REVISION 0

NORTH ST. LOUIS COUNTY SITES ANNUAL ENVIRONMENTAL MONITORING DATA AND ANALYSIS REPORT FOR CALENDAR YEAR 2015

ST. LOUIS, MISSOURI

JUNE 21, 2016

U.S. Army Corps of Engineers
St. Louis District Office
Formerly Utilized Sites Remedial Action Program

REVISION 0

NORTH ST. LOUIS COUNTY SITES ANNUAL ENVIRONMENTAL MONITORING DATA AND ANALYSIS REPORT FOR CALENDAR YEAR 2015

ST. LOUIS, MISSOURI

JUNE 21, 2016

prepared by:

U.S. Army Corps of Engineers, St. Louis District Office
Formerly Utilized Sites Remedial Action Program

with assistance from:

Leidos, Inc.
under Contract No. W912P9-12-D-0506, Delivery Order 0004

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

SECTION **PAGE**

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

LIST OF FIGURES (Continued)

NUMBER

LIST OF APPENDICES

BACK COVER

ACRONYMS AND ABBREVIATIONS

Both English and metrics units are used in this report. The units used in a specific situation are based on common unit usage or regulatory language (e.g., depths are given in feet and meters, and areas are given in square feet and square meters). Acres are given for area when applicable.

µCi/mL	microcurie(s) per milliliter
µg/L	microgram(s) per liter
µS/cm	microSiemen(s) per centimeter
Ac	actinium
AEC	Atomic Energy Commission
Am	americium
amsl	above mean sea level
ARAR	applicable or relevant and appropriate requirement
ATD	alpha track detector
bgs	below ground surface
BOD	biological oxygen demand
BTOC	below top of casing
°C	degrees Celsius (centigrade)
CCV	continuing calibration verification
CEDE	committed effective dose equivalent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	*Code of Federal Regulations*
Ci	curie(s)
COC	contaminant of concern
COD	chemical oxygen demand
Cs	cesium
CSR	*Code of State Regulations*
CWC	Coldwater Creek
CY	calendar year
DCF	dose conversion factor
DHSS	Department of Health and Senior Services
DL	detection limit
DO	dissolved oxygen
DOD	U.S. Department of Defense
DOE	U.S. Department of Energy
DQO	data quality objective
EDE	effective dose equivalent
EE/CA	engineering evaluation/cost analysis
ELAP	Environmental Laboratory Accreditation Program
EM	Engineer Manual
EMDAR	Environmental Monitoring Data and Analysis Report
EMG	*Environmental Monitoring Guide for the St. Louis Sites*
EMICY15	*Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2015*

ACRONYMS AND ABBREVIATIONS (Continued)

EMP	Environmental Monitoring Program
FUSRAP	Formerly Utilized Sites Remedial Action Program
Futura	Futura Coatings Company
g	gram(s)
HISS	Hazelwood Interim Storage Site
HZ	hydrostratigraphic zone
IA	investigation area
ICP	inductively coupled plasma
ICRP	International Commission on Radiation Protection
ICV	initial calibration verification
K	potassium
KPA	kinetic phosphorescence analysis
L	liter(s)
LCL_{95}	95 percent lower confidence limit
MARSSIM	*Multi-Agency Radiation Survey and Site Investigation Manual*
MDA	minimum detectable activity
MDC	minimum detectable concentration
MDL	method detection limit
MDNR	Missouri Department of Natural Resources
MED	Manhattan Engineer District
mg	milligram(s)
mg/kg	milligram(s) per kilogram
mg/L	milligram(s) per liter
MGD	million gallons per day
mL	milliliter(s)
mL/L/hour	milliliter(s) per liter per hour
mrem	millirem
mrem/pCi	millirem per picocurie
MSD	Metropolitan St. Louis Sewer District
mV	millivolt(s)
NAD	normalized absolute difference
NC	North St. Louis County
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	U.S. Nuclear Regulatory Commission
NTU	nephelometric turbidity unit
ORNL	Oak Ridge National Laboratory
ORP	oxidation reduction potential
Pa	protactinium
PCB	polychlorinated biphenyl
pCi/µg	picocurie(s) per microgram
pCi/g	picocurie(s) per gram
pCi/L	picocurie(s) per liter
PDI	pre-design investigation
QA	quality assurance
QAPP	quality assurance program plan

ACRONYMS AND ABBREVIATIONS (Continued)

QC	quality control
QSM	*Department of Defense (DoD)/Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories*
RA	remedial action
Ra	radium
RCRA	Resource Conservation and Recovery Act
RG	remediation goal
RL	reporting limit
RME	reasonably maximally exposed
Rn	radon
ROD	*Record of Decision for the North St. Louis County Sites*
ROW	right of way
RPD	relative percent difference
S	test statistic
SAG	*Sampling and Analysis Guide for the St. Louis Sites*
SLAPS	St. Louis Airport Site
SLS	St. Louis Sites
SOP	standard operating procedure
SOR	sum of ratios
SS	settleable solid
s.u.	standard unit
SU	survey unit
TEDE	total effective dose equivalent
Th	thorium
TLD	thermoluminescent dosimeter
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon
TSS	total suspended solid
U	uranium
UCL	upper confidence limit
UCL_{95}	95 percent upper confidence limit
UNSCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VQ	validation qualifier
VP	vicinity property
WL	working level
WLM	working level month
WRS	Wilcoxon Rank Sum

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2015 applies to the North St. Louis County (NC) Sites, which are within the St. Louis Sites (SLS) (Figure 1-1) and under the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the implementation of the Environmental Monitoring Program (EMP) for the NC Sites. The NC Sites consist of the St. Louis Airport Site (SLAPS), SLAPS vicinity properties (VPs) (Figure 1-2), and the Latty Avenue Properties (i.e., the Hazelwood Interim Storage Site [HISS], Futura Coatings Company [Futura], and eight Latty Avenue VPs) (Figure 1-3). Additional environmental data were collected along Coldwater Creek (CWC), which flows adjacent to the SLAPS and near the HISS. Environmental monitoring of various media at each of the NC Sites is required in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the commitments in the *Record of Decision for the North St. Louis County Sites* (ROD) (USACE 2005).

The purpose of this EMDAR is:

1) to document the environmental monitoring activities, and
2) to assess whether remedial actions (RAs) had a measurable environmental impact by:
    a) reporting the current condition of the NC Sites,
    b) summarizing the data collection effort for CY 2015, and
    c) providing an analysis of the environmental monitoring data to date.

The U.S. Army Corps of Engineers (USACE) St. Louis District collects comprehensive environmental data for decision-making and planning purposes. Environmental monitoring, performed as a Best Management Practice or as a component of RAs, serves as a critical component in the evaluation of the current status and potential future migration of residual contaminants.

All environmental monitoring required through implementation of the *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2015* (EMICY15) (USACE 2014) was conducted as planned during CY 2015. The evaluation of environmental monitoring data for all NC Sites demonstrates compliance with ROD (USACE 2005) goals and applicable or relevant and appropriate requirements (ARARs).

RADIOLOGICAL AIR MONITORING

Radiological air data were collected and evaluated at the NC Sites through airborne radioactive particulate, radon (indoor and outdoor), and gamma radiation monitoring, as required in the EMICY15 (USACE 2014). In addition to being used for environmental monitoring purposes, radiological air data were also used as inputs to calculate the total effective dose equivalent (TEDE) to the reasonably maximally exposed (RME) member of the public for the NC Sites.

Each TEDE calculated for the RME individual at each NC Site was less than 0.1 millirem (mrem) per year. The calculated TEDE is compliant with the 100 mrem per year limit provided in 10 *Code of Federal Regulations (CFR)* 20.1301.

The radiological air monitoring results conducted at the NC Sites demonstrate compliance with all ARARs for the NC Sites. The ARARs are described in Tables 2-1 through 2-4 of the EMICY15 (USACE 2014).

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM MONITORING

Discharge requirements for the NC Sites are currently set by the Missouri Department of Natural Resources (MDNR) National Pollutant Discharge Elimination System (NPDES) ARARs (permit-equivalent) document dated October 2, 1998 (MDNR 1998), and amended in a letter from the MDNR dated February 19, 2002 (MDNR 2002).

The storm-water sampling results for the NC Sites demonstrate compliance with the discharge limits described in Section 2.2.2 of the EMICY15 (USACE 2014).

EXCAVATION-WATER DISCHARGE MONITORING AT THE NORTH ST. LOUIS COUNTY SITES

CY 2015 was the 14th year excavation water was treated and discharged from the NC Sites. Excavation water discharged from the NC Sites to the sanitary sewer system is subject to the requirements stated in the July 23, 2001, Metropolitan St. Louis Sewer District (MSD) authorization letter (MSD 2001) and the selenium discharge variance letter for the SLAPS dated February 10, 2005 (MSD 2005). This authorization was extended for 2 years through the issuance of a letter dated July 23, 2014, from Mr. Steve Grace to Ms. Sharon Cotner. This authorization expires on July 23, 2016 (MSD 2014a). The selenium discharge variance for the SLAPS was not utilized in CY 2015 (MSD 2005 and 2012). There is no longer a requirement to analyze for barium, lead, or selenium after the first two batches from new investigative areas (MSD 2012).

Waste water from the USACE St. Louis District FUSRAP Radioanalytical Laboratory is discharged in accordance with the MSD discharge authorization letter dated February 5, 2014 (MSD 2014b). The special discharge authorization was extended to February 7, 2016. The data collected at each site were compared to discharge limits described in Section 2.2.2 of the EMICY15 (USACE 2014). During CY 2015, no exceedances of the discharge limits occurred at the USACE St. Louis FUSRAP laboratory or the NC Sites.

COLDWATER CREEK MONITORING

The CY 2015 Coldwater Creek (CWC) surface-water and sediment sampling events, which were completed in March and October of 2015, evaluated the physical, radiological, and chemical conditions in the creek. During the March and October sampling events, samples were collected at each of the eight surface-water and sediment sampling locations (C002 through C009). These sampling locations are shown on Figure 3-3. The data collected were compared to the monitoring guidelines and/or remediation goals (RGs) described in Section 2.2.3 of the EMICY15 (USACE 2014).

The results of the surface-water and sediment sampling conducted in CWC demonstrate compliance with ARARs for the NC Sites.

GROUND-WATER MONITORING

Ground water was sampled during CY 2015 at the NC Sites following a protocol for individual wells and analytes. Ground water was analyzed for various radiological constituents and for inorganic parameters. Static ground-water elevations for all NC Site wells were measured quarterly.

The environmental sampling requirements and ground-water monitoring guidelines for each analyte are consistent with the EMICY15 (USACE 2014) and were used for comparison and discussion purposes. The ROD ground-water monitoring guidelines (henceforth referred to as ROD guidelines) for assessing ground-water sampling data at the NC Sites (Latty Avenue Properties and the SLAPS and SLAPS VPs) are presented in Section 2.2.4 of the EMICY15 (USACE 2014) and in Section 4.0 and Appendix F of this EMDAR. For those wells at which an analyte exceeded the ROD guidelines at least once during CY 2015 and sufficient data were available to evaluate trends, Mann-Kendall statistical trend analyses were completed to assess whether analyte concentrations were increasing or decreasing through time.

LATTY AVENUE PROPERTIES

Ground-water sampling was conducted at eight hydrostratigraphic zone (HZ)-A ground-water monitoring wells at the Latty Avenue Properties during CY 2015. Contaminant of concern (COC) concentrations in two wells (molybdenum in HISS-10 and uranium (U)-234 in HW22) exceeded the ROD guidelines in HZ-A ground water at the Latty Avenue Properties during CY 2015. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water.

Ground-water samples were collected from one HZ-C well (HW23) during CY 2015. Concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in this well during CY 2015.

The Mann-Kendall Trend Test was performed for two COCs in two HZ-A wells (molybdenum in HISS-10 and total U in HW22) during CY 2015. The Mann-Kendall Trend Test identified a statistically significant increasing trend for molybdenum concentrations in HISS-10. A statistically significant increasing trend was also identified for total U concentrations in HW22. Because the total U values are calculated using the U-234 and U-238 values, the trends in their values should be the same as the total U trend results. Therefore, performance of a separate trend analysis for each of these isotopes was unnecessary.

Concentrations of all soil COCs were below the NC ROD ground-water criteria in CY 2015 ground-water samples from the HZ-C well HW23. Therefore, a trend analysis was not conducted for HZ-C ground water.

The potentiometric data indicate near-radial potentiometric surface contour patterns for HZ-A ground water at the HISS and Futura. Wells HISS-01, HISS-10, and HISS-17S have the highest potentiometric surface elevations, with lower ground-water elevations measured in the surrounding wells. At the western edge of the HISS and Futura, ground water in HZ-A flows to the west toward CWC.

The potentiometric surface of the HZ-C ground water at the Latty Avenue Properties is not well defined due to the limited data available for the deeper HZs. Based on measured ground-water elevations in the HZ-C monitoring well HW23 at the Latty Avenue Properties and several HZ-C wells located to the southwest at the SLAPS and SLAPS VPs, the flow direction in HZ-C ground water beneath the Latty Avenue Properties is generally toward the northeast.

ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES

At the SLAPS and SLAPS VPs, 14 ground-water wells were sampled for various parameters during CY 2015. Nine (9) wells, screened in HZ-A, were sampled at the SLAPS and the adjacent SLAPS VP ballfields. Four inorganic analytes (barium, chromium, molybdenum, and nickel) and one radiological contaminant (total U) were detected in HZ-A ground water at concentrations in excess of the ROD guidelines. A comparison of the data indicates that the chromium concentrations in B53W13S and B53W18S; molybdenum concentrations in B53W18S; nickel concentrations in B53W13S; and the total U concentrations in PW46 exceeded the ROD guidelines for a period of at least 12 months. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2015. However, because chromium, molybdenum, nickel, and total U levels exceeded the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent 5-year reviews.

During CY 2015, five wells screened across the deeper HZs (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs. If the associated measurement errors are taken into account, no soil COCs from ground-water samples collected from these five wells in CY 2015 exceeded the ROD guidelines. Therefore, the CY 2015 HZ-C through HZ-E ground-water data from the SLAPS and SLAPS VPs indicate that significant degradation of lower ground water is not occurring.

The Mann-Kendall Trend Test was performed for barium (B53W19S), chromium (B53W09S, B53W13S, and B53W18S), molybdenum (B53W18S and B53W19S), nickel (B53W09S, B53W13S, B53W18S, B53W19S, and PW43), and total U (PW46). Statistically significant increasing trends were observed for chromium (B53W09S, B53W13S, and B53W18S), molybdenum (B53W18S), and nickel (B53W09S, B53W13S, B53W18S, and B53W19S). No trend was observed for barium (B53W19S), molybdenum (B53W19S), nickel (PW43), or total U (PW46).

Potentiometric surface maps were created from ground-water elevations measured in May and November to illustrate ground-water flow conditions in wet and dry seasons. The potentiometric data indicate ground-water flow northwesterly toward CWC in the HZ-A at the SLAPS. The flow direction in the HZ-C ground water at the SLAPS is generally east to northeast.

1.0 HISTORICAL SITE BACKGROUND AND CURRENT SITE STATUS

1.1 INTRODUCTION

This annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2015 applies to the North St. Louis County (NC) Sites, which are within the St. Louis Sites (SLS) (Figure 1-1), and under the scope of the Formerly Utilized Sites Remedial Action Program (FUSRAP). This EMDAR provides an evaluation of the data collected as part of the implementation of the Environmental Monitoring Program (EMP) for the NC Sites. The NC Sites consist of the St. Louis Airport Site (SLAPS), SLAPS vicinity properties (VPs) (Figure 1-2), and the Latty Avenue Properties (i.e., the Hazelwood Interim Storage Site [HISS], the Futura Coatings Company [Futura], and eight Latty Avenue VPs) (Figure 1-3). Additional environmental data were collected along Coldwater Creek (CWC), which flows adjacent to the SLAPS and near the HISS. Environmental monitoring of various media at each of the NC Sites is required in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the *Record of Decision for the North St. Louis County Sites* (ROD) (USACE 2005).

1.2 PURPOSE

The purpose of this EMDAR is to document the environmental monitoring activities and to assess whether remedial actions (RAs) at the NC Sites had a measurable environmental impact. In addition, this EMDAR serves to enhance the reader's awareness of the current condition of the NC Sites, summarize the data collection efforts for CY 2015, and provide analysis of the CY 2015 environmental monitoring data results. This EMDAR presents the following information:

- Sample collection data for various media at each site and interpretation of CY 2015 EMP results;
- The compliance status of each site with federal and state applicable or relevant and appropriate requirements (ARARs) or other benchmarks (e.g., *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2015* [EMICY15] [USACE 2014]);
- Dose assessments for radiological contaminants as appropriate;
- A summary of trends based on changes in contaminant concentration, to support RAs, ensure public safety, and maintain surveillance monitoring requirements at each site; and
- The identification of data gaps and future EMP needs.

1.3 ST. LOUIS SITE PROGRAM AND SITE BACKGROUND

The FUSRAP was executed by the U.S. Atomic Energy Commission (AEC) in 1974 to identify, remediate, or otherwise control sites at which residual radioactivity remains from operations conducted for the Manhattan Engineer District (MED) and AEC during the early years of the nation's atomic energy program. The FUSRAP was continued by the follow-on agencies to the AEC until 1997, when the U.S. Congress transferred responsibility for the FUSRAP to the U.S. Army Corps of Engineers (USACE).

On October 4, 1989, the SLAPS, the HISS, and Futura were placed on the U.S. Environmental Protection Agency (USEPA) National Priorities List (NPL) under the site name "St. Louis

Airport/Hazelwood Interim Storage/Futura Coatings Co." (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] No. MOD980633176). The three NPL sites have been involved with: refinement of uranium ores, production of uranium metal and compounds, uranium recovery from residues and scrap, and the storage and disposal of associated process byproducts.

Detailed descriptions and histories for each site can be found in the *Remedial Investigation Report for the St. Louis Site* (DOE 1994), *Remedial Investigation Addendum for the St. Louis Site* (DOE 1995), *St. Louis Airport Site (SLAPS) Interim Action Engineering Evaluation/Cost Analysis (EE/CA)* (DOE 1997), *Engineering Evaluation/Cost Analysis (EE/CA) and Responsiveness Summary for the St. Louis Airport Site (SLAPS)* (USACE 1998a), *Environmental Evaluation/Cost Analysis (EE/CA) for the Hazelwood Interim Storage Site (HISS)* (USACE 1998b), the *Environmental Monitoring Guide for the St. Louis Sites* (EMG) (USACE 1999a), and the ROD (USACE 2005).

During CY 2015, the following USACE documents were finalized for the NC Sites:

- *Post-Remedial Action Report and Final Status Survey Evaluation for the St. Louis Airport Site Vicinity Property Banshee Road, St. Louis, Missouri* (February 20);
- *Pre-Design Investigation Summary Report and Final Status Survey Evaluation for Byassee Drive and Adjacent Properties, St. Louis, Missouri* (February 20);
- *CY2014 Fourth Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (February);
- *Remedial Design/Remedial Action Work Plan for the FUSRAP North St. Louis County Sites, St. Louis, Missouri* (March 30);
- *CY2015 First Quarter Radiation Protection Program Review, St. Louis, Missouri* (April 24);
- *CY2015 First Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (May);
- *Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property, and Duchesne Park, St. Louis, Missouri* (June 24);
- *North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014, St. Louis, Missouri* (June 30);
- *Remedial Design/Remedial Action Work Description St. Cin Park, Supplement No. 2 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (July 2);
- *Third Five-Year Review Report for Formerly Utilized Sites Remedial Action Program (FUSRAP) St. Louis Sites, St. Louis, Missouri* (July 31);
- *Institutional Controls Implementation Plan for the North St. Louis County Sites, St. Louis, Missouri* (August 13);
- *CY2015 Second Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories, St. Louis, Missouri* (September);
- *Pre-Design Investigation Summary Report for the St. Louis Airport Site Vicinity Property Parcel 10L340133, St. Louis, Missouri* (September 23);

- *Remedial Design/Remedial Action Work Description Archdiocese of St. Louis Property, Supplement No. 3 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (October 1);
- *CY2015 Third Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories, St. Louis, Missouri* (November);
- *Remedial Design/Remedial Action Work Description Duchesne Park, Supplement No. 4 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (December 21);
- *Pre-Design Investigation Work Plan for the Ford Lane Properties, the Seeger Industrial Driver Properties, the Polson Lane Properties, Romiss Court, Jonas Place, Heather Lane, and the Interstate 170 Right-of-Way, St. Louis, Missouri* (December 22); and
- *Final Status Survey Plan for Soils, Structures, and Sediments at the St. Louis FUSRAP Sites, St. Louis, Missouri* (December 28).

1.3.1 Latty Avenue Properties Calendar Year 2015 Remedial Actions

In the second quarter of CY 2015, RAs were performed at VP-04(L) (Figure 1-2). No *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)* (DOD 2000) Class 1, Class 2, or Class 3 verifications were performed at the Latty Avenue Properties in CY 2015. Verifications are performed to confirm the ROD remediation goals (RGs) were achieved. A characterization/pre-design investigation (PDI) was performed on Latty Avenue in CY 2015.

1.3.2 St. Louis Airport Site and St. Louis Airport Site Vicinity Properties Calendar Year 2015 Remedial Actions

In CY 2015, RAs were performed at the following SLAPS-related investigation areas (IAs) and VPs (Figure 1-2): IA-10, VP-57 and VP-58, the CWC corridor, the Pershall Road South Ditch, and St. Cin Park. RAs at VP-57 and VP-58 and the CWC corridor were performed in the first, second, and third quarters. RAs at the Pershall Road South Ditch were performed in the second quarter. RAs at St. Cin Park were performed in the third and fourth quarters. A total of 6,071 m^3 of contaminated material was shipped from the SLAPS IAs and VPs via railcar to US Ecology in Idaho for proper disposal.

During CY 2015, MARSSIM Class 1 verifications were performed at VP-57 and VP-58 (survey unit [SU]-3 through SU-5), the CWC corridor (SU-1), the Pershall Road South Ditch (SU-1), and St. Cin Park (SU-1) to confirm that ROD RGs were achieved. No MARSSIM Class 2 verifications were performed. MARSSIM Class 3 verifications were performed on structures in the CWC corridor.

Characterizations/PDIs were performed at the following SLAPS VPs in CY 2015: VPs 2(C), 3(C), 4(C), 5(C), 6(C), 7(C), and 8(C); VP-40A; VPs 56, 57, 58, and 59; Parcel 10L340133; the Road Right-of-Way (ROW); CWC from Frost Avenue to St. Denis Bridge; and Pershall Road.

In CY 2015, no Resource Conservation and Recovery Act (RCRA) hazardous waste was shipped, and no monitoring wells were decommissioned.

In accordance with the Metropolitan St. Louis Sewer District (MSD) authorization letter, 1,852,244 gallons of excavation water were discharged from the NC Sites in CY 2015. Since the beginning of the project, 29,224,828 gallons have been treated and released to MSD from the NC Sites.

THIS PAGE INTENTIONALLY LEFT BLANK

2.0 EVALUATION OF RADIOLOGICAL AIR MONITORING DATA

This section documents environmental monitoring activities related to radiological air data. The radiological air monitoring conducted at the NC Sites is part of the EMP. Radiological air data are collected to evaluate the compliance status of each site with ARARs, to evaluate trends, and to perform dose assessments for radiological contaminants as appropriate at each site. Section 2.1 includes a description of the types of radiological air monitoring conducted at the NC Sites, potential sources of the contaminants to be measured (including natural background), and measurement techniques employed during CY 2015.

All radiological air monitoring required through implementation of the EMICY15 (USACE 2014) was conducted as planned in CY 2015. The evaluations of radiological air monitoring data for all NC Sites demonstrate compliance with ARARs.

A total effective dose equivalent (TEDE) for the reasonably maximally exposed (RME) member of the public was calculated by summing the dose due to gamma radiation, radiological air particulates, and radon, as applicable. The TEDE calculated for the RME individual at each of the NC Sites was less than or equal to 0.1 millirem (mrem) per year. The calculated TEDE is compliant with the 100 mrem per year limit prescribed in 10 *Code of Federal Regulations (CFR)* 20.1301. Details of the radiological dose assessment (TEDE calculation) are presented in Section 6.0.

2.1 RADIOLOGICAL AIR MEASUREMENTS

The three types of radiological air monitoring conducted at the NC Sites in CY 2015 were gamma radiation, airborne radioactive particulates, and airborne radon. Sections 2.2 and 2.3 provide details of the air monitoring conducted at the Latty Avenue Properties and the SLAPS and SLAPS VPs.

2.1.1 Gamma Radiation

Gamma radiation is emitted from natural, cosmic, and manmade sources. The earth naturally contains gamma radiation-emitting substances, such as the uranium decay series, the thorium decay series, and potassium (K)-40. Cosmic radiation originates in outer space and filters through the atmosphere to the earth. Together, these two sources comprise the majority of natural gamma background radiation. The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) estimates that the total naturally occurring background radiation dose equivalent due to gamma exposure is 65 mrem per year, 35 mrem per year of which originates from sources on earth and 30 mrem per year of which originates from cosmic sources (UNSCEAR 1982). The background monitoring location for the NC Sites (Figure 2-1) is reasonably representative of background gamma radiation for the St. Louis metropolitan area.

Gamma radiation was measured at the NC Sites in CY 2015 using thermoluminescent dosimeters (TLDs). TLDs were placed at site boundaries in order to provide input for calculation of TEDE.

The TLDs were placed at the monitoring location approximately 3 ft above the ground surface inside a housing shelter. The TLDs were collected quarterly and sent to a properly certified, off-site laboratory for analysis.

2.1.2 Airborne Radioactive Particulates

2.1.2.1 Air Sampling

Airborne radioactive particulates result from radionuclides in soil that become suspended in the air. The radionuclides in soil normally become airborne as a result of wind erosion of the surface soil or as a result of soil disturbance (e.g., excavation). This airborne radioactive material includes naturally occurring background concentrations, as well as above background concentrations of radioactive materials present at the NC Sites.

Airborne radioactive particulates were measured at the NC Sites by drawing air through a filter membrane with an air sampling pump placed approximately 3 ft above the ground and then analyzing the material contained on the filter. The results of the analysis, when compared to the amount of air drawn through the filter, were reported as radioactive contaminant concentrations (i.e., microcuries per milliliter [µCi/mL]). Particulate air monitors were located at excavation and loadout area perimeter locations, as appropriate, to provide input for the National Emissions Standards for Hazardous Air Pollutants (NESHAP) Report and calculation of TEDE to the critical receptor. Air particulate samples were typically collected weekly or at more frequent intervals.

2.1.2.2 Estimation of Emissions in Accordance with the National Emission Standard for Hazardous Air Pollutants

The NC Sites CY 2015 NESHAP report (Appendix A) presents calculation of the effective dose equivalent (EDE) from radionuclide emissions to critical receptors in accordance with the NESHAP. The report is prepared in accordance with the requirements and procedures contained in 40 *CFR* 61, Subpart I.

Emission rates calculated using air sampling data, activity fractions, and other site-specific information were used for the NC Sites as inputs to the USEPA CAP88-PC Version 4.0 modeling code (USEPA 2014) to demonstrate compliance with the 10 mrem per year ARAR prescribed in 40 *CFR* 61, Subpart I.

2.1.3 Airborne Radon

Uranium (U)-238 is a naturally occurring radionuclide commonly found in soil and rock. Radon (Rn)-222 is a naturally occurring radioactive gas found in the uranium decay series. A fraction of the radon produced from the radioactive decay of naturally occurring U-238 diffuses from soil and rock into the atmosphere, accounting for natural background airborne radon concentrations. In addition to this natural source, radon is produced from the above background concentrations of radioactive materials present at the NC Sites.

Outdoor airborne radon concentration is governed by the emission rate and dilution factors, both of which are strongly affected by meteorological conditions. Surface soil is the largest source of radon. Secondary contributors include oceans, natural gas, geothermal fluids, volcanic gases, ventilation from caves and mines, and coal combustion. Radon levels in the atmosphere have been observed to vary with height above the ground, season, time of day, and location. The chief meteorological parameter governing airborne radon concentration is atmospheric stability; however, the largest variations in atmospheric radon occur spatially (USEPA 1987).

Radon alpha track detectors (ATDs) were used at the NC Sites to measure alpha particles emitted from radon and its associated decay products. Radon ATDs were co-located with environmental TLDs approximately 3 ft above the ground surface in housing shelters at the site boundaries or at locations representative of areas accessible to the public. Outdoor ATDs were collected approximately every 6 months and sent to an off-site laboratory for analysis. Recorded radon concentrations are listed in picocuries per liter (pCi/L) and are used to provide input for calculation of TEDE.

At the NC Sites, ATDs were also placed in locations within applicable structures to monitor for indoor radon exposure. The ATDs were placed in areas that represent the highest likely exposure from indoor radon. ATD locations were chosen with consideration given to known radium (Ra)-226 concentrations under applicable buildings and occupancy time at any one location within each building. Annual average indoor radon data in each applicable building were compared to the 40 *CFR* 192.12(b) ARAR value of 0.02 working level (WL). In accordance with 40 *CFR* 192.12(b), reasonable effort shall be made to achieve, in each habitable or occupied building, an annual average (or equivalent) radon decay product concentration (including background) not to exceed 0.02 WL. In any case, the radon decay product concentration shall not exceed 0.03 WL. Background indoor radon monitors were not necessary, because the regulatory standard of 0.02 WL includes background. Indoor ATDs were also collected approximately every 6 months and sent to an off-site laboratory for analysis.

CY 2015 monitoring results for the NC Sites demonstrate compliance with the 0.02 WL ARAR prescribed by 40 *CFR* 192.12(b). See Section 2.2.4 for further details.

2.2 LATTY AVENUE PROPERTIES

Radiological air monitoring was conducted at Futura and VP-04(L) in CY 2015.

2.2.1 Evaluation of Gamma Radiation Data

Because cleanup activities at the HISS and Futura were completed in CY 2011, external gamma radiation exposure from the Latty Avenue Properties is considered negligible. Therefore, environmental TLD monitoring was not conducted at the Latty Avenue Properties in CY 2015.

2.2.2 Evaluation of Airborne Radioactive Particulate Data

For the Latty Avenue Properties, air sampling for particulate radionuclides was conducted at the perimeter of each active excavation throughout CY 2015. Air particulate data were used as inputs to the NESHAP report (Appendix A) and calculation of TEDE to the critical receptor (Section 6.0).

A summary of air particulate monitoring data for the Latty Avenue Properties is shown in Table 2-1. Airborne radioactive particulate data are contained in Appendix B, Table B-1, of this EMDAR.

Table 2-1. Summary of Latty Avenue Airborne Radioactive Particulate Data for CY 2015

Monitoring Station	Average Concentration (μCi/mL)[a]	
	Gross Alpha	Gross Beta
VP-04(L)	0	1.49E-14
Background Concentration[b]	3.66E-15	1.86E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only.

2.2.3 Evaluation of Outdoor Airborne Radon Data

Because cleanup activities at the HISS and Futura were completed in CY 2011, outdoor exposure to Rn-222 from the Latty Avenue Properties was considered negligible. Therefore, outdoor environmental Rn-222 monitoring was not conducted at the Latty Avenue Properties in CY 2015.

2.2.4 Evaluation of Indoor Airborne Radon Data

Indoor radon monitoring was performed at Futura buildings using ATDs placed at several locations in each Futura building at a height of 4 ft (to approximate breathing zone conditions) to measure radon concentrations. The detectors were located as shown on Figure 2-2. The ATDs were installed in January of CY 2015 at each monitoring location, collected for analysis after approximately 6 months of exposure, and replaced with another set that represent radon exposure for the remainder of the year. Recorded radon concentrations (listed in pCi/L) were converted to a radon WL, and an indoor radon equilibrium factor of 0.4 (NCRP 1988) was applied.

The results (including background) were evaluated based on the criteria contained in 40 *CFR* 192.12(b). The average annual radon concentration was less than the 40 *CFR* 192.12(b) criterion of 0.02 WL in each building (Leidos 2016a). Table 2-2 includes additional details of the data and calculation methodology used to determine the indoor radon WL in the Futura buildings. Indoor ATD data are contained in Appendix B, Table B-2, of this EMDAR.

Table 2-2. Summary of Futura Indoor Airborne Radon (Rn-222) Data for CY 2015

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)				WL[d]
		01/8/15 to 07/02/15[a]	07/02/15 to 01/04/16[a]	Annual Average[b]	Building Average[c]	
Futura Building	HF-1	1.0	1.5	1.25	2.12	0.008
	HF-2	4.8	4.8	4.80		
	HF-3	0.2	0.4	0.3		
Futura Building 2/3	HF-4	0.6	0.8	0.7	0.55	0.002
	HF-5	0.6	0.4	0.5		
	HF-6	0.5	0.3	0.4		
	HF-7[e]	0.6	0.6	0.6		
Futura Building 4	HF-8	0.5	0.9	0.7	0.65	0.003
	HF-9	0.4	0.7	0.55		
	HF-10	0.5	0.9	0.7		

[a] Detectors were installed and removed on the dates listed. Data are as reported from the vendor.
[b] Results reported from the vendor for two periods are averaged to estimate an annual average radon concentration (in pCi/L) above background.
[c] In each building, the average annual result for each monitoring station within the building was used to calculate a building average.
[d] The average annual WL is calculated by dividing the average pCi/L by 100 pCi/L per WL and multiplying by 0.4. The average annual WL must be less than 0.02 (40 *CFR* 192.12(b)).
[e] The second semi-annual radon result for monitoring station HF-7 was assumed to be the same as the first semi-annual result because the radon monitor was missing from the monitoring station.

2.3 SLAPS AND SLAPS VICINITY PROPERTIES

Radiological air monitoring was conducted at the CWC corridor (adjacent to VP-57 and VP-58), VP-57 and VP-58, the Pershall Road South Ditch, St. Cin Park, IA-10, and the SLAPS in CY 2015.

2.3.1 Evaluation of Gamma Radiation Data

External gamma radiation exposure from the SLAPS VPs is considered negligible; therefore, environmental TLD monitoring was not conducted. Gamma radiation monitoring was performed at the SLAPS in CY 2015 at four site locations surrounding the loadout area (Figure 2-3) and at the background location (Figure 2-1) to compare on-site/off-site exposure and to provide input for calculation of TEDE to the critical receptor (Section 6.0). The EMP uses two TLDs at monitoring station PA-2 (for each monitoring period) to provide additional quality control (QC) of the monitoring data.

A summary of TLD monitoring results for CY 2015 at the SLAPS is shown in Table 2-3. TLD data are contained in Appendix B, Table B-3, of this EMDAR.

Table 2-3. Summary of SLAPS Gamma Radiation Data for CY 2015

Monitoring Location	Monitoring Station	First Quarter TLD Data		Second Quarter TLD Data		Third Quarter TLD Data		Fourth Quarter TLD Data		CY 2015 Net TLD Data (mrem/year)
		(mrem/quarter)								
		Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	
SLAPS Perimeter	PA-1	17.8	0	18.2	0	18.8	1.9	18.9	0	2
	PA-2	22.2	4.9	20	1.1	21.7	5.0	25.1	4.1	15
	PA-2[c]	20.2	2.7	21.5	2.7	22.1	5.5	24.3	3.3	---
	PA-3	18.9	1.2	19.3	0.3	19	2.1	19.7	0	4
	PA-4	23.2	6.0	23.9	5.3	24.9	8.6	25.0	4.0	24
Background	BA-1	17.8	---	19	---	17.1	---	21.2	---	18.8

[a] All quarterly data reported from the vendor have been normalized to exactly one quarter's exposure.
[b] CY 2015 net TLD data are corrected for background, shelter absorption (s/a = 1.075), and fade.
[c] A QC duplicate is collected at the same time and location, and is analyzed by the same method for evaluating precision in sampling and analysis. Duplicate sample results were not included in calculations.
--- Result calculations are not required.
Cor. – Corrected
Rpt. – Reported

2.3.2 Evaluation of Airborne Radioactive Particulate Data

For the SLAPS and SLAPS VPs, air sampling for particulate radionuclides was conducted at the perimeter of each active excavation and loadout area throughout CY 2015. Air particulate data were used as inputs to the NESHAP report (Appendix A) and calculation of TEDE to the critical receptor (Section 6.0).

A summary of air particulate monitoring data for the SLAPS and SLAPS VPs is shown in Table 2-4. Airborne radioactive particulate data are contained in Appendix B, Table B-4, of this EMDAR.

Table 2-4. Summary of SLAPS Airborne Radioactive Particulate Data for CY 2015

Monitoring Station	Average Concentration (µCi/mL)[a]	
	Gross Alpha	Gross Beta
CWC Corridor	4.77E-15	2.85E-14
VP-57 and VP-58	1.66E-14	7.30E-14
Pershall Road South Ditch	6.91E-15	2.65E-14
St. Cin Park	5.96E-15	3.41E-14
IA-10	1.22E-14	2.78E-14
SLAPS Loadout	3.86E-15	2.73E-14
Background Concentration[b]	3.66E-15	1.86E-14

[a] Average concentration values for the sampling period by location.
[b] These concentrations are provided for informational purposes only.

2.3.3 Evaluation of Outdoor Airborne Radon Data

Exposure to Rn-222 from the SLAPS VPs is considered negligible; therefore, outdoor environmental Rn-222 monitoring was not conducted. Outdoor airborne radon monitoring was performed at the SLAPS using ATDs placed around the loadout area to measure radon emissions from the site. Four detectors were co-located with TLDs, as identified on Figure 2-3. One additional detector was located at monitoring station PA-2 as a QC duplicate. A background ATD was used to compare on-site exposure and off-site background exposure. Outdoor airborne radon data were used as an input for calculation of TEDE to the critical receptor (Section 6.0).

A summary of CY 2015 outdoor radon data at the SLAPS is shown in Table 2-5. Outdoor ATD data are contained in Appendix B, Table B-2, of this EMDAR.

Table 2-5. Summary of SLAPS Outdoor Airborne Radon (Rn-222) Data for CY 2015

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)		
		01/8/15 to 07/02/15[a] (Uncorrected)	07/02/15 to 01/04/16[a] (Uncorrected)	Average Annual Concentration[b]
SLAPS Perimeter	PA-1	0.2	0.3	0.05
	PA-2	0.2	0.2	0.00
	PA-2[c]	0.2	0.2	---
	PA-3	0.2	0.2	0.00
	PA-4	0.2	0.4	0.10
Background	BA-1	0.2	0.2	---

[a] Detectors were installed and removed on the dates listed. Data are as reported from the vendor (gross data including background).
[b] Results reported from vendor for two periods are time-weighted and averaged to estimate an annual average radon concentration (pCi/L) above background.
[c] A QC duplicate is collected at the same time and location, and is analyzed by the same method for evaluating precision in sampling and analysis.
--- Result calculations are not required.

3.0 EVALUATION OF EXCAVATION-WATER, STORM-WATER, SURFACE-WATER, AND SEDIMENT MONITORING DATA

This section provides a description of the excavation-water, storm-water, surface-water, and sediment monitoring activities conducted at the NC Sites, including the monitoring of CWC, in CY 2015. The results obtained from these monitoring activities are presented and evaluated with respect to historical data and the appropriate discharge limits as described in the EMICY15 (USACE 2014).

Section 2.2.2 of the EMICY15 outlines the discharge limits for the storm-water and excavation-water discharged at each site (USACE 2014). The MSD has issued discharge authorization letters for the NC Sites that established discharge-limit-based criteria (MSD 1998, 2001, 2006, 2008, 2010, 2012, and 2014a). The pollutants addressed for all NC Sites are identified in Table 2-5 of the EMICY15 (USACE 2014). The pollutants addressed in the National Pollutant Discharge Elimination System (NPDES) permit equivalent for the SLAPS will be applied at all NC Sites and are identified in Table 2-6 of the EMICY15 (USACE 2014). For cases in which the regulatory authorities have not provided radiological contaminant of concern (COC) discharge limits, the 10 *CFR* 20, Appendix B, water effluent values are used to calculate the sum of ratios (SOR) value for each discharge. Additionally, the SOR aids in the establishment of water management protocols. The Missouri Department of Natural Resources (MDNR) has also issued an ARAR document outlining limits for the storm-water outfalls at the SLAPS (MDNR 1998).

3.1 EXCAVATION-WATER AND STORM-WATER DISCHARGE MONITORING

This section provides a description of the excavation-water and storm-water monitoring activities conducted at the NC Sites in CY 2015. The monitoring results obtained from these activities are presented and compared with the various authorization letters or permit-equivalent limits as presented in the EMICY15 (USACE 2014). The purpose of storm-water and excavation-water discharge monitoring at the NC Sites is to maintain compliance with the specific discharge requirements for each respective site.

3.1.1 Metropolitan St. Louis Sewer District Special Discharge Approval for the On-Site USACE St. Louis District FUSRAP Radioanalytical Laboratory

The USACE owns the on-site laboratory located at 8945 Latty Avenue in Hazelwood, Missouri. The laboratory operates in accordance with an MSD special discharge approval. The USACE St. Louis FUSRAP laboratory waste-water is discharged to MSD manhole 10K2-075S, which is shown on Figure 3-1. The MSD special discharge approval requires compliance with applicable discharge regulations (Ordinance 8472) (MSD 1991). The current special discharge approval extension was renewed on February 5, 2014, and expires February 7, 2016 (MSD 2014b).

3.1.2 Evaluation of Storm-Water Discharge Monitoring Results

In CY 2015, storm-water monitoring at the SLAPS was conducted to verify compliance with NPDES permit-equivalent requirements. There is one NPDES outfall located at the SLAPS. This outfall has been assigned the station identification PN02 for Outfall 002. PN02 is located at the termination of a drainage feature that conveys storm water along the north side of James S. McDonnell Boulevard to CWC (Figure 3-2).

In conjunction with the construction of a sedimentation basin during CY 1998, the MDNR issued discharge sampling requirements for three outfalls (PN01 [now terminated], PN02, and PN03 [now terminated]). The ARAR permit-equivalent document (MDNR 1998) requires monthly monitoring for flow, oil and grease, total petroleum hydrocarbons (TPHs), pH, settleable solids (SSs), and polychlorinated biphenyls (PCBs), as well as total recoverable arsenic, chromium, and cadmium. In addition, effluent monitoring for gross alpha, gross beta, protactinium (Pa)-231, actinium (Ac)-227, total Ra, total thorium (Th), and total U is required for each discharge event. Effluent monitoring for radon is required twice per year. As outlined in a letter from the USACE to the MDNR dated November 18, 2003, chemical oxygen demand (COD) monitoring has been modified from quarterly to annually (USACE 2003). Only one effluent monitoring event for radon was performed in CY 2015, because sampling was scheduled for the fourth quarter, and no event occurred.

On February 19, 2002, the MDNR issued a letter to the USACE conditionally agreeing with a request to reduce the sampling frequency at PN02 to once per year, effective February of 2002 until the drainage area becomes affected by soil disturbance such as excavation (MDNR 2002). The condition of the agreement is that the MDNR be notified prior to the soil in the area being disturbed. The USACE increased the sampling frequency at PN02 from annually (MDNR 2002) to monthly, as established in the original permit equivalent agreement, as of November 26, 2013. Sampling frequency at PN02 was again reduced to annually, per USACE email on June 17, 2014.

During 2015, un-named moving pumping outfalls were utilized during excavation activities at VP-57, VP-58, the Pershall Road South Ditch, and St. Cin Park for the management of storm water with regard to sediment control and pumped excavation water. Moving outfalls are necessary to pump excess excavation water, which cannot be contained due to geographic conditions, to CWC. The excess excavation water is pumped to CWC in accordance with agreements made during a March 12, 2007, meeting with Mr. Tom Siegel of the MDNR, and as described in a subsequent letter from the USACE dated April 20, 2007 (USACE 2007). Excavation water sampling is conducted to verify compliance with the NPDES permit-equivalent requirements. The discharge parameters for the un-named outfalls follow the same NPDES parameters as Outfall 002.

Analytical results for the NC Sites are contained in Appendix C, Table C-1. Quarterly summaries of the CY 2015 storm-water monitoring events for the NC Sites are presented in the following subsections. NC Site storm-water monitoring results for CY 2015 are contained in Tables 3-1 through 3-4.

During CY 2015, rainfall data were obtained for the National Weather Service Lambert – St. Louis International Weather Station (Weather Underground, Inc. 2015), which is located adjacent to the NC Sites. Daily flow and rainfall data are contained in Appendix C, Table C-2.

First Quarter

During the first quarter (January, February, and March) of CY 2015, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-1). Samples were collected when flow permitted. Fourteen (14) sampling events were conducted at Un-Named Outfall VP-57, VP-58, and the Pershall Road South Ditch during the first quarter.

Second Quarter

During the second quarter (April, May, and June) of CY 2015, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-2). Samples were collected when flow permitted. Two (2) sampling events were conducted at Outfall 002 and at Un-Named Outfall VP-57, VP-58, and the Pershall Road South Ditch during the second quarter.

Table 3-1. First Quarter CY 2015 NPDES Sampling Events[a]

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results								
				Outfall 002			Un-Named Outfall – VP-57, VP-58, and Pershall Road					
	Daily Maximum	Monthly Average		Chemical Parameters								
				January	February	March	January		February		March	
Flow	Monitor only	Monitor only	MGD	[e]	[e]	[e]	0.008		[g]		0.008	
Oil and Grease	15	10	mg/L	[e]	[e]	[e]	2.4		[g]		Non-detect[q]	
TPHs	10	10	mg/L	[e]	[e]	[e]	Non-detect[p]		[g]		Non-detect[r]	
pH-Units	6.0-9.0	NA	s.u.	[e]	[e]	[e]	7.54		[g]		6.94	
COD[b]	120	90	mg/L	[e]	[e]	[e]	[b]		[g]		[b]	
SSs[o]	1.5	1	mL/L/hour	[e]	[e]	[e]	<0.1[f]		[g]		[h]	
Arsenic, Total Recoverable	100	100	µg/L	[e]	[e]	[e]	4.6		[g]		5.7	
Lead, Total Recoverable[c]	190	190	µg/L	[e]	[e]	[e]	[c]		[g]		[c]	
Chromium, Total Recoverable	280	280	µg/L	[e]	[e]	[e]	4.8		[g]		3.3	
Copper, Total Recoverable[c]	84	84	µg/L	[e]	[e]	[e]	[c]		[g]		[c]	
Cadmium, Total Recoverable	94	94	µg/L	[e]	[e]	[e]	0.15		[g]		0.14	
PCBs[d]	No release	No release	µg/L	[e]	[e]	[e]	Non-detect		[g]		Non-detect	
							Radiological Parameters[i,j,k]					
Event Sampling Date				Event 1	Event 2	Event 3	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6
				NA	NA	NA	01/05/15 - 01/06/15	01/12/15	01/14/15 - 01/15/15	01/19/15 - 01/20/15	01/22/15	01/26/15
Total U[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	3.E+00	4.E+00	2.E+00	2.E+00	1.E+00	4.E-01
Total Ra[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	5.E-07	-4.E-08	1.E-07	3.E-07	8.E-07	8.E-07
Total Th[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	-8.E-02	1.E-05	7.E-01	4.E-01	-3.E-01	6.E-01
Gross Alpha[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	2.E+00	3.E+00	8.E-01	2.E+00	0.E+00	3.E+00
Gross Beta[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	-1.E+00	-2.E+00	1.E+00	5.E-01	5.E+00	-3.E-01
Pa-231[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	3.E+00	3.E+00	-2.E+00	7.E+00	-9.E+00	-3.E+00
Ac-227[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	-4.E+00	-3.E+00	-7.E+00	-3.E+00	-1.E+00	3.E+01
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	[n]	[n]	[n]	[n]	[n]	[n]
Event Sampling Date				Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	Event 11	Event 12
				NA	NA	NA	02/02/15 - 02/04/15	02/09/15 - 02/10/15	03/10/15 - 03/12/15	03/16/15	03/19/15	03/23/15
Total U[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	1.E+00	4.E+00	7.E+00	5.E+00	1.E+00	1.E+00
Total Ra[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	2.E-07	-2.E-08	4.E-07	2.E-07	-7.E-08	5.E-10
Total Th[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]	[e]	6.E-01	5.E-01	1.E+00	2.E+00	-6.E-01	-9.E-01
Gross Alpha[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	1.E+00	4.E+00	-7.E-01	5.E+00	6.E+00	4.E+00
Gross Beta[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	2.E+00	4.E+00	2.E+00	8.E+00	3.E+00	-3.E+00
Pa-231[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	3.E+00	2.E+01	2.E+01	-2.E+01	-3.E+00	9.E-01
Ac-227[l]	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	-1.E+00	-2.E+00	-8.E-01	5.E+00	-1.E+00	-3.E+00
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	[e]	[e]	[e]	[n]	[n]	[n]	[n]	[n]	[n]

Table 3-1. First Quarter CY 2015 NPDES Sampling Events[a] (Continued)

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results								
	Daily Maximum	Monthly Average		Outfall 002			Un-Named Outfall – VP-57, VP-58, and Pershall Road					
				Radiological Parameters[j,k,l]								
Event Sampling Date				Event 7	Event 8		Event 13	Event 14				
				NA	NA		03/25/15 - 03/26/15	03/30/15				
Total U[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]		3.E+00	1.E+00				
Total Ra[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]		8.E-08	8.E-08				
Total Th[l,m]	Monitor only	Monitor only	µg/L	[e]	[e]		-2.E-01	2.E-06				
Gross Alpha[l]	Monitor only	Monitor only	pCi/L	[e]	[e]		6.E+00	8.E+00				
Gross Beta[l]	Monitor only	Monitor only	pCi/L	[e]	[e]		2.E+00	-2.E+00				
Pa-231[l]	Monitor only	Monitor only	pCi/L	[e]	[e]		-4.E+00	-2.E+01				
Ac-227[l]	Monitor only	Monitor only	pCi/L	[e]	[e]		-1.E+00	-3.E+00				
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	[e]	[e]		[n]	[n]				

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch or more of liquid in a 24-hour period that may also exceed the duration of 24 hours; two events experienced within 48 hours may be reported together.
[b] Per the USACE letter dated November 18, 2003, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[c] Lead and copper sampling are no longer necessary per the ROD.
[d] Detection Limit (DL) = 0.5 µg/L.
[e] Per the USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.
[f] The SS values for the Un-Named Outfall – VP-57, VP-58, and Pershall Road ranged from 0 to 0.10 mL/L/hour with the volume-weighted average of less than 0.1 mL/L/hour.
[g] Collection of a chemical sample was planned for late February; however, because of a lack of rainfall during that timeframe, no sample was collected.
[h] The SS values for the Un-Named Outfall – VP-57, VP-58, and Pershall Road ranged from 0 to 0.20 mL/L/hour with the volume-weighted average of 0.1 mL/L/hour.
[i] Value reported is based on a volume-weighted average of analyte activity concentrations for samples collected during the defined event. Corresponding radiological samples were collected on the same date as chemical samples; however, the radiological results are incorporated into the volume-weighted average for the specified event.
[j] Negative results are less than the laboratory system's background level.
[k] Ra-228 and Th-228 are assumed to be in secular equilibrium with Th-232; therefore, Th-232 results are used to estimate Ra-228 and Th-228 values.
[l] As specified in the permit-equivalent, radionuclides require monitoring only, and limits are not permit-specified.
[m] Total nuclide values (in µg/L) were calculated using the activity concentration values reported by the laboratory and values for specific activity listed in Table 8.4.1 of *The Health Physics and Radiological Health Handbook* (Shleien 1992).
[n] Semi-annual reporting requirement only.
[o] DL = 0.1 mL/L/hour.
[p] DL = 3.0 mg/L
[q] DL = 1.6 mg/L
[r] DL = 2.8 mg/L
µg/L – micrograms per liter
MGD – million gallons per day
mg/L – milligrams per liter
mL/L/hour – milliliter per liter per hour
NA – not applicable
s.u. – standard unit

Table 3-2. Second Quarter CY 2015 NPDES Sampling Events[a]

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results					
				Outfall 002			Un-Named Outfall – VP-57, VP-58, and Pershall Road		
				Chemical Parameters					
	Daily Maximum	Monthly Average		April	May	June	April	May	June
Flow	Monitor only	Monitor only	MGD	[e]	[e]	0.213	[f]	[g]	[g]
Oil and Grease	15	10	mg/L	[e]	[e]	Non-detect[n]	[f]	[g]	[g]
TPHs	10	10	mg/L	[e]	[e]	3.4	[f]	[g]	[g]
pH-Units	6.0-9.0	NA	s.u.	[e]	[e]	7.25	[f]	[g]	[g]
COD[b]	120	90	mg/L	[e]	[e]	39	[f]	[g]	[g]
SSs	1.5	1	mL/L/hour	[e]	[e]	0.1	[f]	[g]	[g]
Arsenic, Total Recoverable	100	100	µg/L	[e]	[e]	2.4	[f]	[g]	[g]
Lead, Total Recoverable [c]	190	190	µg/L	[e]	[e]	[c]	[f]	[g]	[g]
Chromium, Total Recoverable	280	280	µg/L	[e]	[e]	2.1	[f]	[g]	[g]
Copper, Total Recoverable [c]	84	84	µg/L	[e]	[e]	[c]	[f]	[g]	[g]
Cadmium, Total Recoverable	94	94	µg/L	[e]	[e]	0.12	[f]	[g]	[g]
PCBs[d]	No release	No release	µg/L	[e]	[e]	Non-detect	[f]	[g]	[g]
Event Sampling Date				Radiological Parameters[h,i,j]					
				Event 1	Event 2		Event 1	Event 2	
				NA	06/08/15		NA	NA	
Total U[k,l]	Monitor only	Monitor only	µg/L	[e]	3.E-01		9.E-01	[g]	
Total Ra[k,l]	Monitor only	Monitor only	µg/L	[e]	8.E-07		7.E-07	[g]	
Total Th[k,l]	Monitor only	Monitor only	µg/L	[e]	2.E+00		5.E+00	[g]	
Gross Alpha[k]	Monitor only	Monitor only	pCi/L	[e]	-4.E+00		4.E+00	[g]	
Gross Beta[k]	Monitor only	Monitor only	pCi/L	[e]	-2.E+00		7.E+00	[g]	
Pa-231[k]	Monitor only	Monitor only	pCi/L	[e]	7.E+01		6.E+00	[g]	
Ac-227[k]	Monitor only	Monitor only	pCi/L	[e]	-4.E+00		-4.E+00	[g]	
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	[e]	Non-detect		NS[m]	[g]	

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch or more of liquid in a 24-hour period that may also exceed the duration of 24 hours; two events experienced within 48 hours may be reported together.
[b] Per the USACE letter dated November 18, 2003, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[c] Lead and copper sampling are no longer necessary per the ROD.
[d] DL = 0.5 µg/L.
[e] Per the USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.
[f] Pumping was performed a few times early in April; then it was no longer necessary. No chemical sample was collected.
[g] No sample is required, because no rain events producing measurable flow offsite occurred, and no pumping activities were performed.
[h] Value reported is based on a volume-weighted average of analyte activity concentrations for samples collected during the defined event. Corresponding radiological samples were collected on the same date as chemical samples; however, the radiological results are incorporated into the volume-weighted average for the specified event.
[i] Negative results are less than the laboratory system's background level.
[j] Ra-228 and Th-228 are assumed to be in secular equilibrium with Th-232; therefore, Th-232 results are used to estimate Ra-228 and Th-228 values.
[k] As specified in the permit-equivalent, radionuclides require monitoring only, and limits are not permit-specified.
[l] Total nuclide values (in µg/L) were calculated using the activity concentration values reported by the laboratory and values for specific activity listed in Table 8.4.1 of *The Health Physics and Radiological Health Handbook* (Shleien 1992).
[m] Semi-annual reporting requirement only.
[n] DL = 1.7 mg/L.
NA – not applicable

THIS PAGE INTENTIONALLY LEFT BLANK

Third Quarter

During the third quarter (July, August, and September) of CY 2015, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-3). Samples were collected when flow permitted. One (1) sampling event was conducted at Un-Named Outfall St. Cin Park during the third quarter.

Fourth Quarter

During the fourth quarter (October, November, and December) of CY 2015, no NPDES samples were collected as no water was pumped (Table 3-4).

THIS PAGE INTENTIONALLY LEFT BLANK

Table 3-3. Third Quarter CY 2015 NPDES Sampling Events[a]

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results								
				Outfall 002			Un-Named Outfall – VP-57, VP-58, and Pershall Road			Un-Named Outfall – St. Cin Park		
	Daily Maximum	Monthly Average		Chemical Parameters								
				July	August	September	July	August	September	July	August	September
Flow	Monitor only	Monitor only	MGD	[e]	[e]	[e]	[f]	[g]	[g]	[f]	0.024	[f]
Oil and Grease	15	10	mg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	Non-detect[p]	[f]
TPHs	10	10	mg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	Non-detect[q]	[f]
pH-Units	6.0-9.0	NA	s.u.	[e]	[e]	[e]	[f]	[g]	[g]	[f]	6.85	[f]
COD[b]	120	90	mg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	[b]	[f]
SSs	1.5	1	mL/L/hour	[e]	[e]	[e]	[f]	[g]	[g]	[f]	<0.1[h]	[f]
Arsenic, Total Recoverable	100	100	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	1.3	[f]
Lead, Total Recoverable[c]	190	190	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	[c]	[f]
Chromium, Total Recoverable	280	280	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	1.4	[f]
Copper, Total Recoverable[c]	84	84	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	[c]	[f]
Cadmium, Total Recoverable	94	94	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	<0.1	[f]
PCBs[d]	No release	No release	µg/L	[e]	[e]	[e]	[f]	[g]	[g]	[f]	Non-detect	[f]
				Radiological Parameters[i,j,k]								
Event Sampling Date				Event 1			Event 1			Event 1[l]		
				NA			08/11/15 - 08/12/15			08/11/15 - 08/12/15		
Total U[m,n]	Monitor only	Monitor only	µg/L	[e]			[g]			-8.E-02		
Total Ra[m,n]	Monitor only	Monitor only	µg/L	[e]			[g]			2.E-07		
Total Th[m,n]	Monitor only	Monitor only	µg/L	[e]			[g]			8.E-01		
Gross Alpha[m]	Monitor only	Monitor only	pCi/L	[e]			[g]			-2.E-01		
Gross Beta[m]	Monitor only	Monitor only	pCi/L	[e]			[g]			-1.E+01		
Pa-231[m]	Monitor only	Monitor only	pCi/L	[e]			[g]			4.E+00		
Ac-227[m]	Monitor only	Monitor only	pCi/L	[e]			[g]			-2.E-01		
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	[e]			[g]			[o]		

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch or more of liquid in a 24-hour period that may also exceed the duration of 24 hours; two events experienced within 48 hours may be reported together.
[b] Per the USACE letter dated November 18, 2003, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[c] Lead and copper sampling are no longer necessary per the ROD.
[d] DL = 0.5 µg/L.
[e] Per the USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.
[f] No sample is required, because no rain events producing measurable flow offsite occurred, and no pumping activities were performed..
[g] Remediation work was completed at the Un-Named Outfall – VP-57, VP-58, and Pershall Road on July 9, 2015.
[h] The SS values for the Un-Named Outfall – St. Cin Park was 0 mL/L/hour with the weighted average of less than 0.1 mL/L/hour.
[i] Value reported is based on a volume-weighted average of analyte activity concentrations for samples collected during the defined event. Corresponding radiological samples were collected on the same date as chemical samples; however, the radiological results are incorporated into the volume-weighted average for the specified event.
[j] Negative results are less than the laboratory system's background level.
[k] Ra-228 and Th-228 are assumed to be in secular equilibrium with Th-232; therefore, Th-232 results are used to estimate Ra-228 and Th-228 values.
[l] Remediation work started at the Un-Named Outfall – St. Cin Park on July 29, 2015.
[m] As specified in the permit-equivalent, radionuclides require monitoring only, and limits are not permit-specified.
[n] Total nuclide values (in µg/L) were calculated using the activity concentration values reported by the laboratory and values for specific activity listed in Table 8.4.1 of *The Health Physics and Radiological Health Handbook* (Shleien 1992).
[o] Semi-annual reporting requirement only.
[p] DL = 1.5 mg/L.
[q] DL = 2.6 mg/L.
NA – not applicable

Table 3-4. Fourth Quarter CY 2015 NPDES Sampling Events[a]

Monitoring Parameter	Final Effluent Limitations		Units	Analytical Results								
				Outfall 002			Un-Named Outfall – Ballfields			Un-Named Outfall – St. Cin Park		
	Daily Maximum	Monthly Average		Chemical Parameters								
				October	November	December	October	November	December	October	November	December
Flow	Monitor only	Monitor only	MGD	e	e	e	f	f	f	f	f	f
Oil and Grease	15	10	mg/L	e	e	e	f	f	f	f	f	f
TPHs	10	10	mg/L	e	e	e	f	f	f	f	f	f
pH-Units	6.0-9.0	NA	s.u.	e	e	e	f	f	f	f	f	f
COD [b]	120	90	mg/L	e	e	e	f	f	f	f	f	f
SSs	1.5	1	mL/L/hour	e	e	e	f	f	f	f	f	f
Arsenic, Total Recoverable	100	100	µg/L	e	e	e	f	f	f	f	f	f
Lead, Total Recoverable[c]	190	190	µg/L	e	e	e	f	f	f	f	f	f
Chromium, Total Recoverable	280	280	µg/L	e	e	e	f	f	f	f	f	f
Copper, Total Recoverable[c]	84	84	µg/L	e	e	e	f	f	f	f	f	f
Cadmium, Total Recoverable	94	94	µg/L	e	e	e	f	f	f	f	f	f
PCBs[d]	No release	No release	µg/L	e	e	e	f	f	f	f	f	f
Event Sampling Date				Radiological Parameters[g,h]								
				Event 1			Event 1			Event 1		
				NA			NA			NA		
Total U[i,j]	Monitor only	Monitor only	µg/L	e			f			f		
Total Ra[i,j]	Monitor only	Monitor only	µg/L	e			f			f		
Total Th[i,j]	Monitor only	Monitor only	µg/L	e			f			f		
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	e			f			f		
Gross Beta[i]	Monitor only	Monitor only	pCi/L	e			f			f		
Pa-231[i]	Monitor only	Monitor only	pCi/L	e			f			f		
Ac-227[i]	Monitor only	Monitor only	pCi/L	e			f			f		
Radon (semi-annual monitoring)	Monitor only	Monitor only	pCi/L	e			f			f		

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch or more of liquid in a 24-hour period that may also exceed the duration of 24 hours; two events experienced within 48 hours may be reported together.
[b] Per the USACE letter dated November 18, 2003, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[c] Lead and copper sampling are no longer necessary per the ROD.
[d] DL = 0.5 µg/L.
[e] Per the USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.
[f] No sample is required, because no rain events producing measurable flow offsite occurred, and no pumping activities were performed..
[g] Value reported is based on a volume-weighted average of analyte activity concentrations for samples collected during the defined event. Corresponding radiological samples were collected on the same date as chemical samples; however, the radiological results are incorporated into the volume-weighted average for the specified event.
[h] Ra-228 and Th-228 are assumed to be in secular equilibrium with Th-232; therefore, Th-232 results are used to estimate Ra-228 and Th-228 values.
[i] As specified in the permit-equivalent, radionuclides require monitoring only, and limits are not permit-specified.
[j] Total nuclide values (in µg/L) were calculated using the activity concentration values reported by the laboratory and values for specific activity listed in Table 8.4.1 of *The Health Physics and Radiological Health Handbook* (Shleien 1992).
NA – not applicable

3.1.3 Evaluation of Excavation-Water Monitoring Results at the North St. Louis County Sites

On July 23, 2001, the MSD conditionally approved the discharge of treated excavation water to an MSD sanitary sewer manhole located at the SLAPS (MSD 2001). The current extension to the special discharge approval expires on July 23, 2016 (MSD 2014a). The primary condition of the approval requires a treatment system be installed, maintained, and operated to produce an effluent meeting the following standards: MSD ordinances 8472, 10177, and 10082 (MSD 1991, 1994, 1997); the U.S. Nuclear Regulatory Commission (NRC) requirements prescribed in 10 *CFR* 20, Appendix B; and the Missouri Department of Health and Senior Services (DHSS) requirements prescribed in 19 *Code of State Regulations (CSR)* 20-10. In addition, the MSD limits the annual allocation for radioactivity from the NC Sites to the MSD CWC treatment plant. The MSD establishes the maximum volume of excavation water discharge allowed in a 24-hour period and requires that the analytical results of the treated excavation water comply with applicable standards and limits prior to discharge. The evaluation of monitoring data results demonstrates that all ARARs have been met. The selenium discharge variance for the SLAPS was not utilized in CY 2015 (MSD 2005, 2008, 2010, 2012, 2014a). There is no longer a requirement to analyze for barium, lead, or selenium after the first two batches from new investigative areas (MSD 2012). Analytical results of the treated water are contained in Appendix C, Table C-3.

In CY 2015, approximately 1,852,244 gallons of treated excavation water from 11 treatment batches were released to MSD manholes 10L3-043S, 09K2-004S, and 09K2-005S (Table 3-5). The discharge location is illustrated on Figure 3-2. Batches of treated excavation water were sampled and analyzed for MSD effluent criteria (Appendix C, Table C-3).

Table 3-5. Excavation Water Discharged at the NC Sites in CY 2015

Quarter	Number of Discharges	Number of Gallons Discharged[a]	Total Activity (Curies [Ci])		
			Thorium[b]	Uranium (KPA)[c]	Radium[d]
1	2	185,984	1.06E-06	1.26E-05	7.49E-07
2	1	239,835	2.00E-06	1.04E-05	9.62E-07
3	3	607,008	2.70E-06	4.89E-06	2.19E-06
4	5	819,417	9.04E-06	1.65E-05	3.01E-06
Total	11	1,852,244	1.48E-05	4.44E-05	6.91E-06

[a] Quantities based on actual quarterly discharges from NC Sites.
[b] Calculated value based on the addition of isotopic analyses: Th-228 and Th-230.
[c] Value based on total U results (kinetic phosphorescence analysis [KPA]).
[d] Calculated value based on the addition of isotopic analyses: Ra-226 and Ra-228.

3.2 COLDWATER CREEK MONITORING

RA monitoring of surface water and sediment in CWC is required until the creek has been remediated. The purpose of the monitoring is to document that RAs are having a positive effect on the creek and to provide additional data to assess whether CWC is being measurably affected by COC migration from hydrostratigraphic zone (HZ)-A.

The EMP for CWC evaluates the water quality and the radiological and chemical parameters present in surface water and sediment. Surface water and sediment are monitored for the radiological and chemical parameters specified as List 2 of Table 3-3 of the EMICY15 (USACE 2014). The water quality parameters are measured for surface water only.

The water quality parameters measured include pH, temperature, dissolved oxygen (DO), specific conductivity, oxidation reduction potential (ORP), and turbidity. The objectives of the EMP are:

- to assess the quality of surface water and sediment in CWC;
- to compare the results with monitoring guidelines and/or ROD RGs as established for these media in the EMICY15 (USACE 2014); and,
- to evaluate/determine if runoff from the SLAPS, the HISS, the SLAPS VPs, and the Latty Avenue Properties affects the quality of surface water and sediment in CWC.

The MDNR has designated CWC as a metropolitan no-discharge stream. Therefore, discharges are prohibited, except as specifically permitted under the water quality standard (10 *CSR* 20-7.031) and non-contaminated storm-water flows (10 *CSR* 20-7.015.1.A.4). CWC, from its crossing of U.S. Highway 67 (Lindbergh Boulevard) to its mouth at the Missouri River (a distance of roughly 5.5 miles), is a Class C stream. Class C streams may cease flow during dry periods but maintain permanent pools that support aquatic life (10 *CSR* 20-7.031.1.F.6). The upper reach of CWC south of U.S. Highway 67, which includes the SLAPS/HISS reach, is an unclassified water of the state.

Surface-water and sediment samples are collected from CWC on a semi-annual basis as part of the EMP (USACE 2014). The sampling events are conducted at eight CWC monitoring stations (C002 through C004). Locations of the eight monitoring stations are shown on Figure 3-3. Monitoring station C004, located between the SLAPS and the HISS, is used to monitor the potential water quality impacts from the SLAPS to CWC. Monitoring station C005 is used to monitor water quality downstream from the HISS and the Latty Avenue VPs. Monitoring station C009, located just upstream from the St. Denis Bridge in Coldwater Commons Park, is the farthest downstream monitoring station on CWC.

Note that other non-FUSRAP industrial discharges are relatively common along the sampled reaches of CWC; therefore, sample parameters could be influenced by existing industrial sources other than former MED/AEC operations.

3.2.1 Coldwater Creek Surface-Water Monitoring Results

Sampling of surface water at CWC was conducted at or below base flow elevation during the months of March and October in CY 2015. The base flow elevation for CWC at the McDonnell Boulevard Bridge is 508.2 ft above mean sea level (amsl). The base flow also may be approximated by a depth measurement of 3.2 ft or less at an "average cross section." CWC surface-water monitoring included determining water quality parameters, as well as obtaining samples for metals and radionuclides listed in Table 3-3 of the EMICY15 (USACE 2014). Grab samples were collected and analyzed according to the protocol defined in the *Sampling and Analysis Guide for the St. Louis Sites* (SAG) (USACE 2000). In addition, isotopic U results were used to evaluate total U concentrations in surface water for comparison to the 30 micrograms per liter (µg/L) monitoring guideline described in the ROD (USACE 2005).

All surface-water monitoring required through implementation of the EMICY15 was conducted as planned during CY 2015 (USACE 2014). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The sample results are contained in Appendix D, Table D-1, of this EMDAR.

<u>Water Quality Parameters</u>

Water quality data are collected as part of the routine performance of surface-water sampling and are used as part of the overall evaluation of water quality. The water quality results for each surface-water monitoring station are summarized in Table 3-6. The average surface-water temperatures during the March and October sampling events were 15.4 and 16.9 degrees Celsius (°C), respectively. The average surface-water pH values were 7.48 and 6.99, respectively. The average pH values for both sampling events were within the acceptance range (6.0 to 9.0) and thus provide suitable conditions for aquatic life.

Table 3-6. Water Quality Results for CY 2015 CWC Surface-Water Sampling

Monitoring Parameter	Unit	Monitoring Station								Average
		C002	C003	C004	C005	C006	C007	C008	C009	
First Sampling Event (03/31/15)										
Temperature	°C	14.0	17.1	17.4	15.6	15.1	15.0	15.7	13.6	15.4
pH	standard unit	7.60	7.67	7.62	7.58	7.53	7.52	7.30	7.04	7.48
DO	mg/L	8.40	8.41	8.04	8.00	8.01	6.64	7.32	7.80	7.83
Specific Conductivity	microSiemens per centimeter (µS/cm)	0.153	0.158	0.163	0.169	0.162	0.167	0.161	0.166	0.162
ORP	millivolt (mV)	41	52	197	192	207	191	199	227	163
Turbidity	nephelometric turbidity units (NTU)	13.1	20.3	24.1	14.8	21.4	19.3	17.7	15.3	18.3
Second Sampling Event (10/20/15-10/21/15)										
Temperature	°C	18.7	19.2	18.0	17.6	15.8	15.5	15.0	15.4	16.9
pH	standard unit	7.23	7.01	6.90	6.47	7.10	7.12	7.18	6.98	6.99
DO	mg/L	8.57	8.64	7.09	8.62	7.25	7.51	7.22	7.12	7.75
Specific Conductivity	µS/cm	0.125	0.128	0.134	0.137	0.114	0.127	0.132	0.128	0.128
ORP	mV	245	257	261	275	245	244	236	244	251
Turbidity	NTU	0	21.4	38.7	49.3	194	160	115	188	95.8

Note: Water quality data are used as part of the overall evaluation of water quality, but no ROD-defined monitoring criteria exist.
NA – not applicable (No sample was collected during this event.)

Average DO levels were 7.83 milligrams per liter (mg/L) in March and 7.75 mg/L in October. Specific conductivity values were higher for the March event compared to the October event. The average specific conductivity for the March sampling event was 0.162 microSiemens per centimeter (µS/cm), and the average specific conductivity for the October sampling event was 0.128 µS/cm. The average ORP value during the March sampling event (163 millivolt [mV]) was less than that of the October sampling event (251 mV). The average turbidity value during the March sampling event (18.3 nephelometric turbidity units [NTUs]) was less than the October sampling event (95.8 NTUs).

Radiological Parameters

The radiological monitoring results for the CY 2015 CWC surface-water sampling events are summarized in Table 3-7. Historically, FUSRAP surface-water analysis has included unfiltered water samples for the following radiological parameters: Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. Unfiltered surface-water samples from CWC were not analyzed for Ra-228 during CY 2015, because Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.

Table 3-7. Radiological Results for CY 2015 CWC Surface-Water Sampling

Monitoring Parameter	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008	C009
Radionuclide Concentration (pCi/L)								
First Sampling Event (03/31/15)								
Ra-226	<1.21[a]	<1.23[a]	<1.22[a]	<1.05[a]	<1.09[a]	<1.35[a]	<1.28[a]	<1.04[a]
Th-228[b]	<0. 46[a]	0.43	<0.55[a]	<0.64[a]	<0.20[a]	<0.63[a]	0.64	<0.45[a]
Th-230	<0.46[a]	0.36	<0.48[a]	<0.64[a]	<0.67[a]	<0.20[a]	<0.50[a]	<0.45[a]
Th-232	<0.21[a]	<0.53[a]	<0.18[a]	<0.45[a]	<0.43[a]	<0.45[a]	<0.40[a]	<0.52[a]
U-234	0.98	<0.60[a]	0.88	1.11	1.07	1.49	1.16	<0.77[a]
U-235	<0.26[a]	<0.74[a]	<0.69[a]	<0.28[a]	<0.26[a]	<0.73[a]	<0.66[a]	<0.31[a]
U-238	0.98	0.73	0.74	0.82	0.71	1.23	0.75	1.47
Second Sampling Event (10/20/15-10/21/15)								
Ra-226	<1.11[a]	<1.63[a]	<1.47[a]	<0.74[a]	<1.67[a]	0.61	<1.18[a]	0.81
Th-228[b]	<0.51[a]	<0.41[a]	<0.64[a]	<0.64[a]	<0.84[a]	<0.42[a]	<0.61[a]	<0.46[a]
Th-230	0.63	<0.18[a]	0.76	0.69	<0.62[a]	<0.42[a]	0.42	<0.51[a]
Th-232	<0.19[a]	<0.50[a]	<0.46[a]	<0.38[a]	<0.20[a]	<0.34[a]	<0.36[a]	<0.40[a]
U-234	1.09	1.27	0.73	0.60	0.68	0.55	0.95	0.88
U-235	<0.47[a]	<0.25[a]	<0.51[a]	<0.46[a]	<0.53[a]	<0.55[a]	<0.48[a]	<0.54[a]
U-238	<0.17[a]	0.63	0.90	0.87	0.50	0.59	<0.18[a]	0.66

[a] Reported result is less than the minimum detectable concentration (MDC) and is therefore set equal to the MDC.
[b] Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.
Note: Total U (30 µg/L) is the only ROD monitoring guideline for surface water. Radiological monitoring parameter data are collected to monitor COC migration and to calculate total U.
NA – not applicable. (No sample was collected during this event.)

Surface-water data for U-234, U-235, and U-238 (reported in pCi/L) were converted to µg/L and compared to the 30 µg/L criterion for total U described in the ROD. The total U concentrations in surface water were significantly less than the 30 µg/L ROD criterion. A summary of the surface-water radiological data collected from CWC since 2005 is presented in Table 3-8.

Table 3-8. Comparison of Historical Radiological Surface-Water Results for CWC

Stations	Radionuclide	Units	03/05	10/05	03/06	09/06	03/07	10/07	04/08	11/08	04/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15
	Total U[a]	µg/L	3.0	1.3	0.72	2.2	2.3	2.2	3.2	2.2	1.6	3.3	2.4	2.3	2.3	3.8	1.9	2.0	2.43	2.64	4.11	1.53	3.33	2.04
	Ra-226	pCi/L	<0.42[b]	<0.39[b]	<0.44[b]	<0.46[b]	0.52	<0.67[b]	0.81	0.34	<0.39[b]	<0.48[b]	<0.17[b]	<1.51[b]	<2.14[b]	0.87	<1.47[b]	<1.44[b]	2.15	<2.50[b]	<2.04[b]	<1.30[b]	<1.21[a]	<1.11[a]
C002	Th-228[c]	pCi/L	<0.97[b]	<0.45[b]	0.64	<0.38[b]	0.25	<0.53[b]	<0.20[a]	<0.40[a]	<0.59[b]	0.21	0.46	<0.78[b]	<0.52[b]	<0.55[b]	<0.59[b]	<0.45[b]	<0.87[b]	<0.53[b]	<0.55[b]	0.25	<0. 46[a]	<0.51[a]
	Th-230	pCi/L	<0.97[b]	0.60	<0.55[b]	0.64	0.38	1.3	0.59	<0.40[a]	0.69	0.41	0.28	<0.68[b]	<0.52[b]	0.37	0.46	<0.45[b]	1.19	<0.65[b]	0.40	<0.38[b]	<0.46[a]	0.63
	Th-232	pCi/L	<0.36[b]	<0.45[b]	<0.77[b]	<0.38[b]	<0.17[b]	<0.38[b]	<0.20[a]	<0.18[a]	<0.59[b]	<0.41[b]	<0.19[b]	<0.68[b]	<0.17[b]	<0.20[b]	<0.42[b]	<0.20[b]	<0.32[b]	<0.24[b]	<0.18[b]	<0.17[b]	<0.21[a]	<0.19[a]
	Total U[a]	µg/L	4.5	2.8	2.1	1.2	3.1	2.1	4.4	3.6	3.9	3.4	5.4	2.3	6.0	3.4	2.8	2.8	4.09	1.97	2.49	1.68	1.80	2.95
	Ra-226	pCi/L	<0.41[b]	<0.45[b]	<0.41[b]	1.5	0.20	<0.54[b]	1.32	<0.49[a]	0.29	<.0.65[b]	<0.54[b]	<1.8[b]	<1.3[a]	<1.3[b]	<1.09[b]	<1.50[b]	1.62	<1.41[b]	<2.03[b]	<0.89[b]	<1.23[a]	<1.63[a]
C003	Th-228[c]	pCi/L	1.4	0.70	<0.54[b]	<0.50[b]	<0.54[b]	<0.42[b]	<0.44[a]	<0.33[a]	<0.50[b]	<0.48[b]	<0.63[b]	<0.60[b]	<0.53[a]	<0.50[b]	0.43	<0.54[b]	<0.38[b]	<0.44[b]	<0.26[b]	<0.56[b]	0.43	<0.41[a]
	Th-230	pCi/L	1.6	0.63	0.55	0.67	0.44	1.3	1.32	0.58	<0.41[b]	<0.67[b]	0.60	<0.61[b]	0.52	0.48	<0.23[b]	0.70	<0.38[b]	0.70	0.85	0.50	0.36	<0.18[a]
	Th-232	pCi/L	<0.92[b]	<0.40[b]	<0.20[b]	<0.41	<0.16[b]	<0.19[b]	<0.20[a]	<0.15[a]	0.20	<0.48[b]	<0.23[b]	<0.22[b]	<0.43[b]	<0.18[b]	<0.51[b]	<0.20[b]	<0.38[b]	<0.54[b]	<0.26[b]	<0.18[b]	<0.53[a]	<0.50[a]
	Total U[a]	µg/L	6.4	4.4	4.3	1.9	2.7	2.1	2.4	2.6	3.4	2.1	6.4	3.0	3.0	2.3	3.4	2.2	1.17	2.48	3.13	1.19	2.48	2.58
	Ra-226	pCi/L	<0.58[b]	<0.54[b]	<0.50[b]	<0.67[b]	0.41	<0.61[b]	<0.63[a]	<0.71[a]	0.64	<0.52[b]	<0.49[b]	<1.5[b]	<1.9[b]	0.64	<1.59[b]	<1.98[b]	<1.93[b]	<1.93[b]	1.52	<1.46[b]	<1.22[a]	<1.47[a]
C004	Th-228[c]	pCi/L	<0.93[b]	0.31	0.45	<0.44[b]	<0.53[b]	<0.17[b]	0.31	<0.50[a]	<0.51[b]	0.32	0.52	<0.65[b]	<0.52[b]	<0.49[b]	0.65	<0.18[b]	<0.65[b]	<0.18[b]	<0.97[b]	<0.52[b]	<0.55[a]	<0.64[a]
	Th-230	pCi/L	1.3	0.47	0.55	0.71	<0.38[b]	<0.45[b]	0.79	<0.50[a]	<0.51[b]	0.83	0.55	0.58	0.43	<0.49[b]	0.65	0.67	<0.65[b]	0.33	0.68	<0.42[b]	<0.48[a]	0.76
	Th-232	pCi/L	<0.34[b]	<0.47[b]	<0.19[b]	<0.20[b]	0.19	<0.19[b]	<0.21[a]	<0.18[a]	<0.51[b]	<0.38[b]	<0.20[b]	<0.24[b]	<0.20[b]	0.25	<0.49[b]	<0.18[b]	<0.29[b]	<0.39[b]	<0.63[b]	<0.42[b]	<0.18[a]	<0.46[a]
	Total U[a]	µg/L	3.8	4.9	2.1	3.0	4.8	1.4	4.0	3.2	1.8	3.9	3.1	3.0	2.1	2.6	1.7	1.8	2.31	1.42	2.51	1.14	3.15	2.23
	Ra-226	pCi/L	0.83	0.68	0.57	<0.36[b]	<0.51[b]	<0.64[b]	<0.74[a]	<0.20[a]	<0.42[b]	<0.40[b]	0.26	<0.64[b]	<1.8[b]	0.68	<1.48[b]	<2.39[b]	<1.60[b]	<1.76[b]	<1.84[b]	<1.19[b]	<1.05[a]	<0.74[a]
C005	Th-228[c]	pCi/L	0.88	<0.41[b]	<0.56[b]	0.26	<0.39[b]	0.23	<0.46[a]	<0.68[a]	0.21	<0.72[b]	0.33	<0.19[b]	<0.39[b]	0.32	<0.44[b]	<0.41[b]	<0.69[b]	<0.42[b]	<0.72[b]	0.37	<0.64[a]	<0.64[a]
	Th-230	pCi/L	1.5	0.52	0.87	0.46	<0.39[b]	0.99	1.7	0.32	0.41	<0.23[b]	0.27	0.42	<0.39[b]	<0.64[b]	0.44	0.76	0.69	0.63	0.65	<0.55[b]	<0.64[a]	0.69
	Th-232	pCi/L	<0.32[b]	<0.41[b]	<0.45[b]	<0.39[b]	<0.39[b]	<0.56[b]	<0.21[a]	<0.17[a]	0.34	<0.23[b]	<0.18[b]	<0.51[b]	<0.18[b]	<0.3[b]	<0.20[b]	<0.41[b]	<0.31[b]	<0.42[b]	<0.23[b]	<0.25[b]	<0.45[a]	<0.38[a]
	Total U[a]	µg/L	1.3	2.1	2.0	1.9	3.5	2.2	2.9	3.2	3.2	2.5	2.8	2.6	2.8	1.9	2.8	1.2	1.29	3.11	2.09	1.44	2.77	1.73
	Ra-226	pCi/L	<0.41[b]	<0.55[b]	<0.57[b]	<0.55[b]	0.51	<0.46[b]	<0.66[a]	0.91	5.26	<0.56[b]	<0.42[b]	<0.64[b]	<1.82[b]	<1.26[a]	<2.00[b]	<0.57[b]	<1.20[b]	<1.44[b]	0.95	<1.39[b]	<1.09[a]	<1.67[a]
C006	Th-228[c]	pCi/L	0.54	0.73	<0.56[b]	<0.59[b]	<0.43[b]	<0.36[b]	<0.56[a]	<0.39[a]	0.56	<0.42[b]	<0.42[b]	<0.19[b]	<0.44[b]	<0.57[b]	<0.24[b]	<0.46[b]	<0.25[b]	<0.17[b]	<0.70[b]	<0.41[b]	<0.20[a]	<0.84[a]
	Th-230	pCi/L	1.9	1.2	0.83	<0.52[b]	<0.16[b]	0.36	0.60	0.53	<0.48[b]	0.50	0.35	0.42	0.45	0.38	<0.54[b]	<0.53[b]	0.74	<0.17[b]	0.53	<0.33[b]	<0.67[a]	<0.62[a]
	Th-232	pCi/L	0.18	<0.20[b]	<0.18[b]	<0.19[b]	<0.16[b]	<0.16[b]	<0.20[a]	<0.39[a]	<0.22[b]	<0.19[b]	<0.42[b]	<0.51[b]	<0.21[b]	<0.26[b]	<0.24[b]	<0.17[b]	<0.25[b]	<0.17[b]	<0.45[b]	<0.15[b]	<0.43[a]	<0.20[a]
	Total U[a]	µg/L	1.9	2.1	1.9	1.7	3.1	1.7	2.7	1.8	2.3	3.0	2.5	2.8	2.6	1.6	1.9	1.3	2.15	5.65	2.06	1.84	4.29	1.69
	Ra-226	pCi/L	<0.79[b]	<0.43[b]	<0.58[b]	<0.40[b]	0.55	<0.46[b]	<0.81[a]	<0.18[a]	<0.51[b]	0.22	<0.19[b]	<2.24[b]	<1.2[b]	<1.4[b]	<1.53[b]	<1.61[b]	1.42	<2.01[b]	<1.54[b]	<0.98[b]	<1.35[a]	0.61
C007	Th-228[c]	pCi/L	0.78	0.42	<0.41[b]	<0.38[b]	<0.17[b]	<0.47[b]	0.51	0.18	<0.23[b]	<0.46[b]	<0.47[b]	0.53	<0.43[b]	<0.40[b]	<0.20[b]	<0.37[b]	<0.80[b]	<0.19[b]	<0.42[b]	<0.89[b]	<0.63[a]	<0.42[a]
	Th-230	pCi/L	<0.44[b]	1.3	0.62	0.45	<0.17[b]	0.99	1.03	0.47	0.25	<0.46[b]	0.51	<0.49[b]	0.59	0.40	0.59	0.59	<0.29[b]	0.90	0.67	<0.57[b]	<0.20[a]	<0.42[a]
	Th-232	pCi/L	<0.36[b]	<0.36[b]	<0.19[b]	<0.18[b]	<0.17[b]	<0.38[b]	<0.41[a]	<0.16[a]	<0.23[b]	<0.21[b]	<0.21[b]	<0.40[b]	<0.20[b]	<0.18[b]	<0.19[b]	<0.37[b]	<0.29[b]	<0.51[b]	<0.19[b]	<0.26[b]	<0.45[a]	<0.34[a]
	Total U[a]	µg/L																				1.32	2.82	1.79
	Ra-226	pCi/L																				<0.83[b]	<1.28[a]	0.61
C008[d]	Th-228[c]	pCi/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.54[b]	0.64	<0.42[a]
	Th-230	pCi/L																				0.22	<0.50[a]	<0.42[a]
	Th-232	pCi/L																				<0.20[b]	<0.40[a]	<0.36[a]
	Total U[a]	µg/L																				1.92	3.53	2.47
	Ra-226	pCi/L																				<0.90[b]	<1.04[a]	0.81
C009[d]	Th-228[c]	pCi/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.40[b]	<0.45[a]	<0.46[a]
	Th-230	pCi/L																				<0.49[b]	<0.45[a]	<0.51[a]
	Th-232	pCi/L																				<0.18[b]	<0.52[a]	<0.40[a]

[a] Total U is equal to the sum of the concentrations of U isotopes (in pCi/L) divided by 0.677, where 0.677 microgram per picocurie is the specific activity for total U, assuming secular equilibrium.
[b] Reported result is less than the MDC and is therefore set equal to the MDC.
[c] Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.
[d] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
Note: Total U (30 µg/L) is the only ROD monitoring guideline for surface water. The other radiological monitoring parameter data are collected to monitor COC migration.
NA – not applicable. (No sample was collected during this event, because this station was established in 2014.)

