APPENDIX D

ER HOME SITE QASP

United States Environmental Protection Agency
Emergency Response Section

Emergency Response and Time Critical Quality Assurance Sampling Plan for Air and Soil Sampling

Response Location: Northeast Church Rock Mine, McKinley County, New Mexico
(Site Name): Northeast Church Rock (NECR)

Date: April 30, 2007

Prepared by: Carl Palladino, The Palladino Company, Inc.

Reviewed by: Robin Clemens, Ecology and Environment, Inc.

Approved by: Harry Allen, U.S. Environmental Protection Agency

This sampling plan was prepared and delivered to the EPA OSC (select one):
■ Prior to Sampling ☐ Post Sampling (within one month of sampling)

This emergency sampling plan is intended to be used in conjunction with the Environmental Protection Agency's (EPA) Region 9 Emergency Response Section's (ERS) Generic Data Quality Objectives (DQOs) for Emergency Responses and Time Critical Evaluations. This Quality Assurance Sampling Plan (QASP) has been designed to assist field responders in their preparation for collecting, analyzing, shipping, storing and handling samples collected during an emergency response. The use of this generic sampling plan will involve forethought and planning that should help direct the sampling and analytical work. It is meant to be used in the case of emergency responses or time-critical responses when sampling teams may not have the opportunity to write a more thorough sampling plan. Sampling teams should always reference standard quality procedures, standard operations procedures, standard methods for sampling and analytical guidance.

The development of this generic plan will improve the documentation, communication, planning, and overall quality associated with the sampling and analysis by:

1) encouraging field teams to consider their goals and objectives before the generation of environmental data,
2) documenting predetermined information in a standardize format,
3) increasing the communication between sampling personnel and decision makers, and
4) detailing expectations and objective before samples are collected.

1.0 Introduction and Background. ***Describe the site and specify the geographic boundaries for the site and any specific areas of concern.*** *What is the problem, what precipitated the response, which agencies and other entities (e.g., contractors) are on site, who has taken the lead for the response and for environmental clean-up actions?*

The NECR mine site is an inactive uranium mine site that operated from 1968 until 1982 with waste water treatment activities from 1979 until 1983. The mine was closed between 1986 and 1994 in accordance with Nuclear Regulatory Commission (NRC) requirements under Title II of the Uranium Mill Tailings Radiation Control Act (UMTRCA). The mine was operated by United Nuclear Corporation (UNC), the Potentially Responsible Party (PRP), who retained MWH to conduct investigations at the mine. Most of the mine is located on Navajo Indian Trust land with a portions on Navajo Indian Reservation and UNC owned land.

The NRC regulated cleanup action only addresses mine tailings, thus contamination remains on the site. At the request of the Navajo Nation Environmental Protection Agency (NNEPA), the EPA became involved in November of 2005 to oversee the investigation and remediation of the site. The EPA required UNC to conduct a Removal Site Evaluation (RSE) to determine the extent of contamination and perform a risk assessment, which was completed in December 2006. The investigation report is pending. Additional mine history, mining practices, and pertinent background information is detailed in the Final Removal Site Evaluation Work Plan (MWH 2006).

During the RSE eight Home Sites were investigated for surface soil contamination and three were found to have elevated levels above the screening level of 2.24 pCi/g Ra-226. Based on the results, the EPA initiated further investigations and actions to mitigate potential exposures to the radioactive contamination. The three Home Sites were investigated for indoor contamination and one additional Home Site was investigated for surface soil contamination on April 18 and 19, 2007 by the EPA (E&E 2007). No indoor gamma radiation above twice background levels were detected. Elevated levels of gamma radiation above twice background were detected from the surface soil survey performed at the ninth Home Site, thus five surface soil samples were collected for analysis. Results are pending.

This QASP addresses the third phase of the Home Site investigation involving indoor air radon sampling, outdoor airborne particulate sampling and monitoring, and soil sampling during the remediation of the contaminated soil.

Reference: MWH, Final Removal Site Evaluation Work Plan, August 2006
E&E, Quality Assurance Sampling Plan for Home Sites Indoor Assessment, April 2007

2.0 Objectives. *Brief statement on the general project objective. What is the overall goal or objective? Specific objectives are summarized in Table D.*

The project objectives are as follows:

1. Conduct perimeter air sampling and monitoring during soil removal activities
2. Conduct air sampling for radon-222 inside residential homes
3. Delineate the extent of soil contamination to direct removal activities
4. Conduct confirmation soil sampling for laboratory analysis
5. Conduct final status surveys at all residential properties in accordance with the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)

2.1 Data Use Objectives. (How will the data be used?)

Data that are generated will be used: (Select Appropriate Boxes)

1 ☐ To be compared with a background or reference sample(s).

2 ☐ To be compared with an available detection or quantification level.

3 ■ To assist in determining the presence or absence of a hazardous material or substance at levels above an available detection or quantification level.

4 ■ To assist with determining the area of impact due to a hazardous material release. (i.e., horizontal and lateral extent).

5 ■ To be compared with site-specific action levels or risk-based action levels (e.g., EPA PRGs) to assist in determination if health threats exist.

6 ■ As definitive confirmatory data for confirmation of non-definitive (screening) data.

7 ■ Other objectives: To meet MARSSIM final status survey requirements

2.2 Sampling Objectives. (What are you proposing to do?)

1 ☐ Sampling to determine only the presence or absence of a hazardous substance within the area of concern.

2 ■ Sampling to estimate:

■ contamination levels within the area of concern. (Indoor residential Rn-222 sampling)

☐ contamination area(s) within a site.

3 ☐ Sampling to determine the location of hot spots within the area of concern..

4 ■ Surface soil sampling to estimate the lateral extent of contamination

■ of specific source area(s) or areas of concern

☐ over entire site

5 ■ Sub-surface sampling to estimate the vertical extent of contamination

■ of specific source area(s) or areas of concern

☐ over entire site.

6 ■ Sampling off site to determine: Migration of airborne contamination at the perimeter of site. Background for radiation instrumentation.

2.3 Sample Matrices

1 ■ Surface soils

2 ■ Subsurface soil
Depth(s): To be determined in the field by the depth of excavation.

3 ☐ Surface water

4 ☐ Groundwater
Depth(s):_____

5 ☐ Other aqueous matrices
Please specify:_____

6 ☐ Wipe samples

7 ☐ Biota
Please specify:_____

8 ■ Other matrices: Airborne particulate and radon-222 gas

2.4 Data Type

In general, data type and data needs should be decided prior to data generation. The data can be generally divided into three categories: definitive methodology data (generally data generated using standardize methods), non-definitive methodology data (also referred to as screening data) and screening data with at least 10% definitive conformation. The generation of definitive data is preferable, however in emergency and time critical situations where definitive data is not available, non-definitive data should be generated. Note that the data type is not an indicator of precision, accuracy or documentation completeness, or quality! Reported data should be verified (by a party other than the laboratory) as meeting specific quality control and data category requirements by following a verification or validation procedure. Refer to the START or ERS Quality Assurance Plans for specific quality parameters and requirements.

Check appropriate box(es):

1 ■ Screening data will be generated. The data by itself may not be verifiable. **Due to the time critical situation, the data must be reported and may be used to make decisions.**

2a ■ Screening data with at least 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Due to the time critical situation, the data must be reported and may be used to make decisions prior to generation of definitive data.** The screening data by itself may not be verifiable. Screening data will be evaluated and reported with definitive data at a later time.

2b ☐ Screening data with 10 percent definitive data will be generated. Data using non-definitive analytical methodologies will be generated. **Data will not be reported until it is evaluated against definitive data.**

3a ☐ Definitive data will be generated. The sampling and analysis must be done on an emergency basis. **Due to the time critical situation, the preliminarily data must be reported and used for comparison without validation. Analytical data packages will be required. However, since the data was not used or intended for decision making, validation of the data package will not be performed.** (Document generic DQO deviation in Section 4.4)

3b ■ Definitive data will be generated. The sampling must be done on an emergency basis. **Due to the time critical situation, preliminary data must be reported and may be used to make decisions without validation. The generated analytical documentation packages will be reviewed and validated. Qualified data will be reported after validation.**

3c ☐ Definitive data will be generated. **Full documentation will be required. Analytical data packages will be reviewed and validated prior to reporting.**

2.5 Contaminants of Concern

Potential contaminants of potential concern (COPC), proposed analytical method, proposed action levels and available reporting limit are summarized in Table A.

Table A
Contaminants of Concern

Potential COC	Proposed Analytical Method	Proposed Action Level	Available Reporting Limit
Radium-226 (soil)	EPA Method 901.1 (Modified) equivalent per General Engineering Laboratory procedures	USEPA Region 9 Residential 1E-4 risk PRG of 1.24 pCi/g + background of 1.0 pCi/g equals 2.24 pCi/g	0.5 pCi/g
Radium-226 (air filter)	Determination of Radium-226 (GL-RAD-A-008 Revision 8) Applicable to EPA 600/4-80-032 Method 903.1 (Modified)	1×10^{-3} pCi/L	1×10^{-7} pCi/L
Radium-226 (total particulate)	FOP 5, Ludlum Model 2200 with Model 43-78	$1 \text{ X } 10^{-3}$ pCi/L	TBD (sampling time adjusted to obtain sufficient RL)
Radon-222 gas	TBD	4 pCi/L	TBD
Total airborne particulates	Personal DataRAM or DataRam	5 mg/m^3 (OSHA PNOR PEL)	0.001 mg/m^3
Gross gamma radiation	FOP 2, Radiation Survey Scanning or FOP 3, Radiation Static Measurement	TBD	TBD (sampling time adjusted to obtain sufficient RL)
Other Data Collection Activity (non-chemical) *(circle all that apply)*	GPS **Visual** Interviews Magnetometer Other Geophysical Modeling **Photography** File Search		

Add additional pages if necessary.

Key:
TBD: To be determined
FOP: Field Operating Procedure

3.0 Approach and Sampling Methodologies

3.1 Sampling Approach

Indicate sampling approaches to be used (select approach)

1 ■ Due to the lack of site information the approach will be determined in the field based on professional judgment of the field team.

2 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of US EPA.

3 ☐ Due to the lack of site information the approach will be determined in the field based on professional judgment of local regulator.

4 ■ Judgmental (Biased for extent of delineation surveys)

5 ☐ Random

6 ■ Systematic (systematic random grid)

7 ■ Transects

8 ☐ Search-Grid

If a search-grid, specify grid type (circle one): Square Triangle Rectangle

Size of contamination hot-spot to be detected:_____

Shape of hot-spot (circle one): Circle Elliptical Elongated-Elliptical

Required Grid Spacing :_____

Acceptable probability of missing hot-spot (circle one): 5 % 10 % 20% 40%

3.2 Field Analysis Equipment

Field analysis equipment requirements are summarized in Table B1.

