar leaves and are analyzed for Iodine-131 and gamma emitting isotopes.

For the year 2014, all radionuclide analysis met their required LLDs. The naturally occurring radionuclide of Potassium-40 was found in 36 of 36 samples taken. The radionuclide Beryllium-7 was present in 35 of 36 samples. No positive results for Cesium-137 were present.

No abnormal results were reported by CPNPP or by the State of Texas.

During the year 2014, there were no exceptions to the Broadleaf Program.

**Table 13 -- 2014 Environmental Broadleaf Iodine-131 and Gamma Isotopic Results
(Units of pCi/kg wet)**

	Nuclides														
	BL-1	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
Date	Location														
01-28-14	N-1.45	<5.33E+01	<5.45E+01	3.42E+03	<4.15E+01	<5.17E+01	<4.79E+01	<4.37E+01	<7.48E+01	2.33E+03	<5.45E+01	<4.14E+01	<4.93E+01	<8.55E+01	<7.74E+01
02-25-14	N-1.45	<2.43E+01	<2.67E+01	2.98E+03	<1.65E+01	<1.88E+01	<2.29E+01	<2.01E+01	<3.15E+01	7.47E+02	<2.67E+01	<1.81E+01	<1.94E+01	<4.07E+01	<3.48E+01
03-25-14	N-1.45	<5.69E+01	<5.21E+01	8.32E+03	<4.38E+01	<3.88E+01	<5.05E+01	<4.70E+01	<7.08E+01	1.94E+03	<5.21E+01	<4.49E+01	<4.32E+01	<7.90E+01	<7.71E+01
04-29-14	N-1.45	<4.11E+01	<3.47E+01	9.14E+03	<3.07E+01	<2.96E+01	<3.22E+01	<2.86E+01	<4.57E+01	1.23E+03	<3.47E+01	<2.98E+01	<2.96E+01	<5.36E+01	<4.97E+01
05-27-14	N-1.45	<3.66E+01	<3.79E+01	1.90E+03	<3.25E+01	<3.01E+01	<3.65E+01	<3.41E+01	<6.05E+01	4.28E+03	<3.79E+01	<3.07E+01	<3.06E+01	<6.90E+01	<4.55E+01
06-24-14	N-1.45	<4.95E+01	<4.68E+01	2.33E+03	<2.45E+01	<2.80E+01	<2.97E+01	<2.93E+01	<5.52E+01	6.06E+03	<4.68E+01	<3.36E+01	<3.12E+01	<5.88E+01	<4.51E+01
07-29-14	N-1.45	<5.75E+01	<3.96E+01	4.89E+02	<1.03E+01	<8.88E+00	<9.23E+00	<8.45E+00	<2.53E+01	3.44E+03	<3.96E+01	<8.39E+00	<1.11E+01	<1.98E+01	<1.94E+01
08-26-14	N-1.45	<2.38E+01	<2.49E+01	1.80E+03	<1.98E+01	<2.44E+01	<2.26E+01	<2.16E+01	<4.47E+01	8.01E+03	<2.49E+01	<1.91E+01	<1.91E+01	<5.10E+01	<3.49E+01
09-30-14	N-1.45	<5.20E+01	<4.78E+01	1.40E+03	<2.47E+01	<2.73E+01	<2.83E+01	<2.52E+01	<5.26E+01	7.92E+03	<4.78E+01	<2.39E+01	<2.52E+01	<6.19E+01	<4.49E+01
10-28-14	N-1.45	<3.53E+01	<3.11E+01	1.06E+03	<1.73E+01	<1.88E+01	<1.98E+01	<1.83E+01	<3.69E+01	4.72E+03	<3.11E+01	<1.76E+01	<1.74E+01	<4.14E+01	<2.90E+01
11-25-14	N-1.45	<5.92E+01	<5.43E+01	3.73E+03	<3.30E+01	<3.64E+01	<3.86E+01	<3.62E+01	<7.13E+01	3.86E+03	<5.43E+01	<3.72E+01	<3.61E+01	<6.41E+01	<5.52E+01
12-30-14	N-1.45	<5.24E+01	<3.26E+01	4.24E+03	<2.69E+01	<2.76E+01	<2.93E+01	<2.90E+01	<4.67E+01	2.25E+03	<3.26E+01	<2.70E+01	<2.62E+01	<4.75E+01	<5.05E+01
	BL-3	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
	Control														
01-28-14	SW-13.5	<5.52E+01	<6.56E+01	3.84E+03	<4.90E+01	<6.20E+01	<5.03E+01	<5.53E+01	<9.66E+01	1.32E+03	<6.56E+01	<5.52E+01	<4.86E+01	<1.13E+02	<8.39E+01
02-25-14	SW-13.5	<2.05E+01	<2.50E+01	2.29E+03	<1.50E+01	<1.74E+01	<1.73E+01	<1.62E+01	<2.91E+01	7.25E+02	<2.50E+01	<1.64E+01	<1.49E+01	<3.65E+01	<2.71E+01
03-25-14	SW-13.5	<4.71E+01	<5.48E+01	6.43E+03	<3.80E+01	<4.30E+01	<4.20E+01	<4.07E+01	<7.02E+01	1.04E+03	<5.48E+01	<3.00E+01	<3.91E+01	<6.75E+01	<6.12E+01
04-29-14	SW-13.5	<4.45E+01	<3.18E+01	7.86E+03	<2.34E+01	<2.18E+01	<2.64E+01	<2.32E+01	<4.05E+01	1.32E+03	<3.18E+01	<2.38E+01	<2.32E+01	<3.93E+01	<3.99E+01
05-27-14	SW-13.5	<2.96E+01	<4.17E+01	1.50E+03	<2.17E+01	<2.35E+01	<2.71E+01	<2.40E+01	<5.16E+01	4.13E+03	<4.17E+01	<2.56E+01	<2.05E+01	<5.28E+01	<4.32E+01
06-24-14	SW-13.5	<5.97E+01	<5.38E+01	1.36E+03	<3.01E+01	<3.55E+01	<3.36E+01	<3.06E+01	<6.45E+01	4.41E+03	<5.38E+01	<2.96E+01	<3.47E+01	<7.29E+01	<5.92E+01
07-29-14	SW-13.5	<5.89E+01	<4.02E+01	2.97E+02	<1.05E+01	<1.08E+01	<9.48E+00	<9.07E+00	<2.73E+01	5.37E+03	<4.02E+01	<9.07E+00	<1.14E+01	<2.19E+01	<2.05E+01
08-26-14	SW-13.5	<3.17E+01	<3.32E+01	1.21E+03	<2.48E+01	<3.02E+01	<2.69E+01	<2.72E+01	<5.29E+01	7.05E+03	<3.32E+01	<2.50E+01	<2.76E+01	<5.86E+01	<4.84E+01
09-30-14	SW-13.5	<4.01E+01	<2.81E+01	1.35E+03	<1.95E+01	<1.86E+01	<2.04E+01	<1.90E+01	<3.56E+01	5.86E+03	<2.81E+01	<1.92E+01	<1.99E+01	<4.02E+01	<3.20E+01
10-28-14	SW-13.5	<2.71E+01	<2.04E+01	1.08E+03	<1.43E+01	<1.37E+01	<1.37E+01	<1.17E+01	<3.29E+01	4.49E+03	<2.04E+01	<1.22E+01	<1.38E+01	<3.03E+01	<2.25E+01
11-25-14	SW-13.5	<4.95E+01	<5.21E+01	4.07E+03	<2.47E+01	<3.19E+01	<2.87E+01	<3.12E+01	<5.47E+01	5.35E+03	<5.21E+01	<2.89E+01	<2.81E+01	<7.07E+01	<4.58E+01
12-30-14	SW-13.5	<2.22E+01	<2.52E+01	1.22E+03	<1.24E+01	<1.82E+01	<1.46E+01	<1.47E+01	<3.02E+01	5.10E+03	<2.52E+01	<1.19E+01	<1.44E+01	<3.12E+01	<2.74E+01
	BL-2	I-131	Ba-140	Be-7	Co-58	Co-60	Cs-134	Cs-137	Fe-59	K-40	La-140	Mn-54	Nb-95	Zn-65	Zr-95
01-28-14	SW-1.0	<5.49E+01	<5.39E+01	3.92E+03	<4.38E+01	<4.80E+01	<5.35E+01	<4.17E+01	<7.51E+01	2.14E+03	<5.39E+01	<4.59E+01	<4.57E+01	<9.14E+01	<7.06E+01
02-25-14	SW-1.0	<1.71E+01	<1.69E+01	2.04E+03	<1.22E+01	<1.56E+01	<1.56E+01	<1.73E+01	<2.12E+01	7.83E+02	<1.69E+01	<1.30E+01	<1.32E+01	<2.89E+01	<2.38E+01
03-25-14	SW-1.0	<4.82E+01	<6.58E+01	4.54E+03	<3.66E+01	<5.17E+01	<4.98E+01	<3.99E+01	<7.68E+01	1.02E+03	<6.58E+01	<4.09E+01	<4.18E+01	<7.22E+01	<6.76E+01
04-29-14	SW-1.0	<3.98E+01	<4.09E+01	9.30E+03	<2.86E+01	<3.45E+01	<3.27E+01	<3.15E+01	<5.51E+01	1.16E+03	<4.09E+01	<2.34E+01	<3.17E+01	<5.82E+01	<5.11E+01
05-27-14	SW-1.0	<2.81E+01	<2.82E+01	1.36E+03	<1.69E+01	<2.37E+01	<1.79E+01	<2.55E+01	<4.00E+01	2.05E+03	<2.82E+01	<2.14E+01	<2.36E+01	<4.57E+01	<3.80E+01
06-24-14	SW-1.0	<5.71E+01	<3.87E+01	2.22E+03	<3.03E+01	<3.20E+01	<3.31E+01	<3.22E+01	<5.72E+01	3.57E+03	<3.87E+01	<3.47E+01	<3.01E+01	<5.84E+01	<5.93E+01
07-29-14	SW-1.0	<5.29E+01	<7.36E+01	1.16E+03	<1.57E+01	<1.45E+01	<1.39E+01	<1.62E+01	<4.09E+01	2.89E+03	<7.36E+01	<1.35E+01	<1.59E+01	<3.10E+01	<2.88E+01
08-26-14	SW-1.0	<2.04E+01	<2.28E+01	3.10E+03	<1.77E+01	<1.94E+01	<2.05E+01	<2.01E+01	<3.89E+01	3.84E+03	<2.28E+01	<1.93E+01	<1.73E+01	<4.37E+01	<3.39E+01
09-30-14	SW-1.0	<2.37E+01	<2.06E+01	1.06E+03	<1.21E+01	<1.35E+01	<1.32E+01	<1.29E+01	<2.81E+01	5.16E+03	<2.06E+01	<1.20E+01	<1.24E+01	<2.85E+01	<2.18E+01
10-28-14	SW-1.0	<2.77E+01	<2.52E+01	1.62E+03	<1.30E+01	<1.45E+01	<1.40E+01	<1.74E+01	<2.91E+01	4.31E+03	<2.52E+01	<1.44E+01	<1.39E+01	<2.95E+01	<2.37E+01
11-25-14	SW-1.0	<5.91E+01	<5.86E+01	3.76E+03	<2.55E+01	<3.33E+01	<3.37E+01	<4.00E+01	<5.45E+01	2.20E+03	<5.86E+01	<3.10E+01	<2.59E+01	<4.97E+01	<5.47E+01
12-30-14	SW-1.0	<5.46E+01	<4.59E+01	3.93E+03	<2.74E+01	<3.22E+01	<3.34E+01	<3.18E+01	<6.21E+01	1.71E+03	<4.59E+01	<2.82E+01	<3.01E+01	<6.20E+01	<5.70E+01
	Required LLD's	6.00E+01					6.00E+01	8.00E+01							
	Reportable Levels	1.00E+02					1.00E+03	2.00E+03							