Chemical Parameters

No chemical-specific ROD monitoring guidelines exist for surface water. Chemical monitoring parameter data are collected to monitor COC migration. The chemical monitoring results for the CY 2015 CWC surface-water sampling events are presented in Table 3-9.

Table 3-9. Chemical Results for CY 2015 CWC Surface-Water Sampling

Monitoring Parameter[a]	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008	C009
Target Analyte List Metals Concentration (μg/L)								
First Sampling Event (03/31/15)								
Antimony	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]
Arsenic	3.6	3.3	2.8	3.1	2.4	2.7	2.1	2.2
Barium	180	180	190	180	180	170	180	190
Cadmium	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]
Chromium	<1.0[b]	1.2	1.5	1.2	1.2	1.0	1.0	<1.0[b]
Molybdenum	8.0	8.7	8.5	8.4	7.3	7.2	7.5	7.1
Nickel	2.9	2.8	3.0	3.0	3.0	2.8	2.7	2.8
Selenium	1.6	2.1	3.6	3.2	3.5	<1.6[b]	2.5	3.0
Thallium	0.78	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]
Vanadium	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]
Second Sampling Event (10/21 to 10/22/15)								
Antimony	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]
Arsenic	3.3	3.7	3.6	3.7	3	3	2.8	2.7
Barium	120	150	170	180	140	140	160	170
Cadmium	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]
Chromium	<1.0[b]	1.6	1.4	1.4	2.1	1.4	1.2	<1.0[b]
Molybdenum	6.0	8.2	8.1	8.4	6.5	6.4	7.2	7.2
Nickel	2.1	3.0	3.3	3.6	3.2	3.0	3.3	3.4
Selenium	<1.6[b]	2.0	2.3	3.1	2.9	<1.6[b]	1.6	<1.6[b]
Thallium	0.81	1.2	<0.55[b]	<0.55[b]	<0.55[b]	<055[b]	<0.55[b]	<0.55[b]
Vanadium	<2.4[b]	<2.4[b]	<2.4[b]	2.4	4.0	3.0	2.9	3.1

[a] No chemical-specific ROD monitoring guidelines exist for surface water.
[b] Reported result is less than the MDC and is therefore set equal to the MDC.

3.2.2 Coldwater Creek Sediment Monitoring Results

CY 2015 sediment sampling at CWC was conducted during the months of March and October as part of the EMP. Sediment samples were collected in depositional environments near each of the eight previously described surface-water locations (C002 through C009) (Figure 3-3) and analyzed according to the methods described in the SAG (USACE 2000). Sediment samples collected for the EMP were evaluated for the radiological and metal constituents listed in Table 3-3 of the EMICY15 (USACE 2014).

All sediment monitoring required through implementation of the EMICY15 was conducted as planned during CY 2015 (USACE 2014). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The analytical results from these monitoring activities are contained in Appendix D, Table D-2, of this EMDAR.

Radiological Parameters

The radiological results for CY 2015 CWC sediment sampling events are presented in Table 3-10. The ROD established sediment RGs for Ra-226, Th-230, and U-238 at the NC Sites (USACE 2005). Therefore, sediment sampling results for those radionuclides were compared against their corresponding RGs. Sediment samples from CWC were not analyzed for U-234 during CY 2015, because U-234 is assumed to be in equilibrium with U-238.

Table 3-10. Radiological Results for CY 2015 CWC Sediment Sampling

Monitoring Parameter	RGs[a]	Monitoring Stations							
		C002	C003	C004	C005	C006	C007	C008	C009
Radionuclide Concentration (picocuries per gram [pCi/g])									
First Sampling Event (03/31/15)									
Ac-227	No RG	<0.09[b]	<0.13[b]	<0.16[b]	<0.15[b]	<0.15[b]	<0.21[b]	<0.15[b]	<0.16[b]
Pa-231	No RG	<0.29[b]	<0.45[b]	<0.47[b]	<0.44[b]	<0.47[b]	<0.70[b]	<0.48[b]	<0.53[b]
Ra-226	15	0.78	1.00	1.00	1.12	1.06	1.10	1.17	1.26
Ra-228	No RG	0.18	0.82	0.90	0.94	0.85	0.87	0.81	0.94
Th-228[c]	No RG	<0.18[b]	0.84	1.81	1.27	1.20	1.06	1.18	1.16
Th-230[c]	43	0.56	2.57	1.7	2.13	1.52	3.89	2.48	2.27
Th-232[c]	No RG	0.26	0.84	1.32	0.88	0.74	0.66	1.19	1.22
U-235	No RG	<0.11[b]	<0.17[b]	<0.18[b]	<0.17[b]	<0.18[b]	<0.24[b]	<0.18[b]	<0.20[b]
U-238[d]	150	0.68	1.31	0.80	0.69	1.33	0.77	0.91	0.86
Second Sampling Event (10/20/15-10/21/15)									
Ac-227	No RG	<0.16[b]	<0.11[b]	<0.16[b]	<0.15[b]	<0.15[b]	<0.14[b]	<0.17[b]	<0.15[b]
Pa-231	No RG	<0.48[b]	<0.31[b]	<0.51[b]	<0.47[b]	<0.47[b]	<0.44[b]	<0.54[b]	<0.48[b]
Ra-226	15	1.26	0.92	1.21	1.05	1.28	1.08	1.23	1.19
Ra-228	No RG	1.01	0.22	1.01	0.81	0.90	0.64	0.76	0.81
Th-228[c]	No RG	1.52	0.44	1.31	1.50	0.88	1.24	0.86	1.06
Th-230[c]	43	1.53	0.57	3.02	2.28	2.12	3.91	3.36	2.99
Th-232[c]	No RG	1.36	0.25	0.81	0.97	1.27	0.87	0.55	0.63
U-235	No RG	<0.20[b]	<0.13[b]	<0.20[b]	<0.19[b]	<0.19[b]	<0.18[b]	<0.20[b]	<0.19[b]
U-238[d]	150	0.95	0.46	1.02	1.19	0.85	0.66	0.69	0.82

[a] RGs presented in the ROD (USACE 2005).
[b] Reported result is less than the MDC and is therefore set equal to the MDC.
[c] Both gamma spectroscopy and alpha spectroscopy results are produced; alpha spectroscopy results are reported.
[d] U-238 and U-234 are assumed to be in equilibrium.

All sediment data results were below the RGs established by the ROD. The historical radiological sediment sampling data for all monitoring stations since 2005 are summarized in Table 3-11.

Chemical Parameters

Chemical monitoring results for CY 2015 CWC sediment sampling events are presented in Table 3-12.

Table 3-11. Comparison of Historical Radiological Sediment Results for CWC

Station	Radionuclide	Units	03/05	10/05	03/06	09/06	03/07	10/07	04/08	11/08	03/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15
C002	Total U[a]	pCi/g	0.91	0.93	1.2	1.7	0.97	1.1[b]	1.7	0.73	0.80	0.89	1.3	1.3	1.4	1.1	0.84	1.21	1.49	1.02	0.75	0.90	1.35	1.89
	Ra-226	pCi/g	0.92	0.69	0.74	0.72	0.97	<0.37[b,c]	1.0	0.85	0.75	1.07	0.71	0.95	0.87	0.85	0.89	0.911	0.91	1.01	0.94	0.88	0.78	1.26
	Ra-228	pCi/g	0.26	0.26	0.22	0.29	0.20	0.18	0.20	0.17	0.20	0.24	0.30	0.33	0.27	0.28	0.24	0.372	0.30	0.28	0.26	0.36	0.18	1.01
	Th-228	pCi/g	0.51	0.61	0.75	0.67	0.26	0.24[b]	0.53	0.41	0.50	0.35	0.46	0.44	0.26	0.37	0.37	0.37	0.30	<0.16[c]	<0.26[c]	0.69	<0.18[b]	1.52
	Th-230	pCi/g	0.78	0.98	1.1	1.3	1.2	0.84[b]	0.92	1.1	0.51	1.2	0.67	1.2	1.5	1.1	0.52	0.64	1.06	1.20	0.69	0.55	0.56	1.53
	Th-232	pCi/g	<0.26[c]	0.41	0.30	0.22	0.46	<0.24[b,c]	0.24	<0.26[c]	0.28	0.31	0.53	0.21	<0.29[c]	0.39	0.35	0.47	0.36	<0.44[c]	0.26	0.55	0.26	1.36
C003	Total U[a]	pCi/g	1.6	2.0	1.4	1.4	1.2	2.0[b]	1.9	2.3	1.2	2.9	0.72	1.7	1.4	1.5	1.20	1.78	1.80	1.01	0.90	2.04	2.68	0.99
	Ra-226	pCi/g	1.0	1.5	1.1	1.3	1.5	1.7[b]	1.1	1.1	0.79	1.4	0.98	1.1	0.73	1.2	1.07	1.33	1.41	1.03	1.42	1.22	1.00	0.92
	Ra-228	pCi/g	0.59	0.86	0.45	0.38	0.68	0.49	0.49	0.57	0.40	1.0	0.44	0.36	0.39	0.79	0.81	0.78	0.91	0.36	0.91	0.63	0.82	0.22
	Th-228	pCi/g	1.1	0.92	1.2	0.34	0.97	0.53[b]	0.70	0.66	0.64	1.1	0.85	0.42	0.55	1.79	1.69	1.23	1.01	0.94	1.21	0.68	0.84	0.44
	Th-230	pCi/g	3.5	1.5	2.6	3.8	1.2	1.5[b]	2.1	2.3	1.2	1.5	1.0	1.1	0.89	1.9	1.81	1.19	3.92	1.90	1.67	1.04	2.57	0.57
	Th-232	pCi/g	0.75	0.71	0.69	0.43	0.38	0.46[b]	0.51	0.57	0.34	0.73	0.43	0.17	0.64	1.22	1.28	1.18	0.99	<0.35[c]	0.95	0.89	0.84	0.25
C004	Total U[a]	pCi/g	2.1	2.1	1.6	1.9	2.7	7.3[b,d]	2.0	2.3	2.0	3.3	1.8	2.6	1.8	2.0	2.84	3.09	1.97	2.14	1.84	1.20	1.67	2.14
	Ra-226	pCi/g	1.0	1.3	1.2	1.2	1.3	1.6[b]	1.0	1.0	0.97	1.3	1.3	1.5	1.1	1.3	1.13	1.28	1.16	1.25	1.62	1.36	1.00	1.21
	Ra-228	pCi/g	0.85	0.87	0.83	0.74	0.80	0.81	0.70	1.0	0.73	0.85	0.62	0.81	0.85	0.96	0.85	0.86	0.72	0.62	0.80	0.89	0.90	1.01
	Th-228	pCi/g	0.99	1.1	0.9	0.93	1.7	1.3[b]	1.2	1.4	0.83	1.1	0.90	1.2	1.4	1.3	1.72	1.24	0.74	1.09	0.94	0.73	1.81	1.31
	Th-230	pCi/g	2.0	2.2	2.2	2.1	2.6	2.2[b]	2.0	1.0	1.7	2.0	2.2	1.6	2.7	3.8	2.41	1.28	2.37	2.15	3.11	1.82	1.7	3.02
	Th-232	pCi/g	0.82	0.86	1.0	0.85	0.79	0.97[b]	1.3	0.80	0.82	1.0	0.77	1.0	0.85	1.1	1.45	1.13	0.84	1.42	0.57	1.50	1.32	0.81
C005	Total U[a]	pCi/g	3.3	2.0	2.3	2.0	0.94	2.0[b]	2.0	3.6	1.6	2.8	1.6	3.6	1.8	2.5	4.36	2.5	1.86	1.20	2.10	1.55	1.58	2.44
	Ra-226	pCi/g	1.6	1.8	1.4	1.4	1.7	1.6[b]	1.1	5.4	1.0	1.4	1.5	2.5	1.2	1.5	1.47	1.33	1.28	1.01	1.59	1.62	1.12	1.05
	Ra-228	pCi/g	0.85	0.73	0.78	0.53	0.98	0.58	0.78	1.1	0.31	0.86	0.73	0.88	0.56	0.94	0.92	0.90	0.87	0.47	1.00	0.99	0.94	0.81
	Th-228	pCi/g	0.99	0.95	1.5	1.0	1.5	0.68[b]	0.98	1.7	0.50	1.3	0.92	0.96	0.61	0.61	1.05	1.30	0.64	0.82	1.35	1.19	1.27	1.50
	Th-230	pCi/g	8.4	4.5	11	11	4.7	3.7[b]	6.6	82.6	4.2	9.6	2.2	19.6	3.9	3.4	4.3	5.42	4.65	3.26	1.53	1.58	2.13	2.28
	Th-232	pCi/g	0.43	0.57	1.3	0.77	1.6	0.45[b]	0.98	1.4	0.50	0.87	0.65	1.1	0.63	0.87	1.01	1.23	1.08	0.49	1.16	0.69	0.88	0.97
C006	Total U[a]	pCi/g	2.6	1.8	2.7	2.3	2.9	2.3[b]	1.7	1.8	2.1	0.75	1.9	2.2	2.0	1.0	2.35	1.97	1.53	1.87	0.19	2.60	2.77	1.70
	Ra-226	pCi/g	1.2	1.3	1.3	1.3	1.4	0.94[b]	1.0	1.4	1.0	1.1	1.7	1.7	1.3	0.90	1.16	1.02	1.13	1.37	1.38	1.36	1.06	1.28
	Ra-228	pCi/g	0.94	1.0	0.74	0.92	0.97	0.93	0.88	0.98	0.82	0.99	0.88	0.88	0.86	0.48	1.06	0.94	0.99	0.91	1.01	1.05	0.85	0.90
	Th-228	pCi/g	1.4	1.2	0.92	2.0	0.99	1.6[b]	1.7	0.94	1.5	1.6	1.0	0.82	1.9	0.54	1.38	1.03	0.97	1.07	0.60	1.18	1.20	0.88
	Th-230	pCi/g	2.2	2.1	2.8	3.2	1.8	2.7[b]	3.4	2.2	2.2	2.6	2.0	4.1	9.7	1.2	3.39	1.78	2.18	1.57	2.30	2.39	1.52	2.12
	Th-232	pCi/g	1.3	0.98	1.3	0.85	1.1	1.4[b]	1.1	1.2	1.1	0.97	0.80	0.71	1.6	0.82	1.00	1.30	1.31	0.88	0.85	1.04	0.74	1.27
C007	Total U[a]	pCi/g	2.8	1.6	2.1	1.9	2.0	2.3[b]	1.4	2.3	1.9	2.6	2.2	1.7	1.9	2.4	2.45	3.08	2.13	1.79	0.49	3.35	1.55	1.32
	Ra-226	pCi/g	1.1	1.5	1.3	1.5	1.9	1.1[b]	1.1	1.4	1.1	1.3	1.4	1.4	1.3	1.4	1.23	1.06	1.32	1.20	1.55	2.12	1.10	1.08
	Ra-228	pCi/g	0.87	0.90	0.99	0.87	0.79	0.84	0.69	0.89	0.77	0.77	0.82	0.73	0.87	0.81	0.89	0.80	0.85	0.54	0.77	1.01	0.87	0.64
	Th-228	pCi/g	0.79	1.2	1.2	1.0	1.2	1.5[b]	0.73	0.67	1.1	0.66	1.0	0.78	1.4	1.3	2.07	0.96	0.86	0.94	0.74	0.80	1.06	1.24
	Th-230	pCi/g	5.6	2.9	3.8	2.8	19	4.6[b]	3.8	3.6	3.6	2.3	2.6	4.4	3.3	2.8	3.51	2.73	3.25	4.50	3.19	6.81	3.89	3.91
	Th-232	pCi/g	0.98	1.4	1.1	0.84	1.2	0.83[b]	0.55	0.72	1.00	0.57	1.04	0.72	0.93	0.95	1.14	0.70	0.62	0.69	1.21	0.85	0.66	0.87
C008[e]	Total U[a]	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.60	1.81	1.37
	Ra-226	pCi/g																				1.22	1.17	1.23
	Ra-228	pCi/g																				0.72	0.81	0.76
	Th-228	pCi/g																				0.82	1.18	0.86
	Th-230	pCi/g																				2.80	2.48	3.36
	Th-232	pCi/g																				0.56	1.19	0.55

Table 3-11. Comparison of Historical Radiological Sediment Results for CWC (Continued)

Station	Radionuclide	Units	03/05	10/05	03/06	09/06	03/07	10/07	04/08	11/08	03/09	10/09	03/10	10/10	03/11	10/11	03/12	10/12	04/13	10/13	03/14	10/14	03/15	10/15
C009[e]	Total U[a]	pCi/g	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.79	1.72	1.63
	Ra-226	pCi/g																				1.43	1.26	1.19
	Ra-228	pCi/g																				0.80	0.94	0.81
	Th-228	pCi/g																				0.86	1.16	1.06
	Th-230	pCi/g																				3.96	2.27	2.99
	Th-232	pCi/g																				1.06	1.22	0.63

[a] Total U is equal to the sum of the concentrations of U isotopes (Office of the Federal Register, NARA 1998).
[b] Both gamma spectroscopy and alpha spectroscopy results were produced; gamma spectroscopy results are reported.
[c] Reported result is less than the MDC and is therefore set equal to the MDC.
[d] The 7.3 pCi/g value for total U obtained in 10/07 from C004 was a typographical error. The result should be reported as 1.3.
[e] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
Note: The sediment RGs for Ra-226, Th-230, and U-238 are 15 pCi/g, 43 pCi/g, and 150 pCi/g, respectively. The other radiological monitoring parameter data are collected to monitor COC migration.
NA – not applicable. (No sample was collected during this event, because this station was established in 2014.)

Table 3-12. Chemical Results for CY 2015 CWC Sediment Sampling

Monitoring Parameter	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008	C009
Target Analyte List Metals Concentration (milligrams per kilogram [mg/kg])								
First Sampling Event (03/31/15)								
Antimony	0.76	<0.44[a]	<0.44[a]	<0.52[a]	<0.50[a]	<0.51[a]	<0.48[a]	<0.50[a]
Arsenic	4.1	3.4	4.5	3.7	2.1	4.6	2.6	4.5
Barium	2,900	160	140	110	97	120	110	120
Cadmium	0.23	0.26	0.38	0.27	0.29	0.53	0.39	0.4
Chromium	29	13	17	15	13	18	13	18
Molybdenum	2.8	<0.84[a]	<0.85[a]	<0.99[a]	<0.95[a]	<0.97[a]	<0.91[a]	<0.96[a]
Nickel	13	14	15	15	11	13	14	13
Selenium	1.1	4.2	2.0	2.3	1.6	2.1	2.1	2.5
Thallium	<0.85[a]	<1.0[a]	<1.0[a]	<1.2[a]	<1.2[a]	<1.2[a]	<1.1[a]	<1.2[a]
Vanadium	11	21	20	19	15	18	14	18
Second Sampling Event (10/20/15-10/21/15)								
Antimony	<0.36[a]	<0.42[a]	<0.42[a]	<0.43[a]	<0.40[a]	0.41	<0.42[a]	<0.40[a]
Arsenic	10	12	8.0	5.9	7.2	9.7	16	6.6
Barium	440	280	200	130	240	190	260	200
Cadmium	0.50	0.44	0.70	0.27	0.32	0.90	0.67	0.47
Chromium	9.4	22	29	26	23	30	25	25
Molybdenum	3.6	0.91	<0.80[a]	<0.83[a]	<0.75[a]	2.5	1.2	<0.77[a]
Nickel	9.2	31	21	28	29	22	35	23
Selenium	<0.89[a]	3.1	2.9	4.6	3.1	2.7	3.0	3.3
Thallium	<0.85[a]	<0.99[a]	<0.98[a]	<1.0[a]	<0.92[a]	<0.89[a]	<0.98[a]	<0.94[a]
Vanadium	9.2	43	29	32	33	27	48	32

[a] Reported result is less than the DL and is therefore set equal to the DL.

Note: There are no chemical-specific ROD RGs or monitoring guidelines for sediment. Chemical monitoring parameter data are collected to monitor COC migration.

3.2.3 Impact of FUSRAP Coldwater Creek Remedial Action on Total Uranium Concentrations in Coldwater Creek Surface Water and Sediment

As part of the FUSRAP RA at the SLAPS, sediment and soil were removed from the bed and banks of CWC near monitoring stations C002 and C003 during August of 2004. An evaluation was conducted to determine if the SLAPS RA resulted in increased levels of uranium in CWC. The concentrations of radionuclides in sediment and surface-water samples from various stations along CWC were assessed. Radionuclide data from surface-water and sediment samples collected from March of 2000 to March of 2004 were used to create a baseline for comparison with sample results collected after the RA.

<u>Methodology</u>

CY 2015 total U results from surface-water and sediment samples from six monitoring stations (C002 through C007) were compared to the 2000 to 2004 dataset for this evaluation. Total U was selected for this evaluation, because it is among the most mobile of all the radionuclide COCs present at the SLAPS.

The total U concentration statistics for surface water and sediment at monitoring stations C002 through C007 for 2000 through 2004 are presented in Table 3-13.

Table 3-13. Total Uranium Concentration Statistics for CWC (2000-2004)

Stations[a]	Statistics for Total U in Surface Water March 2000 to March 2004 Data (pCi/L)			Statistics for Total U in Sediment March 2000 to March 2004 Data (pCi/g)		
	UCL_{95}	Mean	LCL_{95}	UCL_{95}	Mean	LCL_{95}
C002	4.2	3.1	1.9	1.7	1.4	1.1
C003	3.8	3.3	2.7	1.9	1.5	1.0
C004	4.5	3.4	2.3	2.3	1.7	1.2
C005	4.1	3.0	1.9	2.8	2.4	2.0
C006	8.2[b]	5.0	[c]	3.0	2.4	1.8
C007	4.7	3.4	0.75	2.5	1.9	1.3

[a] Monitoring stations C008 and C009 were established in 2014.
[b] March 2000 to March 2004 data are gamma distributed. Therefore, approximate gamma upper confidence limit (UCL) is used.
[c] The 95 percent lower confidence limit (LCL_{95}) is not calculated due to gamma-distributed data.

Qualitative trend line graphs of total U results from surface-water and sediment samples collected at monitoring stations C002 through C007 from March of 2000 to October of 2015 are presented on Figures 3-4 and 3-5. The mean, 95 percent upper confidence limit (UCL_{95}), and 95 percent lower confidence limit (LCL_{95}) concentrations of total U calculated from the March 2000 to March 2004 dataset are also shown on Figures 3-4 and 3-5.

Surface-water and sediment data and associated qualitative trend line graphs for total U from monitoring stations C008 and C009 will be presented in future EMDARs when additional samples are collected and data are available.

Conclusion

The data fit two hypothetical scenarios. First, the post-RA sampling results were not significantly less than the pre-RA sampling results for downstream stations at the SLAPS (C003 through C007), so it is unlikely that total U from the SLAPS RA is causing a significant contribution to CWC. The RA over time should markedly reduce the total U load in CWC if the SLAPS were a significant contributor. While a time lag in the fate downstream could occur, the current total U concentrations are already low. Second, the RA within CWC did not adversely impact concentrations of total U in CWC surface water or sediment. Had the RA contributed adversely, an excessive short-term increase in total U concentrations would have been observed.

THIS PAGE INTENTIONALLY LEFT BLANK

4.0 EVALUATION OF GROUND-WATER MONITORING DATA

Twenty (20) ground-water monitoring wells were sampled at the NC Sites during CY 2015. Ground water was sampled following protocol for individual wells and analytes, and was analyzed for various radiological constituents and inorganic analytes. Static water levels were measured quarterly at the retained monitoring wells. In addition, field parameters were measured continuously during purging of the wells before sampling. The static water levels and other ground-water field parameter results for CY 2015 sampling are contained in Appendix E, Tables E-1 and E-2. Summary tables providing the NC Sites ground-water analytical sampling results for CY 2015 are contained in Appendix E, Tables E-3 and E-4.

Ground-Water Guidelines

The CY 2015 ground-water monitoring data for the NC Sites are compared to the ROD ground-water monitoring guidelines (henceforth referred to as ROD guidelines) listed in Tables F-1 and F-2 in Appendix F of this EMDAR. The ROD guidelines for the NC Sites are based on requirements specified in the ROD (USACE 2005) and are further explained in Sections 4.1.1 and 4.2.1.

Stratigraphy at the North St. Louis County Sites

The stratigraphic units present at the NC sites are shown in the stratigraphic column presented on Figure 4-1. Fill and topsoil (Unit 1) overlie Pleistocene loess (Unit 2) and glaciolacustrine deposits. The glaciolacustrine sediments consist of Subunit 3T (silty clay), Subunit 3M (moderately to highly plastic clay), Subunit 3B (silty clay), and Unit 4 (clayey and sandy gravel). Beneath these unconsolidated deposits, the bedrock is composed of Mississippian limestone (Unit 6). Stratigraphic Unit 5, Pennsylvanian shale bedrock, is not present at the HISS or Futura, but is found directly overlying Unit 6 under portions of the SLAPS.

4.1 LATTY AVENUE PROPERTIES

The Latty Avenue Properties include the HISS, Futura, and eight Latty Avenue VPs (VPs 01[L] through 06[L], VP-40A, and Parcel 10K530087). The ground-water monitoring wells at the Latty Avenue Properties are located on or immediately adjacent to the HISS and Futura.

Stratigraphy at the Latty Avenue Properties

Four HZs (HZ-A through HZ-C, and HZ-E) have been identified at the Latty Avenue Properties. The shallow ground-water zone, HZ-A, consists of the fine-grained silts and clays of Unit 1, Unit 2, and Subunit 3T. Underlying HZ-A is HZ-B, which consists of a highly impermeable clay (Subunit 3M). HZ-C consists of silty clay, clayey silt, and clayey gravel deposits that comprise the stratigraphic Subunit 3B and Unit 4. The Mississippian limestone bedrock is defined as HZ-E. HZ-E is the protected aquifer for the site. As a result of their very low permeability, Subunits 3M and 3B limit vertical ground-water movement between HZ-A and the deep ground-water zones (HZ-C and HZ-E) at the Latty Avenue Properties.

Summary of CY 2015 Ground-Water Monitoring Results at the Latty Avenue Properties

Based on an evaluation of the ground-water data at the Latty Avenue Properties, one inorganic soil COC (molybdenum) and one radiological soil COC (U-234) were detected at concentrations in excess of the ROD guidelines in HZ-A ground water at the Latty Avenue Properties in CY 2015. The molybdenum concentration in HZ-A well HISS-10 exceeded the ROD guideline in CY 2015 and has exceeded the ROD guideline for more than 12 months. A statistically significant increasing trend in molybdenum concentrations was observed for HISS-10. However, no significant trend exists in molybdenum concentrations at HISS-10 when measurement error is taken into account. In addition, U-234 was detected above the ROD guidelines in HZ-A well HW22 in CY 2015. However, U-234 does not exceed its ROD guideline at HW22 when measurement error is taken into account. A statistically significant increasing trend in total U concentrations was observed for HW22, but the total U concentration detected from the 2015 sampling event did not exceed the total U monitoring guideline of 30 µg/L. Because a significant degradation of CWC surface water has not occurred, there is currently no finding of significantly degraded ground-water conditions in HZ-A ground water.

Based on the CY 2015 results for HW23, concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HZ-C during CY 2015. Therefore, no findings currently indicate significantly degraded ground-water conditions in HZ-C ground water. An evaluation of potential response actions is not required.

4.1.1 Evaluation of Ground-Water Monitoring Data at the Latty Avenue Properties

The ground-water monitoring data for the Latty Avenue Properties are evaluated against the requirements for ground-water monitoring identified in the ROD (USACE 2005). The ROD specifies two types of ground-water monitoring guidelines: (1) response-action monitoring guidelines and (2) a total U monitoring guideline (which is used for both response-action and long-term monitoring). Response-action monitoring of HZ-A and HZ-C is being conducted to ensure that the RA does not degrade current ground-water conditions. Another purpose of the response-action ground-water monitoring of HZ-C is to document the protection of the limestone aquifer (HZ-E) during the RA.

The response-action monitoring guideline is two times the UCL_{95}, based on historical concentrations of the analyte in a particular well before RAs were initiated under the ROD. The response-action monitoring guidelines have been developed for the ROD soil COCs for each of the wells at the Latty Avenue Properties. The methodology for the development of the response-action monitoring guidelines is detailed in Appendix F of this EMDAR. The total U guideline is defined in the ROD to be equal to the total U maximum contaminant level of 30 µg/L (USACE 2005). If total U levels exceed 30 µg/L, monitoring would continue subject to a CERCLA 5-year review.

In addition to the previous requirements, an evaluation of concentration trends over time is conducted for the COCs detected above the ROD guidelines in ground water to support assessment of the effectiveness of the RA in the CERCLA 5-year reviews.

Monitoring Well Network at the Latty Avenue Properties

The CY 2015 EMP well network for the Latty Avenue Properties is shown on Figure 4-2. With the exception of monitoring well HW23, which is screened in HZ-C, the monitoring wells are screened in HZ-A. The screened HZs for the ground-water monitoring wells at the Latty Avenue Properties are identified in Table 4-1. Appendix G provides the well maintenance checklists for the annual inspection of the ground-water monitoring wells at the Latty Avenue Properties, conducted in February 2015.

Table 4-1. Screened HZs for Ground-Water Monitoring Wells at the Latty Avenue Properties in CY 2015

Well ID	Screened HZs
HISS-01[a]	HZ-A
HISS-06A	HZ-A
HISS-10[a]	HZ-A
HISS-11A[a]	HZ-A
HISS-17S	HZ-A
HISS-19S[a]	HZ-A
HW22[a]	HZ-A
HW23[a]	HZ-C

[a] Wells sampled in CY 2015.

Ground-water sampling was conducted at six ground-water monitoring wells at the Latty Avenue Properties in CY 2015. First-quarter sampling was conducted on March 4, 2015; second-quarter sampling was conducted on May 18, 2015; third-quarter sampling was conducted on August 10 and 11, 2015; and fourth-quarter sampling was conducted on November 18, 2015.

HZ-A Ground Water

Ground-water samples were collected from five HZ-A wells in CY 2015. A summary table presenting the CY 2015 analytical data for all analytes is included in Appendix E (Table E-3).

For response-action monitoring, the CY 2015 ground-water data were evaluated to determine if ground-water conditions have significantly degraded. Continued monitoring of HZ-A could be required long term if significantly degraded ground-water conditions are found. Based on the ROD, a significantly degraded ground-water condition requires all of the following:

1) that soil COC concentrations have statistically increased in ground water (relative to the well's historical data and accounting for uncertainty) for more than a 12-month period. Significantly increased concentrations are defined as doubling of an individual COC concentration above the upper confidence limit (UCL) of the mean (based on the historical concentration before RA) for a period of 12 months;
2) that the degraded well is close enough to impact CWC; and
3) that a significant degradation of CWC surface water is anticipated.

The CY 2015 results were compared to the guidelines for the soil COCs identified in the ROD (i.e., antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238). Those soil COCs with concentrations above the ROD guidelines in HZ-A ground-water samples at the Latty Avenue Properties during CY 2015 are listed in Table 4-2. Because no ground-water sampling data are available for HISS-11A prior to CY 2011, the ROD guidelines for HISS-11A were developed using the pre-2006 data from the well previously at this location (HISS-11).

Table 4-2. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the Latty Avenue Properties in CY 2015

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
Molybdenum	µg/L	HISS-10	5.6	19	19	19	1	1/1
U-234	pCi/L	HW22	6.4	7.2[b]	7.2[b]	7.2[b]	1	1/1

[a] ROD guidelines include the response-action monitoring guidelines and the total U monitoring guideline of 30 µg/L. Response-action monitoring guideline = 2 x UCL_{95}, based on historical concentrations before RAs were initiated (USACE 2005). Results are reported to two significant digits.

[b] The concentration of U-234 detected in HW22 is not above the ROD guideline when the measurement error (1.6 pCi/L) is taken into account.

One inorganic soil COC was detected at a concentration above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties: molybdenum at HISS-10. The concentration of molybdenum at HISS-10 exceeded the ROD guideline during the first-quarter sampling event conducted in CY 2015, as well as in the previous CY 2014, CY 2013, and CY 2010 sampling events; therefore, concentrations of molybdenum in HISS-10 have exceeded the ROD guideline for more than 12 months. However, CWC surface-water and sediment sampling results for CY 2015, presented in Section 3.2, do not indicate an increase in molybdenum concentrations in CWC. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water.

The radiological COC U-234 was detected above its ROD guideline in HZ-A ground water in one well (HW22) at the Latty Avenue Properties in CY 2015. However, the concentration of U-234 detected at HW22 during the second-quarter sampling event conducted in CY 2015 does not exceed the ROD guideline when measurement error is taken into account.

The ROD guideline for total U (30 µg/L) is used for both response-action and long-term monitoring of ground water at the Latty Avenue Properties. Total U concentrations were compared to the 30 µg/L monitoring guideline. Total U concentrations (in µg/L) were calculated as follows from the isotopic results (in pCi/L) and the specific activities (in picocuries per microgram [pCi/µg]) for each radionuclide.

$$TotalU\left(\mu g/L\right) = \left[\frac{U^{234}\left(pCi/L\right)}{6240\left(pCi/\mu g\right)}\right] + \left[\frac{U^{235}\left(pCi/L\right)}{2.16\left(pCi/\mu g\right)}\right] + \left[\frac{U^{238}\left(pCi/L\right)}{0.335\left(pCi/\mu g\right)}\right]$$

The total U concentration in HW22 (14 µg/L, calculated from the isotopic concentrations) does not exceed the total U monitoring guideline of 30 µg/L. Therefore, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the Latty Avenue Properties.

In summary, comparison of the data to the ROD guidelines indicates that one inorganic soil COC (molybdenum in HISS-10) exceeded the ROD guidelines during CY 2015. No radiological soil COCs exceeded the ROD guidelines when measurement error is taken into account. Concentrations of molybdenum in HISS-10 have exceeded the ROD guideline for more than 12 months. However, because a significant degradation of CWC surface water has not occurred, there is currently no finding of significantly degraded ground-water conditions in HZ-A ground water.

HZ-C Ground Water

Ground-water samples were collected from one HZ-C well (HW23) in CY 2015. This well was sampled for both radionuclides and inorganics during the second quarter. Concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HW23 during CY 2015.

In summary, the CY 2015 HZ-C ground-water data from the Latty Avenue Properties indicate that no analytes were detected at concentrations above ROD ground-water criteria in HZ-C ground water. Therefore, there is currently no finding of significantly degraded ground-water conditions in HZ-C ground water.

4.1.2 Comparison of Historical Ground-Water Data at the Latty Avenue Properties

Ground-water sampling has been conducted at the Latty Avenue Properties from CY 1984 to the present. The most comprehensive ground-water monitoring program, involving sampling from 18 monitoring wells, was conducted at the site in the summer of CY 1997. Results from subsequent sampling events were used to evaluate contaminant trends at the Latty Avenue Properties during the period from the first quarter of CY 1999 to the fourth quarter of CY 2015. Statistical analysis was used to assist with identifying trends for those contaminants that exceeded the ROD guidelines in CY 2015.

Statistical Method and Trend Analysis

Several statistical methods are available to evaluate contaminant trends in ground water. These include the Mann-Kendall Trend Test, the Wilcoxon Rank Sum (WRS) Test, and the Seasonal Kendall Test (USEPA 2000). The latter two tests are applicable to data that may or may not exhibit seasonal behavior, but generally require larger sample sizes than the Mann-Kendall Trend Test. The Mann-Kendall Trend Test was selected for this project, because this test can be used with small sample sizes (as few as four data points), and because a seasonal variation in concentrations was not indicated by the time-versus-concentration plots at the NC Sites. The Mann-Kendall Trend Test is a non-parametric test and, as such, is not dependent upon assumptions of distribution, missing data, or irregularly-spaced monitoring periods. In addition, data reported as being less than the detection limit (DL) can be used (Gibbons 1994). The test can assess whether a time-ordered dataset exhibits an increasing or decreasing trend, within a predetermined level of significance. While the Mann-Kendall Trend Test can use as few as four data points, often this is not enough data to detect a trend. Therefore, the test was performed only at those monitoring stations at the NC Sites for which data have been collected for at least six sampling events.

A customized Microsoft Excel spreadsheet was used to perform the Mann-Kendall Trend Test. The test involves listing the sampling results in chronological order and computing all differences that may be formed between current measurements and earlier measurements. The value of the test statistic (S) is the difference between the number of strictly positive differences and the number of strictly negative differences. If S is a large positive value, then evidence indicates an increasing trend in the data. If S is a large negative value, then evidence indicates a decreasing trend in the data. If no trend exists and all observations are independent, then all rank orderings of the annual statistics are equally likely (USEPA 2000). The results of the Mann-Kendall Trend Test are reported in terms of a p-value or Z-score, depending on sample size, N. If the sample size is less than or equal to 10, then the p-value is computed. If the p value is less than or equal to 0.05, the test concludes that the trend is statistically significant. If the p value is greater than 0.05, the test concludes no evidence of a significant trend exists. For dataset sizes larger than 10, the Z-score is compared to ±1.65, which is the comparison level at a 95 percent confidence level. If the Z-score is greater than 1.65, the test concludes that a significant upward trend exists. If the Z-score is less than –1.65, the test concludes that a significant downward trend exists. For Z-scores between –1.65 and 1.65, no evidence of a significant trend exists.

The results of the Mann-Kendall Trend Test are less reliable for datasets containing a high number of non-detects, particularly if the DL changes over time. For that reason, for datasets in which more than 50 percent of the time-series data are non-detect, the Mann-Kendall Trend Test was not conducted. No general consensus exists regarding the percentage of non-detects that can be handled by the Mann-Kendall Trend Test. However, because the Mann-Kendall Trend Test is a nonparametric test that uses relative magnitudes, not actual values, it is generally valid even in cases in which there are a large number of non-detects.

Only unfiltered data were used, and split and QC sample results were not included in the database for the Mann-Kendall Trend Test. The Mann-Kendall Trend Test is used to evaluate the radiological data and to determine trends without regard to isotopic analysis. In addition, for monitoring wells for which the Mann-Kendall Trend Test has indicated a trend (either upward or downward), another analysis is performed to determine whether the trend is due to inherent error associated with the analytical test method for each sample analysis. This analysis involves graphing the data and the associated error-bar for the specific constituent. Time-versus-concentration plots for total U in HW22 and for molybdenum in HISS-10 are provided on Figure 4-3.

Results of Trend Analysis for Ground Water at the Latty Avenue Properties

For those stations at which an analyte exceeded the ROD guideline at least once during the year and for which sufficient historical data were available to evaluate trends (i.e., at least six samples), statistical trend analysis was conducted to assess whether concentrations of the analyte are increasing (upward trending) or decreasing (downward trending) over time. For the purposes of this trend analysis, a statistically significant trend in concentration is defined as a trend with a confidence level greater than 95 percent. The confidence level denotes the probability that the indicated trend is an actual trend in the data, rather than a result of the random nature of environmental data.

HZ-A Ground Water

The Mann-Kendall Trend Test was performed for those wells in which analytes exceeded the ROD guidelines at least once during CY 2015, for which sufficient data were available (i.e., at least six samples were collected during the period from the first quarter of CY 1999 to the fourth quarter of CY 2015), and at which the percentage of non-detect results is less than or equal to 50 percent. Two COCs (molybdenum in HISS-10 and U-234 in HW22) exceeded the ROD guidelines in HZ-A ground water at the Latty Avenue Properties during CY 2015. The Mann-Kendall Trend Test is typically performed using data collected during the period from the first quarter of CY 1999 to the fourth quarter of CY 2015. However, for molybdenum at HISS-10, the time period was limited to CY 2002 through CY 2015 to obtain a dataset for which less than 50 percent of the results were non-detect.

Inorganics

Statistical trend analysis was conducted to confirm whether concentrations of molybdenum are increasing or decreasing over time in HISS-10. The molybdenum concentration for the first quarter CY 2015 sample from HISS-10 (19.0 µg/L) exceeded the ROD guideline (5.6 µg/L).

A statistically significant upward trend in molybdenum concentrations was observed for HISS-10 for the period between April 2002 and December 2015.

Radionuclides

The time-versus-concentration plots shown on Figure 4-4 provide an overview of the temporal and spatial variability in the concentrations of total U in ground water at the Latty Avenue Properties. Total U concentrations were calculated using the isotopic U results measured in pCi/L and converted to µg/L using radionuclide-specific activities. The reported values were used for detected and non-detected isotopic values, except in instances in which the value was negative. If the reported value was negative, a value equal to zero was substituted for the result prior to calculating the total U concentration.

U-234 concentrations exceeded the ROD guideline in HW22 during the second quarter CY 2015 sampling event. A trend analysis was performed for the total U concentrations for HW22. Because the total U values are calculated using the U-234 value, the trend in its value should be similar to the total U trend results. Therefore, performance of a separate trend analysis for U-234 was unnecessary.

As shown in Table 4-3, a statistically significant increasing trend in total U concentrations was identified for HW22 for the CY 1999 through CY 2015 dataset. However, based on the time-versus-concentration plot for total U in HW22 (Figure 4-3), no significant trend exists in total U concentrations at HW22 when measurement error is taken into account. In addition, the total U concentrations at HW22 for this period have not exceeded the 30 µg/L ROD guideline.

Table 4-3. Results of Mann-Kendall Trend Test[a] for Analyte Exceeding the ROD Guidelines at the Latty Avenue Properties in CY 2015

Analyte	Station	N[b]	Test Statistics[c]		Trend[d]
			S	Z	
Molybdenum	HISS-10	13	30	1.8	Upward Trend
Total U	HW22	16	64	2.84	Upward Trend[e]

[a] One-tailed Mann-Kendall Trend Tests were performed at a UCL_{95}.
[b] N is the number of unfiltered ground-water sample results for a particular analyte at a well within a specified time period. With the exception of molybdenum at HISS-10, the time period is between January of 1999 and December of 2015. For HISS-10, the molybdenum dataset was restricted to the period between January of 2002 and December of 2015 to meet the Mann-Kendall Trend Test requirement that the dataset have a detection frequency greater than 50 percent.
[c] Test Statistics: S – the S-Statistic; Z – Z-score, or normalized test statistic (for datasets having N greater than 10).
[d] Trend: If N greater than 10, the Z-score is compared to ±1.65 to determine trend significance.
[e] When the measurement error is taken into account, a significant upward trend does not exist.

HZ-C Ground Water

The Mann-Kendall Trend Test is performed for those wells in which analytes exceeded the ROD guidelines at least once during CY 2015. Concentrations of all soil COCs were below the ROD ground-water criteria in CY 2015 ground-water samples from the HZ-C well HW23. Therefore, a trend analysis was not conducted for HZ-C ground water.

4.1.3 Evaluation of the Potentiometric Surface at the Latty Avenue Properties

Ground-water surface elevations were measured at the Latty Avenue Properties in February, May, August, and November of CY 2015. The potentiometric surface maps for HZ-A and HZ-C created from the May 16 and November 16, 2015, ground-water elevation measurements are provided on Figures 4-5, 4-6, 4-7, and 4-8. The ground-water surface elevations at the Latty Avenue Properties and the SLAPS and SLAPS VPs were mapped on the same figures, because these areas are located in the same ground-water flow regime.

The top of the saturated zone occurs in the low hydraulic conductivity silts and clays of stratigraphic Units 2 and 3T at the Latty Avenue Properties. The potentiometric data indicate some mounding of the HZ-A ground water at the HISS and Futura. Wells HISS-01, HISS-10, and HISS-17S have the highest potentiometric surface elevations, with lower ground-water elevations measured in the surrounding wells. At the western edge of the HISS and Futura, ground water in the HZ-A zone flows to the west toward CWC. The local horizontal gradient for HZ-A ground water at the HISS and Futura ranged from 0.012 ft/ft (May) to 0.010 ft/ft (November) in CY 2015. Based on the CY 2015 water-level measurements, the position of the HZ-A ground-water surface averages approximately 1.6 ft higher in the corresponding shallow wells at the HISS in the wet season (May) than in the dry season (November).

The potentiometric surface of the HZ-C ground water at the Latty Avenue Properties is not well defined due to the limited data available for the deeper HZs. Based on measured ground-water elevations in the HZ-C monitoring well HW23 at the Latty Avenue Properties and several HZ-C wells located to the southwest at the SLAPS and SLAPS VPs, the flow direction in the HZ-C ground water beneath the Latty Avenue Properties was generally toward the northeast at an average horizontal gradient of 0.002 ft/ft in May and 0.003 ft/ft in November of CY 2015.

4.2 ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES

Ground-water monitoring wells have been installed at the SLAPS and SLAPS VPs to characterize the site stratigraphy, ground-water chemistry, and ground-water migration pathways.

Stratigraphy at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

In the vicinity of the SLAPS and the adjacent SLAPS VP ballfields, surficial deposits (Unit 1) include topsoil and anthropogenic fill (rubble, scrap metal, gravel, glass, slag, and concrete) generally less than 14 ft thick (Figures 4-1, 4-9, and 4-10). Unit 2 is comprised of loess and has a thickness of 11 to 30 ft. Unit 3, which is subdivided into Subunits 3T, 3M, and 3B, consists primarily of clay and silt lakebed deposits. Each of these clayey subunits has a thickness of up to 30 ft. Unit 4 consists of clayey gravel with fine to very-fine sand and sandy gravel. This unit is interpreted to be approximately 5 to 15 ft thick and thins eastward and westward of the SLAPS. This unit is absent beneath the eastern part of the SLAPS, where the 3T, 3M, and 3B drape, or onlap, onto shale bedrock. Below Units 3 and 4 are Units 5 and 6, which consist of Pennsylvanian shale/siltstone and Mississippian limestone, respectively. Depth to bedrock ranges from approximately 55 ft on the eastern part of the SLAPS to a maximum of 90 ft toward CWC to the west. The hydrogeologic and geologic setting at the SLAPS and SLAPS VPs is similar to that at the HISS, with one exception. The Pennsylvanian shale bedrock unit (Unit 5), present beneath portions of the SLAPS and SLAPS VPs, is absent beneath the HISS.

Five HZs (HZ-A through HZ-E) are recognized beneath the SLAPS and SLAPS VPs. HZ-A consists of fill (Unit 1) and the Pleistocene, glacially related sediments of stratigraphic Unit 2, and Subunit 3T. Underlying HZ-A is HZ-B, which consists of highly impermeable clay (Subunit 3M). HZ-C consists of the stratigraphic Subunit 3B and Unit 4. The shale (Unit 5) and limestone (Unit 6) bedrock are recognized as HZ-D and HZ-E, respectively. HZ-E is the protected aquifer for the site.

The shallow (HZ-A) ground-water flow is toward CWC under normal flow conditions. Average depths to the ground-water surface at the site range from near the ground surface during the spring months to approximately 10 ft below ground surface (bgs) during the fall months. The dominant flow in HZ-A is through the more permeable Unit 2. Each of the subunits in Unit 3 has lower hydraulic conductivity than Units 1, 2, and 4. Units HZ-B and the Pennsylvanian shale HZ-D limit the passage of ground water vertically beneath the SLAPS and SLAPS VPs. Subunit 3M of HZ-B acts as a vertical barrier to ground-water movement under the western portion of the site. Subunit 3M is a clayey aquitard (unit resisting water passage) that effectively separates the HZ-A ground-water system from the underlying HZ-C and HZ-E. The dominant unit to obtain water in the lower horizon is the sandy, clayey gravel of Unit 4. Unit 4 of HZ-C is used as a surrogate for HZ-E, because water movement within the Mississippian limestone is dependent upon the limestone's joint and solutioned system. In addition, the limestone has exhibited massive characteristics and is very slow to recharge.

Summary of Calendar Year 2015 Ground-Water Monitoring Results at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Five soil COCs (barium, chromium, molybdenum, nickel, and total U) exceeded the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2015. Three inorganic soil COCs (chromium, molybdenum, and nickel) and one radiological COC (total U) have exceeded the ROD guidelines for a period of at least 12 months.

Statistically significant increasing trends were observed for chromium concentrations in B53W09S, B53W13S and B53W18S; molybdenum concentrations in B53W18S; and nickel concentrations in B53W09S, B53W13S, B53W18S, and B53W19S. The Mann-Kendall Trend Test results indicate no trend for total U in PW46.

Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2015. However, because chromium, molybdenum, nickel, and total U levels have exceeded the ROD guidelines for a period of at least 12 months, ground-water monitoring will continue subject to subsequent CERCLA 5-year reviews.

Based on the CY 2015 results for B53W01D, B53W07D, PW35, PW36, and PW42, no inorganic or radiological soil COC concentrations exceeded ROD ground-water guidelines in HZ-C during CY 2015 if the associated measurement errors are taken into account. Therefore, no findings currently indicate significantly degraded ground-water conditions in HZ-C ground water.

4.2.1 Evaluation of Ground-Water Monitoring Data at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The purpose of the ground-water monitoring conducted at the SLAPS and SLAPS VPs is specified in the ROD (USACE 2005). Response-action monitoring is currently being conducted in HZ-A and HZ-C to assess the improvement of water quality due to source removals, and to document the protection of the limestone aquifer (HZ-E) during the RA.

As noted in Section 4.1.1, the ground-water monitoring data at the SLAPS and SLAPS VPs are evaluated against the requirements for ground-water monitoring identified in the ROD (USACE 2005).

In addition to the previously described monitoring, an evaluation of concentration trends is conducted for the COCs detected in excess of the ROD guidelines in ground water to support assessment of the effectiveness of the RA in the CERCLA 5-year reviews.

Monitoring Well Network at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The current EMP well network for the SLAPS and SLAPS VPs is shown on Figure 4-11. A summary of the HZ information for the ground-water monitoring wells located at the SLAPS and SLAPS VPs is provided in Table 4-4. HZ-A is considered the upper (or shallow) zone, while HZ-C, HZ-D, and HZ-E have been considered the lower (or deep) zone. This designation of upper and lower zones is separated at Subunit 3M of HZ-B. Fourteen (14) wells are screened exclusively across the shallow zone (HZ-A). Four (4) wells are screened exclusively in the lower zone across HZ-C, HZ-D, and/or HZ-E. The remaining well (PW36) is screened across both HZ-B and HZ-C. Appendix G provides the well maintenance checklists for the annual inspection of the ground-water monitoring wells at the SLAPS and SLAPS VPs, conducted in February 2015.

Table 4-4. Ground-Water Monitoring Well Network at the SLAPS and SLAPS VPs in CY 2015

Well ID	Screened HZs			
	HZ-A	HZ-B	HZ-C	HZ-E
B53W01D[a]			X	
B53W01S	X			
B53W06S[a]	X			
B53W07D[a]			X	
B53W07S	X			
B53W09S[a]	X			
B53W13S[a]	X			
B53W17S	X			
B53W18S[a]	X			
B53W19S[a]	X			
MW31-98	X			
MW32-98	X			
PW35[a]				X
PW36[a]		X	X	
PW42[a]			X	
PW43[a]	X			
PW44[a]	X			
PW45[a]	X			
PW46[a]	X			

[a] Wells sampled in CY 2015.

During CY 2015, 14 ground-water wells were sampled for various parameters at the SLAPS and SLAPS VPs. Ground-water samples collected from these wells were analyzed for both radiological and inorganic constituents. Historically, radiological parameters (Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238) and inorganic constituents have been the main focus of the ground-water sampling. In CY 2015, ground-water sampling was conducted on March 2, 3, and 4 (first quarter); May 18, 19, and 20 (second quarter); August 11, 12, and 14 (third quarter); and November 18 and 20 (fourth quarter).

HZ-A Ground Water

Nine (9) HZ-A wells (B53W06S, B53W09S, B53W13S, B53W18S, B53W19S, PW43, PW44, PW45, and PW46) were sampled at the SLAPS and SLAPS VPs during CY 2015. The analytical data for the CY 2015 ground-water sampling at the SLAPS and SLAPS VPs are contained in Appendix E, Table E-4.

The CY 2015 results were compared to ROD guidelines for the soil COCs identified in the ROD (i.e., antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238).

Table 4-5 lists those soil COCs exceeding the ROD guidelines in CY 2015 ground-water samples from HZ-A wells at the SLAPS and SLAPS VPs.

Table 4-5. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the SLAPS and SLAPS VPs in CY 2015

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
Barium	µg/L	B53W19S	510	210	640	425	1	2/2
Chromium	µg/L	B53W09S	9.6	6.9	25	19.0	3	4/4
		B53W13S	9.1	15	31	23	2	2/2
		B53W18S	51	250	380	297	3	3/3
Molybdenum	µg/L	B53W18S	28	38	59	46.7	3	3/3
		B53W19S	130	23	180	101.5	1	2/2
Nickel	µg/L	B53W09S	83	40	110	71.8	1	4/4
		B53W13S	38	80	80	80	2	2/2
		B53W18S	910	1,000	1,100	1,033	3	3/3
		B53W19S	1,100	380	2,200	1,290	1	2/2
		PW43	3.6	11	11	11	1	1/1
U-234	pCi/L	PW46	5,500	540[b]	540[b]	540	1	1/1
U-235	pCi/L	PW46	290	27.4[b]	27.4[b]	27.4	1	1/1
U-238	pCi/L	PW46	5,600	536[b]	536[b]	536	1	1/1
Total U[c]	µg/L	PW46	30	1,613	1,613	1,613	1	1/1

[a] ROD guidelines = response-action monitoring guideline and total U monitoring guideline. Response-action monitoring guideline = 2 x UCL_{95} (based on historical concentrations before RAs were initiated). Total U monitoring guideline = 30 µg/L (USACE 2005).

[b] The results for U-234, U-235, and U-238 do not exceed the ROD guidelines. The results are provided because they were used in the total U calculation.

[c] Total U values were calculated from isotopic concentrations in pCi/L and converted to µg/L using radionuclide-specific activities with the following formula: total U (µg/L) = U-234 (pCi/L)/6240 + U-235 (pCi/L)/2.16 + U-238 (pCi/L)/0.335.

Four inorganic soil COCs (barium, chromium, molybdenum, and nickel) were detected in HZ-A ground water at concentrations in excess of the ROD guidelines at the SLAPS and SLAPS VPs. Barium was detected in B53W19S at levels above the ROD guideline of 510 µg/L in the first-quarter sample (640 µg/L), but was below the ROD guideline in the third-quarter sample (210 µg/L). Therefore, barium concentrations in B53W19S did not exceed the ROD guideline for more than 12 months.

Chromium was detected at concentrations in excess of the ROD guidelines in three HZ-A wells (B53W09S, B53W13S, and B53W18S) during CY 2015. Chromium concentrations exceeded the ROD guideline of 9.6 µg/L in the first-, second-, and third-quarter samples from B53W09S (21 µg/L, 25 µg/L, and 23 µg/L, respectively). However, chromium was detected at concentrations below the ROD guideline in the fourth-quarter sample from B53W09S (6.9 µg/L). Therefore, chromium concentrations in B53W09S did not exceed the ROD guideline for more than 12 months. Chromium concentrations also exceeded the ROD guidelines in the first- and second-quarter samples from B53W13S (15 µg/L and 31 µg/L, respectively), and in the first-, second-, and third-quarter samples from B53W18S (260 µg/L, 250 µg/L, and 380 µg/L, respectively). Chromium concentrations exceeded the ROD guidelines in the previous samples from these two wells. Therefore, chromium concentrations in B53W13S and B53W18S have exceeded the ROD guidelines for more than 12 months.

Molybdenum was detected at concentrations in excess of the ROD guidelines in two HZ-A wells (B53W18S and B53W19S) during CY 2015. Molybdenum concentrations in B53W18S exceeded the ROD guideline of 28 µg/L in the first-, second-, and third-quarter samples (59 µg/L, 43 µg/L, and 38 µg/L, respectively). Molybdenum concentrations also exceeded the

ROD guideline in the fourth-quarter samples from B53W18S in CY 2014. Therefore, molybdenum concentrations in B53W18S have exceeded the ROD guideline for more than 12 months. Molybdenum concentrations also exceeded the ROD guideline of 130 μg/L in the third-quarter sample from B53W19S. Molybdenum was detected below the ROD guideline in the first-quarter sample from this well. Therefore, molybdenum concentrations in B53W19S have not exceeded the ROD guideline for more than 12 months.

Nickel was detected at concentrations in excess of the ROD guidelines in five HZ-A wells (B53W09S, B53W13S, B53W18S, B53W19S, and PW43) during CY 2015. The concentration of nickel detected at B53W09S (110 μg/L) during the third-quarter sampling event conducted in CY 2015 exceeded the ROD guideline (83 μg/L). However, nickel was detected at concentrations below the ROD guideline in the first-, second-, and fourth-quarter samples. Therefore, the nickel concentration at B53W09S has not exceeded the ROD guideline for a period of at least 12 months. Nickel concentrations in B53W13S exceeded the ROD guideline (38 μg/L) in both the first- and second-quarter samples of CY 2015 (80 μg/L in both samples). It also exceeded the ROD guideline in the CY 2014 samples. Therefore, nickel has exceeded the ROD guideline for a period of at least 12 months in B53W13S. Nickel concentrations also exceeded the ROD guideline of 910 μg/L in the first-, second-, and third-quarter samples from B53W18S (1,000 μg/L, 1,000 μg/L, and 1,100 μg/L, respectively). However, nickel was detected at concentrations below the ROD guideline in the CY 2014 samples. Therefore, the nickel concentration at B53W18S has not exceeded the ROD guideline for a period of at least 12 months. Nickel concentrations also exceeded the ROD guideline (1,100 μg/L) in the third-quarter sample from B53W19S (2,200 μg/L). However, nickel was detected at concentrations below the ROD guideline in the first-quarter sample (380 μg/L). Therefore, nickel concentrations in B53W19S have not exceeded the ROD guideline for a period of at least 12 months. Nickel concentrations in PW43 exceeded the ROD guideline of 3.6 μg/L in the third-quarter sample (11.0 μg/L). However, the nickel concentration was not above the ROD guideline in PW43 during the previous sampling event in CY 2014 if the associated measurement error is taken into account. Therefore, nickel concentrations in PW43 have not exceeded the ROD guideline for more than 12 months.

One radiological soil COC (total U) exceeded the ROD guideline of 30 μg/L in HZ-A ground water at the SLAPS and SLAPS VPs. The total U concentration in PW46 (calculated from the isotopic concentrations) exceeded the 30-μg/L guideline during the first-quarter CY 2015 sampling event. The total U concentration in PW46 was 1,612.8 μg/L on March 4, 2015. PW46 is an RA evaluation well that was installed at the western edge of the SLAPS in April of 2006. Although no ground-water sampling data are available for PW46 prior to May 18, 2006, data are available for PW38, the previous well at this location. The ROD guidelines for PW46 were developed using pre-2004 data from PW38. Based on the total U data collected from PW38 prior to its decommissioning in November of 2003, the CY 2015 total U concentration at PW46 is lower than the historical concentrations reported at PW38. Based on the statistical evaluation of trends presented in Section 4.2.2, no increases in the concentrations of total U have occurred in PW46 during CY 2015.

In summary, three inorganic soil COCs (chromium, molybdenum, and nickel) exceeded the ROD guidelines for a period of at least 12 months in HZ-A ground water (chromium and nickel in B53W13S, and chromium and molybdenum in B53W18S) at the SLAPS and SLAPS VPs in CY 2015. In addition, total U concentrations exceeded the total U guideline of 30 μg/L in one HZ-A well (PW46) located at the western edge of the SLAPS and have exceeded the guideline for a period of at least 12 months. However, comparison of their CY 2015 concentrations with historical well data did not indicate that significant degradation of HZ-A ground water is occurring. Because a significant degradation of CWC surface water has not occurred, no findings currently indicate significantly degraded ground-water conditions in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2015. However, because chromium, molybdenum, nickel, and total U levels have exceeded the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent CERCLA 5-year reviews.

Lower Ground Water (HZ-C Through HZ-E)

Five wells (B53W01D, B53W07D, PW35, PW36, and PW42) screened across lower ground water (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs during CY 2015. Table 4-6 lists those soil COCs exceeding the ROD guidelines in CY 2015 ground-water samples from wells screened across the lower ground-water at the SLAPS and SLAPS VPs.

Comparison of the data to the ROD guidelines indicates that concentrations of cadmium in PW35 (3.6 µg/L), chromium in B53W01D (8.5 µg/L) and B53W07D (8.1 µg/L), and nickel in B53W07D (14.0 µg/L) exceeded the ROD guidelines in HZ-C through HZ-E ground water in CY 2015. However, these concentrations did not exceed their ROD guidelines if the associated measurement errors are taken into account. Therefore, the CY 2015 HZ-C through HZ-E ground-water data from the SLAPS and SLAPS VPs do not indicate significant degradation of lower ground water.

Table 4-6. Analytes Exceeding ROD Ground-Water Criteria in Lower Ground Water (HZ-C through HZ-E) at the SLAPS and SLAPS VPs in CY 2015

Analyte	Units	Station	ROD Ground-Water Criteria[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Ground-Water Criteria[a]
Cadmium	µg/L	PW35	0.6	3.6[b]	3.6[b]	3.6	1
Chromium	µg/L	B53W01D	7.2	8.5[b]	8.5[b]	8.5	1
		B53W07D	5.6	8.1[b]	8.1[b]	8.1	1
Nickel	µg/L	B53W07D	12	14.0[b]	14.0[b]	14.0	1

[a] ROD ground-water guidelines include the response-action monitoring guidelines and the total U monitoring guideline of 30 µg/L. Response-action monitoring guideline = 2 x UCL_{95}, based on historical concentrations before RAs were initiated (USACE 2005).

[b] The results did not exceed the ROD guideline if the associated measurement errors are taken into account.

4.2.2 Comparison of Historical Ground-Water Data at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Results of ground-water sampling conducted from CY 1998 though CY 2015 indicate that various inorganics and radionuclides have been detected at concentrations in excess of the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs. Statistical analysis was used to identify trends for those contaminants that exceeded these guidelines during CY 2015. The statistical method used to evaluate the trends, the Mann-Kendall Trend Test, is described in Section 4.1.2. Filtered data, split samples, and field duplicates were not included in the analysis. For datasets in which 50 percent or more of the time-series data are non-detect, the Mann-Kendall Trend Test was not performed.

Results of Trend Analysis at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

The evaluation of historical trends for ground water at the SLAPS and SLAPS VPs focuses on those contaminants that exceeded the ROD guidelines in samples collected during CY 2015. For those monitoring wells at which an analyte exceeded these guidelines in one or more samples during CY 2015 and the historical dataset had a detection frequency greater than 50 percent and a sample size of at least six, a statistical trend analysis was conducted to assess whether concentrations of the analyte are increasing (upward trending) or decreasing (downward trending) over time. For the purposes of this EMDAR, a statistically significant trend in concentration is defined as a trend with a confidence level greater than 95 percent. Because the Mann-Kendall Trend Test does not consider the effects of measurement error and does not provide any information concerning the magnitude of trends, time-versus-concentration plots were used to evaluate these factors.

Based on the CY 2015 ground-water monitoring data for the SLAPS and SLAPS VPs, five soil COCs (barium, chromium, molybdenum, nickel, and total U) exceeded the ROD guidelines in HZ-A ground water in CY 2015. The Mann-Kendall Trend Test was performed for barium in B53W19S; chromium in B53W09S, B53W13S, and B53W18S; molybdenum in B53W18S and B53W19S; nickel in B53W09S, B53W13S, B53W18S, B53W19S, and PW43; and total U in PW46. For nickel in PW43, the time period was limited to CY 2003 through CY 2015 to obtain a dataset for which less than 50 percent of the results were non-detect. To aid in the evaluation of trends, time-versus-concentration plots for chromium, molybdenum, nickel, and total U are provided on Figures 4-12 through 4-15.

Trend analysis was not performed for deep (HZ-C through HZ-E) ground water, because no COCs exceeded their ROD guidelines in deep ground water during CY 2015 at the SLAPS and SLAPS VPs when measurement error is taken into account.

Inorganics

The results of the Mann-Kendall Trend Tests are provided in Table 4-7. As shown in Table 4-7, a statistically significant increasing trend in chromium and nickel concentrations (i.e., a trend with a confidence level greater than 95 percent) was observed for B53W09S, B53W13S, and B53W18S. In addition, statistically significant increasing trends were observed for molybdenum concentrations in B53W18S and nickel concentrations in B53W19S. Because the Mann-Kendall Trend Test does not consider the effects of measurement error and does not provide any information concerning the magnitude of the trend, time-versus-concentration plots of chromium, molybdenum, and nickel (provided in Figures 4-12, 4-13, and 4-14, respectively) were used to evaluate these factors. The best-fit trend lines based on the data scatter are also shown on the graphs on these figures.

Table 4-7. Results of Mann-Kendall Trend Test[a] for Analytes with Concentrations Exceeding ROD Guidelines in Ground Water at the SLAPS and SLAPS VPs in CY 2015

Analyte	Station	N[b]	Test Statistics[c]		Trend[d]
			S	Z	
Barium	B53W19S	19	41	1.40	No Trend
Chromium	B53W09S	22	123	3.46	Upward Trend
	B53W13S	27	175	3.63	Upward Trend
	B53W18S	23	143	3.76	Upward Trend
Molybdenum	B53W18S	23	149	3.93	Upward Trend
	B53W19S	19	42	1.44	No Trend
Nickel	B53W09S	22	76	2.12	Upward Trend
	B53W13S	27	145	3.01	Upward Trend
	B53W18S	23	114	2.99	Upward Trend
	B53W19S	19	54	1.86	Upward Trend
	PW43	13	14	0.81	No Trend
Total U	PW46	16	-4	-0.14	No Trend

[a] One-tailed Mann-Kendall Trend Tests were performed at a 95-percent level of confidence.
[b] N is the number of unfiltered ground-water sample results for a particular analyte for the period between January of 1999 and December of 2015. With the exception of nickel at PW43 and total U at PW46, the time period is between January of 1999 and December of 2015. For PW43, the nickel dataset was restricted to the period between January of 2003 and December of 2015 to meet the Mann-Kendall Trend Test requirement that the dataset have a detection frequency greater than 50 percent. For PW46, which was installed in April 2006, the dataset covers the period between May of 2006 and December of 2015.
[c] Test Statistics: S – the S-Statistic; Z – Z-score, or normalized test statistic (used if N greater than 10).
[d] Trend: If N greater than 10, the Z-score is compared to ±1.64 to determine trend significance.

Radionuclides

A statistical evaluation of historical uranium concentrations has been conducted using total U concentrations. Total U values were calculated from isotopic concentrations in pCi/L and converted to µg/L using radionuclide-specific activities. The Mann-Kendall Trend Test was performed for total U in the HZ-A well with concentrations in excess of the 30-µg/L ROD guideline in CY 2015 (PW46). The results of the Mann-Kendall Trend Test are provided in Table 4-7. The Mann-Kendall Trend Test results indicate no trend for total U in PW46. A graph of time-versus-total-U concentrations for PW46 is shown on Figure 4-15. PW46 was installed in April of 2006 near the former location of PW38 and is screened across the same interval. For comparison purposes, the PW38 data collected between March of 2000 and November of 2003 are also shown on the graph of PW46 data on Figure 4-15. As indicated on the graph, total U concentrations in PW46 have decreased from the levels reported at PW38 prior to installation of PW46. Time-versus-concentration graphs for total U for some of the wells sampled in CY 2015 at the SLAPS and SLAPS VPs are provided on Figure 4-16.

4.2.3 Evaluation of Potentiometric Surface at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Ground-water surface elevations were measured from wells at the SLAPS and SLAPS VPs in February, May, August, and November of CY 2015. Ground-water elevation contours were drawn using the May 18, 2015, and November 16, 2015, measurements to provide a comparison of the ground-water flow conditions during periods of high and low ground-water elevations, respectively. The potentiometric surface maps, shown on Figures 4-5 through 4-8, were developed for both HZ-A and HZ-C ground-water zones. The ground-water flow direction is interpreted to be perpendicular to the ground-water equipotential contours.

In May and November of CY 2015, the ground-water flow direction in the HZ-A ground water at the SLAPS and adjacent SLAPS VP ballfields was northwesterly toward CWC (Figures 4-5 and 4-7). In the eastern portion of the SLAPS, the average horizontal hydraulic gradient was 0.006 ft/ft in both the wet season (May 18, 2015) and dry season (November 16, 2015). The hydraulic gradient increases near CWC, where the average horizontal gradient ranges from 0.028 ft/ft (May 18, 2015) to 0.023 ft/ft (November 16, 2015). The unconfined HZ-A ground water is interpreted to discharge into CWC, which divides the HZ-A ground-water system south and east of the creek from areas north and west of CWC. Ground-water recharge comes from three primary sources: precipitation, off-site inflow of ground water, and creek bed infiltration during high creek stage. Ground-water discharge could occur by seepage into CWC during low creek stage (DOE 1994). The vertical gradient varies beneath the site and is influenced by stratigraphic heterogeneity and seasonal fluctuations in recharge and evapotranspiration. Based on the CY 2015 water-level measurements, the position of the HZ-A ground-water surface averages approximately 1.4 ft higher in the corresponding shallow wells at the SLAPS and SLAPS VPs in the wet season (May) than in the dry season (November).

A review of the screened intervals in the deep wells indicates that many wells are screened across multiple lithologic units and HZs. Based on this review, the HZ-C (Units 3B and 4) potentiometric surface was determined to be a proper representation of the lower ground-water system. This review reduces the number of data points used to develop the potentiometric surface contours, but results in a higher level of confidence in contouring the HZ-C potentiometric surface.

The potentiometric surface contours for the HZ-C ground water in CY 2015 are illustrated on Figures 4-6 and 4-8. The flow direction in HZ-C is generally east or northeast beneath the SLAPS and SLAPS VPs, at an average horizontal gradient of 0.0017 ft/ft in May and 0.0021 ft/ft in November of 2015. A comparison of the ground-water elevations from monitoring well pairs indicates that the wells completed in HZ-A exhibit different hydraulic heads from the wells completed in HZ-C. Near CWC, the potentiometric surface of the “confined” aquifer HZ-C averages approximately 7.7 ft higher than the potentiometric surface of the unconfined HZ-A zone, indicating an upward vertical gradient. The large difference in hydraulic head demonstrates that the HZ-A and HZ-C ground-water zones are distinct ground-water systems with limited hydraulic connection. This is supported by the lithologic data, which indicate that a highly impermeable clay (Subunit 3M of HZ-B) and silty clay (Subunit 3B of HZ-C) separates the HZ-A ground-water system from the underlying ground-water zones. The HZ-C potentiometric surfaces do not appear to be influenced by CWC (the creek’s thalweg is approximately 500 ft amsl) or by seasonal changes. These features are likely a result of the overlying clay layers limiting vertical ground-water movement.

5.0 ENVIRONMENTAL QUALITY ASSURANCE PROGRAM

5.1 PROGRAM OVERVIEW

The environmental quality assurance (QA) program includes management of the QA/QC programs, plans, and procedures governing environmental monitoring activities at all SLS and at subcontracted vendor laboratories. This section discusses the environmental monitoring standards of the FUSRAP and the goals for these programs, plans, and procedures.

The environmental QA program provides the FUSRAP with reliable, accurate, and precise monitoring data. The program furnishes guidance and directives to detect and prevent problems from the time a sample is collected until the associated data are evaluated. The MDNR conducted site visits on March 4, 2015, March 31, 2015, October 20 to 21, 2015, and November 18, 2015, to observe the environmental monitoring activities. USEPA and MDNR regulatory oversight of sampling activities provided an additional level of QA/QC.

Key elements in achieving the goals of this program are maintaining compliance with the QA program; personnel training; compliance assessments; use of QC samples; documentation of field activities and laboratory analyses; and a review of data documents for precision, accuracy, and completeness.

General objectives are:

- To provide data of sufficient quality and quantity to support ongoing remedial efforts, aid in defining potential COCs, meet the requirements of the EMG and the SAG, and support the ROD (USACE 1999a, 2000, 2005).
- To provide data of sufficient quality to meet applicable State of Missouri and federal concerns (e.g., reporting requirements).
- To ensure samples were collected using approved techniques and are representative of existing site conditions.

5.2 QUALITY ASSURANCE PROGRAM PLAN

The quality assurance program plan (QAPP) for activities performed at the NC Sites is described within Section 3.0 of the SAG. The QAPP provides the organization, objectives, functional activities, and specific QA/QC activities associated with investigations and sampling activities at the NC Sites.

QA/QC procedures are performed in accordance with applicable professional technical standards, USEPA requirements, government regulations and guidelines, and specific project goals and requirements. The QAPP was prepared in accordance with USEPA and USACE guidance documents, including *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (USEPA 1991), *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations* (USEPA 1994), and *Requirements for the Preparation of Sampling and Analysis Plans,* Engineer Manual (EM) 200-1-3 (USACE 2001).

5.3 SAMPLING AND ANALYSIS GUIDE

The SAG summarizes standard operating procedures (SOPs) and data quality requirements for collecting and analyzing environmental data. The SAG integrates protocols and methodologies identified under various USACE and regulatory guidance. It describes administrative procedures for managing environmental data and governs sampling plan preparation, data review, evaluation and validation, database administration, and data archiving. The identified sampling and monitoring structures are delineated in programmatic documents such as the EMG (USACE 1999a) for the NC Sites, which is an upper-tier companion document to the SAG (USACE 2000). The EMICY15 outlines the analyses to be performed at the NC Sites for various media (USACE 2014).

Flexibility to address non-periodic environmental sampling (e.g., specific studies regarding environmental impacts, well installations, and/or in-situ waste characterizations) was accomplished by the issuance of work descriptions. Environmental monitoring data obtained during these sampling activities were reported to the USEPA Region 7 on a quarterly basis.

5.4 FIELD SAMPLE COLLECTION AND MEASUREMENT

Prior to beginning field sampling, field personnel were trained, as necessary, and participated in a project-specific readiness review. These activities ensured that standard procedures were followed in sample collection and completion of field logbooks, chain-of-custody forms, labels, and custody seals. Documentation of training and readiness were submitted to the project file.

The master field investigation documents are the site field logbooks. The primary purpose of these documents is to record daily field activities; personnel on each sampling team; and any administrative occurrences, conditions, or activities that may have affected the fieldwork or data quality of any environmental samples for a given day. Guidance for documenting specific types of field sampling activities in field logbooks or log sheets is provided in Appendix C of *Requirements for the Preparation of Sampling and Analysis Plans,* EM 200-1-3 (USACE 2001).

At any point in the process of sample collection or data and document review, a non-conformance report may be initiated if non-conformances are identified (Leidos 2015a). Data entered into the St. Louis FUSRAP database may be flagged accordingly.

5.5 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities were conducted to verify that sampling and analysis activities were performed in accordance with the procedures established in the SAG and activity-specific work description or the EMICY15 (USACE 2014).

5.5.1 Field Assessments

Internal assessments (audit or surveillance) of field activities (sampling and measurements) were conducted by the QA/QC Officer (or designee). Assessments included an examination of field sampling records; field instrument operating records; sample collection, handling, and packaging procedures; and maintenance of QA procedures and chain-of-custody forms. These assessments occurred at the onset of the project to verify that all established procedures were followed (systems audit).

Performance assessments followed the system audits to ensure that deficiencies had been corrected and to verify that QA practices/procedures were being maintained throughout the duration of the project. These assessments involved reviewing field measurement records, instrumentation calibration records, and sample documentation.

External assessments may be conducted at the discretion of the USACE; USEPA Region 7; or the State of Missouri.

5.5.2 Laboratory Audits

The on-site USACE St. Louis FUSRAP laboratory locations are subject to periodic review(s) by the local USACE Chemist to demonstrate compliance with the *Department of Defense (DoD)/Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories* (QSM) (DOD and DOE 2013). In conjunction, the on-site laboratories participate in blind, third-party performance evaluation studies (performance audits) at least twice per year, with results reported to the local USACE point(s) of contact. In addition, contract laboratories are required to be accredited under the U.S. Department of Defense (DOD) Environmental Laboratory Accreditation Program (ELAP). The DOD ELAP requires an annual audit and re-accreditation every 3 years.

These system audits include examining laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records. Performance audits consist of USACE laboratories receiving performance evaluation samples from an outside vendor for an ongoing assessment of laboratory precision and accuracy. The analytical results of the analysis of performance evaluation samples are evaluated by USACE Hazardous, Toxic, and Radioactive Waste – Center of Expertise and/or a local oversight chemist to ensure that laboratories maintain acceptable performance.

Internal performance and system audits of laboratories were conducted by the Laboratory QA Manager as directed in the *Laboratory Quality Assurance Plan for the FUSRAP St. Louis Radioanalytical Laboratory* (USACE 2013). System audits included an examination of laboratory documentation of sample receipt, sample log-in, sample storage, chain-of-custody procedures, sample preparation and analysis, and instrument operating records against the requirements of the laboratory's SOPs. Internal performance audits were also conducted on a regular basis. Single-blind performance samples were prepared and submitted along with project samples to the laboratory for analysis. The Laboratory QA Manager evaluated the analytical results of these single-blind performance samples to ensure that the laboratory maintained acceptable performance. Quarterly QA/QC reports were generated and provided to the local USACE authority; these reports document the ongoing QC elements and allow further monitoring of quality processes/status. In addition, QA plans and methodology follow the guidance presented in the QSM (DOD and DOE 2013).

5.6 SUBCONTRACTED LABORATORY PROGRAMS

All samples collected during environmental monitoring activities were analyzed by USACE-approved subcontractor laboratories. QA samples collected for ground water and sediment were analyzed by the designated USACE QA laboratory. Each laboratory supporting this work maintained statements of qualifications including organizational structure, QA manual, and SOPs. Additionally, subcontracted laboratories were also required to be an accredited laboratory under the DOD ELAP.

Samples collected during these investigations were analyzed by the USEPA methods contained in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846* (USEPA 1993) and by other documented USEPA or nationally recognized methods. Laboratory SOPs are based on the QSM) (DOD and DOE 2013).

5.7 QUALITY ASSURANCE AND QUALITY CONTROL SAMPLES

The QA and QC samples were analyzed for the purpose of assessing the quality of the sampling effort and the reported analytical data. The QA and QC samples include duplicate samples (–1) and split samples (–2). The equations utilized for accuracy and precision can be found in Section 5.9.

5.7.1 Duplicate Samples

These samples, which measure precision, were collected by the sampling teams and were submitted for analysis to the on-site USACE St. Louis FUSRAP laboratory or contract laboratories. The identity of duplicate samples is held blind to the analysts. The purpose of these samples is to provide activity-specific, field-originated information regarding the homogeneity of the sampled matrix and the consistency of the sampling effort. These samples were collected concurrently with the primary environmental samples and equally represent the medium at a given time and location. Duplicate samples were collected from each medium addressed by this project and were submitted to the contracted laboratories for analysis. One duplicate sample was collected for approximately every 20 field samples of each matrix and analyte across the SLS. Precision is measured by the relative percent difference (RPD) for radiological and by non-radiological analyses or the normalized absolute difference (NAD) for radiological analyses.