Table B1
Field Analytical Equipment

Analysis Equipment Specify the field analytical procedures to be used. Select the appropriate boxes.	**Model**	**Analyses**	**Matrix**	**Resource/Contractor**
☐ X-Ray Fluorescence (XRF) Device [for metals]				
☐ Lumex (XRF) Mercury Instrument				
☐ Oil Analysis Kit [for oils]				
☐ Immunoassay Test Kits [pesticides, oils, chlorinated substances]				
☐ Chlor-N-Soil/Chlor-N-Oil test kits[PCBs, chlorinated substances]				
☐ pH Meter				
☐ Other field test kits [for pesticides] _____				
■ Ludlum ratemeter with gamma detector	2241-2 or 2221 with 44-10	gamma radiation	soil	EPA
■ Ludlum ratemeter with alpha detector	2200 with 43-78	alpha radiation	air filter	EPA ORIA
☐				
☐				

3.3 Field Sampling Equipment

Field equipment requirements are summarized in Table B2.

Table B2
Field Sampling and Decontamination Equipment

Analyses and Matrix	Sampling Equipment	Dedicated or Reusable	Decontamination Solution	Resource/ Contractor
EPA Method 901.1, Gamma Emitting Radionuclides / Soil	Plastic scoop	Dedicated	Not Applicable	General Engineering Laboratory and EPA
EPA method 903.1, Radium-226 Radon Emanation Technique / Air filter	Hi-Q high volume air sampler with F&J, Model FR-4.0 M filter	Reusable	Water with wipe	General Engineering Laboratory and EPA ORIA
FOP 5, Air Filter Field Screening / Air filter	Hi-Q high volume air sampler with F&J, Model FR-4.0 M filter	Reusable	Water with wipe	EPA ORIA
Method TBD, Radon-222 / Gas	TBD	Reusable	Water with wipe	ORIA
FOP 2, Radiation Scanning Survey / Gamma in air	Ludlum Model 2241-2 or Model 2221 with Model 44-10	Reusable	Water with wipe	EPA
FOP 3, Radiation Static Measurement / Gamma in air	Ludlum Model 2241-2 or Model 2221 with Model 44-10	Reusable	Water with wipe	EPA

Add additional pages if necessary.

3.4 Field Methods and Procedures

3.4.1 Sample Locations. Indicate the sampling location name, describe location, and indicate rationale for each sample location chosen.

Sample locations to delineate the extent of contamination will be selected in the field based on professional judgment. Sample locations for the final status survey will be determined in the field upon completion of the removal action (locations are dependant on the size of each survey unit). Sample numbers, for both soil samples and static gamma measurements, will follow the format below:

Survey unit abbreviation-survey unit number-sequential number in the form of XX#-##-##, where X represent a letter and # represent a number from zero to nine.

For example, Home Site 1 will have a survey unit abbreviation of HS1, thus the third sample number collected from the second survey unit would have the sample number HS1-02-03.

Sketch a map of the site and any areas of concern. Indicate sampling locations or sampling areas in Figure A and included names. Use a scale that is meaningful for the sampling work covered under this plan. Sketch out where the samples will be collected and include sampling location names. Attach a local map to this plan if it is available.

Figure A
Sample Location Map

To be drawn in the field and/or documented in the project logbook.

Samples locations will determine in the field and recorded with GPS and a sketch will be made in the field logbook. In addition, measurements will be made for soil samples relative to a fixed position selected in the field.

Add additional maps if necessary.

3.4.2 Sample Labeling and Documentation

Sample Jar Labels

Sample labels will clearly identify the particular sample and should include the following:

1. Site name
2. Time and date samples were taken
3. Sample preservation
4. Analysis requested
5. Sample location and/or identification number

Sample labels will be securely affixed to the sample container.

Chain of Custody Record

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a secured container sealed with a custody seal.

The chain of custody record should include (at minimum) the following:

1. Sample identification number
2. Sample information
3. Sample location
4. Sample date and time
5. Names(s) and signature(s) of sampler(s)
6. Signature(s) of any individual(s) with control over samples

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the samples' packaging, should be noted in the field book.

All sample documents will be completed legibly in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error. These include the logbooks, the chain of custody forms, this field QASP and any other tracking forms.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries and will include the following:

1. Site name and project number
2. Names of sampling personnel
3. Dates and times of all entries (military time preferred)
4. Descriptions of all site activities, especially sampling start and ending times. Include site entry and exit times
5. Noteworthy events and discussions
6. Weather conditions
7. Site observations
8. Identification and description of samples and locations

9. Subcontractor information and names of on-site personnel
10. Date and time of sample collections, along with chain of custody information
11. Record of photographs
12. Site sketches
13. Exact times of various activities and occurrences related to sampling
14. Deviations from standard procedures or methods and the rational for the deviations.

3.4.3 Sample Containers and Preservatives

Containers and preservatives are summarized in Table C.

Table C
Containers and Preservatives

Analyses and Matrix	Container Type (per sample)	Preservation Method	Holding Time
EPA Method 901.1 / Soil	8 ounce jar	None	6 months
EPA Method 903.1 / Air filter	Paper envelope	None	6 months
FOP 5, Air Filter Field Screening / Air filter	Paper envelope	None	24 hours
TBD / Radon-222 gas	TBD	None	TBD
FOP 2, Radiation Scanning Survey / Gamma radiation	None (real-time measurement)	None	None
FOP 3, Radiation Static Measurement / Gamma radiation	None (real-time measurement)	None	None

Add additional pages if necessary.

3.5 Analytical Methods and Procedures

The analytical methods per sample and sample location are presented in Table D. General field QC considerations and requirements are presented in Table E.

Table D
Sample Locations and Data Objective
Summary

Sampling Locations and Identifiers should correspond to location indicated on Figure A

Sample Location(s) (should match with 3.3.1 and Figure A)	Sample Identifiers	Analytical Method Refer to Table A	Data Use Objective(s) Refer to Section 2.1	Data Category Refer to Section 2.3	Samples Matrix
Each survey unit for Home Site number 4, 6, 7, 8, and 9	Assigned in the field depending on the final status survey	EPA Method 901.1	4, 5, 7	3C	Soil
Each survey unit for Home Site number 4, 6, 7, 8, and 9	Assigned in the field depending on location	Field screening static gamma measurement with Ludlum 44-10 sodium iodide scintillation detector	4, 5, 7	2B	Soil
Each survey unit for Home Site number 4, 6, 7, 8, and 9	None	Field screening scanning gamma measurement with Ludlum 44-10 sodium iodide scintillation detector	4, 5, 7	1	Soil

Add additional pages if necessary.

3.6 Quality Assurance and Quality Control

General field QA/QC considerations and requirements are presented in Table E.

Table E
Quality Control Samples and Data Quality Indicator Goals

QC Sample	Number/Frequency	Data Quality Indicator Goals & Evaluation Criteria	Comments/Exceptions *Site specific remarks:*
FIELD SPECIFIED QA/QC			
Background or reference sample	At least one sample should be collected from an area believed to be unaffected by source contamination.	Source samples should be at least 3 times background.	Surface soil: up-slope. Surface water: upstream. Ground water: up-gradient. *:Not Applicable, background concentration already determined.*
Field Blanks	1 per SDG[1], per matrix, per method	Source samples should be at least 3 times the blank.	Water only. *:Not Applicable*
Travel Blanks	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	Volatile analytes, water only. *:Not Applicable*
Equipment Blanks	1 per SDG, per matrix, per method	Source samples should be at least 3 times the blank.	Only when the use of decontaminated non-dedicated equipment is involved. *: Not Applicable*
Field Duplicates or Replicates	1 per SDG, per matrix, per method	Water - 25% RPD[2] Soil - 35% RPD[2] Other - 35%	As needed by sampling objectives. The procedure for collecting duplicate samples can greatly effect the reproducibility. *:One sample per set of ten.*
Performance Standards	1 per project, per matrix, per method	75 -125 %R[3]	If available. *:Performed by the laboratory*
SELECTED LABORATORY QA/AC			
Method Blank	1 per SDG, per matrix, per method	Stds and samples should be at least 3 times the blank.	Mandatory.
Matrix Spike	1 per SDG, per matrix, per method on field designated sample.	75 -125 %R	Designate sample on COC.
Matrix Spike Duplicate or Replicate	1 per SDG, per matrix, per method on field designated sample.	≤50 RPD for organics; ≤20 RPD for metals	Designate sample on COC.
Reference Standards	1 per SDG, per matrix, per method	75 -125 %R	If available.
Internal Standards	All samples	50 -200 %R	All GC/MS and some GC analyses only.
Laboratory Control Standards	1 per SDG, per matrix, per method	75 - 125 %R	Per method for organic analyses.

[1] SDG = Sample Delivery Group (Maximum 20 samples)
[2] RPD = Relative Percent Difference
[3] %R = Percent Recovery

4.0 Project Organization and Responsibilities

4.1 Schedule of Sampling Activities

Sampling activities are summarized in Table F.

Table F Proposed Schedule of Work For Sampling Activities		
Activity	**Start Date**	**End Date**
Confirmatory data collection for comparison to PRP data	November 2006	December 2006

Add additional pages if necessary.

4.2 Project Laboratories

Laboratories used for this project are summarized in Table G.

Table G Laboratories	
Lab Name/ Location	**Methods**
TBD	EPA 901.1

Add additional pages if necessary.

4.3 Project Personnel and Responsibilities

Personnel and responsibilities are summarized in Table H.

Table H Sample Team(s) Personnel	
Personnel (Agency)	**Responsibility**
Robin Clemens	Project Manager, Sampler
Carl Palladino	Sampler, Support

Add additional pages if necessary.

4.4 Modification or Additions to the Generic Data Quality Objective for Emergency and Time Critical Sampling

Project specific modification to the generic DQO statements for this are summarized in Table I. Also indicate which DQO step corresponds to the addition or modification.