K. Conclusions

For the year 2014, based on the results presented in this report and from comparisons with the pre-operational and operational program results from previous years, it can be concluded that the impact of Comanche Peak on the environment is very small. **The only indication directly attributable to Comanche Peak is the tritium detected in Squaw Creek reservoir.**

Gross beta trend indications concerning Squaw Creek Reservoir are consistent with previous values and do not indicate any increase due to influence from Comanche Peak. Future data will be evaluated as it is received and changes will be addressed as necessary.

The tritium in Squaw Creek reservoir has been increasing slowly over the last twenty years and is expected to remain well below the reportable level.

There were no values reported during the year 2014 that exceeded any NRC reportable limit.

L. Inter Laboratory Comparison and Cross Check Program

GEL Laboratories LLC

GEL Laboratories LLC is the independent contract laboratory that processes the radiological environmental monitoring samples collected by CPNPP. The contract laboratory is required to participate in an Interlaboratory Comparison Program in accordance with the ODCM Control 3.12.3. GEL participates in multiple programs to ensure all environmental media sent to them are analyzed to the proper standards.

GEL Laboratories, LLC (GEL) is a privately owned environmental laboratory. GEL was established as an analytical testing laboratory in 1981. Now a full service lab, their analytical divisions use state of the art equipment and methods to provide a comprehensive array of organic, inorganic, and radiochemical analyses.

GEL administers the QA program in accordance with the Quality Assurance Plan, GL-QSB-001. Their Quality Systems include all quality assurance (QA) policies and quality control (QC) procedures necessary to plan, implement, and assess the work they perform. GEL's QA Program establishes a quality management system (QMS) that governs all of the activities of their organization.

In May 2014 there wasn't a NUPIC Audit on GEL performed by Cooper Station.

Summary of 2014 Data Results

During 2014, forty-four radioisotopes associated with seven matrix types were analyzed under GEL's Performance Evaluation program in participation with ERA, MAPEP, and Eckert & Ziegler Analytics. Matrix types were representative of client analyses performed during 2014. Of the four hundred forty-five (445) total results reported, 98.6% (439 of 445) were found to be acceptable. The list below contains the type of matrix evaluated by GEL.

- Air Filter
- Cartridge
- Water
- Milk
- Soil
- Liquid
- Vegetation

Summary of Participation in the Eckert & Ziegler Analytics Environmental Cross-Check Program

Eckert & Ziegler Analytics provided samples for seventy (70) individual environmental analyses. The accuracy of each result reported to Eckert & Ziegler Analytics, Inc. is measured by the ratio of GEL's result to the known value. All results fell within GEL's acceptance criteria (100%).