The RPDs for non-radiological analyses are presented in Tables 5-1 and 5-2. The RPDs and NADs for radiological analyses are presented in Tables 5-3 through 5-5. The overall precision for CY 2015 environmental monitoring sampling activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-1. Non-Radiological Duplicate Sample Analysis for CY 2015 – Surface and Ground Water[a]

Sample Name[b]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179898 / CWC179898-1	NC	25.64	23.53	NC	NC
CWC183539 / CWC183539-1	NC	0.00	0.00	NC	8.00
SVP180867 / SVP183867-1	NC	0.00	6.45	NC	8.00
Sample Name[b]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179898 / CWC179898-1	16.79	24.00	NC	NC	NC
CWC183539 / CWC183539-1	4.08	0.00	22.22	NC	6.67
SVP180867 / SVP180867-1	5.71	**57.51**	NC	NC	NC

[a] RPD criterion for liquid samples is less than or equal to 30 percent.
[b] Soil samples ending in "-1" are duplicate soil samples.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-2. Non-Radiological Duplicate Sample Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179899 / CWC179899-1	NC	14.29	40.00	10.53	10.53
CWC183540 / CWC183540-1	NC	22.22	47.62	13.89	12.77
Sample Name[b]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179899 / CWC179899-1	NC	0.00	**56.41**	NC	5.41
CWC183540 / CWC183540-1	22.22	2.82	14.29	NC	6.45

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent.
[b] Soil samples ending in "-1" are duplicate soil samples.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-3. Radiological Duplicate Sample Analysis for CY 2015 – Surface and Ground Water[a]

Sample Name[b]	Ra-226		Ra-228		Th-228		Th-230	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179898 / CWC179898-1	NC	NA	*	*	NC	NA	NC	NA
CWC183539 / CWC183539-1	*	*	*	*	*	*	*	*
SVP180867 / SVP180867-1	6.61	NA	*	*	NC	NA	NC	NA
Sample Name[b]	**Th-232**		**U-234**		**U-235**		**U-238**	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179898 / CWC179898-1	NC	NA	NC	NA	NC	NA	62.62	0.69
CWC183539 / CWC183539-1	*	*	*	*	*	*	*	*
SVP180867 / SVP180867-1	NC	NA	NC	NA	NC	NA	NC	NA

[a] RPD criterion for liquid samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-1" are duplicate soil samples.
* Not calculated, because either parent or duplicate sample was not analyzed.
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

Table 5-4. Radiological Duplicate Sample Alpha Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Th-228		Th-230		Th-232	
	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-1	12.90	NA	45.84	NA	0.82	NA
CWC183540 / CWC183540-1	*	*	*	*	*	*

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-1" are duplicate soil samples.
* Not calculated, because either parent or duplicate sample was not analyzed.
NA – not applicable (see RPD)

Table 5-5. Radiological Duplicate Sample Gamma Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Ac-227		Am-241		Cs-137		K-40	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-1	NC	NA	NC	NA	NC	NA	10.96	NA
CWC183540 / CWC183540-1	*	*	*	*	*	*	*	*
Sample Name[b]	**Pa-231**		**Ra-226**		**Ra-228**		**Th-228**	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-1	NC	NA	4.05	NA	6.30	NA	6.30	NA
CWC183540 / CWC183540-1	*	*	*	*	*	*	*	*
Sample Name[b]	**Th-230**		**Th-232**		**U-235**		**U-238**	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-1	NC	NA	6.30	NA	NC	NA	17.14	NA
CWC183540 / CWC183540-1	*	*	*	*	*	*	*	*

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-1" are duplicate soil samples.
* Not calculated, because either parent or duplicate sample was not analyzed.
Am – americium
Cs – cesium
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

5.7.2 Split Samples

Split samples measure accuracy and were collected by the sampling team and sent to a USACE QA laboratory for analysis to provide an independent assessment of contractor and subcontractor laboratory performance. One split sample was collected for approximately every 20 field samples of each matrix for non-radiological and for radiological analytes across the SLS.

The RPDs for non-radiological analyses are presented in Tables 5-6 and 5-7. The RPDs and NADs for radiological analyses are presented in Tables 5-8 through 5-10. The overall accuracy for the CY 2015 environmental monitoring sampling activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-6. Non-Radiological Split Sample Analysis for CY 2015 – Surface and Ground Water[a]

Sample Name[b]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	RPD	RPD	RPD	RPD
CWC179898 / CWC179898-2	*	*	*	*	*
CWC183539 / CWC183539-2	NC	NC	12.62	NC	NC
SVP180867 / SVP180867-2	*	*	*	*	*
Sample Name[b]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179898 / CWC179898-2	*	*	*	*	*
CWC183539 / CWC183539-2	17.85	NC	NC	NC	NC
SVP180867 / SVP180867-2	*	*	*	*	*

[a] RPD criterion for liquid samples is less than or equal to 30 percent.
[b] Soil samples ending in "-2" are split soil samples.
* Not calculated, because either parent or split sample was not analyzed.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-7. Non-Radiological Split Sample Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	RPD	RPD	RPD	RPD
CWC179899 / CWC179899-2	*	*	*	*	*
CWC183540 / CWC183540-2	NC	**106.95**	47.03	NC	10.25
Sample Name[b]	**Molybdenum**	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC179899 / CWC179899-2	*	*	*	*	*
CWC183540 / CWC183540-2	11.45	**88.07**	NC	NC	**81.94**

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent.
[b] Soil samples ending in "-2" are split soil samples.
* Not calculated, because either parent or split sample was not analyzed.
Bold values exceed the control limits. Values not in bold are within control limits.
NC – not calculated (due to one or both concentrations being below DLs)

Table 5-8. Radiological Split Sample Analysis for CY 2015 – Surface and Ground Water[a]

Sample Name[b]	Ra-226		Ra-228		Th-228		Th-230	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179898 / CWC179898-2	NC	NA	*	*	NC	NA	NC	NA
CWC183539 / CWC183539-2	*	*	*	*	*	*	*	*
SVP180867 / SVP180867-2	52.94	0.78	*	*	NC	NA	NC	NA
Sample Name[b]	**Th-232**		**U-234**		**U-235**		**U-238**	
	RPD	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**
CWC179898 / CWC179898-2	NC	NA	NC	NA	NC	NA	84.61	1.06
CWC183539 / CWC183539-2	*	*	*	*	*	*	*	*
SVP180867 / SVP180867-2	NC	NA	NC	NA	NC	NA	NC	NA

[a] RPD criterion for liquid samples is less than or equal to 30 percent. If the RPD is greater than 30 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-2" are split soil samples.
* Not calculated, because either parent or split sample was not analyzed.
NA – not applicable (see RPD)
NC – not calculated (due to one or both concentrations being below MDCs)

Table 5-9. Radiological Split Sample Alpha Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Th-228		Th-230		Th-232	
	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-2	38.32	NA	4.31	NA	42.30	NA
CWC183540 / CWC183540-2	*	*	*	*	*	*

[a] RPD criterion for solid matrix sample is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-2" are split soil samples.
* Not calculated, because either parent or split sample was not analyzed.
NA – not applicable (see RPD)

Table 5-10. Radiological Split Sample Gamma Analysis for CY 2015 – Sediment[a]

Sample Name[b]	Ac-227		Am-241		Cs-137		K-40	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC179899 / CWC179899-2	NC	NA	NC	NA	NC	NA	17.22	NA
CWC183540 / CWC183540-2	*	*	*	*	*	*	*	*
Sample Name[b]	**Pa-231**		**Ra-226**		**Ra-228**		**Th-228**	
	RPD	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**
CWC179899 / CWC179899-2	NC	NA	11.94	NA	26.94	NA	*	*
CWC183540 / CWC183540-2	*	*	*	*	*	*	*	*
Sample Name[b]	**Th-230**		**Th-232**		**U-235**		**U-238**	
	RPD	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**	**RPD**	**NAD**
CWC179899 / CWC179899-2	*	*	26.94	NA	NC	NA	NC	NA
CWC183540 / CWC183540-2	*	*	*	*	*	*	*	*

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent. If the RPD is greater than 50 percent, then the NAD shall be less than or equal to 1.96 to remain within the control limits.
[b] Soil samples ending in "-2" are split soil samples.
* Not calculated, because either parent or split sample was not analyzed.
NC – not calculated (due to one or both concentrations being below MDCs)

5.7.3 Equipment Rinsate Blanks

Equipment rinsate blank samples are typically taken from the rinsate water collected from equipment decontamination activities. These samples consist of analyte-free water that has been rinsed over sampling equipment for the purposes of evaluating the effectiveness of equipment decontamination. All of the monitoring wells have dedicated sampling equipment, rendering decontamination unnecessary. Because decontamination does not apply, equipment rinsate blanks were not employed.

Sediment samples from CWC are collected from each station using a clean sampling spoon. These spoons are segregated after use and decontaminated at the SLAPS field trailer according to Field Technical Procedure 400, “Equipment Decontamination” (Leidos 2015b). Because the process of collecting sediment occurs below the surface of the water, a rinsate blank would not represent the wetted surface of the sampling spoon at the time of sample collection and would therefore not apply. The CWC surface water samples are collected using new nitrile gloves and new laboratory sample containers. Equipment rinsate blanks for these samples are also not required, because no potential for contamination exists.

5.8 DATA REVIEW, EVALUATION, AND VALIDATION

All data packages received from the analytical laboratory were reviewed and either evaluated or validated by data management personnel. Data validation is the systematic process of ensuring that the precision and accuracy of the analytical data are adequate for their intended use. Validation was performed in accordance with *Data Verification and Validation* (Leidos 2015c), and/or with project-specific guidelines. General chemical data quality management guidance found in Engineer Regulation 1110-1-263 (USACE 1998c) was also used when planning for chemical data management and evaluation. Additional details of data review, evaluation, and validation are provided in the *FUSRAP Laboratory Data Management Process for the St. Louis Site* (USACE 1999b). Data assessment guidance to determine the usability of data from hazardous, toxic, and radioactive waste projects is provided in EM 200-1-6 (USACE 1997).

One hundred (100) percent of the data generated from all analytical laboratories was independently reviewed and either evaluated or validated. The data review process documents the possible effects on the data from various QC failures; it does not determine data usability, nor does it include assignment of data validation qualifier (VQ) flags. The data evaluation process uses the results of the data review to determine the usability of the data. The process of data evaluation summarizes the potential effects of QA/QC failures on the data, and the USACE Chemist or USACE Health Physicist assesses their impact on the attainment of the project-specific data quality objectives (DQOs). Consistent with the data quality requirements, as defined in the DQOs, approximately 10 percent of all project data were validated.

5.9 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILITY, COMPLETENESS, AND SENSITIVITY

The data evaluation process considers precision, accuracy, representativeness, completeness, comparability, and sensitivity. This section provides detail to the particular parameters and how the data were evaluated for each, with discussion and tables to present the associated data.

Accuracy and precision can be measured by the RPD or the NAD using the following equations:

$$RPD = \left(\frac{[S - D]}{\frac{S+D}{2}} \right) x\ 100$$

$$NAD = \frac{|S - D|}{\sqrt{U_S^2 + U_D^2}}$$

where:

S = parent sample result
D = duplicate/split sample result
U_S = parent sample uncertainty
U_D = duplicate/split sample uncertainty

The RPD is calculated for all samples for which a detectable result is reported for both the parent and the QA field split or field duplicate. For surface and ground-water radiological samples, when the RPD is greater than 30 percent, the NAD is used to determine the accuracy or precision of the method. NAD accounts for uncertainty in the results; RPD does not. The NAD should be equal to or less than a value of 1.96. The RPD criterion for sediment samples is equal to 50 percent. Neither equation is used when the analyte in one or both of the samples is not detected. In cases in which neither equation can be used, the comparison is counted as acceptable in the overall number of comparisons.

Precision is a measure of mutual agreement among individual measurements performed under the same laboratory controls. To evaluate for precision, a field duplicate is submitted to the same laboratory as the original sample to be analyzed under the same laboratory conditions.

The RPD and NAD between the two results was calculated and used as an indication of the precision of the analyses performed (Tables 5-1 through 5-5). Sample collection precision was measured in the laboratory by the analyses of duplicates. With the exception of a few outliers, which were qualified accordingly, the overall precision for the CY 2015 environmental monitoring sampling activities was acceptable.

Accuracy provides a gauge or measure of the agreement between an observed result and the true value for an analysis. The RPD and NAD between the two results was calculated and used as an indication of the accuracy of the analyses performed (Tables 5-6 through 5-10). For this EMDAR, accuracy is measured through the use of the field split samples through a comparison of the prime laboratory results versus the results of an independent laboratory. The overall accuracy for CY 2015 environmental monitoring sampling activities was acceptable.

Representativeness expresses the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Representativeness is a qualitative parameter that depends upon the proper design of the sampling program and proper laboratory protocols. Representativeness is satisfied through proper design of the sampling network, use of proper sampling techniques, following proper analytical procedures, and not exceeding holding times of the samples.

Representativeness was determined by assessing the combined aspects of the QA program, QC measures, and data evaluations. The network design was developed from the EMICY15, the sampling protocol from the SAG has been followed, and analytical procedures were conducted within the bounds of the QAPP. The overall representativeness of the CY 2015 environmental monitoring sampling activities was acceptable.

Comparability expresses the confidence with which one dataset can be compared with another. The extent to which analytical data will be comparable depends upon the similarity of sampling and analytical methods, as well as sample-to-sample and historical comparability. Standardized and consistent procedures used to obtain analytical data are expected to provide comparable results. For example, post-CY 1997 analytical data may not be directly comparable to data collected before CY 1997, because of differences in DQOs. Additionally, some sample media (e.g., storm water and radiological monitoring) have values that are primarily useful in the present, thus the comparison to historical data is not as relevant. However, the overall comparability of the applicable environmental monitoring sampling data met the project DQOs.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount expected to be obtained under normal conditions. Laboratories are expected to provide data meeting QC acceptance criteria for all samples tested. For the CY 2015 environmental monitoring sampling activities, the data completeness was 100 percent (St. Louis FUSRAP DQO for completeness is 90 percent).

Sensitivity is the determination of minimum detectable concentration (MDC) values that allows the investigation to assess the relative confidence that can be placed in an analytical result in comparison to the magnitude or level of analyte concentration observed. For this EMDAR, MDC is a term generically used to represent both the method detection limit (MDL) for non-radiologicals and the minimum detectable activity (MDA) for radiological analytes. The closer a measured value to the MDC, the less confidence and more variation the measurement will have. Project sensitivity goals were expressed as quantitation level goals in the SAG. These levels were achieved or exceeded throughout the analytical process.

The MDC is reported for each result obtained by laboratory analysis. These very low MDCs are achieved through the use of gamma spectroscopy for all radionuclides of concern, with additional analyses from alpha spectroscopy for thorium and from inductively coupled plasma (ICP) for metals. Variations in MDCs for the same radiological analyte reflect variability in the detection efficiencies and conversion factors due to factors such as individual sample aliquot, sample density, and variations in analyte background radioactivity for gamma and alpha spectroscopy at the laboratory. Variations in MDLs for the same non-radiological analyte reflect variability in calibrations between laboratories, dilutions, and analytical methods. In order to complete the data evaluation (i.e. precision, accuracy, representativeness, and comparability), analytical results that exceed the MDC of the analyte are desired.

5.10 DATA QUALITY ASSESSMENT SUMMARY

The overall quality of the data meets the established project objectives. Through proper implementation of the project data review, evaluation, validation, and assessment process, project information has been determined to be acceptable for use.

Data, as presented, have been qualified as usable, but estimated when necessary. Data that have been estimated have concentrations/activities that are below the quantitation limit or are indicative of accuracy, precision, or sensitivity less than desired but adequate for interpretation.

These data can withstand scientific scrutiny, are appropriate for the intended purpose, and are technically defensible. The environmental information presented has an established confidence, which allows utilization for the project objectives and provides data for future needs.

5.11 RESULTS FOR PARENT SAMPLES AND THE ASSOCIATED DUPLICATE AND SPLIT SAMPLES

Summaries of the QA parent sample results and associated duplicate and/or split sample results are presented in Tables 5-11 through 5-14.

Table 5-11. Non-Radiological Parent Samples and Associated Duplicate and Split Samples (Surface and Ground Water) for CY 2015[a]

Sample Name[b]	Antimony			Arsenic			Barium			Cadmium			Chromium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC179898	1.70	1.70	U	2.20	1.20	=	190.00	0.22	=	0.10	0.10	U	1.00	1.00	U
CWC179898-1	1.70	1.70	U	1.70	1.20	=	150.00	0.22	=	0.10	0.10	U	1.00	1.00	U
CWC179898-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183539	1.70	1.70	J	2.80	1.20	=	160.00	0.22	=	0.10	0.10	U	1.20	1.00	=
CWC183539-1	1.70	1.70	U	2.80	1.20	=	160.00	0.22	=	0.10	0.10	U	1.30	1.00	=
CWC183539-2	10.00	10.00	U	10.00	10.00	U	141.00	5.00	=	2.00	2.00	U	10.00	10.00	U
SVP180867	1.70	1.70	U	120.00	1.20	=	450.00	0.22	=	0.10	0.10	U	1.20	1.00	=
SVP180867-1	1.70	1.70	U	120.00	1.20	=	480.00	0.22	=	0.17	0.10	=	1.30	1.00	=
SVP180867-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Sample Name[b]	**Molybdenum**			**Nickel**			**Selenium**			**Thallium**			**Vanadium**		
	Result	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**	**Result**	**DL**	**VQ**
CWC179898	7.10	1.00	=	2.80	0.80	=	3.00	1.60	=	0.55	0.55	U	2.40	2.40	U
CWC179898-1	6.00	1.00	=	2.20	0.80	=	1.60	1.60	U	0.55	0.55	U	2.40	2.40	U
CWC179898-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183539	7.20	1.00	=	3.30	0.80	=	1.60	1.60	=	0.55	0.55	U	2.90	2.40	=
CWC183539-1	7.50	1.00	=	3.30	0.80	=	2.00	1.60	=	0.55	0.55	U	3.10	2.40	=
CWC183539-2	6.02	5.00	=	10.00	10.00	U	10.00	10.00	U	10.00	10.00	U	20.00	20.00	U
SVP180867	1.70	1.00	=	0.83	0.80	J	1.60	1.60	U	0.55	0.55	U	2.40	2.40	U
SVP180867-1	1.80	1.00	=	1.50	0.80	J	1.60	1.60	U	0.55	0.55	U	2.40	2.40	U
SVP180867-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

[a] Results are expressed in mg/kg.
[b] Samples ending in “-1” are duplicate samples. Samples ending in “-2” are split samples.
* Not available, because sample was not analyzed.
VQ symbols indicate: “=” for positively identified results, “U” for not detected, and “J” analyte was identified as estimated quantity.

Table 5-12. Non-Radiological Parent Samples and Associated Duplicate and Split Samples (Sediment) for CY 2015[a]

Sample Name[b]	Antimony			Arsenic			Barium			Cadmium			Chromium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC179899	0.50	0.50	U	4.50	2.00	=	120.00	0.73	=	0.40	0.12	=	18.00	5.70	=
CWC179899-1	0.49	0.49	U	3.90	1.90	=	180.00	0.70	=	0.36	0.12	=	20.00	5.50	=
CWC179899-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540	0.42	0.42	U	16.00	1.70	=	260.00	0.60	=	0.67	0.10	=	25.00	2.90	=
CWC183540-1	0.40	0.40	U	20.00	1.60	=	160.00	0.58	=	0.77	0.10	=	22.00	2.80	=
CWC183540-2	2.00	2.00	U	4.85	2.00	=	161.00	0.50	=	0.50	0.50	U	27.70	1.00	=
Sample Name[b]	Molybdenum			Nickel			Selenium			Thallium			Vanadium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC179899	0.96	0.96	U	13.00	0.83	=	2.50	1.20	=	1.20	1.20	U	18.00	5.70	=
CWC179899-1	0.93	0.93	U	13.00	0.80	=	1.40	1.20	=	1.10	1.10	U	19.00	5.50	=
CWC179899-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540	1.20	0.80	=	35.00	0.69	=	3.00	1.00	=	0.98	0.98	U	48.00	4.70	=
CWC183540-1	1.50	0.76	=	36.00	0.66	=	2.60	0.97	=	0.93	0.93	U	45.00	4.50	=
CWC183540-2	1.07	0.50	=	13.60	2.00	=	2.00	2.00	U	2.00	2.00	U	20.10	2.10	=

[a] Results are expressed in mg/kg.
[b] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
* Not available, because sample was not analyzed.
VQ symbols indicate: "=" for positively identified results, "U" for not detected, and "J" analyte was identified as estimated quantity.

Table 5-13. Radiological Parent Samples and Associated Duplicate and Split Samples (Surface and Ground Water) for CY 2015[a]

Sample Name[b]	Ra-226				Ra-228				Th-228				Th-230			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179898	0.34	0.56	1.04	UJ	*	*	*	*	0.25	0.29	0.45	UJ	0.37	0.34	0.45	U
CWC179898-1	0.82	0.78	1.20	U	*	*	*	*	0.19	0.27	0.46	UJ	0.47	0.37	0.37	J
CWC179898-2	0.08	0.06	0.08	U	*	*	*	*	0.17	0.14	0.21	U	0.11	0.08	0.04	J
CWC183539	0.07	0.52	1.18	UJ	*	*	*	*	0.27	0.35	0.61	UJ	0.42	0.33	0.16	J
CWC183539-1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183539-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SVP180867	1.72	0.89	0.98	J	*	*	*	*	0.09	0.18	0.37	UJ	0.06	0.19	0.45	UJ
SVP180867-1	1.61	0.77	0.75	J	*	*	*	*	0.16	0.18	0.14	UJ	0.03	0.22	0.53	UJ
SVP180867-2	1.00	0.26	0.18	=	*	*	*	*	0.14	0.08	0.11	J	0.03	0.03	0.02	J
Sample Name[b]	**Th-232**				**U-234**				**U-235**				**U-238**			
	Result	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**	**Result**	**Error**	**MDC**	**VQ**
CWC179898	-0.09	0.11	0.52	UJ	0.69	0.59	0.77	U	0.23	0.33	0.31	UJ	1.47	0.80	0.25	J
CWC179898-1	-0.03	0.06	0.37	UJ	0.32	0.73	0.76	UJ	0.11	0.23	0.30	UJ	0.77	0.62	0.76	J
CWC179898-2	0.00	0.02	0.04	UJ	0.91	0.31	0.10	=	0.04	0.06	0.10	UJ	0.60	0.21	0.05	=
CWC183539	0.00	0.14	0.36	UJ	0.95	0.45	0.39	J	-0.04	0.08	0.48	UJ	0.26	0.27	0.18	UJ
CWC183539-1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CWC183539-2	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
SVP180867	0.12	0.17	0.17	UJ	0.12	0.25	0.26	UJ	0.02	0.17	0.40	UJ	0.11	0.13	0.10	UJ
SVP180867-1	-0.05	0.07	0.38	UJ	0.09	0.37	0.29	UJ	-0.03	0.16	0.45	UJ	0.13	0.18	0.29	UJ
SVP180867-2	0.00	0.01	0.02	UJ	0.03	0.20	0.06	UJ	0.01	0.03	0.06	UJ	-0.01	0.01	0.06	UJ

[a] Results are expressed in pCi/L. Negative results are less than the laboratory system's background level.
[b] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
* Not available, because sample was not analyzed.
VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" analyte was identified as estimated quantity, and "UJ" analyte was not detected and had QC deficiencies.

Table 5-14. Radiological Parent Samples and Associated Duplicate and Split Samples (Sediment) for CY 2015[a]

Sample Name[b]	Th-228[c]				Th-230[c]				Th-232[c]			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179899	1.16	0.53	0.27	=	2.27	0.82	0.12	=	1.22	0.55	0.12	=
CWC179899-1	1.32	0.63	0.32	=	3.62	1.25	0.36	=	1.21	0.60	0.32	=
CWC179899-2	0.79	0.14	0.06	=	2.37	0.29	0.01	=	0.79	0.14	0.03	=
CWC183540	0.86	0.46	0.31	J	3.36	1.07	0.31	=	0.55	0.36	0.31	J
CWC183540-1	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540-2	*	*	*	*	*	*	*	*	*	*	*	*
Sample Name[b]	**Ac-227**				**Am-241**				**Cs-137**			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179899	0.06	0.16	0.26	UJ	0.01	0.03	0.05	UJ	0.00	0.02	0.03	UJ
CWC179899-1	0.05	0.16	0.26	UJ	0.01	0.04	0.06	UJ	-0.01	0.02	0.03	UJ
CWC179899-2	0.21	0.36	0.61	UJ	0.05	0.19	0.33	UJ	0.00	0.07	0.14	UJ
CWC183540	0.01	0.17	0.27	UJ	0.02	0.03	0.05	UJ	0.00	0.02	0.03	UJ
CWC183540-1	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540-2	*	*	*	*	*	*	*	*	*	*	*	*
Sample Name[b]	**K-40**				**Pa-231**				**Ra-226**			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179899	13.80	1.14	0.21	=	0.02	0.53	0.75	UJ	1.26	0.34	0.07	=
CWC179899-1	15.40	1.22	0.20	=	-0.13	0.51	0.71	UJ	1.21	0.33	0.07	=
CWC179899-2	16.40	3.02	1.07	=	0.48	0.37	3.70	U	1.42	0.30	0.17	=
CWC183540	13.50	1.27	0.20	=	0.27	0.54	0.80	UJ	1.23	0.34	0.07	=
CWC183540-1	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540-2	*	*	*	*	*	*	*	*	*	*	*	*
Sample Name[b]	**Ra-228**				**Th-228[c]**				**Th-230[c]**			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179899	0.94	0.08	0.11	=	0.94	0.08	0.11	=	1.91	3.39	5.30	UJ
CWC179899-1	1.00	0.09	0.09	=	1.00	0.09	0.09	=	3.51	3.43	5.43	UJ
CWC179899-2	1.23	0.35	0.25	=	*	*	*	*	*	*	*	*
CWC183540	0.76	0.09	0.09	=	0.76	0.09	0.09	=	6.56	4.10	5.00	J
CWC183540-1	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540-2	*	*	*	*	*	*	*	*	*	*	*	*
Sample Name[b]	**Th-232[c]**				**U-235**				**U-238**			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC179899	0.94	0.08	0.11	=	-0.12	0.20	0.32	UJ	0.86	0.67	0.51	J
CWC179899-1	1.00	0.09	0.09	=	-0.10	0.21	0.33	UJ	1.02	0.55	0.53	J
CWC179899-2	1.23	0.35	0.25	=	0.15	0.39	0.67	UJ	1.44	1.03	2.85	U
CWC183540	0.76	0.09	0.09	=	-0.02	0.20	0.32	UJ	0.69	0.57	0.49	J
CWC183540-1	*	*	*	*	*	*	*	*	*	*	*	*
CWC183540-2	*	*	*	*	*	*	*	*	*	*	*	*

[a] Results are expressed in pCi/g. Negative results are less than the laboratory system's background level.
[b] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
[c] Results from alpha spectroscopy.
* Not available, because sample was not analyzed.
VQ symbols indicate: "=" for positively identified results, "U" for not detected, "J" analyte was identified as estimated quantity, and "UJ" analyte was not detected and had QC deficiencies.

6.0 RADIOLOGICAL DOSE ASSESSMENT

This section evaluates the cumulative dose to a hypothetically impacted individual from exposure to radiological contaminants at the NC Sites and documents dose trends. The regulatory dose limit for members of the public is 100 mrem per year, as stated in 10 *CFR* 20.1301. Although 10 *CFR* 20.1301 is not an ARAR for the NC Sites, the USACE has provided this evaluation to assess public exposures from St. Louis FUSRAP cleanup operations. Compliance with the dose limit in §20.1301 can be demonstrated in one of the two following methods (§20.1302(b)(1) and (2)):

1) Demonstrating by measurement or calculation that the TEDE to the individual likely to receive the highest dose from FUSRAP cleanup operations at the NC Sites does not exceed the annual dose limit (i.e., 100 mrem per year); or
2) Demonstrating that: (*i*) the annual average concentration of radioactive material released in gaseous and liquid effluents at the boundary of the unrestricted area does not exceed the values specified in Table 2 of Appendix B to 10 *CFR* 20; and (*ii*) if an individual were continuously present in an unrestricted area, the dose from external sources would not exceed 2 mrem per hour.

The USACE has elected to demonstrate compliance by calculation of the TEDE to a hypothetical individual likely to receive the highest dose from FUSRAP cleanup operations at the NC Sites (method 1). This section describes the methodology employed for this evaluation.

Dose calculations are presented for hypothetical maximally exposed individuals at the SLAPS and SLAPS VPs and CWC. The monitoring data used in the dose calculations are reported in the respective environmental monitoring sections of this EMDAR.

Dose calculations related to airborne emissions, as required by 40 *CFR* 61, Subpart I, *National Emission Standards for Emissions of Radionuclides Other Than Radon From Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered By Subpart H,* are presented in Appendix A (the "North St. Louis County FUSRAP Sites 2015 Radionuclide Emissions NESHAP Report Submitted in Accordance with Requirements of 40 *CFR* 61, Subpart I").

6.1 SUMMARY OF ASSESSMENT RESULTS AND DOSE TRENDS

The TEDE from the Latty Avenue Properties to a hypothetical maximally exposed individual from all complete/applicable pathways combined was less than 0.1 mrem per year, estimated for an individual who works full time at a location approximately 30 m south from the center of the VP-04(L) excavation area.

The TEDE from the SLAPS and SLAPS VPs to a hypothetical maximally exposed individual from all complete/applicable pathways combined was less than 0.1 mrem per year, estimated for an individual who works full time at a location approximately 500 m west-southwest from the center of the SLAPS Loadout area.

The TEDE from CWC to a hypothetical maximally exposed individual from all complete/applicable pathways combined was 0.4 mrem per year, estimated for a resident youth spending time as a recreational user of CWC.

Annual dose trends from CY 2000 to CY 2015 at applicable NC Sites are documented on Figure 6-1. A comparison of the maximum annual dose from CY 2000 to CY 2015 at each of the applicable

NC Sites to the annual average natural background dose of approximately 300 mrem per year is provided on Figure 6-2.

6.2 PATHWAY ANALYSIS

The six complete pathways for exposure to NC Site radiological contaminants evaluated by the St. Louis FUSRAP EMP are listed in Table 6-1. These pathways are used to identify data gaps in the EMP and to estimate potential radiological exposures from the site. Of the six complete pathways, four were applicable in CY 2015 and were thus incorporated into radiological dose estimates.

Table 6-1. Complete Radiological Exposure Pathways for the NC Sites

Exposure Pathway	Pathway Description	Applicable to CY 2015 Dose Estimate	
		NC	CWC
Liquid A	Ingestion of ground water from local wells down-gradient from the site.	NA	NA
Liquid B	Ingestion of fish inhabiting CWC.	NC	NA
Liquid C	Ingestion of surface water[a] and sediments.	NC	Y[b]
Airborne A	Inhalation of particulates dispersed through wind erosion and RAs.	Y	NC
Airborne B	Inhalation of Rn-222 and decay products emitted from contaminated soils/wastes.	Y	NC
External	Direct gamma radiation from contaminated soils/wastes.	Y	NA

[a] Surface water includes storm-water run-off from NC Sites, MSD discharges, and the water in CWC.
[b] The pathway is only applicable to a recreational receptor (youth) exposed to contaminants present in CWC water and sediments. Data from NC Sites storm-water discharges and MSD discharges are not applicable to the hypothetical recreational receptor; therefore, those data are not evaluated in this section.
NA – not applicable for the site
NC – not a complete pathway for the respective site
Y – applicable for the site

In developing specific elements of the St. Louis FUSRAP EMP, potential exposure pathways of the radioactive materials present on site are reviewed to determine which pathways are complete. Evaluation of each exposure pathway is based on hypothetical sources, release mechanisms, types, probable environmental fates of contaminants, and the locations and activities of potential receptors. Pathways are then reviewed to determine whether a link exists between one or more radiological contaminant sources, or between one or more environmental transport processes, to an exposure point at which human receptors are present. If a link exists, the pathway is termed complete. Each complete pathway was reviewed to determine if a potential for exposure was present in CY 2015. If a potential for exposure was possible, the pathway is termed applicable. Only applicable pathways are considered in estimates of dose.

The pathways applicable to the CY 2015 dose estimates for NC Sites, including CWC, are shown in Table 6-1. The incomplete pathways were not considered in the dose assessment and are only listed in Table 6-1 because they were complete for at least one receptor location. The pathways listed as not applicable were listed as such in CY 2015 for the following reasons:

- Liquid A is not applicable, because the aquifer is of naturally low quality and is not known to be used for any domestic purpose in the vicinity of the NC Sites (DOE 1994).
- Liquid B is not applicable at CWC or for the SLAPS transient receptor, because the receptor would be unlikely to catch and eat a game fish. A survey was conducted, and 97 percent of the fish collected at CWC during the survey were fathead minnows (Parker and Szlemp 1987).

- The dose equivalent from CWC to the receptor from contaminants in the water/sediment was estimated using the Microshield Version 5.03 computer-modeling program. The scenario used was a youth playing in the creek bed (1 ft of water shielding and dry) for 52 hours per year. The highest estimated whole body dose to the youth was 0.3 microrem per year. The gamma dose rate emitted from the contaminants is indistinguishable from background gamma radiation. Therefore, the external gamma pathway (from contaminants in the creek water/sediment) is not applicable for the CWC receptor.

6.3 EXPOSURE SCENARIOS

Dose calculations were performed for maximally exposed individuals at critical receptor locations for applicable exposure pathways (see Table 6-1) to assess dose due to radiological releases from the NC Sites. First, conditions were set to determine the TEDE to a maximally exposed individual at each of the main site locations on which excavation and loadout activities occurred (i.e., Latty Avenue Properties, the SLAPS, and the SLAPS VPs). A second dose equivalent for CWC was calculated. A third set of dose equivalent calculations was performed to meet NESHAP requirements (Appendix A). These dose equivalent calculations were also used for purposes of TEDE calculation.

The scenarios and models used to evaluate these radiological exposures are conservative but appropriate. Although radiation doses can be calculated or measured for individuals, it is not appropriate to predict the health risk to a single individual using the methods prescribed herein. Dose equivalents to a single individual are estimated by hypothesizing a maximally exposed individual and placing this individual in a reasonable but conservative scenario. This method is acceptable when the magnitude of the dose to a hypothetical maximally exposed individual is small, as is the case for the NC Sites. This methodology provides for reasonable estimates of potential exposure to the public and maintains a conservative approach. The scenarios and resulting estimated doses are outlined in Section 6.4.

All ingestion calculations were performed using the methodology described in International Commission on Radiation Protection (ICRP) Reports 26 and 30 for a 50-year committed effective dose equivalent (CEDE). Fifty-year CEDE conversion factors were obtained from *Federal Guidance Report* 11 (USEPA 1989a) and *Calculation of Slope Factors and Dose Coefficients* (ORNL 2014).

6.4 DETERMINATION OF TOTAL EFFECTIVE DOSE EQUIVALENT FOR EXPOSURE SCENARIOS

The TEDE for the exposure scenarios was calculated using CY 2015 monitoring data. Calculations for dose scenarios are provided in Appendix H. Dose equivalent estimates are well below the standards set by the NRC for annual public exposure and the USEPA NESHAP limits.

The CY 2015 TEDE for a hypothetical maximally exposed individual near the Latty Avenue Properties, the SLAPS, the SLAPS VPs, and CWC is less than 0.1 mrem per year, less than 0.1 mrem per year, less than 0.1 mrem per year, and 0.4 mrem per year, respectively. In comparison, the annual average exposure to natural background radiation in the United States results in a TEDE of approximately 300 mrem per year (NCRP 2009). Assumptions are detailed in the following sections.

6.4.1 Radiation Dose Equivalent from Latty Avenue Properties to a Maximally Exposed Individual

The Latty Avenue Properties contributing to dose (i.e., those properties at which RA occurred in CY 2015) include: VP-04(L). This section describes the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent the perimeter of the Latty Avenue Properties and to receive a radiation dose by the exposure pathways identified previously. No private residences are adjacent to the site. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than 100 percent. A full-time-employee business receptor was considered the maximally exposed individual for the Latty Avenue Properties.

The exposure scenario assumptions are:

- Exposure to radiation from all Latty Avenue Property sources occurs to the maximally exposed individual while working full time outside at the receptor location facility located approximately 30 m south of the VP-04(L) excavation area. Exposure time is 2,000 hours per year (Leidos 2016b).
- Exposure from external gamma radiation was considered negligible.
- Exposure from airborne radioactive particulates was calculated using soil concentration data and air particulate monitoring data to determine a source term and then running the CAP-88 PC modeling code to calculate dose to the receptor (Leidos 2016b).
- Exposure from Rn-222 (and progeny) was considered negligible.

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the receptor facility 30 m south of the VP-04(L) excavation area would have received less than 0.1 mrem per year from airborne radioactive particulates, for a TEDE of less than 0.1 mrem per year (Leidos 2016b).

6.4.2 Radiation Dose Equivalent from St. Louis Airport Site to a Maximally Exposed Individual

The SLAPS Properties contributing to dose (i.e., those properties at which RA occurred in CY 2015) include: the SLAPS Loadout area. This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent the perimeter of the SLAPS and to receive a radiation dose by the exposure pathways identified previously. No private residences are adjacent to the site. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than 100 percent. A full-time-employee business receptor was considered the maximally exposed individual for the SLAPS.

The exposure scenario assumptions are:

- Exposure to radiation from all SLAPS sources occurs to the maximally exposed individual while working full time outside at the receptor location facility located approximately 500 m west-southwest from the center of the SLAPS Loadout area. Exposure time is 2,000 hours per year (Leidos 2016c).
- Exposure from external gamma radiation was calculated using environmental TLD monitoring data at the perimeter between the source and the receptor. The site is assumed to represent a line-source to the receptor.

- Exposure from airborne radioactive particulates was calculated using soil concentration data and air particulate monitoring data to determine a source term and then running the CAP-88 PC modeling code to calculate dose to the receptor (Leidos 2016c).
- Exposure from Rn-222 (and progeny) was calculated using a dispersion factor and Rn-222 (ATD) monitoring data at the site perimeter between the source and the receptor (Leidos 2016c).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the receptor facility 500 m west-southwest of the center of the SLAPS Loadout area would have received less than 0.1 mrem per year from external gamma, less than 0.1 mrem per year from airborne radioactive particulates, and less than 0.1 mrem per year from Rn-222, for a TEDE of less than 0.1 mrem per year (Leidos 2016c).

6.4.3 Radiation Dose Equivalent from St. Louis Airport Site Vicinity Properties to a Maximally Exposed Individual

The SLAPS VPs contributing to dose (i.e., those properties at which RA occurred in CY 2015) include: IA-10, VP-57 and VP-58, the CWC corridor, the Pershall Road South Ditch, and St. Cin Park. This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent the perimeter of the SLAPS VPs and to receive a radiation dose by the exposure pathways identified previously. Because radiation dose due to radon and external gamma radiation are considered negligible at the SLAPS VPs, the estimated TEDE only includes dose from exposure to airborne radioactive particulates that are assumed to be released during active excavations. The excavation activities at St. Cin Park yielded the highest estimated exposure to airborne radioactive particulates from SLAPS VPs and a private residence was located approximately 100 m northwest of the St. Cin Park excavation; therefore a residential receptor was considered the maximally exposed individual for the SLAPS VPs.

The exposure scenario assumptions are:

- Exposure to radiation from all SLAPS VP sources occurs to the maximally exposed individual while living full time at the residence receptor location located approximately 100 m northwest from the center of the St. Cin Park excavation area. Exposure time is 8,760 hours per year (Leidos 2016c).
- Exposure from airborne radioactive particulates was calculated using soil concentration data and air particulate monitoring data to determine a source term and then running the CAP-88 PC modeling code to calculate dose to the receptor (Leidos 2016c).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual living at the residence receptor location 100 m northwest from the center of the St. Cin Park excavation area would have received 0.1 mrem per year from airborne radioactive particulates for a TEDE of 0.1 mrem per year (Leidos 2016c).

6.4.4 Radiation Dose Equivalent from Coldwater Creek to a Maximally Exposed Individual

This section discusses the estimated TEDE to a hypothetical maximally exposed individual assumed to frequent CWC and receive a radiation dose by the exposure pathways identified previously. The assumed scenario is for a recreational user. Therefore, all calculations of dose equivalent due to the applicable pathway assume a realistic residence time that is less than

100 percent. A youth spending time as a recreational user of CWC is considered the maximally exposed individual for CWC.

The exposure scenario assumptions are:

- The youth spends 2 hours at CWC during each visit, and visits once every 2 weeks. It is likely that this activity would be greater in summer and less in winter, but the yearly average is 26 visits.
- The soil/sediment ingestion rate is 50 milligrams (mg) per day, and the water ingestion rate is 2 liters (L) per day (USEPA 1989b).
- The UCL_{95} of the mean radionuclide concentrations in CWC surface water/sediment samples collected in CY 2014 were assumed to be present in the water/sediment ingested by the maximally exposed individual (Leidos 2016d).
- Dose equivalent conversion factors for ingestion are: total U, 2.63E-4 millirem per picocurie (mrem/pCi); Ra-226, 2.97E-3 mrem/pCi; Ra-228, 1.45E-02 mrem/pCi; Th-228, 5.07E-4 mrem/pCi; Th-230, 9.10E-4 mrem/pCi; and Th-232, 1.07E-3 mrem/pCi (ORNL 2014).

Based on the exposure scenario and assumptions described herein, a maximally exposed individual using CWC for recreational purposes would have received less than 0.1 mrem per year from soil/sediment ingestion and 0.3 mrem per year from water ingestion, for a TEDE of 0.4 mrem per year (Leidos 2016d).

7.0 REFERENCES

Cember, H. 1996. *Introduction to Health Physics,* McGraw-Hill, New York, NY.

DOE 1998. U.S. Department of Energy. *Internal Dosimetry Program Technical Basis Manual*, DOE/OR/21548-241, Oak Ridge Operations Office, Rev. 5. November.

DOD 2000. U.S. Department of Defense, U.S. Department of Energy, U.S. Environmental Protection Agency, and U.S. Nuclear Regulatory Commission. *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM).* NUREG-1575. EPA 402-R-97-016. Revision 1. August.

DOD and DOE 2013. U.S. Department of Defense and U.S. Department of Energy. *Department of Defense (DoD)/Department of Energy (DOE) Consolidated Quality Systems Manual (QSM) for Environmental Laboratories*. DOD Quality Systems Manual Version 5.0 and DOE Quality Systems for Analytical Services Version 3.0. July.

DOE 1994. U.S. Department of Energy, Oak Ridge National Laboratory. *Remedial Investigation Report for the St. Louis Site,* St. Louis, Missouri. DOE/OR/21949-280. January.

DOE 1995. U.S. Department of Energy, Oak Ridge Operations Office. *Remedial Investigation Addendum for the St. Louis Site,* St. Louis, Missouri. DOE/OR/21950-132. Final. September.

DOE 1997. U.S. Department of Energy. *St. Louis Airport Site (SLAPS) Interim Action Engineering Evaluation/Cost Analysis (EE/CA),* St. Louis, Missouri. DOE/OR/21950-12026. September.

Gibbons, Robert D. 1994. *Statistical Methods for Groundwater Monitoring*, John Wiley and Sons, Inc., New York.

Leidos 2015a. Leidos Inc. Environmental Science & Engineering Operation, Standard Operating Procedure. "Control of Nonconforming Items," ESE A15.1, Rev. 0, January 31.

Leidos 2015b. Leidos Inc. Environmental Science & Engineering Operation, Standard Operating Procedure. "Equipment Decontamination," FTP-400, Rev. 0, January 31.

Leidos 2015c. Leidos, Inc. *Data Verification and Validation.* Environmental Science & Engineering Operation. Standard Operating Procedure. ESE DM-05. Revision 0. January 31.

Leidos 2016a. Leidos Inc. *Radon Working Levels (WL) at FUTURA.* Calculations Package. March.

Leidos 2016b. Leidos Inc. *Total Effective Dose Equivalent (TEDE) to the Hypothetically Maximally Exposed Individual at Latty Avenue Properties.* Calculations Package. March.

Leidos 2016c. Leidos Inc. *Total Effective Dose Equivalent (TEDE) to the Hypothetically Maximally Exposed Individual at SLAPS/SLAPS VPs.* Calculations Package. March.

Leidos 2016d. Leidos Inc. *Total Effective Dose Equivalent (TEDE) to the Hypothetically Maximally Exposed Individual at Coldwater Creek.* Calculations Package. March.

MDNR 1998. Missouri Department of Natural Resources. Letter dated October 2, 1998. From Philip A. Schroeder, Permit Section Chief, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: St. Louis Airport Site (SLAPS), St. Louis, Missouri.

MDNR 2002. Missouri Department of Natural Resources. Letter dated February 19, 2002. From Matthew Sikes to Sharon Cotner, USACE FUSRAP Project Manager. Subject: Reduce Sampling at SLAPS Outfall 002.

MSD 1991. Metropolitan St. Louis Sewer District. Ordinance No. 8472. Adopted August 14, 1991.

MSD 1994. Metropolitan St. Louis Sewer District. Ordinance No. 10177. Adopted November 9, 1994.

MSD 1997. Metropolitan St. Louis Sewer District. Ordinance No. 10082. Adopted May 8, 1997.

MSD 1998. Metropolitan St. Louis Sewer District. Letter dated October 30, 1998. From Bruce H. Litzsinger, Civil Engineer, to Ken Axetel, International Technology Corporation.

MSD 2001. Metropolitan St. Louis Sewer District. Letter dated July 23, 2001. From Bruce H. Litzsinger, Civil Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: St. Louis Airport Site, File: SD – St. Louis Airport FUSRAP Site, 110 McDonnell.

MSD 2005. Metropolitan St. Louis Sewer District. Letter dated February 10, 2005. From Roland Biehl, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: St. Louis Airport Site File: SD, St. Louis Airport FUSRAP Site, 110 McDonnell.

MSD 2006. Metropolitan St. Louis Sewer District. Letter dated June 19, 2006. From Roland A. Biehl, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: FUSRAP St. Louis Airport Site, File: SD, St. Louis Airport FUSRAP Site, 9012138501, SP801.

MSD 2008. Metropolitan St. Louis Sewer District. Letter dated May 22, 2008. From Steve Grace, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: FUSRAP St. Louis Airport Site, File: SD, St. Louis Airport FUSRAP Site, 9012138501, SP801.

MSD 2010. Metropolitan St. Louis Sewer District. Letter dated May 10, 2010. From Steve Grace, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: FUSRAP St. Louis Airport Site, File: SD, St. Louis Airport FUSRAP Site, 9012138501, SP801.

MSD 2012. Metropolitan St. Louis Sewer District. Letter dated May 24, 2012. From Steve Grace, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: FUSRAP St. Louis Airport Site, File: SD, St. Louis Airport FUSRAP Site, 9012138501, SP801.

MSD 2014a. Metropolitan St. Louis Sewer District. Letter dated June 23, 2014. From Steve Grace, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: FUSRAP St. Louis Airport Site, File: SD, St. Louis Airport FUSRAP Site, 9012138501, SP801.

MSD 2014b. Metropolitan St. Louis Sewer District. Letter dated February 5, 2014. From Steve Grace, Environmental Assistant Engineer, to Sharon Cotner, USACE FUSRAP Project Manager. Subject: SD, Hazelwood Interim Storage Site, SOUR057900, 8945 Latty Avenue, Berkeley, Missouri.

NCRP 1988. National Council on Radiation Protection and Measurements. *Measurement of Radon and Radon Daughters in Air*, NCRP Report No. 97. November.

NCRP 2009. National Council on Radiation Protection and Measurements. *Ionizing Radiation Exposure of the Population of the United States*, NCRP Report No. 160. 3 March.

Office of the Federal Register, NARA 1998. National Archives and Records Administration. "National Primary Drinking Water Regulations: Disinfectants and Disinfection Byproducts; Final Rule." *Federal Register.* Volume 63, No. 241, 40 *CFR* 9, 141, and 142. December 16.

ORNL 2014. Oak Ridge National Laboratory. *Calculation of Slope Factors and Dose Coefficients,* by Michael Bellamy, Lauren Finklea, Fred Dolislager, and Keith Eckerman, published July 2014, Oak Ridge National Laboratory, Center for Radiation Protection Knowledge. ORNL/TM-2013/00. September.

Parker, M. A., and R. Szlemp 1987. *Final Fish and Wildlife Coordination Act Report,* Coldwater Creek Flood Control Project, St. Louis County, Missouri, Final, May. Published as Appendix D of *Coldwater Creek, Missouri, Feasibility Report and Environmental Impact Statement,* U.S. Army Corps of Engineers, St. Louis District, Lower Mississippi Valley Division, May.

Shleien, Bernard, ed. 1992. *The Health Physics and Radiological Health Handbook.* Silver Spring, MD: Scinta Inc.

UNSCEAR 1982. United Nations Scientific Committee on the Effects of Radiation. *United Nations Scientific Committee on the Effects of Radiation, 37th Session, Supplement No. 45 (A/37/45).* United Nations, New York, NY.

USACE 1997. U.S. Army Corps of Engineers. *Engineering and Design – Chemical Data Quality Management for Hazardous, Toxic, and Radioactive Waste (HTRW) Projects.* Engineer Manual, EM-200-1-6. October.

USACE 1998a. U.S. Army Corps of Engineers. *Engineering Evaluation/Cost Analysis (EE/CA) and Responsiveness Summary for the St. Louis Airport Site (SLAPS)*, St. Louis, Missouri. Final. May.

USACE 1998b. U.S. Army Corps of Engineers. *Engineering Evaluation/Cost Analysis (EE/CA) for the Hazelwood Interim Storage Site (HISS),* St. Louis, Missouri. Final. October.

USACE 1998c. U.S. Army Corps of Engineers. *Engineering and Design – Chemical Data Quality Management for Hazardous, Toxic, and Radioactive Waste Activities.* Engineer Regulation ER-1110-1-263. April.

USACE 1999a. U.S. Army Corps of Engineers. *Environmental Monitoring Guide for the St. Louis Sites,* St. Louis, Missouri. Final. December.

USACE 1999b. U.S. Army Corps of Engineers. *FUSRAP Laboratory Data Management Process for the St. Louis Site,* St. Louis, Missouri. June.

USACE 2000. U.S. Army Corps of Engineers, St. Louis District. *Sampling and Analysis Guide for the St. Louis Site.* Final, October.

USACE 2001. U.S. Army Corps of Engineers. *Requirements for the Preparation of Sampling and Analysis Plans,* Engineer Manual, EM 200-1-3. February 1.

USACE 2003. U.S. Army Corps of Engineers. Letter dated November 18, 2003. From Sharon Cotner, USACE FUSRAP Project Manager, to Phillip A. Schroeder, Permit Section Chief, MDNR.

USACE 2005. U.S. Army Corps of Engineers, St. Louis District. *Record of Decision for the North St. Louis County Sites,* St. Louis, Missouri. Final. September 2.

USACE 2007. U.S. Army Corps of Engineers. Letter dated April 20, 2007. From Sharon Cotner, USACE FUSRAP Project Manager, to Thomas Siegel, Permit and Engineering Chief, MDNR. Subject: Sediment Control and Pumped Excavation Water Outfall Vicinity Properties 08(c) and 40A.

USACE 2013. U.S. Army Corps of Engineers. *Laboratory Quality Assurance Plan for the FUSRAP St. Louis Radioanalytical Laboratory*, Berkeley, Missouri. Revision 8. April.

USACE 2014. U.S. Army Corps of Engineers. *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for Calendar Year 2015,* St. Louis, Missouri. Revision 0. December 23.

USEPA 1987. U.S. Environmental Protection Agency. *Environmental Radon.* Volume 35, New York.

USEPA 1989a. U.S. Environmental Protection Agency. "Limiting Values of Radionuclide Intake and Air Concentration and Dose Conversion Factors for Inhalation, Submersion and Ingestion," *Federal Guidance Report* No. 11. September.

USEPA 1989b. U.S. Environmental Protection Agency. *Exposure Factor Handbook.* EPA/600/8-89/043, Office of Health and Environmental Assessment, Washington D.C. July.

USEPA 1989c. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. *Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual* (*Part A)*.USEPA/5401/1-89/002. December.

USEPA 1991. U.S. Environmental Protection Agency. *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans.* QAMS-005/80.

USEPA 1992. U.S. Environmental Protection Agency. *Supplemental Guidance to RAGS: Calculating the Concentration Term.* Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.7-081. May.

USEPA 1993. U.S. Environmental Protection Agency. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*, Third Edition, Revision 1, Updates 1, 2, and 3.

USEPA 1994. U.S. Environmental Protection Agency. *EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations.* EPA QA/R-5. January.

USEPA 2000. U.S. Environmental Protection Agency. *Guidance for Data Quality Assessment - Practical Methods for Data Analysis.* EPA QA/G-9, QA00 Update. July.

USEPA 2013. U.S. Environmental Protection Agency. ProUCL Version 5.0, Developed by Lockheed Martin for National Exposure Research Laboratory, April. Available online: www.epa.gov/nerlesd1/tsc/software.htm. 19 September.

USEPA 2014. U.S. Environmental Protection Agency. CAP88-PC Version 4.0 Computer Code, U.S. Environmental Protection Agency. September.

Weather Underground, Inc. 2015. Weather, National Weather Service, Lambert – St. Louis International Weather Station, Precipitation. Available online: http://www. wunderground.com. Accessed as needed in CY 2015.

10 *CFR* 20, *Standards for Protection Against Radiation.*

10 *CFR* 20.1301, *Dose Limits For Individual Members Of The Public*.

10 *CFR* 20.1302, *Compliance With Dose Limits For Individual Members Of The Public*.

10 *CSR* 20-7.015, *Effluent Regulations.*

10 *CSR* 20-7.031, *Water Quality Standards.*

19 *CSR* 20-10, *Protection Against Ionizing Radiation.*

40 *CFR* 61, Subpart I, *National Emission Standards for Radionuclide Emissions from Federal Facilities Other than Nuclear Regulatory Commission Licenses and Not Covered by Subpart H.*

40 *CFR* 192, *Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings.*

THIS PAGE INTENTIONALLY LEFT BLANK

FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

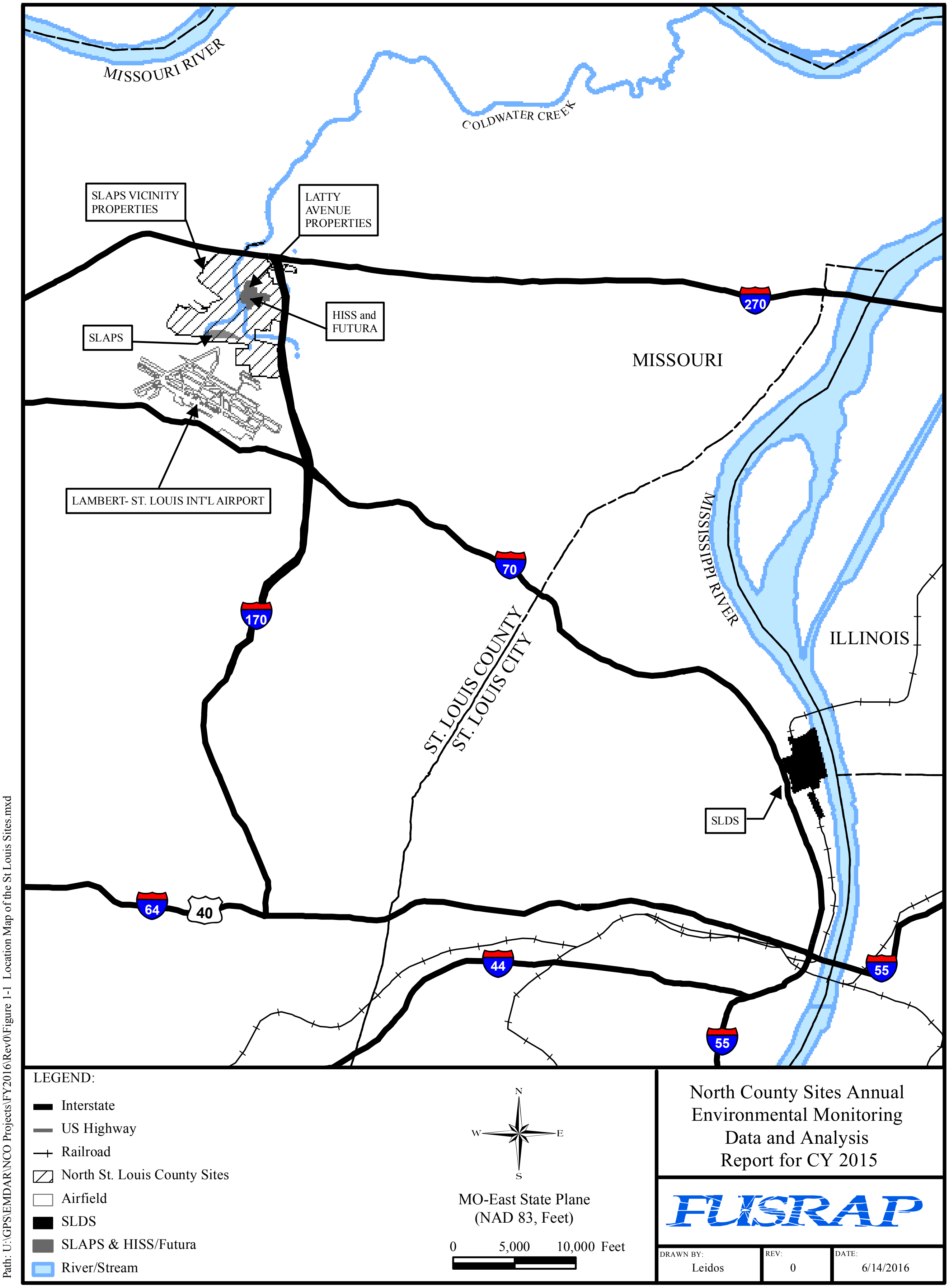


Figure 1-1. Location Map of the St. Louis Sites

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 1-2 Plan View of the SLAPS and SLAPS VPs.mxd

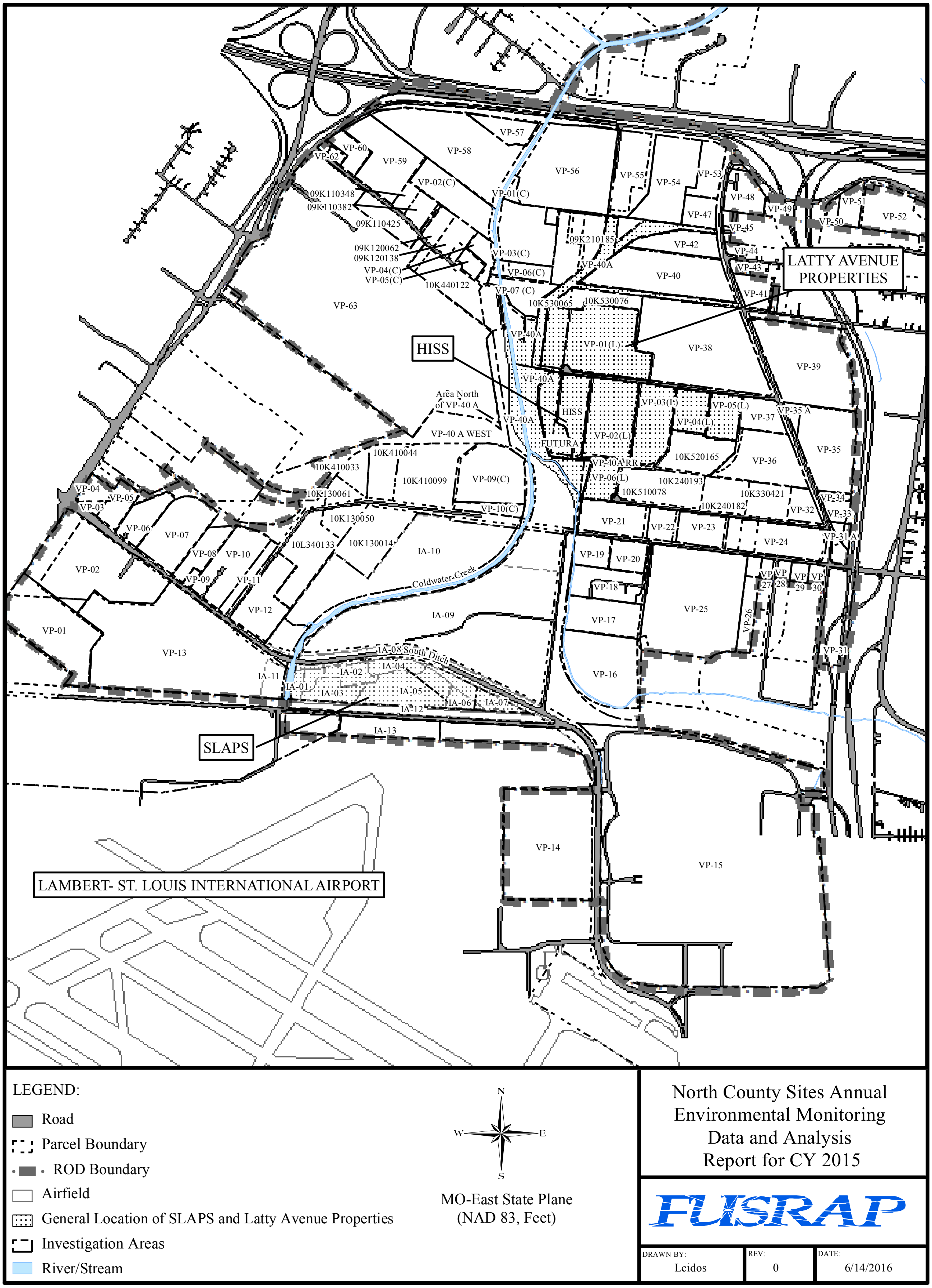
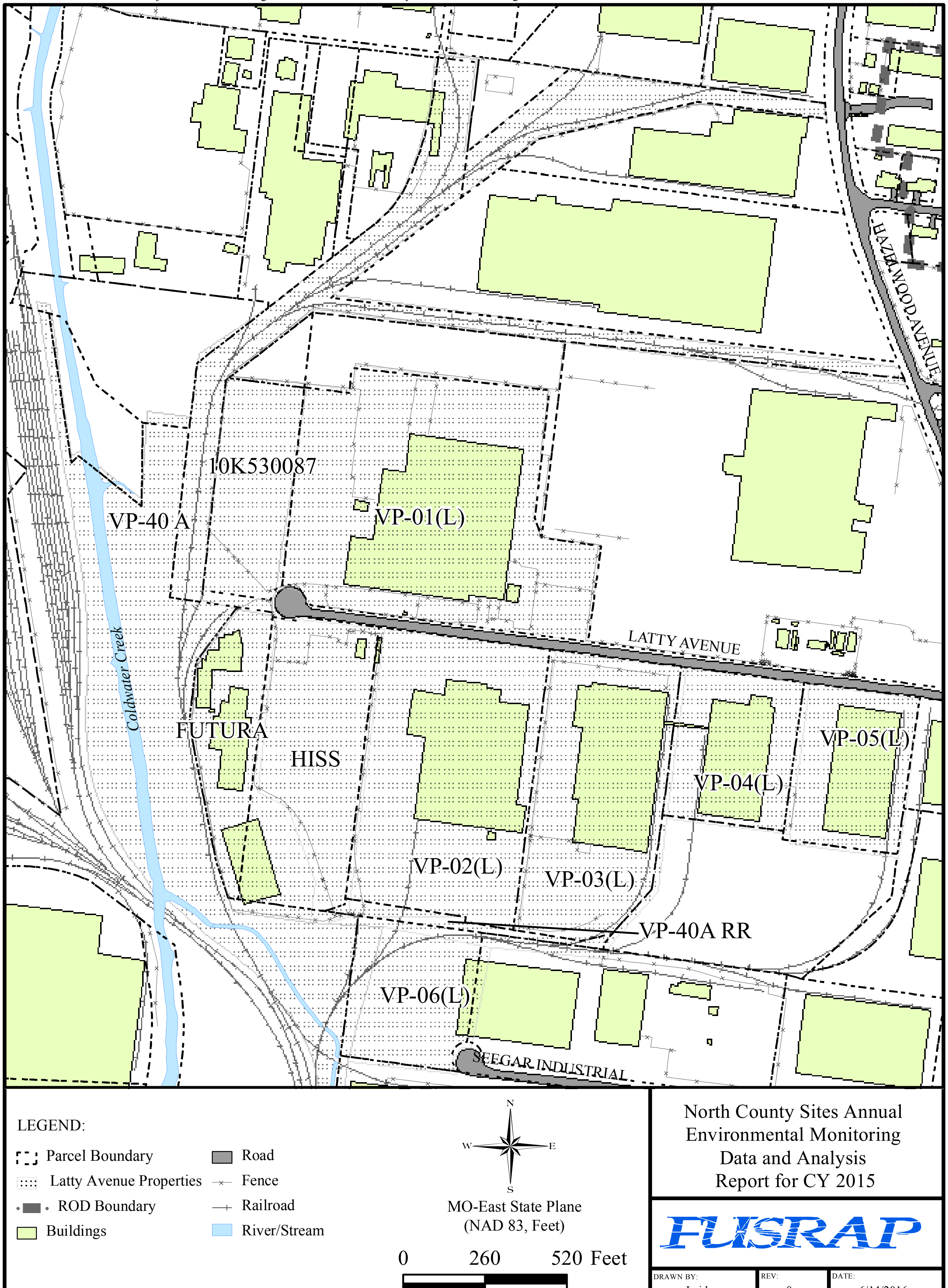


Figure 1-2. Plan View of the SLAPS, SLAPS VPs, and Latty Avenue Properties

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 1-3 Plan View of the Latty Avenue VPs including HISS and Futura.mxd



North County Sites Annual Environmental Monitoring Data and Analysis Report for CY 2015

FUSRAP

DRAWN BY:	REV:	DATE:
Leidos	0	6/14/2016

Figure 1-3. Plan View of the Latty Avenue Properties including HISS and Futura

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 2-1 Gamma Radiation, Rn, and Particulate Air Monitoring at St. Louis Background Location2.mxd

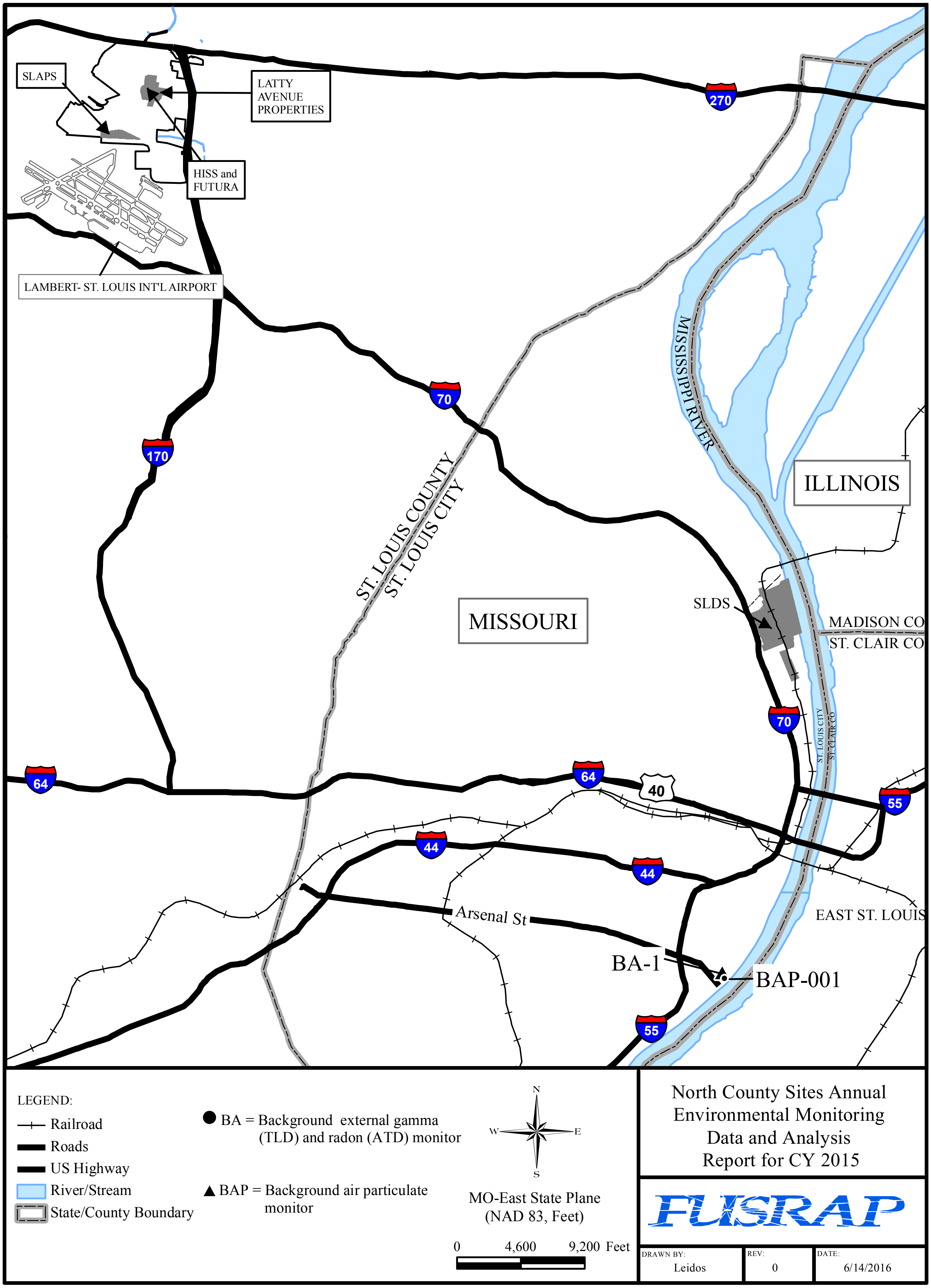


Figure 2-1. Gamma Radiation, Radon, and Particulate Air Monitoring at St. Louis Background Location - USACE Service Base

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 2-2 Gamma Radiation, Rn, and Particulate Air Monitoring Locations at the Latty Avenue Properties.mxd

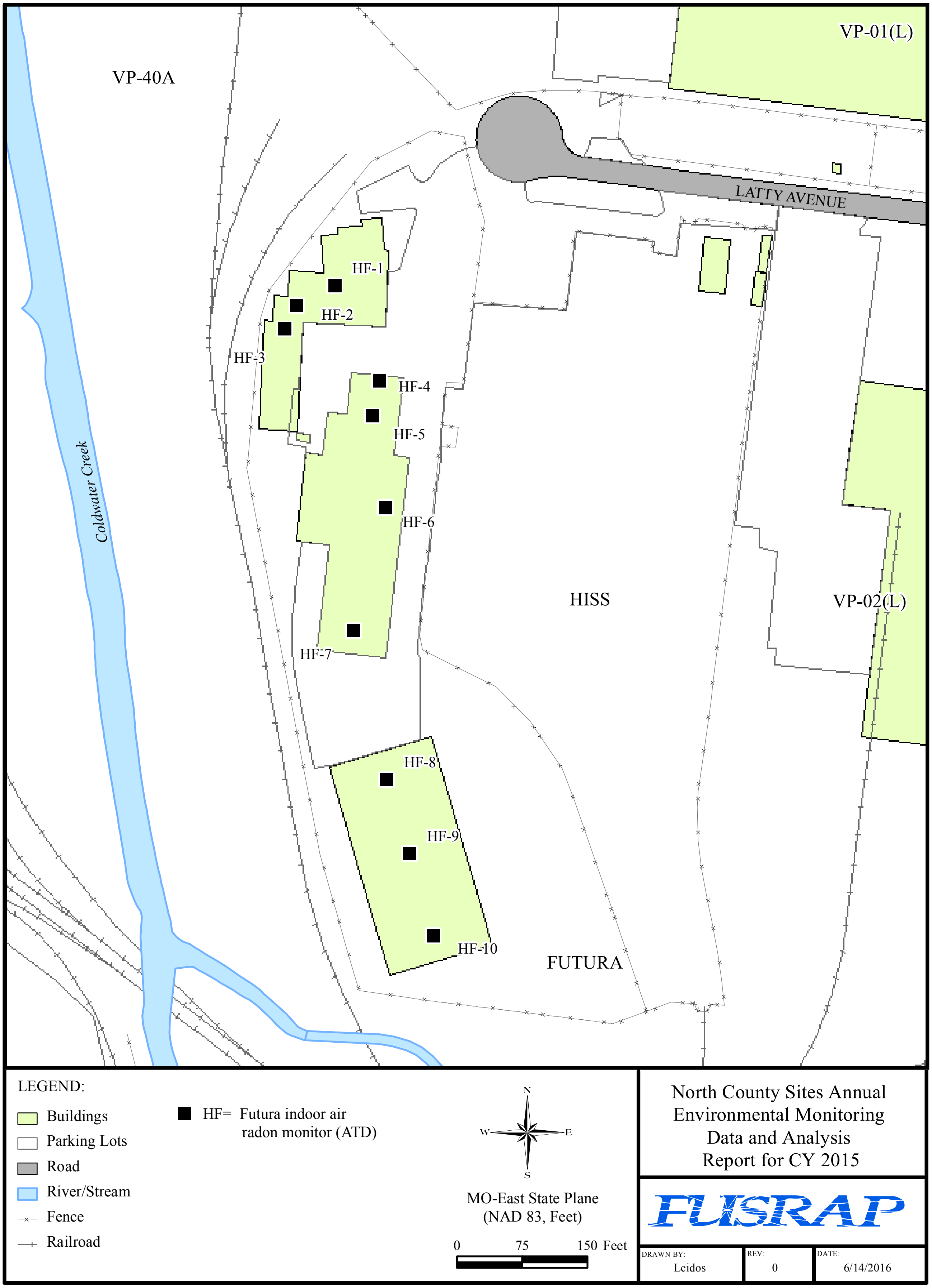


Figure 2-2. Radon Monitoring Locations at the Latty Avenue Properties

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 2-3 Gamma Radiation, Rn, and Particulate Air Monitoring Locations at the SLAPS and SLAPS VPs.mxd

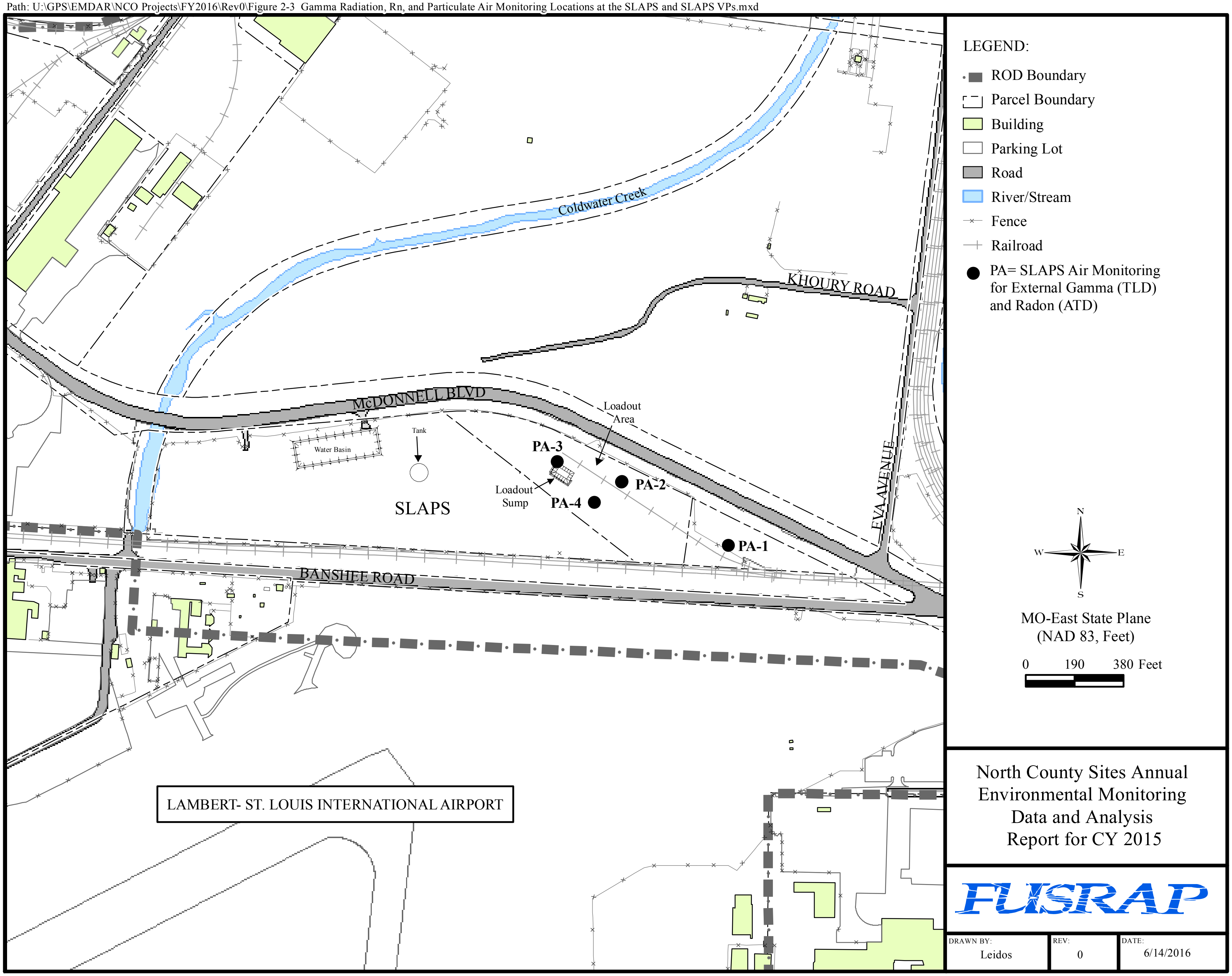


Figure 2-3. Gamma Radiation and Radon Monitoring Locations at the SLAPS

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 3-1 MSD Discharge Point for Waste Water from the HISS Labratory.mxd

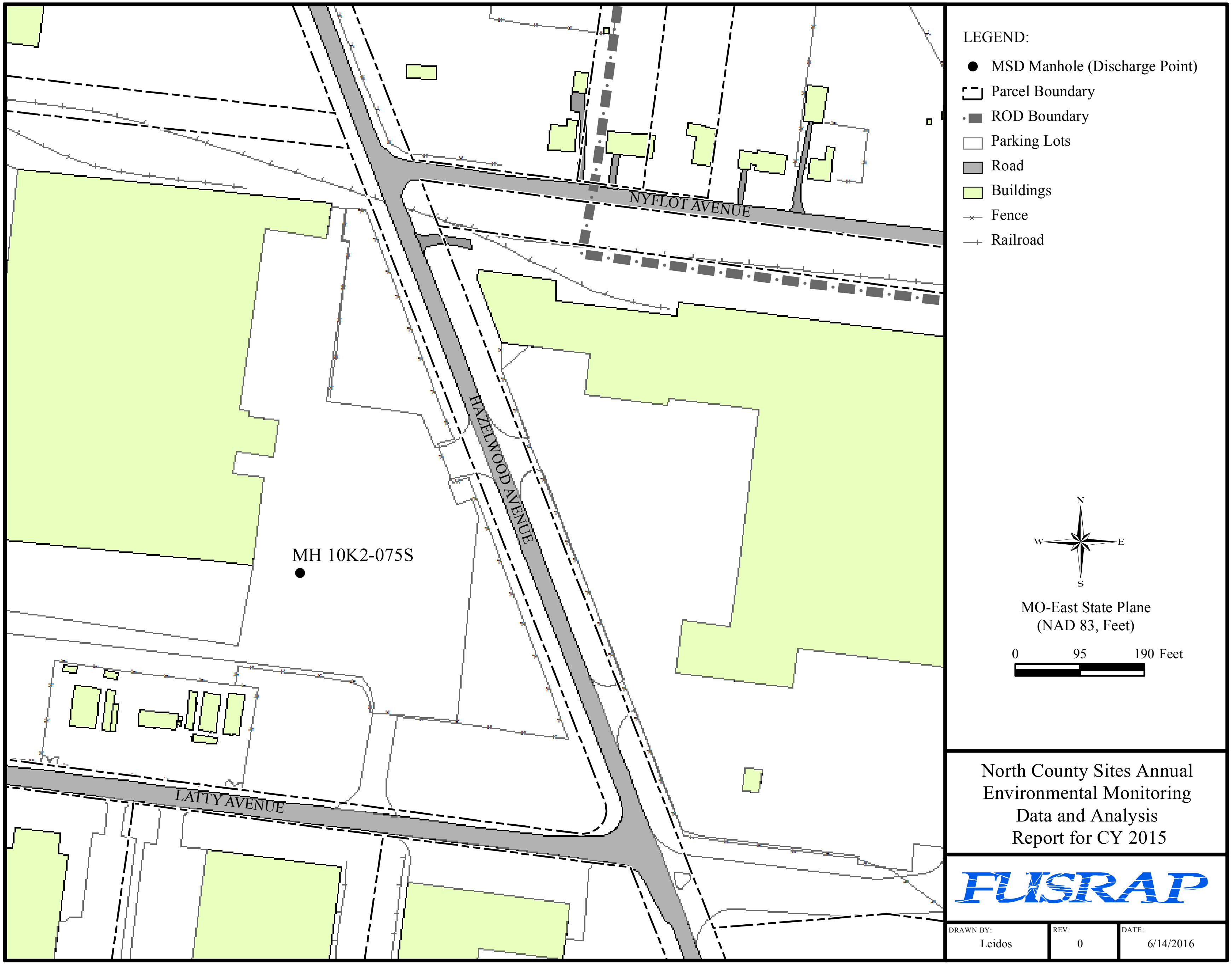


Figure 3-1. MSD Discharge Point for Waste-Water from the USACE St. Louis FUSRAP Laboratory