Table I DQO Modifications and Additions	
Additions or Modifications to the Generic DQO Output Statements	**DQO Step**

Add additional pages if necessary

UPPER CONFIDENCE LIMIT TABLES

Table D-1
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NECR-1 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	47	44	15	<0.25	2.9	4.4	0.67	Inconclusive	na	nc	nc	Gamma	5.2	5.2
Molybdenum	47	4	214	11	32	8.8	3.6	Inconclusive	na	nc	nc	Non-parametric	29	29
Radium-226	48	48	93	1.2	27	29	0.91	Inconclusive	na	nc	nc	Gamma	39	39
Selenium	47	44	69	<0.10	17	14	1.3	Inconclusive	na	nc	nc	Gamma	20	20
Uranium	47	47	758	1.2	148	82	1.8	Inconclusive	na	nc	nc	Gamma	117	117
Vanadium	47	47	76	19	13	39	0.32	Normal	na	nc	nc	Normal	42	42

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-2
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NECR-2 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	19	19	8.1	1.3	1.70	4.0	0.43	Normal	na	nc	nc	Normal	4.6	4.6
Radium-226	24	24	160	1.2	37	23	1.6	Inconclusive	na	nc	nc	Gamma	39	39
Selenium	19	15	27	<0.10	7.4	5.8	1.3	Inconclusive	na	nc	nc	Gamma	11	11
Uranium	19	19	370	1.5	85	40	2.1	Inconclusive	na	nc	nc	Gamma	85	85
Vanadium	19	19	67	16	12	35	0.34	Inconclusive	na	nc	nc	Gamma	40	40

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-3
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Ponds 1 & 2 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	23	23	8.8	2.2	1.5	4.3	0.3	Inconclusive	na	nc	nc	Gamma	4.9	4.9
Radium-226	24	24	655	1.0	161	89	1.8	Inconclusive	na	nc	nc	Gamma	179	179
Selenium	23	21	159	<0.10	37	21	1.8	Inconclusive	na	nc	nc	Gamma	43	43
Uranium	23	23	1,080	1.0	239	104	2.3	Inconclusive	na	nc	nc	Gamma	223	223
Vanadium	23	23	198	25	39	53	0.7	Inconclusive	na	nc	nc	Non-parametric	89	89

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-4
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Ponds 3/3a[a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	15	15	8.1	2.7	1.4	5.3	0.25	Normal	na	nc	nc	Normal	**6.0**	**6.0**
Radium-226	16	16	875	1.4	226	102	2.2	Lognormal	na	nc	nc	Lognormal	**253**	**253**
Selenium	15	15	72	0.70	18	11	1.7	Inconclusive	na	nc	nc	Gamma	**21**	**21**
Uranium	15	15	3,970	1.9	1,052	437	2.4	Lognormal	na	nc	nc	Lognormal	**1,141**	**1,141**
Vanadium	15	15	118	19	25	46	0.54	Inconclusive	na	nc	nc	Gamma	**58**	**58**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-5
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sediment Pad [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	14	13	12	<0.25	2.9	2.9	1.0	Inconclusive	na	nc	nc	Gamma	4.5	4.5
Radium-226	14	14	236	0.50	64	61	1.1	Inconclusive	na	nc	nc	Gamma	109	109
Selenium	14	13	79	<0.10	24	22	1.1	Inconclusive	na	nc	nc	Gamma	43	43
Uranium	14	14	1,640	1.9	433	196	2.2	Lognormal	na	nc	nc	Lognormal	513	513
Vanadium	14	14	502	22	433	79	1.6	Inconclusive	na	nc	nc	Non-parametric	223	223

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-6
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #1 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	18	18	6.7	2.0	1.4	4.2	0.35	Normal	na	nc	nc	Normal	4.7	4.7
Radium-226	18	18	47	0.80	11	9.3	1.2	Inconclusive	na	nc	nc	Gamma	15	15
Selenium	18	18	19	0.20	4.5	2.6	1.7	Inconclusive	na	nc	nc	Gamma	4.5	4.5
Uranium	18	18	41	0.70	13	7.8	1.6	Lognormal	na	nc	nc	Lognormal	16	16
Vanadium	18	18	81	12	16	28	0.55	Inconclusive	na	nc	nc	Gamma	35	35

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-7
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #2 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	13	13	9.0	3.2	2.1	5.2	0.39	Inconclusive	na	nc	nc	Gamma	6.4	6.4
Radium-226	13	13	36	0.80	11	10	1.1	Inconclusive	na	nc	nc	Gamma	19	19
Selenium	13	12	6.3	<0.10	1.98	1.8	1.1	Inconclusive	na	nc	nc	Gamma	3.4	3.4
Uranium	13	13	41	0.70	13	10	1.3	Inconclusive	na	nc	nc	Gamma	20	20
Vanadium	13	13	54	12	12	36	0.32	Normal	na	nc	nc	Normal	42	42

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-8
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #3 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	13	13	5.3	1.5	1.2	3.5	0.34	Normal	na	nc	nc	Normal	**4.0**	**4.0**
Radium-226	14	14	123	1.0	27	17	1.60	Inconclusive	na	nc	nc	Non-parametric	**69**	**69**
Selenium	13	12	34	<0.10	11	8.8	1.29	Inconclusive	na	nc	nc	Gamma	**18**	**18**
Uranium	13	13	396	0.90	110	66	1.67	Inconclusive	na	nc	nc	Gamma	**185**	**185**
Vanadium	13	13	55	21	124	79	1.56	Inconclusive	na	nc	nc	Non-parametric	**223**	**55**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-9
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NEMSA [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	6	6	4.3	0.70	1.4	3.4	0.41	Inconclusive	na	nc	nc	Non-parametric	5.9	4.3
Radium-226	6	6	47	0.90	18	9.1	2.0	Inconclusive	na	nc	nc	Non-parametric	42	42
Selenium	6	5	19	<0.10	7.4	3.9	1.9	Lognormal	na	nc	nc	Lognormal	12	12
Uranium	6	6	80	0.90	31	16	2.0	Lognormal	na	nc	nc	Lognormal	75	75
Vanadium	6	6	42	18	7.6	30	0.26	Normal	na	nc	nc	Normal	36	36

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-10
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Boneyard [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.5	1.3	1.6	3.9	0.42	Normal	na	nc	nc	Normal	**5.5**	**5.5**
Radium-226	5	5	46	1.10	20	10	1.9	Normal	na	nc	nc	Non-parametric	**49**	**46**
Selenium	5	4	17	<0.10	7.3	3.7	2.0	Lognormal	na	nc	nc	Lognormal	**11**	**11**
Uranium	5	5	17	0.80	7.2	4.6	1.6	Lognormal	na	nc	nc	Lognormal	**12**	**12**
Vanadium	5	5	41	26	5.7	32	0.18	Normal	na	nc	nc	Normal	**37**	**37**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-11
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Vents 3 & 8 [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.1	2.3	1.1	3.3	0.33	Normal	na	nc	nc	Normal	4.4	4.4
Radium-226	5	5	137	1.4	59	31	1.9	Lognormal	na	nc	nc	Lognormal	92	92
Selenium	5	5	27	0.20	11	7.3	1.6	Lognormal	na	nc	nc	Lognormal	30	27
Uranium	5	5	358	1.1	157	77	2.0	Lognormal	na	nc	nc	Lognormal	224	224
Vanadium	5	5	55	9.0	17	30	0.57	Normal	na	nc	nc	Normal	47	47

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-12
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Trailer Park [a]
Northeast Church Rock Mine Site, New Mexico

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	4	6.1	<0.25	2.4	4.2	0.57	Normal	na	nc	nc	Normal	6.4	6.1
Radium-226	5	5	33	2.1	16	17	0.95	Normal	na	nc	nc	Normal	32	32
Selenium	5	5	101	0.80	43	30	1.4	Normal	na	nc	nc	Normal	71	71
Uranium	5	5	139	1.7	56	43	1.3	Normal	na	nc	nc	Normal	96	96
Vanadium	5	5	78	32	20	50	0.40	Normal	na	nc	nc	Normal	69	69

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-13
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NECR-1 [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^1	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	8	7.9	<0.25	2.8	3.7	0.75	Normal	na	nc	nc	Normal	5.2	5.2
Radium-226	11	11	67	1.9	22	25	0.89	Inconclusive	na	nc	nc	Gamma	46	46
Selenium	11	10	30	<0.10	10.0	9.8	1.01	Normal	na	nc	nc	Normal	15	15
Uranium	11	11	141	8.5	38	66	0.57	Normal	na	nc	nc	Normal	87	87
Vanadium	11	11	54	31	6	43	0.15	Normal	na	nc	nc	Normal	46	46

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-14
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NECR-2 [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	6	6	3.6	2.9	0.27	3.3	0.08	Normal	na	nc	nc	Normal	3.5	3.5
Radium-226	6	6	13	1.2	4.6	5.9	0.79	Normal	na	nc	nc	Normal	9.7	9.7
Selenium	6	6	4.0	0.80	1.2	1.7	0.72	Normal	na	nc	nc	Normal	2.7	2.7
Uranium	6	6	71	9.7	21	33	0.64	Normal	na	nc	nc	Normal	50	50
Vanadium	6	6	35	19	6.4	29	0.22	Normal	na	nc	nc	Normal	34	34

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-15
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Ponds 1 & 2[a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	11	9	6.4	1.4	1.4	4.6	0.29	Normal	na	nc	nc	Normal	5.3	5.3
Radium-226	11	11	438	0.7	167	90	1.9	Inconclusive	na	nc	nc	Gamma	352	352
Selenium	11	11	227	<0.25	77	40	1.9	Inconclusive	na	nc	nc	Gamma	168	168
Uranium	11	11	760	1.3	223	148	1.51	Inconclusive	na	nc	nc	Gamma	380	380
Vanadium	11	11	173	30	53	59	0.90	Inconclusive	na	nc	nc	Non-parametric	129	129

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-16
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Ponds 3/3a [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	11	6.7	2.9	1.3	4.8	0.27	Normal	na	nc	nc	Normal	5.5	5.5
Radium-226	11	11	16	0.70	5.6	4.0	1.4	Inconclusive	na	nc	nc	Non-parametric	11	11
Selenium	11	4	3.1	<0.10	1.1	0.8	1.5	Inconclusive	na	nc	nc	Non-parametric	2.3	2.3
Uranium	11	11	116	0.70	41	29	1.4	Inconclusive	na	nc	nc	Gamma	93	93
Vanadium	11	11	46	22	7	30	0.22	Normal	na	nc	nc	Normal	34	34

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-17
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sediment Pad[a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	9	9	5.5	0.60	1.9	2.7	0.71	Normal	na	nc	nc	Normal	3.8	3.8
Radium-226	9	9	165	2.8	55	70	0.78	Normal	na	nc	nc	Normal	104	104
Selenium	9	9	161	2.4	51	55	0.93	Normal	na	nc	nc	Normal	86	86
Uranium	9	9	357	19	111	161	0.69	Normal	na	nc	nc	Normal	230	230
Vanadium	9	9	75	29	19	53	0.35	Normal	na	nc	nc	Normal	65	65

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-18
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #1 [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	9	9	14	1.1	4.0	5.3	0.767	Normal	na	nc	nc	Normal	7.8	7.8
Radium-226	9	9	113	0.60	43	39	1.1	Inconclusive	na	nc	nc	Gamma	106	106
Selenium	9	9	34	0.40	12	11	1.1	Normal	na	nc	nc	Normal	18	18
Uranium	9	9	92	0.80	35	38	0.93	Normal	na	nc	nc	Normal	60	60
Vanadium	9	9	49	10	14	34	0.42	Normal	na	nc	nc	Normal	43	43

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-19
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #2 [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.3	3.1	0.83	3.9	0.22	Normal	na	nc	nc	Normal	4.7	4.7
Radium-226	5	5	3.8	1.1	1.0	2.2	0.46	Normal	na	nc	nc	Normal	3.2	3.2
Selenium	5	3	0.70	<0.10	0.26	0.36	0.72	Normal	na	nc	nc	Normal	0.61	0.61
Uranium	5	5	27	2.5	11	10	1.1	Normal	na	nc	nc	Normal	20	20
Vanadium	5	5	51	30	8.2	41	0.20	Normal	na	nc	nc	Normal	48	48

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-20
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #3 [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	7	7	6.9	0.80	2.1	3.9	0.54	Normal	na	nc	nc	Normal	5.4	5.4
Radium-226	7	7	84	1.2	29	28	1.0	Normal	na	nc	nc	Normal	49	49
Selenium	7	7	39	0.80	16	12	1.3	Inconclusive	na	nc	nc	Gamma	40	39
Uranium	7	7	488	21	156	163	0.96	Inconclusive	na	nc	nc	Gamma	356	356
Vanadium	7	7	63	29	12	42	0.28	Normal	na	nc	nc	Normal	51	51