Corrective Action Request and Report (CARR)

There are two categories of corrective action at GEL. One is corrective action implemented at the analytical and data review level in accordance with the analytical SOP. The other is formal corrective action documented by the Quality Systems Team in accordance with GL-QS-E-002. A formal corrective action is initiated when a nonconformance reoccurs or is so significant that permanent elimination or prevention of the problem is required. Formal corrective action investigations include root cause analysis.

GEL includes quality requirements in most analytical standard operating procedures to ensure that data are reported only if the quality control criteria are met or the quality control measures that did not meet the acceptance criteria are documented. A formal corrective action is implemented according to GL-QS-E-002 for Conducting Corrective/Preventive Action and Identifying Opportunities for Improvement. Recording and documentation is performed following guidelines stated in GL-QS-E-012 for Client NCR Database Operation.

Any employee at GEL can identify and report a nonconformance and request that corrective action be taken. Any GEL employee can participate on a corrective action team as requested by the QS team or Group Leaders. The steps for conducting corrective action are detailed in GL-QS-E-002. In the event that correctness or validity of the laboratory's test results in doubt, the laboratory will take corrective action. If investigations show that the results have been impacted, affected clients will be informed of the issue in writing within five (5) calendar days of the discovery

Quality Assurance Program for Internal and External Audits

During each annual reporting period, at least one internal assessment of each area of the laboratory is conducted in accordance with the pre-established schedule from Standard Operating Procedure for the Conduct of Quality Audits, GL-QS-E-001. The annual internal audit plan is reviewed for adequacy and includes the scheduled frequency and scope of quality control actions necessary to GEL's QA program. Internal audits are conducted at least annually in accordance with a schedule approved by the Quality Systems Director. Supplier audits are contingent upon the categorization of the supplier, and may or may not be conducted prior to the use of a supplier or subcontractor. Type I suppliers and subcontractors, regardless of how they were initially qualified, are re-evaluated at least once every three years.

In addition, prospective customers audit GEL during pre-contract audits. GEL hosts several external audits each year for both our clients and other programs. These programs include environmental monitoring, waste characterization, and radiobioassay. The following list of programs may audit GEL at least annually or up to every three years depending on the program.

- NELAC, National Environmental Laboratory Accreditation Program
- DOECAP, U.S. Department of Energy Consolidated Audit Program
- DOELAP, U.S. Department of Energy Laboratory Accreditation Program
- DOE QSAS, U.S. Department of Energy, Quality Systems for Analytical Services
- ISO/IEC 17025:2005
- A2LA, American Association for Laboratory Accreditation
- DOD ELAP, US Department of Defense Environmental Accreditation Program
- NUPIC, Nuclear Procurement Issues Committee
- South Carolina Department of Health and Environmental Control (SC DHEC)

The annual radiochemistry laboratory internal audit (13-RAD-001) was conducted in July, 2014. One (1) finding, four (4) observations, and eight (8) recommendations resulted from this assessment. By September, 2014, the finding was closed and appropriate laboratory staff addressed each observation and recommendation. The one finding addressed improper labeling of a reagent container and did not affect any of the analytical data. This finding was documented in CR-2015-003136.

**LAND USE CENSUS
VERIFICATION SHEET**

Date Completed: 08-20-14

Performed By: Todd Emery/ *Todd Emery* Bonnie Vaughan/ *Bonnie Vaughan*
Print / Signature

New locations identified that require the recalculation of D/Q or X/Q:

YES / NO

The locations with, "Nearest population" changed from 2013 to 2014 are as follows (Listed as the sector/2013/2014 change in miles): NNE 2.2 to 2.5 miles, NE 2.2 to 2.5 miles, WSW 0.8 to 0.5

miles and WNW 2.8 to 2.5 miles. CR-2014-009862 was generated to document calculation errors and recalculated D/Q and X/Q values on the 2013 Land Use Census Report. These corrections are reflected within the 2014 Land Use Census report. See attached spreadsheet with corrections in **RED** (2013 Land Use Use Spreadsheet).

Receptors with calculated doses increasing by 20%:

YES NO

Specific Locations: The primary "from" wind direction used to calculate the annual average X/Q dose calculation, tritium X/Q and D/Q is based on SSE,S, and SSW winds. There has been no change in the predominant wind direction that would affect the calculated dose receptors.

Potential Sources of Hazardous Chemicals and/or Toxic Gases:

YES / NO

(If YES, Supply copy to Design Engineering Analysis Group)

Specific Locations, Types, and Quantities: Land Use Census map indicates all locations of oil, gas raw LPG and refined products. Design Engineering Analysis is supplied maps for review.

Radiological Environmental Monitoring Program Changes Implemented:

YES NO / NA

Comments: _____

Approved By: *K. Powell*
Health Physics Supervisor

Date: 11/4/2014

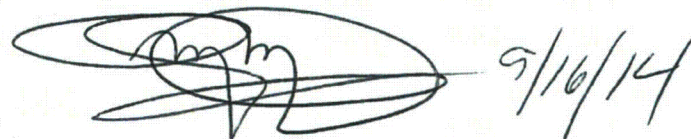
REFERENCE USE

2013 Recalculated X/Q and D/Q values

AFTD SECT	DESIGN DIST MI	BASE DISTANCE IN MILES/KILOMETERS																Average Annual Relative Concentration (X/Q) Tables	
		0.5	1	1.5	2	2.5	3.5	4	4.5	6	7.5	10	15	25	35	45	50	Actual Distance	
		0.8	1.61	2.41	3.22	4.02	5.63	6.44	7.24	9.65	12.07	16.09	24.13	40.22	56.31	72.4	80.45		
NNE	0	1.30E-05	3.10E-06	1.20E-06	6.50E-07	4.20E-07	2.30E-07	1.80E-07	1.50E-07	9.60E-08	7.00E-08	4.60E-08	2.70E-08	1.40E-08	9.50E-09	7.00E-09	6.20E-09	2.2	5.58E-07
NE	0	9.20E-06	2.20E-06	8.50E-07	4.60E-07	2.90E-07	1.60E-07	1.30E-07	1.10E-07	6.80E-08	5.00E-08	3.30E-08	2.00E-08	1.00E-08	6.90E-09	5.10E-09	4.50E-09	2.2	3.92E-07
ENE	0	7.50E-06	1.80E-06	6.80E-07	3.70E-07	2.30E-07	1.30E-07	1.00E-07	8.40E-08	5.50E-08	4.10E-08	2.70E-08	1.60E-08	8.50E-09	5.70E-09	4.20E-09	3.70E-09	2.6	2.20E-07
E	0	8.90E-06	2.10E-06	8.00E-07	4.30E-07	2.70E-07	1.50E-07	1.20E-07	9.90E-08	6.50E-08	4.80E-08	3.10E-08	1.90E-08	1.00E-08	6.80E-09	5.00E-09	4.40E-09	2.5	2.70E-07
ESE	0	9.70E-06	2.30E-06	8.80E-07	4.70E-07	3.00E-07	1.60E-07	1.30E-07	1.10E-07	7.10E-08	5.20E-08	3.50E-08	2.10E-08	1.10E-08	7.40E-09	5.50E-09	4.90E-09	2.2	4.02E-07
SE	0	1.40E-05	3.40E-06	1.30E-06	7.10E-07	4.50E-07	2.50E-07	2.00E-07	1.60E-07	1.10E-07	7.80E-08	5.10E-08	3.10E-08	1.60E-08	1.10E-08	8.00E-09	7.10E-09	2.0	7.10E-07
SSE	0	1.10E-05	2.70E-06	1.10E-06	5.80E-07	3.70E-07	2.00E-07	1.60E-07	1.30E-07	8.40E-08	6.10E-08	4.00E-08	2.30E-08	1.20E-08	8.10E-09	6.00E-09	5.30E-09	1.5	1.10E-06
S	0	8.60E-06	2.20E-06	8.50E-07	4.70E-07	3.00E-07	1.60E-07	1.30E-07	1.10E-07	6.70E-08	4.90E-08	3.20E-08	1.90E-08	9.70E-09	6.40E-09	4.70E-09	4.10E-09	1.5	8.50E-07
SSW	0	7.10E-06	1.80E-06	6.90E-07	3.80E-07	2.40E-07	1.30E-07	1.00E-07	8.60E-08	5.50E-08	4.00E-08	2.60E-08	1.50E-08	7.80E-09	5.10E-09	3.80E-09	3.30E-09	1.8	5.04E-07
SW	0	6.50E-06	1.60E-06	6.40E-06	3.50E-07	2.30E-07	1.20E-07	9.70E-08	8.00E-08	5.10E-08	3.70E-08	2.40E-08	1.40E-08	7.30E-09	4.80E-09	3.50E-09	3.10E-09	0.8	3.56E-06
WSW	0	7.10E-06	1.80E-06	6.90E-06	3.80E-07	2.50E-07	1.30E-07	1.10E-07	8.70E-08	5.60E-08	4.00E-08	2.60E-08	1.50E-08	8.10E-09	5.30E-09	3.90E-09	3.50E-09	0.8	3.92E-06
W	0	8.60E-06	2.20E-06	8.40E-07	4.60E-07	2.90E-07	1.60E-07	1.30E-07	1.00E-07	6.70E-08	4.90E-08	3.20E-08	1.90E-08	9.70E-09	6.40E-09	4.70E-09	4.20E-09	1.6	7.64E-07
WNW	0	1.40E-05	3.40E-06	1.30E-06	7.30E-07	4.70E-07	2.60E-07	2.00E-07	1.70E-07	1.10E-07	7.90E-08	5.10E-08	3.00E-08	1.60E-08	1.10E-08	7.80E-09	6.90E-09	2.8	4.07E-07
NW	0	2.30E-05	5.70E-06	2.20E-06	1.20E-06	7.70E-07	4.10E-07	3.30E-07	2.70E-07	1.80E-07	1.30E-07	8.50E-08	5.00E-08	2.70E-08	1.80E-08	1.30E-08	1.20E-08	4.8	2.52E-07
NNW	0	2.50E-05	6.10E-06	2.40E-06	1.30E-06	8.40E-07	4.50E-07	3.60E-07	3.00E-07	1.90E-07	1.40E-07	9.20E-08	5.40E-08	2.90E-08	1.90E-08	1.40E-08	1.20E-08	2.2	1.12E-06
N	0	2.00E-05	4.90E-06	1.90E-06	1.10E-06	6.70E-07	3.60E-07	2.90E-07	2.40E-07	1.50E-07	1.10E-07	7.30E-08	4.30E-08	2.30E-08	1.50E-08	1.10E-08	9.70E-09	2.6	6.39E-07

AFTD SECT	DESIGN DIST MI	BASE DISTANCE IN MILES/KILOMETERS																Average Annual Relative Deposition Rate (D/Q) Tables	
		0.5	1	1.5	2	2.5	3.5	4	4.5	6	7.5	10	15	25	35	45	50	Actual Distance	
		0.8	1.61	2.41	3.22	4.02	5.63	6.44	7.24	9.65	12.07	16.09	24.13	40.22	56.31	72.4	80.45		
NNE	0	1.00E-07	2.20E-08	7.20E-09	3.50E-09	2.00E-09	9.40E-10	7.40E-10	5.50E-10	3.10E-10	2.00E-10	1.10E-10	5.50E-11	2.10E-11	1.10E-11	6.40E-12	5.10E-12	2.2	2.90E-09
NE	0	5.00E-08	1.10E-08	3.60E-09	1.70E-09	1.00E-09	4.60E-10	3.40E-10	2.70E-10	1.50E-10	9.90E-11	5.60E-11	2.70E-11	1.00E-11	5.30E-12	3.10E-12	2.50E-12	2.2	1.42E-09
ENE	0	3.00E-08	6.50E-09	2.20E-09	1.10E-09	6.10E-10	2.80E-10	2.10E-10	1.60E-10	9.20E-11	6.10E-11	3.40E-11	1.60E-11	6.30E-12	3.20E-12	1.90E-12	1.50E-12	2.6	5.77E-10
E	0	2.90E-08	6.10E-09	2.10E-09	9.90E-10	5.80E-10	2.70E-10	2.00E-10	1.60E-10	8.70E-11	5.70E-11	3.20E-11	1.60E-11	5.90E-12	3.10E-12	1.80E-12	1.50E-12	2.5	5.80E-10
ESE	0	3.50E-08	7.50E-09	2.50E-09	1.20E-09	7.00E-10	3.20E-10	2.40E-10	1.90E-10	1.10E-10	7.00E-11	3.90E-11	1.90E-11	7.20E-12	3.70E-12	2.20E-12	1.80E-12	2.2	2.06E-10
SE	0	8.00E-08	1.70E-08	5.70E-09	2.80E-09	1.60E-09	7.40E-10	5.50E-10	4.30E-10	2.40E-10	1.60E-10	9.00E-11	4.30E-11	1.70E-11	8.50E-12	5.10E-12	4.00E-12	2.0	2.80E-09
SSE	0	9.10E-08	1.90E-08	6.60E-09	3.20E-09	1.80E-09	8.50E-10	6.30E-10	4.90E-10	2.80E-10	1.80E-10	1.00E-10	4.90E-11	1.90E-11	9.70E-12	5.80E-12	4.60E-12	1.5	6.60E-09
S	0	7.20E-08	1.50E-08	5.20E-09	2.50E-09	1.40E-09	6.70E-10	5.00E-10	3.90E-10	2.20E-10	1.40E-10	8.10E-11	3.90E-11	1.50E-11	7.70E-12	4.60E-12	3.70E-12	1.5	5.20E-09
SSW	0	4.80E-08	1.00E-08	3.50E-09	1.70E-09	9.80E-10	4.50E-10	3.40E-10	2.60E-10	1.50E-10	9.70E-11	5.50E-11	2.60E-11	1.00E-11	5.20E-12	3.10E-12	2.50E-12	1.8	2.42E-09
SW	0	3.50E-08	7.50E-09	2.50E-09	1.20E-09	7.10E-10	3.30E-10	2.40E-10	1.90E-10	1.10E-10	7.00E-11	4.00E-11	1.90E-11	7.30E-12	3.70E-12	2.20E-12	1.80E-12	0.8	1.85E-08
WSW	0	3.10E-08	6.50E-09	2.20E-09	1.10E-09	6.10E-10	2.80E-10	2.10E-10	1.70E-10	9.30E-11	6.10E-11	3.40E-11	1.70E-11	6.30E-12	3.30E-12	1.90E-12	1.60E-12	0.8	1.63E-08
W	0	3.80E-08	8.20E-09	2.80E-09	1.30E-09	7.70E-10	3.60E-10	2.70E-10	2.10E-10	1.20E-10	7.70E-11	4.30E-11	2.10E-11	8.00E-12	4.10E-12	2.40E-12	1.90E-12	1.6	2.50E-09
WNW	0	7.20E-08	1.50E-08	5.10E-09	2.50E-09	1.40E-09	6.70E-10	5.00E-10	3.90E-10	2.20E-10	1.40E-10	8.10E-11	3.90E-11	1.50E-11	7.60E-12	4.50E-12	3.60E-12	2.8	1.18E-09
NW	0	1.20E-07	2.70E-08	9.00E-09	4.30E-09	2.50E-09	1.20E-09	8.70E-10	6.80E-10	3.80E-10	2.50E-10	1.40E-10	6.80E-11	2.60E-11	1.30E-11	7.90E-12	6.30E-12	4.8	6.20E-10
NNW	0	1.80E-07	3.80E-08	1.30E-08	6.20E-09	3.60E-09	1.70E-09	1.20E-09	9.60E-10	5.40E-10	3.50E-10	2.00E-10	9.60E-11	3.70E-11	1.90E-11	1.10E-11	9.00E-12	2.2	5.16E-09
N	0	1.80E-07	3.90E-08	1.30E-08	6.40E-09	3.70E-09	1.70E-09	1.30E-09	1.00E-09	5.60E-10	3.70E-10	2.10E-10	9.90E-11	3.80E-11	2.00E-11	1.20E-11	9.30E-12	2.6	3.50E-09