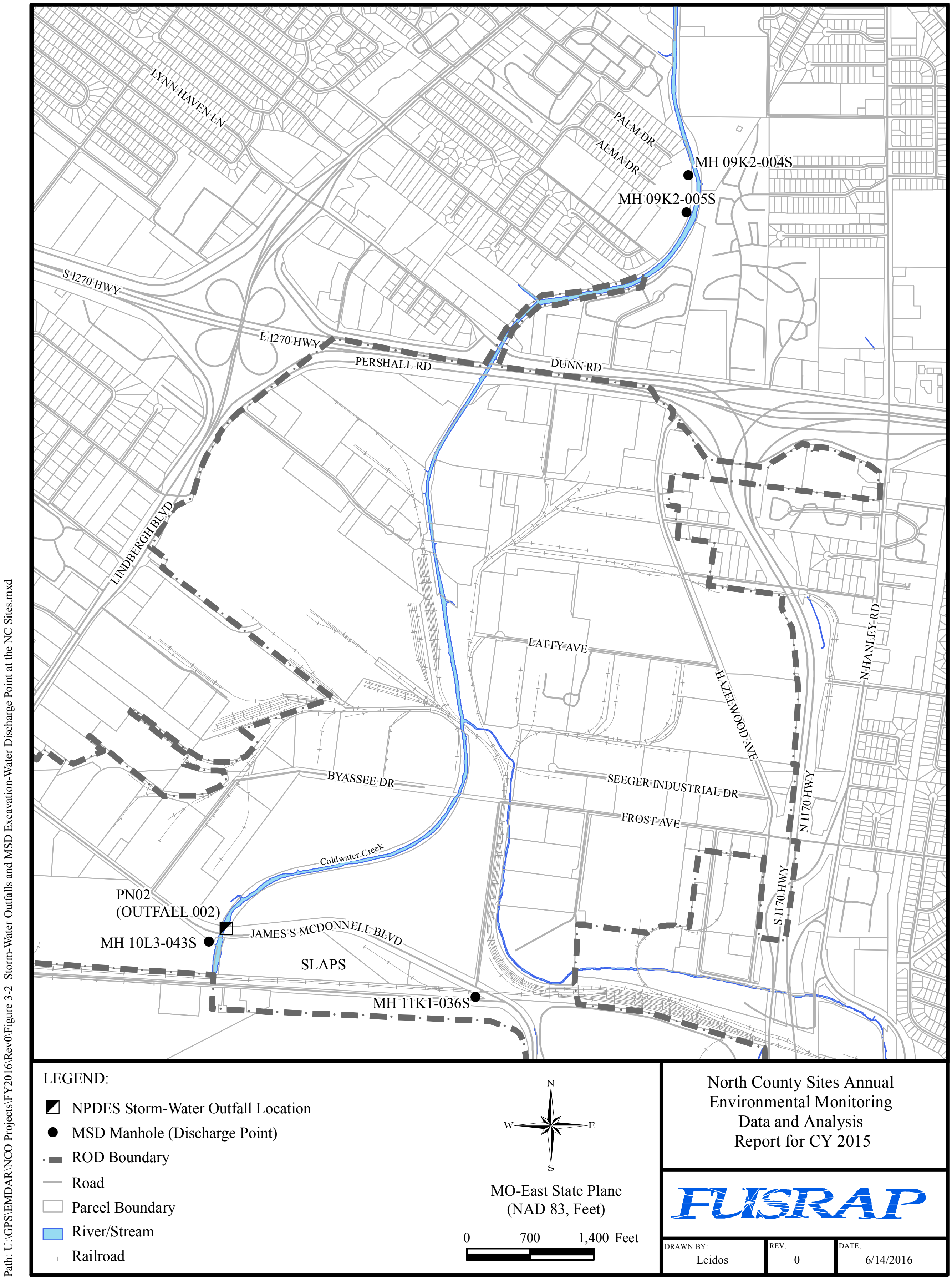


Figure 3-2 Storm-Water Outfall and MSD Excavation-Water Discharge Points at the NC Sites

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 3-3 Surface-Water and Sediment Sampling Locations at Coldwater Creek_new.mxd

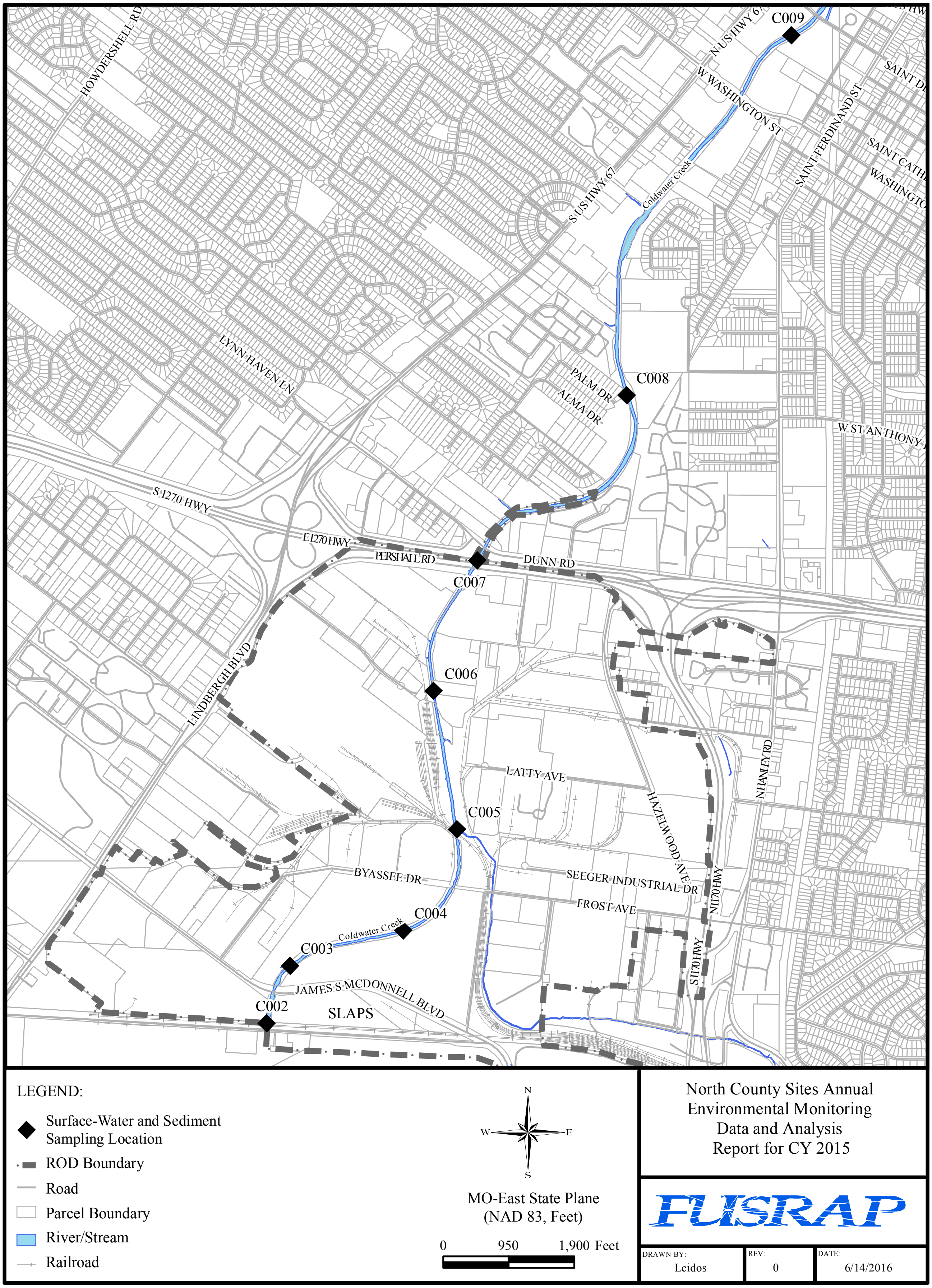


Figure 3-3. Surface-Water and Sediment Sampling Locations at Coldwater Creek

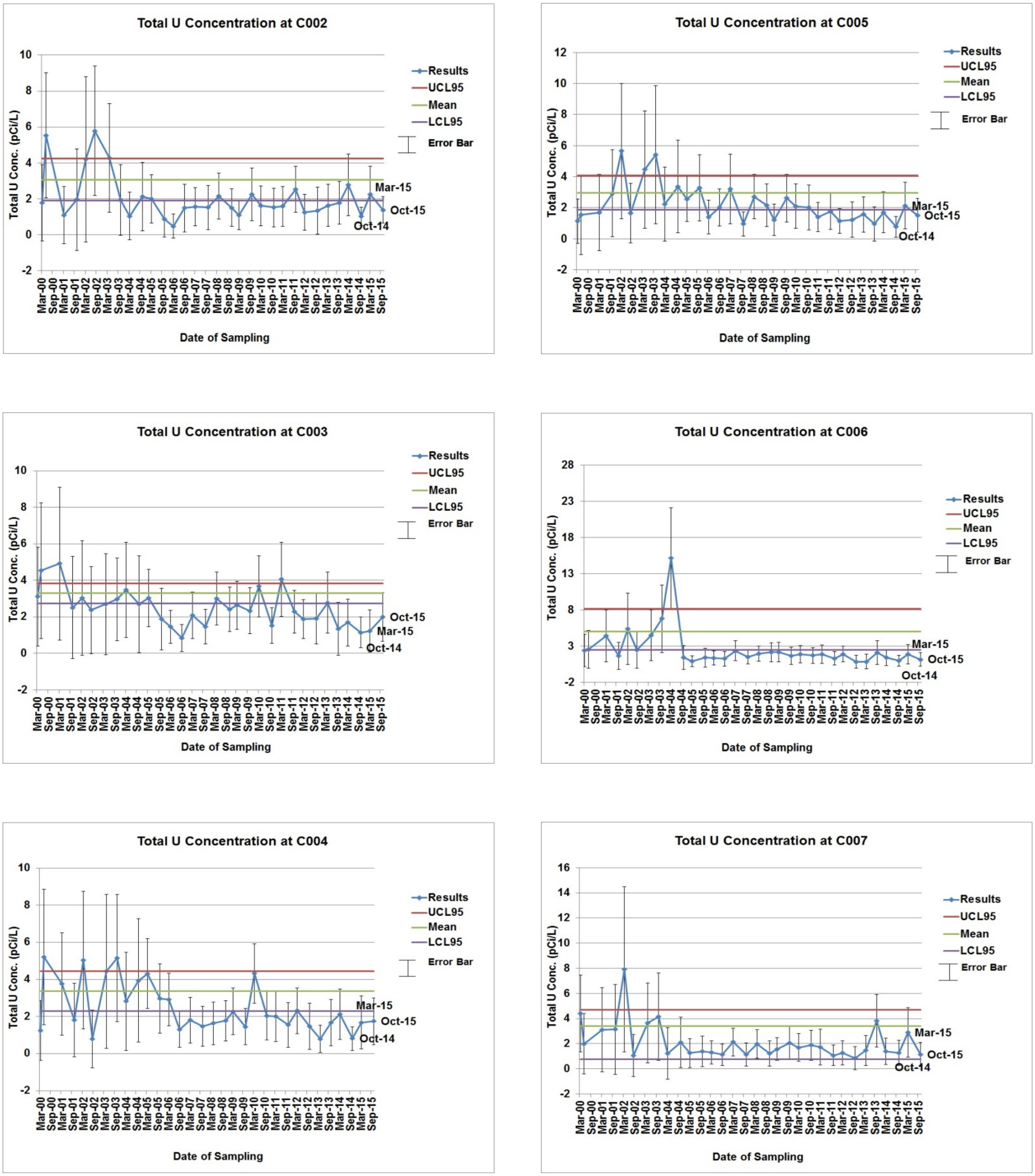
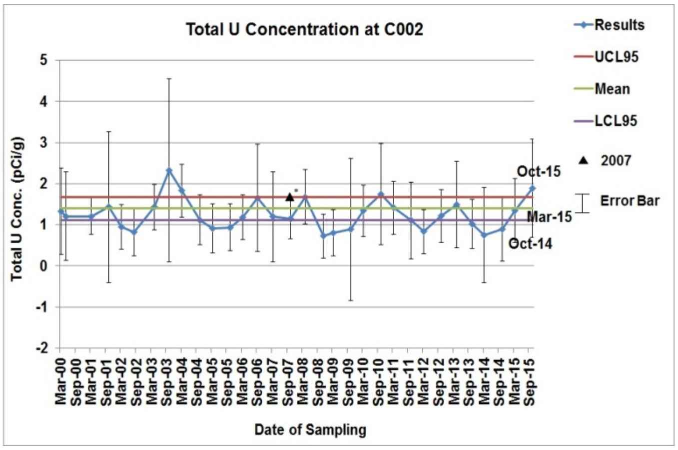
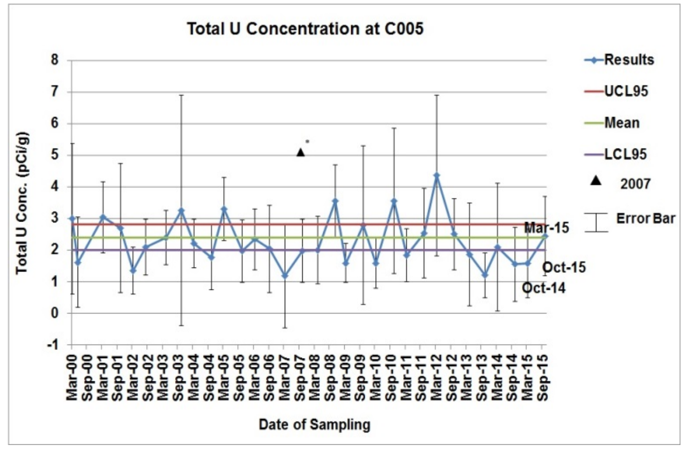
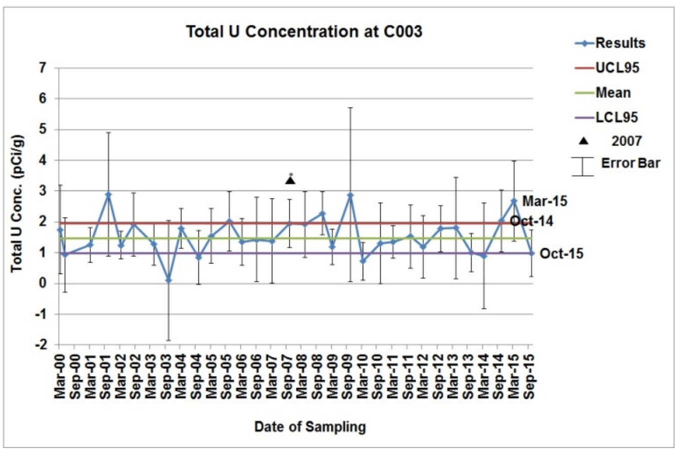
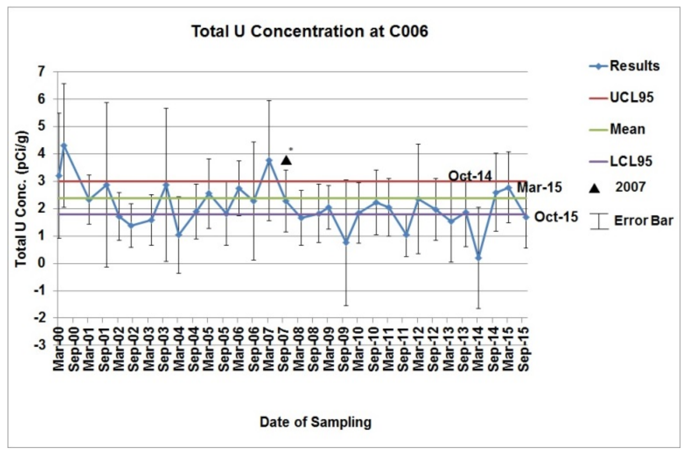


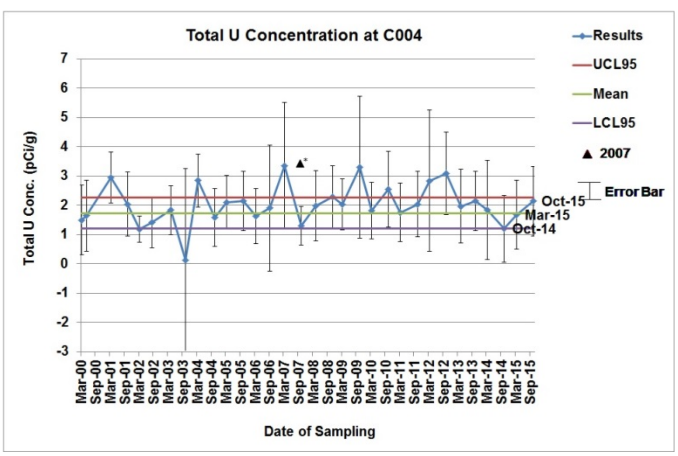
Figure 3-4. Total U Concentrations in Surface Water Versus Sampling Date

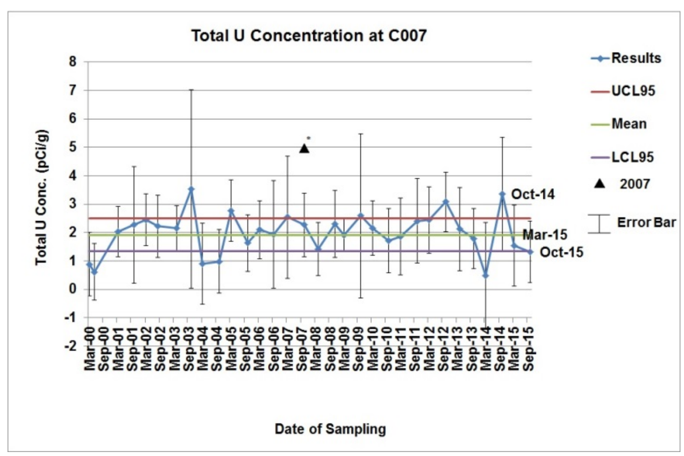












* The October 2007 value was incorrectly graphed due to the alpha and gamma results being added together, artificially increasing the value. The charts in this figure have been corrected.

Figure 3-5. Total U Concentrations in Sediment Versus Sampling Date

Zone	Period	Epoch	Stratigraphy	Thickness (ft.)	Description
Hydrostratigraphic zone (HZ)-A	Quaternary	Holocene	FILL/TOPSOIL	0-14	**UNIT 1** Fill - Sand, silt, clay, concrete, rubble. Topsoil - Organic silts, clayey silts, wood, fine sand.
Hydrostratigraphic zone (HZ)-A	Quaternary	Pleistocene	LOESS (CLAYEY SILT)	11-32	**UNIT 2** Clayey silts, fine sands, commonly mottled with iron oxide staining. Scattered roots and organic material, and a few fossils.
Hydrostratigraphic zone (HZ)-A	Quaternary	Pleistocene	GLACIOLACUSTRINE SERIES: SILTY CLAY	19-75 (3) 9-27 (3T)	**UNIT 3** Silty clay with scattered organic blebs and peat stringers. Moderate plasticity. Moist to saturated (3T).
Hydrostratigraphic zone (HZ)-B	Quaternary	Pleistocene	VARVED CLAY	0-8	Alternating layers of dark and light clay as much as 1/16 inch thick (3M).
Hydrostratigraphic zone (HZ)-B	Quaternary	Pleistocene	CLAY	0-26	Dense, stiff, moist, highly plastic clay (3M).
Hydrostratigraphic zone (HZ)-C	Quaternary	Pleistocene	SILTY CLAY	10-29	Similar to upper silty clay. Probable unconformable contact with highly plastic clay (3B).
Hydrostratigraphic zone (HZ)-C	Quaternary	Pleistocene	BASAL CLAYEY AND SANDY GRAVEL	0-6	**UNIT 4** Glacial clayey gravels, sands, and sandy gravels. Mostly chert.
Hydrostratigraphic zone (HZ)-D	Pennsylvanian		CHEROKEE (?) GROUP (UNDIFFERENTIATED)	0-35	**UNIT 5** BEDROCK: Interbedded silty clay/shale, lignite/coal, sandstone, and siltstone. Erosionally truncated by glaciolacustrine sequences. (Absent at the HISS).
Hydrostratigraphic zone (HZ)-E	Mississippian		STE. GENEVIEVE ST. LOUIS LIMESTONES	10+	**UNIT 6** BEDROCK: Hard, white to olive, well cemented, sandy limestone with interbedded shale laminations.

FUSRAP

North St. Louis County Sites
Annual Environmental Monitoring Data and Analysis Report for CY 2015

DRAWN BY: C.Kaple	REV. NO./DATE: 0 - 06/01/2016	FILE:	NOT TO SCALE

Figure 4-1. Generalized Stratigraphic Column for the NC Sites

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 4-2 Existing Monitoring Well Locations at the Latty Avenue Properties.mxd

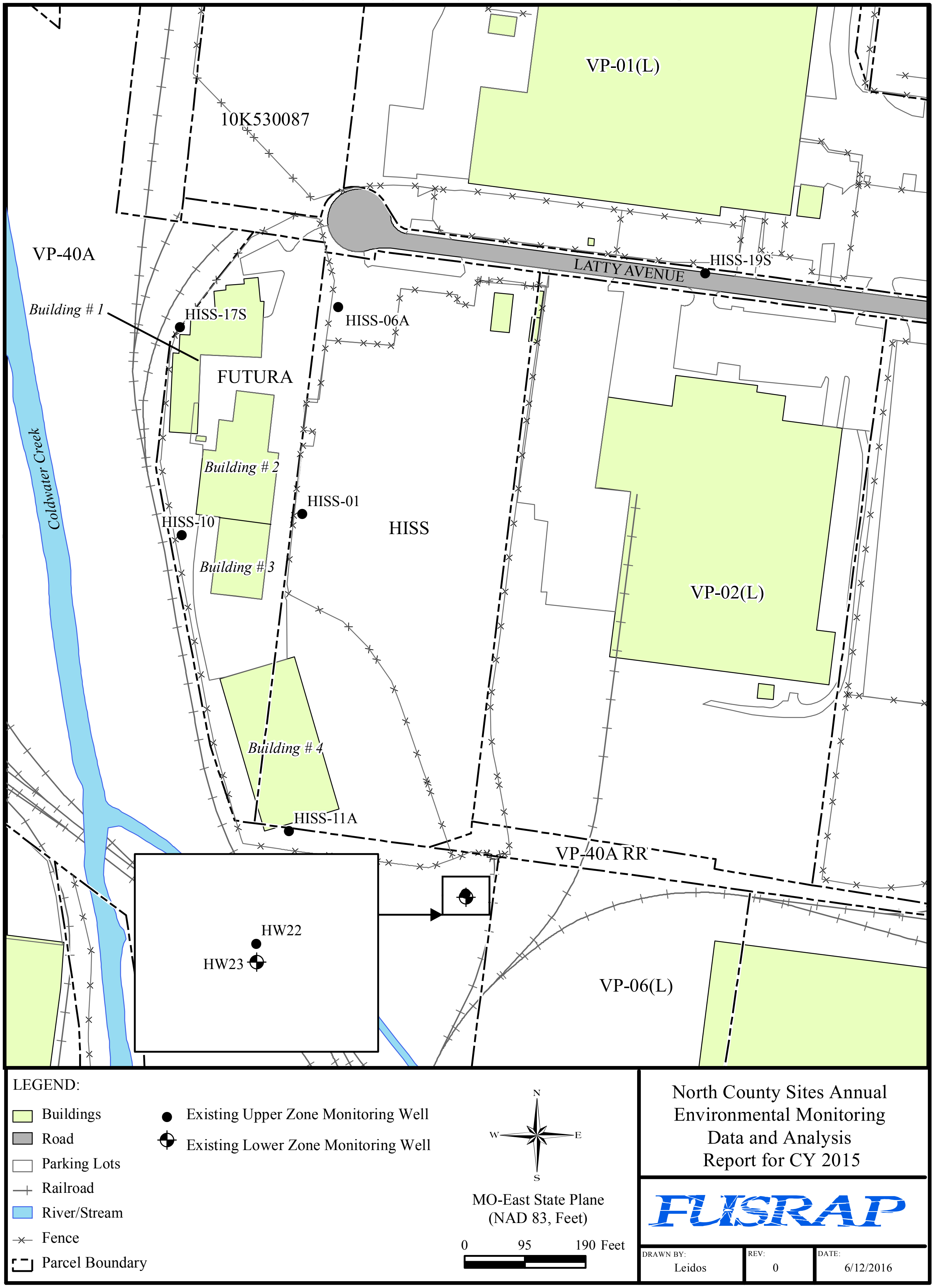
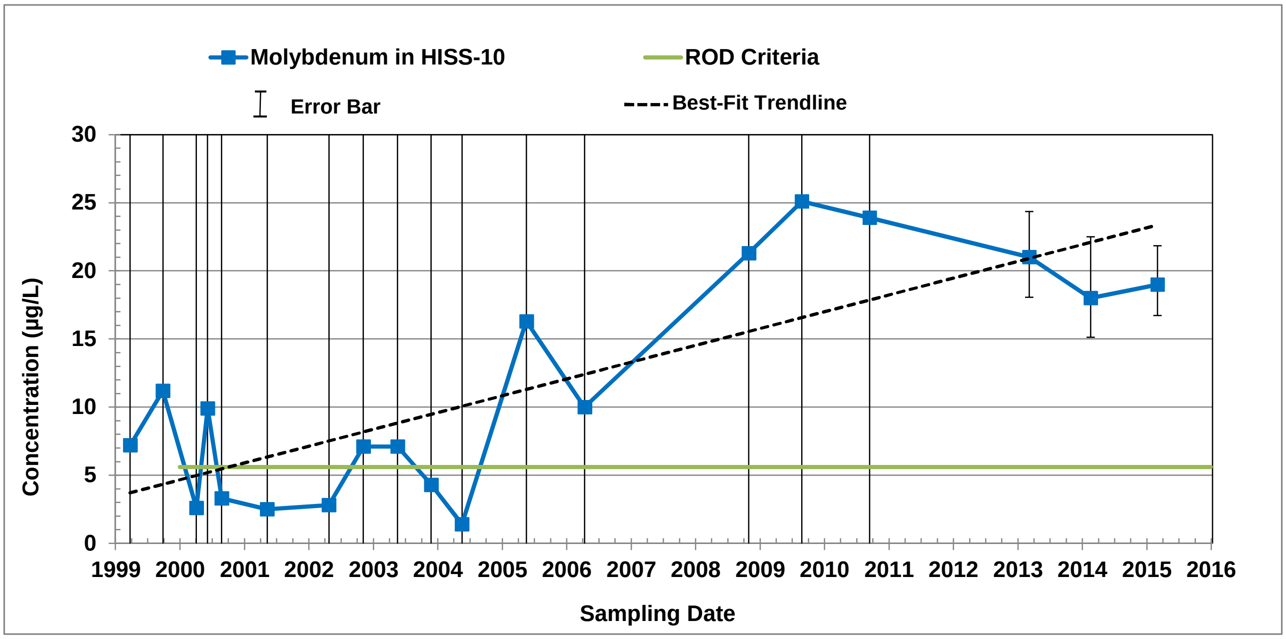
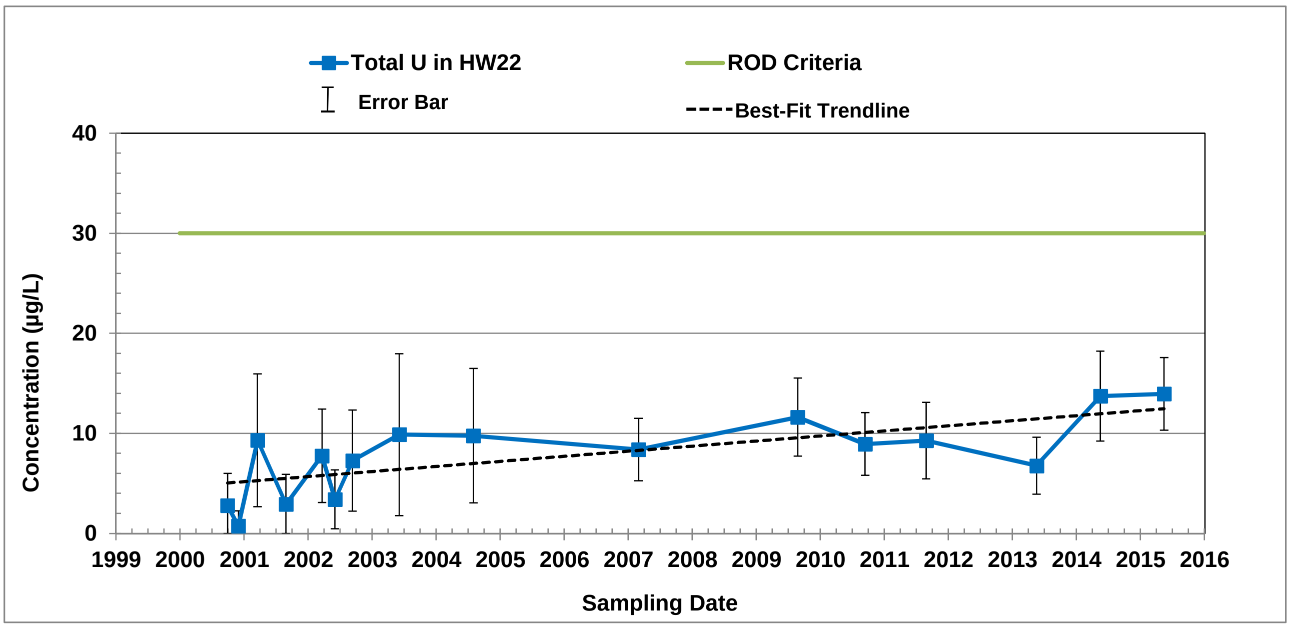


Figure 4-2. Existing Monitoring Well Locations at the Latty Avenue Properties





Notes:

For molybdemum results less than 3 times the reporting limit (RL), the error bar represents ± RL. The RL for molybdenum changed from 40 µg/L to 5 µg/L in CY 2011.

For molybdenum results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.

Molybdenum error bars for 2003 and earlier are based on laboratory control limits for 2003. Error bars for 2004 and later are based on laboratory control limits reported for the respective years.

For total U, the error bar represents ± the sum of the measurement errors for U-234, U-235, and U-238, converted to µg/L.

Figure 4-3. Time-Versus-Concentration Plots for Molybdenum in HISS-10 and Total U in HW22 at the HISS

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 4-4 Selenium Concentrations in Unfiltered HZ-A Ground Water at the Latty Avenue Properties.mxd

Figure 4-4. Total U Concentrations in Unfiltered Ground Water at the Latty Avenue Properties

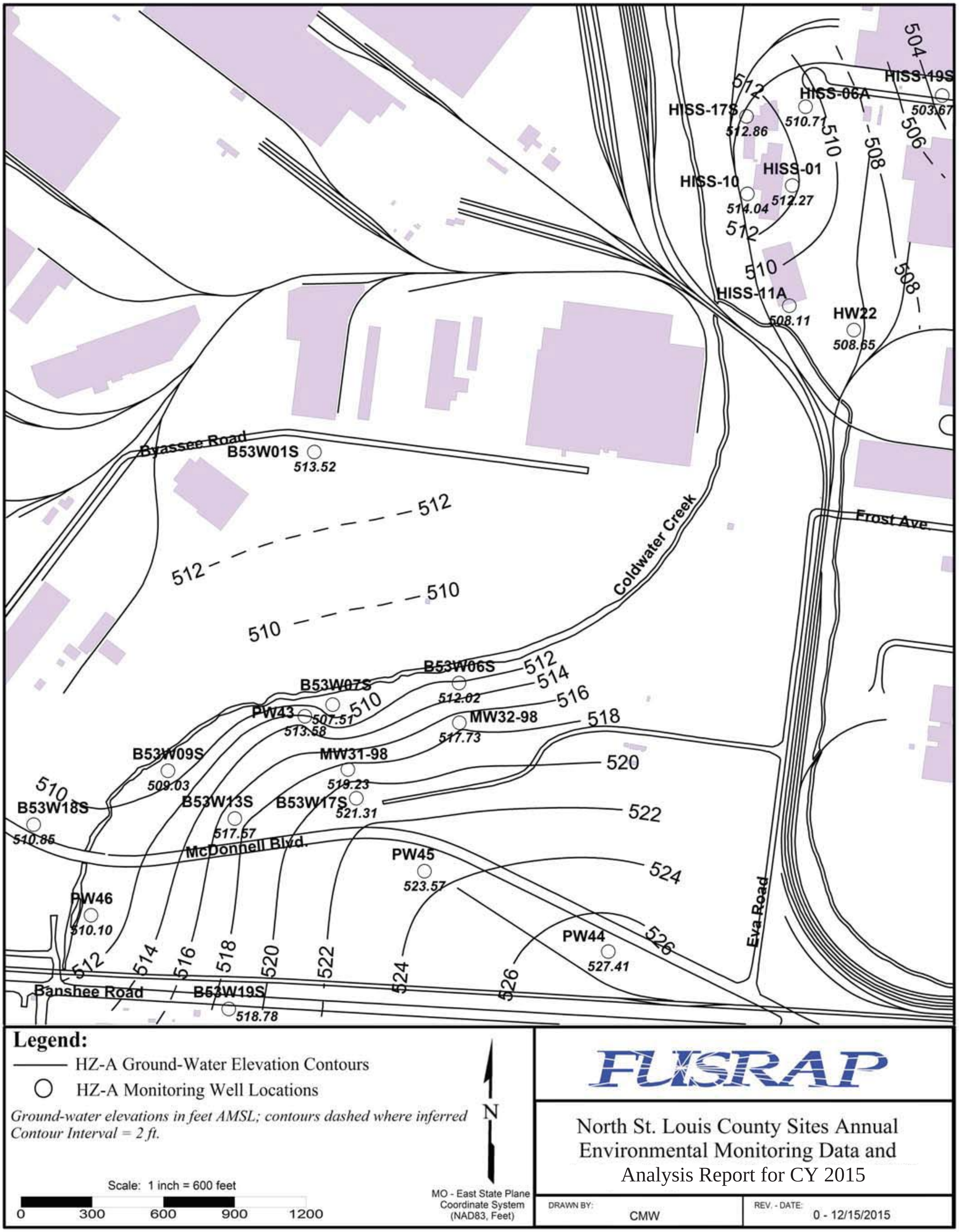


Figure 4-5. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 18, 2015)

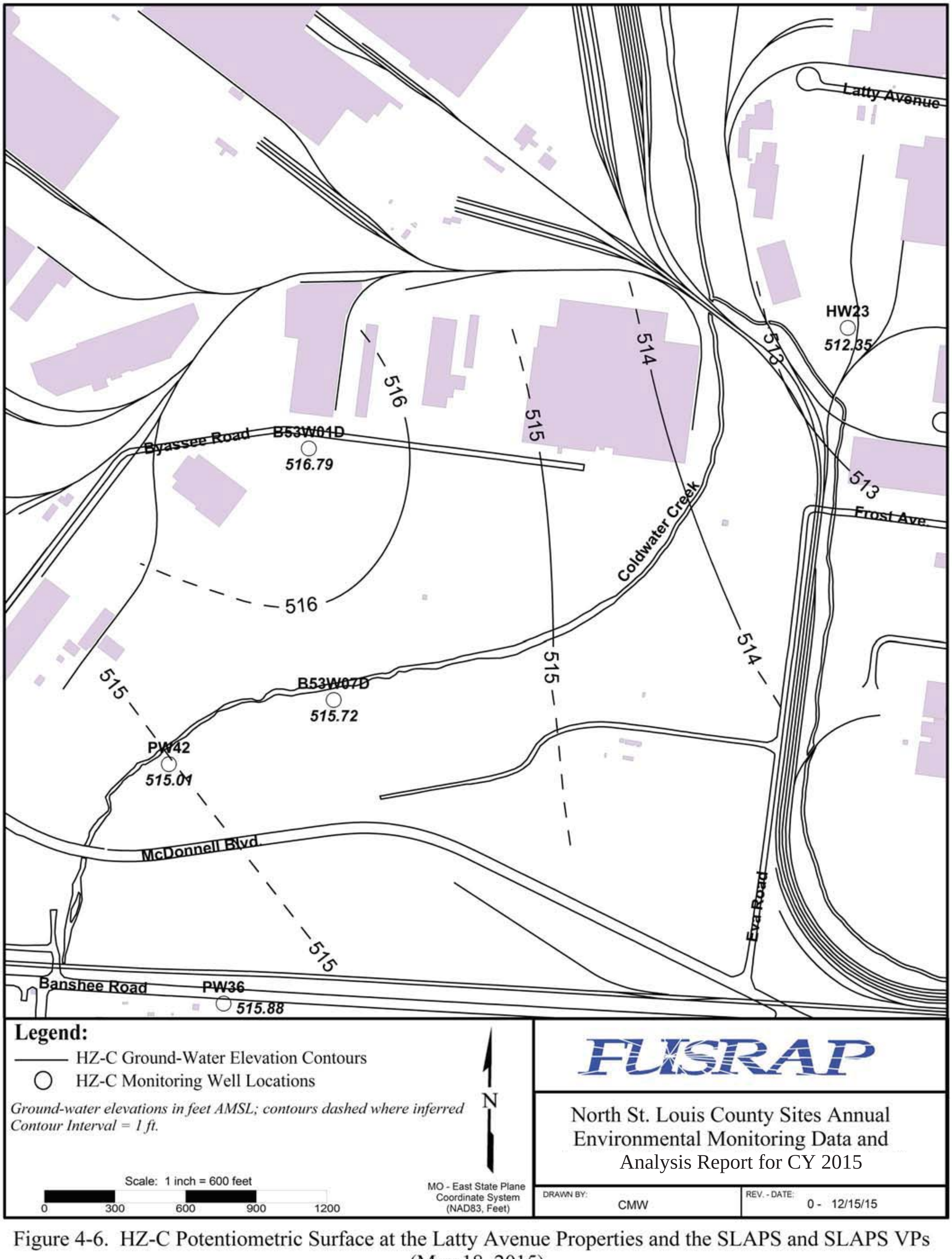


Figure 4-6. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 18, 2015)

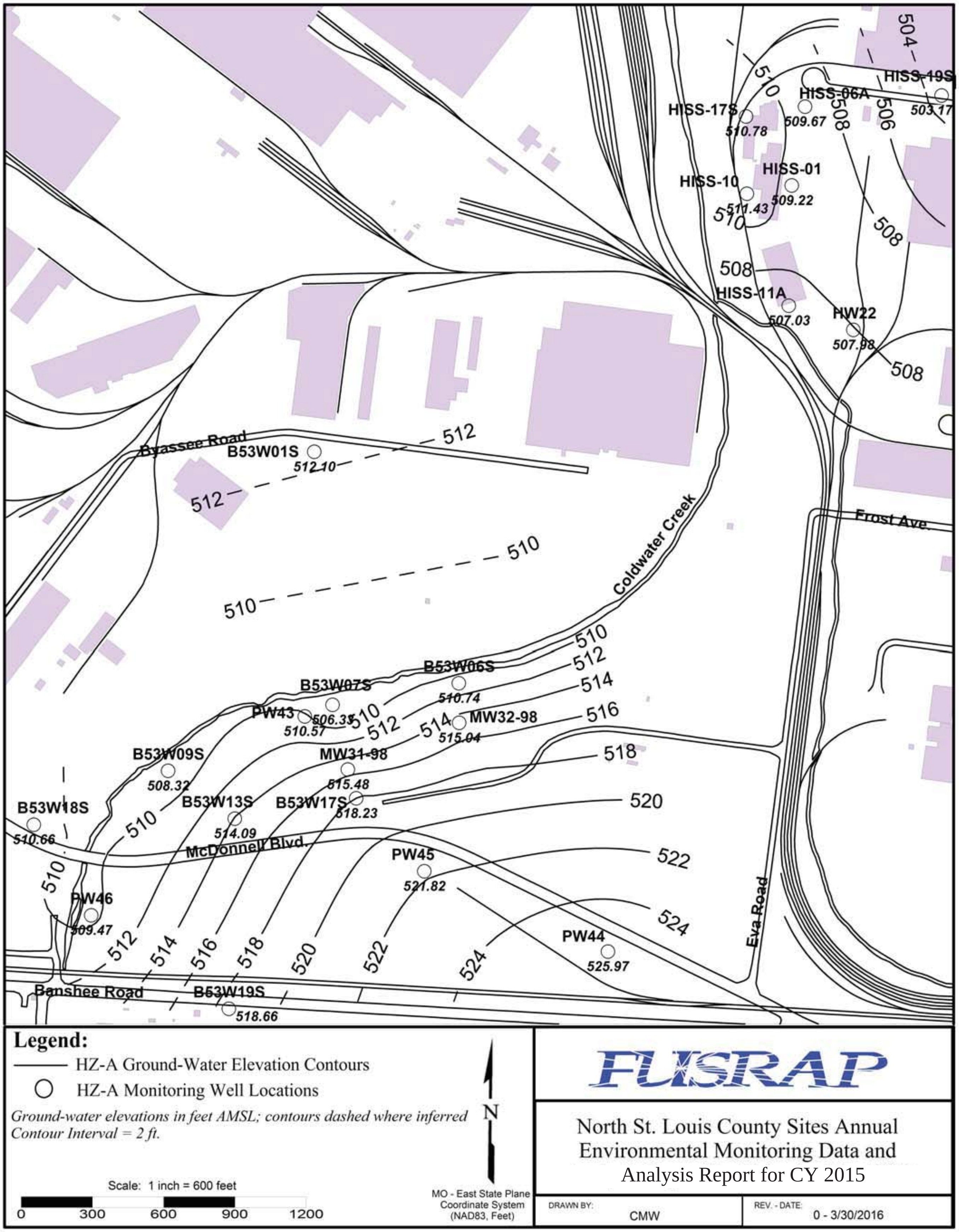


Figure 4-7. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (November 16, 2015)

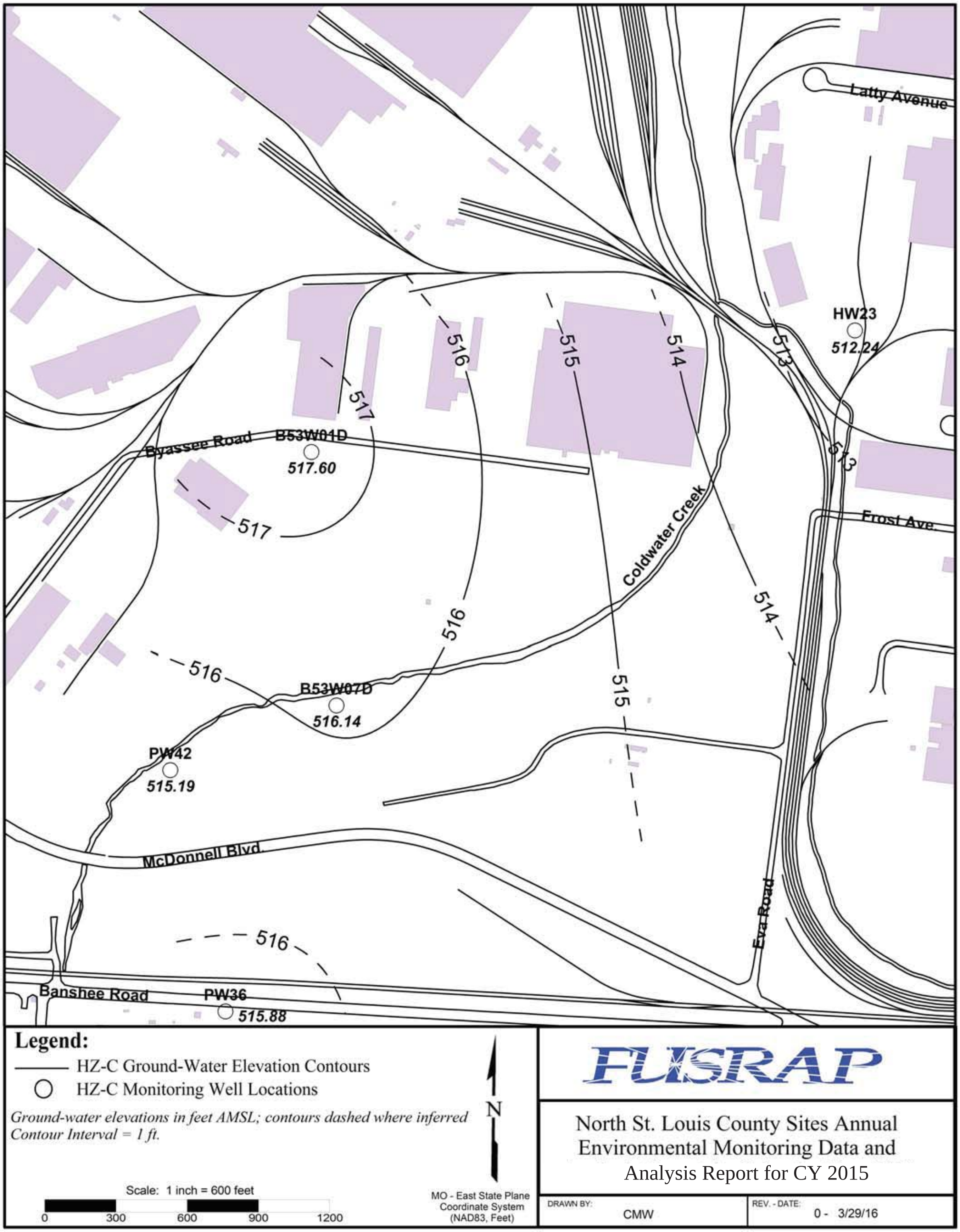


Figure 4-8. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (November 16, 2015)

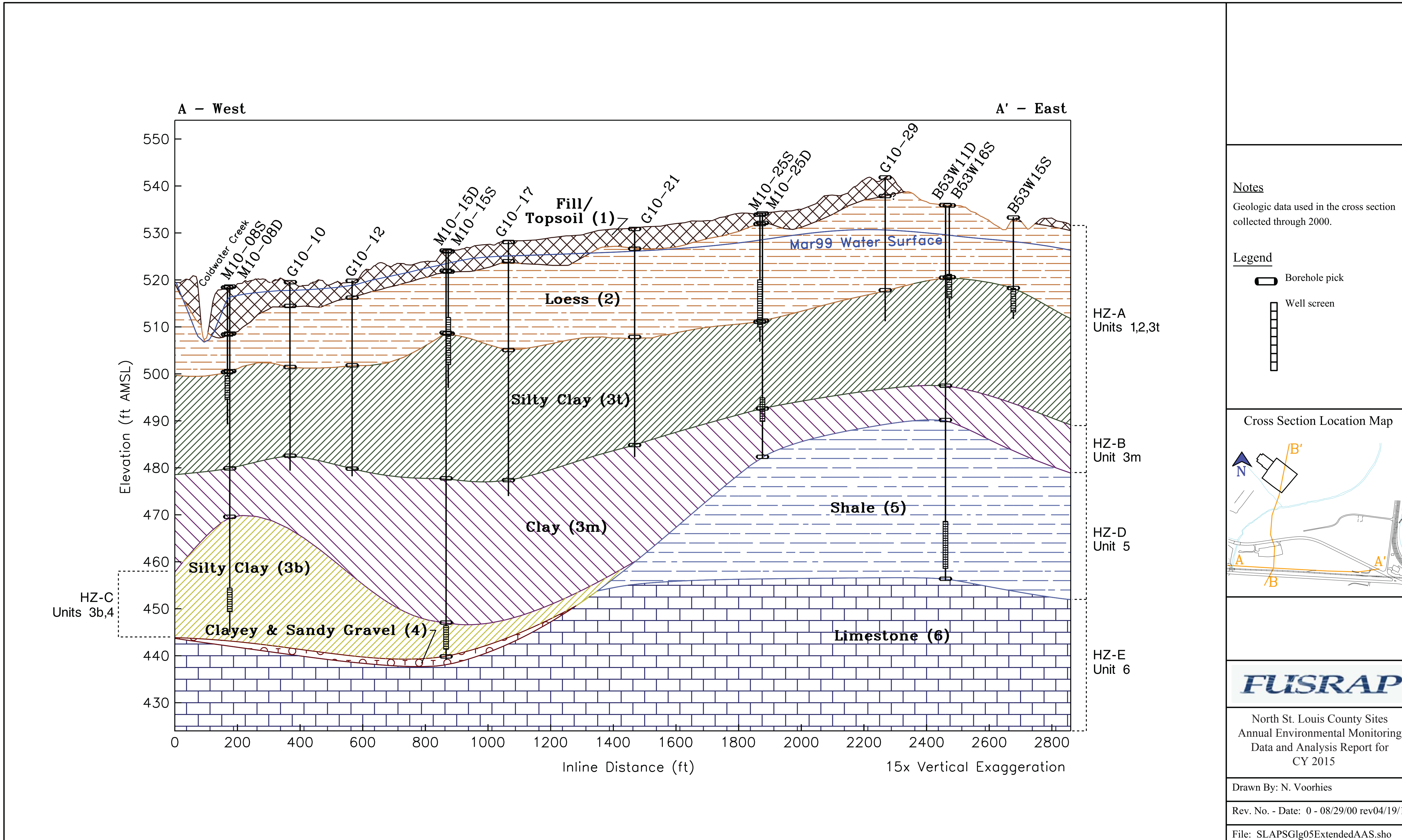


Figure 4-9. Geologic Cross-Section A-A' at the SLAPS

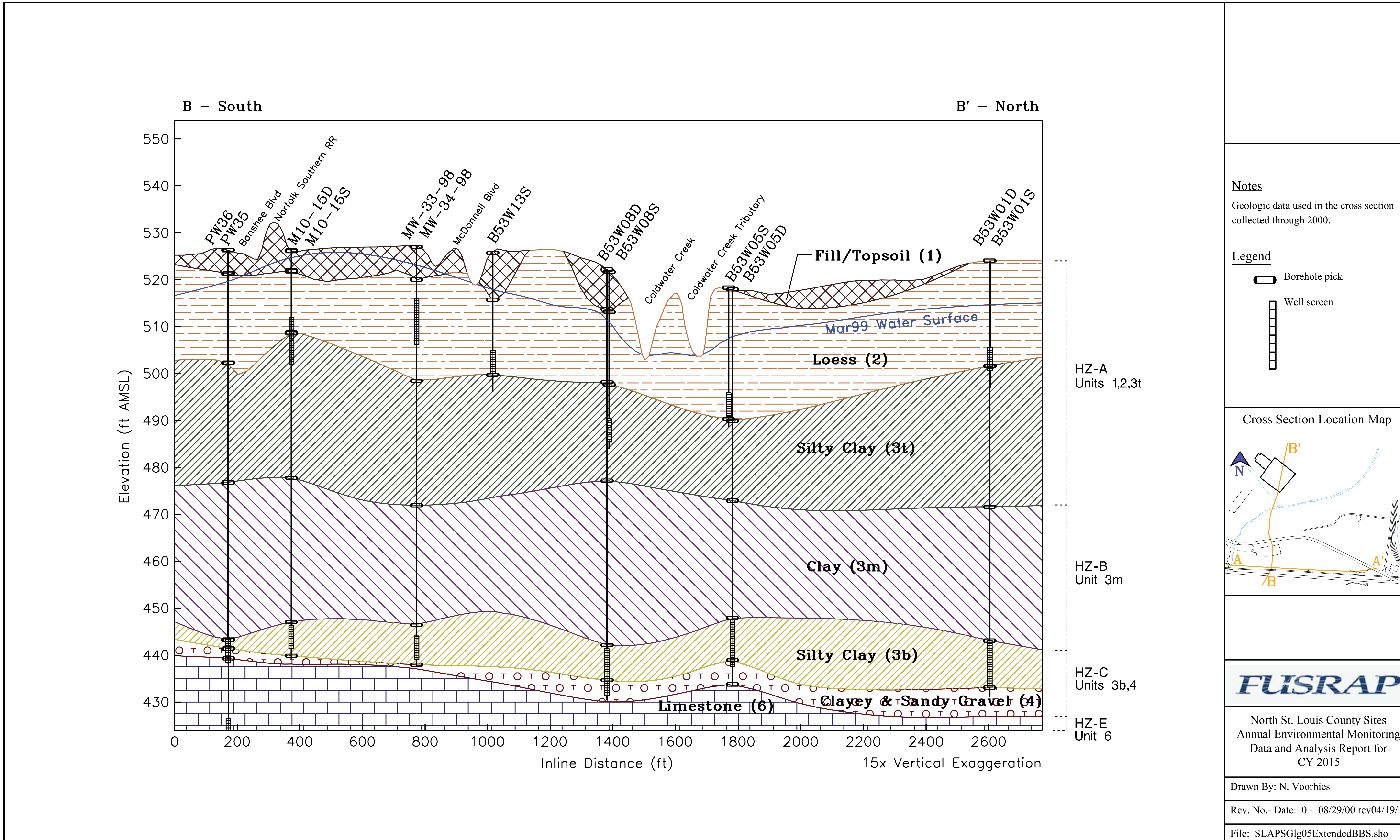
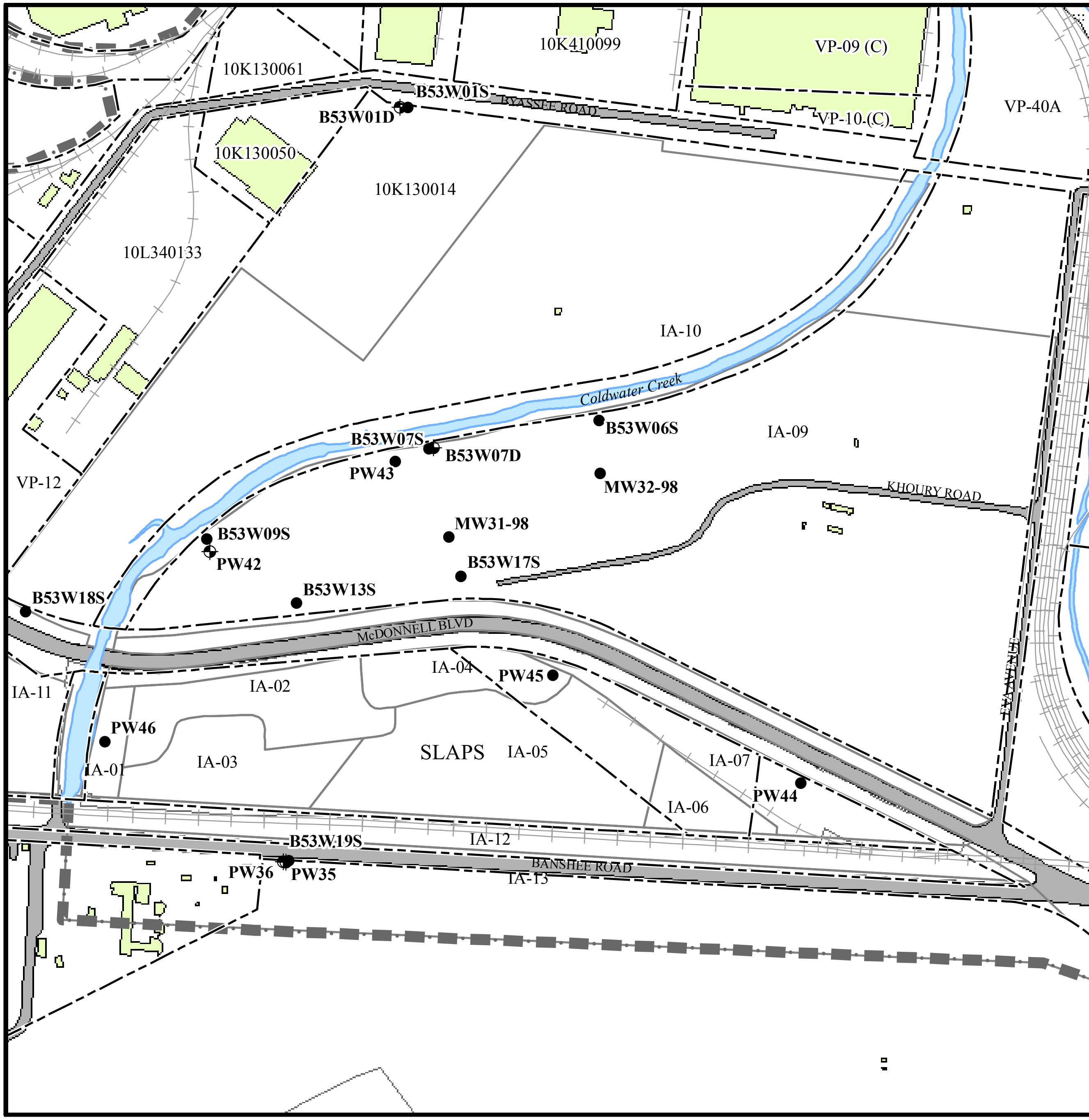


Figure 4-10. Geologic Cross-Section B-B' at the SLAPS and SLAPS VPs



LEGEND:

- Buildings
- River/Stream
- Road
- Investigation Area
- ROD Boundary
- Parcel Boundary
- Existing Lower Zone Monitoring Well
- Existing Upper Zone Monitoring Well

N W E S

MO-East State Plane
(NAD 83, Feet)

0 230 460 Feet

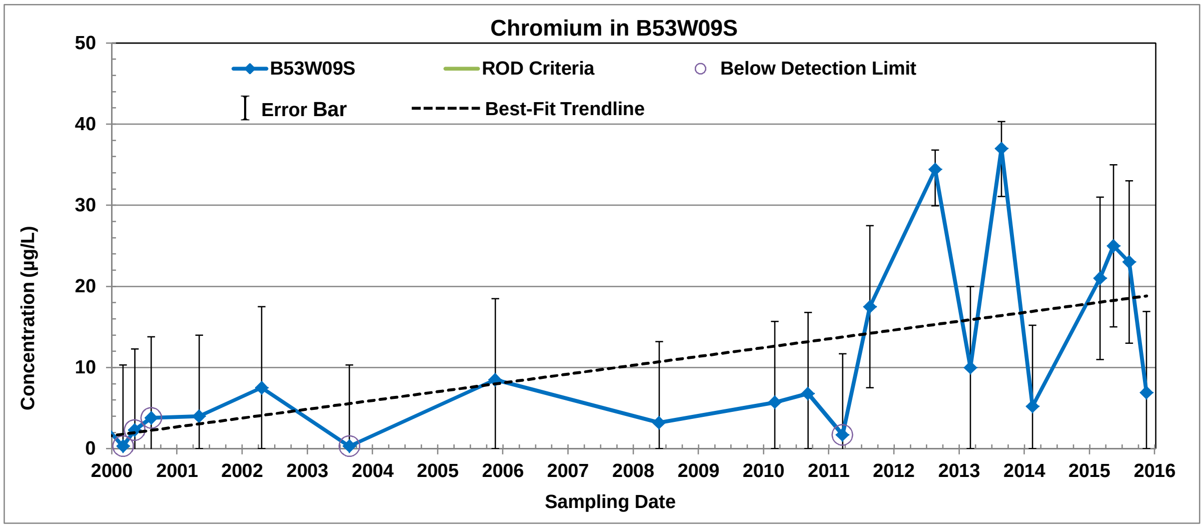
North County Sites Annual
Environmental Monitoring
Data and Analysis
Report for CY 2015

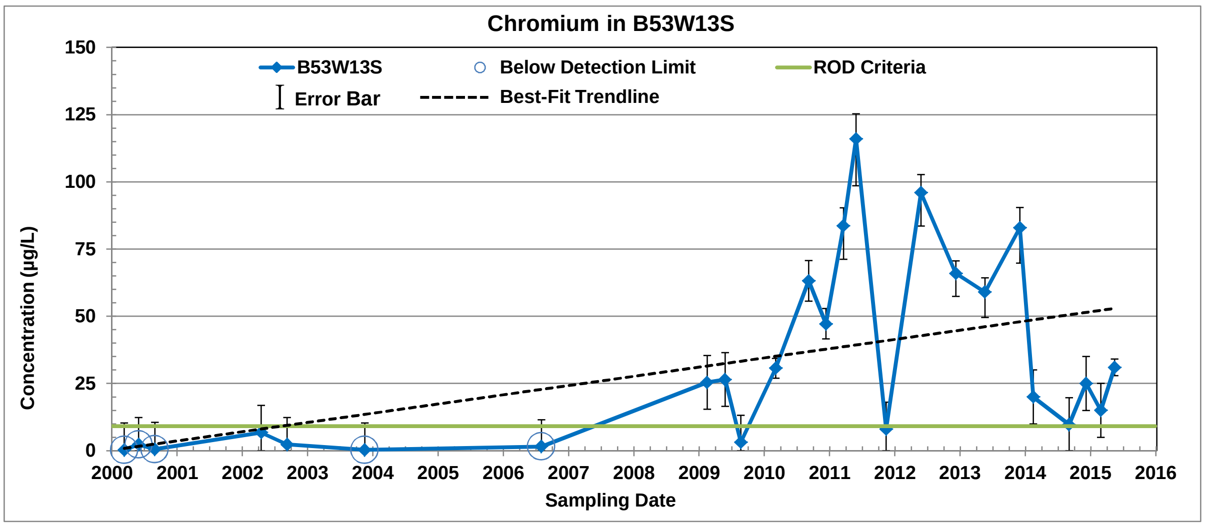
FUSRAP

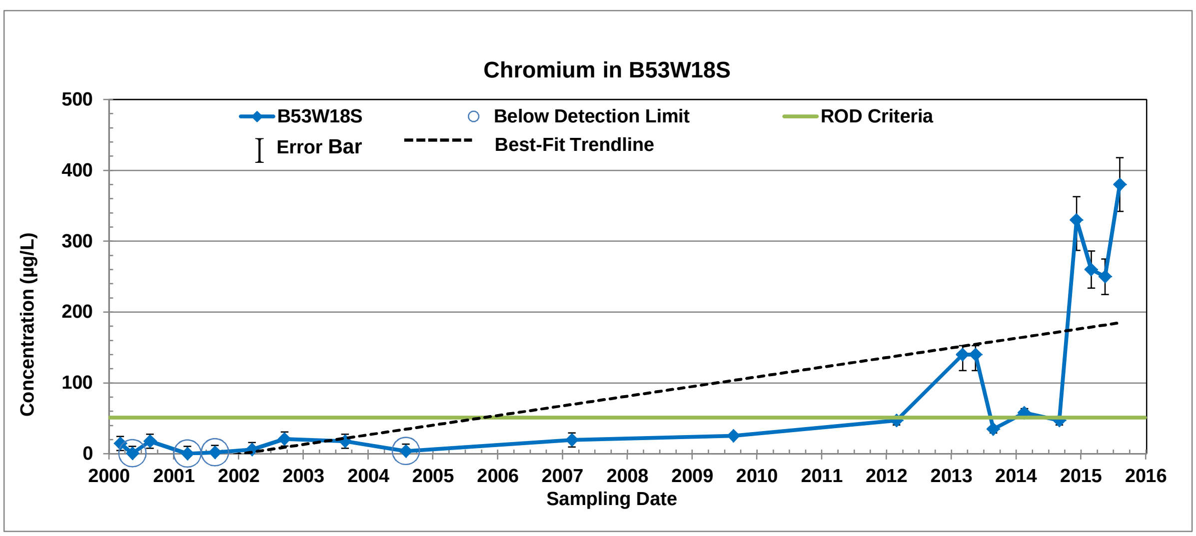
DRAWN BY:	REV:	DATE:
Leidos	0	6/12/2016

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 4-11 Ground-Water Monitoring Locations at the SLAPS and Surrounding SLAPS VPs.mxd

Figure 4-11. Existing Ground-Water Monitoring Locations at the SLAPS and SLAPS VPs





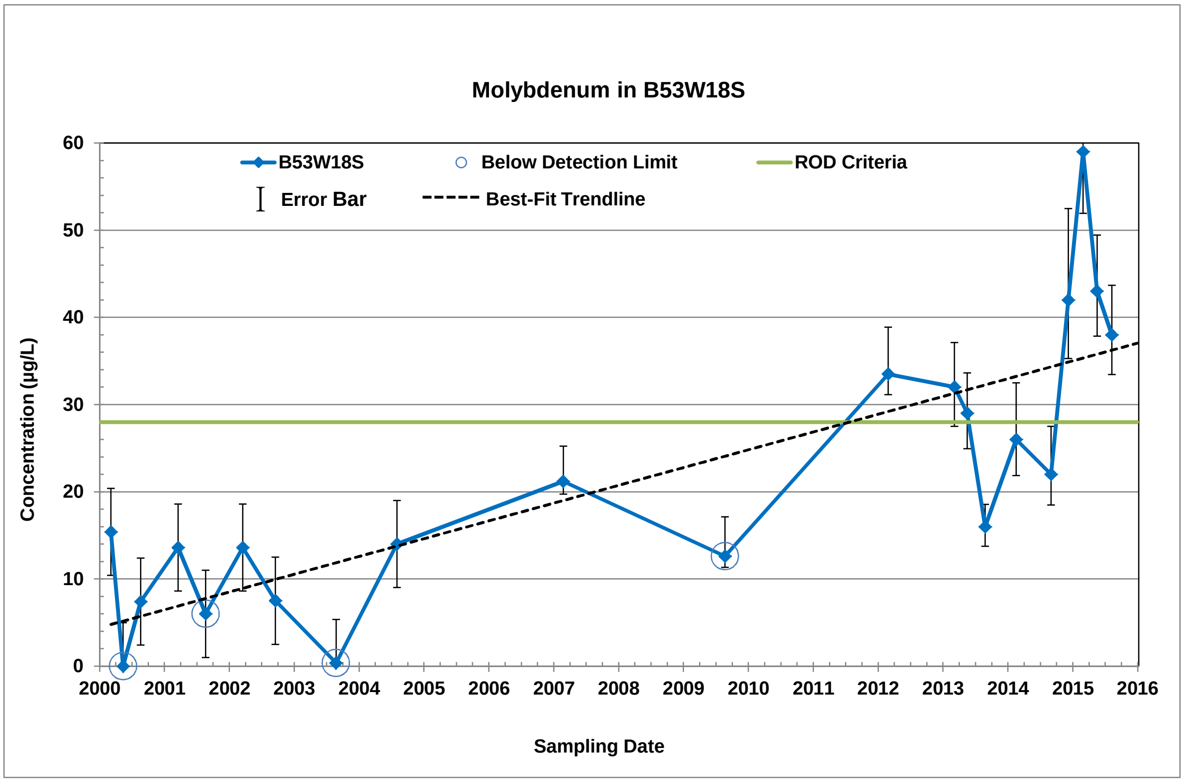


Notes:

For chromium results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.

For chromium results reported below the DL (non-detect), the value plotted is half the DL.

Figure 4-12. Time-Versus-Concentration Graphs for Chromium in Ground Water at B53W09S, B53W13S, and B53W18S

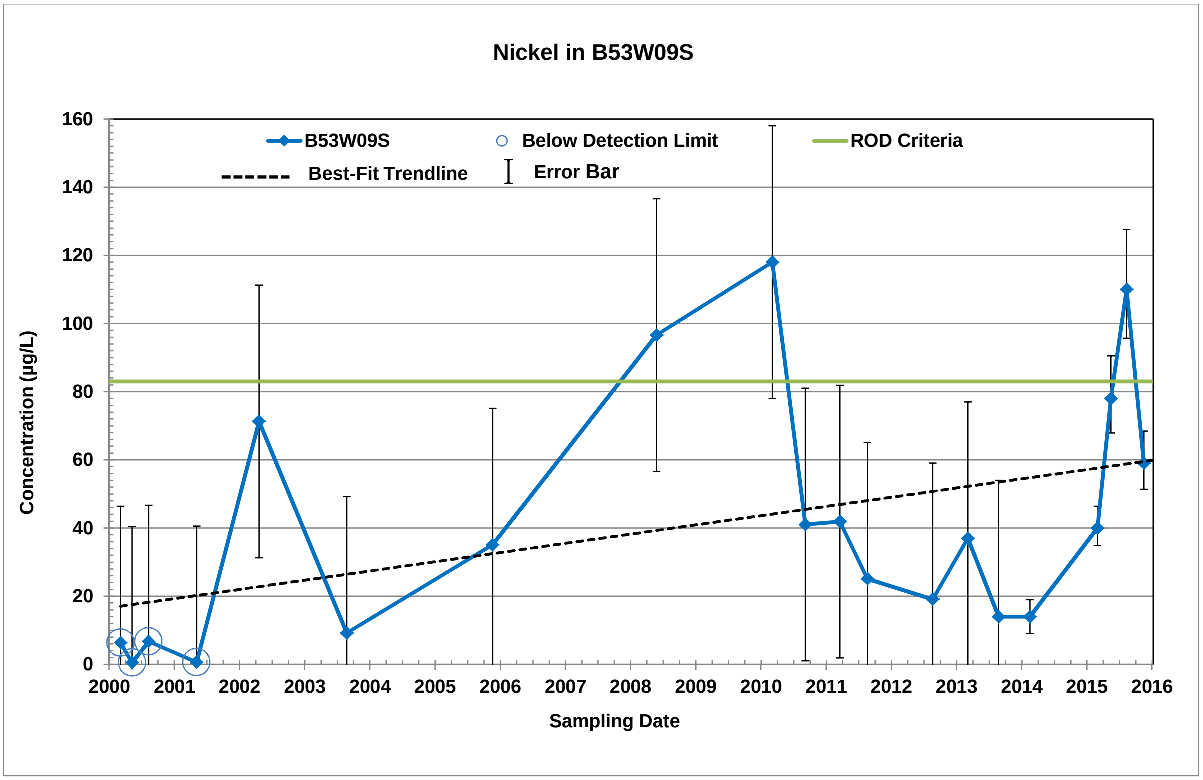


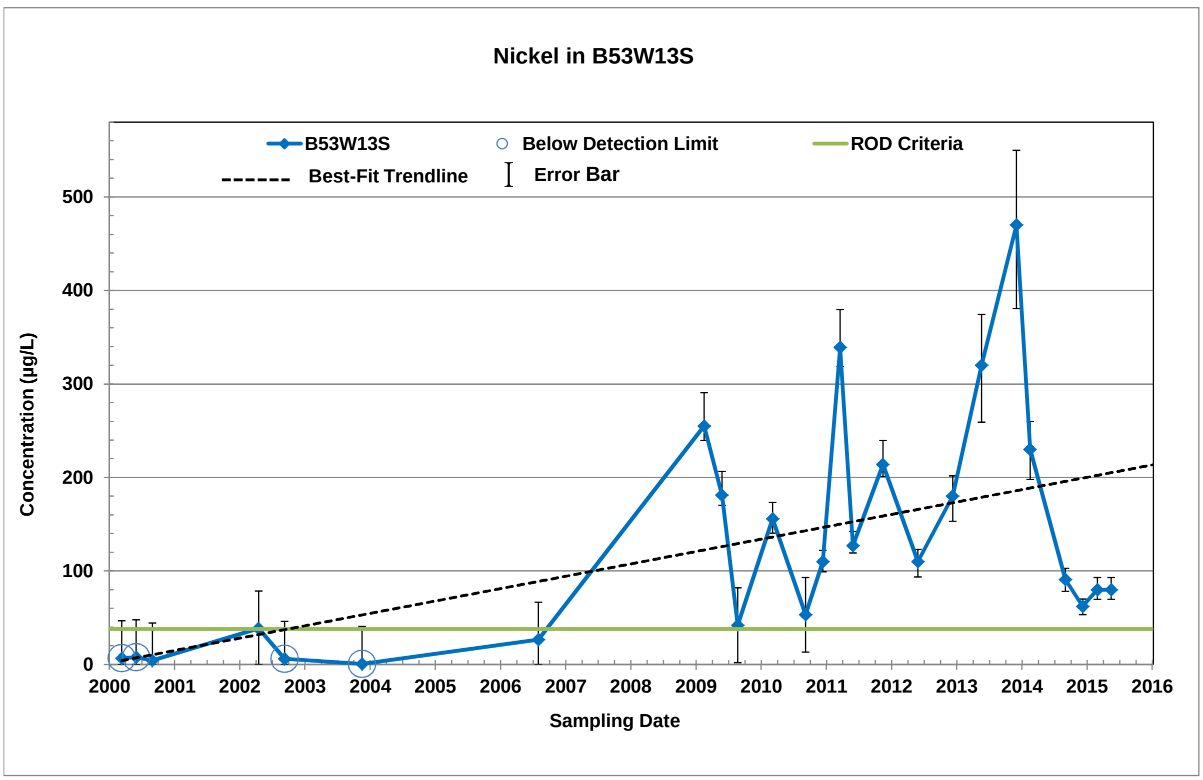
Notes:

For molybdenum results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples.

For molybdenum results reported below the DL (non-detect), the value plotted is half the DL.

Figure 4-13. Time-Versus-Concentration Graphs for Molybdenum in Ground Water at B53W18S



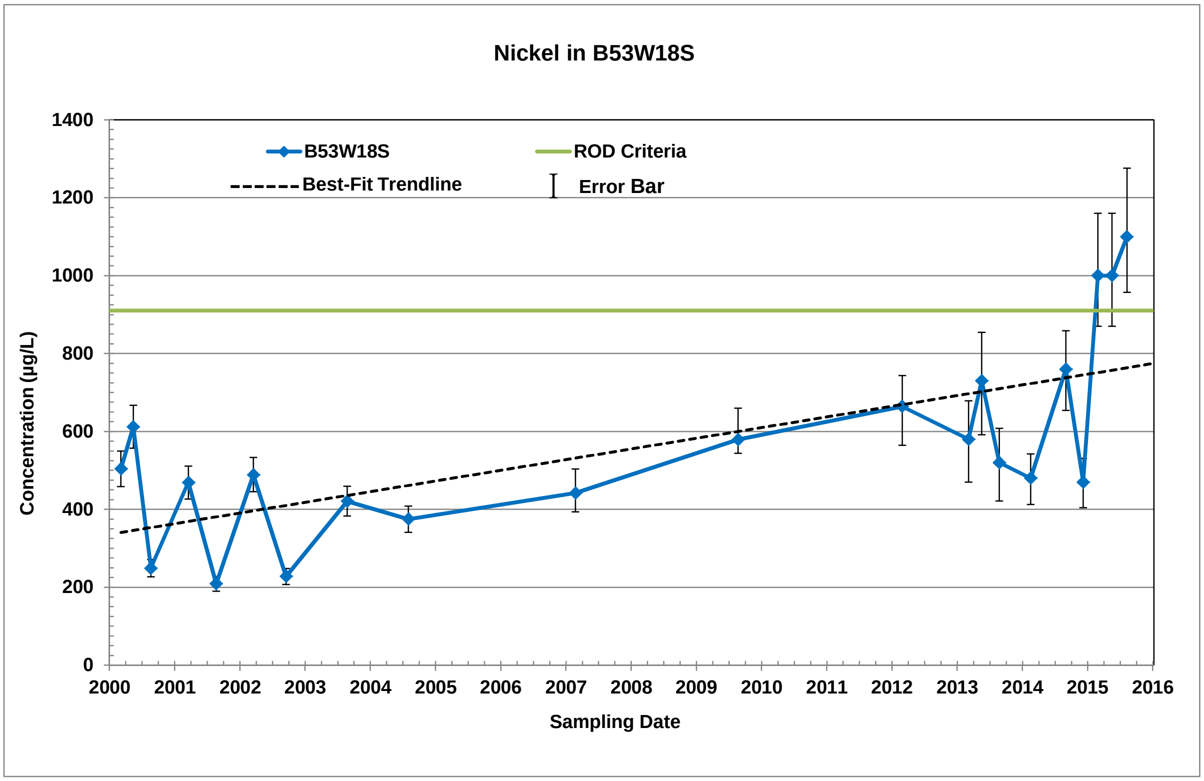


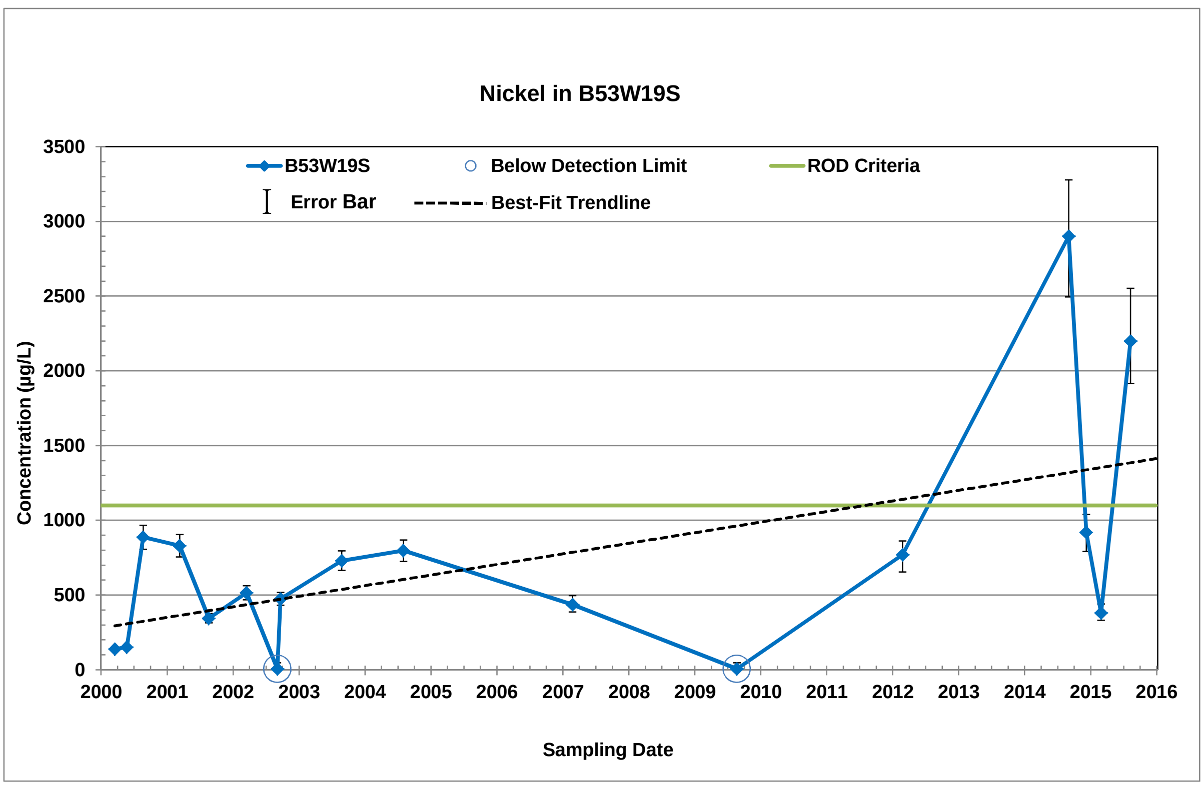
Notes:

For nickel results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples. The RL for nickel changed from 40 µg/L to 5 µg/L in 2014.

For nickel results reported below the DL (non-detect), the value plotted is half the DL.

Figure 4-14. Time-Versus-Concentration Graphs for Nickel in Ground Water at B53W09S, B53W13S, B53W18S, and B53W19S



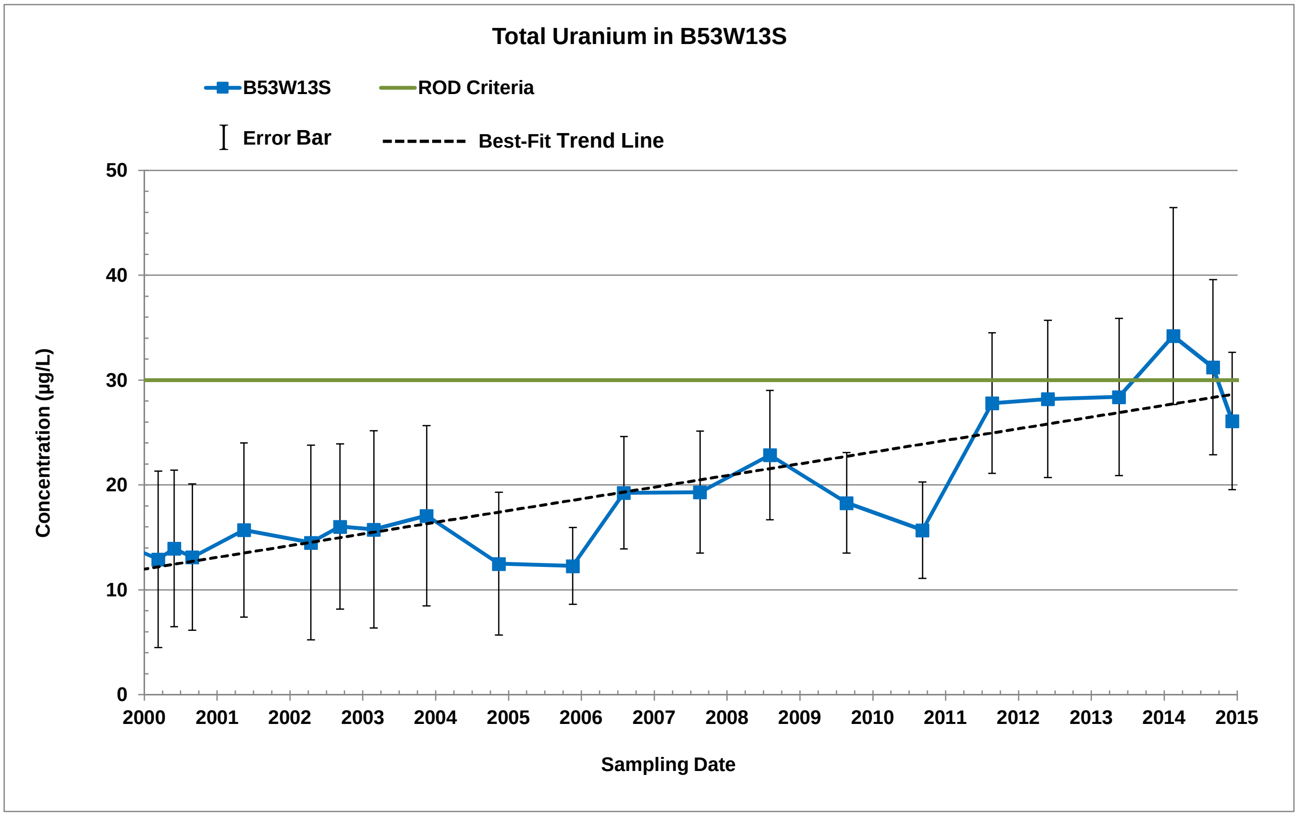


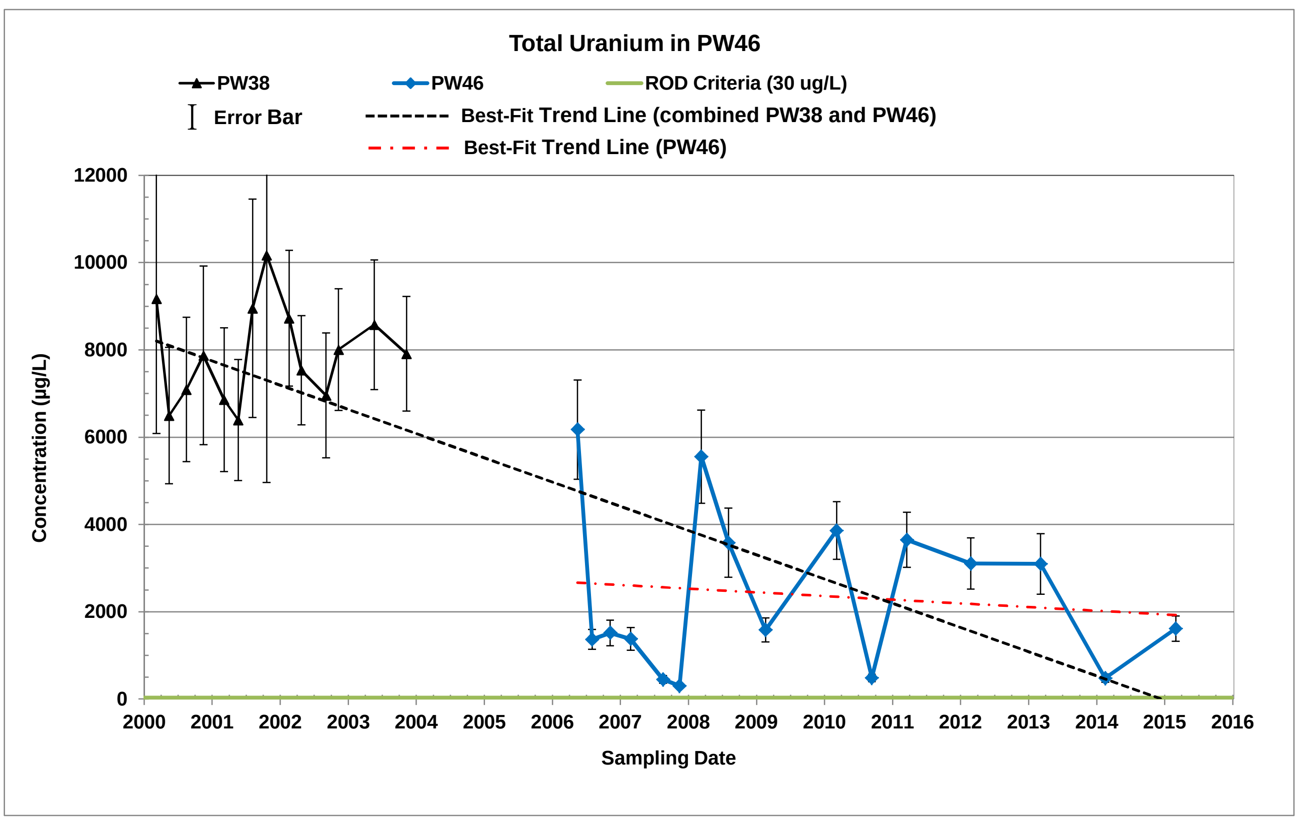
Notes:

For nickel results less than 3 times the RL, the error bar represents ± RL. For results exceeding 3 times the RL, the error bar represents the upper and lower control limits on the control spike samples. The RL for nickel changed from 40 µg/L to 5 µg/L in 2014.