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-21
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NEMSA [a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	12	11	4.9	<0.25	1.8	2.2	0.82	Inconclusive	na	nc	nc	Gamma	3.7	3.7
Radium-226	12	12	140	0.80	47	45	1.0	Normal	na	nc	nc	Normal	69	69
Selenium	12	9	132	<0.10	45	32	1.4	Inconclusive	na	nc	nc	Gamma	119	119
Uranium	12	12	390	1.4	123	125	0.98	Inconclusive	na	nc	nc	Gamma	242	242
Vanadium	12	12	47	25	7.6	35	0.22	Normal	na	nc	nc	Normal	39	39

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-22
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Boneyard[a]
Northeast Church Rock Mine Site, New Mexico

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	11	11	5.2	0.80	1.41	3.8	0.37	Normal	na	nc	nc	Normal	4.6	4.6
Radium-226	11	11	51	1.1	19	11	1.75	Inconclusive	na	nc	nc	Non-parametric	36	36
Selenium	11	8	33	<0.10	12	5.8	1.99	Lognormal	na	nc	nc	Lognormal	17	17
Uranium	11	11	240	0.80	93	46	2.01	Lognormal	na	nc	nc	Lognormal	124	124
Vanadium	11	11	38	22	5.3	29	0.18	Normal	na	nc	nc	Normal	32	32

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-23
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #1 [a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.7	2.3	1.3	3.4	0.40	Normal	na	nc	nc	Normal	**4.6**	**4.6**
Radium-226	5	5	1.5	0.90	0.24	1.2	0.20	Normal	na	nc	nc	Normal	**1.4**	**1.4**
Selenium	5	5	0.30	0.10	0.089	0.16	0.56	Normal	na	nc	nc	Normal	**0.25**	**0.25**
Uranium	5	5	1.4	0.80	0.22	1.0	0.21	Normal	na	nc	nc	Normal	**1.2**	**1.2**
Vanadium	5	5	32	22	4.2	28	0.15	Inconclusive	na	nc	nc	Normal	**30**	**30**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/g. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-24
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #2 [a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.9	3.6	0.89	4.6	0.19	Normal	na	nc	nc	Normal	5.5	5.5
Radium-226	5	5	0.90	0.90	na	na	na	na	na	nc	nc	na	na	0.90
Selenium	5	5	1.2	0.30	0.37	0.62	0.60	Normal	na	nc	nc	Normal	0.97	0.97
Uranium	5	5	1.0	0.70	0.14	0.90	0.16	Normal	na	nc	nc	Normal	1.0	1.0
Vanadium	5	5	38	33	1.48	36	0.041	Normal	na	nc	nc	Normal	37	37

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/g. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-25
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #3 [a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	6.4	3.3	1.3	4.2	0.31	Normal	na	nc	nc	Normal	5.5	5.5
Radium-226	5	5	1.2	0.90	0.11	1.1	0.10	Normal	na	nc	nc	Normal	1.2	1.2
Selenium	5	5	0.70	0.10	0.30	0.32	0.95	Inconclusive	na	nc	nc	Non-parametric	0.62	0.62
Uranium	5	5	1.4	0.70	0.26	1.0	0.25	Normal	na	nc	nc	Normal	1.3	1.3
Vanadium	5	5	43	29	5.6	35	0.16	Normal	na	nc	nc	Normal	40	40

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/g. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-26
Summary Statistics and Derived 95% UCLs for Residential Receptors
Post-Removal Surface Soil - Home Site #4[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	2	2	3.9	3.0	0.6	3.5	nc	na	na	nc	nc	na	nc	3.9
Radium-226	7	7	3.46	0.97	0.9	1.59	0.57	NOT NORMAL	na	nc	nc	LOGNORMAL	2.26	2.26
Selenium	2	1	0.8	0.8	0.49	0.45	nc	na	na	nc	nc	na	nc	0.8
Uranium	2	2	1.5	1.1	0.3	1.3	nc	na	na	nc	nc	na	nc	1.5
Vanadium	2	2	34	27	4.9	30	nc	na	na	nc	nc	na	nc	33.5

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/g. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-27
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #5 [a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	7.2	3.0	1.7	4.6	0.37	Normal	na	nc	nc	Normal	6.2	6.2
Radium-226	5	5	2.1	1.9	0.47	1.3	0.35	Normal	na	nc	nc	Normal	1.8	1.8
Selenium	5	5	1.2	0.70	0.19	0.92	0.21	Normal	na	nc	nc	Normal	1.1	1.1
Uranium	5	5	2.4	0.80	0.65	1.3	0.49	Normal	na	nc	nc	Normal	1.9	1.9
Vanadium	5	5	32	24	3.2	29	0.11	Normal	na	nc	nc	Normal	32	32

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/g. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-28
Summary Statistics and Derived 95% UCLs for Residential Receptors
Post-Removal Surface Soil - Home Site #6[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Radium-226	35	35	2.43	0.51	0.38	0.79	0.48	NOT NORMAL	na	nc	nc	NON-PARAMETRIC	**0.90**	**0.90**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] Results for radium-226 are presented in pCi/g. Post-removal confirmation samples were not analyzed for metals. Original metals results are presented in Appendix B. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-29
Summary Statistics and Derived 95% UCLs for Residential Receptors
Post-Removal Surface Soil - - Home Site #7[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Radium-226	49	49	1.58	0.55	0.16	0.74	0.21	NOT NORMAL	na	nc	nc	NON-PARAMETRIC	0.78	0.78

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] Results for radium-226 are presented in pCi/g. Post-removal confirmation samples were not analyzed for metals. Original metals results are presented in Appendix B. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-30
Summary Statistics and Derived 95% UCLs for Residential Receptor:
Post-Removal Surface Soil - Home Site #8[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Radium-226	40	40	1.81	0.54	0.24	0.84	0.29	NOT NORMAL	na	nc	nc	NON-PARAMETRIC	0.90	0.90

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] Results for radium-226 are presented in pCi/g. Post-removal confirmation samples were not analyzed for metals. Original metals results are presented in Appendix B. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E-31
Summary Statistics and Derived 95% UCLs for Residential Receptors
Post-Removal Surface Soil - Home Site #9[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Radium-226	39	39	1.04	0.54	0.12	0.80	0.15	NORMAL	na	nc	nc	NORMAL	0.84	0.84

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] Results for radium-226 are presented in pCi/g. Post-removal confirmation samples were not analyzed for metals. Original metals results are presented in Appendix B. Surface soil is 0.0 to 0.5 ft bgs.

[b] Based upon calculations performed using ProUCL v.3.

[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-32
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Background Data[a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC[b]	EPC[c]
Arsenic	25	25	10	2.0	2.0	3.7	0.54	Inconclusive	na	nc	nc	Non-Parametric	4.4	4.4
Radium-226	25	25	1.3	0.60	0.18	1.0	0.18	Normal	na	nc	nc	Normal	1.1	1.1
Selenium	25	25	0.70	0.10	0.21	0.35	0.59	Inconclusive	na	nc	nc	Non-Parametric	0.53	0.53
Uranium	25	25	1.8	0.80	0.23	1.1	0.20	Inconclusive	na	nc	nc	Non-Parametric	1.2	1.2
Vanadium	25	25	41	18	5.84	27	0.22	Normal	na	nc	nc	Normal	29	29

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-33
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Arroyo [a]
Northeast Church Rock Site

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Radium-226	15	15	26	9.7	4.80	17	0.29	Normal	na	nc	nc	Normal	19	19

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table D-34
Summary Statistics and Derived 95% UCLs for Residential Receptors
Subsurface Soil - Arroyo [a]
Northeast Church Rock Site

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	30	30	8.2	1.2	2.0	3.4	0.59	Inconclusive	na	nc	nc	Gamma	4.1	4.1
Radium-226	30	30	36	8.4	5.97	16	0.36	Inconclusive	na	nc	nc	Gamma	1.1	1.1
Selenium	30	29	14	0.10	3.68	5.4	0.68	Inconclusive	na	nc	nc	Gamma	6.9	6.9
Uranium	30	30	108	14	20	27	0.72	Normal	na	nc	nc	Normal	33	33
Vanadium	30	30	38	20	5.5	29	0.19	Normal	na	nc	nc	Normal	30	30

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.

[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Subsurface soil is >0.5 to 10 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

APPENDIX E

HUMAN HEALTH EXPOSURE POINT CALCULATIONS AND RISK ESTIMATES FOR HOME SITES

Table E.1
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NECR-1 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	47	44	15	<0.25	2.9	4.4	0.67	Inconclusive	na	nc	nc	Gamma	**5.2**	**5.2**
Molybdenum	47	4	214	11	32	8.8	3.6	Inconclusive	na	nc	nc	Non-parametric	**29**	**29**
Radium-226	48	48	93	1.2	27	29	0.91	Inconclusive	na	nc	nc	Gamma	**39**	**39**
Selenium	47	44	69	<0.10	17	14	1.3	Inconclusive	na	nc	nc	Gamma	**20**	**20**
Uranium	47	47	758	1.2	148	82	1.8	Inconclusive	na	nc	nc	Gamma	**117**	**117**
Vanadium	47	47	76	19	13	39	0.32	Normal	na	nc	nc	Normal	**42**	**42**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.2
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NECR-2 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	19	19	8.1	1.3	1.70	4.0	0.43	Normal	na	nc	nc	Normal	**4.6**	**4.6**
Radium-226	24	24	160	1.2	37	23	1.6	Inconclusive	na	nc	nc	Gamma	**39**	**39**
Selenium	19	15	27	<0.10	7.4	5.8	1.3	Inconclusive	na	nc	nc	Gamma	**11**	**11**
Uranium	19	19	370	1.5	85	40	2.1	Inconclusive	na	nc	nc	Gamma	**85**	**85**
Vanadium	19	19	67	16	12	35	0.34	Inconclusive	na	nc	nc	Gamma	**40**	**40**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.3
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Ponds 1 & 2 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	23	23	8.8	2.2	1.5	4.3	0 3	Inconclusive	na	nc	nc	Gamma	**4.9**	**4.9**
Radium-226	24	24	655	1.0	161	89	1.8	Inconclusive	na	nc	nc	Gamma	**179**	**179**
Selenium	23	21	159	<0.10	37	21	1.8	Inconclusive	na	nc	nc	Gamma	**43**	**43**
Uranium	23	23	1,080	1.0	239	104	2.3	Inconclusive	na	nc	nc	Gamma	**223**	**223**
Vanadium	23	23	198	25	39	53	0.7	Inconclusive	na	nc	nc	Non-parametric	**89**	**89**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.4
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Ponds 3/3a [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	15	15	8.1	2.7	1.4	5.3	0.25	Normal	na	nc	nc	Normal	**6.0**	**6.0**
Radium-226	16	16	875	1.4	226	102	2.2	Lognormal	na	nc	nc	Lognormal	**253**	**253**
Selenium	15	15	72	0.70	18	11	1.7	Inconclusive	na	nc	nc	Gamma	**21**	**21**
Uranium	15	15	3,970	1.9	1,052	437	2.4	Lognormal	na	nc	nc	Lognormal	**1,141**	**1,141**
Vanadium	15	15	118	19	25	46	0.54	Inconclusive	na	nc	nc	Gamma	**58**	**58**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.5
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sediment Pad [a]