NOTE: X/Q and D/Q in RED are corrected values from the 2013 Land Use Census Report.



BASE DISTANCE IN MILES/KILOMETERS

Average Annual Relative Concentration (X/Q) Tables

AFTD SECT	DESIGN DIST #	0.5 0.8	1 1.61	1.5 2.41	2 3.22	2.5 4.02	3.5 5.63	4 6.44	4.5 7.24	6 9.65	7.5 12.07	10 16.09	15 24.13	25 40.22	35 56.31	45 72.4	50 80.45	Actual Distance	
NNE	0	1.30E-05	3.10E-06	1.20E-06	6.50E-07	4.20E-07	2.30E-07	1.80E-07	1.50E-07	9.60E-08	7.00E-08	4.60E-08	2.70E-08	1.40E-08	9.50E-09	7.00E-09	6.20E-09	2.5	4.20E-07
NE	0	9.20E-06	2.20E-06	8.50E-07	4.60E-07	2.90E-07	1.60E-07	1.30E-07	1.10E-07	6.80E-08	5.00E-08	3.30E-08	2.00E-08	1.00E-08	6.90E-09	5.10E-09	4.50E-09	2.5	2.90E-07
ENE	0	7.50E-06	1.80E-06	6.80E-07	3.70E-07	2.30E-07	1.30E-07	1.00E-07	8.40E-08	5.50E-08	4.10E-08	2.70E-08	1.60E-08	8.50E-09	5.70E-09	4.20E-09	3.70E-09	2.6	2.20E-07
E	0	8.90E-06	2.10E-06	8.00E-07	4.30E-07	2.70E-07	1.50E-07	1.20E-07	9.90E-08	6.50E-08	4.80E-08	3.10E-08	1.90E-08	1.00E-08	6.80E-09	5.00E-09	4.40E-09	2.5	2.70E-07
ESE	0	9.70E-06	2.30E-06	8.80E-07	4.70E-07	3.00E-07	1.60E-07	1.30E-07	1.10E-07	7.10E-08	5.20E-08	3.50E-08	2.10E-08	1.10E-08	7.40E-09	5.50E-09	4.90E-09	2.2	4.02E-07
SE	0	1.40E-05	3.40E-06	1.30E-06	7.10E-07	4.50E-07	2.50E-07	2.00E-07	1.60E-07	1.10E-07	7.80E-08	5.10E-08	3.10E-08	1.60E-08	1.10E-08	8.00E-09	7.10E-09	2.0	7.10E-07
SSE	0	1.10E-05	2.70E-06	1.10E-06	5.80E-07	3.70E-07	2.00E-07	1.60E-07	1.30E-07	8.40E-08	6.10E-08	4.00E-08	2.30E-08	1.20E-08	8.10E-09	6.00E-09	5.30E-09	1.5	1.10E-06
S	0	8.60E-06	2.20E-06	8.50E-07	4.70E-07	3.00E-07	1.60E-07	1.30E-07	1.10E-07	6.70E-08	4.90E-08	3.20E-08	1.90E-08	9.70E-09	6.40E-09	4.70E-09	4.10E-09	1.8	8.50E-07
SSW	0	7.10E-06	1.80E-06	6.90E-07	3.80E-07	2.40E-07	1.30E-07	1.00E-07	8.60E-08	5.50E-08	4.00E-08	2.60E-08	1.50E-08	7.80E-09	5.10E-09	3.80E-09	3.30E-09	1.8	5.04E-07
SW	0	6.50E-06	1.60E-06	6.40E-06	3.50E-07	2.30E-07	1.20E-07	9.70E-08	8.00E-08	5.10E-08	3.70E-08	2.40E-08	1.40E-08	7.30E-09	4.80E-09	3.50E-09	3.10E-09	0.8	3.56E-06
WSW	0	7.10E-06	1.80E-06	6.90E-06	3.80E-07	2.50E-07	1.30E-07	1.10E-07	8.70E-08	5.60E-08	4.00E-08	2.60E-08	1.50E-08	8.10E-09	5.30E-09	3.90E-09	3.50E-09	0.8	3.92E-06
W	0	8.60E-06	2.20E-06	8.40E-07	4.60E-07	2.90E-07	1.60E-07	1.30E-07	1.00E-07	6.70E-08	4.90E-08	3.20E-08	1.90E-08	9.70E-09	6.40E-09	4.70E-09	4.20E-09	1.6	7.64E-07
WNW	0	1.40E-05	3.40E-06	1.30E-06	7.30E-07	4.70E-07	2.60E-07	2.00E-07	1.70E-07	1.10E-07	7.90E-08	5.10E-08	3.00E-08	1.60E-08	1.10E-08	7.80E-09	6.90E-09	2.5	4.70E-07
NW	0	2.30E-05	5.70E-06	2.20E-06	1.20E-06	7.70E-07	4.10E-07	3.30E-07	2.70E-07	1.80E-07	1.30E-07	8.50E-08	5.00E-08	2.70E-08	1.80E-08	1.30E-08	1.20E-08	4.8	2.52E-07
NNW	0	2.50E-05	6.10E-06	2.40E-06	1.30E-06	8.40E-07	4.50E-07	3.60E-07	3.00E-07	1.90E-07	1.40E-07	9.20E-08	5.40E-08	2.90E-08	1.90E-08	1.40E-08	1.20E-08	2.2	1.12E-06
N	0	2.00E-05	4.90E-06	1.90E-06	1.10E-06	6.70E-07	3.60E-07	2.90E-07	2.40E-07	1.50E-07	1.10E-07	7.30E-08	4.30E-08	2.30E-08	1.50E-08	1.10E-08	9.70E-09	2.6	6.39E-07