For nickel results reported below the DL (non-detect), the value plotted is half the DL.

Figure 4-14. Time-Versus-Concentration Graphs for Nickel in Ground Water at B53W09S, B53W13S, B53W18S, and B53W19S (Continued)





Notes:
For total U, the error bar represents ± the sum of the measurement errors for U-234, U-235, and U-238, converted to µg/L.

Figure 4-15. Time-Versus-Concentration Graphs for Total U in Ground Water at B53W13S, PW38, and PW46

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure 4-16 Selenium Concentrations in Ground Water at the SLAPS and SLAPS VPs.mxd

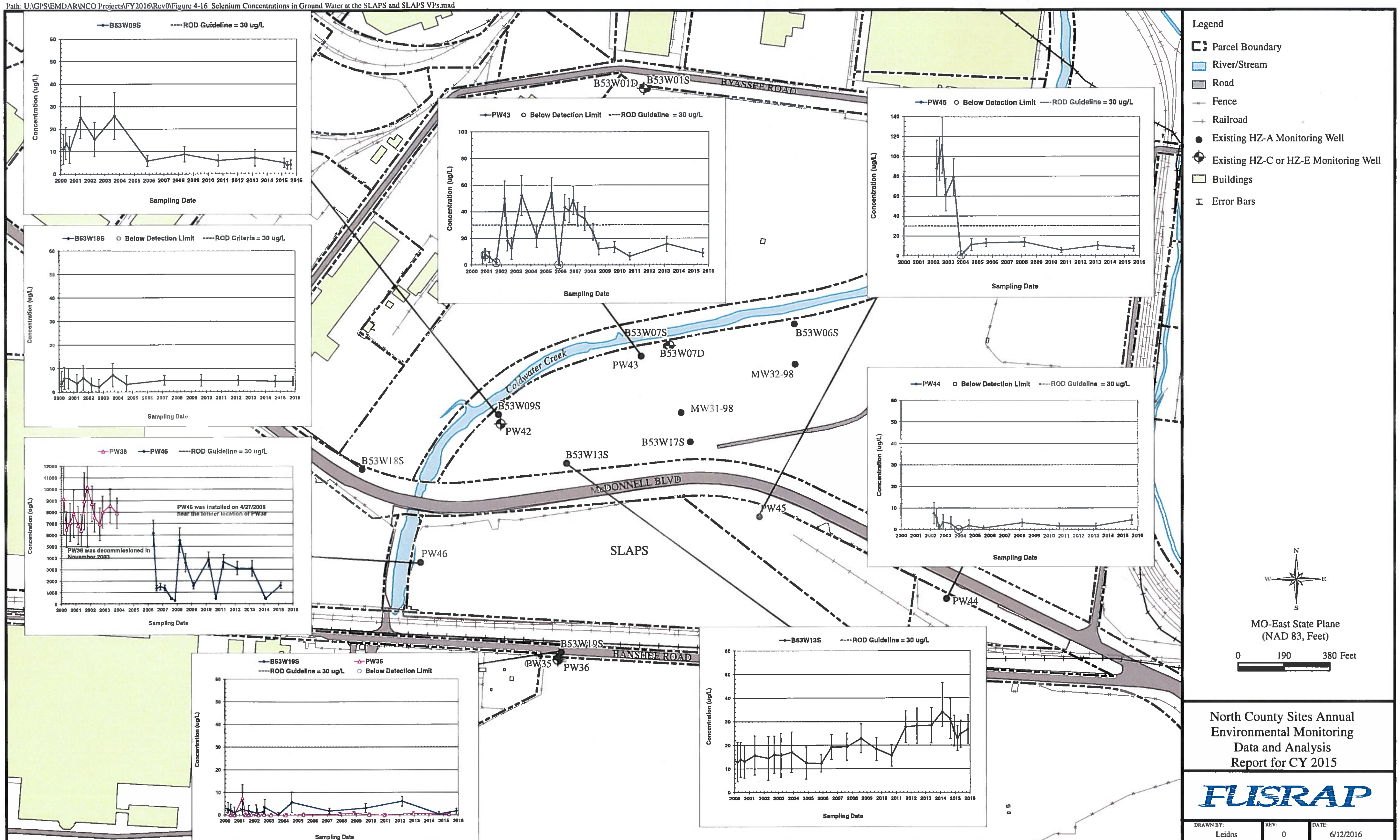


Figure 4-16. Total U Concentrations in Unfiltered Ground Water at the SLAPS and SLAPS VPs

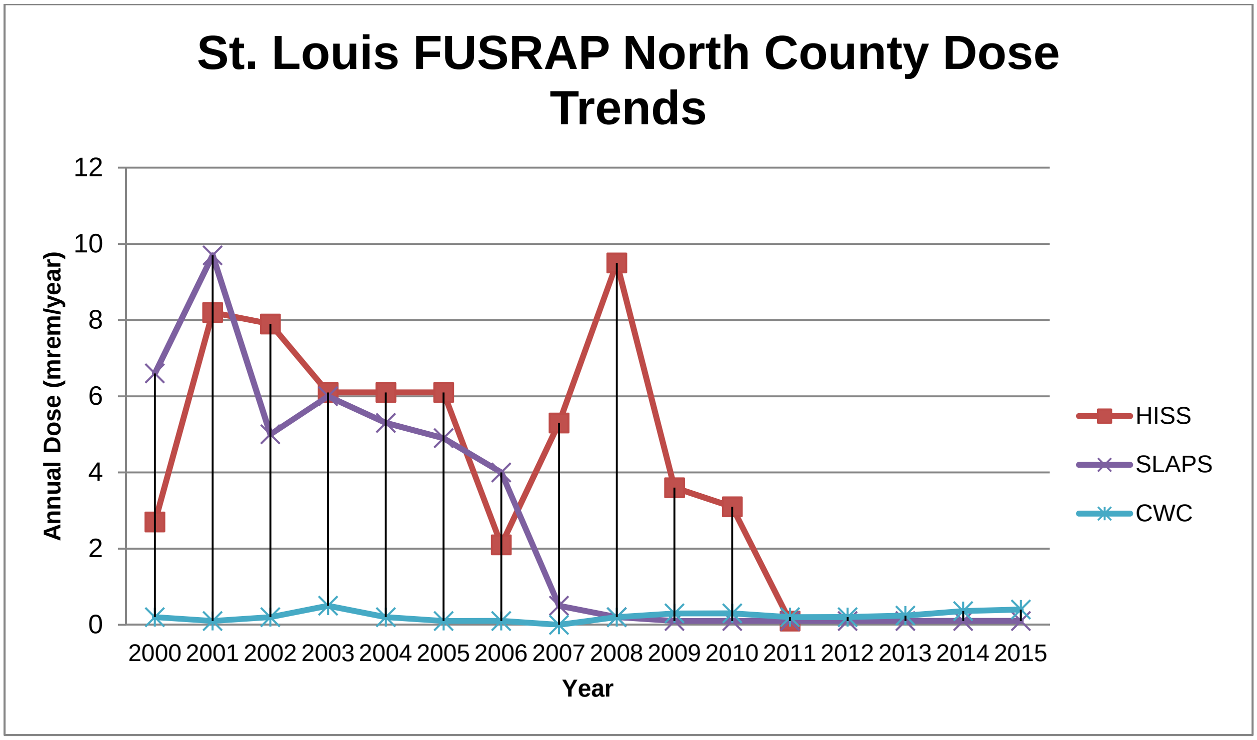


Figure 6-1. St. Louis FUSRAP NC Dose Trends

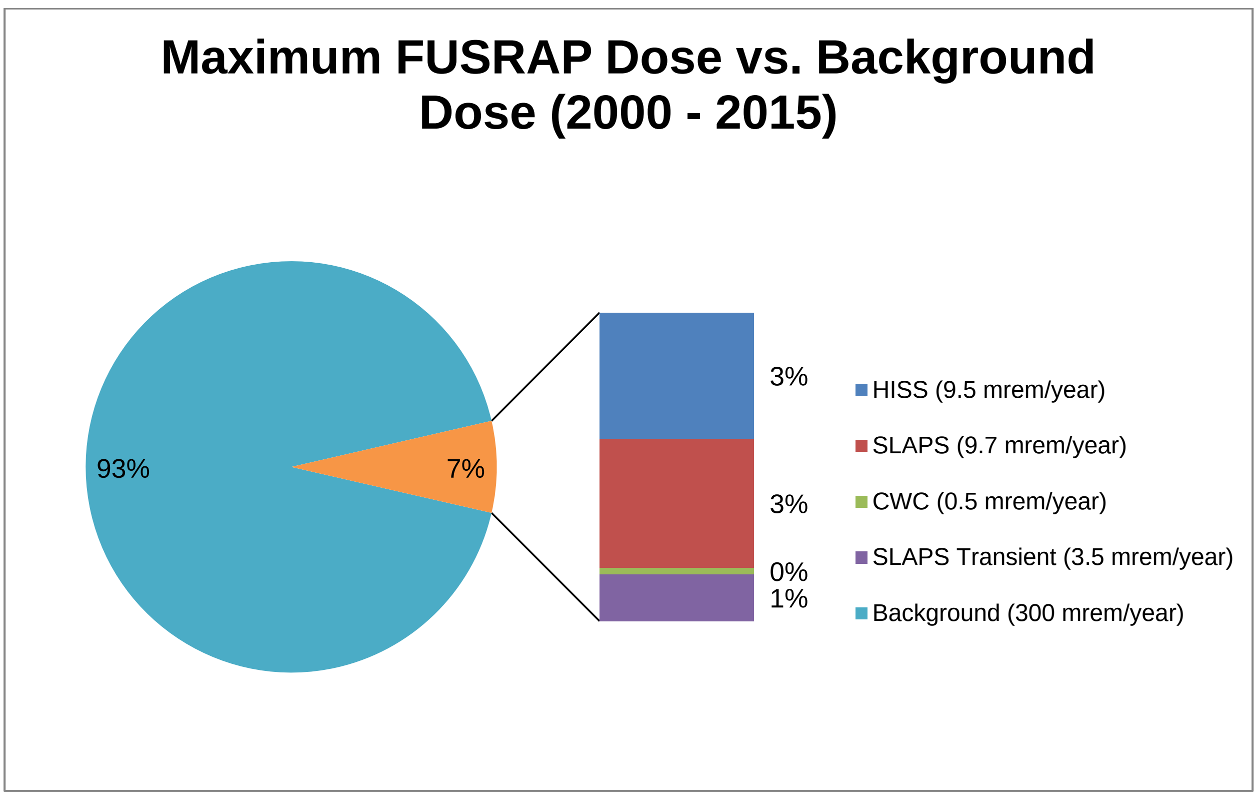


Figure 6-2. St. Louis FUSRAP NC Maximum Dose Versus Background Dose

APPENDIX A

NORTH ST. LOUIS COUNTY FUSRAP SITES
2015 RADIONUCLIDE EMISSIONS NESHAP REPORT
SUBMITTED IN ACCORDANCE WITH REQUIREMENTS OF 40 *CFR* 61, SUBPART I

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

SECTION **PAGE**

TABLE OF CONTENTS (Continued)

LIST OF TABLES

LIST OF TABLES (Continued)

LIST OF FIGURES

LIST OF ATTACHMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

ACRONYMS AND ABBREVIATIONS

Both English and metrics units are used in this report. The units used in a specific situation are based on common unit usage or regulatory language (e.g., depths are given in feet and meters, and areas are given in square feet and square meters). Acres are given for area when applicable.

µCi/cm^3	microcurie(s) per cubic centimeter
µCi/mL	microcurie(s) per milliliter
Ac	actinium
AEC	Atomic Energy Commission
BNI	Bechtal National Inc.
°C	degrees Celsius (centigrade)
CFR	*Code of Federal Regulations*
Ci	curie(s)
CWC	Coldwater Creek
CY	calendar year
DOE	U.S. Department of Energy
EDE	effective dose equivalent
FS	*Feasibility Study for the St. Louis North County Site*
FUSRAP	Formerly Utilized Sites Remedial Action Program
Futura	Futura Coatings Company
g	gram(s)
GIS	geographic information system
HEPA	high efficiency particulate air
HISS	Hazelwood Interim Storage Site
IA	investigation area
IAAAP	Iowa Army Ammunition Plant
kg	kilogram(s)
MED	Manhattan Engineer District
mL	milliliter(s)
mrem	millirem
NC	North St. Louis County
NESHAP	National Emission Standard for Hazardous Air Pollutants
Pa	protactinium
pCi/g	picocurie(s) per gram
Ra	radium
RA	remedial action
SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site
STLAA	St. Louis Airport Authority
SU	survey unit
Th	thorium
U	uranium
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VP	vicinity property
yd^3	cubic yard(s)

THIS PAGE INTENTIONALLY LEFT BLANK

EXECUTIVE SUMMARY AND DECLARATION STATEMENT

This report presents the results of National Emission Standard for Hazardous Air Pollutants (NESHAP) calculations for the St. Louis Formerly Utilized Sites Remedial Action Program (FUSRAP) North St. Louis County (NC) Sites for calendar year (CY) 2015. The NESHAP requires the calculation of the effective dose equivalent (EDE) from radionuclide emissions to critical receptors. The report follows the requirements and procedures contained in 40 *Code of Federal Regulations (CFR)* 61, Subpart I, *National Emission Standards for Radionuclide Emissions from Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H.*

This report describes evaluations of sites at which a reasonable potential exists for radionuclide emissions due to St. Louis FUSRAP activities. These sites include: vicinity property (VP)-57 and VP-58, the Coldwater Creek (CWC) corridor, the Pershall Road South Ditch, St. Cin Park, VP-04(L), investigation area (IA)-10, and the St. Louis Airport Site (SLAPS) Loadout area. This report also evaluates radionuclide emissions from the U.S. Army Corps of Engineers (USACE) St. Louis District FUSRAP Radioanalytical Laboratory operations. Emissions from the sites and laboratory were evaluated for the entire CY 2015 to provide a conservative estimate of total emissions.

The NESHAP of EDE to a critical receptor from radionuclide emissions is 10 millirem (mrem) per year. None of the sites exceeded this standard. The EDEs from radionuclide emissions at the sites were calculated using soil characterization data, air particulate monitoring data, and the U.S. Environmental Protection Agency (USEPA) CAP88-PC modeling code, which resulted in an EDE of less than 0.1 mrem per year from the Latty Avenue Properties, less than 0.1 mrem per year from the SLAPS, and 0.1 mrem per year from the SLAPS VPs. The EDE from the laboratory emissions was calculated using the methodology prescribed in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions,* soil characterization data, and the USEPA CAP88-PC modeling code (USEPA 2014), resulting in an EDE of less than 0.1 mrem per year.

Evaluations for the Latty Avenue Properties, the SLAPS, the SLAPS VPs, and the USACE St. Louis FUSRAP laboratory resulted in an EDE of less than 10 percent of the dose standard prescribed in 40 *CFR* 61.102. These sites are exempt from the reporting requirements of 40 *CFR* 61.104(a).

DECLARATION STATEMENT – 40 *CFR* 61.104(a)(xvi)

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, and based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. See 18 *U.S. Code* 1001.

____________________________________ _______________

Signature Date

Office:	U.S. Army Corps of Engineers, St. Louis District Office
Address:	8945 Latty Ave.
	Berkeley, MO 63134
Contact:	Jon Rankins

THIS PAGE INTENTIONALLY LEFT BLANK

1.0 PURPOSE

This NESHAP report contains the EDE calculations from radionuclide emissions (exclusive of radon) to critical receptors from the NC Sites at which a reasonable potential existed for radionuclide emissions due to St. Louis FUSRAP activities. These sites include: VP-57 and VP-58, the CWC corridor, the Pershall Road South Ditch, St. Cin Park, VP-04(L), IA-10, the SLAPS Loadout area, and the USACE St. Louis FUSRAP laboratory. The air emissions from the laboratory include fume hood stack releases of particulate radionuclides from sample preparation and separation activities. The air emissions from the other sites are ground releases of particulate radionuclides in soil as a result of windblown action and remedial action (RA) in the form of excavation and off-site disposal of soil.

THIS PAGE INTENTIONALLY LEFT BLANK

2.0 METHOD

Emission rates for the NC Sites were modeled using guidance documents (i.e., *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities* [USEPA 1989]) referenced in 40 *CFR* 61, Appendix E, *Compliance Procedures Methods for Determining Compliance with Subpart I*, and were measured by collection of environmental air samples. Emission rates for the laboratory were modeled using guidance in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions*. Emission rates were input into the USEPA computer code CAP88-PC, along with appropriate meteorological data and distances to critical receptors[1], to obtain the EDE from the air emissions.

Although 40 *CFR* 61.103 requires the use of the USEPA computer code COMPLY, USEPA no longer supplies technical support for COMPLY. However, the USEPA lists both COMPLY and CAP88-PC as atmospheric models for assessing dose and risk from radioactive air emissions (USEPA 2014). The USEPA continues to maintain and update the CAP88-PC modeling program and has updated it as recently as September 2014. In previous FUSRAP NESHAP reports, both COMPLY and CAP88-PC results have been compared. This comparison indicated that CAP88-PC is a comparable and conservative method of demonstrating compliance with 40 *CFR* 61, Subpart I. For these reasons, CAP88-PC was used in this report to demonstrate compliance with the NESHAP.

2.1 EMISSION RATE

Two methods were used to determine particulate radionuclide emission rates from the sites: (1) 40 *CFR* 61 Appendix D, *Methods for Estimating Radionuclide Emissions*, and (2) environmental air samples collected from the perimeter of a site. Emissions during excavations and waste loadout were evaluated using air sampling data at the excavation and waste loadout perimeters.

2.2 EFFECTIVE DOSE EQUIVALENT

The EDE to critical receptors[1] is obtained using USEPA computer code CAP88-PC, Version 4.0 (USEPA 2014). CAP88-PC uses a Gaussian plume equation to estimate the dispersion of radionuclides and is referenced by the USEPA to demonstrate compliance with the NESHAP emissions criterion in 40 *CFR* 61. An area ground release at a height of 1 m is modeled for the sites, and a stack release is modeled for the laboratory.

The EDE is calculated by combining doses from ingestion, inhalation, air immersion, and external ground surface. CAP88-PC contains historical weather data libraries for major airports across the country, and the results can be modeled for receptors at multiple distances from the emissions source.

[1] "Critical receptors," as used in this report, are the locations for the nearest residence, school, business, and farm.

THIS PAGE INTENTIONALLY LEFT BLANK

3.0 METEOROLOGICAL DATA

Meteorological data were obtained from the CAP88-PC code for the Lambert – St. Louis International Airport (wind file 13994.WND). Data in the file were accumulated from 1988 through 1992.

- Average Annual Wind Velocity: 4.446 m per second
- Average Annual Precipitation Rate: 111 cm per year
- Average Annual Air Temperature: 14.18 degrees Celsius (centigrade) (°C)

Wind speed frequency data were obtained from Lambert – St. Louis International Airport (see Table A-1).

Table A-1. St. Louis Wind Speed Frequency

Wind Speed Group (Knots)	Frequency
0 – 3	0.10
4 – 7	0.29
8 – 12	0.36
13 – 18	0.21
19 – 24	0.03
25 – 31	0.01

Knot – 1.151 miles per hour

Wind direction frequency data were obtained from the CAP88-PC wind file, 13994.WND (see Table A-2).

Table A-2. St. Louis Wind Rose Frequency

Wind Direction		Wind Frequency	Wind Direction		Wind Frequency
Wind Toward	Wind From		Wind Toward	Wind From	
N	S	0.131	S	N	0.056
NNW	SSE	0.074	SSE	NNW	0.043
NW	SE	0.068	SE	NW	0.061
WNW	ESE	0.069	ESE	WNW	0.087
W	E	0.055	E	W	0.090
WSW	ENE	0.028	ENE	WSW	0.068
SW	NE	0.031	NE	SW	0.054
SSW	NNE	0.037	NNE	SSW	0.050

THIS PAGE INTENTIONALLY LEFT BLANK

4.0 LATTY AVENUE PROPERTIES UNDER ACTIVE REMEDIATION

4.1 SITE HISTORY

In 1966, Continental Mining and Milling Company of Chicago, Illinois, purchased the wastes stored at the SLAPS and began moving them to a property at 9200 Latty Avenue for storage. In 1967, the Commercial Discount Corporation of Chicago, Illinois, purchased the residues, dried the materials, and shipped much of the material to Canon City, Colorado. Cotter Corporation purchased the remaining residues in 1969 and dried and shipped more material to Canon City during 1970. In 1973, the remaining undried material was shipped to Canon City, and leached barium sulfate was mixed with soil and transported to a St. Louis County landfill. During these activities, improper storage, handling, and transportation of materials caused the spread of materials along haul routes and to the adjacent VPs.

In 1979, the owner of the 9200 Latty Avenue property excavated approximately 13,000 cubic yards (yd^3) from the western half of the property prior to constructing a manufacturing facility. The material excavated at this time was stockpiled on the eastern half of the property, which now constitutes the Hazelwood Interim Storage Site (HISS). In 1984, Bechtel National Inc. (BNI) performed removal actions, including clearing, cleanup, and excavation of the property at 9200 Latty Avenue and the surrounding VPs. This action created approximately 14,000 yd^3 of additional contaminated soil, which was stockpiled at the HISS.

In 1986, the U.S. Department of Energy (DOE) provided radiological support to the cities of Hazelwood and Berkeley, Missouri, for a drainage and road improvement project. Soil with constituents in excess of DOE RA guidelines was excavated and stored at the HISS. This action resulted in an additional 4,600 yd^3 of material being placed at the HISS in a supplemental storage pile.

In 1996, the owner of the property to the east of the HISS, General Investment Funds Real Estate Holding Company, in consultation with the DOE, made commercial parking and drainage improvements on the property. This action resulted in the stockpiling of approximately 8,000 yd^3 of soil and debris in two interim storage piles located in the southwestern portion of the Latty Avenue VP-02(L). These piles were referred to as the Eastern Piles.

In 2000 and 2001, the USACE removed the Main, Supplemental, and Eastern Piles and shipped the material by rail to properly permitted disposal facilities. The ground surface on which the piles were previously located was covered by a layer of plastic and approximately 6 inches of gravel.

4.2 MATERIAL HANDLING AND PROCESSING FOR CALENDAR YEAR 2015

Soil cleanup activities at the HISS and the Futura Coatings Company (Futura), which were the Latty Avenue Properties with the highest initial levels of residual contamination, were completed in CY 2011. Excavation activities for a single Latty Avenue Property occurred in CY 2015 at VP-04(L).

4.3 SOURCE DESCRIPTION – RADIONUCLIDE SOIL CONCENTRATIONS

The radionuclide concentrations for each site were obtained from data contained in Table D-5 of the *Feasibility Study for the St. Louis North County Site* (FS) (USACE 2003). Attachment A-1 of this NESHAP report contains a summary table of the radionuclide concentrations used to calculate the emission rate from the site.

4.4 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2015

Ground releases of particulate radionuclides in soil, as a result of windblown action and RA in the form of excavation and off-site disposal of soil, are assumed for the particulate radionuclide emission determinations from the Latty Avenue Properties at which excavations occurred in CY 2015. Other Latty Avenue Properties do not contribute to the emission determinations for periods of inactivity due to the low activity and vegetative cover.

4.5 DISTANCES TO CRITICAL RECEPTORS

The distances to critical receptors are shown on Figure A-1 and presented in Table A-3. Distances and directions to critical receptors are determined by using tools in a geographic information system (GIS).

Table A-3. Latty Avenue Properties Critical Receptors for CY 2015

Sources	Nearest Residence		School		Business		Farm	
	Distance (m)	Direction	Distance (m)	Direction	Distance (m)	Direction	Distance (m)	Direction
VP-04(L)	400	NE	1,830	SE	30	S	400	NE

4.6 EMISSIONS DETERMINATION

4.6.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from around the perimeter of active excavations to measure the radionuclide emissions. The samples provide the basis for determining the radionuclide emission rates during all of CY 2015. The average gross alpha and gross beta concentrations (in microcuries per milliliter [μCi/mL]) were determined for each sample location for CY 2015. The site average concentrations are presented in Table A-4.

Table A-4. Latty Avenue Properties Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2015

Monitoring Location	Average Concentration (μCi/mL)	
	Gross Alpha	Gross Beta
VP-04(L)	0	1.49E-14
Background Concentration[a]	3.66E-15	1.86E-14

[a] These concentrations are provided for informational purposes only. As a conservative approach, background values were not subtracted from the gross average concentration during the determination of EDE.

Radionuclide activity fractions are determined for alpha and beta from the average radionuclide concentration data contained in Table D-5 of the FS (USACE 2003). The product of each radionuclide activity fraction and the gross concentration provide the radionuclide emission concentration as measured in microcuries per cubic centimeters (μCi/cm^3). The gross average concentration (in μCi/cm^3) is converted to a release (emission) rate (in curies [Ci] per year) using Equations 1 and 2.

A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities (USEPA 1989) (page 3-21, [2]) includes Equation 1 for determination of the effective diameter of a non-circular stack or vent.

$$D = (1.3\ A)^{1/2} \qquad \textit{Equation 1}$$

where:

D = the effective diameter of the release (in m)
A = the area of the stack, vent, or release point (in m^2)

Table A-5 provides the effective surface area available for release of airborne radionuclides normalized to 1 year and the effective diameter for the Latty Avenue Properties that were excavated in CY 2015. Calculation of the effective surface area is contained in Attachment A-1 of this NESHAP report.

Table A-5. Latty Avenue Properties Excavation Effective Areas and Effective Diameters for CY 2015

Location	Effective Area (m^2)	Effective Diameters (m)
VP-04(L)	0.3	1

The average annual wind speed for the Lambert – St. Louis International Airport is provided in CAP88-PC as 4.446 m per second. Conversion of this wind speed to a flow rate through stacks with the listed effective diameter for each area is completed using Equation 2.

$$F = V\ \pi\ (D)^2 / 4 \qquad \textit{Equation 2}$$

where:

V = the wind velocity (in m per minute) = 266.76 m per minute
F = the flow rate (in m^3 per minute)
π = a mathematical constant
D = the effective diameter of the release (in m) determined using Equation 1

Converting the velocity of emissions from the site to an effective flow rate results in the following site release flow rates for the Latty Avenue Properties site VP-04(L), as listed in Table A-6. The product of the flow rate, the activity fraction associated with each radionuclide, and the appropriate conversion factors provide the site emission rate for each radionuclide, as illustrated in Table A-7. Attachment A-1 of this NESHAP report contains flow rate and average radionuclide concentration data.

Table A-6. Latty Avenue Properties Site Release Flow Rates for CY 2015

Location	Site Release Flow Rate (m^3/minute)
VP-04(L)	7.8E+01

4.6.2 Latty Avenue Properties Total Airborne Radioactive Particulate Emission Rates

The total CY 2015 emission/release rates input into the USEPA codes for the Latty Avenue Properties are shown in Table A-7 and are based on the measured emission rates from the air samples collected from the perimeter of the site or excavations as appropriate.

Table A-7. Latty Avenue Properties Total Airborne Radioactive Particulate Emission Rates for CY 2015

VP-04(L)	
Radionuclide	**Emission (Ci/year)[a]**
Uranium (U)-238	0
U-235	0
U-234	0
Radium (Ra)-226	0
Thorium (Th)-232	0
Th-230	0
Th-228	0
Ra-224	0
Th-234	3.0E-07
Protactinium (Pa)-234m	3.0E-07
Th-231	3.6E-10
Ra-228	2.5E-10
Actinium (Ac)-228	2.5E-10
Pa-231	3.0E-09
Ac-227	2.3E-09

[a] Release rate based on a 365-day period at a respective flow rate (as presented in Table A-6) as determined from the average annual wind speed (4,446 m per second) and the effective site area (as presented in Table A-5) for each location.

4.7 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The effective area factor input was taken from Table A-5. Results show compliance with the 10 mrem per year criterion for all critical receptors. Table A-8 summarizes the results.

Table A-8. Latty Avenue Properties CAP88-PC Results for Critical Receptors for CY 2015

Source	Dose (mrem/year)			
	Nearest Residence[a]	School[b]	Business[b]	Farm[a]
VP-04(L)	<0.1	<0.1	<0.1	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).

5.0 ST. LOUIS AIRPORT SITE AND ST. LOUIS AIRPORT SITE VICINITY PROPERTIES UNDER ACTIVE REMEDIATION

5.1 SITE HISTORY

The Manhattan Engineer District (MED) acquired the SLAPS in 1946 to store uranium-bearing residuals generated at the St. Louis Downtown Site (SLDS) from 1946 through 1966. In 1966, these residuals were purchased by Continental Mining and Milling Company of Chicago, removed from the SLAPS, and placed in storage at 9200 Latty Avenue (i.e., the HISS) under an Atomic Energy Commission (AEC) license. After most of the residuals were removed, site structures were demolished and buried on the property, along with approximately 60 truckloads of scrap metal and a vehicle that had become contaminated. In 1973, the U.S. Congress and the City of St. Louis agreed to transfer ownership from the AEC to the St. Louis Airport Authority (STLAA). The USACE conducted cleanup operations on the SLAPS from 1998 through 2007. Although excavations have concluded at the SLAPS, a small portion of the site is still used to conduct waste storage and loadout activities.

5.2 MATERIAL HANDLING AND PROCESSING FOR CALENDAR YEAR 2015

During CY 2015, excavations were conducted on the CWC corridor (adjacent to VP-57 and VP-58), VP-57 and VP-58, the Pershall Road South Ditch, St. Cin Park, and IA-10; and waste loadout activities were conducted at the SLAPS Loadout facility. Air particulate samples were collected around excavation perimeters during active excavation on the SLAPS VPs and around the SLAPS Loadout area throughout CY 2015. Analytical results of air particulate samples were used to determine windblown in situ emissions.

5.3 SOURCE DESCRIPTION – RADIONUCLIDE SOIL CONCENTRATIONS

The radionuclide concentrations for each site, except St. Cin Park, were obtained from data contained in Table D-5 of the FS (USACE 2003). The radionuclide concentrations for St. Cin Park were obtained from data contained in the *Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property, and Duchesne Park* (USACE 2015). Attachment A-1 of this NESHAP report contains a summary table of the radionuclide concentrations used to calculate the emission rate from each site.

5.4 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2015

Ground releases of particulate radionuclides in soil, as a result of windblown action and RA in the form of excavation and off-site disposal of soil, are assumed for the particulate radionuclide emission determinations from the SLAPS VPs at which excavations occurred in CY 2015. Other SLAPS VPs do not contribute to the emission determinations for periods of inactivity due to the low activity and vegetative cover.

5.5 DISTANCES TO CRITICAL RECEPTORS

The distances to critical receptors are shown on Figures A-2 and A-3 and presented in Table A-9. Distances and directions to critical receptors are determined using tools in a GIS.

Table A-9. SLAPS and SLAPS VPs Critical Receptors for CY 2015

Sources	Nearest Residence		School		Business		Farm	
	Distance (m)	Direction	Distance (m)	Direction	Distance (m)[a]	Direction	Distance (m)	Direction
CWC Corridor	300	NNW	1,900	NE	170	W	4,000	NW
VP-57 and VP-58	300	NNW	1,900	NE	170	W	4,000	NW
Pershall Road South Ditch	300	NNW	1,900	NE	170	W	4,000	NW
St. Cin Park	100	NW	850	NE	100	E	4,500	WNW
IA-10	1,150	ENE	3,000	E	250	SSE	2,000	NE
SLAPS Loadout	770	NE	2,580	E	500	WSW	1,710	NE

[a] Distance from business receptor to fenceline is 160 m. Distance from business receptor to center of source from the SLAPS Loadout is 500 m for emissions determination.

5.6 EMISSIONS DETERMINATION

5.6.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from around the perimeter of active excavations and the SLAPS Loadout area to measure the radionuclide emissions. The samples provide the basis for determining the radionuclide emission rates during all of CY 2015. The average gross alpha and gross beta concentrations (in μCi/mL) were determined for each sample location for CY 2015. The site average concentrations are presented in Table A-10.

Table A-10. SLAPS and SLAPS VPs Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2015

Monitoring Location	Average Concentration (μCi/mL)	
	Gross Alpha	Gross Beta
CWC Corridor	4.77E-15	2.85E-14
VP-57 and VP-58	6.91E-15	2.65E-14
Pershall Road South Ditch	1.66E-14	7.30E-14
St. Cin Park	5.96E-15	3.41E-14
IA-10	1.22E-14	2.78E-14
SLAPS Loadout	3.86E-15	2.73E-14
Background Concentration[a]	3.66E-15	1.86E-14

[a] These concentrations are provided for informational purposes only. As a conservative approach, background values were not subtracted from the gross average concentration during the determination of EDE.

Radionuclide activity fractions are determined for alpha and beta from the average radionuclide concentration data contained in Table D-5 of the FS (USACE 2003). The product of each radionuclide activity fraction and the gross concentration provide the radionuclide emission concentration as measured in μCi/cm^3. The gross average concentration (in μCi/cm^3) is converted to a release (emission) rate (in Ci per year) using Equations 1 and 2.

A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities (USEPA 1989) (page 3-21, [2]) includes Equation 1 for determination of the effective diameter of a non-circular stack or vent.

$$D = (1.3\ A)^{1/2} \qquad \textit{Equation 1}$$

where:

D = the effective diameter of the release (in m)
A = the area of the stack, vent, or release point (in m^2)

Table A-11 provides the effective surface area available for release of airborne radionuclides normalized to 1 year and the effective diameter for the SLAPS and SLAPS VPs that were excavated in CY 2015. Calculation of the effective surface area is contained in Attachment A-1 of this NESHAP report.

Table A-11. SLAPS and SLAPS VPs Excavation Effective Areas and Effective Diameters for CY 2015

Location	Effective Area (m^2)	Effective Diameters (m)
CWC Corridor	81	10
VP-57 and VP-58	655	29
Pershall Road South Ditch	7	3
St. Cin Park	62	9
IA-10	1	1
SLAPS Loadout	600	28

The average annual wind speed for the Lambert – St. Louis International Airport is provided in CAP88-PC as 4.446 m per second. Conversion of this wind speed to a flow rate through stacks with the listed effective diameters for each area is completed using Equation 2.

$$F = V \pi (D)^2 / 4 \qquad \textit{Equation 2}$$

where:

V = the wind velocity (in m per minute) = 266.76 m per minute
F = the flow rate (in m^3 per minute)
π = a mathematical constant
D = the effective diameter of the release (in m) determined using Equation 13

Converting the velocity of emissions from the sites to an effective flow rate results in the following site release flow rates for the SLAPS and SLAPS VPs, as listed in Table A-12. The product of the flow rate, the activity fraction associated with each radionuclide, and the appropriate conversion factors provide the site emission rate for each radionuclide, as contained in Table A-13. Attachment A-1 of this NESHAP report contains flow rate and average radionuclide concentration data.

Table A-12. SLAPS and SLAPS VPs Site Release Flow Rates for CY 2015

Location	Site Release Flow Rate (m^3/minute)
CWC Corridor	2.2E+04
VP-57 and VP-58	1.8E+05
Pershall Road South Ditch	1.9E+03
St. Cin Park	1.7E+04
IA-10	2.7E+02
SLAPS Loadout	1.6E+05

5.6.2 St. Louis Airport Site and St. Louis Airport Site Vicinity Properties Total Airborne Radioactive Particulate Emission Rates

The total CY 2015 emission/release rates input into the USEPA codes for the SLAPS and SLAPS VPs are shown in Table A-7 and are based on the measured emission rates from the air samples collected from the perimeter of the site or excavations as appropriate.

Table A-13. SLAPS and SLAPS VPs Total Airborne Radioactive Particulate Emission Rates for CY 2015

Radionuclide	Emission (Ci/year)[a]					
	CWC Corridor	VP-57 and VP-58	Pershall Road South Ditch	St. Cin Park	IA-10	SLAPS Loadout
U-238	1.2E-05	1.4E-04	3.9E-06	3.2E-06	1.5E-09	7.9E-05
U-235	5.5E-07	1.8E-07	1.3E-07	1.1E-07	5.0E-11	1.4E-06
U-234	1.2E-05	4.1E-06	3.9E-06	3.2E-06	1.5E-09	3.6E-05
Ra-226	3.7E-06	2.8E-05	9.2E-07	4.1E-06	3.5E-10	1.8E-05
Th-232	4.1E-06	2.8E-05	1.1E-06	2.5E-06	4.2E-10	2.0E-05
Th-230	6.2E-06	3.4E-04	3.1E-06	2.8E-06	1.2E-09	1.3E-04
Th-228	4.1E-06	3.4E-07	1.6E-06	1.9E-05	6.1E-10	1.4E-05
Ra-224	4.1E-06	3.4E-07	1.6E-06	1.9E-05	6.1E-10	1.4E-05
Th-234	1.6E-04	1.0E-03	3.1E-05	8.5E-05	6.2E-09	1.1E-03
Pa-234m	1.6E-04	1.0E-03	3.1E-05	8.5E-05	6.2E-09	1.1E-03
Th-231	7.2E-06	1.4E-06	1.0E-06	2.9E-06	2.0E-10	1.9E-05
Ra-228	4.3E-06	9.4E-07	5.3E-06	6.6E-05	1.1E-09	5.9E-05
Ac-228	4.3E-06	9.4E-07	5.3E-06	6.6E-05	1.1E-09	5.9E-05
Pa-231	2.8E-05	2.7E-06	2.2E-07	0	1.9E-10	4.9E-05
Ac-227	2.4E-05	2.3E-06	1.5E-07	0	1.4E-10	4.0E-05

[a] Release rate based on a 365-day period at a respective flow rate (as presented in Table A-12) as determined from the average annual wind speed (4.446 m per second) and the effective site area (as presented in Table A-11) for each location.

5.7 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The effective area factor input was taken from Table A-11. Results show compliance with the 10 mrem per year criterion for all critical receptors. The results are summarized in Table A-14.

Table A-14. SLAPS and SLAPS VPs CAP88-PC Results for Critical Receptors for CY 2015

Source	Dose (mrem/year)			
	Nearest Residence[a]	School[b]	Business[b]	Farm[a]
CWC Corridor	<0.1	<0.1	<0.1	<0.1
VP-57 and VP-58	<0.1	<0.1	<0.1	<0.1
Pershall Road South Ditch	<0.1	<0.1	<0.1	<0.1
St. Cin Park	0.1	<0.1	<0.1	<0.1
IA-10	<0.1	<0.1	<0.1	<0.1
SLAPS Loadout[c]	<0.1	<0.1	<0.1	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).
[c] Distance from the business receptor to the fenceline is 160 m. Distance from the business receptor to the center of the source is 500 m for emissions determination.

6.0 U.S. ARMY CORPS OF ENGINEERS ST. LOUIS DISTRICT FUSRAP RADIOANALYTICAL LABORATORY

6.1 SITE DESCRIPTION

The USACE St. Louis FUSRAP laboratory is located on VP-38. VP-38 is a SLAPS VP owned by SuperValue Inc. The USACE St. Louis FUSRAP laboratory is bounded to the north, east, and west by the SuperValue Inc. property and bounded to the south by Latty Avenue. The laboratory site covers approximately 4,047 m^2 of VP-38.

6.2 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2015

Emissions from the USACE St. Louis FUSRAP laboratory operations are assumed for the particulate radionuclide emission determinations from the laboratory site. No active excavations occurred on VP-38 during CY 2015.

6.3 EFFLUENT CONTROLS

The effluent controls at the USACE St. Louis FUSRAP laboratory during operations include performing all radioanalytical activities in fume hoods that exhaust to the outside air after passing through a high efficiency particulate air (HEPA) filter.

6.4 DISTANCES TO CRITICAL RECEPTORS

The distances to critical receptors are shown on Figure A-1 and listed in Table A-15. Distances and directions to critical receptors are determined using tools in a GIS.

Table A-15. Laboratory Critical Receptors for CY 2015

Receptor	Distance (m)	Direction from Site
Nearest Residence	330	NE
School	1,830	SE
Business	110	S
Farm	310	NE

6.5 EMISSIONS DETERMINATIONS

6.5.1 Stack Emissions from U.S. Army Corps of Engineers St. Louis District FUSRAP Radioanalytical Laboratory Operations

Two potential sources of emissions from laboratory operations exist:

1) The drying and grinding operations for soil samples, and
2) The dissolution of soil and water samples.

To obtain an estimate of the emissions these operations can cause, the methodology in 40 *CFR* 61, Appendix D, *Methods for Estimating Radionuclide Emissions*, was utilized. For the drying and grinding operations, a factor of 0.001 (applicable to liquids and powders) was applied to the entire annual laboratory inventory to determine the emissions for the year. For the dissolution operation, however, only 5 grams (g) of any sample are used. Because the dissolution involved heating samples to near boiling temperatures, no adjustment was made to the dissolution inventory to determine the emissions (a factor of 1.0, as specified in 40 *CFR* 61, Appendix D). To account for the small aliquot utilized, the annual inventory was adjusted by a factor of 0.005

(the ratio of the 5-g aliquot to the 1-kilogram [kg] sample mass) to estimate emissions. The two emission sources were then summed to determine the total laboratory source term.

Note that no credit is taken for emission controls serving the drying and grinding operations, although 40 *CFR* 61, Appendix D, allows for credit to be taken for the HEPA filters installed on the grinder equipment. The calculated source term therefore provides a conservative basis on which to determine compliance with USEPA guidance in 40 *CFR* 61.

To determine whether the laboratory complies with the 10 mrem per year limit specified in 40 *CFR* 61, Subpart I, the annual inventory handled by the laboratory had to be determined. The actual number of samples handled by the laboratory was reported as shown in Table A-16. With these data, the following equation was used to calculate laboratory emissions from the operations conducted in CY 2015.

$$\text{Emission Rate (Ci/year)} = \text{C} * \left[N_1 * F_1 + N_2 * F_2\right] * 1{,}000 \text{ g/sample} * 1\text{E} \quad 12 \text{ (Ci per picocuries)}$$

where:

C = the concentration of a radionuclide of concern in a sample type (in picocuries per gram [pCi/g])

N_1 = the number of samples involved in a drying and grinding operation

N_2 = the number of samples involved in a separations operation

F = the appropriate correction factor (i.e., 0.001 for drying and grinding [F_1] or 0.005 for dissolution [F_2])

Table A-16. Laboratory Annual Sample Inventory for CY 2015

Site	Type	Gamma Spectroscopy	Isotopic Ra[b]	Isotopic Th[b]	Isotopic U[b]	Total Drying and Grinding[c]	Total Separations[d]
HISS	Soil	0	0	0	0	0	0
HISS	Water	0	6	6	6	0	18
Latty Avenue Properties	Soil	91	198	0	0	91	198
Latty Avenue Properties	Water	0	0	0	0	0	0
IAAAP	Soil	158	0	0	196	158	196
IAAAP	Water	0	0	0	32	0	32
SLAPS	Soil	0	0	0	0	0	0
SLAPS	Water	1	8	8	7	1	23
SLAPS VPs	Soil	1,336	1,510	0	1	1,336	1,511
SLAPS VPs	Water	29	59	63	7	29	129
CWC	Sediment (soil)	3,690	4,188	0	0	3,690	4,188
CWC	Water	0	17	17	17	0	51
SLDS	Soil	247	245	0	0	247	245
SLDS	Water	0	77	88	7	0	172
		HISS and Latty Avenue Properties			**Total**	91	216
		IAAAP			**Total**	158	228
		SLAPS, SLAPS VPs, and CWC			**Total**	5,026	5,902
		SLDS			**Total**	247	417

[a] Data provided by the USACE St. Louis FUSRAP laboratory for CY 2015.
[b] Assumes isotopic Ra, Th, and U occur in separate and distinct processes.
[c] Assumes all soil samples went through a drying and grinding process.
[d] Assumes all soil and water samples for isotopic Ra, Th, and U went through a separations process.
Note: CWC samples use SLAPS characterization data to determine release rates.

6.5.2 Laboratory Total Airborne Radioactive Particulate Emission Rates

The USACE St. Louis FUSRAP laboratory total CY 2015 emission rate was input into the USEPA CAP88-PC code. The total emission rates are shown in Table A-17 as the calculated emissions from laboratory operations. The result was then used to calculate total dose to the hypothetical maximally exposed receptor. Calculation of emission rates is contained in Attachment A-1 of this NESHAP report.

Table A-17. Laboratory Total Airborne Radioactive Particulate Emission Rates for CY 2015

Radionuclide	Emission (Ci/year)[a]
U-238	2.0E-06
U-235	4.4E-08
U-234	9.6E-07
Ra-226	2.6E-07
Th-232	8.7E-08
Th-230	2.6E-06
Th-228	3.7E-08
Ra-224	3.7E-08
Th-234	7.9E-07
Pa-234m	7.9E-07
Th-231	3.3E-08
Ra-228	2.9E-08
Ac-228	2.9E-08
Pa-231	1.7E-07
Ac-227	1.5E-07

[a] Total emission rate is the sum of individual emission rates determined using the calculation in Section 6.5.1 of this NESHAP report.

6.6 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this NESHAP report. The stack factor input was 3 m high and 0.3 m in diameter. This evaluation demonstrates that all USACE St. Louis FUSRAP laboratory critical receptors receive less than 10 percent of the dose standard prescribed in 40 *CFR* 61.102; therefore, the laboratory is exempt from the reporting requirement of 40 *CFR* 61.104(a). The results are summarized in Table A-18.

Table A-18. Laboratory CAP88-PC Results for Critical Receptors for CY 2015

Receptor	Distance (m)	Direction from Site	Dose (mrem/year)
Nearest Residence[a]	330	NE	<0.1
School[b]	1,830	SE	<0.1
Business[b]	110	S	<0.1
Farm[a]	310	NE	<0.1

[a] Occupancy factor is 100 percent for the nearest residence and farm.
[b] Corrected for the 23 percent occupancy factor (40 hours per week for 50 weeks per year).

THIS PAGE INTENTIONALLY LEFT BLANK

7.0 REFERENCES

USACE 2003. U.S. Army Corps of Engineers, St. Louis District Office. *Feasibility Study for the St. Louis North County Site*, St. Louis Missouri. Final. May.

USACE 2011. U.S. Army Corps of Engineers, St. Louis District Office. *Feasibility Study for the Iowa Army Ammunition Plant*, Burlington, Iowa. Final. April.

USACE 2015. U.S. Army Corps of Engineers. *Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property, and Duchesne Park,* St. Louis, Missouri. Revision 0. June 24.

USACE 2016. U.S. Army Corps of Engineers. *St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2015*, St. Louis, Missouri. Revision 0. June 21.

USEPA 1989. U.S. Environmental Protection Agency, Office of Radiation Programs, Washington, D.C. *A Guide for Determining Compliance with the Clean Air Act Standards for Radionuclide Emissions from NRC-Licensed and Non-DOE Federal Facilities*. EPA 520/1-89-002. October.

USEPA 2014. U.S. Environmental Protection Agency. CAP88-PC Version 4.0 Computer Code, U.S. Environmental Protection Agency. September.

40 *CFR* 61, Subpart I. *National Emission Standards for Radionuclide Emissions From Federal Facilities Other Than Nuclear Regulatory Commission Licensees and Not Covered by Subpart H*.

40 *CFR* 61, Appendix D. *Methods for Estimating Radionuclide Emissions.*

40 *CFR* 61, Appendix E. *Compliance Procedures Methods for Determining Compliance with Subpart I*.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

FIGURES

THIS PAGE INTENTIONALLY LEFT BLANK

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure A-1 FUSRAP Lab Critical Reports.mxd

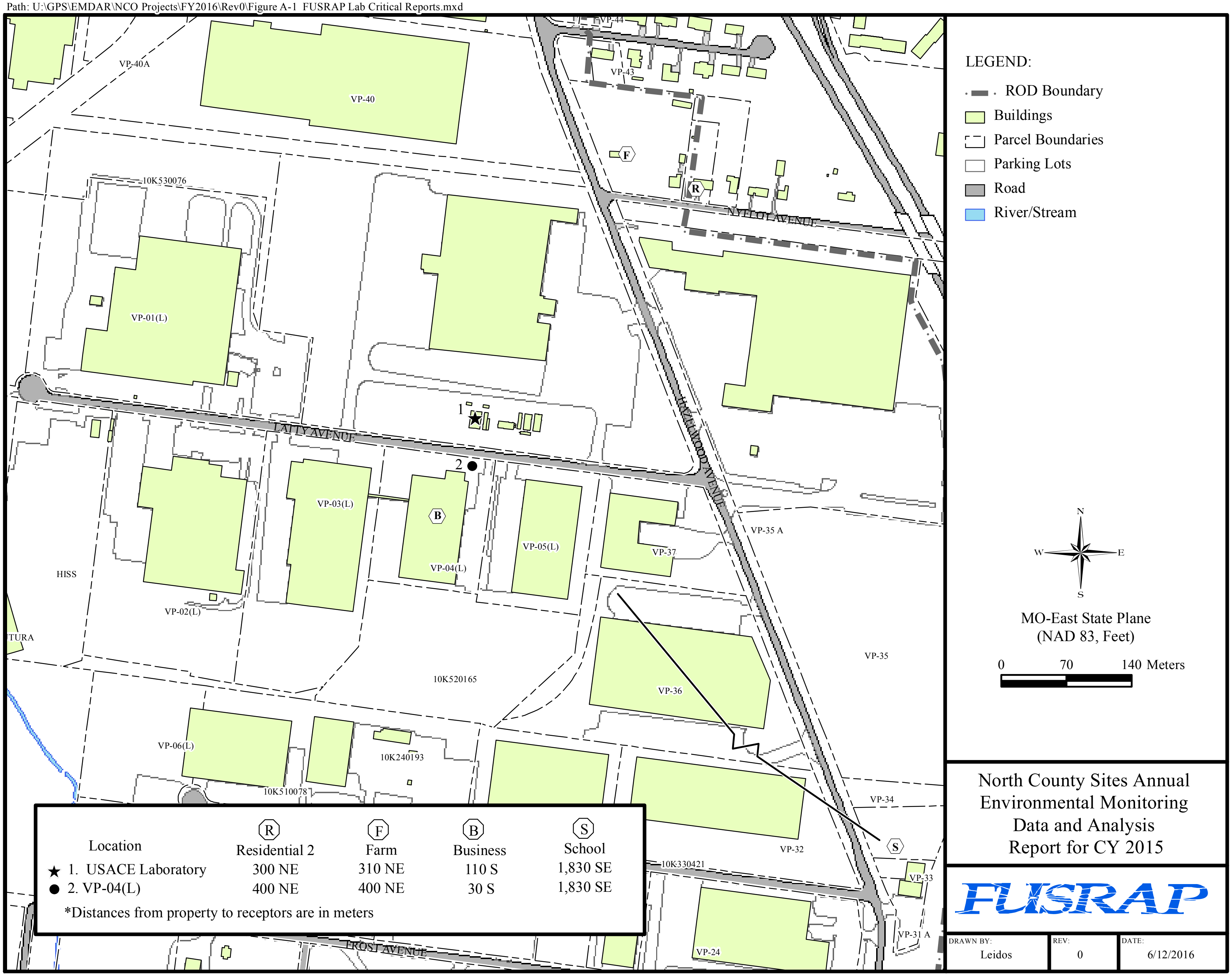


Figure A-1. Latty Avenue Properties and USACE St. Louis FUSRAP Laboratory Critical Receptors

Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure A-2 SLAPS Crticial Receptors.mxd

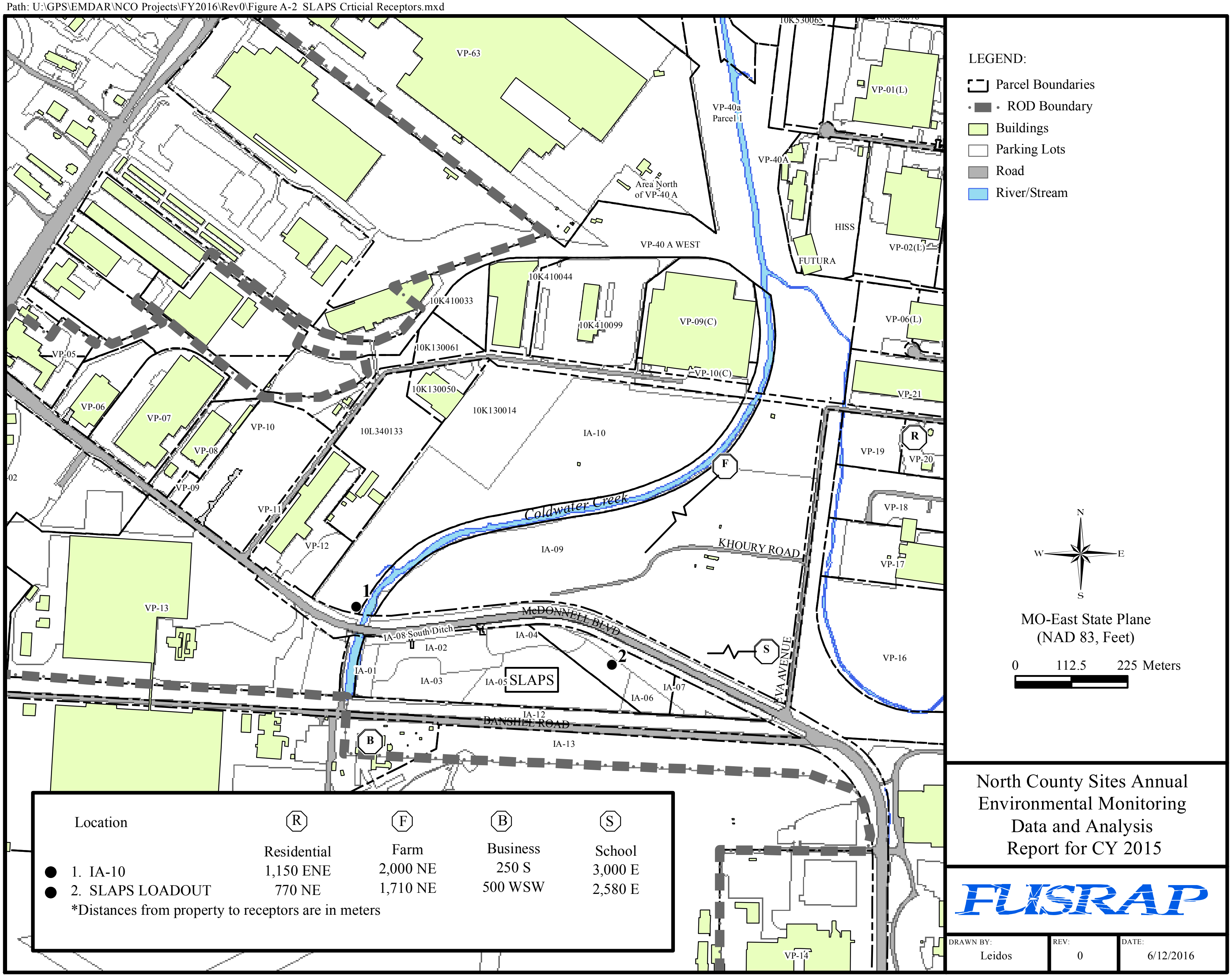
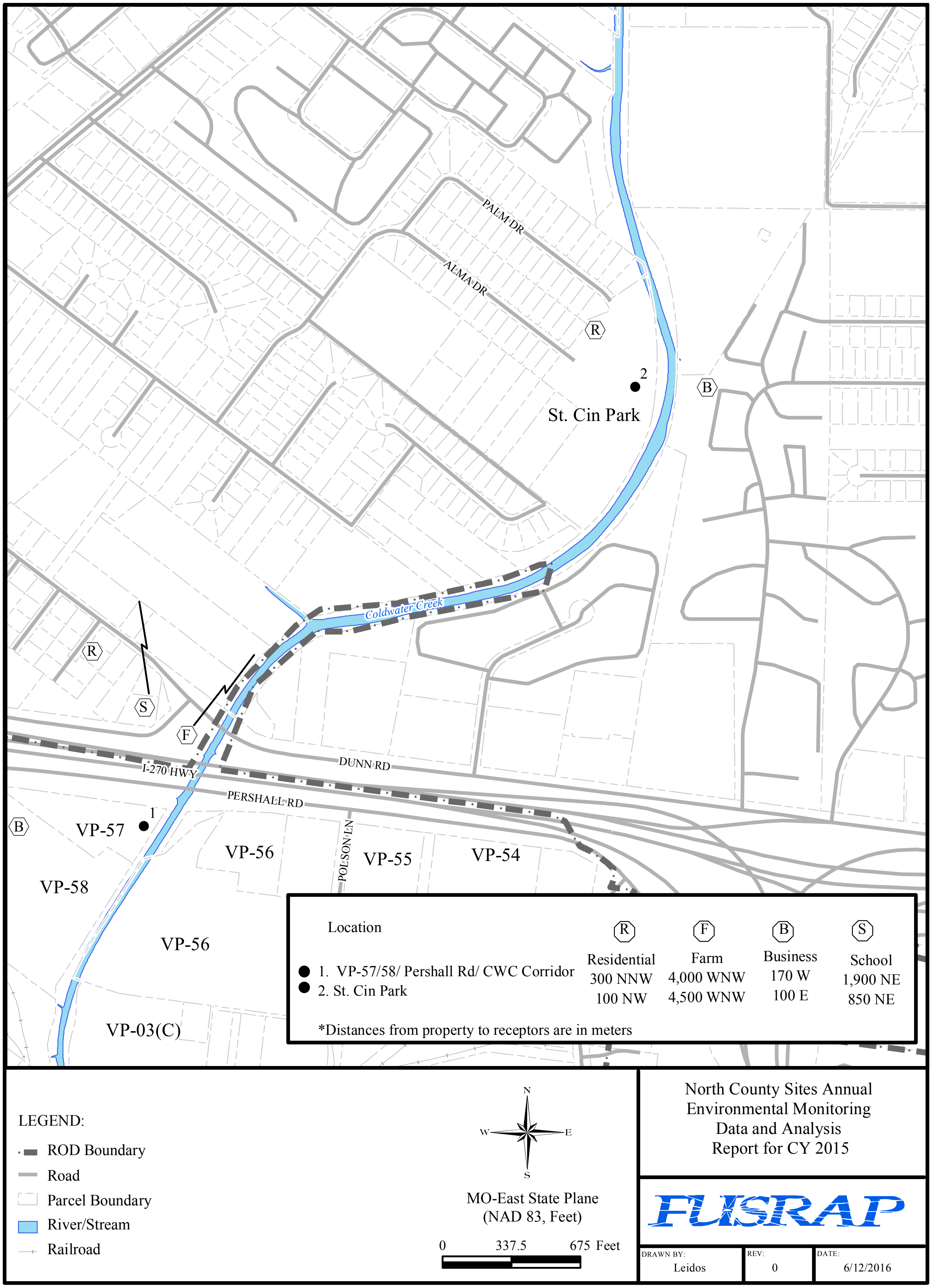


Figure A-2. SLAPS and SLAPS VPs Critical Receptors



Path: U:\GPS\EMDAR\NCO Projects\FY2016\Rev0\Figure A-3 SLAPS Critical Receptors Portrait.mxd

Figure A-3. SLAPS and SLAPS VPs Critical Receptors

ATTACHMENT A-1

CALCULATED EMISSION RATES FROM NORTH ST. LOUIS COUNTY SITE PROPERTIES

THIS PAGE INTENTIONALLY LEFT BLANK

Table A-1-1. North St. Louis County Site Properties Soil Radionuclide Concentrations for CY 2015

Property	CWC Corridor[a]	VP-57 and VP-58[a]	Pershall Road South Ditch[a]	St Cin Park[b]	IA-10[a]	SLAPS Loadout	VP-04(L)[a]
Radionuclide	**Average Concentration (pCi/g)**						
U-238	5.7	11.6	5.5	1.2	5.5	7.5	9.4
U-235	0.3	0.02	0.2	0.04	0.2	0.1	0.01
U-234	5.7	0.3	5.5	1.2	5.5	3.4	0.3
Ra-226	1.8	2.4	1.3	1.5	1.3	1.7	2.0
Ra-228	0.2	0.01	0.9	0.9	0.9	0.4	0.01
Th-232	2.0	2.4	1.5	1.0	1.5	1.9	2.0
Th-230	3.0	29.0	4.4	6.8	4.4	12.4	21.3
Th-228	2.0	0.03	2.2	1.1	2.2	1.3	0.02
Pa-231	2.3	0.2	0.3	0.1	0.3	0.7	0.2
Ac-227	1.9	0.2	0.2	0.08	0.2	0.5	0.1

[a] Radionuclides and concentrations from the FS, Appendix D, Attachment 5 (USACE 2003).
[b] Derived from the average soil radionuclide concentrations from the *Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property, and Duchesne Park* (USACE 2015).

Table A-1-2. North St. Louis County Sites Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2015

Location	Average Concentration (µCi/mL) for Location[a]	
	Gross Alpha	Gross Beta
VP-04(L)	0	1.49E-14
CWC Corridor	4.77E-15	2.85E-14
VP-57 and VP-58	1.66E-14	7.30E-14
Pershall Road South Ditch	6.91E-15	2.65E-14
St. Cin Park	5.96E-15	3.41E-14
IA-10	1.22E-14	2.78E-14
SLAPS Loadout	3.86E-15	2.73E-14
Background Concentration	3.66E-15	1.86E-14

[a] Average concentration values for the sampling period by location.

Table A-1-3. North St. Louis County Site Properties Excavation Data for CY 2015

Location	Area (m^2)	Excavation Start Date[a]	Excavation End Date[a]
VP-04(L)	5	04/30/15	05/20/15
CWC Corridor, Survey Unit (SU)-1A (d)	18	03/17/15	07/07/15
CWC Corridor, SU-1B	96	05/06/15	07/01/15
CWC Corridor, Area 3	171	03/18/15	06/30/15
CWC Corridor, Area 1 (North of SU-1B)	60	04/28/15	07/06/15
VP-57 and VP-58, SU-3A	1,395	01/01/15	01/21/15
VP-57 and VP-58, SU-3C	310	01/01/15	05/20/15
VP-57 and VP-58, SU-3D	119	01/01/15	07/01/15
VP-57 and VP-58, SU-4C	158	01/01/15	04/29/15
VP-57 and VP-58, SU-4D	789	01/01/15	02/26/15
VP-57 and VP-58, SU-4E	215	01/19/15	05/07/15
VP-57 and VP-58, SU-5A	212	01/01/15	03/30/15
VP-57 and VP-58, SU-5B	69	01/15/15	03/30/15
VP-57 and VP-58, SU-5C	143	02/05/15	03/30/15
VP-57 and VP-58, SU-5D	68	02/10/15	03/30/15
VP-57 and VP-58, SU-5E	252	01/01/15	03/30/15
Pershall Road: South Ditch, SU-1E	158	12/16/15	12/31/15
St. Cin Park, SU-1A	764	07/29/15	10/13/15
St. Cin Park, SU-1B	467	08/11/15	10/13/15
St. Cin Park, SU-1C	0.4	09/03/15	10/13/15
St. Cin Park, SU-1D	81	09/28/15	10/26/15
St. Cin Park, SU-1E	260	09/28/15	12/08/15
St. Cin Park, SU-1F	103	10/12/15	12/08/15
St. Cin Park, SU-1G	163	10/05/15	11/17/15
St. Cin Park, SU-1H	98	11/09/15	12/09/15
St. Cin Park, SU-1I	198	11/12/15	12/31/15
St. Cin Park, SU-1J	158	12/16/15	12/31/15
IA-10, SU-1C	45	03/23/15	03/30/15
SLAPS Loadout	600	01/01/15	12/31/15

[a] Open/close dates set to start or stop at the CY boundary.

Table A-1-4. North St. Louis County Site Properties Average Surface Area and Flow Rate per Location for CY 2015

Location	Total Days	Surface Area × Total Days	Average Surface Area/Year (m^2)	Diameter of Stack $D = (1.3\ A)^{1/2}$ (m)	Flow Rate $F = V\ \pi\ (D)^2/4$ (m^3/minute)
VP-04(L)					
VP-04(L)	21	105			
	Total	105	0.3	1	**7.8E+01**
CWC Corridor					
SU-1A (d)	113	2,034			
SU-1B	57	5,472			
Area 3	105	17,955			
Area 1 North of SU-1B)	70	4,200			
	Total	29,661	81	10	**2.2E+04**
VP-57 and VP-58					
SU-3A	21	29,303			
SU-3C	140	43,332			
SU-3D	182	21,658			
SU-4C	119	18,824			
SU-4D	57	44,994			
SU-4E	109	23,435			
SU-5A	89	18,863			
SU-5B	75	5,198			
SU-5C	54	7,722			
SU-5D	49	3,332			
SU-5E	89	22,428			
	Total	239,089	655	29	**1.8E+05**
Pershall Road South Ditch					
SU-1E	16	2,528			
	Total	2,528	7	3	**1.9E+03**
St. Cin Park					
SU-1A	77	58,829			
SU-1B	64	29,883			
SU-1C	41	17			
SU-1D	29	2,352			
SU-1E	72	18,720			
SU-1F	58	5,965			
SU-1G	44	7,172			
SU-1H	31	3,038			
SU-1I	50	9,900			
SU-1J	16	2,528			
	Total	22,638	62	9	**1.7E+04**
IA-10					
SU-1C	8	360			
	Total	360	1	1	**2.7E+02**
SLAPS Loadout					
SLAPS Loadout	365	219,000			
	Total	219,000	600	28	**1.6E+05**

Table A-1-5. Latty Avenue Properties Airborne Radioactive Particulate Emissions Based on Site Perimeter Air Samples for CY 2015[a]

Property	VP-04(L)		
Radionuclide	**Activity Fraction[a]**	**Emission Concentration ($\mu Ci/cm^3$)[b]**	**Release Rate (Ci/year)[c]**
U-238	0.17	0	0
U-235	0.0002	0	0
U-234	0.005	0	0
Ra-226	0.03	0	0
Th-232	0.0001	0	0
Th-230	0.03	0	0
Th-228	0.38	0	0
Ra-224[d]	0.38	0	0
Th-234[d]	0.50	7.4E-15	3.0E-07
Pa-234m[d]	0.50	7.4E-15	3.0E-07
Th-231[d]	0.001	8.8E-18	3.6E-10
Ra-228	0.0004	6.1E-18	2.5E-10
Ac-228[d]	0.0004	6.1E-18	2.5E-10
Pa-231	0.005	7.4E-17	3.0E-09

[a] Derived from the average soil radionuclide concentrations from the FS, Table D-5 (USACE 2003). Average soil radionuclide concentrations are presented in Table A-1-1. Activity fractions have been rounded; non-rounded values were used in calculations.
[b] Emission concentration is equal to the activity fraction * the gross alpha or gross beta airborne particulate concentrations listed in Table A-1-2.
[c] Release rate based on 365-day period at measured flow rate (Table A-1-4) for each site as determined from the average annual wind speed (4.446 m per second) and calculated site area (Table A-1-4). (Note: 1 milliliter [mL] = 1 cm^3).
[d] Note: When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent.

Table A-1-6. SLAPS and SLAPS VPs Airborne Radioactive Particulate Emissions Based on Site Perimeter Air Samples for CY 2015[a]

Property	CWC Corridor			VP-57 and VP-58			Pershall Road South Ditch			St. Cin Park			IA-10			SLAPS Loadout		
Radionuclide	Activity Fraction[a]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[e]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm^3)[b]	Release Rate (Ci/year)[c]
U-238	0.21	1.0E-15	1.2E-05	0.25	1.7E-15	1.4E-04	0.23	3.9E-15	3.9E-06	0.06	3.6E-16	3.2E-06	0.23	2.9E-15	1.5E-09	0.24	9.4E-16	7.9E-05
U-235	0.01	4.7E-17	5.5E-07	0.00	2.3E-18	1.8E-07	0.008	1.3E-16	1.3E-07	0.00	1.2E-17	1.1E-07	0.01	9.4E-17	5.0E-11	0.004	1.6E-17	1.4E-06
U-234	0.21	1.0E-15	1.2E-05	0.01	5.2E-17	4.1E-06	0.23	3.9E-15	3.9E-06	0.06	3.6E-16	3.2E-06	0.23	2.9E-15	1.5E-09	0.11	4.3E-16	3.6E-05
Ra-226	0.07	3.2E-16	3.7E-06	0.05	3.6E-16	2.8E-05	0.06	9.2E-16	9.2E-07	0.08	4.6E-16	4.1E-06	0.06	6.8E-16	3.5E-10	0.06	2.2E-16	1.8E-05
Th-232	0.07	3.5E-16	4.1E-06	0.05	3.6E-16	2.8E-05	0.07	1.1E-15	1.1E-06	0.05	2.8E-16	2.5E-06	0.07	8.0E-16	4.2E-10	0.06	2.3E-16	2.0E-05
Th-230	0.11	5.3E-16	6.2E-06	0.63	4.3E-15	3.4E-04	0.19	3.1E-15	3.1E-06	0.05	3.1E-16	2.8E-06	0.19	2.3E-15	1.2E-09	0.40	1.5E-15	1.3E-04
Th-228	0.07	3.5E-16	4.1E-06	0.00	4.3E-18	3.4E-07	0.10	1.6E-15	1.6E-06	0.35	2.1E-15	1.9E-05	0.10	1.2E-15	6.1E-10	0.04	1.6E-16	1.4E-05
Ra-224[d]	0.07	3.5E-16	4.1E-06	0.00	4.3E-18	3.4E-07	0.10	1.6E-15	1.6E-06	0.35	2.1E-15	1.9E-05	0.10	1.2E-15	6.1E-10	0.04	1.6E-16	1.4E-05
Th-234[d]	0.48	1.4E-14	1.6E-04	0.50	1.3E-14	1.0E-03	0.42	3.1E-14	3.1E-05	0.28	9.5E-15	8.5E-05	0.42	1.2E-14	6.2E-09	0.47	1.3E-14	1.1E-03
Pa-234m[d]	0.48	1.4E-14	1.6E-04	0.50	1.3E-14	1.0E-03	0.42	3.1E-14	3.1E-05	0.28	9.5E-15	8.5E-05	0.42	1.2E-14	6.2E-09	0.47	1.3E-14	1.1E-03
Th-231[d]	0.02	6.2E-16	7.2E-06	0.00	1.7E-17	1.4E-06	0.01	1.0E-15	1.0E-06	0.01	3.2E-16	2.9E-06	0.01	3.9E-16	2.0E-10	0.01	2.2E-16	1.9E-05
Ra-228	0.01	3.8E-16	4.3E-06	0.00	1.2E-17	9.4E-07	0.07	5.3E-15	5.3E-06	0.22	7.4E-15	6.6E-05	0.07	2.0E-15	1.1E-09	0.03	7.0E-16	5.9E-05
Ac-228[d]	0.01	3.8E-16	4.3E-06	0.00	1.2E-17	9.4E-07	0.07	5.3E-15	5.3E-06	0.22	7.4E-15	6.6E-05	0.07	2.0E-15	1.1E-09	0.03	7.0E-16	5.9E-05
Pa-231	0.09	2.5E-15	2.8E-05	0.01	3.5E-17	2.7E-06	0.01	2.2E-16	2.2E-07	0	0	0	0.01	3.6E-16	1.9E-10	0.02	5.8E-16	4.9E-05
Ac-227	0.07	2.1E-15	2.4E-05	0.00	2.9E-17	2.3E-06	0.01	1.6E-16	1.5E-07	0	0	0	0.01	2.6E-16	1.4E-10	0.02	4.8E-16	4.0E-05

[a] Derived from the average soil radionuclide concentrations from the FS, Table D-5 (USACE 2003). Average soil radionuclide concentrations are presented in Table A-1-1. Activity fractions have been rounded; non-rounded values were used in calculations.

[b] Emission concentration is equal to the activity fraction * the gross alpha or gross beta airborne particulate concentrations listed in Table A-1-2.

[c] Release rate based on 365-day period at measured flow rate (Table A-1-4) for each site as determined from the average annual wind speed (4.446 m per second) and calculated site area (Table A-1-4). (Note: 1 mL = 1 cm^3).

[d] Note: When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent.

[e] Derived from the average soil radionuclide concentrations from the *Pre-Design Investigation Summary Report for St. Cin Park, the Archdiocese of St. Louis Property, and Duchesne Park* (USACE 2015).

Table A-1-7. USACE St. Louis FUSRAP Laboratory Analyses for CY 2015[a]

Site	Type	Gamma Spectroscopy	Isotopic Ra[b]	Isotopic Th[b]	Isotopic U[b]	Total Drying and Grinding[c]	Total Separations[d]
HISS	Soil	0	0	0	0	0	0
HISS	Water	0	6	6	6	0	18
Latty Avenue Properties	Soil	91	198	0	0	91	198
Latty Avenue Properties	Water	0	0	0	0	0	0
IAAAP	Soil	158	0	0	196	158	196
IAAAP	Water	0	0	0	32	0	32
SLAPS	Soil	0	0	0	0	0	0
SLAPS	Water	1	8	8	7	1	23
SLAPS VPs	Soil	1,336	1,510	0	1	1,336	1,511
SLAPS VPs	Water	29	59	63	7	29	129
CWC	Sediment (soil)	3,690	4,188	0	0	3,690	4,188
CWC	Water	0	17	17	17	0	51
SLDS	Soil	247	245	0	0	247	245
SLDS	Water	0	77	88	7	0	172
		HISS and Latty Avenue Properties			**Total**	91	216
		IAAAP			**Total**	158	228
		SLAPS, SLAPS VPs, and CWC			**Total**	5,026	5,902
		SLDS			**Total**	247	417

[a] Data provided by the USACE St. Louis FUSRAP laboratory for CY 2015.
[b] Assumes isotopic Ra, Th, and U occur in separate and distinct processes.
[c] Assumes all soil samples went through a drying and grinding process.
[d] Assumes all soil and water samples for isotopic Ra, Th, and U went through a separations process.
Note: CWC samples use SLAPS characterization data to determine release rates.

Table A-1-8. SLDS Property Laboratory Samples for CY 2015

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate[c] (Ci/year)
U-238[a]	140	247	417	3.3E-07
U-235[a]	7	247	417	1.6E-08
U-234[a]	140	247	417	3.3E-07
Ra-226[a]	27	247	417	6.3E-08
Th-232[a]	7	247	417	1.6E-08
Th-230[a]	52	247	417	1.2E-07
Th-228[a]	7	247	417	1.6E-08
Ra-224[b]	7	247	417	1.6E-08
Th-234[b]	140	247	417	3.3E-07
Pa-234m[b]	140	247	417	3.3E-07
Th-231[b]	7	247	417	1.6E-08
Ra-228[b]	7	247	417	1.6E-08
Ac-228[b]	7	247	417	1.6E-08
Pa-231[b]	7	247	417	1.6E-08
Ac-227[b]	7	247	417	1.6E-08

[a] Average soil concentration from Table A-1-1 of the *St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2015*, Appendix A, Attachment A-1 (USACE 2016).
[b] Note: When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent.
[c] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).

Table A-1-9. SLAPS and SLAPS VPs Laboratory Samples for CY 2015

Radionuclide	Average (pCi/g)	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate[c] (Ci/year)
U-238[a]	8	5,026	5,902	2.6E-07
U-235[a]	0.1	5,026	5,902	4.5E-09
U-234[a]	3	5,026	5,902	1.2E-07
Ra-226[a]	2	5,026	5,902	6.0E-08
Th-232[a]	2	5,026	5,902	6.5E-08
Th-230[a]	12	5,026	5,902	4.3E-07
Th-228[a]	1	5,026	5,902	4.5E-08
Ra-224[b]	1	5,026	5,902	4.5E-08
Th-234[b]	8	5,026	5,902	2.6E-07
Pa-234m[b]	8	5,026	5,902	2.6E-07
Th-231[b]	0.1	5,026	5,902	4.5E-09
Ra-228[b]	0.4	5,026	5,902	1.4E-08
Ac-228[b]	0.4	5,026	5,902	1.4E-08
Pa-231[a]	0.7	5,026	5,902	2.3E-08
Ac-227[a]	0.5	5,026	5,902	1.9E-08

[a] Average soil concentration from Table A-1-1.
[b] Note: When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent.
[c] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).

Table A-1-10. Latty Avenue Property Laboratory Samples for CY 2015

Radionuclide	Average (pCi/g)[a]	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/year)
U-238	9	91	216	1.1E-08
U-235	0.01	91	216	1.3E-11
U-234	0.3	91	216	3.0E-10
Ra-226	2	91	216	2.3E-09
Th-232	0.01	91	216	9.0E-12
Th-230	2	91	216	2.3E-09
Th-228	21	91	216	2.5E-08
Ra-224	21	91	216	2.5E-08
Th-234	9	91	216	1.1E-08
Pa-234m	9	91	216	1.1E-08
Th-231	0.01	91	216	1.3E-11
Ra-228	0.01	91	216	9.0E-12
Ac-228	0.01	91	216	9.0E-12
Pa-231	0.3	91	216	3.3E-10
Ac-227	0.2	91	216	2.4E-10

[a] Average soil concentration from Table A-1-1.
[b] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).

Table A-1-11. Iowa Army Ammunition Plant Laboratory Samples for CY 2015

Radionuclide	Average (pCi/g)[a]	No. Samples (Drying and Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/year)
U-238	623	158	228	8.1E-07
U-235	6	158	228	7.3E-09
U-234	211	158	228	2.7E-07
Ra-226	0	158	228	0.0E+00
Th-232	0	158	228	0.0E+00
Th-230	0	158	228	0.0E+00
Th-228	0	158	228	0.0E+00
Ra-224	0	158	228	0.0E+00
Th-234	0	158	228	0.0E+00
Pa-234m	0	158	228	0.0E+00
Th-231	0	158	228	0.0E+00
Ra-228	0	158	228	0.0E+00
Ac-228	0	158	228	0.0E+00
Pa-231	0	158	228	0.0E+00
Ac-227	0	158	228	0.0E+00

[a] Average soil concentration from Table 2-3 of *FUSRAP Feasibility Study for the Iowa Army Ammunition Plant* (USACE 2011).
[b] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding]+ 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).

Table A-1-12. Total Laboratory Airborne Radioactive Particulate Emission Rate for CY 2015

Radionuclide	Emission Rate (Ci/year)				
	SLDS	SLAPS and SLAPS VPs	Latty Avenue Properties	IAAAP	Total Across Laboratory[a]
U-238	3.3E-07	2.6E-07	1.1E-08	8.1E-07	1.4E-06
U-235	1.6E-08	4.5E-09	1.3E-11	7.3E-09	2.8E-08
U-234	3.3E-07	1.2E-07	3.0E-10	2.7E-07	7.2E-07
Ra-226	6.3E-08	6.0E-08	2.3E-09	0.0E+00	1.3E-07
Th-232	1.6E-08	6.5E-08	9.0E-12	0.0E+00	8.1E-08
Th-230	1.2E-07	4.3E-07	2.3E-09	0.0E+00	5.5E-07
Th-228	1.6E-08	4.5E-08	2.5E-08	0.0E+00	8.6E-08
Ra-224	1.6E-08	4.5E-08	2.5E-08	0.0E+00	8.6E-08
Th-234	3.3E-07	2.6E-07	1.1E-08	0.0E+00	6.0E-07
Pa-234m	3.3E-07	2.6E-07	1.1E-08	0.0E+00	6.0E-07
Th-231	1.6E-08	4.5E-09	1.3E-11	0.0E+00	2.1E-08
Ra-228	1.6E-08	1.4E-08	9.0E-12	0.0E+00	3.1E-08
Ac-228	1.6E-08	1.4E-08	9.0E-12	0.0E+00	3.1E-08
Pa-231	1.6E-08	2.3E-08	3.3E-10	0.0E+00	3.9E-08
Ac-227	1.6E-08	1.9E-08	2.4E-10	0.0E+00	3.5E-08

[a] Total emission rate is the sum of the SLDS, SLAPS and SLAPS VPs, Latty Avenue Properties, and IAAAP emission rates.