Surface Soil COPC	Number of		Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots		Assumed Distribution	ProUCL EPC [b]	EPC [c]
	Samples	Detections								Normal r^2	Lognormal r^2			
Arsenic	14	13	12	<0.25	2.9	2.9	1.0	Inconclusve	na	nc	nc	Gamma	**4.5**	**4.5**
Radium-226	14	14	236	0.50	64	61	1.1	Inconclusve	na	nc	nc	Gamma	**109**	**109**
Selenium	14	13	79	<0.10	24	22	1.1	Inconclusve	na	nc	nc	Gamma	**43**	**43**
Uranium	14	14	1,640	1.9	433	196	2.2	Lognormal	na	nc	nc	Lognormal	**513**	**513**
Vanadium	14	14	502	22	433	79	1.6	Inconclusve	na	nc	nc	Non-parametric	**223**	**223**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.6
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #1 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	18	18	6.7	2.0	1.4	4.2	0.35	Normal	na	nc	nc	Normal	**4.7**	**4.7**
Radium-226	18	18	47	0.80	11	9.3	1.2	Inconclusive	na	nc	nc	Gamma	**15**	**15**
Selenium	18	18	19	0.20	4.5	2.6	1.7	Inconclusive	na	nc	nc	Gamma	**4.5**	**4.5**
Uranium	18	18	41	0.70	13	7.8	1.6	Lognormal	na	nc	nc	Lognormal	**16**	**16**
Vanadium	18	18	81	12	16	28	0.55	Inconclusive	na	nc	nc	Gamma	**35**	**35**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.7
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #2 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	13	13	9.0	3.2	2.1	5.2	0.39	Inconclusive	na	nc	nc	Gamma	6.4	6.4
Radium-226	13	13	36	0.80	11	10	1.1	Inconclusive	na	nc	nc	Gamma	19	19
Selenium	13	12	6.3	<0.10	1.98	1.8	1.1	Inconclusive	na	nc	nc	Gamma	3.4	3.4
Uranium	13	13	41	0.70	13	10	1.3	Inconclusive	na	nc	nc	Gamma	20	20
Vanadium	13	13	54	12	12	36	0.32	Normal	na	nc	nc	Normal	42	42

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.8
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Sandfill #3 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	13	13	5.3	1.5	1.2	3.5	0.34	Normal	na	nc	nc	Normal	**4.0**	**4.0**
Radium-226	14	14	123	1.0	27	17	1.60	Inconclusive	na	nc	nc	Non-parametric	**69**	**69**
Selenium	13	12	34	<0.10	11	8.8	1.29	Inconclusive	na	nc	nc	Gamma	**18**	**18**
Uranium	13	13	396	0.90	110	66	1.67	Inconclusive	na	nc	nc	Gamma	**185**	**185**
Vanadium	13	13	55	21	124	79	1.56	Inconclusive	na	nc	nc	Non-parametric	**223**	**55**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.9
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - NEMSA [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	6	6	4.3	0.70	1.4	3.4	0.41	Inconclusive	na	nc	nc	Non-parametric	5.9	4.3
Radium-226	6	6	47	0.90	18	9.1	2.0	Inconclusive	na	nc	nc	Non-parametric	42	42
Selenium	6	5	19	<0.10	7.4	3.9	1.9	Lognormal	na	nc	nc	Lognormal	12	12
Uranium	6	6	80	0.90	31	16	2.0	Lognormal	na	nc	nc	Lognormal	75	75
Vanadium	6	6	42	18	7.6	30	0.26	Normal	na	nc	nc	Normal	36	36

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.10
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Boneyard [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.5	1.3	1.6	3.9	0.42	Normal	na	nc	nc	Normal	**5.5**	**5.5**
Radium-226	5	5	46	1.10	20	10	1.9	Normal	na	nc	nc	Non-parametric	**49**	**46**
Selenium	5	4	17	<0.10	7.3	3.7	2.0	Lognormal	na	nc	nc	Lognormal	**11**	**11**
Uranium	5	5	17	0.80	7.2	4.6	1.6	Lognormal	na	nc	nc	Lognormal	**12**	**12**
Vanadium	5	5	41	26	5.7	32	0.18	Normal	na	nc	nc	Normal	**37**	**37**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.11
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Vents 3 & 8 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.1	2.3	1.1	3.3	0.33	Normal	na	nc	nc	Normal	4.4	4.4
Radium-226	5	5	137	1.4	59	31	1.9	Lognormal	na	nc	nc	Lognormal	92	92
Selenium	5	5	27	0.20	11	7.3	1.6	Lognormal	na	nc	nc	Lognormal	30	27
Uranium	5	5	358	1.1	157	77	2.0	Lognormal	na	nc	nc	Lognormal	224	224
Vanadium	5	5	55	9.0	17	30	0.57	Normal	na	nc	nc	Normal	47	47

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.12
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Surface Soil - Trailer Park [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	4	6.1	<0.25	2.4	4.2	0.57	Normal	na	nc	nc	Normal	6.4	6.1
Radium-226	5	5	33	2.1	16	17	0.95	Normal	na	nc	nc	Normal	32	32
Selenium	5	5	101	0.80	43	30	1.4	Normal	na	nc	nc	Normal	71	71
Uranium	5	5	139	1.7	56	43	1.3	Normal	na	nc	nc	Normal	96	96
Vanadium	5	5	78	32	20	50	0.40	Normal	na	nc	nc	Normal	69	69

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.13
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NECR-1 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	8	7.9	<0.25	2.8	3.7	0.75	Normal	na	nc	nc	Normal	**5.2**	**5.2**
Radium-226	11	11	67	1.9	22	25	0.89	Inconclusive	na	nc	nc	Gamma	**46**	**46**
Selenium	11	10	30	<0.10	10.0	9.8	1.01	Normal	na	nc	nc	Normal	**15**	**15**
Uranium	11	11	141	8.5	38	66	0.57	Normal	na	nc	nc	Normal	**87**	**87**
Vanadium	11	11	54	31	6	43	0.15	Normal	na	nc	nc	Normal	**46**	**46**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.14
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NECR-2 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	6	6	3.6	2.9	0.27	3.3	0.08	Normal	na	nc	nc	Normal	**3.5**	**3.5**
Radium-226	6	6	13	1.2	4.6	5.9	0.79	Normal	na	nc	nc	Normal	**9.7**	**9.7**
Selenium	6	6	4.0	0.60	1.2	1.7	0.72	Normal	na	nc	nc	Normal	**2.7**	**2.7**
Uranium	6	6	71	9.7	21	33	0.64	Normal	na	nc	nc	Normal	**50**	**50**
Vanadium	6	6	35	19	6.4	29	0.22	Normal	na	nc	nc	Normal	**34**	**34**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.15
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Ponds 1 & 2 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	9	6.4	1.4	1.4	4.6	0.29	Normal	na	nc	nc	Normal	**5.3**	**5.3**
Radium-226	11	11	438	0.7	167	90	1.9	Inconclusive	na	nc	nc	Gamma	**352**	**352**
Selenium	11	11	227	<0.25	77	40	1.9	Inconclusive	na	nc	nc	Gamma	**168**	**168**
Uranium	11	11	760	1.3	223	148	1.51	Inconclusive	na	nc	nc	Gamma	**380**	**380**
Vanadium	11	11	173	30	53	59	0.90	Inconclusive	na	nc	nc	Non-parametric	**129**	**129**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.16
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Ponds 3/3a [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	11	6.7	2.9	1.3	4.8	0.27	Normal	na	nc	nc	Normal	5.5	5.5
Radium-226	11	11	16	0.70	5.6	4.0	1.4	Inconclusive	na	nc	nc	Non-parametric	11	11
Selenium	11	4	3.1	<0.10	1.1	0.8	1.5	Inconclusive	na	nc	nc	Non-parametric	2.3	2.3
Uranium	11	11	116	0.70	41	29	1.4	Inconclusive	na	nc	nc	Gamma	93	93
Vanadium	11	11	46	22	7	30	0.22	Normal	na	nc	nc	Normal	34	34

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.17
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sediment Pad [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	9	9	5.5	0.60	1.9	2.7	0.71	Normal	na	nc	nc	Normal	**3.8**	**3.8**
Radium-226	9	9	165	2.8	55	70	0.78	Normal	na	nc	nc	Normal	**104**	**104**
Selenium	9	9	161	2.4	51	55	0.93	Normal	na	nc	nc	Normal	**86**	**86**
Uranium	9	9	357	19	111	161	0.69	Normal	na	nc	nc	Normal	**230**	**230**
Vanadium	9	9	75	29	19	53	0.35	Normal	na	nc	nc	Normal	**65**	**65**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.18
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #1 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	9	9	14	1.1	4.0	5.3	0.767	Normal	na	nc	nc	Normal	**7.8**	**7.8**
Radium-226	9	9	113	0.60	43	39	1.1	Inconclusive	na	nc	nc	Gamma	**106**	**106**
Selenium	9	9	34	0.40	12	11	1.1	Normal	na	nc	nc	Normal	**18**	**18**
Uranium	9	9	92	0.80	35	38	0.93	Normal	na	nc	nc	Normal	**60**	**60**
Vanadium	9	9	49	10	14	34	0.42	Normal	na	nc	nc	Normal	**43**	**43**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.19
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #2 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.3	3.1	0.83	3.9	0.22	Normal	na	nc	nc	Normal	**4.7**	**4.7**
Radium-226	5	5	3.8	1.1	1.0	2.2	0.46	Normal	na	nc	nc	Normal	**3.2**	**3.2**
Selenium	5	3	0.70	<0.10	0.26	0.36	0.72	Normal	na	nc	nc	Normal	**0.61**	**0.61**
Uranium	5	5	27	2.5	11	10	1.1	Normal	na	nc	nc	Normal	**20**	**20**
Vanadium	5	5	51	30	8.2	41	0.20	Normal	na	nc	nc	Normal	**48**	**48**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.20
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Sandfill #3 [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	7	7	6.9	0.80	2.1	3.9	0.54	Normal	na	nc	nc	Normal	5.4	5.4
Radium-226	7	7	84	1.2	29	28	1.0	Normal	na	nc	nc	Normal	49	49
Selenium	7	7	39	0.80	16	12	1.3	Inconclusive	na	nc	nc	Gamma	40	39
Uranium	7	7	488	21	156	163	0.96	Inconclusive	na	nc	nc	Gamma	356	356
Vanadium	7	7	63	29	12	42	0.28	Normal	na	nc	nc	Normal	51	51