BASE DISTANCE IN MILES/KILOMETERS

Average Annual Relative Deposition Rate (D/Q) Tables

AFTD SECT DESIGN DI	MI	0.5 0.8	1 1.61	1.5 2.41	2 3.22	2.5 4.02	3.5 5.63	4 6.44	4.5 7.24	6 9.65	7.5 12.07	10 16.09	15 24.13	25 40.22	35 56.31	45 72.4	50 80.45		
NNE	0	1.00E-07	2.20E-08	7.20E-09	3.50E-09	2.00E-09	9.40E-10	7.40E-10	5.50E-10	3.10E-10	2.00E-10	1.10E-10	5.50E-11	2.10E-11	1.10E-11	6.40E-12	5.10E-12	2.5	2.00E-09
NE	0	5.00E-08	1.10E-08	3.60E-09	1.70E-09	1.00E-09	4.60E-10	3.40E-10	2.70E-10	1.50E-10	9.90E-11	5.60E-11	2.70E-11	1.00E-11	5.30E-12	3.10E-12	2.50E-12	2.5	1.00E-09
ENE	0	3.00E-08	6.50E-09	2.20E-09	1.10E-09	6.10E-10	2.80E-10	2.10E-10	1.60E-10	9.20E-11	6.10E-11	3.40E-11	1.60E-11	6.30E-12	3.20E-12	1.90E-12	1.50E-12	2.6	5.77E-10
E	0	2.90E-08	6.10E-09	2.10E-09	9.90E-10	5.80E-10	2.70E-10	2.00E-10	1.60E-10	8.70E-11	5.70E-11	3.20E-11	1.60E-11	5.90E-12	3.10E-12	1.80E-12	1.50E-12	2.5	5.80E-10
ESE	0	3.50E-08	7.50E-09	2.50E-09	1.20E-09	7.00E-10	3.20E-10	2.40E-10	1.90E-10	1.10E-10	7.00E-11	3.90E-11	1.90E-11	7.20E-12	3.70E-12	2.20E-12	1.80E-12	2.2	1.00E-09
SE	0	8.00E-08	1.70E-08	5.70E-09	2.80E-09	1.60E-09	7.40E-10	5.50E-10	4.30E-10	2.40E-10	1.60E-10	9.00E-11	4.30E-11	1.70E-11	8.50E-12	5.10E-12	4.00E-12	2.0	2.80E-09
SSE	0	9.10E-08	1.90E-08	6.60E-09	3.20E-09	1.80E-09	8.50E-10	6.30E-10	4.90E-10	2.80E-10	1.80E-10	1.00E-10	4.90E-11	1.90E-11	9.70E-12	5.80E-12	4.60E-12	1.5	6.60E-09
S	0	7.20E-08	1.50E-08	5.20E-09	2.50E-09	1.40E-09	6.70E-10	5.00E-10	3.90E-10	2.20E-10	1.40E-10	8.10E-11	3.90E-11	1.50E-11	7.70E-12	4.60E-12	3.70E-12	1.5	5.20E-09
SSW	0	4.80E-08	1.00E-08	3.50E-09	1.70E-09	9.80E-10	4.50E-10	3.40E-10	2.60E-10	1.50E-10	9.70E-11	5.50E-11	2.60E-11	1.00E-11	5.20E-12	3.10E-12	2.50E-12	1.8	2.42E-09
SW	0	3.50E-08	7.50E-09	2.50E-09	1.20E-09	7.10E-10	3.30E-10	2.40E-10	1.90E-10	1.10E-10	7.00E-11	4.00E-11	1.90E-11	7.30E-12	3.70E-12	2.20E-12	1.80E-12	0.8	1.85E-08
WSW	0	3.10E-08	6.50E-09	2.20E-09	1.10E-09	6.10E-10	2.80E-10	2.10E-10	1.70E-10	9.30E-11	6.10E-11	3.40E-11	1.70E-11	6.30E-12	3.30E-12	1.90E-12	1.60E-12	0.8	1.63E-08
W	0	3.80E-08	8.20E-09	2.80E-09	1.30E-09	7.70E-10	3.60E-10	2.70E-10	2.10E-10	1.20E-10	7.70E-11	4.30E-11	2.10E-11	8.00E-12	4.10E-12	2.40E-12	1.90E-12	1.6	2.50E-09
WNW	0	7.20E-08	1.50E-08	5.10E-09	2.50E-09	1.40E-09	6.70E-10	5.00E-10	3.90E-10	2.20E-10	1.40E-10	8.10E-11	3.90E-11	1.50E-11	7.60E-12	4.50E-12	3.60E-12	2.5	1.40E-09
NW	0	1.20E-07	2.70E-08	9.00E-09	4.30E-09	2.50E-09	1.20E-09	8.70E-10	6.80E-10	3.80E-10	2.50E-10	1.40E-10	6.80E-11	2.60E-11	1.30E-11	7.90E-12	6.30E-12	4.8	6.20E-10
NNW	0	1.80E-07	3.80E-08	1.30E-08	6.20E-09	3.60E-09	1.70E-09	1.20E-09	9.60E-10	5.40E-10	3.50E-10	2.00E-10	9.60E-11	3.70E-11	1.90E-11	1.10E-11	9.00E-12	2.2	5.16E-09
N	0	1.80E-07	3.90E-08	1.30E-08	6.40E-09	3.70E-09	1.70E-09	1.30E-09	1.00E-09	5.60E-10	3.70E-10	2.10E-10	9.90E-11	3.80E-11	2.00E-11	1.20E-11	9.30E-12	2.6	3.50E-09

Appendix A

**Comanche Peak Nuclear Power Plant
Land Use Census
2014**

COPY

**COMANCHE PEAK NUCLEAR POWER PLANT
LAND USE CENSUS 2014**

The Land Use Census identified receptors within a five (5) mile radius of the plant in each of the sixteen (16) meteorological sectors. The Land Use Census was conducted August 18-20, 2014 and includes the following items:

1. Evaluation of the 2014 Land Use Census
2. Nearest Resident by Sector, Distance, X/Q and D/Q
3. Nearest Garden by Sector, Distance and D/Q
4. Nearest Milk Animal by Sector, Distance and D/Q
5. Population by Sector and Distance
6. Environmental Sample Locations Table
7. Environmental Monitoring Locations Map – 2 Mile Radius
8. 5 Mile Sector and Road Map with Field Data*
9. Environmental Monitoring Locations Map – all sample locations*

*These maps are vaulted along with this census. Copies of this census will not contain a copy of these maps unless specifically requested.

Evaluation of the 2014 Land Use Census

The results of the 2014 Land Use Census were reviewed for impact on the Radiological Environmental Monitoring Program (REMP). The specific areas reviewed, that could be affected by changes found in the land use census, were the sampling requirements for milk, broadleaf vegetation and food products.