THIS PAGE INTENTIONALLY LEFT BLANK

ATTACHMENT A-2

CAP88-PC RUNS FOR NORTH ST. LOUIS COUNTY SITE PROPERTIES

THIS PAGE INTENTIONALLY LEFT BLANK

CAP88-PC RUNS FOR THE LATTY AVENUE PROPERTIES

THIS PAGE INTENTIONALLY LEFT BLANK

CAP88 OUTPUT RESULTS

VP-04(L)

```
                    C A P 8 8 - P C

                      Version 4.0

          Clean Air Act Assessment Package - 1988

        D O S E   A N D   R I S K   S U M M A R I E S

              Non-Radon Individual Assessment
                   Tue Mar 15 16:05:20 2016


      Facility:  VP-04L
       Address:  Latty Ave
          City:  Hazelwood
         State:  MO          Zip:  63042


 Source Category:  Area
     Source Type:  Area
   Emission Year:  2015
  DOSE Age Group:  Adult

        Comments:  Air
                 Air


    Dataset Name:  2015 VP-4L.
    Dataset Date:  Mar 15, 2016 04:05 PM
       Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 16:05:20 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	3.93E-05
UB_Wall	3.97E-05
Bone_Sur	1.19E-02
Brain	3.95E-05
Breasts	4.06E-05
St_Wall	3.98E-05
SI_Wall	3.98E-05
ULI_Wall	4.72E-05
LLI_Wall	6.13E-05
Kidneys	1.52E-04
Liver	8.11E-04
Muscle	4.06E-05
Ovaries	1.37E-04
Pancreas	3.91E-05
R_Marrow	4.86E-04
Skin	2.04E-04
Spleen	3.98E-05
Testes	1.39E-04
Thymus	3.96E-05
Thyroid	4.01E-05
GB_Wall	3.92E-05
Ht_Wall	3.95E-05
Uterus	3.93E-05
ET_Reg	8.22E-05
Lung_66	2.22E-04
Effectiv	2.95E-04

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	2.77E-06
INHALATION	2.85E-04
AIR IMMERSION	2.10E-09
GROUND SURFACE	7.94E-06
INTERNAL	2.87E-04
EXTERNAL	7.94E-06
TOTAL	2.95E-04

Tue Mar 15 16:05:20 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
Th-234	1.74E-06
Pa-234m	3.62E-07
Pa-234	7.11E-09
U-234	2.28E-13
Th-230	7.93E-17
Ra-226	9.65E-18
Rn-222	5.37E-19
Po-218	9.60E-24
Pb-214	3.51E-16
At-218	3.61E-23
Bi-214	2.05E-15
Rn-218	2.09E-25
Po-214	1.14E-19
Tl-210	8.01E-19
Pb-210	1.34E-18
Bi-210	2.17E-17
Hg-206	1.75E-24
Po-210	5.57E-21
Tl-206	5.07E-23
Th-231	6.09E-11
Pa-231	1.81E-04
Ac-227	1.05E-04
Th-227	1.49E-06
Fr-223	1.40E-08
Ra-223	1.66E-06
Rn-219	7.19E-07
At-219	0.00E+00
Bi-215	3.23E-12
Po-215	2.20E-09
Pb-211	1.41E-06
Bi-211	5.82E-07
Tl-207	7.32E-07
Po-211	2.80E-10
Ra-228	6.38E-07
Ac-228	1.70E-07
Th-228	4.12E-10
Ra-224	1.83E-09
Rn-220	1.14E-10
Po-216	2.76E-12
Pb-212	2.51E-08
Bi-212	2.93E-08
Po-212	0.00E+00
Tl-208	2.02E-07
TOTAL	2.95E-04

Tue Mar 15 16:05:20 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.09E-13
INHALATION	2.12E-11
AIR IMMERSION	8.49E-16
GROUND SURFACE	3.59E-12
INTERNAL	2.13E-11
EXTERNAL	3.59E-12
TOTAL	2.49E-11

Tue Mar 15 16:05:20 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
Th-234	5.67E-13
Pa-234m	6.37E-14
Pa-234	3.86E-15
U-234	7.87E-20
Th-230	3.37E-23
Ra-226	5.25E-24
Rn-222	2.93E-25
Po-218	4.29E-30
Pb-214	1.88E-22
At-218	4.45E-30
Bi-214	1.08E-21
Rn-218	1.14E-31
Po-214	6.24E-26
Tl-210	4.28E-25
Pb-210	6.01E-25
Bi-210	2.40E-24
Hg-206	7.77E-31
Po-210	3.06E-27
Tl-206	5.70E-30
Th-231	2.01E-17
Pa-231	7.81E-12
Ac-227	1.31E-11
Th-227	8.04E-13
Fr-223	5.21E-15
Ra-223	8.97E-13
Rn-219	3.94E-13
At-219	0.00E+00
Bi-215	1.44E-18
Po-215	1.20E-15
Pb-211	5.05E-13
Bi-211	3.18E-13
Tl-207	9.40E-14
Po-211	1.53E-16
Ra-228	9.22E-14
Ac-228	9.00E-14
Th-228	2.06E-16
Ra-224	9.99E-16
Rn-220	6.26E-17
Po-216	1.52E-18
Pb-212	1.37E-14
Bi-212	1.13E-14
Po-212	0.00E+00
Tl-208	1.10E-13
TOTAL	2.49E-11

Tue Mar 15 16:05:20 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	30	400	1830	
N	3.0E-04	6.1E-06	2.1E-06	
NNW	1.6E-04	4.0E-06	2.0E-06	
NW	1.6E-04	4.4E-06	2.0E-06	
WNW	1.9E-04	5.0E-06	2.1E-06	
W	1.5E-04	4.2E-06	2.0E-06	
WSW	7.8E-05	3.0E-06	1.9E-06	
SW	9.7E-05	3.5E-06	2.0E-06	
SSW	1.2E-04	3.9E-06	2.0E-06	
S	1.3E-04	3.6E-06	2.0E-06	Business
SSE	9.3E-05	3.1E-06	1.9E-06	
SE	1.3E-04	3.6E-06	2.0E-06	School
ESE	1.9E-04	4.9E-06	2.1E-06	
E	2.3E-04	5.9E-06	2.1E-06	
ENE	1.8E-04	5.2E-06	2.1E-06	
NE	1.3E-04	3.9E-06	2.0E-06	Resident, Farm
NNE	1.2E-04	3.5E-06	2.0E-06	

Tue Mar 15 16:05:20 2016

SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)		
Direction	30	400	1830
N	2.5E-11	4.4E-13	9.7E-14
NNW	1.4E-11	2.6E-13	8.6E-14
NW	1.4E-11	2.9E-13	8.8E-14
WNW	1.6E-11	3.4E-13	9.1E-14
W	1.3E-11	2.7E-13	8.7E-14
WSW	6.5E-12	1.7E-13	8.0E-14
SW	8.2E-12	2.1E-13	8.2E-14
SSW	9.8E-12	2.4E-13	8.4E-14
S	1.1E-11	2.2E-13	8.3E-14
SSE	7.8E-12	1.8E-13	8.1E-14
SSE	1.1E-11	2.2E-13	8.4E-14
ESE	1.6E-11	3.3E-13	9.0E-14
E	1.9E-11	4.1E-13	9.5E-14
ENE	1.5E-11	3.5E-13	9.1E-14
NE	1.1E-11	2.4E-13	8.5E-14
NNE	9.8E-12	2.2E-13	8.3E-14

THIS PAGE INTENTIONALLY LEFT BLANK

CAP88-PC RUNS FOR THE SLAPS AND SLAPS VICINITY PROPERTIES

THIS PAGE INTENTIONALLY LEFT BLANK

CAP88 OUTPUT RESULTS

Coldwater Creek Corridor

C A P 8 8 - P C

Version 4.0

Clean Air Act Assessment Package - 1988

D O S E   A N D   R I S K   S U M M A R I E S

Non-Radon Individual Assessment
Tue Mar 15 13:45:12 2016

```
     Facility:  2015 Coldwater Creek Corridor
      Address:  Near VP-57/VP-58
         City:  Saint Louis
        State:  MO          Zip:  63042

 Source Category:  Area
     Source Type:  Area
   Emission Year:  2015
  DOSE Age Group:  Adult

        Comments:  Air
                 Air

    Dataset Name:  2015 CWC Corrido
    Dataset Date:  Mar 15, 2016 01:44 PM
       Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 13:45:12 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	1.27E-02
UB_Wall	1.40E-02
Bone_Sur	4.55E-01
Brain	1.33E-02
Breasts	1.45E-02
St_Wall	1.35E-02
SI_Wall	1.34E-02
ULI_Wall	1.40E-02
LLI_Wall	1.53E-02
Kidneys	2.15E-02
Liver	2.85E-02
Muscle	1.49E-02
Ovaries	1.52E-02
Pancreas	1.28E-02
R_Marrow	4.81E-02
Skin	9.50E-02
Spleen	1.35E-02
Testes	1.70E-02
Thymus	1.34E-02
Thyroid	1.38E-02
GB_Wall	1.28E-02
Ht_Wall	1.33E-02
Uterus	1.32E-02
ET_Reg	1.07E-01
Lung_66	3.33E-01
Effectiv	6.30E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	5.10E-03
INHALATION	4.49E-02
AIR IMMERSION	7.79E-07
GROUND SURFACE	1.30E-02
INTERNAL	5.00E-02
EXTERNAL	1.30E-02
TOTAL	6.30E-02

Tue Mar 15 13:45:12 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	3.44E-04
Th-234	4.50E-05
Pa-234m	1.35E-04
Pa-234	2.65E-06
U-234	4.15E-04
Th-230	1.76E-03
Ra-226	7.37E-04
Rn-222	5.40E-07
Po-218	9.64E-12
Pb-214	3.52E-04
At-218	3.63E-11
Bi-214	2.06E-03
Rn-218	2.10E-13
Po-214	1.14E-07
Tl-210	8.04E-07
Pb-210	1.74E-06
Bi-210	2.81E-05
Hg-206	2.26E-12
Po-210	7.27E-09
Tl-206	6.55E-11
U-235	1.85E-05
Th-231	6.29E-07
Pa-231	9.89E-10
Ac-227	3.32E-12
Th-227	1.58E-09
Fr-223	1.49E-11
Ra-223	1.77E-09
Rn-219	7.67E-10
At-219	0.00E+00
Bi-215	3.45E-15
Po-215	2.34E-12
Pb-211	1.51E-09
Bi-211	6.20E-10
Tl-207	7.80E-10
Po-211	2.99E-13
Th-232	2.88E-03
Ra-228	1.24E-02
Ac-228	3.90E-03
Th-228	2.95E-02
Ra-224	1.93E-03
Rn-220	2.87E-06
Po-216	6.91E-08
Pb-212	6.29E-04
Bi-212	7.34E-04
Po-212	0.00E+00
Tl-208	5.07E-03
TOTAL	6.30E-02

Tue Mar 15 13:45:12 2016

SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	5.34E-10
INHALATION	1.42E-08
AIR IMMERSION	4.20E-13
GROUND SURFACE	6.79E-09
INTERNAL	1.47E-08
EXTERNAL	6.79E-09
TOTAL	2.15E-08

Tue Mar 15 13:45:12 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.15E-10
Th-234	1.64E-11
Pa-234m	2.36E-11
Pa-234	1.44E-12
U-234	1.43E-10
Th-230	3.89E-10
Ra-226	3.96E-10
Rn-222	2.94E-13
Po-218	4.31E-18
Pb-214	1.89E-10
At-218	4.47E-18
Bi-214	1.09E-09
Rn-218	1.15E-19
Po-214	6.26E-14
Tl-210	4.29E-13
Pb-210	7.77E-13
Bi-210	3.11E-12
Hg-206	1.00E-18
Po-210	3.99E-15
Tl-206	7.36E-18
U-235	7.39E-12
Th-231	2.83E-13
Pa-231	5.16E-16
Ac-227	1.24E-18
Th-227	8.58E-16
Fr-223	5.56E-18
Ra-223	9.56E-16
Rn-219	4.20E-16
At-219	0.00E+00
Bi-215	1.54E-21
Po-215	1.28E-18
Pb-211	5.38E-16
Bi-211	3.39E-16
Tl-207	1.00E-16
Po-211	1.64E-19
Th-232	6.31E-10
Ra-228	1.76E-09
Ac-228	2.06E-09
Th-228	1.06E-08
Ra-224	7.09E-10
Rn-220	1.57E-12
Po-216	3.80E-14
Pb-212	3.42E-10
Bi-212	2.83E-10
Po-212	0.00E+00
Tl-208	2.76E-09
TOTAL	2.15E-08

Tue Mar 15 13:45:12 2016

SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 170	300	1900	4000
N	6.3E-02	2.5E-02	4.6E-03	4.1E-03
NNW	3.4E-02	1.4E-02	4.3E-03	4.0E-03
NW	4.0E-02	1.6E-02	4.3E-03	4.0E-03
WNW	4.8E-02	1.9E-02	4.4E-03	4.0E-03
W	3.7E-02	1.5E-02	4.3E-03	4.0E-03
WSW	2.0E-02	9.4E-03	4.1E-03	3.9E-03
SW	2.6E-02	1.2E-02	4.1E-03	3.9E-03
SSW	3.2E-02	1.4E-02	4.2E-03	4.0E-03
S	2.8E-02	1.2E-02	4.2E-03	4.0E-03
SSE	2.1E-02	9.8E-03	4.1E-03	3.9E-03
SSE	2.8E-02	1.2E-02	4.2E-03	4.0E-03
ESE	4.6E-02	1.9E-02	4.4E-03	4.0E-03
E	6.0E-02	2.3E-02	4.5E-03	4.1E-03
ENE	5.0E-02	2.0E-02	4.4E-03	4.0E-03
NE	3.2E-02	1.4E-02	4.2E-03	4.0E-03
NNE	2.7E-02	1.2E-02	4.2E-03	4.0E-03

Tue Mar 15 13:45:12 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	170	300	1900	4000
N	2.2E-08	7.8E-09	6.8E-10	4.9E-10
NNW	1.1E-08	4.2E-09	5.4E-10	4.4E-10
NW	1.3E-08	4.9E-09	5.6E-10	4.5E-10
WNW	1.6E-08	5.9E-09	6.0E-10	4.6E-10
W	1.2E-08	4.5E-09	5.5E-10	4.5E-10
WSW	6.1E-09	2.4E-09	4.7E-10	4.2E-10
SW	8.5E-09	3.2E-09	5.0E-10	4.3E-10
SSW	1.0E-08	3.9E-09	5.2E-10	4.4E-10
S	9.0E-09	3.4E-09	5.1E-10	4.4E-10
SSE	6.4E-09	2.5E-09	4.8E-10	4.3E-10
SSE	9.2E-09	3.5E-09	5.2E-10	4.4E-10
ESE	1.6E-08	5.7E-09	5.9E-10	4.6E-10
E	2.0E-08	7.4E-09	6.5E-10	4.7E-10
ENE	1.7E-08	6.2E-09	6.0E-10	4.6E-10
NE	1.0E-08	3.9E-09	5.3E-10	4.4E-10
NNE	8.8E-09	3.3E-09	5.1E-10	4.3E-10

CAP88 OUTPUT RESULTS

VP-57/VP-58

```
                         C A P 8 8 - P C

                           Version 4.0

          D O S E   A N D   R I S K   S U M M A R I E S

                 Non-Radon Individual Assessment
                      Tue Mar 15 14:02:00 2016


        Facility:  2015 VP-57/VP-58
         Address:  9044 Pershall Rd
            City:  Hazelwood
           State:  MO          Zip:  63042


   Source Category:  Area
       Source Type:  Area
     Emission Year:  2015
    DOSE Age Group:  Adult

          Comments:  Air
                   Air


      Dataset Name:  2015 VP-57 VP-58
      Dataset Date:  Mar 15, 2016 02:01 PM
         Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 14:02:00 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	4.25E-02
UB_Wall	4.64E-02
Bone_Sur	6.07E+00
Brain	4.45E-02
Breasts	4.83E-02
St_Wall	4.50E-02
SI_Wall	4.47E-02
ULI_Wall	4.67E-02
LLI_Wall	5.10E-02
Kidneys	1.37E-01
Liver	1.66E-01
Muscle	4.96E-02
Ovaries	8.64E-02
Pancreas	4.28E-02
R_Marrow	2.65E-01
Skin	7.34E-01
Spleen	4.52E-02
Testes	9.31E-02
Thymus	4.47E-02
Thyroid	4.63E-02
GB_Wall	4.30E-02
Ht_Wall	4.45E-02
Uterus	4.41E-02
ET_Reg	5.72E-01
Lung_66	1.50E+00
Effectiv	3.30E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	7.43E-03
INHALATION	2.79E-01
AIR IMMERSION	5.00E-07
GROUND SURFACE	4.41E-02
INTERNAL	2.86E-01
EXTERNAL	4.41E-02
TOTAL	3.30E-01

Tue Mar 15 14:02:00 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	1.50E-02
Th-234	8.27E-04
Pa-234m	5.65E-03
Pa-234	1.11E-04
U-234	5.32E-04
Th-230	2.13E-01
Ra-226	5.04E-03
Rn-222	4.31E-06
Po-218	7.70E-11
Pb-214	2.81E-03
At-218	2.90E-10
Bi-214	1.64E-02
Rn-218	1.68E-12
Po-214	9.11E-07
Tl-210	6.42E-06
Pb-210	1.36E-05
Bi-210	2.20E-04
Hg-206	1.78E-11
Po-210	5.70E-08
Tl-206	5.14E-10
U-235	3.03E-05
Th-231	9.89E-07
Pa-231	1.16E-02
Ac-227	7.45E-03
Th-227	1.02E-04
Fr-223	9.57E-07
Ra-223	1.14E-04
Rn-219	4.92E-05
At-219	0.00E+00
Bi-215	2.21E-10
Po-215	1.50E-07
Pb-211	9.66E-05
Bi-211	3.98E-05
Tl-207	5.00E-05
Po-211	1.91E-08
Th-232	3.23E-02
Ra-228	1.82E-04
Ac-228	7.02E-03
Th-228	5.45E-04
Ra-224	1.09E-04
Rn-220	4.72E-06
Po-216	1.14E-07
Pb-212	1.04E-03
Bi-212	1.21E-03
Po-212	0.00E+00
Tl-208	8.36E-03
TOTAL	3.30E-01

Tue Mar 15 14:02:00 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.04E-09
INHALATION	6.18E-08
AIR IMMERSION	2.02E-13
GROUND SURFACE	2.12E-08
INTERNAL	6.39E-08
EXTERNAL	2.12E-08
TOTAL	8.50E-08

Tue Mar 15 14:02:00 2016

SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	5.01E-09
Th-234	3.47E-10
Pa-234m	9.89E-10
Pa-234	6.05E-11
U-234	1.83E-10
Th-230	4.72E-08
Ra-226	2.71E-09
Rn-222	2.35E-12
Po-218	3.44E-17
Pb-214	1.51E-09
At-218	3.57E-17
Bi-214	8.69E-09
Rn-218	9.17E-19
Po-214	5.00E-13
Tl-210	3.43E-12
Pb-210	6.10E-12
Bi-210	2.44E-11
Hg-206	7.88E-18
Po-210	3.13E-14
Tl-206	5.78E-17
U-235	1.21E-11
Th-231	4.50E-13
Pa-231	5.00E-10
Ac-227	9.32E-10
Th-227	5.50E-11
Fr-223	3.56E-13
Ra-223	6.13E-11
Rn-219	2.69E-11
At-219	0.00E+00
Bi-215	9.86E-17
Po-215	8.23E-14
Pb-211	3.45E-11
Bi-211	2.17E-11
Tl-207	6.43E-12
Po-211	1.05E-14
Th-232	7.07E-09
Ra-228	2.68E-11
Ac-228	3.73E-09
Th-228	1.98E-10
Ra-224	5.35E-11
Rn-220	2.58E-12
Po-216	6.26E-14
Pb-212	5.64E-10
Bi-212	4.67E-10
Po-212	0.00E+00
Tl-208	4.55E-09
TOTAL	8.50E-08

Tue Mar 15 14:02:00 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	170	300	1900	4000
N	3.3E-01	1.2E-01	9.3E-03	6.5E-03
NNW	1.7E-01	6.3E-02	7.4E-03	5.9E-03
NW	2.0E-01	7.4E-02	7.7E-03	6.0E-03
WNW	2.5E-01	8.9E-02	8.2E-03	6.1E-03
W	1.9E-01	6.9E-02	7.5E-03	5.9E-03
WSW	9.2E-02	3.6E-02	6.3E-03	5.6E-03
SW	1.3E-01	4.8E-02	6.7E-03	5.7E-03
SSW	1.6E-01	5.9E-02	7.1E-03	5.8E-03
S	1.4E-01	5.2E-02	6.9E-03	5.8E-03
SSE	9.8E-02	3.8E-02	6.4E-03	5.6E-03
SSE	1.4E-01	5.3E-02	7.0E-03	5.8E-03
ESE	2.4E-01	8.7E-02	8.1E-03	6.1E-03
E	3.1E-01	1.1E-01	8.9E-03	6.3E-03
ENE	2.6E-01	9.4E-02	8.3E-03	6.2E-03
NE	1.6E-01	5.9E-02	7.1E-03	5.8E-03
NNE	1.3E-01	5.0E-02	6.8E-03	5.7E-03

Tue Mar 15 14:02:00 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m)			
	170	300	1900	4000
N	8.5E-08	3.1E-08	2.6E-09	1.8E-09
NNW	4.4E-08	1.7E-08	2.0E-09	1.7E-09
NW	5.2E-08	1.9E-08	2.1E-09	1.7E-09
WNW	6.4E-08	2.3E-08	2.3E-09	1.7E-09
W	4.8E-08	1.8E-08	2.1E-09	1.7E-09
WSW	2.4E-08	9.3E-09	1.8E-09	1.6E-09
SW	3.3E-08	1.3E-08	1.9E-09	1.6E-09
SSW	4.1E-08	1.5E-08	2.0E-09	1.6E-09
S	3.6E-08	1.3E-08	1.9E-09	1.6E-09
SSE	2.5E-08	9.9E-09	1.8E-09	1.6E-09
SSE	3.6E-08	1.4E-08	1.9E-09	1.6E-09
ESE	6.1E-08	2.2E-08	2.2E-09	1.7E-09
E	8.1E-08	2.9E-08	2.5E-09	1.8E-09
ENE	6.7E-08	2.4E-08	2.3E-09	1.7E-09
NE	4.1E-08	1.5E-08	2.0E-09	1.6E-09
NNE	3.5E-08	1.3E-08	1.9E-09	1.6E-09

CAP88 OUTPUT RESULTS

Pershall Road: South Ditch

```
                    C A P 8 8 - P C

                     Version 4.0

          D O S E   A N D   R I S K   S U M M A R I E S

               Non-Radon Individual Assessment
                   Tue Mar 15 14:09:31 2016


       Facility:  2015 Pershall Rd South Ditch
        Address:  9044 Pershall Rd
           City:  Hazelwood
          State:  MO         Zip:  63042


  Source Category:  Area
      Source Type:  Area
    Emission Year:  2015
   DOSE Age Group:  Adult

         Comments:  Air
                  Air


     Dataset Name:  2015 Pershall Rd
     Dataset Date:  Mar 15, 2016 02:09 PM
        Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 14:09:31 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	2.18E-03
UB_Wall	2.38E-03
Bone_Sur	1.54E-01
Brain	2.28E-03
Breasts	2.48E-03
St_Wall	2.31E-03
SI_Wall	2.29E-03
ULI_Wall	2.40E-03
LLI_Wall	2.65E-03
Kidneys	4.85E-03
Liver	8.08E-03
Muscle	2.54E-03
Ovaries	3.26E-03
Pancreas	2.20E-03
R_Marrow	9.54E-03
Skin	2.70E-02
Spleen	2.32E-03
Testes	3.58E-03
Thymus	2.29E-03
Thyroid	2.37E-03
GB_Wall	2.20E-03
Ht_Wall	2.28E-03
Uterus	2.26E-03
ET_Reg	1.72E-02
Lung_66	5.27E-02
Effectiv	1.16E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	5.36E-04
INHALATION	8.86E-03
AIR IMMERSION	7.48E-08
GROUND SURFACE	2.19E-03
INTERNAL	9.39E-03
EXTERNAL	2.19E-03
TOTAL	1.16E-02

Tue Mar 15 14:09:31 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	4.19E-04
Th-234	2.44E-05
Pa-234m	1.58E-04
Pa-234	3.11E-06
U-234	5.06E-04
Th-230	1.95E-03
Ra-226	1.65E-04
Rn-222	1.26E-07
Po-218	2.25E-12
Pb-214	8.22E-05
At-218	8.46E-12
Bi-214	4.80E-04
Rn-218	4.90E-14
Po-214	2.66E-08
Tl-210	1.88E-07
Pb-210	4.03E-07
Bi-210	6.52E-06
Hg-206	5.26E-13
Po-210	1.69E-09
Tl-206	1.52E-11
U-235	2.19E-05
Th-231	7.14E-07
Pa-231	9.42E-04
Ac-227	4.86E-04
Th-227	7.61E-06
Fr-223	7.17E-08
Ra-223	8.51E-06
Rn-219	3.68E-06
At-219	0.00E+00
Bi-215	1.66E-11
Po-215	1.13E-08
Pb-211	7.23E-06
Bi-211	2.98E-06
Tl-207	3.75E-06
Po-211	1.43E-09
Th-232	1.27E-03
Ra-228	9.94E-04
Ac-228	5.37E-04
Th-228	2.49E-03
Ra-224	1.65E-04
Rn-220	3.82E-07
Po-216	9.21E-09
Pb-212	8.38E-05
Bi-212	9.78E-05
Po-212	0.00E+00
Tl-208	6.75E-04
TOTAL	1.16E-02

Tue Mar 15 14:09:31 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	8.38E-11
INHALATION	2.23E-09
AIR IMMERSION	3.86E-14
GROUND SURFACE	1.10E-09
INTERNAL	2.31E-09
EXTERNAL	1.10E-09
TOTAL	3.41E-09

Tue Mar 15 14:09:31 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.40E-10
Th-234	1.01E-11
Pa-234m	2.76E-11
Pa-234	1.69E-12
U-234	1.74E-10
Th-230	4.30E-10
Ra-226	8.90E-11
Rn-222	6.87E-14
Po-218	1.00E-18
Pb-214	4.40E-11
At-218	1.04E-18
Bi-214	2.54E-10
Rn-218	2.68E-20
Po-214	1.46E-14
Tl-210	1.00E-13
Pb-210	1.81E-13
Bi-210	7.22E-13
Hg-206	2.33E-19
Po-210	9.26E-16
Tl-206	1.71E-18
U-235	8.73E-12
Th-231	3.25E-13
Pa-231	4.07E-11
Ac-227	6.08E-11
Th-227	4.12E-12
Fr-223	2.67E-14
Ra-223	4.59E-12
Rn-219	2.02E-12
At-219	0.00E+00
Bi-215	7.39E-18
Po-215	6.17E-15
Pb-211	2.59E-12
Bi-211	1.63E-12
Tl-207	4.82E-13
Po-211	7.86E-16
Th-232	2.78E-10
Ra-228	1.41E-10
Ac-228	2.85E-10
Th-228	8.93E-10
Ra-224	6.09E-11
Rn-220	2.09E-13
Po-216	5.06E-15
Pb-212	4.56E-11
Bi-212	3.77E-11
Po-212	0.00E+00
Tl-208	3.67E-10
TOTAL	3.41E-09

Tue Mar 15 14:09:31 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m)			
	170	300	1900	4000
N	1.2E-02	4.3E-03	5.4E-04	4.4E-04
NNW	6.1E-03	2.4E-03	4.7E-04	4.2E-04
NW	7.2E-03	2.8E-03	4.8E-04	4.3E-04
WNW	8.7E-03	3.3E-03	5.0E-04	4.3E-04
W	6.6E-03	2.6E-03	4.8E-04	4.2E-04
WSW	3.4E-03	1.4E-03	4.4E-04	4.1E-04
SW	4.7E-03	1.9E-03	4.5E-04	4.2E-04
SSW	5.7E-03	2.2E-03	4.6E-04	4.2E-04
S	5.0E-03	2.0E-03	4.6E-04	4.2E-04
SSE	3.6E-03	1.5E-03	4.4E-04	4.1E-04
SSE	5.0E-03	2.0E-03	4.6E-04	4.2E-04
ESE	8.4E-03	3.2E-03	5.0E-04	4.3E-04
E	1.1E-02	4.1E-03	5.3E-04	4.4E-04
ENE	9.2E-03	3.5E-03	5.1E-04	4.3E-04
NE	5.7E-03	2.3E-03	4.7E-04	4.2E-04
NNE	4.8E-03	2.0E-03	4.6E-04	4.2E-04

Tue Mar 15 14:09:31 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	170	300	1900	4000
N	3.4E-09	1.2E-09	1.1E-10	7.6E-11
NNW	1.8E-09	6.6E-10	8.5E-11	6.9E-11
NW	2.1E-09	7.7E-10	8.8E-11	7.0E-11
WNW	2.5E-09	9.3E-10	9.3E-11	7.2E-11
W	1.9E-09	7.2E-10	8.6E-11	7.0E-11
WSW	9.6E-10	3.8E-10	7.4E-11	6.6E-11
SW	1.3E-09	5.1E-10	7.8E-11	6.7E-11
SSW	1.6E-09	6.1E-10	8.2E-11	6.8E-11
S	1.4E-09	5.4E-10	8.0E-11	6.8E-11
SSE	1.0E-09	4.0E-10	7.5E-11	6.6E-11
SSE	1.5E-09	5.5E-10	8.1E-11	6.8E-11
ESE	2.5E-09	9.0E-10	9.3E-11	7.2E-11
E	3.2E-09	1.2E-09	1.0E-10	7.4E-11
ENE	2.7E-09	9.8E-10	9.4E-11	7.2E-11
NE	1.6E-09	6.2E-10	8.2E-11	6.9E-11
NNE	1.4E-09	5.3E-10	7.9E-11	6.8E-11

CAP88 OUTPUT RESULTS

St. Cin Park

C A P 8 8 - P C

Version 4.0

Clean Air Act Assessment Package - 1988

```
D O S E   A N D   R I S K   S U M M A R I E S

          Non-Radon Individual Assessment
               Tue Mar 15 14:32:33 2016


      Facility:  2015 St Cin Park
       Address:  135 St. Cin Lane
          City:  Hazelwood
         State:  MO          Zip:  63042


 Source Category:  Area
     Source Type:  Area
   Emission Year:  2015
 DOSE Age Group:  Adult

        Comments:  Air
                 Air


    Dataset Name:  2015 St Cin Park
    Dataset Date:  Mar 15, 2016 02:32 PM
       Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 14:32:33 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	3.21E-02
UB_Wall	3.55E-02
Bone_Sur	1.16E+00
Brain	3.38E-02
Breasts	3.67E-02
St_Wall	3.41E-02
SI_Wall	3.39E-02
ULI_Wall	3.54E-02
LLI_Wall	3.88E-02
Kidneys	5.46E-02
Liver	7.25E-02
Muscle	3.78E-02
Ovaries	3.85E-02
Pancreas	3.25E-02
R_Marrow	1.22E-01
Skin	2.41E-01
Spleen	3.44E-02
Testes	4.32E-02
Thymus	3.40E-02
Thyroid	3.51E-02
GB_Wall	3.25E-02
Ht_Wall	3.38E-02
Uterus	3.35E-02
ET_Reg	2.74E-01
Lung_66	8.57E-01
Effectiv	1.61E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.28E-02
INHALATION	1.15E-01
AIR IMMERSION	2.00E-06
GROUND SURFACE	3.29E-02
INTERNAL	1.28E-01
EXTERNAL	3.29E-02
TOTAL	1.61E-01

Tue Mar 15 14:32:33 2016 SUMMARY

Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	8.84E-04
Th-234	1.15E-04
Pa-234m	3.41E-04
Pa-234	6.73E-06
U-234	1.07E-03
Th-230	4.52E-03
Ra-226	1.88E-03
Rn-222	1.37E-06
Po-218	2.45E-11
Pb-214	8.94E-04
At-218	9.20E-11
Bi-214	5.22E-03
Rn-218	5.33E-13
Po-214	2.89E-07
Tl-210	2.04E-06
Pb-210	4.40E-06
Bi-210	7.12E-05
Hg-206	5.74E-12
Po-210	1.84E-08
Tl-206	1.66E-10
U-235	4.74E-05
Th-231	1.60E-06
Pa-231	2.51E-09
Ac-227	8.41E-12
Th-227	4.02E-09
Fr-223	3.79E-11
Ra-223	4.49E-09
Rn-219	1.94E-09
At-219	0.00E+00
Bi-215	8.75E-15
Po-215	5.94E-12
Pb-211	3.82E-09
Bi-211	1.57E-09
Tl-207	1.98E-09
Po-211	7.57E-13
Th-232	7.41E-03
Ra-228	3.16E-02
Ac-228	9.88E-03
Th-228	7.60E-02
Ra-224	4.97E-03
Rn-220	7.27E-06
Po-216	1.75E-07
Pb-212	1.60E-03
Bi-212	1.86E-03
Po-212	0.00E+00
Tl-208	1.29E-02
TOTAL	1.61E-01

Tue Mar 15 14:32:33 2016

SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.34E-09
INHALATION	3.65E-08
AIR IMMERSION	1.08E-12
GROUND SURFACE	1.72E-08
INTERNAL	3.79E-08
EXTERNAL	1.72E-08
TOTAL	5.51E-08

Tue Mar 15 14:32:33 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	2.95E-10
Th-234	4.19E-11
Pa-234m	5.98E-11
Pa-234	3.66E-12
U-234	3.67E-10
Th-230	9.99E-10
Ra-226	1.01E-09
Rn-222	7.47E-13
Po-218	1.09E-17
Pb-214	4.78E-10
At-218	1.13E-17
Bi-214	2.76E-09
Rn-218	2.91E-19
Po-214	1.59E-13
Tl-210	1.09E-12
Pb-210	1.97E-12
Bi-210	7.89E-12
Hg-206	2.55E-18
Po-210	1.01E-14
Tl-206	1.87E-17
U-235	1.89E-11
Th-231	7.18E-13
Pa-231	1.31E-15
Ac-227	3.15E-18
Th-227	2.18E-15
Fr-223	1.41E-17
Ra-223	2.43E-15
Rn-219	1.06E-15
At-219	0.00E+00
Bi-215	3.91E-21
Po-215	3.26E-18
Pb-211	1.36E-15
Bi-211	8.59E-16
Tl-207	2.54E-16
Po-211	4.15E-19
Th-232	1.62E-09
Ra-228	4.50E-09
Ac-228	5.23E-09
Th-228	2.73E-08
Ra-224	1.82E-09
Rn-220	3.98E-12
Po-216	9.64E-14
Pb-212	8.68E-10
Bi-212	7.18E-10
Po-212	0.00E+00
Tl-208	7.00E-09
TOTAL	5.51E-08

Tue Mar 15 14:32:33 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

	Distance (m)		
Direction	100	850	4500
N	1.6E-01	1.3E-02	9.9E-03
NNW	8.7E-02	1.1E-02	9.8E-03
NW	1.0E-01	1.1E-02	9.8E-03
WNW	1.2E-01	1.2E-02	9.8E-03
W	9.4E-02	1.1E-02	9.8E-03
WSW	5.0E-02	1.0E-02	9.7E-03
SW	6.7E-02	1.1E-02	9.8E-03
SSW	8.1E-02	1.1E-02	9.8E-03
S	7.2E-02	1.1E-02	9.8E-03
SSE	5.3E-02	1.1E-02	9.8E-03
SSE	7.3E-02	1.1E-02	9.8E-03
ESE	1.2E-01	1.2E-02	9.8E-03
E	1.5E-01	1.2E-02	9.9E-03
ENE	1.3E-01	1.2E-02	9.8E-03
NE	8.1E-02	1.1E-02	9.8E-03
NNE	7.0E-02	1.1E-02	9.8E-03

Tue Mar 15 14:32:33 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)		
Direction	100	850	4500
N	5.5E-08	2.1E-09	1.1E-09
NNW	2.9E-08	1.6E-09	1.0E-09
NW	3.4E-08	1.6E-09	1.0E-09
WNW	4.1E-08	1.8E-09	1.1E-09
W	3.1E-08	1.6E-09	1.0E-09
WSW	1.6E-08	1.3E-09	1.0E-09
SW	2.2E-08	1.4E-09	1.0E-09
SSW	2.6E-08	1.5E-09	1.0E-09
S	2.3E-08	1.4E-09	1.0E-09
SSE	1.6E-08	1.3E-09	1.0E-09
SSE	2.3E-08	1.5E-09	1.0E-09
ESE	4.0E-08	1.8E-09	1.1E-09
E	5.2E-08	2.0E-09	1.1E-09
ENE	4.3E-08	1.8E-09	1.1E-09
NE	2.7E-08	1.5E-09	1.0E-09
NNE	2.3E-08	1.4E-09	1.0E-09

CAP88 OUTPUT RESULTS

IA-10

C A P 8 8 - P C

Version 4.0

Clean Air Act Assessment Package - 1988

D O S E   A N D   R I S K   S U M M A R I E S

Non-Radon Individual Assessment
Tue Mar 15 14:39:10 2016

```
     Facility:  IA-10
      Address:  McDonnel Blvd
         City:  Hazelwood
        State:  MO          Zip:  63042

Source Category:  Area
    Source Type:  Area
  Emission Year:  2015
 DOSE Age Group:  Adult

       Comments:  Air
                Air

   Dataset Name:  2015 IA-10.
   Dataset Date:  Mar 15, 2016 02:39 PM
      Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 14:39:10 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	4.00E-07
UB_Wall	4.34E-07
Bone_Sur	4.10E-05
Brain	4.17E-07
Breasts	4.51E-07
St_Wall	4.21E-07
SI_Wall	4.18E-07
ULI_Wall	4.42E-07
LLI_Wall	4.89E-07
Kidneys	9.91E-07
Liver	2.37E-06
Muscle	4.61E-07
Ovaries	7.14E-07
Pancreas	4.03E-07
R_Marrow	2.11E-06
Skin	4.98E-06
Spleen	4.24E-07
Testes	7.68E-07
Thymus	4.19E-07
Thyroid	4.33E-07
GB_Wall	4.04E-07
Ht_Wall	4.17E-07
Uterus	4.14E-07
ET_Reg	3.21E-06
Lung_66	9.93E-06
Effectiv	2.39E-06

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	6.16E-08
INHALATION	1.96E-06
AIR IMMERSION	7.64E-12
GROUND SURFACE	3.69E-07
INTERNAL	2.02E-06
EXTERNAL	3.69E-07
TOTAL	2.39E-06

Tue Mar 15 14:39:10 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	7.88E-08
Th-234	3.42E-09
Pa-234m	3.00E-08
Pa-234	5.91E-10
U-234	9.51E-08
Th-230	3.69E-07
Ra-226	2.97E-08
Rn-222	2.39E-11
Po-218	4.27E-16
Pb-214	1.56E-08
At-218	1.61E-15
Bi-214	9.12E-08
Rn-218	9.30E-18
Po-214	5.06E-12
Tl-210	3.56E-11
Pb-210	7.65E-11
Bi-210	1.24E-09
Hg-206	9.98E-17
Po-210	3.20E-13
Tl-206	2.89E-15
U-235	4.14E-09
Th-231	1.36E-10
Pa-231	3.99E-07
Ac-227	2.23E-07
Th-227	3.37E-09
Fr-223	3.17E-11
Ra-223	3.77E-09
Rn-219	1.63E-09
At-219	0.00E+00
Bi-215	7.33E-15
Po-215	4.98E-12
Pb-211	3.20E-09
Bi-211	1.32E-09
Tl-207	1.66E-09
Po-211	6.35E-13
Th-232	2.37E-07
Ra-228	9.61E-08
Ac-228	7.94E-08
Th-228	4.65E-07
Ra-224	3.07E-08
Rn-220	5.73E-11
Po-216	1.38E-12
Pb-212	1.26E-08
Bi-212	1.47E-08
Po-212	0.00E+00
Tl-208	1.01E-07
TOTAL	2.39E-06

Tue Mar 15 14:39:10 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.19E-14
INHALATION	4.34E-13
AIR IMMERSION	3.96E-18
GROUND SURFACE	1.82E-13
INTERNAL	4.46E-13
EXTERNAL	1.82E-13
TOTAL	6.28E-13

Tue Mar 15 14:39:10 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	2.64E-14
Th-234	1.53E-15
Pa-234m	5.25E-15
Pa-234	3.21E-16
U-234	3.27E-14
Th-230	8.16E-14
Ra-226	1.54E-14
Rn-222	1.30E-17
Po-218	1.91E-22
Pb-214	8.35E-15
At-218	1.98E-22
Bi-214	4.82E-14
Rn-218	5.09E-24
Po-214	2.78E-18
Tl-210	1.90E-17
Pb-210	3.43E-17
Bi-210	1.37E-16
Hg-206	4.43E-23
Po-210	1.76E-19
Tl-206	3.25E-22
U-235	1.66E-15
Th-231	6.19E-17
Pa-231	1.73E-14
Ac-227	2.78E-14
Th-227	1.82E-15
Fr-223	1.18E-17
Ra-223	2.03E-15
Rn-219	8.93E-16
At-219	0.00E+00
Bi-215	3.27E-21
Po-215	2.73E-18
Pb-211	1.14E-15
Bi-211	7.21E-16
Tl-207	2.13E-16
Po-211	3.48E-19
Th-232	5.21E-14
Ra-228	1.41E-14
Ac-228	4.21E-14
Th-228	1.67E-13
Ra-224	1.13E-14
Rn-220	3.14E-17
Po-216	7.60E-19
Pb-212	6.85E-15
Bi-212	5.66E-15
Po-212	0.00E+00
Tl-208	5.52E-14
TOTAL	6.28E-13

Tue Mar 15 14:39:10 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 250	1150	2000	3000
N	2.4E-06	1.8E-07	9.8E-08	7.1E-08
NNW	1.2E-06	1.1E-07	7.1E-08	5.7E-08
NW	1.5E-06	1.3E-07	7.5E-08	5.9E-08
WNW	1.8E-06	1.4E-07	8.2E-08	6.3E-08
W	1.4E-06	1.2E-07	7.2E-08	5.8E-08
WSW	6.7E-07	7.9E-08	5.7E-08	5.0E-08
SW	9.4E-07	9.4E-08	6.3E-08	5.3E-08
SSW	1.1E-06	1.1E-07	6.7E-08	5.5E-08
S	1.0E-06	1.0E-07	6.5E-08	5.4E-08
SSE	7.1E-07	8.3E-08	5.9E-08	5.1E-08
SSE	1.0E-06	1.0E-07	6.6E-08	5.4E-08
ESE	1.7E-06	1.4E-07	8.1E-08	6.2E-08
E	2.3E-06	1.7E-07	9.2E-08	6.7E-08
ENE	1.9E-06	1.5E-07	8.3E-08	6.3E-08
NE	1.2E-06	1.1E-07	6.8E-08	5.6E-08
NNE	9.8E-07	9.7E-08	6.4E-08	5.4E-08

Tue Mar 15 14:39:10 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 250	1150	2000	3000
N	6.3E-13	4.6E-14	2.3E-14	1.6E-14
NNW	3.2E-13	2.8E-14	1.6E-14	1.2E-14
NW	3.8E-13	3.0E-14	1.7E-14	1.3E-14
WNW	4.7E-13	3.5E-14	1.9E-14	1.4E-14
W	3.5E-13	2.9E-14	1.6E-14	1.2E-14
WSW	1.7E-13	1.8E-14	1.2E-14	1.0E-14
SW	2.4E-13	2.2E-14	1.4E-14	1.1E-14
SSW	3.0E-13	2.5E-14	1.5E-14	1.2E-14
S	2.6E-13	2.4E-14	1.4E-14	1.1E-14
SSE	1.9E-13	1.9E-14	1.3E-14	1.0E-14
SSE	2.7E-13	2.4E-14	1.5E-14	1.1E-14
ESE	4.5E-13	3.5E-14	1.9E-14	1.4E-14
E	5.9E-13	4.2E-14	2.2E-14	1.5E-14
ENE	4.9E-13	3.6E-14	1.9E-14	1.4E-14
NE	3.0E-13	2.6E-14	1.5E-14	1.2E-14
NNE	2.5E-13	2.3E-14	1.4E-14	1.1E-14

CAP88 OUTPUT RESULTS

SLAPS Loadout

```
                         C A P 8 8 - P C

                           Version 4.0

              Clean Air Act Assessment Package - 1988

           D O S E   A N D   R I S K   S U M M A R I E S

                   Non-Radon Individual Assessment
                        Tue Mar 15 14:44:35 2016



       Facility:  SLAPS Loadout
        Address:  1110 James S. McDonnell Boulevard
           City:  Hazelwood
          State:  MO          Zip:  63042


 Source Category:  Area
     Source Type:  Area
   Emission Year:  2015
  DOSE Age Group:  Adult

        Comments:  Air
                  Air


    Dataset Name:  2015 SLAPS Loado
    Dataset Date:  Mar 15, 2016 02:44 PM
       Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 15 14:44:35 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	1.09E-02
UB_Wall	1.14E-02
Bone_Sur	2.21E+00
Brain	1.12E-02
Breasts	1.18E-02
St_Wall	1.13E-02
SI_Wall	1.12E-02
ULI_Wall	1.23E-02
LLI_Wall	1.44E-02
Kidneys	3.48E-02
Liver	1.42E-01
Muscle	1.19E-02
Ovaries	2.88E-02
Pancreas	1.09E-02
R_Marrow	9.67E-02
Skin	9.76E-02
Spleen	1.13E-02
Testes	2.98E-02
Thymus	1.12E-02
Thyroid	1.15E-02
GB_Wall	1.10E-02
Ht_Wall	1.12E-02
Uterus	1.11E-02
ET_Reg	5.71E-02
Lung_66	1.58E-01
Effectiv	7.26E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.71E-03
INHALATION	6.46E-02
AIR IMMERSION	1.63E-07
GROUND SURFACE	6.31E-03
INTERNAL	6.63E-02
EXTERNAL	6.31E-03
TOTAL	7.26E-02

Tue Mar 15 14:44:35 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	1.14E-03
Th-234	9.72E-05
Pa-234m	4.59E-04
Pa-234	9.05E-06
U-234	6.27E-04
Th-230	1.09E-02
Ra-226	4.59E-04
Rn-222	3.69E-07
Po-218	6.59E-12
Pb-214	2.41E-04
At-218	2.48E-11
Bi-214	1.41E-03
Rn-218	1.43E-13
Po-214	7.79E-08
Tl-210	5.49E-07
Pb-210	1.17E-06
Bi-210	1.90E-05
Hg-206	1.53E-12
Po-210	4.91E-09
Tl-206	4.43E-11
U-235	3.22E-05
Th-231	1.10E-06
Pa-231	2.81E-02
Ac-227	1.73E-02
Th-227	2.57E-04
Fr-223	2.42E-06
Ra-223	2.87E-04
Rn-219	1.24E-04
At-219	0.00E+00
Bi-215	5.60E-10
Po-215	3.80E-07
Pb-211	2.44E-04
Bi-211	1.01E-04
Tl-207	1.27E-04
Po-211	4.85E-08
Th-232	3.09E-03
Ra-228	1.60E-03
Ac-228	1.12E-03
Th-228	2.91E-03
Ra-224	1.98E-04
Rn-220	7.80E-07
Po-216	1.88E-08
Pb-212	1.71E-04
Bi-212	2.00E-04
Po-212	0.00E+00
Tl-208	1.38E-03
TOTAL	7.26E-02

Tue Mar 15 14:44:35 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	2.42E-10
INHALATION	8.38E-09
AIR IMMERSION	7.84E-14
GROUND SURFACE	3.08E-09
INTERNAL	8.62E-09
EXTERNAL	3.08E-09
TOTAL	1.17E-08

Tue Mar 15 14:44:35 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	3.78E-10
Th-234	3.76E-11
Pa-234m	8.03E-11
Pa-234	4.92E-12
U-234	2.15E-10
Th-230	2.41E-09
Ra-226	2.59E-10
Rn-222	2.01E-13
Po-218	2.94E-18
Pb-214	1.29E-10
At-218	3.05E-18
Bi-214	7.43E-10
Rn-218	7.85E-20
Po-214	4.28E-14
Tl-210	2.93E-13
Pb-210	5.25E-13
Bi-210	2.10E-12
Hg-206	6.79E-19
Po-210	2.70E-15
Tl-206	4.98E-18
U-235	1.29E-11
Th-231	5.00E-13
Pa-231	1.21E-09
Ac-227	2.16E-09
Th-227	1.39E-10
Fr-223	9.03E-13
Ra-223	1.55E-10
Rn-219	6.81E-11
At-219	0.00E+00
Bi-215	2.50E-16
Po-215	2.08E-13
Pb-211	8.74E-11
Bi-211	5.50E-11
Tl-207	1.63E-11
Po-211	2.65E-14
Th-232	6.74E-10
Ra-228	2.17E-10
Ac-228	5.95E-10
Th-228	1.04E-09
Ra-224	7.42E-11
Rn-220	4.27E-13
Po-216	1.03E-14
Pb-212	9.32E-11
Bi-212	7.71E-11
Po-212	0.00E+00
Tl-208	7.51E-10
TOTAL	1.17E-08

Tue Mar 15 14:44:35 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 500	770	1710	2580
N	7.3E-02	3.3E-02	9.1E-03	5.2E-03
NNW	3.8E-02	1.8E-02	5.3E-03	3.3E-03
NW	4.4E-02	2.0E-02	5.9E-03	3.6E-03
WNW	5.4E-02	2.4E-02	6.9E-03	4.1E-03
W	4.1E-02	1.9E-02	5.5E-03	3.4E-03
WSW	2.0E-02	9.6E-03	3.3E-03	2.3E-03
SW	2.8E-02	1.3E-02	4.1E-03	2.7E-03
SSW	3.4E-02	1.6E-02	4.8E-03	3.0E-03
S	3.0E-02	1.4E-02	4.5E-03	2.9E-03
SSE	2.2E-02	1.0E-02	3.5E-03	2.4E-03
SSE	3.1E-02	1.5E-02	4.6E-03	2.9E-03
ESE	5.2E-02	2.4E-02	6.8E-03	4.0E-03
E	6.8E-02	3.0E-02	8.3E-03	4.8E-03
ENE	5.6E-02	2.5E-02	7.1E-03	4.2E-03
NE	3.5E-02	1.6E-02	4.9E-03	3.1E-03
NNE	2.9E-02	1.4E-02	4.3E-03	2.8E-03

Tue Mar 15 14:44:35 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	500	770	1710	2580
N	1.2E-08	5.3E-09	1.5E-09	8.4E-10
NNW	6.1E-09	2.8E-09	8.6E-10	5.3E-10
NW	7.1E-09	3.3E-09	9.5E-10	5.7E-10
WNW	8.6E-09	3.9E-09	1.1E-09	6.5E-10
W	6.5E-09	3.0E-09	8.9E-10	5.4E-10
WSW	3.2E-09	1.5E-09	5.2E-10	3.6E-10
SW	4.5E-09	2.1E-09	6.5E-10	4.2E-10
SSW	5.5E-09	2.5E-09	7.7E-10	4.8E-10
S	4.9E-09	2.3E-09	7.2E-10	4.5E-10
SSE	3.5E-09	1.7E-09	5.6E-10	3.8E-10
SSE	5.0E-09	2.3E-09	7.3E-10	4.6E-10
ESE	8.4E-09	3.8E-09	1.1E-09	6.5E-10
E	1.1E-08	4.9E-09	1.3E-09	7.7E-10
ENE	9.0E-09	4.1E-09	1.1E-09	6.7E-10
NE	5.6E-09	2.6E-09	7.9E-10	4.9E-10
NNE	4.7E-09	2.2E-09	6.9E-10	4.4E-10

CAP88-PC RUNS FOR THE USACE ST. LOUIS FUSRAP LABORATORY

THIS PAGE INTENTIONALLY LEFT BLANK

CAP88 OUTPUT RESULTS

USACE Laboratory

C A P 8 8 - P C

Version 4.0

Clean Air Act Assessment Package - 1988

```
D O S E   A N D   R I S K   S U M M A R I E S

          Non-Radon Individual Assessment
               Tue Mar 22 14:37:15 2016


       Facility:  USACE Lab
        Address:  Latty Ave
           City:  Berkely
          State:  MO          Zip:  63134


  Source Category:  Stack
      Source Type:  Stack
    Emission Year:  2015
   DOSE Age Group:  Adult

         Comments:  Air
                  Air


     Dataset Name:  2015 USACE Lab.
     Dataset Date:  Mar 22, 2016 02:37 PM
        Wind File:  C:\Users\hansenra\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 22 14:37:15 2016 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	2.62E-04
UB_Wall	2.83E-04
Bone_Sur	2.83E-02
Brain	2.73E-04
Breasts	2.96E-04
St_Wall	2.76E-04
SI_Wall	2.73E-04
ULI_Wall	2.89E-04
LLI_Wall	3.22E-04
Kidneys	7.97E-04
Liver	1.55E-03
Muscle	3.02E-04
Ovaries	4.78E-04
Pancreas	2.63E-04
R_Marrow	1.37E-03
Skin	7.65E-03
Spleen	2.77E-04
Testes	5.16E-04
Thymus	2.74E-04
Thyroid	2.84E-04
GB_Wall	2.65E-04
Ht_Wall	2.73E-04
Uterus	2.70E-04
ET_Reg	2.49E-03
Lung_66	7.71E-03
Effectiv	1.77E-03

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	3.87E-05
INHALATION	1.46E-03
AIR IMMERSION	9.67E-10
GROUND SURFACE	2.77E-04
INTERNAL	1.49E-03
EXTERNAL	2.77E-04
TOTAL	1.77E-03

Tue Mar 22 14:37:15 2016 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	1.98E-04
Th-234	5.72E-06
Pa-234m	7.38E-05
Pa-234	1.45E-06
U-234	1.23E-04
Th-230	4.54E-04
Ra-226	3.10E-05
Rn-222	2.39E-08
Po-218	4.26E-13
Pb-214	1.56E-05
At-218	1.60E-12
Bi-214	9.11E-05
Rn-218	9.29E-15
Po-214	5.05E-09
Tl-210	3.56E-08
Pb-210	7.63E-08
Bi-210	1.23E-06
Hg-206	9.95E-14
Po-210	3.19E-10
Tl-206	2.88E-12
U-235	6.21E-06
Th-231	2.01E-07
Pa-231	2.19E-04
Ac-227	1.49E-04
Th-227	1.99E-06
Fr-223	1.87E-08
Ra-223	2.22E-06
Rn-219	9.62E-07
At-219	0.00E+00
Bi-215	4.32E-12
Po-215	2.94E-09
Pb-211	1.89E-06
Bi-211	7.78E-07
Tl-207	9.78E-07
Po-211	3.74E-10
Th-232	1.23E-04
Ra-228	7.77E-06
Ac-228	2.88E-05
Th-228	1.76E-04
Ra-224	1.16E-05
Rn-220	2.08E-08
Po-216	5.02E-10
Pb-212	4.57E-06
Bi-212	5.33E-06
Po-212	0.00E+00
Tl-208	3.68E-05
TOTAL	1.77E-03

Tue Mar 22 14:37:15 2016 SUMMARY
Page 3

CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.22E-11
INHALATION	3.37E-10
AIR IMMERSION	4.70E-16
GROUND SURFACE	1.19E-10
INTERNAL	3.49E-10
EXTERNAL	1.19E-10
TOTAL	4.68E-10

Tue Mar 22 14:37:15 2016 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	6.59E-11
Th-234	2.90E-12
Pa-234m	1.29E-11
Pa-234	7.90E-13
U-234	4.22E-11
Th-230	1.00E-10
Ra-226	1.69E-11
Rn-222	1.30E-14
Po-218	1.90E-19
Pb-214	8.33E-12
At-218	1.98E-19
Bi-214	4.81E-11
Rn-218	5.08E-21
Po-214	2.77E-15
Tl-210	1.90E-14
Pb-210	3.42E-14
Bi-210	1.37E-13
Hg-206	4.41E-20
Po-210	1.75E-16
Tl-206	3.24E-19
U-235	2.48E-12
Th-231	9.16E-14
Pa-231	9.49E-12
Ac-227	1.86E-11
Th-227	1.08E-12
Fr-223	6.97E-15
Ra-223	1.20E-12
Rn-219	5.26E-13
At-219	0.00E+00
Bi-215	1.93E-18
Po-215	1.61E-15
Pb-211	6.75E-13
Bi-211	4.25E-13
Tl-207	1.26E-13
Po-211	2.05E-16
Th-232	2.69E-11
Ra-228	1.10E-12
Ac-228	1.53E-11
Th-228	6.31E-11
Ra-224	4.25E-12
Rn-220	1.14E-14
Po-216	2.76E-16
Pb-212	2.49E-12
Bi-212	2.06E-12
Po-212	0.00E+00
Tl-208	2.00E-11
TOTAL	4.68E-10

Tue Mar 22 14:37:15 2016 SUMMARY
Page 5

INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 110	300	310	1830	
N	1.8E-03	4.6E-04	4.4E-04	4.6E-05	
NNW	9.7E-04	2.5E-04	2.4E-04	3.8E-05	
NW	1.0E-03	2.9E-04	2.7E-04	3.9E-05	
WNW	1.2E-03	3.4E-04	3.3E-04	4.1E-05	
W	9.4E-04	2.7E-04	2.5E-04	3.8E-05	
WSW	4.8E-04	1.4E-04	1.4E-04	3.3E-05	
SW	6.0E-04	1.9E-04	1.8E-04	3.5E-05	
SSW	7.2E-04	2.3E-04	2.2E-04	3.7E-05	
S	7.7E-04	2.1E-04	2.0E-04	3.6E-05	Business
SSE	5.7E-04	1.5E-04	1.5E-04	3.3E-05	
SSE	7.9E-04	2.1E-04	2.0E-04	3.6E-05	School
ESE	1.2E-03	3.3E-04	3.2E-04	4.1E-05	
E	1.4E-03	4.3E-04	4.1E-04	4.5E-05	
ENE	1.1E-03	3.6E-04	3.4E-04	4.2E-05	
NE	8.0E-04	2.3E-04	2.2E-04	3.7E-05	Resident, Farm
NNE	7.1E-04	2.0E-04	1.9E-04	3.5E-05	

Tue Mar 22 14:37:15 2016 SUMMARY
Page 6

INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

	Distance (m)			
Direction	110	300	310	1830
N	4.7E-10	1.2E-10	1.2E-10	1.4E-11
NNW	2.6E-10	6.8E-11	6.5E-11	1.2E-11
NW	2.6E-10	7.7E-11	7.3E-11	1.2E-11
WNW	3.1E-10	9.2E-11	8.8E-11	1.3E-11
W	2.5E-10	7.2E-11	6.9E-11	1.2E-11
WSW	1.3E-10	3.9E-11	3.8E-11	1.0E-11
SW	1.6E-10	5.2E-11	4.9E-11	1.1E-11
SSW	1.9E-10	6.1E-11	5.9E-11	1.1E-11
S	2.1E-10	5.6E-11	5.3E-11	1.1E-11
SSE	1.5E-10	4.2E-11	4.0E-11	1.1E-11
SSE	2.1E-10	5.7E-11	5.4E-11	1.1E-11
ESE	3.1E-10	9.0E-11	8.5E-11	1.3E-11
E	3.7E-10	1.1E-10	1.1E-10	1.4E-11
ENE	3.0E-10	9.5E-11	9.1E-11	1.3E-11
NE	2.1E-10	6.2E-11	6.0E-11	1.1E-11
NNE	1.9E-10	5.4E-11	5.2E-11	1.1E-11

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX B

ENVIRONMENTAL THERMOLUMINESCENT DOSIMETER, ALPHA TRACK DETECTOR, AND PERIMETER AIR DATA

(On the CD-ROM on the Back Cover of this Report)

THIS PAGE INTENTIONALLY LEFT BLANK

Table B-1. Background Air Particulate Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178319	BAP-001	01/05/15	Gross Alpha/Beta	Gross Alpha	4.81E-15	1.15E-15	6.09E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178319		01/05/15		Gross Beta	1.76E-14	1.82E-15	9.58E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178320	BAP-001	01/12/15	Gross Alpha/Beta	Gross Alpha	3.41E-15	9.98E-16	6.33E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178320		01/12/15		Gross Beta	1.50E-14	1.73E-15	9.95E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178321	BAP-001	01/20/15	Gross Alpha/Beta	Gross Alpha	4.03E-15	9.88E-16	5.39E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178321		01/20/15		Gross Beta	2.17E-14	1.88E-15	8.48E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178322	BAP-001	01/27/15	Gross Alpha/Beta	Gross Alpha	2.47E-15	8.22E-16	5.80E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178322		01/27/15		Gross Beta	1.44E-14	1.62E-15	9.12E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178323	BAP-001	02/02/15	Gross Alpha/Beta	Gross Alpha	3.69E-15	1.13E-15	7.41E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178323		02/02/15		Gross Beta	1.41E-14	1.84E-15	1.17E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178324	BAP-001	02/09/15	Gross Alpha/Beta	Gross Alpha	3.02E-15	9.44E-16	6.33E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178324		02/09/15		Gross Beta	2.41E-14	2.15E-15	9.95E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178325	BAP-001	02/17/15	Gross Alpha/Beta	Gross Alpha	3.30E-15	9.26E-16	5.68E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178325		02/17/15		Gross Beta	2.22E-14	1.95E-15	8.93E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178326	BAP-001	02/23/15	Gross Alpha/Beta	Gross Alpha	4.29E-15	1.17E-15	7.00E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178326		02/23/15		Gross Beta	3.46E-14	2.69E-15	1.10E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178327	BAP-001	03/02/15	Gross Alpha/Beta	Gross Alpha	2.12E-15	8.12E-16	6.38E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178327		03/02/15		Gross Beta	2.00E-14	1.98E-15	1.00E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178328	BAP-001	03/11/15	Gross Alpha/Beta	Gross Alpha	1.25E-15	5.68E-16	5.03E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178328		03/11/15		Gross Beta	1.55E-14	1.55E-15	7.92E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178329	BAP-001	03/16/15	Gross Alpha/Beta	Gross Alpha	2.35E-15	1.04E-15	9.09E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178329		03/16/15		Gross Beta	2.03E-14	2.42E-15	1.43E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178330	BAP-001	03/23/15	Gross Alpha/Beta	Gross Alpha	1.45E-15	6.77E-16	6.11E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178330		03/23/15		Gross Beta	1.88E-14	1.88E-15	9.60E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178331	BAP-001	03/30/15	Gross Alpha/Beta	Gross Alpha	1.34E-15	6.79E-16	6.48E-16	μCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
HIS178331		03/30/15		Gross Beta	1.60E-14	1.80E-15	1.02E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178332	BAP-001	04/06/15	Gross Alpha/Beta	Gross Alpha	4.86E-15	1.16E-15	6.15E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178332		04/06/15		Gross Beta	1.02E-14	1.43E-15	9.88E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178333	BAP-001	04/13/15	Gross Alpha/Beta	Gross Alpha	4.00E-15	1.10E-15	6.59E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178333		04/13/15		Gross Beta	1.33E-14	1.66E-15	1.06E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178334	BAP-001	04/20/15	Gross Alpha/Beta	Gross Alpha	4.38E-15	1.12E-15	6.27E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178334		04/20/15		Gross Beta	1.24E-14	1.57E-15	1.01E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178335	BAP-001	04/27/15	Gross Alpha/Beta	Gross Alpha	2.88E-15	9.10E-16	6.07E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178335		04/27/15		Gross Beta	1.15E-14	1.49E-15	9.76E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178336	BAP-001	05/04/15	Gross Alpha/Beta	Gross Alpha	3.43E-15	9.92E-16	6.18E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178336		05/04/15		Gross Beta	1.35E-14	1.61E-15	9.93E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178337	BAP-001	05/11/15	Gross Alpha/Beta	Gross Alpha	3.02E-15	9.41E-16	6.22E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178337		05/11/15		Gross Beta	1.25E-14	1.57E-15	1.00E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178338	BAP-001	05/18/15	Gross Alpha/Beta	Gross Alpha	2.35E-15	8.65E-16	6.47E-16	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178338		05/18/15		Gross Beta	1.18E-14	1.56E-15	1.04E-15	μCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178339	BAP-001	05/26/15	Gross Alpha/Beta	Gross Alpha	1.97E-15	7.26E-16	5.42E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178339		05/26/15		Gross Beta	1.19E-14	1.42E-15	8.72E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178340	BAP-001	06/01/15	Gross Alpha/Beta	Gross Alpha	1.93E-15	8.87E-16	7.68E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178340		06/01/15		Gross Beta	8.40E-15	1.52E-15	1.24E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178341	BAP-001	06/08/15	Gross Alpha/Beta	Gross Alpha	2.49E-15	8.89E-16	6.50E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178341		06/08/15		Gross Beta	1.56E-14	1.77E-15	1.05E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178342	BAP-001	06/15/15	Gross Alpha/Beta	Gross Alpha	2.70E-15	9.21E-16	6.52E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178342		06/15/15		Gross Beta	1.52E-14	1.75E-15	1.05E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178343	BAP-001	06/22/15	Gross Alpha/Beta	Gross Alpha	1.24E-15	6.79E-16	6.52E-16	µCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
HIS178343		06/22/15		Gross Beta	1.30E-14	1.64E-15	1.05E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178344	BAP-001	06/29/15	Gross Alpha/Beta	Gross Alpha	1.83E-15	7.85E-16	6.50E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178344		06/29/15		Gross Beta	1.35E-14	1.66E-15	1.05E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178345	BAP-001	07/06/15	Gross Alpha/Beta	Gross Alpha	8.14E-15	1.83E-15	7.52E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178345		07/06/15		Gross Beta	2.40E-14	2.76E-15	2.05E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178346	BAP-001	07/13/15	Gross Alpha/Beta	Gross Alpha	4.53E-15	1.13E-15	5.17E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178346		07/13/15		Gross Beta	1.05E-14	1.58E-15	1.41E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178347	BAP-001	07/20/15	Gross Alpha/Beta	Gross Alpha	4.74E-15	1.70E-15	1.09E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178347		07/20/15		Gross Beta	1.68E-14	3.00E-15	2.95E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178348	BAP-001	07/27/15	Gross Alpha/Beta	Gross Alpha	5.09E-15	1.21E-15	5.27E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178348		07/27/15		Gross Beta	1.65E-14	1.92E-15	1.43E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178349	BAP-001	08/03/15	Gross Alpha/Beta	Gross Alpha	6.36E-15	1.31E-15	4.94E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178349		08/03/15		Gross Beta	2.21E-14	2.11E-15	1.34E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178350	BAP-001	08/10/15	Gross Alpha/Beta	Gross Alpha	4.51E-15	1.10E-15	4.94E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178350		08/10/15		Gross Beta	1.94E-14	1.99E-15	1.34E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178351	BAP-001	08/17/15	Gross Alpha/Beta	Gross Alpha	4.90E-15	1.14E-15	4.87E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178351		08/17/15		Gross Beta	2.20E-14	2.09E-15	1.33E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178352	BAP-001	08/24/15	Gross Alpha/Beta	Gross Alpha	3.67E-15	1.01E-15	5.09E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178352		08/24/15		Gross Beta	1.67E-14	1.89E-15	1.39E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178353	BAP-001	08/31/15	Gross Alpha/Beta	Gross Alpha	3.80E-15	1.03E-15	5.09E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178353		08/31/15		Gross Beta	2.42E-14	2.24E-15	1.39E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178354	BAP-001	09/08/15	Gross Alpha/Beta	Gross Alpha	6.96E-15	1.45E-15	5.57E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178354		09/08/15		Gross Beta	4.31E-14	3.10E-15	1.52E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178355	BAP-001	09/14/15	Gross Alpha/Beta	Gross Alpha	2.13E-15	8.17E-16	5.52E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178355		09/14/15		Gross Beta	1.48E-14	1.88E-15	1.50E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178356	BAP-001	09/21/15	Gross Alpha/Beta	Gross Alpha	2.44E-15	8.49E-16	5.27E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178356		09/21/15		Gross Beta	2.42E-14	2.28E-15	1.43E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178357	BAP-001	09/28/15	Gross Alpha/Beta	Gross Alpha	2.31E-15	8.31E-16	5.30E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178357		09/28/15		Gross Beta	2.67E-14	2.39E-15	1.44E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178358	BAP-001	10/05/15	Gross Alpha/Beta	Gross Alpha	3.61E-15	9.94E-16	4.41E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178358		10/05/15		Gross Beta	1.38E-14	1.75E-15	1.40E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178359	BAP-001	10/12/15	Gross Alpha/Beta	Gross Alpha	7.04E-15	1.36E-15	4.28E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178359		10/12/15		Gross Beta	2.67E-14	2.30E-15	1.35E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178360	BAP-001	10/19/15	Gross Alpha/Beta	Gross Alpha	4.58E-15	1.13E-15	4.47E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178360		10/19/15		Gross Beta	1.74E-14	1.95E-15	1.41E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178361	BAP-001	10/26/15	Gross Alpha/Beta	Gross Alpha	6.41E-15	1.32E-15	4.41E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178361		10/26/15		Gross Beta	2.29E-14	2.18E-15	1.40E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178362	BAP-001	11/02/15	Gross Alpha/Beta	Gross Alpha	6.05E-15	1.30E-15	4.53E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178362		11/02/15		Gross Beta	2.29E-14	2.21E-15	1.43E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178363	BAP-001	11/09/15	Gross Alpha/Beta	Gross Alpha	5.86E-15	1.24E-15	4.25E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178363		11/09/15		Gross Beta	2.41E-14	2.19E-15	1.34E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178364	BAP-001	11/16/15	Gross Alpha/Beta	Gross Alpha	5.55E-15	1.23E-15	4.40E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178364		11/16/15		Gross Beta	2.37E-14	2.21E-15	1.39E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178365	BAP-001	11/23/15	Gross Alpha/Beta	Gross Alpha	2.53E-15	8.17E-16	4.22E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178365		11/23/15		Gross Beta	1.43E-14	1.74E-15	1.34E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178366	BAP-001	11/30/15	Gross Alpha/Beta	Gross Alpha	3.65E-15	1.02E-15	4.62E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178366		11/30/15		Gross Beta	1.99E-14	2.10E-15	1.46E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178367	BAP-001	12/07/15	Gross Alpha/Beta	Gross Alpha	5.28E-15	1.20E-15	4.39E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178367		12/07/15		Gross Beta	3.55E-14	2.68E-15	1.39E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178368	BAP-001	12/14/15	Gross Alpha/Beta	Gross Alpha	3.97E-15	1.06E-15	4.60E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178368		12/14/15		Gross Beta	3.29E-14	2.65E-15	1.46E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178369	BAP-001	12/21/15	Gross Alpha/Beta	Gross Alpha	2.25E-16	2.96E-16	4.26E-16	µCi/mL	UJ	T06	HISS Air (Particulate Air)-Environmental Monitoring
HIS178369		12/21/15		Gross Beta	5.33E-16	8.45E-16	1.35E-15	µCi/mL	UJ	T06	HISS Air (Particulate Air)-Environmental Monitoring
HIS178370	BAP-001	12/29/15	Gross Alpha/Beta	Gross Alpha	1.31E-15	5.65E-16	3.78E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS178370		12/29/15		Gross Beta	1.59E-14	1.70E-15	1.20E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T06 Analytical result is less than both the associated counting uncertainty and MDA.

Table B-2. NC Sites Radon-222 Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178376	BA-1	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184861	BA-1	01/04/16	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178439	HF-1	07/02/15	Radiological	Ra-222	1	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184862	HF-1	01/04/16	Radiological	Ra-222	1.5	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178440	HF-2	07/02/15	Radiological	Ra-222	4.8	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184863	HF-2	01/04/16	Radiological	Ra-222	0	0	0.2	pCi/L	UJ	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178441	HF-3	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184864	HF-3	01/04/16	Radiological	Ra-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178442	HF-4	07/02/15	Radiological	Ra-222	0.6	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184865	HF-4	01/04/16	Radiological	Ra-222	0.8	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178443	HF-5	07/02/15	Radiological	Ra-222	0.6	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184866	HF-5	01/04/16	Radiological	Ra-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178444	HF-6	07/02/15	Radiological	Ra-222	0.5	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184867	HF-6	01/04/16	Radiological	Ra-222	0.3	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178445	HF-7	07/02/15	Radiological	Ra-222	0.6	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS178446	HF-8	07/02/15	Radiological	Ra-222	0.5	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS184869	HF-8	01/04/16	Radiological	Ra-222	0.9	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS178447	HF-9	07/02/15	Radiological	Ra-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS184870	HF-9	01/04/16	Radiological	Ra-222	0.7	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS178448	HF-10	07/02/15	Radiological	Ra-222	0.5	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS184871	HF-10	01/04/16	Radiological	Ra-222	0.9	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
SLA178381	PA-1	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA184903	PA-1	01/04/16	Radiological	Ra-222	0.3	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178382	PA-2	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA184904	PA-2	01/04/16	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA184904-1	PA-2 dup	01/04/16	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178382-1	PA-2dup	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178383	PA-3	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA184905	PA-3	01/04/16	Radiological	Ra-222	0.2	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178384	PA-4	07/02/15	Radiological	Ra-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA184906	PA-4	01/04/16	Radiological	Ra-222	0	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring

VQs:

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

Y01 Not enough supporting documentation to perform validation.

Table B-3. NC Sites External Gamma Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178372	BA-1	04/02/15	Radiological	External gamma radiation	17.8	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS178373	BA-1	04/02/15	Radiological	External gamma radiation	19	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS178374	BA-1	10/01/15	Radiological	External gamma radiation	17.1	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS184883	BA-1	01/04/16	Radiological	External gamma radiation	21.2	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
SLA178389	PA-1	04/02/15	Radiological	External gamma radiation	17.8	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178390	PA-2	04/02/15	Radiological	External gamma radiation	22.2	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178390-1	PA-2dup	04/02/15	Radiological	External gamma radiation	20.2	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178391	PA-3	04/02/15	Radiological	External gamma radiation	18.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178392	PA-4	04/02/15	Radiological	External gamma radiation	23.2	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178393	PA-1	04/02/15	Radiological	External gamma radiation	18.2	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178394	PA-2	04/02/15	Radiological	External gamma radiation	20	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178394-1	PA-2dup	04/02/15	Radiological	External gamma radiation	21.5	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178395	PA-3	04/02/15	Radiological	External gamma radiation	19.3	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178396	PA-4	04/02/15	Radiological	External gamma radiation	23.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178397	PA-1	10/01/15	Radiological	External gamma radiation	18.8	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178398	PA-2	10/01/15	Radiological	External gamma radiation	21.7	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178398-1	PA-2dup	10/01/15	Radiological	External gamma radiation	22.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178399	PA-3	10/01/15	Radiological	External gamma radiation	19	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178400	PA-4	10/01/15	Radiological	External gamma radiation	24.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA184887	PA-1	01/04/16	Radiological	External gamma radiation	18.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA184888	PA-2	01/04/16	Radiological	External gamma radiation	25.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA184888-1	PA-2dup	01/04/16	Radiological	External gamma radiation	24.3	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA184889	PA-3	01/04/16	Radiological	External gamma radiation	19.7	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA184890	PA-4	01/04/16	Radiological	External gamma radiation	25	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring

VQs:

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

Validation Reason Code:

Y01 Not enough supporting documentation to perform validation.