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.21
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - NEMSA [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	12	11	4.9	<0.25	1.8	2.2	0.82	Inconclusive	na	nc	nc	Gamma	**3.7**	**3.7**
Radium-226	12	12	140	0.80	47	45	1.0	Normal	na	nc	nc	Normal	**69**	**69**
Selenium	12	9	132	<0.10	45	32	1.4	Inconclusive	na	nc	nc	Gamma	**119**	**119**
Uranium	12	12	390	1.4	123	125	0.98	Inconclusive	na	nc	nc	Gamma	**242**	**242**
Vanadium	12	12	47	25	7.6	35	0.22	Normal	na	nc	nc	Normal	**39**	**39**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.22
Summary Statistics and Derived 95% UCLs for Onsite Receptors
Subsurface Soil - Boneyard [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	11	11	5.2	0.80	1.41	3.8	0.37	Normal	na	nc	nc	Normal	4.6	4.6
Radium-226	11	11	51	1.1	19	11	1.75	Inconclusive	na	nc	nc	Non-parametric	36	36
Selenium	11	8	33	<0.10	12	5.8	1.99	Lognormal	na	nc	nc	Lognormal	17	17
Uranium	11	11	240	0.80	93	46	2.01	Lognormal	na	nc	nc	Lognormal	124	124
Vanadium	11	11	38	22	5.3	29	0.18	Normal	na	nc	nc	Normal	32	32

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.23
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #1 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.7	2.3	1.3	3.4	0.40	Normal	na	nc	nc	Normal	**4.6**	**4.6**
Radium-226	5	5	1.5	0.90	0.24	1.2	0.20	Normal	na	nc	nc	Normal	**1.4**	**1.4**
Selenium	5	5	0.30	0.10	0.089	0.16	0.56	Normal	na	nc	nc	Normal	**0.25**	**0.25**
Uranium	5	5	1.4	0.80	0.22	1.0	0.21	Normal	na	nc	nc	Normal	**1.2**	**1.2**
Vanadium	5	5	32	22	4.2	28	0.15	Inconclusive	na	nc	nc	Normal	**30**	**30**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.24
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #2 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.9	3.6	0.89	4.6	0.19	Normal	na	nc	nc	Normal	**5.5**	**5.5**
Radium-226	5	5	0.90	0.90	na	na	na	na	na	nc	nc	na	na	**0.90**
Selenium	5	5	1.2	0.30	0.37	0.62	0.60	Normal	na	nc	nc	Normal	**0.97**	**0.97**
Uranium	5	5	1.0	0.70	0.14	0.90	0.16	Normal	na	nc	nc	Normal	**1.0**	**1.0**
Vanadium	5	5	38	33	1.48	36	0.041	Normal	na	nc	nc	Normal	**37**	**37**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.25
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #3 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	6.4	3.3	1.3	4.2	0.31	Normal	na	nc	nc	Normal	**5.5**	**5.5**
Radium-226	5	5	1.2	0.90	0.11	1.1	0.10	Normal	na	nc	nc	Normal	**1.2**	**1.2**
Selenium	5	5	0.70	0.10	0.30	0.32	0.95	Inconclusive	na	nc	nc	Non-parametric	**0.62**	**0.62**
Uranium	5	5	1.4	0.70	0.26	1.0	0.25	Normal	na	nc	nc	Normal	**1.3**	**1.3**
Vanadium	5	5	43	29	5.6	35	0.16	Normal	na	nc	nc	Normal	**40**	**40**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.26
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #4 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	6.0	3.0	1.2	4.1	0.29	Normal	na	nc	nc	Normal	5.2	5.2
Radium-226	5	5	3.6	1.3	1.0	2.3	0.42	Normal	na	nc	nc	Normal	3.2	3.2
Selenium	5	5	1.6	0.10	0.55	0.86	0.64	Normal	na	nc	nc	Normal	1.4	1.4
Uranium	5	5	3.5	1.1	1.0	2.1	0.49	Normal	na	nc	nc	Normal	3.0	3.0
Vanadium	5	5	34	29	3.0	29	0.11	Normal	na	nc	nc	Normal	31	31

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.27
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #5 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	7.2	3.0	1.7	4.6	0.37	Normal	na	nc	nc	Normal	**6.2**	**6.2**
Radium-226	5	5	2.1	1.9	0.47	1.3	0.35	Normal	na	nc	nc	Normal	**1.8**	**1.8**
Selenium	5	5	1.2	0.70	0.19	0.92	0.21	Normal	na	nc	nc	Normal	**1.1**	**1.1**
Uranium	5	5	2.4	0.80	0.65	1.3	0.49	Normal	na	nc	nc	Normal	**1.9**	**1.9**
Vanadium	5	5	32	24	3.2	29	0.11	Normal	na	nc	nc	Normal	**32**	**32**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.28
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #6 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	4.5	4.2	0.15	4.4	0.035	Normal	na	nc	nc	Normal	**4.5**	**4.5**
Radium-226	5	5	15	5.6	3.9	9.4	0.41	Normal	na	nc	nc	Normal	**13**	**13**
Selenium	5	5	2.7	1.5	0.45	2.0	0.23	Normal	na	nc	nc	Normal	**2.4**	**2.4**
Uranium	5	5	13	5.7	2.6	9.8	0.27	Normal	na	nc	nc	Normal	**12**	**12**
Vanadium	5	5	38	34	1.8	36	0.051	Normal	na	nc	nc	Normal	**38**	**38**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.29
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #7 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.5	3.4	0.82	4.7	0.18	Normal	na	nc	nc	Normal	**5.5**	**5.5**
Radium-226	5	5	30	3.4	11	11	0.96	Inconclusive	na	nc	nc	Inconclusive	**30**	**30**
Selenium	5	5	6.3	1.2	2.17	2.5	0.88	Inconclusive	na	nc	nc	Gamma	**5.9**	**5.9**
Uranium	5	5	21	2.3	6.8	10	0.68	Normal	na	nc	nc	Normal	**17**	**17**
Vanadium	5	5	50	28	8.9	37	0.24	Normal	na	nc	nc	Normal	**46**	**46**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.30
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #8 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.3	2.7	1.0	3.7	0.28	Normal	na	nc	nc	Normal	**4.7**	**4.7**
Radium-226	5	5	5.6	2.3	1.3	3.4	0.39	Normal	na	nc	nc	Normal	**4.6**	**4.6**
Selenium	5	5	1.2	0.10	0.43	0.50	0.86	Normal	na	nc	nc	Normal	**0.91**	**0.91**
Uranium	5	5	6.4	2.1	1.8	4.3	0.42	Normal	na	nc	nc	Normal	**6.0**	**6.0**
Vanadium	5	5	39	31	2.9	34	0.084	Normal	na	nc	nc	Normal	**37**	**37**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.31
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Home Site #9 [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	5	5	5.0	2.8	0.85	4.0	0.21	Normal	na	nc	nc	Normal	4.8	4.8
Radium-226	5	5	6.7	2.6	1.7	4.3	0.40	Normal	na	nc	nc	Normal	5.9	5.9
Selenium	5	5	1.8	0.40	0.53	1.0	0.52	Normal	na	nc	nc	Normal	1.5	1.5
Uranium	5	5	19	3.3	5.9	10	0.59	Normal	na	nc	nc	Normal	16	16
Vanadium	5	5	33	26	2.6	29	0.089	Normal	na	nc	nc	Normal	32	32

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.32
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Background Data [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	25	25	10	2.0	2.0	3.7	0.54	Inconclusive	na	nc	nc	Non-Parametric	**4.4**	**4.4**
Radium-226	25	25	1.3	0.60	0.18	1.0	0.18	Normal	na	nc	nc	Normal	**1.1**	**1.1**
Selenium	25	25	0.70	0.10	0.21	0.35	0.59	Inconclusive	na	nc	nc	Non-Parametric	**0.53**	**0.53**
Uranium	25	25	1.8	0.80	0.23	1.1	0.20	Inconclusive	na	nc	nc	Non-Parametric	**1.2**	**1.2**
Vanadium	25	25	41	18	5.84	27	0.22	Normal	na	nc	nc	Normal	**29**	**29**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.33
Summary Statistics and Derived 95% UCLs for Residential Receptors
Surface Soil - Arroyo [a]

Surface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Radium-226	15	15	26	9.7	4.80	17	0.29	Normal	na	nc	nc	Normal	19	19

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Surface soil is 0.0 to 0.5 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

Table E.34
Summary Statistics and Derived 95% UCLs for Residential Receptors
Subsurface Soil - Arroyo [a]

Subsurface Soil COPC	Number of Samples	Number of Detections	Max Detect	Min Result	Stdev	Mean	CV	Shapiro-Wilkes Test	D'Agostino's Test	Z-score Plots Normal r^2	Z-score Plots Lognormal r^2	Assumed Distribution	ProUCL EPC [b]	EPC [c]
Arsenic	30	30	8.2	1.2	2.0	3.4	0.59	Inconclusive	na	nc	nc	Gamma	**4.1**	**4.1**
Radium-226	30	30	36	8.4	5.97	16	0.36	Inconclusive	na	nc	nc	Gamma	**1.1**	**1.1**
Selenium	30	29	14	0.10	3.68	5.4	0.68	Inconclusive	na	nc	nc	Gamma	**6.9**	**6.9**
Uranium	30	30	108	14	20	27	0.72	Normal	na	nc	nc	Normal	**33**	**33**
Vanadium	30	30	38	20	5.5	29	0.19	Normal	na	nc	nc	Normal	**30**	**30**

Notes:
95% UCL - 95 percent upper confidence limit (UCL) on the mean concentration.
COPC - Chemical of potential concern.
CV - Coefficient of variation.
EPC - Exposure point concentration.
Lognormal r^2 - Correlation coefficient for the lognormal plot.
mg/kg - Milligrams per kilogram.
na - Not applicable.
nc - Not calculated.
Normal r^2 - Correlation coefficient for the normal plot.
Stdev - Standard deviation.
[a] All results in mg/kg except for radium-226 which are presented in pCi/L. Subsurface soil is >0.5 to 10 ft bgs.
[b] Based upon calculations performed using ProUCL v.3.
[c] The EPC is based on either the 95% UCL or the maximum concentration, which ever is lower.

TABLE E-35
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #4									
Arsenic	5.2	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	2E-06	0.03
Radium-226	3.2	**3E-06**	NA	2E-09	NA	**3E-06**	0	**2E-06**	0
Selenium	1.4	NA	0.004	NA	NA	0E+00	0.004	0E+00	0.002
Uranium	3.0	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.04
Vanadium	31	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.005
Cumulative ILCR/HQ:		**2E-05**	0.3	2E-08	NA	**2E-05**	0.3	**4E-06**	0.08
BACKGROUND									
Arsenic	4.4	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	7E-10	NA	1E-06	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	0E+00	0.05	NA	NA
Cumulative ILCR/HQ:		**1E-05**	0.3	1E-08	NA	**1E-05**	0.3	NA	NA
USEPA Risk Range:						10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.