Reviewing the milk sampling requirements from the ODCM Table 3.12-1 requires that samples are to be obtained from milking animals in three locations within a 5 km distance having the highest potential dose. If none are available, samples are acceptable from milking animals in locations 5 to 8 km distance where doses are calculated to be greater than 1 mRem per year. A sample is also required at a control location. There are currently no identified milking animals (cow or goat) within the specified distances therefore; there are no current milk samples during the year 2014. NOTE: A Control milk location was identified at 12.3 Miles SW, Deridder Dairy, but operator did not wish to participate. (CR-2011-0013802)

If no milk samples are available, the broadleaf vegetation sampling specified in ODCM Table 3.12-1 will be performed. Broadleaf sample requirements are such that samples of broadleaf vegetation are to be collected from each of two offsite locations of the highest predicted annual average D/Q if milk sampling is not performed at all the required locations. Currently, broadleaf vegetation samples are collected at two indicator locations (N - 1.45 and WSW - 1.0) and one control location (SW - 13.5). These indicator locations are near the site boundary in sectors where broadleaf vegetation is available and D/Q are the highest. Therefore, no change to the broadleaf sampling program is required.

Food product sample requirements of ODCM Table 3.12-1 requires that one sample of each principal class of food product be collected from any area that is irrigated with water in which liquid plant waste has been discharged. No gardens were identified in the land use census and no gardens are located in any area that irrigates with water in which liquid plant wastes are discharged. Currently, food products are sampled from one indicator location (ENE - 9.0) when in season. The indicator location for ENE-9.0 for pecans at time of harvest will be continued since it is a major source of food products sold to the public.

The 2013 Land Use Census identified one location within 5 miles with a garden of greater than 500 ft² producing broadleaf vegetation as outlined in CPNPP procedures and Comanche Peak Steam Electric Station Offsite Dose Calculation Manual. This garden was not in operation for the year 2014.

Calculated values for the associated X/Q and D/Q values for each controlling receptor location and pathway are included along with the receptor distances in the data tables of this land use census. The values used to determine potential dose due to radioactive effluent discharges are the highest calculated values based on annual average values. The annual average X/Q used for dose calculations is 3.30E-6, tritium X/Q is 4.36E-6, and the D/Q value is 3.34 E-8. All these values are conservative based on the 2014 Land Use Census data and therefore no changes are required in the dose calculation parameters as verified by the field data.

* X/Q units are Sec/cubic meter

* D/Q units are inverse square meters

Nearest Resident by Sector, Distance, X/Q and D/Q

Sector	Distance (Miles)	X/Q	D/Q
N	2.6	6.39E-07	3.50E-09
NNE	2.5	4.20E-07	2.00E-09
NE	2.5	2.90E-07	1.00E-09
ENE	2.6	2.20E-07	5.77E-10
E	2.5	2.70E-07	5.80E-10
ESE	2.2	4.02E-07	1.00E-09
SE	2.0	7.1E-07	2.80E-09
SSE	1.5	1.10E-06	6.60E-09
S	1.5	8.50E-07	5.20E-09
SSW	1.8	5.04 E-7	2.42 E-9
SW	0.8	3.56E-06	1.85E-08
WSW	0.8	3.92E-06	1.63E-08
W	1.6	7.64E-07	2.50E-09
WNW	2.5	4.70E-07	1.40E-09
NW	4.8	2.52E-07	6.20E-10
NNW	2.2	1.12E-06	5.16E-09

Note: The Annual Average X/Q used for dose calculations is 3.30E-06 sec/cubic meter.
 The Tritium value X/Q used for dose calculations is 4.36E-06 sec/cubic meter.
 The Annual Average D/Q used for dose calculations is 3.34E-08 inverse square meters.

Nearest Garden by Sector, Distance and D/Q

Sector	Distance (Miles)*	D/Q
N	None	None
NNE	None	None
NE	None	None
ENE	None	None
E	None	None
ESE	None	None
SE	None	None
SSE	None	None
S	None	None
SSW	None	None
SW	None	None
WSW	None	None
W	None	None
WNW	None	None
NW	None	None
NNW	None	None

Nearest Milk Animal by Sector, Distance and D/Q

Sector	Distance (Miles)*	D/Q
N	None	None
NNE	None	None
NE	None	None
ENE	None	None
E	None	None
ESE	None	None
SE	None	None
SSE	None	None
S	None	None
SSW	None	None
SW	None	None
WSW	None	None
W	None	None
WNW	None	None
NW	None	None
NNW	None	None

*No Milk samples are currently being collected.

Population by Sector and Distance

Sector	0-1	1-2	2-3	3-4	4-5	Total
N	-	-	5	59	80	144
NNE	-	-	5	59	31	95
NE	-	-	167	169	272	608
ENE	-	-	79	24	16	119
E	-	-	154	182	22	358
ESE	-	-	66	66	96	228
SE	-	-	159	340	66	565
SSE	-	85	91	82	2489	2747
S	-	19	118	36	159	332
SSW	-	6	3	6	60	75
SW	9	110	6	63	47	235
WSW	38	69	9	6	-	122
W	-	84	6	18	13	121
WNW	-	-	8	49	116	173
NW	-	-	-	-	5	5
NNW	-	-	6	44	46	96
TOTAL	47	373	882	1203	3518	6023

The average number of residents per house was obtained from North Central Texas Council of Governments for Hood and Somervell Counties. The number of residents per house is 2.57 and 2.74, respectively.

Note: 2011 thru 2014 Land Use Census was performed with the use of maps and information provided by Somervell County/Hood County 9-1-1 addressing/ geographic information system. Changes were noted during the 2011 Land Use Census in sector population which attributed to use of 911 (Hood and Somervell counties) dispatchers maps. A 9-1-1 map is vaulted under RPI-714-1.

Environmental Sample Locations Table

Sampling Point	Location	Sample Type*
A1	N-1.45 (Squaw Creek Park)	A
A2	N-9.4 (Granbury)	A
A3	E-3.5 (Children's Home)	A
A4	SSE-4.5 (Glen Rose)	A
A5	S/SSW-1.2	A
A6	SW-12.3 (CONTROL)	A
A7	SW/WSW-0.95	A
A8	NW-1.0	A
R1	N-1.45 (Squaw Creek Park)	R
R2	N-4.4	R
R3	N-6.5	R
R4	N-9.4 (Granbury)	R
R5	NNE-1.1	R
R6	NNE-5.65	R
R7	NE-1.7	R
R8	NE-4.8	R
R9	ENE-2.5	R
R10	ENE-5.0	R
R11	E-0.5	R
R12	E-1.9	R
R13	E-3.5 (Children's Home)	R
R14	E-4.2	R
R15	ESE-1.4	R
R16	ESE-4.7	R
R17	SE-1.3	R
R18	SE-3.85	R

Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
R19	SE-4.6	R
R20	SSE-1.3	R
R21	SSE-4.4 (Glen Rose)	R
R22	SSE-4.5 (Glen Rose)	R
R23	S-1.5	R
R24	S-4.2	R
R25	SSW-1.1	R
R26	SSW-4.4 (State Park)	R
R27	SW-0.9	R
R28	SW-4.8 (Girl Scout Camp)	R
R29	SW-12.3 (CONTROL)	R
R30	WSW-1.0	R
R31	WSW-5.35	R
R32	WSW-7.0 (CONTROL)	R
R33	W-1.0	R
R34	W-2.0	R
R35	W-5.5	R
R36	WNW-1.0	R
R37	WNW-5.0	R
R38	WNW-6.7	R
R39	NW-1.0	R
R40	NW-5.7	R
R41	NW-9.9 (Tolar)	R
R42	NNW-1.35	R
R43	NNW-4.6	R

Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
SW1	N-1.5 (Squaw Creek Reservoir Marina)	SW
SW2	N-9.9 (Lake Granbury)	SW/DW ¹
SW3	N-19.3 (CONTROL-Brazos River)	SW
SW4	NE-7.4 (Lake Granbury)	SW
SW5	ESE-1.4 (Squaw Creek Reservoir)	SW ²
SW6	NNW-0.1 (Squaw Creek Reservoir)	SW/DW ^{2,3}
GW1	W-1.2 (Security Rifle Range)	GW ⁷
GW2	WSW-0.1 (Somerville Water district)	GW ^{3,4,6}
GW3	SSE-4.6 (Glen Rose – Somerville Water District)	GW ⁴
GW4	N-9.8 (Granbury)	GW ^{1,4,6}
GW5	N-1.45 (Squaw Creek Park)	GW ⁴
SS1	NNE-1.0 (Squaw Creek Reservoir)	SS
SS2	N-9.9 (Lake Granbury)	SS
SS3	NE-7.4 (Lake Granbury)	SS
SS4	SE-5.3 (Squaw Creek)	SS
F1	ENE-2.0 (Squaw Creek Reservoir)	F
F2	NNE-8.0 (Lake Granbury)	F
FP1	ENE-9.0 (Leonard Bros. Pecan Farm)	FP

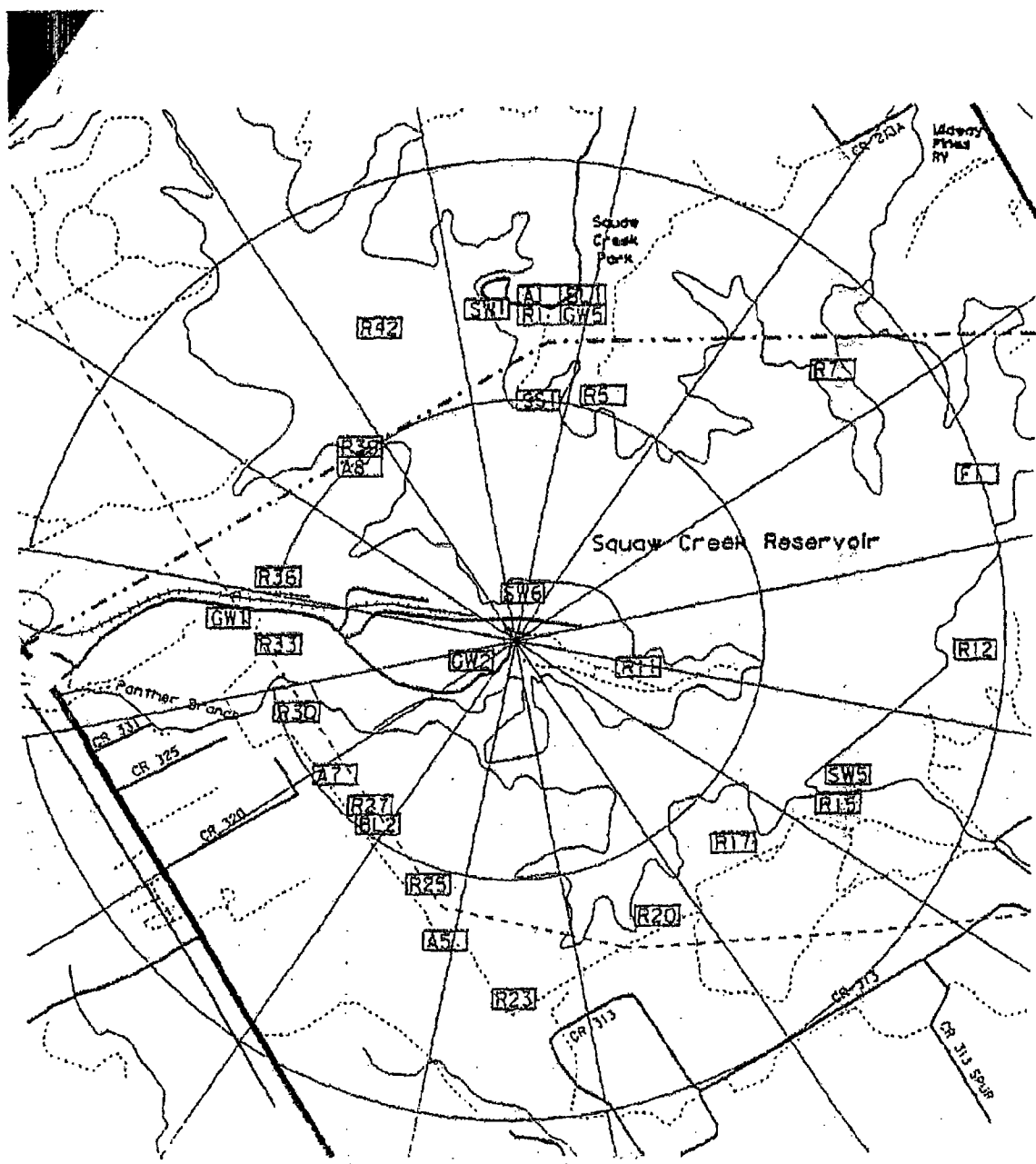
Environmental Sample Locations Table (cont.)

Sampling Point	Location	Sample Type*
BL1	N-1.45	BL
BL2	SW-1.0	BL ⁵
BL3	SW-13.5 (CONTROL)	BL ⁵

*Sample Type: A - Air Sample; R - Direct Radiation; SW - Surface Water; DW - Drinking Water GW - Ground Water; SS - Shoreline Sediments; M - Milk; F - Fish; FP - Food Products; BL - Broadleaf Vegetation

NOTES:

1. The municipal water system for the City of Granbury is supplied by surface water from Lake Granbury (location SW2) and ground water (location GW4). Each of these supplies is sampled. These samples are not required for compliance with Radiological Effluent Control 3/4.12.1, Table 3.12-1, because they are not affected by plant discharges.
2. This sample (location SW6) is representative of discharges from Squaw Creek Reservoir both down Squaw Creek and to Lake Granbury via the return line to Lake Granbury if used.
3. Plant potable water could be supplied by surface water from Squaw Creek Reservoir (location SW6) or ground water from onsite wells (location GW2) but is currently supplied by the Somervell County Water District from the Wheeler Branch Reservoir. Each of these possible sources of water were sampled.
4. Ground water supplies in the plant site area are not affected by plant liquid effluents as discussed in CPSES FSAR Section 2.4.13 and are therefore not required to be monitored for radioactivity to meet the requirements of the Radiological Effluent Control 3/4.12.1, Table 3.12-1.
5. Broadleaf sampling will be performed at the specified locations if milk samples are unavailable from any location.
6. Plant Potable Water (GW2) and Glen Rose (GW3) are supplied from surface water by the Somervell Water District from the Wheeler Branch Reservoir.
7. CPNPP Security Rifle Range (GW1) is supplied by a local Well.



Environmental Sample Locations Map - 2 Mile Radius