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177192	SLAPS Loadout	01/03/15	Gross Alpha/Beta	Gross Alpha	-1.34E-15	5.94E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177192	SLAPS Loadout	01/03/15		Gross Beta	-4.34E-15	1.73E-14	2.79E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177193	SLAPS Loadout	01/05/15	Gross Alpha/Beta	Gross Alpha	4.32E-15	9.27E-15	1.29E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177193	SLAPS Loadout	01/05/15		Gross Beta	2.09E-14	2.29E-14	3.35E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177194	SLAPS Loadout	01/05/15	Gross Alpha/Beta	Gross Alpha	-1.21E-16	7.59E-15	1.27E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177194	SLAPS Loadout	01/05/15		Gross Beta	1.14E-14	2.18E-14	3.29E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177195	SLAPS Loadout	01/06/15	Gross Alpha/Beta	Gross Alpha	4.85E-15	8.15E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177195	SLAPS Loadout	01/06/15		Gross Beta	2.30E-14	1.97E-14	2.80E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177196	SLAPS Loadout	01/06/15	Gross Alpha/Beta	Gross Alpha	4.85E-15	8.15E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177196	SLAPS Loadout	01/06/15		Gross Beta	1.60E-14	1.91E-14	2.80E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177197	SLAPS Loadout	01/07/15	Gross Alpha/Beta	Gross Alpha	1.19E-15	7.25E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177197	SLAPS Loadout	01/07/15		Gross Beta	9.34E-15	1.94E-14	2.93E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177198	SLAPS Loadout	01/07/15	Gross Alpha/Beta	Gross Alpha	7.52E-15	9.09E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177198	SLAPS Loadout	01/07/15		Gross Beta	1.56E-14	1.95E-14	2.87E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177199	SLAPS Loadout	01/08/15	Gross Alpha/Beta	Gross Alpha	-2.59E-15	5.46E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177199	SLAPS Loadout	01/08/15		Gross Beta	3.41E-14	2.06E-14	2.82E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177200	SLAPS Loadout	01/08/15	Gross Alpha/Beta	Gross Alpha	2.39E-15	7.39E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177200	SLAPS Loadout	01/08/15		Gross Beta	2.00E-14	1.95E-14	2.82E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177201	SLAPS Loadout	01/12/15	Gross Alpha/Beta	Gross Alpha	1.13E-15	6.89E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177201	SLAPS Loadout	01/12/15		Gross Beta	4.54E-14	2.13E-14	2.79E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177202	SLAPS Loadout	01/12/15	Gross Alpha/Beta	Gross Alpha	4.83E-15	8.11E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177202	SLAPS Loadout	01/12/15		Gross Beta	5.17E-14	2.17E-14	2.79E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177203	SLAPS Loadout	01/13/15	Gross Alpha/Beta	Gross Alpha	-1.34E-15	5.94E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177203	SLAPS Loadout	01/13/15		Gross Beta	2.29E-14	1.96E-14	2.79E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177204	SLAPS Loadout	01/14/15	Gross Alpha/Beta	Gross Alpha	6.52E-15	7.70E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177204	SLAPS Loadout	01/14/15		Gross Beta	1.88E-14	1.32E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177205	SLAPS Loadout	01/14/15	Gross Alpha/Beta	Gross Alpha	2.79E-15	6.39E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177205	SLAPS Loadout	01/14/15		Gross Beta	2.44E-14	1.39E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177206	SLAPS Loadout	01/19/15	Gross Alpha/Beta	Gross Alpha	7.76E-15	8.09E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177206	SLAPS Loadout	01/19/15		Gross Beta	2.92E-14	1.44E-14	1.83E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177207	SLAPS Loadout	01/19/15	Gross Alpha/Beta	Gross Alpha	2.79E-15	6.39E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177207	SLAPS Loadout	01/19/15		Gross Beta	1.88E-14	1.32E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177208	SLAPS Loadout	01/20/15	Gross Alpha/Beta	Gross Alpha	3.88E-15	6.59E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177208	SLAPS Loadout	01/20/15		Gross Beta	1.43E-14	1.23E-14	1.76E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177209	SLAPS Loadout	01/20/15	Gross Alpha/Beta	Gross Alpha	7.54E-15	7.86E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177209	SLAPS Loadout	01/20/15		Gross Beta	3.45E-14	1.47E-14	1.78E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177210	SLAPS Loadout	01/21/15	Gross Alpha/Beta	Gross Alpha	5.46E-16	9.38E-15	2.04E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177210	SLAPS Loadout	01/21/15		Gross Beta	1.91E-14	2.15E-14	3.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177211	SLAPS Loadout	01/21/15	Gross Alpha/Beta	Gross Alpha	1.70E-14	1.60E-14	2.19E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177211	SLAPS Loadout	01/21/15		Gross Beta	8.51E-15	2.15E-14	3.46E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177212	SLAPS Loadout	01/21/15	Gross Alpha/Beta	Gross Alpha	-1.76E-15	8.92E-15	2.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177212	SLAPS Loadout	01/21/15		Gross Beta	2.80E-14	2.41E-14	3.46E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177213	SLAPS Loadout	01/21/15	Gross Alpha/Beta	Gross Alpha	4.03E-15	6.85E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177213	SLAPS Loadout	01/21/15		Gross Beta	2.28E-14	1.37E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177214	SLAPS Loadout	01/21/15	Gross Alpha/Beta	Gross Alpha	3.10E-16	5.34E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177214	SLAPS Loadout	01/21/15		Gross Beta	2.04E-14	1.34E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177215	SLAPS Loadout	01/26/15	Gross Alpha/Beta	Gross Alpha	5.27E-15	7.29E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177215	SLAPS Loadout	01/26/15		Gross Beta	1.55E-15	5.88E-15	1.16E-14	µCi/mL			SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177215	SLAPS Loadout	01/26/15	Gross Alpha/Beta	Gross Alpha	2.52E-14	1.40E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177215	SLAPS Loadout	01/26/15		Gross Beta	1.72E-14	1.30E-14	1.83E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177216	SLAPS Loadout	01/27/15	Gross Alpha/Beta	Gross Alpha	4.29E-15	8.65E-15	1.08E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177216	SLAPS Loadout	01/27/15		Gross Beta	1.90E-15	7.96E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177216	SLAPS Loadout	01/27/15	Gross Alpha/Beta	Gross Alpha	2.54E-14	1.84E-14	2.57E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177216	SLAPS Loadout	01/27/15		Gross Beta	4.06E-14	1.96E-14	2.57E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177217	SLAPS Loadout	01/27/15	Gross Alpha/Beta	Gross Alpha	-1.71E-15	6.85E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177217	SLAPS Loadout	01/27/15		Gross Beta	1.50E-14	1.77E-14	2.59E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177218	SLAPS Loadout	01/22/15	Gross Alpha/Beta	Gross Alpha	1.93E-15	8.11E-15	1.10E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177218	SLAPS Loadout	01/22/15		Gross Beta	1.52E-14	1.79E-14	2.62E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177219	SLAPS Loadout	01/20/15	Gross Alpha/Beta	Gross Alpha	7.09E-16	7.70E-15	1.10E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177219	SLAPS Loadout	01/20/15		Gross Beta	2.27E-14	1.85E-14	2.60E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177220	SLAPS Loadout	01/29/15	Gross Alpha/Beta	Gross Alpha	-2.98E-15	6.54E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177220	SLAPS Loadout	01/29/15		Gross Beta	2.54E-14	1.89E-14	2.64E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177221	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	8.27E-16	6.17E-15	1.22E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177221	SLAPS Loadout	02/02/15		Gross Beta	3.31E-15	7.10E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177221	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	2.92E-14	1.50E-14	1.92E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177221	SLAPS Loadout	02/02/15		Gross Beta	2.52E-14	1.46E-14	1.92E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177222	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	-4.14E-16	5.65E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177222	SLAPS Loadout	02/02/15		Gross Beta	7.69E-15	1.25E-14	1.92E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177223	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	7.67E-15	1.27E-14	2.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177223	SLAPS Loadout	02/02/15		Gross Beta	3.31E-14	2.36E-14	3.24E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177224	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	-6.97E-16	9.53E-15	2.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177224	SLAPS Loadout	02/02/15		Gross Beta	6.26E-15	2.03E-14	3.24E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177225	SLAPS Loadout	02/02/15	Gross Alpha/Beta	Gross Alpha	-6.97E-16	9.53E-15	2.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177225	SLAPS Loadout	02/02/15		Gross Beta	2.23E-14	2.23E-14	3.24E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177226	SLAPS Loadout	02/03/15	Gross Alpha/Beta	Gross Alpha	2.07E-15	6.65E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177226	SLAPS Loadout	02/03/15		Gross Beta	2.12E-14	1.42E-14	1.92E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177227	SLAPS Loadout	02/03/15	Gross Alpha/Beta	Gross Alpha	2.34E-15	7.54E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177227	SLAPS Loadout	02/03/15		Gross Beta	3.30E-14	1.70E-14	2.18E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177228	SLAPS Loadout	02/04/15	Gross Alpha/Beta	Gross Alpha	5.52E-15	7.55E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177228	SLAPS Loadout	02/04/15		Gross Beta	3.61E-14	1.52E-14	1.83E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177229	SLAPS Loadout	02/04/15	Gross Alpha/Beta	Gross Alpha	4.30E-15	7.11E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177229	SLAPS Loadout	02/04/15		Gross Beta	4.26E-14	1.57E-14	1.82E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177230	SLAPS Loadout	02/05/15	Gross Alpha/Beta	Gross Alpha	3.67E-15	7.87E-15	1.35E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177230	SLAPS Loadout	02/05/15		Gross Beta	3.32E-14	1.68E-14	2.13E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177231	SLAPS Loadout	02/05/15	Gross Alpha/Beta	Gross Alpha	3.25E-15	6.97E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177231	SLAPS Loadout	02/05/15		Gross Beta	3.95E-14	1.59E-14	1.89E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177232	SLAPS Loadout	02/09/15	Gross Alpha/Beta	Gross Alpha	1.41E-15	4.62E-15	9.66E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177232	SLAPS Loadout	02/09/15		Gross Beta	6.59E-15	6.95E-15	9.66E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177232	SLAPS Loadout	02/09/15	Gross Alpha/Beta	Gross Alpha	3.10E-14	2.08E-14	2.76E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177232	SLAPS Loadout	02/09/15		Gross Beta	4.81E-14	2.21E-14	2.76E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177233	SLAPS Loadout	02/09/15	Gross Alpha/Beta	Gross Alpha	5.24E-15	6.38E-15	9.56E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177233	SLAPS Loadout	02/09/15		Gross Beta	4.12E-14	2.14E-14	2.73E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177234	SLAPS Loadout	02/10/15	Gross Alpha/Beta	Gross Alpha	1.34E-15	4.40E-15	9.18E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177234	SLAPS Loadout	02/10/15		Gross Beta	7.84E-14	2.33E-14	2.63E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177235	SLAPS Loadout	02/10/15	Gross Alpha/Beta	Gross Alpha	-1.13E-15	2.67E-15	9.18E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177235	SLAPS Loadout	02/10/15		Gross Beta	5.28E-14	2.15E-14	2.63E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177236	SLAPS Loadout	02/11/15	Gross Alpha/Beta	Gross Alpha	2.54E-15	4.99E-15	9.09E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177236	SLAPS Loadout	02/11/15		Gross Beta	5.76E-14	2.17E-14	2.60E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177237	SLAPS Loadout	02/11/15	Gross Alpha/Beta	Gross Alpha	1.32E-15	4.35E-15	9.09E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177237	SLAPS Loadout	02/11/15		Gross Beta	1.29E-13	2.63E-14	2.60E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177238	SLAPS Loadout	02/12/15	Gross Alpha/Beta	Gross Alpha	4.89E-15	5.96E-15	8.92E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177238	SLAPS Loadout	02/12/15		Gross Beta	1.09E-13	2.48E-14	2.55E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177239	SLAPS Loadout	02/12/15	Gross Alpha/Beta	Gross Alpha	3.80E-15	5.61E-15	9.18E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177239	SLAPS Loadout	02/12/15		Gross Beta	6.21E-14	2.22E-14	2.63E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177240	SLAPS Loadout	02/17/15	Gross Alpha/Beta	Gross Alpha	1.01E-14	7.95E-15	9.27E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177240	SLAPS Loadout	02/17/15		Gross Beta	6.66E-14	2.27E-14	2.65E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177241	SLAPS Loadout	02/17/15	Gross Alpha/Beta	Gross Alpha	2.59E-15	5.09E-15	9.27E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177241	SLAPS Loadout	02/17/15		Gross Beta	8.63E-14	2.40E-14	2.65E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177242	SLAPS Loadout	02/18/15	Gross Alpha/Beta	Gross Alpha	5.46E-15	1.07E-14	1.95E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177242	SLAPS Loadout	02/18/15		Gross Beta	1.32E-13	4.72E-14	5.58E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177243	SLAPS Loadout	02/18/15	Gross Alpha/Beta	Gross Alpha	3.88E-15	5.72E-15	9.37E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177243	SLAPS Loadout	02/18/15		Gross Beta	9.19E-14	2.46E-14	2.68E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177244	SLAPS Loadout	02/23/15	Gross Alpha/Beta	Gross Alpha	2.91E-15	5.71E-15	1.04E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177244	SLAPS Loadout	02/23/15		Gross Beta	6.95E-14	2.51E-14	2.98E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177245	SLAPS Loadout	02/23/15	Gross Alpha/Beta	Gross Alpha	1.42E-15	4.67E-15	9.76E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177245	SLAPS Loadout	02/23/15		Gross Beta	5.28E-14	2.26E-14	2.79E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177246	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	2.71E-15	9.03E-15	1.45E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177246	SLAPS Loadout	02/24/15		Gross Beta	7.57E-15	1.06E-14	1.45E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177246	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	3.79E-14	1.96E-14	2.55E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177246	SLAPS Loadout	02/24/15		Gross Beta	3.16E-14	1.90E-14	2.55E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177247	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	4.17E-15	9.24E-15	1.40E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177247	SLAPS Loadout	02/24/15		Gross Beta	8.43E-15	1.57E-14	2.46E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177248	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	9.44E-15	1.14E-14	1.49E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177248	SLAPS Loadout	02/24/15		Gross Beta	4.31E-14	2.06E-14	2.62E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177249	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	2.71E-15	9.03E-15	1.45E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177249	SLAPS Loadout	02/24/15		Gross Beta	4.10E-14	2.00E-14	2.55E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177250	SLAPS Loadout	02/24/15	Gross Alpha/Beta	Gross Alpha	2.71E-15	9.03E-15	1.45E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177250	SLAPS Loadout	02/24/15		Gross Beta	3.89E-14	1.98E-14	2.55E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177251	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	-3.15E-15	9.62E-15	1.91E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177251	SLAPS Loadout	02/25/15		Gross Beta	-5.04E-15	8.85E-15	1.91E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177251	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	4.74E-14	2.29E-14	2.98E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177251	SLAPS Loadout	02/25/15		Gross Beta	9.88E-15	1.85E-14	2.98E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177252	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	-3.20E-15	9.77E-15	1.94E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177252	SLAPS Loadout	02/25/15		Gross Beta	3.22E-14	2.14E-14	3.02E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177253	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	-5.11E-15	8.98E-15	1.94E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177253	SLAPS Loadout	02/25/15		Gross Beta	8.81E-15	1.86E-14	3.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177254	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	4.69E-16	8.19E-15	1.42E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177254	SLAPS Loadout	02/25/15		Gross Beta	4.43E-14	1.80E-14	2.22E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177255	SLAPS Loadout	02/25/15	Gross Alpha/Beta	Gross Alpha	4.69E-16	8.19E-15	1.42E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177255	SLAPS Loadout	02/25/15		Gross Beta	3.35E-14	1.68E-14	2.22E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177256	SLAPS Loadout	03/03/15	Gross Alpha/Beta	Gross Alpha	5.71E-15	9.32E-15	1.33E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177256	SLAPS Loadout	03/03/15		Gross Beta	1.28E-14	1.36E-14	2.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177257	SLAPS Loadout	03/04/15	Gross Alpha/Beta	Gross Alpha	5.41E-16	9.45E-15	1.64E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177257	SLAPS Loadout	03/04/15		Gross Beta	1.27E-14	1.64E-14	2.56E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177258	SLAPS Loadout	03/04/15	Gross Alpha/Beta	Gross Alpha	2.16E-15	9.99E-15	1.64E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177258	SLAPS Loadout	03/04/15		Gross Beta	-3.99E-15	1.41E-14	2.56E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177259	SLAPS Loadout	03/04/15	Gross Alpha/Beta	Gross Alpha	-2.34E-15	7.16E-15	1.42E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177259	SLAPS Loadout	03/04/15		Gross Beta	2.36E-14	1.57E-14	2.22E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177260	SLAPS Loadout	03/04/15	Gross Alpha/Beta	Gross Alpha	5.41E-15	1.10E-14	1.64E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177260	SLAPS Loadout	03/04/15		Gross Beta	7.45E-15	1.57E-14	2.56E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177261	SLAPS Loadout	03/04/15	Gross Alpha/Beta	Gross Alpha	2.56E-15	1.18E-14	1.94E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177261	SLAPS Loadout	03/04/15		Gross Beta	6.35E-15	1.82E-14	3.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177262	SLAPS Loadout	03/09/15	Gross Alpha/Beta	Gross Alpha	-4.55E-15	5.26E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177262	SLAPS Loadout	03/09/15		Gross Beta	1.76E-14	1.35E-14	1.96E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177263	SLAPS Loadout	03/09/15	Gross Alpha/Beta	Gross Alpha	-2.07E-15	6.32E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177263	SLAPS Loadout	03/09/15		Gross Beta	1.13E-14	1.27E-14	1.96E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177264	SLAPS Loadout	03/05/15	Gross Alpha/Beta	Gross Alpha	3.04E-15	1.03E-14	1.90E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177264	SLAPS Loadout	03/05/15		Gross Beta	1.12E-15	9.56E-15	1.90E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177264	SLAPS Loadout	03/05/15	Gross Alpha/Beta	Gross Alpha	3.57E-14	2.46E-14	2.96E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177264	SLAPS Loadout	03/05/15		Gross Beta	2.84E-14	2.39E-14	2.96E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177265	SLAPS Loadout	03/05/15	Gross Alpha/Beta	Gross Alpha	4.96E-15	1.10E-14	1.90E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177265	SLAPS Loadout	03/05/15		Gross Beta	4.56E-14	2.56E-14	2.96E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177266	SLAPS Loadout	03/10/15	Gross Alpha/Beta	Gross Alpha	-1.39E-15	1.52E-14	3.30E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177266	SLAPS Loadout	03/10/15		Gross Beta	-4.09E-15	3.55E-14	5.14E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177267	SLAPS Loadout	03/10/15	Gross Alpha/Beta	Gross Alpha	-8.05E-15	1.19E-14	3.30E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177267	SLAPS Loadout	03/10/15		Gross Beta	1.09E-14	3.73E-14	5.14E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177268	SLAPS Loadout	03/10/15	Gross Alpha/Beta	Gross Alpha	-1.76E-15	5.10E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177268	SLAPS Loadout	03/10/15		Gross Beta	1.20E-14	1.48E-14	1.91E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177269	SLAPS Loadout	03/10/15	Gross Alpha/Beta	Gross Alpha	-5.48E-15	2.74E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177269	SLAPS Loadout	03/10/15		Gross Beta	6.43E-15	1.42E-14	1.91E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177270	SLAPS Loadout	03/11/15	Gross Alpha/Beta	Gross Alpha	-1.71E-15	4.95E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177270	SLAPS Loadout	03/11/15		Gross Beta	2.01E-14	1.52E-14	1.86E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177271	SLAPS Loadout	03/11/15	Gross Alpha/Beta	Gross Alpha	5.53E-15	7.71E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177271	SLAPS Loadout	03/11/15		Gross Beta	2.32E-14	1.56E-14	1.86E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177272	SLAPS Loadout	03/12/15	Gross Alpha/Beta	Gross Alpha	-5.17E-16	5.67E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177272	SLAPS Loadout	03/12/15		Gross Beta	4.54E-14	1.80E-14	1.91E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177273	SLAPS Loadout	03/12/15	Gross Alpha/Beta	Gross Alpha	7.24E-16	6.19E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177273	SLAPS Loadout	03/12/15		Gross Beta	3.98E-14	1.75E-14	1.91E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177274	SLAPS Loadout	03/16/15	Gross Alpha/Beta	Gross Alpha	9.07E-15	8.24E-15	8.81E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177274	SLAPS Loadout	03/16/15		Gross Beta	6.60E-15	7.45E-15	8.81E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177274	SLAPS Loadout	03/16/15	Gross Alpha/Beta	Gross Alpha	2.24E-14	1.78E-14	2.67E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177274	SLAPS Loadout	03/16/15		Gross Beta	3.27E-14	1.87E-14	2.67E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177275	SLAPS Loadout	03/16/15	Gross Alpha/Beta	Gross Alpha	6.53E-15	7.38E-15	8.73E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177275	SLAPS Loadout	03/16/15		Gross Beta	2.45E-14	1.79E-14	2.64E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177276	SLAPS Loadout	03/17/15	Gross Alpha/Beta	Gross Alpha	4.04E-16	4.90E-15	8.65E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177276	SLAPS Loadout	03/17/15		Gross Beta	5.64E-15	1.60E-14	2.62E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177277	SLAPS Loadout	03/17/15	Gross Alpha/Beta	Gross Alpha	4.04E-15	6.45E-15	8.65E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177277	SLAPS Loadout	03/17/15		Gross Beta	2.12E-14	1.74E-14	2.62E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177278	SLAPS Loadout	03/18/15	Gross Alpha/Beta	Gross Alpha	2.75E-15	5.81E-15	8.40E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177278	SLAPS Loadout	03/18/15		Gross Beta	2.29E-14	1.71E-14	2.54E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177279	SLAPS Loadout	03/18/15	Gross Alpha/Beta	Gross Alpha	3.93E-15	6.27E-15	8.40E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177279	SLAPS Loadout	03/18/15		Gross Beta	1.61E-14	1.65E-14	2.54E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177280	SLAPS Loadout	03/19/15	Gross Alpha/Beta	Gross Alpha	5.16E-15	6.77E-15	8.48E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177280	SLAPS Loadout	03/19/15		Gross Beta	3.07E-14	1.80E-14	2.57E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177281	SLAPS Loadout	03/19/15	Gross Alpha/Beta	Gross Alpha	2.75E-15	5.81E-15	8.40E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177281	SLAPS Loadout	03/19/15		Gross Beta	3.27E-14	1.80E-14	2.54E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177282	SLAPS Loadout	03/23/15	Gross Alpha/Beta	Gross Alpha	5.16E-15	6.77E-15	8.48E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177282	SLAPS Loadout	03/23/15		Gross Beta	3.15E-14	1.80E-14	2.57E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177283	SLAPS Loadout	03/23/15	Gross Alpha/Beta	Gross Alpha	8.73E-15	7.93E-15	8.48E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177283	SLAPS Loadout	03/23/15		Gross Beta	2.84E-14	1.78E-14	2.57E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177284	SLAPS Loadout	03/24/15	Gross Alpha/Beta	Gross Alpha	9.59E-15	1.26E-14	1.58E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177284	SLAPS Loadout	03/24/15		Gross Beta	4.15E-14	3.21E-14	4.78E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177285	SLAPS Loadout	03/24/15	Gross Alpha/Beta	Gross Alpha	-1.48E-15	7.76E-15	1.58E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177285	SLAPS Loadout	03/24/15		Gross Beta	2.73E-14	3.08E-14	4.78E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177286	SLAPS Loadout	03/24/15	Gross Alpha/Beta	Gross Alpha	7.38E-16	8.93E-15	1.58E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177286	SLAPS Loadout	03/24/15		Gross Beta	3.16E-14	3.12E-14	4.78E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177287	SLAPS Loadout	03/24/15	Gross Alpha/Beta	Gross Alpha	7.08E-15	8.00E-15	9.46E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177287	SLAPS Loadout	03/24/15		Gross Beta	1.98E-14	1.88E-14	2.87E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177288	SLAPS Loadout	03/24/15	Gross Alpha/Beta	Gross Alpha	3.07E-15	6.48E-15	9.37E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177288	SLAPS Loadout	03/24/15		Gross Beta	1.28E-14	1.80E-14	2.84E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177289	SLAPS Loadout	03/26/15	Gross Alpha/Beta	Gross Alpha	-4.14E-16	5.45E-15	1.22E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177289	SLAPS Loadout	03/26/15		Gross Beta	3.31E-15	6.94E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177289	SLAPS Loadout	03/26/15	Gross Alpha/Beta	Gross Alpha	2.74E-14	1.37E-14	1.91E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177289	SLAPS Loadout	03/26/15		Gross Beta	1.70E-14	1.25E-14	1.91E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177290	SLAPS Loadout	03/26/15	Gross Alpha/Beta	Gross Alpha	5.79E-15	7.78E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177290	SLAPS Loadout	03/26/15		Gross Beta	2.10E-14	1.30E-14	1.91E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177291	SLAPS Loadout	03/25/15	Gross Alpha/Beta	Gross Alpha	5.79E-15	7.78E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177291	SLAPS Loadout	03/25/15		Gross Beta	1.39E-14	1.21E-14	1.91E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177292	SLAPS Loadout	03/25/15	Gross Alpha/Beta	Gross Alpha	4.55E-15	7.37E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177292	SLAPS Loadout	03/25/15		Gross Beta	1.46E-14	1.22E-14	1.91E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177293	SLAPS Loadout	03/30/15	Gross Alpha/Beta	Gross Alpha	6.77E-15	7.86E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177293	SLAPS Loadout	03/30/15		Gross Beta	2.17E-14	1.27E-14	1.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177294	SLAPS Loadout	03/30/15	Gross Alpha/Beta	Gross Alpha	-2.79E-15	4.01E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177294	SLAPS Loadout	03/30/15		Gross Beta	2.79E-14	1.34E-14	1.83E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177295	SLAPS Loadout	03/31/15	Gross Alpha/Beta	Gross Alpha	5.42E-15	7.28E-15	1.14E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177295	SLAPS Loadout	03/31/15		Gross Beta	1.82E-14	1.20E-14	1.78E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177296	SLAPS Loadout	03/31/15	Gross Alpha/Beta	Gross Alpha	5.42E-15	7.28E-15	1.14E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177296	SLAPS Loadout	03/31/15		Gross Beta	2.71E-14	1.30E-14	1.78E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177297	SLAPS Loadout	04/01/15	Gross Alpha/Beta	Gross Alpha	5.68E-15	7.63E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177297	SLAPS Loadout	04/01/15		Gross Beta	1.90E-14	1.25E-14	1.87E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177298	SLAPS Loadout	04/01/15	Gross Alpha/Beta	Gross Alpha	8.04E-16	5.81E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177298	SLAPS Loadout	04/01/15		Gross Beta	3.51E-14	1.43E-14	1.85E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177299	SLAPS Loadout	04/06/15	Gross Alpha/Beta	Gross Alpha	4.46E-15	7.23E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177299	SLAPS Loadout	04/06/15		Gross Beta	2.06E-14	1.27E-14	1.87E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177300	SLAPS Loadout	04/06/15	Gross Alpha/Beta	Gross Alpha	3.40E-15	5.63E-15	9.70E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177300	SLAPS Loadout	04/06/15		Gross Beta	1.21E-14	8.64E-15	9.70E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177300	SLAPS Loadout	04/06/15	Gross Alpha/Beta	Gross Alpha	4.14E-14	2.10E-14	2.88E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177300	SLAPS Loadout	04/06/15		Gross Beta	5.09E-14	2.17E-14	2.88E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177301	SLAPS Loadout	04/08/15	Gross Alpha/Beta	Gross Alpha	-3.09E-16	3.65E-15	9.70E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177301	SLAPS Loadout	04/08/15		Gross Beta	1.29E-14	1.87E-14	2.88E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177302	SLAPS Loadout	04/08/15	Gross Alpha/Beta	Gross Alpha	3.40E-15	5.63E-15	9.70E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177302	SLAPS Loadout	04/08/15		Gross Beta	1.61E-14	1.90E-14	2.88E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177303	SLAPS Loadout	04/13/15	Gross Alpha/Beta	Gross Alpha	2.15E-15	1.02E-14	2.25E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177303	SLAPS Loadout	04/13/15		Gross Beta	3.72E-14	4.39E-14	6.69E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177304	SLAPS Loadout	04/13/15	Gross Alpha/Beta	Gross Alpha	3.94E-14	2.31E-14	2.25E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177304	SLAPS Loadout	04/13/15		Gross Beta	5.01E-14	4.50E-14	6.69E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177305	SLAPS Loadout	04/13/15	Gross Alpha/Beta	Gross Alpha	1.08E-14	1.43E-14	2.25E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177305	SLAPS Loadout	04/13/15		Gross Beta	2.80E-14	4.31E-14	6.69E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177306	SLAPS Loadout	04/13/15	Gross Alpha/Beta	Gross Alpha	-3.14E-16	3.70E-15	9.84E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177306	SLAPS Loadout	04/13/15		Gross Beta	3.96E-14	2.11E-14	2.93E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177307	SLAPS Loadout	04/13/15	Gross Alpha/Beta	Gross Alpha	9.10E-16	4.32E-15	9.51E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177307	SLAPS Loadout	04/13/15		Gross Beta	7.97E-15	1.79E-14	2.83E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177308	SLAPS Loadout	04/14/15	Gross Alpha/Beta	Gross Alpha	1.13E-15	5.35E-15	1.18E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177308	SLAPS Loadout	04/14/15		Gross Beta	3.78E-14	2.45E-14	3.50E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177309	SLAPS Loadout	04/14/15	Gross Alpha/Beta	Gross Alpha	4.51E-15	7.46E-15	1.29E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177309	SLAPS Loadout	04/14/15		Gross Beta	1.50E-14	2.46E-14	3.82E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177310	SLAPS Loadout	04/20/15	Gross Alpha/Beta	Gross Alpha	8.54E-15	7.45E-15	8.53E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177310	SLAPS Loadout	04/20/15		Gross Beta	1.62E-14	9.75E-15	8.53E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177310	SLAPS Loadout	04/20/15	Gross Alpha/Beta	Gross Alpha	-1.99E-14	5.10E-14	3.19E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177310	SLAPS Loadout	04/20/15		Gross Beta	1.21E-14	5.20E-14	3.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177311	SLAPS Loadout	04/20/15	Gross Alpha/Beta	Gross Alpha	3.42E-15	5.40E-15	8.53E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177311	SLAPS Loadout	04/20/15		Gross Beta	-1.33E-14	5.12E-14	3.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177312	SLAPS Loadout	04/21/15	Gross Alpha/Beta	Gross Alpha	2.70E-15	6.00E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177312	SLAPS Loadout	04/21/15		Gross Beta	-4.41E-15	6.51E-14	4.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177313	SLAPS Loadout	04/21/15	Gross Alpha/Beta	Gross Alpha	1.08E-15	5.06E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177313	SLAPS Loadout	04/21/15		Gross Beta	-3.14E-14	6.42E-14	4.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177314	SLAPS Loadout	04/22/15	Gross Alpha/Beta	Gross Alpha	2.05E-15	4.57E-15	8.20E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177314	SLAPS Loadout	04/22/15		Gross Beta	-9.66E-15	4.93E-14	3.06E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177315	SLAPS Loadout	04/22/15	Gross Alpha/Beta	Gross Alpha	2.04E-15	4.55E-15	8.16E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177315	SLAPS Loadout	04/22/15		Gross Beta	5.89E-16	4.94E-14	3.05E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177316	SLAPS Loadout	04/23/15	Gross Alpha/Beta	Gross Alpha	2.06E-15	4.59E-15	8.24E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177316	SLAPS Loadout	04/23/15		Gross Beta	-1.92E-14	4.92E-14	3.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177317	SLAPS Loadout	04/23/15	Gross Alpha/Beta	Gross Alpha	3.27E-15	5.17E-15	8.16E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177317	SLAPS Loadout	04/23/15		Gross Beta	-1.96E-16	4.94E-14	3.05E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177318	SLAPS Loadout	04/27/15	Gross Alpha/Beta	Gross Alpha	7.93E-16	3.72E-15	7.93E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177318	SLAPS Loadout	04/27/15		Gross Beta	1.13E-14	4.83E-14	2.96E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177319	SLAPS Loadout	04/27/15	Gross Alpha/Beta	Gross Alpha	7.93E-16	3.72E-15	7.93E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177319	SLAPS Loadout	04/27/15		Gross Beta	-2.31E-14	4.72E-14	2.96E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177320	SLAPS Loadout	04/28/15	Gross Alpha/Beta	Gross Alpha	-6.01E-15	4.33E-14	1.20E-13	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177320	SLAPS Loadout	04/28/15		Gross Beta	-1.18E-13	7.23E-13	4.48E-13	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177321	SLAPS Loadout	04/28/15	Gross Alpha/Beta	Gross Alpha	1.20E-14	5.64E-14	1.20E-13	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177321	SLAPS Loadout	04/28/15		Gross Beta	-2.57E-13	7.18E-13	4.48E-13	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177322	SLAPS Loadout	04/28/15	Gross Alpha/Beta	Gross Alpha	1.96E-15	4.36E-15	7.82E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177322	SLAPS Loadout	04/28/15		Gross Beta	-1.69E-15	4.73E-14	2.92E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177323	SLAPS Loadout	04/28/15	Gross Alpha/Beta	Gross Alpha	-3.93E-16	2.83E-15	7.85E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177323	SLAPS Loadout	04/28/15		Gross Beta	-1.53E-14	4.70E-14	2.93E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177324	SLAPS Loadout	04/29/15	Gross Alpha/Beta	Gross Alpha	-1.91E-15	4.95E-15	1.21E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177324	SLAPS Loadout	04/29/15		Gross Beta	1.71E-15	6.48E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177324	SLAPS Loadout	04/29/15	Gross Alpha/Beta	Gross Alpha	2.48E-14	1.32E-14	1.77E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA177324	SLAPS Loadout	04/29/15		Gross Beta	2.86E-14	1.36E-14	1.77E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177325	SLAPS Loadout	04/29/15	Gross Alpha/Beta	Gross Alpha	2.94E-15	6.98E-15	1.22E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177325	SLAPS Loadout	04/29/15		Gross Beta	1.57E-14	1.21E-14	1.79E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA180654	SLAPS Loadout	04/30/15	Gross Alpha/Beta	Gross Alpha	-7.24E-16	5.67E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180654	SLAPS Loadout	04/30/15		Gross Beta	1.99E-14	1.29E-14	1.82E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180655	SLAPS Loadout	04/30/15	Gross Alpha/Beta	Gross Alpha	6.66E-15	9.63E-15	1.51E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180655	SLAPS Loadout	04/30/15		Gross Beta	2.23E-14	1.54E-14	2.22E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180656	SLAPS Loadout	04/30/15	Gross Alpha/Beta	Gross Alpha	5.17E-16	6.19E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180656	SLAPS Loadout	04/30/15		Gross Beta	3.03E-14	1.41E-14	1.82E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180657	SLAPS Loadout	04/30/15	Gross Alpha/Beta	Gross Alpha	6.43E-16	7.70E-15	1.55E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180657	SLAPS Loadout	04/30/15		Gross Beta	1.10E-14	1.42E-14	2.27E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180658	SLAPS Loadout	04/30/15	Gross Alpha/Beta	Gross Alpha	8.07E-15	9.97E-15	1.50E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180658	SLAPS Loadout	04/30/15		Gross Beta	2.78E-14	1.59E-14	2.19E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180659	SLAPS Loadout	05/04/15	Gross Alpha/Beta	Gross Alpha	5.17E-16	6.19E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180659	SLAPS Loadout	05/04/15		Gross Beta	3.66E-14	1.48E-14	1.82E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180660	SLAPS Loadout	05/04/15	Gross Alpha/Beta	Gross Alpha	-7.24E-16	5.67E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180660	SLAPS Loadout	05/04/15		Gross Beta	3.43E-14	1.45E-14	1.82E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180661	SLAPS Loadout	04/15/15	Gross Alpha/Beta	Gross Alpha	7.14E-15	8.54E-15	1.32E-14	µCi/mL			SLAPS General Air Monitoring
SLA180661	SLAPS Loadout	04/15/15		Gross Beta	1.37E-14	1.04E-14	1.32E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180661	SLAPS Loadout	04/15/15	Gross Alpha/Beta	Gross Alpha	2.14E-14	1.54E-14	2.03E-14	µCi/mL			SLAPS General Air Monitoring
SLA180661	SLAPS Loadout	04/15/15		Gross Beta	2.06E-14	1.53E-14	2.03E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180662	SLAPS Loadout	04/15/15	Gross Alpha/Beta	Gross Alpha	1.66E-15	5.96E-15	1.18E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180662	SLAPS Loadout	04/15/15		Gross Beta	8.51E-15	1.25E-14	1.80E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180663	SLAPS Loadout	04/16/15	Gross Alpha/Beta	Gross Alpha	4.88E-14	3.69E-14	4.71E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180663	SLAPS Loadout	04/16/15		Gross Beta	4.31E-14	5.10E-14	7.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180664	SLAPS Loadout	04/16/15	Gross Alpha/Beta	Gross Alpha	1.60E-14	2.73E-14	4.71E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180664	SLAPS Loadout	04/16/15		Gross Beta	4.00E-14	5.07E-14	7.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180665	SLAPS Loadout	04/16/15	Gross Alpha/Beta	Gross Alpha	5.38E-16	6.04E-15	1.30E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180665	SLAPS Loadout	04/16/15		Gross Beta	2.34E-14	1.54E-14	1.99E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180666	SLAPS Loadout	04/16/15	Gross Alpha/Beta	Gross Alpha	9.95E-16	1.12E-14	2.40E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180666	SLAPS Loadout	04/16/15		Gross Beta	1.28E-14	2.49E-14	3.67E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180667	SLAPS Loadout	05/05/15	Gross Alpha/Beta	Gross Alpha	5.04E-15	7.02E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180667	SLAPS Loadout	05/05/15		Gross Beta	2.29E-14	1.38E-14	1.75E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180668	SLAPS Loadout	05/05/15	Gross Alpha/Beta	Gross Alpha	-1.81E-15	4.25E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180668	SLAPS Loadout	05/05/15		Gross Beta	3.46E-14	1.50E-14	1.75E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180669	SLAPS Loadout	05/06/15	Gross Alpha/Beta	Gross Alpha	1.76E-15	6.31E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180669	SLAPS Loadout	05/06/15		Gross Beta	4.56E-14	1.71E-14	1.91E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180670	SLAPS Loadout	05/06/15	Gross Alpha/Beta	Gross Alpha	1.76E-15	6.31E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180670	SLAPS Loadout	05/06/15		Gross Beta	2.25E-14	1.48E-14	1.91E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180671	SLAPS Loadout	05/07/15	Gross Alpha/Beta	Gross Alpha	4.41E-15	7.52E-15	1.30E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180671	SLAPS Loadout	05/07/15		Gross Beta	3.26E-14	1.63E-14	1.99E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180672	SLAPS Loadout	05/07/15	Gross Alpha/Beta	Gross Alpha	5.38E-16	6.04E-15	1.30E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180672	SLAPS Loadout	05/07/15		Gross Beta	2.51E-14	1.55E-14	1.99E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180673	SLAPS Loadout	05/11/15	Gross Alpha/Beta	Gross Alpha	1.76E-15	6.31E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180673	SLAPS Loadout	05/11/15		Gross Beta	1.30E-14	1.37E-14	1.91E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180674	SLAPS Loadout	05/11/15	Gross Alpha/Beta	Gross Alpha	3.00E-15	6.79E-15	1.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180674	SLAPS Loadout	05/11/15		Gross Beta	2.49E-14	1.50E-14	1.91E-14	µCi/mL	J	T04	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180675	SLAPS Loadout	05/12/15	Gross Alpha/Beta	Gross Alpha	2.90E-15	7.00E-15	1.08E-14	µCi/mL			SLAPS General Air Monitoring
SLA180675	SLAPS Loadout	05/12/15		Gross Beta	6.76E-15	8.31E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180675	SLAPS Loadout	05/12/15	Gross Alpha/Beta	Gross Alpha	1.09E-14	2.10E-14	2.93E-14	µCi/mL			SLAPS General Air Monitoring
SLA180675	SLAPS Loadout	05/12/15		Gross Beta	1.84E-14	2.16E-14	2.93E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180676	SLAPS Loadout	05/12/15	Gross Alpha/Beta	Gross Alpha	2.90E-15	7.00E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180676	SLAPS Loadout	05/12/15		Gross Beta	-6.19E-16	2.01E-14	2.93E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180677	SLAPS Loadout	05/13/15	Gross Alpha/Beta	Gross Alpha	1.55E-15	6.26E-15	1.04E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180677	SLAPS Loadout	05/13/15		Gross Beta	-3.77E-15	1.90E-14	2.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180678	SLAPS Loadout	05/13/15	Gross Alpha/Beta	Gross Alpha	-2.16E-15	4.56E-15	1.04E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180678	SLAPS Loadout	05/13/15		Gross Beta	1.21E-14	2.03E-14	2.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180679	SLAPS Loadout	05/14/15	Gross Alpha/Beta	Gross Alpha	-2.12E-15	4.47E-15	1.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180679	SLAPS Loadout	05/14/15		Gross Beta	1.57E-14	2.02E-14	2.76E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180680	SLAPS Loadout	05/14/15	Gross Alpha/Beta	Gross Alpha	6.19E-15	7.61E-15	9.89E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180680	SLAPS Loadout	05/14/15		Gross Beta	1.83E-14	1.99E-14	2.68E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180681	SLAPS Loadout	05/18/15	Gross Alpha/Beta	Gross Alpha	0	6.46E-15	1.16E-14	µCi/mL			SLAPS General Air Monitoring
SLA180681	SLAPS Loadout	05/18/15		Gross Beta	1.22E-15	6.90E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180681	SLAPS Loadout	05/18/15	Gross Alpha/Beta	Gross Alpha	3.11E-14	1.39E-14	1.86E-14	µCi/mL			SLAPS General Air Monitoring
SLA180681	SLAPS Loadout	05/18/15		Gross Beta	2.72E-14	1.35E-14	1.86E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180682	SLAPS Loadout	05/18/15	Gross Alpha/Beta	Gross Alpha	2.48E-15	7.46E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180682	SLAPS Loadout	05/18/15		Gross Beta	1.98E-14	1.28E-14	1.90E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180683	SLAPS Loadout	05/19/15	Gross Alpha/Beta	Gross Alpha	1.45E-15	8.20E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180683	SLAPS Loadout	05/19/15		Gross Beta	8.50E-16	1.18E-14	2.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180684	SLAPS Loadout	05/19/15	Gross Alpha/Beta	Gross Alpha	0	7.68E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180684	SLAPS Loadout	05/19/15		Gross Beta	1.75E-14	1.42E-14	2.21E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180685	SLAPS Loadout	05/19/15	Gross Alpha/Beta	Gross Alpha	-1.45E-15	7.11E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180685	SLAPS Loadout	05/19/15		Gross Beta	2.70E-15	1.21E-14	2.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180686	SLAPS Loadout	05/19/15	Gross Alpha/Beta	Gross Alpha	-3.60E-15	4.82E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180686	SLAPS Loadout	05/19/15		Gross Beta	1.69E-14	1.21E-14	1.83E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180687	SLAPS Loadout	05/19/15	Gross Alpha/Beta	Gross Alpha	0	6.37E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180687	SLAPS Loadout	05/19/15		Gross Beta	3.78E-15	1.03E-14	1.83E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180688	SLAPS Loadout	05/20/15	Gross Alpha/Beta	Gross Alpha	2.43E-15	7.32E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180688	SLAPS Loadout	05/20/15		Gross Beta	1.16E-14	1.16E-14	1.86E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180689	SLAPS Loadout	05/20/15	Gross Alpha/Beta	Gross Alpha	3.76E-15	7.94E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180689	SLAPS Loadout	05/20/15		Gross Beta	1.44E-14	1.22E-14	1.91E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180690	SLAPS Loadout	05/21/15	Gross Alpha/Beta	Gross Alpha	8.69E-15	9.30E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180690	SLAPS Loadout	05/21/15		Gross Beta	2.06E-14	1.29E-14	1.90E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180691	SLAPS Loadout	05/21/15	Gross Alpha/Beta	Gross Alpha	-4.96E-15	4.33E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180691	SLAPS Loadout	05/21/15		Gross Beta	6.29E-15	1.10E-14	1.90E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180692	SLAPS Loadout	05/26/15	Gross Alpha/Beta	Gross Alpha	3.55E-15	7.50E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180692	SLAPS Loadout	05/26/15		Gross Beta	1.66E-14	1.19E-14	1.81E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180693	SLAPS Loadout	05/26/15	Gross Alpha/Beta	Gross Alpha	1.17E-15	6.65E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180693	SLAPS Loadout	05/26/15		Gross Beta	1.35E-14	1.14E-14	1.79E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180694	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	5.02E-15	6.69E-15	9.51E-15	µCi/mL			SLAPS General Air Monitoring
SLA180694	SLAPS Loadout	05/28/15		Gross Beta	1.06E-14	8.74E-15	9.51E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180694	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	3.48E-14	2.21E-14	3.12E-14	µCi/mL			SLAPS General Air Monitoring
SLA180694	SLAPS Loadout	05/28/15		Gross Beta	6.00E-14	2.41E-14	3.12E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180695	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	2.22E-15	5.39E-15	9.51E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180695	SLAPS Loadout	05/28/15		Gross Beta	2.31E-14	2.11E-14	3.12E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180696	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	1.26E-14	1.42E-14	1.86E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180696	SLAPS Loadout	05/28/15		Gross Beta	2.59E-14	3.96E-14	6.10E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180697	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	9.83E-15	1.31E-14	1.86E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180697	SLAPS Loadout	05/28/15		Gross Beta	2.42E-14	3.95E-14	6.10E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180698	SLAPS Loadout	05/28/15	Gross Alpha/Beta	Gross Alpha	1.01E-14	1.34E-14	1.90E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180698	SLAPS Loadout	05/28/15		Gross Beta	2.83E-14	4.07E-14	6.23E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180699	SLAPS Loadout	06/01/15	Gross Alpha/Beta	Gross Alpha	2.03E-15	4.92E-15	8.69E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180699	SLAPS Loadout	06/01/15		Gross Beta	6.36E-15	1.80E-14	2.85E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180700	SLAPS Loadout	06/01/15	Gross Alpha/Beta	Gross Alpha	-5.39E-16	3.37E-15	8.78E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180700	SLAPS Loadout	06/01/15		Gross Beta	8.91E-15	1.84E-14	2.88E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180701	SLAPS Loadout	06/02/15	Gross Alpha/Beta	Gross Alpha	7.14E-16	4.02E-15	8.31E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180701	SLAPS Loadout	06/02/15		Gross Beta	2.96E-14	1.93E-14	2.72E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180702	SLAPS Loadout	06/02/15	Gross Alpha/Beta	Gross Alpha	1.94E-15	4.71E-15	8.31E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180702	SLAPS Loadout	06/02/15		Gross Beta	2.18E-14	1.86E-14	2.72E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180703	SLAPS Loadout	06/03/15	Gross Alpha/Beta	Gross Alpha	5.56E-15	6.28E-15	8.23E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180703	SLAPS Loadout	06/03/15		Gross Beta	1.46E-14	1.78E-14	2.70E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180704	SLAPS Loadout	06/03/15	Gross Alpha/Beta	Gross Alpha	1.92E-15	4.66E-15	8.23E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180704	SLAPS Loadout	06/03/15		Gross Beta	1.30E-14	1.77E-14	2.70E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180705	SLAPS Loadout	06/04/15	Gross Alpha/Beta	Gross Alpha	8.58E-15	1.44E-14	2.25E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180705	SLAPS Loadout	06/04/15		Gross Beta	5.90E-14	5.04E-14	7.38E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180706	SLAPS Loadout	06/04/15	Gross Alpha/Beta	Gross Alpha	1.89E-15	1.06E-14	2.19E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180706	SLAPS Loadout	06/04/15		Gross Beta	7.20E-14	5.03E-14	7.19E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180707	SLAPS Loadout	06/08/15	Gross Alpha/Beta	Gross Alpha	5.61E-15	6.38E-15	8.31E-15	µCi/mL			SLAPS General Air Monitoring
SLA180707	SLAPS Loadout	06/08/15		Gross Beta	3.16E-15	5.35E-15	8.31E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180707	SLAPS Loadout	06/08/15	Gross Alpha/Beta	Gross Alpha	3.02E-14	1.90E-14	2.70E-14	µCi/mL			SLAPS General Air Monitoring
SLA180707	SLAPS Loadout	06/08/15		Gross Beta	2.86E-14	1.89E-14	2.70E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180708	SLAPS Loadout	06/08/15	Gross Alpha/Beta	Gross Alpha	7.14E-16	4.08E-15	8.31E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180708	SLAPS Loadout	06/08/15		Gross Beta	2.31E-14	1.84E-14	2.70E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180709	SLAPS Loadout	06/09/15	Gross Alpha/Beta	Gross Alpha	2.98E-15	5.03E-15	7.81E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180709	SLAPS Loadout	06/09/15		Gross Beta	1.51E-14	1.67E-14	2.54E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180710	SLAPS Loadout	06/09/15	Gross Alpha/Beta	Gross Alpha	4.11E-15	5.51E-15	7.78E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180710	SLAPS Loadout	06/09/15		Gross Beta	3.93E-14	1.87E-14	2.53E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180711	SLAPS Loadout	06/10/15	Gross Alpha/Beta	Gross Alpha	4.15E-15	5.56E-15	7.85E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180711	SLAPS Loadout	06/10/15		Gross Beta	3.37E-14	1.84E-14	2.55E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180712	SLAPS Loadout	06/10/15	Gross Alpha/Beta	Gross Alpha	1.46E-14	8.91E-15	7.85E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180712	SLAPS Loadout	06/10/15		Gross Beta	3.37E-14	1.84E-14	2.55E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180713	SLAPS Loadout	06/11/15	Gross Alpha/Beta	Gross Alpha	-2.63E-15	1.68E-14	4.28E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180713	SLAPS Loadout	06/11/15		Gross Beta	1.68E-15	8.42E-14	1.39E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180714	SLAPS Loadout	06/11/15	Gross Alpha/Beta	Gross Alpha	9.99E-15	2.45E-14	4.28E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180714	SLAPS Loadout	06/11/15		Gross Beta	6.64E-14	9.02E-14	1.39E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180715	SLAPS Loadout	06/11/15	Gross Alpha/Beta	Gross Alpha	9.99E-15	2.45E-14	4.28E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180715	SLAPS Loadout	06/11/15		Gross Beta	5.83E-14	8.95E-14	1.39E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180716	SLAPS Loadout	06/11/15	Gross Alpha/Beta	Gross Alpha	6.58E-15	6.58E-15	8.00E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180716	SLAPS Loadout	06/11/15		Gross Beta	2.90E-14	1.83E-14	2.60E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180717	SLAPS Loadout	06/11/15	Gross Alpha/Beta	Gross Alpha	5.33E-15	6.05E-15	7.89E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180717	SLAPS Loadout	06/11/15		Gross Beta	3.01E-14	1.82E-14	2.56E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180718	SLAPS Loadout	06/15/15	Gross Alpha/Beta	Gross Alpha	2.53E-15	6.20E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180718	SLAPS Loadout	06/15/15		Gross Beta	4.52E-15	2.17E-14	3.52E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180719	SLAPS Loadout	06/15/15	Gross Alpha/Beta	Gross Alpha	-4.82E-16	3.08E-15	7.85E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180719	SLAPS Loadout	06/15/15		Gross Beta	1.44E-14	1.68E-14	2.55E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180720	SLAPS Loadout	06/16/15	Gross Alpha/Beta	Gross Alpha	4.21E-15	5.64E-15	7.96E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180720	SLAPS Loadout	06/16/15		Gross Beta	1.16E-14	1.67E-14	2.59E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180721	SLAPS Loadout	06/16/15	Gross Alpha/Beta	Gross Alpha	3.16E-15	7.55E-15	1.16E-14	µCi/mL			SLAPS General Air Monitoring
SLA180721	SLAPS Loadout	06/16/15		Gross Beta	1.97E-15	7.17E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180721	SLAPS Loadout	06/16/15	Gross Alpha/Beta	Gross Alpha	9.73E-15	1.29E-14	1.87E-14	µCi/mL			SLAPS General Air Monitoring
SLA180721	SLAPS Loadout	06/16/15		Gross Beta	5.94E-15	1.24E-14	1.87E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180722	SLAPS Loadout	06/17/15	Gross Alpha/Beta	Gross Alpha	6.56E-15	9.82E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180722	SLAPS Loadout	06/17/15		Gross Beta	1.88E-14	1.61E-14	2.22E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180723	SLAPS Loadout	06/17/15	Gross Alpha/Beta	Gross Alpha	1.09E-14	2.61E-14	4.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180723	SLAPS Loadout	06/17/15		Gross Beta	1.53E-14	4.22E-14	6.46E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180724	SLAPS Loadout	06/17/15	Gross Alpha/Beta	Gross Alpha	9.32E-16	8.00E-15	1.38E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180724	SLAPS Loadout	06/17/15		Gross Beta	2.40E-14	1.66E-14	2.21E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180725	SLAPS Loadout	06/17/15	Gross Alpha/Beta	Gross Alpha	6.81E-15	2.48E-14	4.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180725	SLAPS Loadout	06/17/15		Gross Beta	1.79E-14	4.25E-14	6.46E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180726	SLAPS Loadout	06/17/15	Gross Alpha/Beta	Gross Alpha	-9.53E-15	1.86E-14	4.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180726	SLAPS Loadout	06/17/15		Gross Beta	-1.61E-14	3.81E-14	6.46E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180727	SLAPS Loadout	06/18/15	Gross Alpha/Beta	Gross Alpha	-7.98E-15	1.56E-14	3.36E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180727	SLAPS Loadout	06/18/15		Gross Beta	4.79E-14	3.95E-14	5.41E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180728	SLAPS Loadout	06/18/15	Gross Alpha/Beta	Gross Alpha	-1.10E-15	1.76E-14	3.23E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180728	SLAPS Loadout	06/18/15		Gross Beta	3.55E-14	3.68E-14	5.20E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180729	SLAPS Loadout	06/22/15	Gross Alpha/Beta	Gross Alpha	2.05E-15	7.45E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180729	SLAPS Loadout	06/22/15		Gross Beta	2.74E-14	1.53E-14	1.94E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180730	SLAPS Loadout	06/22/15	Gross Alpha/Beta	Gross Alpha	1.07E-14	9.89E-15	1.21E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180730	SLAPS Loadout	06/22/15		Gross Beta	2.66E-14	1.52E-14	1.94E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180731	SLAPS Loadout	06/23/15	Gross Alpha/Beta	Gross Alpha	-1.03E-15	2.61E-15	9.08E-15	µCi/mL			SLAPS General Air Monitoring
SLA180731	SLAPS Loadout	06/23/15		Gross Beta	3.92E-15	5.59E-15	9.08E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180731	SLAPS Loadout	06/23/15	Gross Alpha/Beta	Gross Alpha	1.15E-14	1.78E-14	2.81E-14	µCi/mL			SLAPS General Air Monitoring
SLA180731	SLAPS Loadout	06/23/15		Gross Beta	1.47E-14	1.81E-14	2.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180732	SLAPS Loadout	06/24/15	Gross Alpha/Beta	Gross Alpha	1.36E-15	4.12E-15	8.58E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180732	SLAPS Loadout	06/24/15		Gross Beta	1.68E-14	1.74E-14	2.65E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180733	SLAPS Loadout	06/23/15	Gross Alpha/Beta	Gross Alpha	7.59E-15	7.02E-15	9.04E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180733	SLAPS Loadout	06/23/15		Gross Beta	2.80E-14	1.92E-14	2.80E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180734	SLAPS Loadout	06/24/15	Gross Alpha/Beta	Gross Alpha	1.36E-15	4.12E-15	8.58E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180734	SLAPS Loadout	06/24/15		Gross Beta	3.03E-14	1.85E-14	2.65E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180735	SLAPS Loadout	06/25/15	Gross Alpha/Beta	Gross Alpha	2.65E-15	4.97E-15	8.99E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180735	SLAPS Loadout	06/25/15		Gross Beta	6.67E-15	1.72E-14	2.78E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180736	SLAPS Loadout	06/25/15	Gross Alpha/Beta	Gross Alpha	7.20E-15	7.44E-15	1.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180736	SLAPS Loadout	06/25/15		Gross Beta	1.56E-14	2.03E-14	3.17E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180737	SLAPS Loadout	06/25/15	Gross Alpha/Beta	Gross Alpha	1.16E-14	2.18E-14	3.94E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180737	SLAPS Loadout	06/25/15		Gross Beta	2.24E-14	7.49E-14	1.22E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180738	SLAPS Loadout	06/25/15	Gross Alpha/Beta	Gross Alpha	3.31E-14	3.06E-14	3.94E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180738	SLAPS Loadout	06/25/15		Gross Beta	9.46E-14	8.13E-14	1.22E-13	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180739	SLAPS Loadout	06/29/15	Gross Alpha/Beta	Gross Alpha	1.34E-14	8.71E-15	8.82E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180739	SLAPS Loadout	06/29/15		Gross Beta	5.51E-14	2.09E-14	2.73E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180740	SLAPS Loadout	06/29/15	Gross Alpha/Beta	Gross Alpha	5.10E-15	6.06E-15	8.99E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180740	SLAPS Loadout	06/29/15		Gross Beta	2.16E-14	1.86E-14	2.78E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180741	SLAPS Loadout	06/30/15	Gross Alpha/Beta	Gross Alpha	1.60E-14	9.06E-15	8.27E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180741	SLAPS Loadout	06/30/15		Gross Beta	3.07E-14	1.80E-14	2.56E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180742	SLAPS Loadout	06/30/15	Gross Alpha/Beta	Gross Alpha	5.79E-15	5.98E-15	8.23E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180742	SLAPS Loadout	06/30/15		Gross Beta	2.70E-14	1.76E-14	2.55E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180743	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	1.44E-15	4.36E-15	9.08E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180743	SLAPS Loadout	07/01/15		Gross Beta	2.34E-14	1.89E-14	2.81E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180744	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	1.39E-14	9.01E-15	9.13E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180744	SLAPS Loadout	07/01/15		Gross Beta	4.10E-14	2.04E-14	2.82E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180745	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	1.09E-14	9.03E-15	1.06E-14	µCi/mL			SLAPS General Air Monitoring
SLA180745	SLAPS Loadout	07/01/15		Gross Beta	1.83E-15	5.90E-15	1.06E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180745	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	2.94E-14	1.62E-14	2.00E-14	µCi/mL			SLAPS General Air Monitoring
SLA180745	SLAPS Loadout	07/01/15		Gross Beta	2.12E-14	1.53E-14	2.00E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180746	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	5.55E-16	5.47E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180746	SLAPS Loadout	07/01/15		Gross Beta	1.84E-14	1.54E-14	2.07E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180747	SLAPS Loadout	07/01/15	Gross Alpha/Beta	Gross Alpha	1.85E-15	5.96E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180747	SLAPS Loadout	07/01/15		Gross Beta	3.83E-15	1.34E-14	2.02E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180748	SLAPS Loadout	07/02/15	Gross Alpha/Beta	Gross Alpha	3.24E-15	6.68E-15	1.10E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180748	SLAPS Loadout	07/02/15		Gross Beta	9.94E-15	1.45E-14	2.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180749	SLAPS Loadout	07/02/15	Gross Alpha/Beta	Gross Alpha	1.91E-15	6.15E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180749	SLAPS Loadout	07/02/15		Gross Beta	1.78E-14	1.55E-14	2.09E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180750	SLAPS Loadout	07/06/15	Gross Alpha/Beta	Gross Alpha	5.25E-16	5.17E-15	1.03E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180750	SLAPS Loadout	07/06/15		Gross Beta	1.50E-14	1.43E-14	1.95E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180751	SLAPS Loadout	07/06/15	Gross Alpha/Beta	Gross Alpha	6.82E-15	7.65E-15	1.03E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180751	SLAPS Loadout	07/06/15		Gross Beta	2.79E-14	1.57E-14	1.95E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180752	SLAPS Loadout	07/07/15	Gross Alpha/Beta	Gross Alpha	5.30E-15	6.88E-15	9.85E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180752	SLAPS Loadout	07/07/15		Gross Beta	7.37E-15	1.28E-14	1.86E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180753	SLAPS Loadout	07/07/15	Gross Alpha/Beta	Gross Alpha	5.02E-16	4.95E-15	9.90E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180753	SLAPS Loadout	07/07/15		Gross Beta	6.63E-15	1.28E-14	1.87E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180754	SLAPS Loadout	07/08/15	Gross Alpha/Beta	Gross Alpha	4.18E-15	6.57E-15	1.00E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180754	SLAPS Loadout	07/08/15		Gross Beta	1.46E-14	1.39E-14	1.90E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180755	SLAPS Loadout	07/08/15	Gross Alpha/Beta	Gross Alpha	9.03E-15	8.15E-15	9.99E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180755	SLAPS Loadout	07/08/15		Gross Beta	9.03E-15	1.32E-14	1.89E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180756	SLAPS Loadout	07/09/15	Gross Alpha/Beta	Gross Alpha	3.29E-15	6.79E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180756	SLAPS Loadout	07/09/15		Gross Beta	1.27E-14	1.51E-14	2.11E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180757	SLAPS Loadout	07/09/15	Gross Alpha/Beta	Gross Alpha	1.91E-15	6.15E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180757	SLAPS Loadout	07/09/15		Gross Beta	5.03E-16	1.34E-14	2.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180758	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	-1.08E-15	3.81E-14	5.69E-14	µCi/mL			SLAPS General Air Monitoring
SLA180758	SLAPS Loadout	07/13/15		Gross Beta	1.19E-14	4.23E-14	5.69E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180758	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	5.91E-14	1.04E-13	1.47E-13	µCi/mL			SLAPS General Air Monitoring
SLA180758	SLAPS Loadout	07/13/15		Gross Beta	6.32E-14	1.04E-13	1.47E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180759	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	5.26E-15	3.92E-14	5.55E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180759	SLAPS Loadout	07/13/15		Gross Beta	6.57E-14	1.02E-13	1.43E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180760	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	1.22E-14	4.34E-14	5.84E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180760	SLAPS Loadout	07/13/15		Gross Beta	1.03E-13	1.10E-13	1.50E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180761	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	7.32E-15	9.62E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180761	SLAPS Loadout	07/13/15		Gross Beta	3.32E-14	2.19E-14	2.84E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180762	SLAPS Loadout	07/13/15	Gross Alpha/Beta	Gross Alpha	1.17E-15	8.72E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180762	SLAPS Loadout	07/13/15		Gross Beta	1.01E-14	2.23E-14	3.17E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180763	SLAPS Loadout	07/14/15	Gross Alpha/Beta	Gross Alpha	1.33E-14	1.09E-14	1.08E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180763	SLAPS Loadout	07/14/15		Gross Beta	4.18E-14	2.20E-14	2.77E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180764	SLAPS Loadout	07/14/15	Gross Alpha/Beta	Gross Alpha	2.28E-15	8.12E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180764	SLAPS Loadout	07/14/15		Gross Beta	1.61E-14	2.04E-14	2.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180765	SLAPS Loadout	07/15/15	Gross Alpha/Beta	Gross Alpha	-1.42E-15	6.75E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180765	SLAPS Loadout	07/15/15		Gross Beta	2.54E-15	1.89E-14	2.76E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180766	SLAPS Loadout	07/15/15	Gross Alpha/Beta	Gross Alpha	-2.02E-16	7.14E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180766	SLAPS Loadout	07/15/15		Gross Beta	6.41E-15	1.91E-14	2.75E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180767	SLAPS Loadout	07/16/15	Gross Alpha/Beta	Gross Alpha	3.50E-15	8.45E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180767	SLAPS Loadout	07/16/15		Gross Beta	1.61E-14	2.03E-14	2.80E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180768	SLAPS Loadout	07/16/15	Gross Alpha/Beta	Gross Alpha	-2.69E-15	6.42E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180768	SLAPS Loadout	07/16/15		Gross Beta	1.93E-14	2.06E-14	2.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180769	SLAPS Loadout	07/20/15	Gross Alpha/Beta	Gross Alpha	-2.24E-16	7.90E-15	1.18E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180769	SLAPS Loadout	07/20/15		Gross Beta	3.98E-14	2.37E-14	3.04E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180770	SLAPS Loadout	07/20/15	Gross Alpha/Beta	Gross Alpha	-2.21E-16	7.82E-15	1.17E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180770	SLAPS Loadout	07/20/15		Gross Beta	1.72E-14	2.18E-14	3.01E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180771	SLAPS Loadout	07/21/15	Gross Alpha/Beta	Gross Alpha	1.06E-15	7.92E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180771	SLAPS Loadout	07/21/15		Gross Beta	2.47E-14	2.15E-14	2.89E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180772	SLAPS Loadout	07/21/15	Gross Alpha/Beta	Gross Alpha	2.94E-15	8.03E-15	1.33E-14	µCi/mL			SLAPS General Air Monitoring
SLA180772	SLAPS Loadout	07/21/15		Gross Beta	3.26E-16	7.13E-15	1.33E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180772	SLAPS Loadout	07/21/15	Gross Alpha/Beta	Gross Alpha	2.35E-14	1.52E-14	2.04E-14	µCi/mL			SLAPS General Air Monitoring
SLA180772	SLAPS Loadout	07/21/15		Gross Beta	8.43E-15	1.35E-14	2.04E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180773	SLAPS Loadout	07/22/15	Gross Alpha/Beta	Gross Alpha	-2.06E-15	5.51E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180773	SLAPS Loadout	07/22/15		Gross Beta	1.82E-14	1.34E-14	1.84E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180774	SLAPS Loadout	07/22/15	Gross Alpha/Beta	Gross Alpha	7.36E-15	8.65E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180774	SLAPS Loadout	07/22/15		Gross Beta	2.35E-14	1.40E-14	1.84E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180775	SLAPS Loadout	07/23/15	Gross Alpha/Beta	Gross Alpha	-9.49E-16	6.44E-15	1.29E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180775	SLAPS Loadout	07/23/15		Gross Beta	1.39E-14	1.38E-14	1.97E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180776	SLAPS Loadout	07/23/15	Gross Alpha/Beta	Gross Alpha	-9.49E-16	6.44E-15	1.29E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180776	SLAPS Loadout	07/23/15		Gross Beta	2.12E-14	1.46E-14	1.97E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180777	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	3.81E-15	7.68E-15	1.26E-14	µCi/mL			SLAPS General Air Monitoring
SLA180777	SLAPS Loadout	07/27/15		Gross Beta	1.43E-14	1.07E-14	1.26E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180777	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	2.13E-14	1.44E-14	2.05E-14	µCi/mL			SLAPS General Air Monitoring
SLA180777	SLAPS Loadout	07/27/15		Gross Beta	2.96E-14	1.53E-14	2.05E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180778	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	3.85E-15	7.76E-15	1.27E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180778	SLAPS Loadout	07/27/15		Gross Beta	2.57E-14	1.50E-14	2.07E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180779	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	-8.37E-15	1.54E-14	3.87E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180779	SLAPS Loadout	07/27/15		Gross Beta	1.65E-14	3.82E-14	6.31E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180780	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	1.95E-14	2.58E-14	3.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180780	SLAPS Loadout	07/27/15		Gross Beta	5.43E-14	4.24E-14	6.21E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180781	SLAPS Loadout	07/27/15	Gross Alpha/Beta	Gross Alpha	-4.29E-15	1.71E-14	3.81E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180781	SLAPS Loadout	07/27/15		Gross Beta	4.16E-14	4.09E-14	6.21E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180782	SLAPS Loadout	07/28/15	Gross Alpha/Beta	Gross Alpha	2.40E-15	6.94E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180782	SLAPS Loadout	07/28/15		Gross Beta	4.29E-14	1.62E-14	1.97E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180783	SLAPS Loadout	07/28/15	Gross Alpha/Beta	Gross Alpha	4.93E-15	7.83E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180783	SLAPS Loadout	07/28/15		Gross Beta	3.67E-14	1.57E-14	1.98E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180784	SLAPS Loadout	07/29/15	Gross Alpha/Beta	Gross Alpha	1.07E-15	6.05E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180784	SLAPS Loadout	07/29/15		Gross Beta	1.61E-14	1.26E-14	1.84E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180785	SLAPS Loadout	07/29/15	Gross Alpha/Beta	Gross Alpha	3.42E-15	6.90E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180785	SLAPS Loadout	07/29/15		Gross Beta	1.61E-14	1.26E-14	1.84E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180786	SLAPS Loadout	07/30/15	Gross Alpha/Beta	Gross Alpha	4.59E-15	7.29E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180786	SLAPS Loadout	07/30/15		Gross Beta	1.61E-14	1.26E-14	1.84E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180787	SLAPS Loadout	07/30/15	Gross Alpha/Beta	Gross Alpha	2.23E-15	6.43E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180787	SLAPS Loadout	07/30/15		Gross Beta	1.97E-14	1.29E-14	1.82E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180788	SLAPS Loadout	08/03/15	Gross Alpha/Beta	Gross Alpha	6.94E-15	8.00E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180788	SLAPS Loadout	08/03/15		Gross Beta	2.51E-14	1.36E-14	1.84E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180789	SLAPS Loadout	08/03/15	Gross Alpha/Beta	Gross Alpha	6.94E-15	8.00E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180789	SLAPS Loadout	08/03/15		Gross Beta	2.58E-14	1.37E-14	1.84E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180790	SLAPS Loadout	08/04/15	Gross Alpha/Beta	Gross Alpha	1.05E-14	8.98E-15	1.13E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180790	SLAPS Loadout	08/04/15		Gross Beta	4.24E-14	1.54E-14	1.84E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180791	SLAPS Loadout	08/04/15	Gross Alpha/Beta	Gross Alpha	-9.80E-17	5.58E-15	1.13E-14	µCi/mL			SLAPS General Air Monitoring
SLA180791	SLAPS Loadout	08/04/15		Gross Beta	4.59E-15	7.29E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180791	SLAPS Loadout	08/04/15	Gross Alpha/Beta	Gross Alpha	4.99E-14	1.61E-14	1.84E-14	µCi/mL			SLAPS General Air Monitoring
SLA180791	SLAPS Loadout	08/04/15		Gross Beta	4.46E-14	1.56E-14	1.84E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180792	SLAPS Loadout	08/05/15	Gross Alpha/Beta	Gross Alpha	8.30E-15	1.10E-14	1.63E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180792	SLAPS Loadout	08/05/15		Gross Beta	2.64E-14	1.85E-14	2.65E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180793	SLAPS Loadout	08/05/15	Gross Alpha/Beta	Gross Alpha	8.35E-15	1.11E-14	1.64E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180793	SLAPS Loadout	08/05/15		Gross Beta	5.05E-14	2.12E-14	2.67E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180794	SLAPS Loadout	08/05/15	Gross Alpha/Beta	Gross Alpha	4.99E-15	1.01E-14	1.65E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180794	SLAPS Loadout	08/05/15		Gross Beta	2.46E-14	1.85E-14	2.69E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180795	SLAPS Loadout	08/05/15	Gross Alpha/Beta	Gross Alpha	5.11E-15	8.11E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180795	SLAPS Loadout	08/05/15		Gross Beta	1.96E-14	1.42E-14	2.05E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180796	SLAPS Loadout	08/05/15	Gross Alpha/Beta	Gross Alpha	-1.09E-16	6.21E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180796	SLAPS Loadout	08/05/15		Gross Beta	3.96E-14	1.64E-14	2.05E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180797	SLAPS Loadout	08/06/15	Gross Alpha/Beta	Gross Alpha	-1.30E-15	5.18E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180797	SLAPS Loadout	08/06/15		Gross Beta	2.34E-14	1.37E-14	1.89E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180798	SLAPS Loadout	08/06/15	Gross Alpha/Beta	Gross Alpha	5.93E-15	7.87E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180798	SLAPS Loadout	08/06/15		Gross Beta	5.52E-14	1.69E-14	1.89E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180799	SLAPS Loadout	08/10/15	Gross Alpha/Beta	Gross Alpha	3.57E-15	7.20E-15	1.18E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180799	SLAPS Loadout	08/10/15		Gross Beta	2.46E-14	1.40E-14	1.92E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180800	SLAPS Loadout	08/10/15	Gross Alpha/Beta	Gross Alpha	2.27E-15	6.55E-15	1.14E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180800	SLAPS Loadout	08/10/15		Gross Beta	3.06E-14	1.43E-14	1.86E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180801	SLAPS Loadout	08/12/15	Gross Alpha/Beta	Gross Alpha	1.34E-14	9.41E-15	1.09E-14	µCi/mL			SLAPS General Air Monitoring
SLA180801	SLAPS Loadout	08/12/15		Gross Beta	2.75E-15	6.21E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180801	SLAPS Loadout	08/12/15	Gross Alpha/Beta	Gross Alpha	1.50E-14	1.27E-14	1.86E-14	µCi/mL			SLAPS General Air Monitoring
SLA180801	SLAPS Loadout	08/12/15		Gross Beta	1.05E-14	1.21E-14	1.86E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180802	SLAPS Loadout	08/12/15	Gross Alpha/Beta	Gross Alpha	1.55E-15	5.67E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180802	SLAPS Loadout	08/12/15		Gross Beta	3.49E-14	1.47E-14	1.83E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180803	SLAPS Loadout	08/13/15	Gross Alpha/Beta	Gross Alpha	1.14E-14	9.10E-15	1.13E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180803	SLAPS Loadout	08/13/15		Gross Beta	2.72E-14	1.45E-14	1.92E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180804	SLAPS Loadout	08/13/15	Gross Alpha/Beta	Gross Alpha	4.06E-16	5.42E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180804	SLAPS Loadout	08/13/15		Gross Beta	2.57E-14	1.43E-14	1.92E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180805	SLAPS Loadout	08/17/15	Gross Alpha/Beta	Gross Alpha	1.55E-15	5.67E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180805	SLAPS Loadout	08/17/15		Gross Beta	2.82E-14	1.40E-14	1.83E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180806	SLAPS Loadout	08/17/15	Gross Alpha/Beta	Gross Alpha	5.08E-15	7.02E-15	1.09E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180806	SLAPS Loadout	08/17/15		Gross Beta	3.82E-14	1.52E-14	1.85E-14	µCi/mL	=		SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180807	SLAPS Loadout	08/18/15	Gross Alpha/Beta	Gross Alpha	4.14E-16	5.53E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180807	SLAPS Loadout	08/18/15		Gross Beta	1.42E-14	1.32E-14	1.96E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180808	SLAPS Loadout	08/18/15	Gross Alpha/Beta	Gross Alpha	2.92E-15	6.61E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180808	SLAPS Loadout	08/18/15		Gross Beta	3.13E-14	1.52E-14	1.98E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180809	SLAPS Loadout	08/19/15	Gross Alpha/Beta	Gross Alpha	5.63E-16	3.70E-15	7.77E-15	µCi/mL			SLAPS General Air Monitoring
SLA180809	SLAPS Loadout	08/19/15		Gross Beta	6.20E-15	6.26E-15	7.77E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180809	SLAPS Loadout	08/19/15	Gross Alpha/Beta	Gross Alpha	8.30E-15	1.62E-14	2.45E-14	µCi/mL			SLAPS General Air Monitoring
SLA180809	SLAPS Loadout	08/19/15		Gross Beta	1.34E-14	1.67E-14	2.45E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180810	SLAPS Loadout	08/19/15	Gross Alpha/Beta	Gross Alpha	5.07E-15	5.84E-15	7.77E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180810	SLAPS Loadout	08/19/15		Gross Beta	1.19E-14	1.65E-14	2.45E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180811	SLAPS Loadout	08/20/15	Gross Alpha/Beta	Gross Alpha	5.73E-16	3.77E-15	7.91E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180811	SLAPS Loadout	08/20/15		Gross Beta	2.10E-14	1.76E-14	2.50E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180812	SLAPS Loadout	08/20/15	Gross Alpha/Beta	Gross Alpha	1.43E-14	8.81E-15	7.91E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180812	SLAPS Loadout	08/20/15		Gross Beta	2.68E-14	1.81E-14	2.50E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180813	SLAPS Loadout	08/24/15	Gross Alpha/Beta	Gross Alpha	5.16E-15	5.94E-15	7.91E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180813	SLAPS Loadout	08/24/15		Gross Beta	2.76E-14	1.81E-14	2.50E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180814	SLAPS Loadout	08/24/15	Gross Alpha/Beta	Gross Alpha	5.68E-16	3.74E-15	7.84E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180814	SLAPS Loadout	08/24/15		Gross Beta	2.22E-14	1.76E-14	2.48E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180815	SLAPS Loadout	08/25/15	Gross Alpha/Beta	Gross Alpha	8.60E-15	7.15E-15	7.91E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180815	SLAPS Loadout	08/25/15		Gross Beta	3.34E-14	1.86E-14	2.50E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180816	SLAPS Loadout	08/25/15	Gross Alpha/Beta	Gross Alpha	5.05E-15	5.81E-15	7.74E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180816	SLAPS Loadout	08/25/15		Gross Beta	4.71E-14	1.93E-14	2.44E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180817	SLAPS Loadout	08/26/15	Gross Alpha/Beta	Gross Alpha	2.87E-15	4.98E-15	7.91E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180817	SLAPS Loadout	08/26/15		Gross Beta	3.64E-14	1.88E-14	2.50E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180818	SLAPS Loadout	08/26/15	Gross Alpha/Beta	Gross Alpha	1.71E-15	4.40E-15	7.88E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180818	SLAPS Loadout	08/26/15		Gross Beta	3.04E-14	1.83E-14	2.49E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180819	SLAPS Loadout	08/27/15	Gross Alpha/Beta	Gross Alpha	6.12E-16	4.03E-15	8.45E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180819	SLAPS Loadout	08/27/15		Gross Beta	1.77E-14	1.84E-14	2.67E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180820	SLAPS Loadout	08/27/15	Gross Alpha/Beta	Gross Alpha	1.84E-15	4.72E-15	8.45E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180820	SLAPS Loadout	08/27/15		Gross Beta	2.32E-14	1.88E-14	2.67E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180821	SLAPS Loadout	08/31/15	Gross Alpha/Beta	Gross Alpha	1.65E-14	1.89E-14	2.52E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180821	SLAPS Loadout	08/31/15		Gross Beta	1.32E-13	6.14E-14	7.97E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180822	SLAPS Loadout	08/31/15	Gross Alpha/Beta	Gross Alpha	4.15E-14	2.67E-14	2.49E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180822	SLAPS Loadout	08/31/15		Gross Beta	7.97E-14	5.64E-14	7.85E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180823	SLAPS Loadout	08/31/15	Gross Alpha/Beta	Gross Alpha	9.01E-15	1.56E-14	2.49E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180823	SLAPS Loadout	08/31/15		Gross Beta	7.74E-14	5.62E-14	7.85E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180824	SLAPS Loadout	08/31/15	Gross Alpha/Beta	Gross Alpha	7.56E-15	6.87E-15	8.02E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180824	SLAPS Loadout	08/31/15		Gross Beta	5.63E-14	2.06E-14	2.53E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180825	SLAPS Loadout	08/31/15	Gross Alpha/Beta	Gross Alpha	4.05E-15	5.53E-15	7.99E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180825	SLAPS Loadout	08/31/15		Gross Beta	2.56E-14	1.81E-14	2.52E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180826	SLAPS Loadout	09/01/15	Gross Alpha/Beta	Gross Alpha	2.96E-15	5.14E-15	8.17E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180826	SLAPS Loadout	09/01/15		Gross Beta	2.54E-14	1.85E-14	2.58E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180827	SLAPS Loadout	09/01/15	Gross Alpha/Beta	Gross Alpha	1.78E-15	4.56E-15	8.17E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180827	SLAPS Loadout	09/01/15		Gross Beta	7.48E-14	2.22E-14	2.58E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180828	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	4.46E-15	5.92E-15	9.01E-15	µCi/mL			SLAPS General Air Monitoring
SLA180828	SLAPS Loadout	09/02/15		Gross Beta	4.46E-15	5.92E-15	9.01E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180828	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	4.35E-14	1.93E-14	2.60E-14	µCi/mL			SLAPS General Air Monitoring
SLA180828	SLAPS Loadout	09/02/15		Gross Beta	4.64E-14	1.95E-14	2.60E-14	µCi/mL	=		SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180829	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	4.44E-15	5.90E-15	8.97E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180829	SLAPS Loadout	09/02/15		Gross Beta	2.25E-14	1.75E-14	2.59E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180830	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	1.58E-14	1.58E-14	2.10E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180830	SLAPS Loadout	09/02/15		Gross Beta	3.88E-14	3.98E-14	6.08E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180831	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	2.64E-14	1.90E-14	2.08E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180831	SLAPS Loadout	09/02/15		Gross Beta	6.59E-14	4.17E-14	6.01E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180832	SLAPS Loadout	09/02/15	Gross Alpha/Beta	Gross Alpha	1.57E-14	1.56E-14	2.08E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180832	SLAPS Loadout	09/02/15		Gross Beta	4.36E-14	3.98E-14	6.01E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180833	SLAPS Loadout	09/03/15	Gross Alpha/Beta	Gross Alpha	3.57E-15	5.91E-15	9.77E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180833	SLAPS Loadout	09/03/15		Gross Beta	5.44E-14	2.15E-14	2.83E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180834	SLAPS Loadout	09/03/15	Gross Alpha/Beta	Gross Alpha	7.43E-15	7.43E-15	9.87E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180834	SLAPS Loadout	09/03/15		Gross Beta	4.36E-14	2.08E-14	2.85E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180835	SLAPS Loadout	09/08/15	Gross Alpha/Beta	Gross Alpha	5.73E-15	6.48E-15	9.18E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180835	SLAPS Loadout	09/08/15		Gross Beta	4.96E-14	2.00E-14	2.65E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180836	SLAPS Loadout	09/08/15	Gross Alpha/Beta	Gross Alpha	4.54E-15	6.03E-15	9.18E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180836	SLAPS Loadout	09/08/15		Gross Beta	5.57E-14	2.05E-14	2.65E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180837	SLAPS Loadout	09/09/15	Gross Alpha/Beta	Gross Alpha	4.65E-15	6.18E-15	9.40E-15	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180837	SLAPS Loadout	09/09/15		Gross Beta	2.36E-14	1.83E-14	2.72E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180838	SLAPS Loadout	09/09/15	Gross Alpha/Beta	Gross Alpha	8.37E-15	7.55E-15	9.49E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180838	SLAPS Loadout	09/09/15		Gross Beta	3.09E-14	1.91E-14	2.74E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180839	SLAPS Loadout	09/10/15	Gross Alpha/Beta	Gross Alpha	7.29E-15	7.28E-15	9.68E-15	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180839	SLAPS Loadout	09/10/15		Gross Beta	4.27E-14	2.04E-14	2.80E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180840	SLAPS Loadout	09/10/15	Gross Alpha/Beta	Gross Alpha	9.74E-15	8.05E-15	9.63E-15	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180840	SLAPS Loadout	09/10/15		Gross Beta	1.70E-14	1.82E-14	2.78E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180841	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	-3.08E-15	1.81E-14	3.79E-14	µCi/mL			SLAPS General Air Monitoring
SLA180841	SLAPS Loadout	09/14/15		Gross Beta	1.54E-14	2.45E-14	3.79E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180841	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	4.78E-14	3.94E-14	5.95E-14	µCi/mL			SLAPS General Air Monitoring
SLA180841	SLAPS Loadout	09/14/15		Gross Beta	2.17E-14	3.60E-14	5.95E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180842	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	-6.78E-15	1.65E-14	3.79E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180842	SLAPS Loadout	09/14/15		Gross Beta	1.94E-14	3.56E-14	5.95E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180843	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	6.17E-16	1.95E-14	3.79E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180843	SLAPS Loadout	09/14/15		Gross Beta	1.46E-14	3.50E-14	5.95E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180844	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	-1.01E-15	5.91E-15	1.24E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180844	SLAPS Loadout	09/14/15		Gross Beta	1.56E-14	1.29E-14	1.95E-14	µCi/mL	U	T04, T05	SLAPS General Air Monitoring
SLA180845	SLAPS Loadout	09/14/15	Gross Alpha/Beta	Gross Alpha	2.61E-15	7.21E-15	1.23E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180845	SLAPS Loadout	09/14/15		Gross Beta	2.02E-14	1.34E-14	1.94E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180846	SLAPS Loadout	09/15/15	Gross Alpha/Beta	Gross Alpha	1.97E-16	6.23E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180846	SLAPS Loadout	09/15/15		Gross Beta	2.59E-14	1.39E-14	1.90E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180847	SLAPS Loadout	09/15/15	Gross Alpha/Beta	Gross Alpha	2.57E-15	7.11E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180847	SLAPS Loadout	09/15/15		Gross Beta	6.21E-15	1.14E-14	1.91E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180848	SLAPS Loadout	09/16/15	Gross Alpha/Beta	Gross Alpha	2.70E-15	7.46E-15	1.28E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180848	SLAPS Loadout	09/16/15		Gross Beta	4.88E-14	1.70E-14	2.00E-14	µCi/mL	=		SLAPS General Air Monitoring
SLA180849	SLAPS Loadout	09/16/15	Gross Alpha/Beta	Gross Alpha	6.43E-15	8.63E-15	1.28E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180849	SLAPS Loadout	09/16/15		Gross Beta	2.09E-14	1.38E-14	2.00E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180850	SLAPS Loadout	09/17/15	Gross Alpha/Beta	Gross Alpha	2.42E-16	7.67E-15	1.49E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180850	SLAPS Loadout	09/17/15		Gross Beta	2.72E-14	1.65E-14	2.34E-14	µCi/mL	J	T04	SLAPS General Air Monitoring
SLA180851	SLAPS Loadout	09/17/15	Gross Alpha/Beta	Gross Alpha	6.17E-15	9.81E-15	1.51E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180851	SLAPS Loadout	09/17/15		Gross Beta	2.86E-14	1.69E-14	2.38E-14	µCi/mL	J	T04	SLAPS General Air Monitoring