TABLE E-36
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

Location	Soil Concentration EPC[b]	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Ingestion of Eggs		Inhalation of Fugitive Dust		External Exposure		Combined Pathway Risk and Hazard Estimates: Total Cancer Risk and Hazard		Combined Pathway Risk and Hazard Estimates: Incremental Cancer Risk and Hazard [c]	
		ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #4																	
Arsenic	5.2	1E-05	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	1E-05	0.2	2E-06	0.03
Radium-226	3.2	3E-06	NA	5E-05	NA	1E-04	NA	3E-06	NA	2E-09	NA	2E-04	NA	4E-04	0	3E-04	0
Selenium	1.4	NA	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.004	0E+00	0.002
Uranium	3.0	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.04
Vanadium	31	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.005
Cumulative ILCR/HQ:		2E-05	0.3	5E-05	NA	1E-04	NA	3E-06	NA	2E-08	NA	2E-04	NA	4E-04	0.3	3E-04	0.08

TABLE E-36
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

														Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Ingestion of Eggs		Inhalation of Fugitive Dust		External Exposure		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
BACKGROUND																	
Arsenic	4.4	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	**2E-05**	NA	**4E-05**	NA	9E-07	NA	7E-10	NA	**8E-05**	NA	**1E-04**	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.05	NA	NA
	Cumulative ILCR/HQ:	**1E-05**	0.3	**2E-05**	NA	**4E-05**	NA	9E-07	NA	1E-08	NA	**8E-05**	NA	**2E-04**	0.3	NA	NA
													USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium 226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4 or HQ of 1.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
NA - Not applicable.
USEPA - U.S. Environmental Protection Agency

TABLE E-37
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	*Ingestion of Soil*		*Inhalation of Fugitive Dust*		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #6									
Arsenic	4.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	1E-07	0.003
Radium-226	13	1E-05	NA	8E-09	NA	**1E-05**	0	**1E-05**	0
Selenium	2.4	NA	0.006	NA	NA	0E+00	0.006	0E+00	0.005
Uranium	12	NA	0.3	NA	NA	0E+00	0.3	0E+00	0.2
Vanadium	38	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**2E-05**	0.5	2E-08	NA	**2E-05**	0.5	1E-05	0.3
HOME SITE #7									
Arsenic	5.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	30	3E-05	NA	2E-08	NA	**3E-05**	0	**3E-05**	0
Selenium	5.9	NA	0.02	NA	NA	0E+00	0.02	0E+00	0.01
Uranium	17	NA	0.4	NA	NA	0E+00	0.4	0E+00	0.3
Vanadium	46	NA	0.08	NA	NA	0E+00	0.08	0E+00	0.03
Cumulative ILCR/HQ:		**4E-05**	0.7	3E-08	NA	**4E-05**	0.7	**3E-05**	0.4
HOME SITE #8									
Arsenic	4.7	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	6E-07	0.01
Radium-226	4.6	**4E-06**	NA	3E-09	NA	**4E-06**	0	**3E-06**	0
Selenium	0.91	NA	0.002	NA	NA	0E+00	0.002	0E+00	0.001
Uranium	6.0	NA	0.1	NA	NA	0E+00	0.1	0E+00	0.1
Vanadium	37	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.01
Cumulative ILCR/HQ:		**2E-05**	0.4	2E-08	NA	**2E-05**	0.4	**4E-06**	0.1
HOME SITE #9									
Arsenic	4.8	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	9E-07	0.02
Radium-226	5.9	**5E-06**	NA	4E-09	NA	**5E-06**	0	**4E-06**	0
Selenium	1.5	NA	0.004	NA	NA	0E+00	0.004	0E+00	0.003
Uranium	16	NA	0.3	NA	NA	0E+00	0.3	0E+00	0.3
Vanadium	32	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.006
Cumulative ILCR/HQ:		**2E-05**	0.6	2E-08	NA	**2E-05**	0.6	**5E-06**	0.3

TABLE E-37
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
BACKGROUND									
Arsenic	4.4	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	7E-10	NA	1E-06	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	0E+00	0.05	NA	NA
	Cumulative ILCR/HQ:	**1E-05**	0.3	1E-08	NA	**1E-05**	0.3	NA	NA
					USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA. 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.

TABLE E-38
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Pre-Removal Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates[a]												Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Ingestion of Eggs		Inhalation of Fugitive Dust		External Exposure		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard[c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #6																	
Arsenic	4.5	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	1E-07	0.003
Radium-226	13	**1E-05**	NA	**2E-04**	NA	**5E-04**	NA	**1E-05**	NA	8E-09	NA	**1E-03**	NA	**2E-03**	0	**2E-03**	0
Selenium	2.4	NA	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.006	0E+00	0.005
Uranium	12	NA	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.3	0E+00	0.2
Vanadium	38	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.02
	Cumulative ILCR/HQ:	**2E-05**	0.5	**2E-04**	NA	**5E-04**	NA	**1E-05**	NA	2E-08	NA	**1E-03**	NA	**2E-03**	0.5	**2E-03**	0.3
HOME SITE #7																	
Arsenic	5.5	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	30	**3E-05**	NA	**4E-04**	NA	**1E-03**	NA	**2E-05**	NA	2E-08	NA	**2E-03**	NA	**4E-03**	0	**4E-03**	0
Selenium	5.9	NA	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.02	0E+00	0.01
Uranium	17	NA	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.4	0E+00	0.3
Vanadium	46	NA	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.08	0E+00	0.03
	Cumulative ILCR/HQ:	**4E-05**	0.7	**4E-04**	NA	**1E-03**	NA	**2E-05**	NA	3E-08	NA	**2E-03**	NA	**4E-03**	0.7	**4E-03**	0.4
HOME SITE #8																	
Arsenic	4.7	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	6E-07	0.01
Radium-226	4.6	**4E-06**	NA	**7E-05**	NA	**2E-04**	NA	**4E-06**	NA	3E-09	NA	**4E-04**	NA	**6E-04**	0	**5E-04**	0
Selenium	0.9	NA	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.002	0E+00	0.002
Uranium	6.0	NA	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.1	0E+00	0.1
Vanadium	37	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.01
	Cumulative ILCR/HQ:	**2E-05**	0.4	**7E-05**	NA	**2E-04**	NA	**4E-06**	NA	2E-08	NA	**4E-04**	NA	**6E-04**	0.4	**5E-04**	0.1
HOME SITE #9																	
Arsenic	4.8	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	9E-07	0.02
Radium-226	5.9	**5E-06**	NA	**9E-05**	NA	**2E-04**	NA	**5E-06**	NA	4E-09	NA	**5E-04**	NA	**8E-04**	0	**6E-04**	0
Selenium	1.5	NA	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.004	0E+00	0.003
Uranium	16	NA	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.3	0E+00	0.3
Vanadium	32	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.006
	Cumulative ILCR/HQ:	**2E-05**	0.6	**9E-05**	NA	**2E-04**	NA	**5E-06**	NA	2E-08	NA	**5E-04**	NA	**8E-04**	0.6	**6E-04**	0.3
BACKGROUND																	
Arsenic	4.4	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	**2E-05**	NA	**4E-05**	NA	9E-07	NA	7E-10	NA	**8E-05**	NA	**4E-04**	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.05	NA	NA
	Cumulative ILCR/HQ:	**1E-05**	0.3	**2E-05**	NA	**4E-05**	NA	9E-07	NA	1E-08	NA	**8E-05**	NA	**2E-04**	0.3	NA	NA
													USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4 or HQ of 1.

HQ - Hazard quotient
ILCR - Incremental lifetime cancer risk.

NA - Not applicable.
USEPA - U.S. Environmental Protection Agency

TABLE E-39
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #1									
Arsenic	4.6	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	5E-07	0.009
Radium-226	1.4	1E-06	NA	9E-10	NA	1E-06	0	3E-07	0
Selenium	0.25	NA	0.0006	NA	NA	0E+00	0.0006	0E+00	*-0.0007*
Uranium	1.2	NA	0.03	NA	NA	0E+00	0.03	0E+00	0.001
Vanadium	30	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.003
Cumulative ILCR/HQ:		**1E-05**	0.3	1E-08	NA	**1E-05**	0.3	8E-07	0.01
HOME SITE #2									
Arsenic	5.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	2E-06	0.04
Radium-226	0.90	8E-07	NA	6E-10	NA	8E-07	0	***-2E-07***	0
Selenium	0.97	NA	0.002	NA	NA	0E+00	0.002	0E+00	0.001
Uranium	1.0	NA	0.02	NA	NA	0E+00	0.02	0E+00	*-0.004*
Vanadium	37	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**1E-05**	0.3	2E-08	NA	**1E-05**	0.3	**2E-06**	0.06
HOME SITE #3									
Arsenic	5.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	1.2	**1E-06**	NA	7E-10	NA	1E-06	0	**8E-08**	0
Selenium	0.62	NA	0.002	NA	NA	0E+00	0.002	0E+00	0.0002
Uranium	1.3	NA	0.03	NA	NA	0E+00	0.03	0E+00	0.001
Vanadium	40	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**1E-05**	0.3	2E-08	NA	**1E-05**	0.3	**3E-06**	0.07
HOME SITE #4									
Arsenic	5.2	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	2E-06	0.03
Radium-226	3.2	**3E-06**	NA	2E-09	NA	**3E-06**	0	**2E-06**	0
Selenium	1.4	NA	0.004	NA	NA	0E+00	0.004	0E+00	0.002
Uranium	3.0	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.04
Vanadium	31	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.005
Cumulative ILCR/HQ:		**2E-05**	0.3	2E-08	NA	**2E-05**	0.3	**4E-06**	0.08

TABLE E-39
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #5									
Arsenic	6.2	**1E-05**	0.3	2E-08	NA	**1E-05**	0.3	4E-06	0.08
Radium-226	1.8	**2E-06**	NA	1E-09	NA	**2E-06**	0	6E-07	0
Selenium	1.1	NA	0.003	NA	NA	0E+00	0.003	0E+00	0.001
Uranium	1.9	NA	0.04	NA	NA	0E+00	0.04	0E+00	0.02
Vanadium	32	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.006
Cumulative ILCR/HQ:		**2E-05**	0.4	2E-08	NA	**2E-05**	0.4	**5E-06**	0.1
BACKGROUND									
Arsenic	4.4	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	7E-10	NA	1E-06	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	0E+00	0.05	NA	NA
Cumulative ILCR/HQ:		**1E-05**	0.3	1E-08	NA	**1E-05**	0.3	NA	NA
USEPA Risk Range:						10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.

TABLE E-40
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

												Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Inhalation of Fugitive Dust		External Exposure		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #1															
Arsenic	4.6	**1E-05**	0.2	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	5E-07	0.009
Radium-226	1.4	1E-06	NA	**2E-05**	NA	**5E-05**	NA	9E-10	NA	**1E-04**	NA	**2E-04**	0	**4E-05**	0
Selenium	0.25	NA	0.0006	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.0006	0E+00	*-0.0007*
Uranium	1.2	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	0E+00	0.001
Vanadium	30	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.003
Cumulative ILCR/HQ:		**1E-05**	0.3	**2E-05**	NA	**5E-05**	NA	1E-08	NA	**1E-04**	NA	**2E-04**	0.3	**4E-05**	0.01
HOME SITE #2															
Arsenic	5.5	**1E-05**	0.2	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	0.90	8E-07	NA	**1E-05**	NA	**3E-05**	NA	6E-10	NA	**7E-05**	NA	**1E-04**	0	*3E-05*	0
Selenium	0.97	NA	0.002	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.002	0E+00	0.001
Uranium	1.0	NA	0.02	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.02	0E+00	*-0.004*
Vanadium	37	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**1E-05**	0.3	**1E-05**	NA	**3E-05**	NA	2E-08	NA	**7E-05**	NA	**1E-04**	0.3	*-2E-05*	0.06
HOME SITE #3															
Arsenic	5.5	**1E-05**	0.2	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	1.2	1E-06	NA	**2E-05**	NA	**4E-05**	NA	7E-10	NA	**9E-05**	NA	**2E-04**	0	**1E-05**	0
Selenium	0.62	NA	0.002	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.002	0E+00	0.0002
Uranium	1.3	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	0E+00	0.001
Vanadium	40	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**1E-05**	0.3	**2E-05**	NA	**4E-05**	NA	2E-08	NA	**9E-05**	NA	**2E-04**	0.3	**1E-05**	0.07
HOME SITE #4															
Arsenic	5.2	**1E-05**	0.2	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	**2E-06**	0.03
Radium-226	3.2	**3E-06**	NA	**5E-05**	NA	**1E-04**	NA	2E-09	NA	**2E-04**	NA	**4E-04**	0	**3E-04**	0
Selenium	1.4	NA	0.004	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.004	0E+00	0.002
Uranium	3.0	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.04
Vanadium	31	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.0025
Cumulative ILCR/HQ:		**2E-05**	0.3	**5E-05**	NA	**1E-04**	NA	2E-08	NA	**2E-04**	NA	**4E-04**	0.3	**3E-04**	0.08
HOME SITE #5															
Arsenic	6.2	**1E-05**	0.3	NA	NA	NA	NA	2E-08	NA	NA	NA	**1E-05**	0.3	**4E-06**	0.08
Radium-226	1.8	**2E-06**	NA	**3E-05**	NA	**6E-05**	NA	1E-09	NA	**1E-04**	NA	**2E-04**	0	**9E-05**	0
Selenium	1.1	NA	0.003	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.003	0E+00	0.001
Uranium	1.9	NA	0.04	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.04	0E+00	0.02
Vanadium	32	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.006
Cumulative ILCR/HQ:		**2E-05**	0.4	**3E-05**	NA	**6E-05**	NA	2E-08	NA	**1E-04**	NA	**2E-04**	0.4	**9E-05**	0.1

TABLE E-40
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - WESTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

												Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Inhalation of Fugitive Dust		External Exposure		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
BACKGROUND															
Arsenic	4.4	**1E-05**	0.2	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	**2E-05**	NA	**4E-05**	NA	7E-10	NA	**8E-05**	NA	**1E-04**	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.05	NA	NA
	Cumulative ILCR/HQ:	**1E-05**	0.3	**2E-05**	NA	**4E-05**	NA	1E-08	NA	**8E-05**	NA	**2E-04**	0.3	NA	NA
											USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides. Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4 or HQ of 1

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
NA - Not applicable.
USEPA - U. S. Environmental Protection Agency

TABLE E-41
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #6									
Arsenic	4.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	1E-07	0.003
Radium-226	13	1E-05	NA	8E-09	NA	**1E-05**	0	**1E-05**	0
Selenium	2.4	NA	0.006	NA	NA	0E+00	0.006	0E+00	0.005
Uranium	12	NA	0.3	NA	NA	0E+00	0.3	0E+00	0.2
Vanadium	38	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.02
	Cumulative ILCR/HQ:	**2E-05**	0.5	2E-08	NA	**2E-05**	0.5	1E-05	0.3
HOME SITE #7									
Arsenic	5.5	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	30	3E-05	NA	2E-08	NA	**3E-05**	0	**3E-05**	0
Selenium	5.9	NA	0.02	NA	NA	0E+00	0.02	0E+00	0.01
Uranium	17	NA	0.4	NA	NA	0E+00	0.4	0E+00	0.3
Vanadium	46	NA	0.08	NA	NA	0E+00	0.08	0E+00	0.03
	Cumulative ILCR/HQ:	**4E-05**	0.7	3E-08	NA	**4E-05**	0.7	**3E-05**	0.4
HOME SITE #8									
Arsenic	4.7	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	6E-07	0.01
Radium-226	4.6	**4E-06**	NA	3E-09	NA	**4E-06**	0	**3E-06**	0
Selenium	0.91	NA	0.002	NA	NA	0E+00	0.002	0E+00	0.001
Uranium	6.0	NA	0.1	NA	NA	0E+00	0.1	0E+00	0.1
Vanadium	37	NA	0.07	NA	NA	0E+00	0.07	0E+00	0.01
	Cumulative ILCR/HQ:	**2E-05**	0.4	2E-08	NA	**2E-05**	0.4	**4E-06**	0.1
HOME SITE #9									
Arsenic	4.8	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	9E-07	0.02
Radium-226	5.9	**5E-06**	NA	4E-09	NA	**5E-06**	0	**4E-06**	0
Selenium	1.5	NA	0.004	NA	NA	0E+00	0.004	0E+00	0.003
Uranium	16	NA	0.3	NA	NA	0E+00	0.3	0E+00	0.3
Vanadium	32	NA	0.06	NA	NA	0E+00	0.06	0E+00	0.006
	Cumulative ILCR/HQ:	**2E-05**	0.6	2E-08	NA	**2E-05**	0.6	**5E-06**	0.3

TABLE E-41
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 1
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]				Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Inhalation of Fugitive Dust		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC[b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
BACKGROUND									
Arsenic	4.4	**1E-05**	0.2	1E-08	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	7E-10	NA	1E-06	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	0E+00	0.05	NA	NA
	Cumulative ILCR/HQ:	**1E-05**	0.3	1E-08	NA	**1E-05**	0.3	NA	NA
					USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical-specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.

TABLE E-42
SUMMARY OF HUMAN HEALTH RISK ESTIMATES - EASTERN HOME SITES
Shallow Soil - Residential Receptor - Scenario 2
Northeast Church Rock Mine Site, New Mexico

		Pathway-Specific Cancer Risk and Noncancer Hazard Estimates [a]												Combined Pathway Risk and Hazard Estimates			
	Soil Concentration	Ingestion of Soil		Ingestion of Produce		Ingestion of Meat		Ingestion of Eggs		Inhalation of Fugitive Dust		External Exposure		Total Cancer Risk and Hazard		Incremental Cancer Risk and Hazard [c]	
Location	EPC [b]	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ	ILCR	HQ
HOME SITE #6																	
Arsenic	4.5	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	1E-07	0.003
Radium-226	13	**1E-05**	NA	**2E-04**	NA	**5E-04**	NA	**1E-05**	NA	8E-09	NA	**1E-03**	NA	**2E-03**	0	**2E-03**	0
Selenium	2.4	NA	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.006	0E+00	0.005
Uranium	12	NA	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.3	0E+00	0.2
Vanadium	38	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.02
Cumulative ILCR/HQ:		**2E-05**	0.5	**2E-04**	NA	**5E-04**	NA	**1E-05**	NA	2E-08	NA	**1E-03**	NA	**2E-03**	0.5	**2E-03**	0.3
HOME SITE #7																	
Arsenic	5.5	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	**2E-06**	0.04
Radium-226	30	**3E-05**	NA	**4E-04**	NA	**1E-03**	NA	**2E-05**	NA	2E-08	NA	**2E-03**	NA	**4E-03**	0	**4E-03**	0
Selenium	5.9	NA	0.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.02	0E+00	0.01
Uranium	17	NA	0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.4	0E+00	0.3
Vanadium	46	NA	0.08	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.08	0E+00	0.03
Cumulative ILCR/HQ:		**4E-05**	0.7	**4E-04**	NA	**1E-03**	NA	**2E-05**	NA	3E-08	NA	**2E-03**	NA	**4E-03**	0.7	**4E-03**	0.4
HOME SITE #8																	
Arsenic	4.7	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	6E-07	0.01
Radium-226	4.6	**4E-06**	NA	**7E-05**	NA	**2E-04**	NA	**4E-06**	NA	3E-09	NA	**4E-04**	NA	**6E-04**	0	**5E-04**	0
Selenium	0.9	NA	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.002	0E+00	0.001
Uranium	6.0	NA	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.1	0E+00	0.1
Vanadium	37	NA	0.07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.07	0E+00	0.01
Cumulative ILCR/HQ:		**2E-05**	0.4	**7E-05**	NA	**2E-04**	NA	**4E-06**	NA	2E-08	NA	**4E-04**	NA	**6E-04**	0.4	**5E-04**	0.1
HOME SITE #9																	
Arsenic	4.8	1E-05	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	1E-05	0.2	9E-07	0.02
Radium-226	5.9	5E-06	NA	**9E-05**	NA	**2E-04**	NA	5E-06	NA	4E-09	NA	**5E-04**	NA	**8E-04**	0	**6E-04**	0
Selenium	1.5	NA	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.004	0E+00	0.003
Uranium	16	NA	0.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.3	0E+00	0.3
Vanadium	32	NA	0.06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.06	0E+00	0.006
Cumulative ILCR/HQ:		2E-05	0.6	**9E-05**	NA	2E-04	NA	**5E-06**	NA	2E-08	NA	**5E-04**	NA	**8E-04**	0.6	**6E-04**	0.3
BACKGROUND																	
Arsenic	4.4	**1E-05**	0.2	NA	NA	NA	NA	NA	NA	1E-08	NA	NA	NA	**1E-05**	0.2	NA	NA
Radium-226	1.1	1E-06	NA	**2E-05**	NA	**4E-05**	NA	9E-07	NA	7E-10	NA	**8E-05**	NA	**1E-04**	0	NA	NA
Selenium	0.53	NA	0.001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.001	NA	NA
Uranium	1.2	NA	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.03	NA	NA
Vanadium	29	NA	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0E+00	0.05	NA	NA
Cumulative ILCR/HQ:		**1E-05**	0.3	**2E-05**	NA	**4E-05**	NA	9E-07	NA	1E-08	NA	**8E-05**	NA	**2E-04**	0.3	NA	NA
													USEPA Risk Range:	10-6 - 10-4	1	10-6 - 10-4	1

Notes:

[a] Based on the Soil Screening Guidance for Radionuclides, Online SSL Calculator for chemicals and radionuclides (USEPA, 2007).

[b] The exposure point concentration (EPC) is the lower of the maximum or 95% UCL concentration. All results are in mg/kg with the exception of Radium-226 which is reported in pCi/g.

[c] Represents the chemical specific and cumulative risk/hazard for each home site with the background risk/hazard removed.

Boldface indicates ILCR or HQ estimates within USEPA's risk management range.

Italics indicates ILCR or HQ estimates less than zero.

Yellow highlighting indicates potential cause for remedial action due to risk driving status for indicated pathway and/or analyte at a particular location. Risk exceeds USEPA range of 10-6 to 10-4 or HQ of 1.

HQ - Hazard quotient.
ILCR - Incremental lifetime cancer risk.
NA - Not applicable.
USEPA - U.S. Environmental Protection Agency