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA180852	SLAPS Loadout	09/18/15	Gross Alpha/Beta	Gross Alpha	8.63E-15	4.18E-14	7.57E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180852	SLAPS Loadout	09/18/15		Gross Beta	3.40E-14	7.06E-14	1.19E-13	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180853	SLAPS Loadout	09/18/15	Gross Alpha/Beta	Gross Alpha	-4.37E-15	2.56E-14	5.36E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA180853	SLAPS Loadout	09/18/15		Gross Beta	3.08E-14	5.09E-14	8.43E-14	µCi/mL	UJ	T06	SLAPS General Air Monitoring
SLA183263	SLAPS Loadout	09/21/15	Gross Alpha/Beta	Gross Alpha	1.18E-14	9.83E-15	1.25E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183263	SLAPS Loadout	09/21/15		Gross Beta	1.31E-14	1.02E-14	1.25E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183263	SLAPS Loadout	09/21/15	Gross Alpha/Beta	Gross Alpha	1.69E-14	1.35E-14	2.02E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183263	SLAPS Loadout	09/21/15		Gross Beta	2.78E-14	1.49E-14	2.02E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183264	SLAPS Loadout	09/21/15	Gross Alpha/Beta	Gross Alpha	1.06E-14	9.56E-15	1.27E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183264	SLAPS Loadout	09/21/15		Gross Beta	2.47E-14	1.46E-14	2.04E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183265	SLAPS Loadout	09/22/15	Gross Alpha/Beta	Gross Alpha	8.80E-15	8.72E-15	1.20E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183265	SLAPS Loadout	09/22/15		Gross Beta	2.75E-14	1.44E-14	1.94E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183266	SLAPS Loadout	09/22/15	Gross Alpha/Beta	Gross Alpha	6.23E-15	7.87E-15	1.19E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183266	SLAPS Loadout	09/22/15		Gross Beta	2.89E-14	1.44E-14	1.92E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183267	SLAPS Loadout	09/23/15	Gross Alpha/Beta	Gross Alpha	1.12E-14	9.34E-15	1.19E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183267	SLAPS Loadout	09/23/15		Gross Beta	3.44E-14	1.51E-14	1.92E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183268	SLAPS Loadout	09/23/15	Gross Alpha/Beta	Gross Alpha	8.76E-15	8.68E-15	1.20E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183268	SLAPS Loadout	09/23/15		Gross Beta	4.18E-14	1.60E-14	1.93E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183269	SLAPS Loadout	09/24/15	Gross Alpha/Beta	Gross Alpha	2.40E-15	6.32E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183269	SLAPS Loadout	09/24/15		Gross Beta	5.16E-14	1.66E-14	1.85E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183270	SLAPS Loadout	09/24/15	Gross Alpha/Beta	Gross Alpha	-2.42E-15	4.17E-15	1.16E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183270	SLAPS Loadout	09/24/15		Gross Beta	4.20E-14	1.56E-14	1.86E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183271	SLAPS Loadout	09/28/15	Gross Alpha/Beta	Gross Alpha	5.99E-15	1.58E-14	2.86E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183271	SLAPS Loadout	09/28/15		Gross Beta	5.02E-14	3.23E-14	4.61E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183272	SLAPS Loadout	09/28/15	Gross Alpha/Beta	Gross Alpha	-6.14E-15	1.06E-14	2.93E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183272	SLAPS Loadout	09/28/15		Gross Beta	6.22E-15	2.70E-14	4.73E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183273	SLAPS Loadout	09/28/15	Gross Alpha/Beta	Gross Alpha	9.09E-15	1.71E-14	2.90E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183273	SLAPS Loadout	09/28/15		Gross Beta	5.28E-14	3.30E-14	4.67E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183274	SLAPS Loadout	09/28/15	Gross Alpha/Beta	Gross Alpha	1.18E-15	5.74E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183274	SLAPS Loadout	09/28/15		Gross Beta	3.93E-14	1.50E-14	1.81E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183275	SLAPS Loadout	09/28/15	Gross Alpha/Beta	Gross Alpha	1.18E-15	5.74E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183275	SLAPS Loadout	09/28/15		Gross Beta	3.10E-14	1.41E-14	1.81E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183276	SLAPS Loadout	09/29/15	Gross Alpha/Beta	Gross Alpha	3.38E-15	6.37E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183276	SLAPS Loadout	09/29/15		Gross Beta	4.64E-14	1.54E-14	1.74E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183277	SLAPS Loadout	09/29/15	Gross Alpha/Beta	Gross Alpha	0	5.03E-15	1.08E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183277	SLAPS Loadout	09/29/15		Gross Beta	3.38E-15	6.37E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183277	SLAPS Loadout	09/29/15	Gross Alpha/Beta	Gross Alpha	1.20E-16	9.61E-15	1.74E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183277	SLAPS Loadout	09/29/15		Gross Beta	3.73E-15	1.01E-14	1.74E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183278	SLAPS Loadout	09/30/15	Gross Alpha/Beta	Gross Alpha	1.12E-15	5.46E-15	1.07E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183278	SLAPS Loadout	09/30/15		Gross Beta	2.16E-14	1.24E-14	1.72E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183279	SLAPS Loadout	09/30/15	Gross Alpha/Beta	Gross Alpha	3.23E-15	6.07E-15	1.03E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183279	SLAPS Loadout	09/30/15		Gross Beta	2.35E-14	1.23E-14	1.66E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183280	SLAPS Loadout	09/30/15	Gross Alpha/Beta	Gross Alpha	1.18E-15	5.74E-15	1.12E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183280	SLAPS Loadout	09/30/15		Gross Beta	8.79E-16	1.01E-14	1.81E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183281	SLAPS Loadout	09/30/15	Gross Alpha/Beta	Gross Alpha	4.72E-15	7.08E-15	1.13E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183281	SLAPS Loadout	09/30/15		Gross Beta	1.75E-14	1.25E-14	1.82E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183282	SLAPS Loadout	09/30/15	Gross Alpha/Beta	Gross Alpha	3.49E-15	6.58E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183282	SLAPS Loadout	09/30/15		Gross Beta	3.86E-15	1.05E-14	1.79E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA183283	SLAPS Loadout	10/01/15	Gross Alpha/Beta	Gross Alpha	3.86E-15	5.22E-15	8.25E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183283	SLAPS Loadout	10/01/15		Gross Beta	-7.72E-16	2.40E-15	8.25E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183283	SLAPS Loadout	10/01/15	Gross Alpha/Beta	Gross Alpha	8.03E-16	1.64E-14	2.65E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183283	SLAPS Loadout	10/01/15		Gross Beta	3.03E-15	1.66E-14	2.65E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183284	SLAPS Loadout	10/01/15	Gross Alpha/Beta	Gross Alpha	4.97E-15	5.66E-15	8.17E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183284	SLAPS Loadout	10/01/15		Gross Beta	-2.88E-15	1.59E-14	2.63E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183285	SLAPS Loadout	10/05/15	Gross Alpha/Beta	Gross Alpha	1.24E-14	8.85E-15	9.46E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183285	SLAPS Loadout	10/05/15		Gross Beta	2.99E-14	2.13E-14	3.04E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183286	SLAPS Loadout	10/05/15	Gross Alpha/Beta	Gross Alpha	4.43E-15	5.98E-15	9.46E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183286	SLAPS Loadout	10/05/15		Gross Beta	7.73E-15	1.94E-14	3.04E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183287	SLAPS Loadout	10/06/15	Gross Alpha/Beta	Gross Alpha	1.61E-15	4.23E-15	8.60E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183287	SLAPS Loadout	10/06/15		Gross Beta	3.18E-14	1.97E-14	2.76E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183288	SLAPS Loadout	10/06/15	Gross Alpha/Beta	Gross Alpha	4.06E-15	5.49E-15	8.69E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183288	SLAPS Loadout	10/06/15		Gross Beta	3.19E-15	1.75E-14	2.79E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183289	SLAPS Loadout	10/07/15	Gross Alpha/Beta	Gross Alpha	1.68E-15	4.42E-15	8.99E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183289	SLAPS Loadout	10/07/15		Gross Beta	2.92E-14	2.03E-14	2.89E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183290	SLAPS Loadout	10/07/15	Gross Alpha/Beta	Gross Alpha	-2.00E-15	6.57E-16	8.56E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183290	SLAPS Loadout	10/07/15		Gross Beta	8.34E-16	1.70E-14	2.75E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183291	SLAPS Loadout	10/08/15	Gross Alpha/Beta	Gross Alpha	3.93E-15	5.31E-15	8.40E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183291	SLAPS Loadout	10/08/15		Gross Beta	1.97E-14	1.83E-14	2.70E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183292	SLAPS Loadout	10/08/15	Gross Alpha/Beta	Gross Alpha	2.78E-15	4.81E-15	8.48E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183292	SLAPS Loadout	10/08/15		Gross Beta	1.07E-14	1.77E-14	2.72E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183293	SLAPS Loadout	10/12/15	Gross Alpha/Beta	Gross Alpha	4.93E-15	5.60E-15	8.10E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183293	SLAPS Loadout	10/12/15		Gross Beta	1.10E-14	1.70E-14	2.60E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183294	SLAPS Loadout	10/12/15	Gross Alpha/Beta	Gross Alpha	3.82E-15	5.17E-15	8.17E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183294	SLAPS Loadout	10/12/15		Gross Beta	3.61E-14	1.92E-14	2.63E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183295	SLAPS Loadout	10/13/15	Gross Alpha/Beta	Gross Alpha	4.12E-15	5.57E-15	8.81E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183295	SLAPS Loadout	10/13/15		Gross Beta	1.83E-14	1.90E-14	2.83E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183296	SLAPS Loadout	10/13/15	Gross Alpha/Beta	Gross Alpha	3.86E-15	5.22E-15	8.25E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183296	SLAPS Loadout	10/13/15		Gross Beta	1.05E-14	1.72E-14	2.65E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183297	SLAPS Loadout	10/14/15	Gross Alpha/Beta	Gross Alpha	4.47E-15	6.05E-15	9.57E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183297	SLAPS Loadout	10/14/15		Gross Beta	1.38E-14	2.01E-14	3.07E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183298	SLAPS Loadout	10/14/15	Gross Alpha/Beta	Gross Alpha	5.31E-15	6.04E-15	8.73E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183298	SLAPS Loadout	10/14/15		Gross Beta	1.58E-14	1.86E-14	2.80E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183299	SLAPS Loadout	10/15/15	Gross Alpha/Beta	Gross Alpha	4.12E-15	5.57E-15	8.81E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183299	SLAPS Loadout	10/15/15		Gross Beta	3.65E-14	2.05E-14	2.83E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183300	SLAPS Loadout	10/15/15	Gross Alpha/Beta	Gross Alpha	6.35E-15	6.33E-15	8.48E-15	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183300	SLAPS Loadout	10/15/15		Gross Beta	2.22E-14	1.87E-14	2.72E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183301	SLAPS Loadout	10/19/15	Gross Alpha/Beta	Gross Alpha	4.49E-16	4.64E-15	9.12E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183301	SLAPS Loadout	10/19/15		Gross Beta	1.76E-15	5.33E-15	9.12E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183301	SLAPS Loadout	10/19/15	Gross Alpha/Beta	Gross Alpha	6.21E-14	7.53E-14	2.55E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183301	SLAPS Loadout	10/19/15		Gross Beta	6.13E-14	7.52E-14	2.55E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183302	SLAPS Loadout	10/19/15	Gross Alpha/Beta	Gross Alpha	4.44E-15	6.59E-15	9.27E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183302	SLAPS Loadout	10/19/15		Gross Beta	3.67E-14	7.58E-14	2.59E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183303	SLAPS Loadout	10/20/15	Gross Alpha/Beta	Gross Alpha	1.16E-14	1.11E-14	1.28E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183303	SLAPS Loadout	10/20/15		Gross Beta	6.22E-14	1.05E-13	3.57E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183304	SLAPS Loadout	10/20/15	Gross Alpha/Beta	Gross Alpha	4.25E-15	8.24E-15	1.27E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183304	SLAPS Loadout	10/20/15		Gross Beta	6.06E-14	1.04E-13	3.54E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA183305	SLAPS Loadout	10/20/15	Gross Alpha/Beta	Gross Alpha	6.03E-15	8.94E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183305	SLAPS Loadout	10/20/15		Gross Beta	4.17E-14	1.03E-13	3.52E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183306	SLAPS Loadout	10/20/15	Gross Alpha/Beta	Gross Alpha	1.03E-14	8.94E-15	9.78E-15	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183306	SLAPS Loadout	10/20/15		Gross Beta	5.04E-14	8.03E-14	2.74E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183307	SLAPS Loadout	10/20/15	Gross Alpha/Beta	Gross Alpha	1.86E-15	5.65E-15	9.67E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183307	SLAPS Loadout	10/20/15		Gross Beta	3.74E-14	7.92E-14	2.71E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183308	SLAPS Loadout	10/21/15	Gross Alpha/Beta	Gross Alpha	7.48E-15	7.14E-15	8.23E-15	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183308	SLAPS Loadout	10/21/15		Gross Beta	5.75E-14	6.79E-14	2.30E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183309	SLAPS Loadout	10/21/15	Gross Alpha/Beta	Gross Alpha	2.74E-15	5.30E-15	8.15E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183309	SLAPS Loadout	10/21/15		Gross Beta	1.95E-14	6.64E-14	2.28E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183310	SLAPS Loadout	10/22/15	Gross Alpha/Beta	Gross Alpha	5.07E-15	6.25E-15	8.15E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183310	SLAPS Loadout	10/22/15		Gross Beta	3.08E-14	6.67E-14	2.28E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183311	SLAPS Loadout	10/26/15	Gross Alpha/Beta	Gross Alpha	4.12E-16	4.26E-15	8.38E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183311	SLAPS Loadout	10/26/15		Gross Beta	5.17E-14	6.90E-14	2.35E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183312	SLAPS Loadout	10/26/15	Gross Alpha/Beta	Gross Alpha	1.72E-15	5.22E-15	8.94E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183312	SLAPS Loadout	10/26/15		Gross Beta	3.70E-14	7.32E-14	2.50E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183313	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	-2.59E-15	1.16E-14	2.75E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183313	SLAPS Loadout	10/28/15		Gross Beta	1.01E-13	2.25E-13	7.69E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183314	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	9.24E-15	1.79E-14	2.75E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183314	SLAPS Loadout	10/28/15		Gross Beta	9.88E-14	2.25E-13	7.69E-14	µCi/mL	UJ	T02	SLAPS (General Area)-Perimeter Air
SLA183315	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	-9.17E-15	1.71E-14	4.17E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183315	SLAPS Loadout	10/28/15		Gross Beta	-5.24E-15	1.88E-14	4.17E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183315	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	4.03E-14	4.64E-14	6.34E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183315	SLAPS Loadout	10/28/15		Gross Beta	7.55E-15	4.26E-14	6.34E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183316	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	-1.68E-15	6.01E-15	1.34E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183316	SLAPS Loadout	10/28/15		Gross Beta	3.38E-14	1.71E-14	2.03E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183317	SLAPS Loadout	10/28/15	Gross Alpha/Beta	Gross Alpha	-2.94E-15	5.46E-15	1.34E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183317	SLAPS Loadout	10/28/15		Gross Beta	1.29E-14	1.49E-14	2.03E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183318	SLAPS Loadout	10/29/15	Gross Alpha/Beta	Gross Alpha	-2.67E-15	4.96E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183318	SLAPS Loadout	10/29/15		Gross Beta	2.05E-14	1.45E-14	1.84E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183319	SLAPS Loadout	10/29/15	Gross Alpha/Beta	Gross Alpha	-2.89E-15	5.38E-15	1.32E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183319	SLAPS Loadout	10/29/15		Gross Beta	7.94E-16	1.33E-14	2.00E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183320	SLAPS Loadout	11/02/15	Gross Alpha/Beta	Gross Alpha	-1.02E-15	4.60E-15	1.04E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183320	SLAPS Loadout	11/02/15		Gross Beta	2.65E-15	6.26E-15	1.04E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183320	SLAPS Loadout	11/02/15	Gross Alpha/Beta	Gross Alpha	6.41E-14	2.04E-14	2.68E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183320	SLAPS Loadout	11/02/15		Gross Beta	4.37E-14	1.87E-14	2.68E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183321	SLAPS Loadout	11/02/15	Gross Alpha/Beta	Gross Alpha	1.42E-15	5.70E-15	1.03E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183321	SLAPS Loadout	11/02/15		Gross Beta	3.86E-14	1.82E-14	2.66E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183322	SLAPS Loadout	11/03/15	Gross Alpha/Beta	Gross Alpha	-2.20E-15	3.81E-15	1.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183322	SLAPS Loadout	11/03/15		Gross Beta	1.98E-14	1.63E-14	2.63E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183323	SLAPS Loadout	11/03/15	Gross Alpha/Beta	Gross Alpha	2.57E-15	6.05E-15	1.00E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183323	SLAPS Loadout	11/03/15		Gross Beta	7.19E-14	2.05E-14	2.59E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183324	SLAPS Loadout	11/04/15	Gross Alpha/Beta	Gross Alpha	-1.06E-15	4.78E-15	1.08E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183324	SLAPS Loadout	11/04/15		Gross Beta	5.77E-14	2.05E-14	2.79E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183325	SLAPS Loadout	11/04/15	Gross Alpha/Beta	Gross Alpha	1.53E-15	6.17E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183325	SLAPS Loadout	11/04/15		Gross Beta	5.45E-14	2.07E-14	2.88E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183326	SLAPS Loadout	11/05/15	Gross Alpha/Beta	Gross Alpha	-1.88E-15	8.45E-15	1.91E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183326	SLAPS Loadout	11/05/15		Gross Beta	1.97E-14	2.89E-14	4.93E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA183327	SLAPS Loadout	11/05/15	Gross Alpha/Beta	Gross Alpha	-4.06E-15	7.03E-15	1.88E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183327	SLAPS Loadout	11/05/15		Gross Beta	4.35E-14	3.07E-14	4.84E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183328	SLAPS Loadout	11/09/15	Gross Alpha/Beta	Gross Alpha	3.51E-15	7.60E-15	1.26E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183328	SLAPS Loadout	11/09/15		Gross Beta	-2.51E-15	5.36E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183328	SLAPS Loadout	11/09/15	Gross Alpha/Beta	Gross Alpha	4.90E-14	1.73E-14	1.85E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183328	SLAPS Loadout	11/09/15		Gross Beta	3.20E-14	1.55E-14	1.85E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183329	SLAPS Loadout	11/09/15	Gross Alpha/Beta	Gross Alpha	5.92E-15	8.33E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183329	SLAPS Loadout	11/09/15		Gross Beta	1.43E-14	1.34E-14	1.85E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183330	SLAPS Loadout	11/10/15	Gross Alpha/Beta	Gross Alpha	7.16E-15	8.72E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183330	SLAPS Loadout	11/10/15		Gross Beta	2.36E-14	1.46E-14	1.86E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183331	SLAPS Loadout	11/10/15	Gross Alpha/Beta	Gross Alpha	3.53E-15	7.64E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183331	SLAPS Loadout	11/10/15		Gross Beta	4.30E-14	1.67E-14	1.86E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183332	SLAPS Loadout	11/11/15	Gross Alpha/Beta	Gross Alpha	-1.38E-15	6.23E-15	1.33E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183332	SLAPS Loadout	11/11/15		Gross Beta	2.25E-14	1.51E-14	1.96E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183333	SLAPS Loadout	11/11/15	Gross Alpha/Beta	Gross Alpha	7.56E-15	9.21E-15	1.33E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183333	SLAPS Loadout	11/11/15		Gross Beta	4.70E-14	1.78E-14	1.96E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183334	SLAPS Loadout	11/12/15	Gross Alpha/Beta	Gross Alpha	-1.01E-16	6.38E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183334	SLAPS Loadout	11/12/15		Gross Beta	3.29E-14	1.56E-14	1.86E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183335	SLAPS Loadout	11/12/15	Gross Alpha/Beta	Gross Alpha	-1.31E-15	5.90E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183335	SLAPS Loadout	11/12/15		Gross Beta	3.91E-14	1.63E-14	1.86E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183336	SLAPS Loadout	11/16/15	Gross Alpha/Beta	Gross Alpha	6.87E-15	9.68E-15	1.46E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183336	SLAPS Loadout	11/16/15		Gross Beta	2.64E-14	1.68E-14	2.15E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183337	SLAPS Loadout	11/19/15	Gross Alpha/Beta	Gross Alpha	-1.09E-16	6.91E-15	1.37E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183337	SLAPS Loadout	11/19/15		Gross Beta	1.22E-14	1.42E-14	2.01E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183338	SLAPS Loadout	11/19/15	Gross Alpha/Beta	Gross Alpha	-5.35E-15	4.52E-15	1.37E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183338	SLAPS Loadout	11/19/15		Gross Beta	2.06E-14	1.52E-14	2.01E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183339	SLAPS Loadout	11/19/15	Gross Alpha/Beta	Gross Alpha	-5.24E-15	2.36E-14	5.04E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183339	SLAPS Loadout	11/19/15		Gross Beta	6.66E-14	5.51E-14	7.42E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183340	SLAPS Loadout	11/19/15	Gross Alpha/Beta	Gross Alpha	-1.03E-14	2.20E-14	5.14E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183340	SLAPS Loadout	11/19/15		Gross Beta	3.00E-14	5.15E-14	7.57E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183341	SLAPS Loadout	11/19/15	Gross Alpha/Beta	Gross Alpha	-9.71E-15	2.08E-14	4.86E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183341	SLAPS Loadout	11/19/15		Gross Beta	4.33E-14	5.05E-14	7.15E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183342	SLAPS Loadout	11/23/15	Gross Alpha/Beta	Gross Alpha	1.05E-14	9.08E-15	1.09E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183342	SLAPS Loadout	11/23/15		Gross Beta	1.39E-14	9.95E-15	1.09E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183342	SLAPS Loadout	11/23/15	Gross Alpha/Beta	Gross Alpha	9.32E-14	2.05E-14	1.82E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183342	SLAPS Loadout	11/23/15		Gross Beta	7.98E-14	1.92E-14	1.82E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183343	SLAPS Loadout	11/25/15	Gross Alpha/Beta	Gross Alpha	1.14E-14	9.90E-15	1.19E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183343	SLAPS Loadout	11/25/15		Gross Beta	4.11E-14	1.62E-14	1.99E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183344	SLAPS Loadout	11/30/15	Gross Alpha/Beta	Gross Alpha	1.10E-14	9.57E-15	1.15E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183344	SLAPS Loadout	11/30/15		Gross Beta	2.57E-14	1.40E-14	1.92E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183345	SLAPS Loadout	11/30/15	Gross Alpha/Beta	Gross Alpha	7.39E-15	8.57E-15	1.15E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183345	SLAPS Loadout	11/30/15		Gross Beta	3.27E-14	1.48E-14	1.92E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183346	SLAPS Loadout	11/30/15	Gross Alpha/Beta	Gross Alpha	1.19E-14	1.38E-14	1.85E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183346	SLAPS Loadout	11/30/15		Gross Beta	4.62E-14	2.31E-14	3.08E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183347	SLAPS Loadout	11/30/15	Gross Alpha/Beta	Gross Alpha	5.97E-15	1.19E-14	1.84E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183347	SLAPS Loadout	11/30/15		Gross Beta	2.48E-14	2.03E-14	3.05E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183348	SLAPS Loadout	11/30/15	Gross Alpha/Beta	Gross Alpha	-5.64E-15	7.14E-15	1.84E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183348	SLAPS Loadout	11/30/15		Gross Beta	4.46E-14	2.27E-14	3.05E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA183349	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	9.64E-15	1.53E-14	2.09E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183349	LOADOUT	12/09/15		Gross Beta	1.49E-14	1.70E-14	2.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183349	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	6.72E-14	4.66E-14	5.99E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183349	LOADOUT	12/09/15		Gross Beta	3.86E-14	4.45E-14	5.99E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183350	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	1.75E-15	1.23E-14	2.09E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183350	LOADOUT	12/09/15		Gross Beta	6.22E-14	4.63E-14	5.99E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183351	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	4.43E-15	1.35E-14	2.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183351	LOADOUT	12/09/15		Gross Beta	2.20E-14	4.36E-14	6.05E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183352	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	4.05E-15	8.30E-15	1.21E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183352	LOADOUT	12/09/15		Gross Beta	4.38E-14	2.73E-14	3.46E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183353	LOADOUT	12/09/15	Gross Alpha/Beta	Gross Alpha	5.45E-15	7.18E-15	9.27E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183353	LOADOUT	12/09/15		Gross Beta	4.93E-14	2.21E-14	2.66E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183354	LOADOUT	12/10/15	Gross Alpha/Beta	Gross Alpha	9.67E-15	8.91E-15	1.00E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183354	LOADOUT	12/10/15		Gross Beta	3.55E-14	2.26E-14	2.88E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183355	LOADOUT	12/10/15	Gross Alpha/Beta	Gross Alpha	4.67E-15	7.41E-15	1.01E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183355	LOADOUT	12/10/15		Gross Beta	1.30E-14	2.11E-14	2.90E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183356	LOADOUT	12/15/15	Gross Alpha/Beta	Gross Alpha	5.95E-15	7.84E-15	1.01E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183356	LOADOUT	12/15/15		Gross Beta	2.04E-14	2.17E-14	2.90E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183357	LOADOUT	12/15/15	Gross Alpha/Beta	Gross Alpha	-4.27E-16	5.40E-15	1.02E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183357	LOADOUT	12/15/15		Gross Beta	-6.63E-15	1.97E-14	2.92E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183358	SLAPS Loadout	12/16/15	Gross Alpha/Beta	Gross Alpha	6.13E-15	7.12E-15	9.79E-15	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183358	SLAPS Loadout	12/16/15		Gross Beta	7.30E-15	7.50E-15	9.79E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183358	SLAPS Loadout	12/16/15	Gross Alpha/Beta	Gross Alpha	2.12E-15	1.79E-14	2.65E-14	µCi/mL			SLAPS (General Area)-Perimeter Air
SLA183358	SLAPS Loadout	12/16/15		Gross Beta	2.68E-14	1.99E-14	2.65E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183359	SLAPS Loadout	12/16/15	Gross Alpha/Beta	Gross Alpha	1.46E-15	5.37E-15	9.79E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183359	SLAPS Loadout	12/16/15		Gross Beta	1.56E-14	1.90E-14	2.65E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183360	SLAPS Loadout	12/17/15	Gross Alpha/Beta	Gross Alpha	3.76E-15	6.25E-15	9.70E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183360	SLAPS Loadout	12/17/15		Gross Beta	9.52E-15	1.84E-14	2.63E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183361	SLAPS Loadout	12/17/15	Gross Alpha/Beta	Gross Alpha	7.37E-15	7.57E-15	9.89E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183361	SLAPS Loadout	12/17/15		Gross Beta	1.05E-14	1.88E-14	2.68E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183362	SLAPS Loadout	12/21/15	Gross Alpha/Beta	Gross Alpha	1.45E-15	5.32E-15	9.70E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183362	SLAPS Loadout	12/21/15		Gross Beta	2.51E-14	1.96E-14	2.63E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183363	SLAPS Loadout	12/21/15	Gross Alpha/Beta	Gross Alpha	1.47E-15	5.40E-15	9.84E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183363	SLAPS Loadout	12/21/15		Gross Beta	1.72E-14	1.92E-14	2.66E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183364	SLAPS Loadout	12/22/15	Gross Alpha/Beta	Gross Alpha	1.09E-14	1.01E-14	1.26E-14	µCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA183364	SLAPS Loadout	12/22/15		Gross Beta	5.76E-14	2.73E-14	3.41E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183365	SLAPS Loadout	12/22/15	Gross Alpha/Beta	Gross Alpha	7.89E-15	9.16E-15	1.26E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183365	SLAPS Loadout	12/22/15		Gross Beta	4.80E-14	2.66E-14	3.41E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183366	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	-2.01E-15	3.47E-15	9.62E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183366	SLAPS Loadout	12/30/15		Gross Beta	-4.53E-15	1.71E-14	2.60E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183367	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	2.56E-15	5.70E-15	9.53E-15	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183367	SLAPS Loadout	12/30/15		Gross Beta	5.45E-14	2.14E-14	2.58E-14	µCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA183368	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	1.64E-15	6.04E-15	1.10E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183368	SLAPS Loadout	12/30/15		Gross Beta	4.53E-14	2.35E-14	2.98E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183369	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	3.32E-16	5.50E-15	1.11E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183369	SLAPS Loadout	12/30/15		Gross Beta	3.31E-14	2.28E-14	3.01E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA183370	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	3.29E-16	5.44E-15	1.10E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183370	SLAPS Loadout	12/30/15		Gross Beta	3.27E-14	2.26E-14	2.98E-14	µCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA183371	SLAPS Loadout	12/30/15	Gross Alpha/Beta	Gross Alpha	3.23E-15	7.19E-15	1.20E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA183371	SLAPS Loadout	12/30/15		Gross Beta	2.01E-14	2.34E-14	3.25E-14	µCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SVP175267	VP-57/VP-58	01/05/15	Gross Alpha/Beta	Gross Alpha	-4.14E-15	5.68E-15	1.65E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175267	VP-57/VP-58	01/05/15		Gross Beta	1.88E-15	8.28E-15	1.65E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175267	VP-57/VP-58	01/05/15	Gross Alpha/Beta	Gross Alpha	2.83E-14	1.82E-14	2.42E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175267	VP-57/VP-58	01/05/15		Gross Beta	1.38E-14	1.66E-14	2.42E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175268	VP-57/VP-58	01/06/15	Gross Alpha/Beta	Gross Alpha	3.37E-16	6.89E-15	1.47E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175268	VP-57/VP-58	01/06/15		Gross Beta	1.24E-14	1.48E-14	2.16E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175269	VP-57/VP-58	01/07/15	Gross Alpha/Beta	Gross Alpha	-3.66E-15	5.02E-15	1.46E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175269	VP-57/VP-58	01/07/15		Gross Beta	3.61E-14	1.72E-14	2.14E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175270	VP-57/VP-58	01/08/15	Gross Alpha/Beta	Gross Alpha	3.44E-16	7.04E-15	1.50E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175270	VP-57/VP-58	01/08/15		Gross Beta	9.11E-15	1.47E-14	2.21E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175271	VP-57/VP-58	01/12/15	Gross Alpha/Beta	Gross Alpha	5.36E-16	1.10E-14	2.34E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175271	VP-57/VP-58	01/12/15		Gross Beta	2.93E-14	2.47E-14	3.45E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175272	VP-57/VP-58	01/13/15	Gross Alpha/Beta	Gross Alpha	3.96E-16	8.10E-15	1.73E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175272	VP-57/VP-58	01/13/15		Gross Beta	2.77E-14	1.89E-14	2.54E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175273	VP-57/VP-58	01/14/15	Gross Alpha/Beta	Gross Alpha	1.20E-15	7.32E-15	1.14E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175273	VP-57/VP-58	01/14/15		Gross Beta	3.82E-15	8.21E-15	1.14E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175273	VP-57/VP-58	01/14/15	Gross Alpha/Beta	Gross Alpha	2.18E-14	2.06E-14	2.96E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175273	VP-57/VP-58	01/14/15		Gross Beta	-4.61E-15	1.83E-14	2.96E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175274	VP-57/VP-58	01/15/15	Gross Alpha/Beta	Gross Alpha	3.86E-15	8.29E-15	1.15E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175274	VP-57/VP-58	01/15/15		Gross Beta	2.96E-14	2.14E-14	2.99E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175275	VP-57/VP-58	01/19/15	Gross Alpha/Beta	Gross Alpha	3.71E-15	7.96E-15	1.11E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175275	VP-57/VP-58	01/19/15		Gross Beta	1.88E-14	1.98E-14	2.87E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175276	VP-57/VP-58	01/19/15	Gross Alpha/Beta	Gross Alpha	-1.69E-16	1.06E-14	1.77E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175276	VP-57/VP-58	01/19/15		Gross Beta	2.61E-14	3.12E-14	4.59E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175277	VP-57/VP-58	01/20/15	Gross Alpha/Beta	Gross Alpha	-1.77E-15	7.87E-15	1.42E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175277	VP-57/VP-58	01/20/15		Gross Beta	2.31E-14	2.53E-14	3.69E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175278	VP-57/VP-58	01/21/15	Gross Alpha/Beta	Gross Alpha	-3.78E-15	1.68E-14	3.05E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175278	VP-57/VP-58	01/21/15		Gross Beta	3.40E-14	5.29E-14	7.90E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175279	VP-57/VP-58	01/27/15	Gross Alpha/Beta	Gross Alpha	3.22E-15	8.64E-15	1.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175279	VP-57/VP-58	01/27/15		Gross Beta	6.02E-15	1.74E-14	2.67E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175280	VP-57/VP-58	01/28/15	Gross Alpha/Beta	Gross Alpha	-5.97E-15	8.58E-15	1.58E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175280	VP-57/VP-58	01/28/15		Gross Beta	4.04E-15	2.40E-14	3.74E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175281	VP-57/VP-58	01/29/15	Gross Alpha/Beta	Gross Alpha	-1.84E-15	7.35E-15	1.17E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175281	VP-57/VP-58	01/29/15		Gross Beta	2.43E-14	1.97E-14	2.78E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175282	VP-57/VP-58	02/02/15	Gross Alpha/Beta	Gross Alpha	-1.72E-15	5.29E-15	1.27E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175282	VP-57/VP-58	02/02/15		Gross Beta	8.61E-16	6.43E-15	1.27E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175282	VP-57/VP-58	02/02/15	Gross Alpha/Beta	Gross Alpha	2.29E-14	1.48E-14	2.00E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175282	VP-57/VP-58	02/02/15		Gross Beta	1.38E-14	1.38E-14	2.00E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175283	VP-57/VP-58	02/03/15	Gross Alpha/Beta	Gross Alpha	2.40E-15	7.71E-15	1.42E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175283	VP-57/VP-58	02/03/15		Gross Beta	2.64E-14	1.66E-14	2.23E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175284	VP-57/VP-58	02/03/15	Gross Alpha/Beta	Gross Alpha	4.84E-15	7.99E-15	1.30E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175284	VP-57/VP-58	02/03/15		Gross Beta	2.76E-14	1.56E-14	2.04E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175285	VP-57/VP-58	02/04/15	Gross Alpha/Beta	Gross Alpha	7.25E-15	8.55E-15	1.26E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175285	VP-57/VP-58	02/04/15		Gross Beta	3.09E-14	1.56E-14	1.98E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175286	VP-57/VP-58	02/09/15	Gross Alpha/Beta	Gross Alpha	4.94E-15	8.41E-15	1.21E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175286	VP-57/VP-58	02/09/15		Gross Beta	2.95E-15	1.29E-14	2.12E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175287	VP-57/VP-58	02/10/15	Gross Alpha/Beta	Gross Alpha	3.23E-15	7.16E-15	1.09E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175287	VP-57/VP-58	02/10/15		Gross Beta	4.46E-14	1.63E-14	1.90E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175288	VP-57/VP-58	02/11/15	Gross Alpha/Beta	Gross Alpha	4.44E-15	7.56E-15	1.09E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175288	VP-57/VP-58	02/11/15		Gross Beta	1.20E-14	1.28E-14	1.90E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175289	VP-57/VP-58	02/12/15	Gross Alpha/Beta	Gross Alpha	3.23E-15	7.16E-15	1.09E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175289	VP-57/VP-58	02/12/15		Gross Beta	1.51E-14	1.32E-14	1.90E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175290	VP-57/VP-58	02/17/15	Gross Alpha/Beta	Gross Alpha	6.87E-15	9.65E-15	1.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175290	VP-57/VP-58	02/17/15		Gross Beta	2.96E-14	1.73E-14	2.31E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175291	VP-57/VP-58	02/23/15	Gross Alpha/Beta	Gross Alpha	1.26E-14	1.12E-14	1.30E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175291	VP-57/VP-58	02/23/15		Gross Beta	4.98E-14	1.92E-14	2.29E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175292	VP-57/VP-58	02/26/15	Gross Alpha/Beta	Gross Alpha	-6.43E-16	7.05E-15	1.53E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175292	VP-57/VP-58	02/26/15		Gross Beta	5.53E-15	9.37E-15	1.53E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175292	VP-57/VP-58	02/26/15	Gross Alpha/Beta	Gross Alpha	2.18E-14	1.91E-14	2.38E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175292	VP-57/VP-58	02/26/15		Gross Beta	9.97E-15	1.78E-14	2.38E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175293	VP-57/VP-58	03/05/15	Gross Alpha/Beta	Gross Alpha	1.95E-15	6.60E-15	1.22E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175293	VP-57/VP-58	03/05/15		Gross Beta	1.90E-14	1.54E-14	1.90E-14	µCi/mL	J	F01, T04	North County Air (General Area Air)-Perimeter Air
SVP175294	VP-57/VP-58	03/09/15	Gross Alpha/Beta	Gross Alpha	-1.72E-15	5.00E-15	1.21E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175294	VP-57/VP-58	03/09/15		Gross Beta	1.88E-14	1.52E-14	1.88E-14	µCi/mL	J	F01, T04	North County Air (General Area Air)-Perimeter Air
SVP175295	VP-57/VP-58	03/10/15	Gross Alpha/Beta	Gross Alpha	-4.28E-15	3.73E-15	1.24E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175295	VP-57/VP-58	03/10/15		Gross Beta	1.13E-14	1.48E-14	1.93E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175296	VP-57/VP-58	03/11/15	Gross Alpha/Beta	Gross Alpha	7.24E-16	6.19E-15	1.23E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175296	VP-57/VP-58	03/11/15		Gross Beta	3.11E-14	1.67E-14	1.91E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175297	VP-57/VP-58	03/12/15	Gross Alpha/Beta	Gross Alpha	-1.81E-15	5.25E-15	1.27E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175297	VP-57/VP-58	03/12/15		Gross Beta	3.61E-14	1.76E-14	1.97E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175298	VP-57/VP-58	03/16/15	Gross Alpha/Beta	Gross Alpha	2.48E-15	7.04E-15	1.24E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175298	VP-57/VP-58	03/16/15		Gross Beta	6.35E-15	8.35E-15	1.24E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175298	VP-57/VP-58	03/16/15	Gross Alpha/Beta	Gross Alpha	2.12E-14	1.50E-14	1.96E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175298	VP-57/VP-58	03/16/15		Gross Beta	2.95E-14	1.59E-14	1.96E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175299	VP-57/VP-58	03/17/15	Gross Alpha/Beta	Gross Alpha	2.15E-14	2.82E-14	4.20E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175299	VP-57/VP-58	03/17/15		Gross Beta	2.98E-14	4.58E-14	6.61E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175300	VP-57/VP-58	03/18/15	Gross Alpha/Beta	Gross Alpha	1.03E-14	1.62E-14	2.54E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175300	VP-57/VP-58	03/18/15		Gross Beta	2.14E-14	2.81E-14	3.99E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175301	VP-57/VP-58	03/19/15	Gross Alpha/Beta	Gross Alpha	1.37E-15	7.56E-15	1.43E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175301	VP-57/VP-58	03/19/15		Gross Beta	3.21E-14	1.81E-14	2.25E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175302	VP-57/VP-58	03/23/15	Gross Alpha/Beta	Gross Alpha	-1.93E-15	7.51E-15	1.72E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175302	VP-57/VP-58	03/23/15		Gross Beta	2.13E-14	1.98E-14	2.70E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175303	VP-57/VP-58	03/25/15	Gross Alpha/Beta	Gross Alpha	-2.85E-16	1.60E-14	3.29E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175303	VP-57/VP-58	03/25/15		Gross Beta	6.06E-14	4.02E-14	5.18E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175304	McDonnell Blvd.	03/25/15	Gross Alpha/Beta	Gross Alpha	1.37E-14	2.21E-14	3.66E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175304	McDonnell Blvd.	03/25/15		Gross Beta	1.74E-14	2.33E-14	3.66E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175304	McDonnell Blvd.	03/25/15	Gross Alpha/Beta	Gross Alpha	1.29E-14	3.22E-14	5.72E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175304	McDonnell Blvd.	03/25/15		Gross Beta	2.48E-14	3.39E-14	5.72E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175305	McDonnell Blvd.	03/23/15	Gross Alpha/Beta	Gross Alpha	-4.82E-15	1.41E-14	3.56E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175305	McDonnell Blvd.	03/23/15		Gross Beta	5.43E-14	3.69E-14	5.56E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175306	McDonnell Blvd.	03/30/15	Gross Alpha/Beta	Gross Alpha	2.72E-14	2.17E-14	2.77E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175306	McDonnell Blvd.	03/30/15		Gross Beta	2.24E-14	2.61E-14	4.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175307	McDonnell Blvd.	03/26/15	Gross Alpha/Beta	Gross Alpha	8.93E-15	9.21E-15	1.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175307	McDonnell Blvd.	03/26/15		Gross Beta	9.80E-15	1.23E-14	2.06E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175308	VP-57/VP-58	04/06/15	Gross Alpha/Beta	Gross Alpha	2.51E-15	7.87E-15	1.48E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175308	VP-57/VP-58	04/06/15		Gross Beta	2.65E-14	1.59E-14	2.32E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175309	VP-57/VP-58	04/14/15	Gross Alpha/Beta	Gross Alpha	7.03E-15	1.48E-14	2.59E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175309	VP-57/VP-58	04/14/15		Gross Beta	2.60E-14	2.52E-14	4.05E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175310	VP-57/VP-58	04/20/15	Gross Alpha/Beta	Gross Alpha	1.26E-15	1.50E-14	3.03E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175310	VP-57/VP-58	04/20/15		Gross Beta	1.33E-14	1.93E-14	3.03E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175310	VP-57/VP-58	04/20/15	Gross Alpha/Beta	Gross Alpha	4.26E-14	3.05E-14	4.43E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175310	VP-57/VP-58	04/20/15		Gross Beta	3.49E-14	2.95E-14	4.43E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175311	VP-57/VP-58	04/27/15	Gross Alpha/Beta	Gross Alpha	-1.95E-15	5.05E-15	1.23E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175311	VP-57/VP-58	04/27/15		Gross Beta	1.42E-14	1.20E-14	1.81E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175312	VP-57/VP-58	04/28/15	Gross Alpha/Beta	Gross Alpha	-1.34E-14	3.46E-14	8.47E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175312	VP-57/VP-58	04/28/15		Gross Beta	1.67E-14	7.13E-14	1.24E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175313	VP-57/VP-58	04/29/15	Gross Alpha/Beta	Gross Alpha	-4.26E-15	1.11E-14	2.70E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175313	VP-57/VP-58	04/29/15		Gross Beta	2.95E-14	2.62E-14	3.96E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175314	VP-57/VP-58	05/04/15	Gross Alpha/Beta	Gross Alpha	1.14E-14	2.02E-14	3.34E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175314	VP-57/VP-58	05/04/15		Gross Beta	7.06E-14	3.66E-14	4.90E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175315	VP-04L	04/30/15	Gross Alpha/Beta	Gross Alpha	6.65E-15	1.18E-14	1.96E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175315	VP-04L	04/30/15		Gross Beta	1.63E-14	1.82E-14	2.86E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175316	VP-57/VP-58	04/15/15	Gross Alpha/Beta	Gross Alpha	-2.69E-15	5.67E-15	1.29E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175316	VP-57/VP-58	04/15/15		Gross Beta	-1.15E-15	6.45E-15	1.29E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175316	VP-57/VP-58	04/15/15	Gross Alpha/Beta	Gross Alpha	-1.75E-14	2.26E-14	3.50E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175316	VP-57/VP-58	04/15/15		Gross Beta	-6.65E-15	2.35E-14	3.50E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175317	VP-57/VP-58	04/16/15	Gross Alpha/Beta	Gross Alpha	-1.31E-15	7.35E-15	1.47E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175317	VP-57/VP-58	04/16/15		Gross Beta	9.26E-15	2.82E-14	3.99E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175318	VP-57/VP-58	05/05/15	Gross Alpha/Beta	Gross Alpha	1.86E-15	3.45E-14	6.22E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175318	VP-57/VP-58	05/05/15		Gross Beta	-6.54E-14	1.11E-13	1.69E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175319	VP-57/VP-58	05/07/15	Gross Alpha/Beta	Gross Alpha	2.33E-14	2.52E-14	3.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175319	VP-57/VP-58	05/07/15		Gross Beta	1.26E-14	5.94E-14	8.49E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175320	VP-57/VP-58	04/14/15	Gross Alpha/Beta	Gross Alpha	-9.41E-16	5.26E-15	1.05E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175320	VP-57/VP-58	04/14/15		Gross Beta	-7.03E-15	1.90E-14	2.85E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175321	VP-57/VP-58	05/06/15	Gross Alpha/Beta	Gross Alpha	2.82E-14	3.46E-14	4.50E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175321	VP-57/VP-58	05/06/15		Gross Beta	9.72E-14	9.16E-14	1.22E-13	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175322	VP-04L	05/05/15	Gross Alpha/Beta	Gross Alpha	-9.25E-15	1.04E-14	2.82E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175322	VP-04L	05/05/15		Gross Beta	1.35E-14	5.37E-14	7.65E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175323	CWC	05/13/15	Gross Alpha/Beta	Gross Alpha	3.43E-16	6.37E-15	1.15E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175323	CWC	05/13/15		Gross Beta	9.89E-15	2.23E-14	3.12E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175324	CWC	05/18/15	Gross Alpha/Beta	Gross Alpha	2.63E-15	6.51E-15	1.13E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175324	CWC	05/18/15		Gross Beta	7.61E-15	8.69E-15	1.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175324	CWC	05/18/15	Gross Alpha/Beta	Gross Alpha	1.47E-14	2.40E-14	3.67E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175324	CWC	05/18/15		Gross Beta	2.22E-14	2.46E-14	3.67E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175325	CWC	05/20/15	Gross Alpha/Beta	Gross Alpha	2.50E-15	6.18E-15	1.07E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175325	CWC	05/20/15		Gross Beta	1.50E-14	2.28E-14	3.49E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175326	CWC	05/21/15	Gross Alpha/Beta	Gross Alpha	2.15E-15	5.32E-15	9.20E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175326	CWC	05/21/15		Gross Beta	2.25E-14	2.05E-14	3.00E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175327	CWC	05/26/15	Gross Alpha/Beta	Gross Alpha	8.68E-15	2.15E-14	3.72E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175327	CWC	05/26/15		Gross Beta	1.70E-14	7.63E-14	1.21E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175328	Pershall Rd.	05/20/15	Gross Alpha/Beta	Gross Alpha	1.67E-14	4.12E-14	7.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175328	Pershall Rd.	05/20/15		Gross Beta	7.30E-14	1.50E-13	2.32E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175329	CWC	05/21/15	Gross Alpha/Beta	Gross Alpha	6.52E-15	1.14E-14	1.60E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175329	CWC	05/21/15		Gross Beta	4.86E-15	1.09E-14	1.60E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175329	CWC	05/21/15	Gross Alpha/Beta	Gross Alpha	1.13E-14	1.66E-14	2.52E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175329	CWC	05/21/15		Gross Beta	2.09E-14	1.78E-14	2.52E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175330	CWC	06/01/15	Gross Alpha/Beta	Gross Alpha	-2.29E-15	1.10E-14	2.03E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175330	CWC	06/01/15		Gross Beta	1.70E-14	2.13E-14	3.20E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175331	CWC	06/02/15	Gross Alpha/Beta	Gross Alpha	5.81E-15	1.31E-14	1.92E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175331	CWC	06/02/15		Gross Beta	2.76E-14	2.16E-14	3.02E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175332	CWC	06/03/15	Gross Alpha/Beta	Gross Alpha	-3.06E-16	2.04E-14	3.53E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175332	CWC	06/03/15		Gross Beta	5.07E-14	3.97E-14	5.56E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175333	CWC	06/08/15	Gross Alpha/Beta	Gross Alpha	1.47E-15	8.40E-15	1.71E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175333	CWC	06/08/15		Gross Beta	1.91E-14	1.58E-14	1.71E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175333	CWC	06/08/15	Gross Alpha/Beta	Gross Alpha	2.01E-14	3.55E-14	5.56E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175333	CWC	06/08/15		Gross Beta	5.24E-14	3.84E-14	5.56E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175334	CWC	06/09/15	Gross Alpha/Beta	Gross Alpha	5.26E-15	1.29E-14	2.25E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175334	CWC	06/09/15		Gross Beta	4.13E-14	4.81E-14	7.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175335	CWC	06/10/15	Gross Alpha/Beta	Gross Alpha	1.16E-14	1.15E-14	1.40E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175335	CWC	06/10/15		Gross Beta	3.50E-14	3.08E-14	4.56E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175336	CWC	06/16/15	Gross Alpha/Beta	Gross Alpha	8.69E-15	1.47E-14	2.28E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175336	CWC	06/16/15		Gross Beta	1.17E-14	4.59E-14	7.41E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175337	CWC	06/18/15	Gross Alpha/Beta	Gross Alpha	-7.15E-15	8.85E-15	3.42E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175337	CWC	06/18/15		Gross Beta	5.63E-14	7.25E-14	1.11E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175338	VP-57 / VP-58	06/24/15	Gross Alpha/Beta	Gross Alpha	3.11E-14	5.28E-14	8.50E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175338	VP-57 / VP-59	06/24/15		Gross Beta	1.30E-13	8.45E-14	8.50E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175338	VP-57 / VP-60	06/24/15	Gross Alpha/Beta	Gross Alpha	1.12E-13	1.88E-13	2.49E-13	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175338	VP-57 / VP-61	06/24/15		Gross Beta	1.89E-13	1.93E-13	2.49E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175339	VP-57 / VP-62	06/25/15	Gross Alpha/Beta	Gross Alpha	8.71E-14	1.18E-13	1.76E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175339	VP-57 / VP-63	06/25/15		Gross Beta	4.25E-14	3.74E-13	5.15E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175340	VP-57 / VP-64	06/29/15	Gross Alpha/Beta	Gross Alpha	3.89E-15	1.82E-14	3.62E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175340	VP-57 / VP-65	06/29/15		Gross Beta	2.75E-15	7.65E-14	1.06E-13	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175341	St. Cin Park	07/29/15	Gross Alpha/Beta	Gross Alpha	2.83E-15	5.16E-15	8.65E-15	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175341	St. Cin Park	07/29/15		Gross Beta	4.04E-15	5.70E-15	8.65E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175341	St. Cin Park	07/29/15	Gross Alpha/Beta	Gross Alpha	8.16E-15	1.67E-14	2.71E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175341	St. Cin Park	07/29/15		Gross Beta	2.22E-14	1.79E-14	2.71E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175342	St. Cin Park	07/29/15	Gross Alpha/Beta	Gross Alpha	6.07E-15	7.16E-15	9.99E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175342	St. Cin Park	07/29/15		Gross Beta	2.11E-14	2.03E-14	3.14E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175343	St. Cin Park	07/29/15	Gross Alpha/Beta	Gross Alpha	4.55E-15	6.41E-15	9.72E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175343	St. Cin Park	07/29/15		Gross Beta	2.23E-14	1.99E-14	3.05E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175344	St. Cin Park	07/30/15	Gross Alpha/Beta	Gross Alpha	4.38E-15	6.18E-15	9.37E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175344	St. Cin Park	07/30/15		Gross Beta	1.90E-14	1.90E-14	2.94E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175345	St. Cin Park	07/30/15	Gross Alpha/Beta	Gross Alpha	8.37E-15	7.72E-15	9.41E-15	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175345	St. Cin Park	07/30/15		Gross Beta	1.48E-14	1.87E-14	2.96E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175346	St. Cin Park	07/30/15	Gross Alpha/Beta	Gross Alpha	4.47E-15	6.31E-15	9.57E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175346	St. Cin Park	07/30/15		Gross Beta	2.02E-14	1.95E-14	3.00E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175347	St. Cin Park	08/03/15	Gross Alpha/Beta	Gross Alpha	3.07E-15	5.59E-15	9.37E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175347	St. Cin Park	08/03/15		Gross Beta	3.41E-14	2.03E-14	2.94E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175348	St. Cin Park	08/03/15	Gross Alpha/Beta	Gross Alpha	5.75E-15	6.78E-15	9.46E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175348	St. Cin Park	08/03/15		Gross Beta	3.62E-14	2.06E-14	2.97E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175349	St. Cin Park	08/03/15	Gross Alpha/Beta	Gross Alpha	3.99E-15	5.62E-15	8.52E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175349	St. Cin Park	08/03/15		Gross Beta	5.10E-14	2.01E-14	2.68E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175350	St. Cin Park	08/04/15	Gross Alpha/Beta	Gross Alpha	5.31E-15	6.26E-15	8.73E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175350	St. Cin Park	08/04/15		Gross Beta	3.65E-14	1.93E-14	2.74E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175351	St. Cin Park	08/04/15	Gross Alpha/Beta	Gross Alpha	4.29E-15	6.05E-15	9.17E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175351	St. Cin Park	08/04/15		Gross Beta	2.93E-14	1.95E-14	2.88E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175352	St. Cin Park	08/04/15	Gross Alpha/Beta	Gross Alpha	9.54E-15	8.03E-15	9.27E-15	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175352	St. Cin Park	08/04/15		Gross Beta	4.54E-14	2.10E-14	2.91E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175353	St. Cin Park	08/11/15	Gross Alpha/Beta	Gross Alpha	9.06E-15	1.65E-14	2.77E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175353	St. Cin Park	08/11/15		Gross Beta	2.36E-14	5.31E-14	8.69E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175354	St. Cin Park	08/11/15	Gross Alpha/Beta	Gross Alpha	3.29E-14	2.56E-14	2.81E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175354	St. Cin Park	08/11/15		Gross Beta	7.71E-14	5.87E-14	8.82E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175355	St. Cin Park	08/11/15	Gross Alpha/Beta	Gross Alpha	2.72E-14	2.29E-14	2.64E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175355	St. Cin Park	08/11/15		Gross Beta	2.97E-14	5.14E-14	8.30E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175356	St.Cin Park	08/12/15	Gross Alpha/Beta	Gross Alpha	4.06E-15	6.87E-15	1.13E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175356	St.Cin Park	08/12/15		Gross Beta	-3.25E-15	3.41E-15	1.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175356	St.Cin Park	08/12/15	Gross Alpha/Beta	Gross Alpha	2.10E-14	1.38E-14	1.92E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175356	St.Cin Park	08/12/15		Gross Beta	2.26E-14	1.39E-14	1.92E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175357	St.Cin Park	08/12/15	Gross Alpha/Beta	Gross Alpha	1.63E-15	5.97E-15	1.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175357	St.Cin Park	08/12/15		Gross Beta	1.80E-14	1.35E-14	1.93E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175358	St.Cin Park	08/12/15	Gross Alpha/Beta	Gross Alpha	3.91E-16	5.22E-15	1.09E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175358	St.Cin Park	08/12/15		Gross Beta	1.42E-14	1.25E-14	1.85E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175359	St.Cin Park	08/13/15	Gross Alpha/Beta	Gross Alpha	3.01E-15	6.82E-15	1.20E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175359	St.Cin Park	08/13/15		Gross Beta	2.48E-14	1.49E-14	2.04E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175360	St.Cin Park	08/13/15	Gross Alpha/Beta	Gross Alpha	4.24E-16	5.67E-15	1.18E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175360	St.Cin Park	08/13/15		Gross Beta	3.25E-14	1.55E-14	2.01E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175361	St.Cin Park	08/13/15	Gross Alpha/Beta	Gross Alpha	1.18E-14	9.42E-15	1.17E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175361	St.Cin Park	08/13/15		Gross Beta	2.01E-14	1.41E-14	1.99E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175362	St.Cin Park	08/17/15	Gross Alpha/Beta	Gross Alpha	3.98E-16	5.32E-15	1.11E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175362	St.Cin Park	08/17/15		Gross Beta	3.59E-14	1.51E-14	1.89E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175363	St.Cin Park	08/17/15	Gross Alpha/Beta	Gross Alpha	5.43E-15	7.51E-15	1.16E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175363	St.Cin Park	08/17/15		Gross Beta	4.09E-14	1.62E-14	1.98E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175364	St.Cin Park	08/17/15	Gross Alpha/Beta	Gross Alpha	2.92E-15	6.61E-15	1.16E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175364	St.Cin Park	08/17/15		Gross Beta	4.49E-14	1.66E-14	1.98E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175365	St. Cin Park	08/18/15	Gross Alpha/Beta	Gross Alpha	9.04E-15	1.60E-14	2.04E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175365	St. Cin Park	08/18/15		Gross Beta	-1.81E-15	1.27E-14	2.04E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175365	St. Cin Park	08/18/15	Gross Alpha/Beta	Gross Alpha	2.69E-14	2.37E-14	3.33E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP175365	St. Cin Park	08/18/15		Gross Beta	3.10E-14	2.42E-14	3.33E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182138	St. Cin Park	08/18/15	Gross Alpha/Beta	Gross Alpha	7.97E-15	1.78E-14	2.37E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182138	St. Cin Park	08/18/15		Gross Beta	3.44E-14	2.79E-14	3.87E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182139	St. Cin Park	08/18/15	Gross Alpha/Beta	Gross Alpha	3.19E-15	1.77E-14	2.57E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182139	St. Cin Park	08/18/15		Gross Beta	4.96E-14	3.18E-14	4.20E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182140	St. Cin Park	08/19/15	Gross Alpha/Beta	Gross Alpha	1.75E-15	9.71E-15	1.41E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182140	St. Cin Park	08/19/15		Gross Beta	1.09E-14	1.54E-14	2.30E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182141	St. Cin Park	08/19/15	Gross Alpha/Beta	Gross Alpha	2.72E-16	1.01E-14	1.54E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182141	St. Cin Park	08/19/15		Gross Beta	1.50E-14	1.72E-14	2.51E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182142	St. Cin Park	08/19/15	Gross Alpha/Beta	Gross Alpha	5.17E-15	1.16E-14	1.54E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182142	St. Cin Park	08/19/15		Gross Beta	8.72E-15	1.64E-14	2.51E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP182143	St. Cin Park	08/20/15	Gross Alpha/Beta	Gross Alpha	8.75E-15	9.94E-15	1.15E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182143	St. Cin Park	08/20/15		Gross Beta	2.22E-14	1.42E-14	1.88E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182144	St. Cin Park	08/20/15	Gross Alpha/Beta	Gross Alpha	2.15E-16	7.96E-15	1.21E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182144	St. Cin Park	08/20/15		Gross Beta	2.76E-14	1.55E-14	1.98E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182145	St. Cin Park	08/20/15	Gross Alpha/Beta	Gross Alpha	-1.08E-15	7.57E-15	1.22E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182145	St. Cin Park	08/20/15		Gross Beta	1.69E-14	1.43E-14	1.99E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182146	St. Cin Park	08/24/15	Gross Alpha/Beta	Gross Alpha	1.06E-14	1.21E-14	1.39E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182146	St. Cin Park	08/24/15		Gross Beta	1.93E-14	1.63E-14	2.28E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182147	St. Cin Park	08/24/15	Gross Alpha/Beta	Gross Alpha	1.54E-15	8.54E-15	1.24E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182147	St. Cin Park	08/24/15		Gross Beta	1.72E-14	1.45E-14	2.03E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182148	St. Cin Park	08/24/15	Gross Alpha/Beta	Gross Alpha	4.02E-15	8.99E-15	1.20E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182148	St. Cin Park	08/24/15		Gross Beta	3.77E-14	1.64E-14	1.95E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182149	St. Cin Park	08/25/15	Gross Alpha/Beta	Gross Alpha	5.02E-15	8.86E-15	1.13E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182149	St. Cin Park	08/25/15		Gross Beta	2.80E-14	1.47E-14	1.85E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182150	St. Cin Park	08/25/15	Gross Alpha/Beta	Gross Alpha	1.51E-15	8.41E-15	1.22E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182150	St. Cin Park	08/25/15		Gross Beta	1.94E-14	1.46E-14	1.99E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182151	St. Cin Park	08/25/15	Gross Alpha/Beta	Gross Alpha	7.51E-15	8.37E-15	9.97E-15	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182151	St. Cin Park	08/25/15		Gross Beta	8.80E-15	8.76E-15	9.97E-15	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182151	St. Cin Park	08/25/15	Gross Alpha/Beta	Gross Alpha	2.28E-14	2.00E-14	2.91E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182151	St. Cin Park	08/25/15		Gross Beta	2.37E-14	2.01E-14	2.91E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182152	St. Cin Park	08/26/15	Gross Alpha/Beta	Gross Alpha	8.33E-15	8.29E-15	9.44E-15	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182152	St. Cin Park	08/26/15		Gross Beta	3.18E-14	1.98E-14	2.75E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182153	St. Cin Park	08/26/15	Gross Alpha/Beta	Gross Alpha	7.83E-15	8.72E-15	1.04E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182153	St. Cin Park	08/26/15		Gross Beta	1.61E-14	2.02E-14	3.03E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182154	St. Cin Park	08/26/15	Gross Alpha/Beta	Gross Alpha	9.12E-15	9.08E-15	1.03E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182154	St. Cin Park	08/26/15		Gross Beta	3.14E-14	2.14E-14	3.02E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182155	St. Cin Park	08/27/15	Gross Alpha/Beta	Gross Alpha	2.22E-15	6.21E-15	9.40E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182155	St. Cin Park	08/27/15		Gross Beta	2.46E-14	1.91E-14	2.74E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182156	St. Cin Park	08/27/15	Gross Alpha/Beta	Gross Alpha	5.06E-15	7.73E-15	1.02E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182156	St. Cin Park	08/27/15		Gross Beta	5.64E-15	1.90E-14	2.98E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182157	St. Cin Park	08/27/15	Gross Alpha/Beta	Gross Alpha	7.67E-15	8.54E-15	1.02E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182157	St. Cin Park	08/27/15		Gross Beta	3.51E-14	2.14E-14	2.97E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182158	St. Cin Park	09/03/15	Gross Alpha/Beta	Gross Alpha	2.41E-15	1.37E-14	2.80E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182158	St. Cin Park	09/03/15		Gross Beta	8.19E-15	1.60E-14	2.80E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182158	St. Cin Park	09/03/15	Gross Alpha/Beta	Gross Alpha	5.91E-14	4.02E-14	4.36E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182158	St. Cin Park	09/03/15		Gross Beta	6.10E-14	4.04E-14	4.36E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182159	St. Cin Park	09/10/15	Gross Alpha/Beta	Gross Alpha	-6.35E-16	1.64E-14	3.70E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182159	St. Cin Park	09/10/15		Gross Beta	5.35E-14	5.06E-14	5.75E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182160	St. Cin Park	09/28/15	Gross Alpha/Beta	Gross Alpha	4.73E-15	1.20E-14	2.18E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182160	St. Cin Park	09/28/15		Gross Beta	2.68E-14	2.06E-14	2.18E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182160	St. Cin Park	09/28/15	Gross Alpha/Beta	Gross Alpha	4.53E-14	4.80E-14	7.28E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182160	St. Cin Park	09/28/15		Gross Beta	5.95E-14	4.92E-14	7.28E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182161	St. Cin Park	09/28/15	Gross Alpha/Beta	Gross Alpha	1.88E-14	1.89E-14	2.35E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182161	St. Cin Park	09/28/15		Gross Beta	4.90E-14	5.19E-14	7.87E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182162	St. Cin Park	09/29/15	Gross Alpha/Beta	Gross Alpha	7.81E-15	7.06E-15	8.29E-15	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182162	St. Cin Park	09/29/15		Gross Beta	3.96E-14	2.01E-14	2.77E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182163	St. Cin Park	09/29/15	Gross Alpha/Beta	Gross Alpha	4.37E-15	5.93E-15	8.62E-15	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182163	St. Cin Park	09/29/15		Gross Beta	3.88E-14	2.07E-14	2.88E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182164	St. Cin Park	10/01/15	Gross Alpha/Beta	Gross Alpha	8.44E-15	2.39E-14	3.77E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182164	St. Cin Park	10/01/15		Gross Beta	6.43E-14	3.70E-14	3.77E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182164	St. Cin Park	10/01/15	Gross Alpha/Beta	Gross Alpha	5.82E-14	3.99E-14	5.69E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182164	St. Cin Park	10/01/15		Gross Beta	1.23E-13	4.72E-14	5.69E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182165	St. Cin Park	10/01/15	Gross Alpha/Beta	Gross Alpha	-8.15E-16	8.22E-15	1.51E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182165	St. Cin Park	10/01/15		Gross Beta	3.58E-15	1.35E-14	2.28E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP182166	St. Cin Park	10/05/15	Gross Alpha/Beta	Gross Alpha	4.24E-15	1.96E-14	3.23E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182166	St. Cin Park	10/05/15		Gross Beta	3.65E-14	3.26E-14	4.88E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182167	St. Cin Park	10/05/15	Gross Alpha/Beta	Gross Alpha	7.15E-15	2.02E-14	3.20E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182167	St. Cin Park	10/05/15		Gross Beta	1.33E-14	2.93E-14	4.82E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182168	St. Cin Park	10/06/15	Gross Alpha/Beta	Gross Alpha	5.38E-16	8.02E-15	1.39E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182168	St. Cin Park	10/06/15		Gross Beta	2.31E-14	1.49E-14	2.10E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182169	St. Cin Park	10/06/15	Gross Alpha/Beta	Gross Alpha	5.24E-16	7.82E-15	1.36E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182169	St. Cin Park	10/06/15		Gross Beta	2.10E-14	1.44E-14	2.05E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182170	St. Cin Park	10/07/15	Gross Alpha/Beta	Gross Alpha	-1.96E-15	1.97E-14	3.62E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182170	St. Cin Park	10/07/15		Gross Beta	4.51E-14	3.70E-14	5.46E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182171	St. Cin Park	10/07/15	Gross Alpha/Beta	Gross Alpha	1.19E-14	2.49E-14	3.77E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182171	St. Cin Park	10/07/15		Gross Beta	2.24E-14	3.55E-14	5.69E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182172	St. Cin Park	10/08/15	Gross Alpha/Beta	Gross Alpha	4.30E-15	8.95E-15	1.36E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182172	St. Cin Park	10/08/15		Gross Beta	2.90E-14	1.53E-14	2.05E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182173	St. Cin Park	10/08/15	Gross Alpha/Beta	Gross Alpha	5.43E-16	8.10E-15	1.41E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182173	St. Cin Park	10/08/15		Gross Beta	4.09E-14	1.71E-14	2.12E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182174	St. Cin Park	10/12/15	Gross Alpha/Beta	Gross Alpha	5.18E-15	1.08E-14	1.64E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182174	St. Cin Park	10/12/15		Gross Beta	4.37E-14	1.94E-14	2.47E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182175	St. Cin Park	10/12/15	Gross Alpha/Beta	Gross Alpha	5.76E-16	8.59E-15	1.49E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182175	St. Cin Park	10/12/15		Gross Beta	3.90E-14	1.76E-14	2.25E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182176	St. Cin Park	10/13/15	Gross Alpha/Beta	Gross Alpha	-4.35E-15	5.79E-15	1.31E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182176	St. Cin Park	10/13/15		Gross Beta	1.32E-14	1.30E-14	1.98E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182177	St. Cin Park	10/13/15	Gross Alpha/Beta	Gross Alpha	-4.55E-15	6.05E-15	1.37E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182177	St. Cin Park	10/13/15		Gross Beta	4.88E-15	1.25E-14	2.07E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182178	St. Cin Park	10/14/15	Gross Alpha/Beta	Gross Alpha	-3.40E-15	6.80E-15	1.42E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182178	St. Cin Park	10/14/15		Gross Beta	2.45E-14	1.54E-14	2.15E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182179	St. Cin Park	10/14/15	Gross Alpha/Beta	Gross Alpha	-8.20E-16	8.27E-15	1.52E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182179	St. Cin Park	10/14/15		Gross Beta	3.33E-14	1.72E-14	2.29E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182180	St. Cin Park	10/15/15	Gross Alpha/Beta	Gross Alpha	-5.37E-15	7.13E-15	1.62E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182180	St. Cin Park	10/15/15		Gross Beta	2.69E-14	1.73E-14	2.44E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182181	St. Cin Park	10/15/15	Gross Alpha/Beta	Gross Alpha	2.03E-15	9.33E-15	1.54E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182181	St. Cin Park	10/15/15		Gross Beta	4.40E-14	1.86E-14	2.33E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182182	St. Cin Park	10/19/15	Gross Alpha/Beta	Gross Alpha	6.30E-15	9.97E-15	1.47E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182182	St. Cin Park	10/19/15		Gross Beta	6.30E-15	9.97E-15	1.47E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182182	St. Cin Park	10/19/15	Gross Alpha/Beta	Gross Alpha	3.41E-14	1.74E-14	2.20E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182182	St. Cin Park	10/19/15		Gross Beta	5.36E-14	1.96E-14	2.20E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182183	St. Cin Park	10/19/15	Gross Alpha/Beta	Gross Alpha	4.93E-15	9.71E-15	1.50E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182183	St. Cin Park	10/19/15		Gross Beta	4.13E-14	1.84E-14	2.24E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182184	St. Cin Park	10/21/15	Gross Alpha/Beta	Gross Alpha	-1.82E-15	1.42E-14	2.76E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182184	St. Cin Park	10/21/15		Gross Beta	7.81E-14	3.43E-14	4.14E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182185	St. Cin Park	10/21/15	Gross Alpha/Beta	Gross Alpha	2.38E-14	2.79E-14	3.79E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182185	St. Cin Park	10/21/15		Gross Beta	8.32E-14	4.43E-14	5.69E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182186	St. Cin Park	10/22/15	Gross Alpha/Beta	Gross Alpha	5.93E-14	3.20E-14	3.10E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182186	St. Cin Park	10/22/15		Gross Beta	1.19E-13	4.19E-14	4.65E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182187	St. Cin Park	10/22/15	Gross Alpha/Beta	Gross Alpha	2.10E-14	2.20E-14	2.89E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182187	St. Cin Park	10/22/15		Gross Beta	6.33E-14	3.37E-14	4.33E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182188	St. Cin Park	10/26/15	Gross Alpha/Beta	Gross Alpha	1.09E-14	1.15E-14	1.50E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182188	St. Cin Park	10/26/15		Gross Beta	5.40E-14	1.99E-14	2.26E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182189	St. Cin Park	10/26/15	Gross Alpha/Beta	Gross Alpha	6.64E-15	8.90E-15	1.26E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182189	St. Cin Park	10/26/15		Gross Beta	3.88E-14	1.60E-14	1.89E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182190	St. Cin Park	10/29/15	Gross Alpha/Beta	Gross Alpha	9.64E-16	1.61E-14	2.92E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182190	St. Cin Park	10/29/15		Gross Beta	8.26E-14	3.62E-14	4.38E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182191	St. Cin Park	10/29/15	Gross Alpha/Beta	Gross Alpha	3.66E-14	2.80E-14	3.26E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182191	St. Cin Park	10/29/15		Gross Beta	9.01E-14	4.02E-14	4.89E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP182192	St. Cin Park	11/02/15	Gross Alpha/Beta	Gross Alpha	1.87E-14	1.74E-14	2.48E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182192	St. Cin Park	11/02/15		Gross Beta	1.25E-15	1.13E-14	2.48E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182192	St. Cin Park	11/02/15	Gross Alpha/Beta	Gross Alpha	3.11E-14	2.65E-14	3.95E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182192	St. Cin Park	11/02/15		Gross Beta	5.82E-14	2.98E-14	3.95E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182193	St. Cin Park	11/02/15	Gross Alpha/Beta	Gross Alpha	4.66E-15	9.99E-15	1.86E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182193	St. Cin Park	11/02/15		Gross Beta	5.43E-14	2.35E-14	2.96E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182194	St. Cin Park	11/03/15	Gross Alpha/Beta	Gross Alpha	-5.88E-16	4.81E-15	1.17E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182194	St. Cin Park	11/03/15		Gross Beta	1.62E-14	1.27E-14	1.87E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182195	St. Cin Park	11/03/15	Gross Alpha/Beta	Gross Alpha	-6.23E-16	5.10E-15	1.24E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182195	St. Cin Park	11/03/15		Gross Beta	1.88E-14	1.37E-14	1.98E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182196	St. Cin Park	11/04/15	Gross Alpha/Beta	Gross Alpha	-7.07E-16	5.78E-15	1.41E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182196	St. Cin Park	11/04/15		Gross Beta	2.31E-14	1.57E-14	2.24E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182197	St. Cin Park	11/04/15	Gross Alpha/Beta	Gross Alpha	4.63E-15	7.58E-15	1.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182197	St. Cin Park	11/04/15		Gross Beta	1.82E-14	1.43E-14	2.10E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182198	St. Cin Park	11/05/15	Gross Alpha/Beta	Gross Alpha	-7.86E-15	9.31E-15	3.14E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182198	St. Cin Park	11/05/15		Gross Beta	5.34E-14	3.52E-14	4.99E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182199	St. Cin Park	11/05/15	Gross Alpha/Beta	Gross Alpha	-1.50E-15	1.23E-14	2.99E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182199	St. Cin Park	11/05/15		Gross Beta	3.74E-14	3.19E-14	4.75E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182200	St. Cin Park	11/09/15	Gross Alpha/Beta	Gross Alpha	5.31E-15	7.44E-15	1.08E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182200	St. Cin Park	11/09/15		Gross Beta	5.31E-15	7.44E-15	1.08E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182200	St. Cin Park	11/09/15	Gross Alpha/Beta	Gross Alpha	4.30E-14	1.93E-14	2.79E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182200	St. Cin Park	11/09/15		Gross Beta	1.61E-14	1.68E-14	2.79E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182201	St. Cin Park	11/09/15	Gross Alpha/Beta	Gross Alpha	3.19E-16	8.13E-15	1.62E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182201	St. Cin Park	11/09/15		Gross Beta	3.14E-14	2.59E-14	4.18E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182202	St. Cin Park	11/10/15	Gross Alpha/Beta	Gross Alpha	4.81E-15	8.34E-15	1.29E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182202	St. Cin Park	11/10/15		Gross Beta	5.42E-14	2.32E-14	3.33E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP182203	St. Cin Park	11/10/15	Gross Alpha/Beta	Gross Alpha	2.70E-15	1.09E-14	1.96E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182203	St. Cin Park	11/10/15		Gross Beta	3.36E-14	3.10E-14	5.07E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182204	St. Cin Park	11/11/15	Gross Alpha/Beta	Gross Alpha	-4.83E-15	4.21E-15	1.44E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182204	St. Cin Park	11/11/15		Gross Beta	1.28E-14	2.16E-14	3.73E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182205	St. Cin Park	11/11/15	Gross Alpha/Beta	Gross Alpha	3.33E-15	7.86E-15	1.30E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182205	St. Cin Park	11/11/15		Gross Beta	2.43E-14	2.08E-14	3.37E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182206	St. Cin Park	12/10/15	Gross Alpha/Beta	Gross Alpha	5.13E-15	9.36E-15	1.53E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182206	St. Cin Park	12/10/15		Gross Beta	3.37E-15	8.67E-15	1.53E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182206	St. Cin Park	12/10/15	Gross Alpha/Beta	Gross Alpha	4.45E-14	2.63E-14	2.70E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182206	St. Cin Park	12/10/15		Gross Beta	3.10E-14	2.50E-14	2.70E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182207	St. Cin Park	12/10/15	Gross Alpha/Beta	Gross Alpha	5.95E-15	8.64E-15	1.32E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182207	St. Cin Park	12/10/15		Gross Beta	2.77E-14	2.17E-14	2.33E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182208	St. Cin Park	12/15/15	Gross Alpha/Beta	Gross Alpha	2.43E-15	1.19E-14	2.31E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182208	St. Cin Park	12/15/15		Gross Beta	1.44E-14	3.44E-14	4.06E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182209	St. Cin Park	12/15/15	Gross Alpha/Beta	Gross Alpha	-1.72E-16	8.31E-15	1.80E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182209	St. Cin Park	12/15/15		Gross Beta	2.05E-14	2.77E-14	3.16E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182210	St. Cin Park	12/16/15	Gross Alpha/Beta	Gross Alpha	9.30E-15	9.79E-15	1.39E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182210	St. Cin Park	12/16/15		Gross Beta	4.84E-15	8.30E-15	1.39E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182210	St. Cin Park	12/16/15	Gross Alpha/Beta	Gross Alpha	1.22E-14	1.73E-14	2.38E-14	µCi/mL			North County Air (General Area Air)-Perimeter Air
SVP182210	St. Cin Park	12/16/15		Gross Beta	3.58E-15	1.63E-14	2.38E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182211	St. Cin Park	12/16/15	Gross Alpha/Beta	Gross Alpha	3.68E-15	8.50E-15	1.53E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182211	St. Cin Park	12/16/15		Gross Beta	2.28E-14	2.00E-14	2.61E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182212	St. Cin Park	12/17/15	Gross Alpha/Beta	Gross Alpha	2.83E-15	6.55E-15	1.17E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182212	St. Cin Park	12/17/15		Gross Beta	1.11E-14	1.47E-14	2.01E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182213	St. Cin Park	12/17/15	Gross Alpha/Beta	Gross Alpha	1.59E-15	6.10E-15	1.19E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182213	St. Cin Park	12/17/15		Gross Beta	1.69E-14	1.55E-14	2.03E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182214	St. Cin Park	12/21/15	Gross Alpha/Beta	Gross Alpha	1.53E-14	1.23E-14	1.55E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182214	St. Cin Park	12/21/15		Gross Beta	1.35E-14	1.92E-14	2.65E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-4. SLAPS Perimeter Air Data Results for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP182215	St. Cin Park	12/21/15	Gross Alpha/Beta	Gross Alpha	2.40E-15	9.23E-15	1.79E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182215	St. Cin Park	12/21/15		Gross Beta	4.40E-14	2.54E-14	3.07E-14	µCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP182216	St. Cin Park	12/22/15	Gross Alpha/Beta	Gross Alpha	5.38E-16	9.39E-15	2.01E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182216	St. Cin Park	12/22/15		Gross Beta	2.72E-14	2.60E-14	3.44E-14	µCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP182217	St. Cin Park	12/22/15	Gross Alpha/Beta	Gross Alpha	5.92E-15	1.02E-14	1.70E-14	µCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP182217	St. Cin Park	12/22/15		Gross Beta	6.51E-14	2.65E-14	2.92E-14	µCi/mL	=		North County Air (General Area Air)-Perimeter Air

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

Validation Reason Code:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Analytical result is less than both the associated counting uncertainty and MDA.

APPENDIX C

STORM-WATER, WASTE-WATER AND EXCAVATION-WATER DATA

(On the CD-ROM on the Back Cover of this Report)

THIS PAGE INTENTIONALLY LEFT BLANK

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175691	VP-57 and VP-58	01/05/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175691	VP-57 and VP-58	01/05/15	ML-024	pH	7.21		0.1	No Units	=	
SVP175691	VP-57 and VP-58	01/05/15	ML-005	Th-228	0.0854	0.203	0.414	pCi/L	UJ	T06
SVP175691	VP-57 and VP-58	01/05/15	ML-005	Th-230	0.205	0.209	0.139	pCi/L	UJ	T02
SVP175691	VP-57 and VP-58	01/05/15	ML-005	Th-232	-0.0683	0.0974	0.414	pCi/L	UJ	T06
SVP175691	VP-57 and VP-58	01/05/15	ML-006	Ra-226	0.978	0.765	1.01	pCi/L	U	T04, T05
SVP175691	VP-57 and VP-58	01/05/15	ML-018	Gross Alpha	-0.489	4.09	7.23	pCi/L	UJ	T06
SVP175691	VP-57 and VP-58	01/05/15	ML-018	Gross Beta	3.46	5.87	9.72	pCi/L	UJ	T06
SVP175691	VP-57 and VP-58	01/05/15	ML-003	Ac-227	-3.63	5.8	5.75	pCi/L	UJ	T04, T06
SVP175691	VP-57 and VP-58	01/05/15	ML-003	Pa-231	2.39	26.4	27.4	pCi/L	UJ	T04, T06
SVP175691	VP-57 and VP-58	01/05/15	ML-021	Total U	2.39	0.218	2.45	pCi/L	U	T04, T05
SVP175692	VP-57 and VP-58	01/06/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175692	VP-57 and VP-58	01/06/15	ML-005	Th-228	0.0157	0.114	0.307	pCi/L	UJ	T06
SVP175692	VP-57 and VP-58	01/06/15	ML-005	Th-230	0.315	0.288	0.382	pCi/L	U	T04, T05
SVP175692	VP-57 and VP-58	01/06/15	ML-005	Th-232	0.0472	0.0948	0.128	pCi/L	UJ	T06
SVP175692	VP-57 and VP-58	01/06/15	ML-006	Ra-226	5.5E-05	0.631	1.41	pCi/L	UJ	T06
SVP175692	VP-57 and VP-58	01/06/15	ML-018	Gross Alpha	3.91	4.43	7.23	pCi/L	UJ	T06
SVP175692	VP-57 and VP-58	01/06/15	ML-018	Gross Beta	-5.88	5.58	9.72	pCi/L	UJ	T06
SVP175692	VP-57 and VP-58	01/06/15	ML-003	Ac-227	-3.82	7.89	6.97	pCi/L	UJ	T04, T06
SVP175692	VP-57 and VP-58	01/06/15	ML-003	Pa-231	2.67	30.2	31.9	pCi/L	UJ	T04, T06
SVP175692	VP-57 and VP-58	01/06/15	ML-021	Total U	1.86	0.169	1.47	pCi/L	=	
SVP175693	VP-57 and VP-58	01/12/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175693	VP-57 and VP-58	01/12/15	ML-005	Th-228	0.154	0.257	0.467	pCi/L	UJ	T06
SVP175693	VP-57 and VP-58	01/12/15	ML-005	Th-230	0.212	0.284	0.468	pCi/L	UJ	T06
SVP175693	VP-57 and VP-58	01/12/15	ML-005	Th-232	0	0	0.157	pCi/L	U	
SVP175693	VP-57 and VP-58	01/12/15	ML-006	Ra-226	-0.036	0.297	0.874	pCi/L	UJ	T06
SVP175693	VP-57 and VP-58	01/12/15	ML-018	Gross Alpha	2.77	4.34	7.23	pCi/L	UJ	T06
SVP175693	VP-57 and VP-58	01/12/15	ML-018	Gross Beta	-1.77	5.7	9.72	pCi/L	UJ	T06
SVP175693	VP-57 and VP-58	01/12/15	ML-003	Ac-227	-3.13	4.98	4.74	pCi/L	UJ	T04, T06
SVP175693	VP-57 and VP-58	01/12/15	ML-003	Pa-231	2.74	20.6	21.5	pCi/L	UJ	T04, T06
SVP175693	VP-57 and VP-58	01/12/15	ML-021	Total U	2.83	0.258	1.47	pCi/L	=	
SVP175694	VP-57 and VP-58	01/14/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175694	VP-57 and VP-58	01/14/15	ML-005	Th-228	-0.0365	0.0734	0.357	pCi/L	UJ	T06
SVP175694	VP-57 and VP-58	01/14/15	ML-005	Th-230	0.366	0.335	0.443	pCi/L	U	T04, T05
SVP175694	VP-57 and VP-58	01/14/15	ML-005	Th-232	0.11	0.156	0.148	pCi/L	UJ	T06
SVP175694	VP-57 and VP-58	01/14/15	ML-006	Ra-226	-0.2	0.231	0.929	pCi/L	UJ	T06
SVP175694	VP-57 and VP-58	01/14/15	ML-018	Gross Alpha	-0.326	4.1	7.23	pCi/L	UJ	T06

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175694	VP-57 and VP-58	01/14/15	ML-018	Gross Beta	3.46	5.87	9.72	pCi/L	UJ	T06
SVP175694	VP-57 and VP-58	01/14/15	ML-003	Ac-227	-9.66	7.63	6.95	pCi/L	UJ	T04, T06
SVP175694	VP-57 and VP-58	01/14/15	ML-003	Pa-231	12.6	28.5	28.3	pCi/L	UJ	T04, T06
SVP175694	VP-57 and VP-58	01/14/15	ML-021	Total U	1.41	0.129	1.47	pCi/L	U	T04, T05
SVP175695	VP-57 and VP-58	01/15/15	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175695	VP-57 and VP-58	01/15/15	ML-005	Th-228	0.16	0.204	0.312	pCi/L	UJ	T06
SVP175695	VP-57 and VP-58	01/15/15	ML-005	Th-230	0.528	0.333	0.13	pCi/L	J	T04
SVP175695	VP-57 and VP-58	01/15/15	ML-005	Th-232	0.0479	0.0963	0.13	pCi/L	UJ	T06
SVP175695	VP-57 and VP-58	01/15/15	ML-006	Ra-226	0.491	0.53	0.738	pCi/L	UJ	T06
SVP175695	VP-57 and VP-58	01/15/15	ML-018	Gross Alpha	1.96	4.28	7.23	pCi/L	UJ	T06
SVP175695	VP-57 and VP-58	01/15/15	ML-018	Gross Beta	-0.747	5.73	9.72	pCi/L	UJ	T06
SVP175695	VP-57 and VP-58	01/15/15	ML-003	Ac-227	-4.12	5.11	4.73	pCi/L	UJ	T04, T06
SVP175695	VP-57 and VP-58	01/15/15	ML-003	Pa-231	-17.1	19.2	19.3	pCi/L	UJ	T04, T06
SVP175695	VP-57 and VP-58	01/15/15	ML-021	Total U	0.972	0.0887	1.47	pCi/L	U	T04, T05
SVP175696	VP-57 and VP-58	01/19/15	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175696	VP-57 and VP-58	01/19/15	ML-005	Th-228	0.124	0.199	0.347	pCi/L	UJ	T06
SVP175696	VP-57 and VP-58	01/19/15	ML-005	Th-230	0.267	0.244	0.145	pCi/L	J	T04
SVP175696	VP-57 and VP-58	01/19/15	ML-005	Th-232	0.0177	0.128	0.346	pCi/L	UJ	T06
SVP175696	VP-57 and VP-58	01/19/15	ML-006	Ra-226	0.44	0.597	1.02	pCi/L	UJ	T06
SVP175696	VP-57 and VP-58	01/19/15	ML-018	Gross Alpha	3.91	4.43	7.23	pCi/L	UJ	T06
SVP175696	VP-57 and VP-58	01/19/15	ML-018	Gross Beta	0.467	5.77	9.72	pCi/L	UJ	T06
SVP175696	VP-57 and VP-58	01/19/15	ML-003	Ac-227	-5.06	5.42	5.24	pCi/L	UJ	T04, T06
SVP175696	VP-57 and VP-58	01/19/15	ML-003	Pa-231	14.9	21.9	23.8	pCi/L	UJ	T04, T06
SVP175696	VP-57 and VP-58	01/19/15	ML-021	Total U	1.59	0.145	1.47	pCi/L	=	
SVP175697	VP-57 and VP-58	01/20/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175697	VP-57 and VP-58	01/20/15	ML-005	Th-228	0.0655	0.216	0.439	pCi/L	UJ	T06
SVP175697	VP-57 and VP-58	01/20/15	ML-005	Th-230	0.656	0.355	0.119	pCi/L	J	F01, T04
SVP175697	VP-57 and VP-58	01/20/15	ML-005	Th-232	0.0873	0.124	0.118	pCi/L	UJ	T06
SVP175697	VP-57 and VP-58	01/20/15	ML-006	Ra-226	0.119	0.375	0.78	pCi/L	UJ	T06
SVP175697	VP-57 and VP-58	01/20/15	ML-018	Gross Alpha	0.489	4.11	7.14	pCi/L	UJ	T06
SVP175697	VP-57 and VP-58	01/20/15	ML-018	Gross Beta	0.654	5.67	9.54	pCi/L	UJ	T06
SVP175697	VP-57 and VP-58	01/20/15	ML-003	Ac-227	0.34	4.8	4.89	pCi/L	UJ	T04, T06
SVP175697	VP-57 and VP-58	01/20/15	ML-003	Pa-231	-4.42	20.2	19.1	pCi/L	UJ	T04, T06
SVP175697	VP-57 and VP-58	01/20/15	ML-021	Total U	1.28	0.117	1.47	pCi/L	U	T04, T05
SVP175698	VP-57 and VP-58	01/22/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175698	VP-57 and VP-58	01/22/15	ML-005	Th-228	0.0891	0.159	0.286	pCi/L	UJ	T06

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175698	VP-57 and VP-58	01/22/15	ML-005	Th-230	0.659	0.346	0.112	pCi/L	J	F01, T04
SVP175698	VP-57 and VP-58	01/22/15	ML-005	Th-232	-0.0343	0.0687	0.286	pCi/L	UJ	T06
SVP175698	VP-57 and VP-58	01/22/15	ML-006	Ra-226	0.754	0.782	1.24	pCi/L	UJ	T06
SVP175698	VP-57 and VP-58	01/22/15	ML-018	Gross Alpha	0	4.07	7.14	pCi/L	UJ	T06
SVP175698	VP-57 and VP-58	01/22/15	ML-018	Gross Beta	4.76	5.81	9.54	pCi/L	UJ	T06
SVP175698	VP-57 and VP-58	01/22/15	ML-003	Ac-227	-1.13	5.46	4.74	pCi/L	UJ	T04, T06
SVP175698	VP-57 and VP-58	01/22/15	ML-003	Pa-231	-8.55	20.6	21	pCi/L	UJ	T04, T06
SVP175698	VP-57 and VP-58	01/22/15	ML-021	Total U	0.803	0.0733	1.47	pCi/L	U	T04, T05
SVP175699	VP-57 and VP-58	01/26/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175699	VP-57 and VP-58	01/26/15	ML-024	pH	7.54		0.1	No Units	=	
SVP175699	VP-57 and VP-58	01/26/15	ML-005	Th-228	0.131	0.234	0.421	pCi/L	UJ	T06
SVP175699	VP-57 and VP-58	01/26/15	ML-005	Th-230	0.981	0.54	0.422	pCi/L	J	F01, T04
SVP175699	VP-57 and VP-58	01/26/15	ML-005	Th-232	0.0606	0.122	0.164	pCi/L	UJ	T06
SVP175699	VP-57 and VP-58	01/26/15	ML-006	Ra-226	0.776	0.55	0.263	pCi/L	J	F01, T04
SVP175699	VP-57 and VP-58	01/26/15	ML-018	Gross Alpha	2.94	4.3	7.14	pCi/L	UJ	T06
SVP175699	VP-57 and VP-58	01/26/15	ML-018	Gross Beta	-0.28	5.64	9.54	pCi/L	UJ	T06
SVP175699	VP-57 and VP-58	01/26/15	ML-003	Ac-227	32.8	23.4	4.58	pCi/L	UJ	T04
SVP175699	VP-57 and VP-58	01/26/15	ML-003	Pa-231	-3.11	18.8	17.7	pCi/L	UJ	T04, T06
SVP175699	VP-57 and VP-58	01/26/15	ML-021	Total U	0.243	0.0221	2.45	pCi/L	U	T04, T05
SVP175699	VP-57 and VP-58	01/26/15	SW846 6020	Arsenic	4.6		1.2	µg/L	=	
SVP175699	VP-57 and VP-58	01/26/15	SW846 6020	Cadmium	0.15		0.1	µg/L	=	
SVP175699	VP-57 and VP-58	01/26/15	SW846 6020	Chromium	4.8		1	µg/L	=	
SVP175699	VP-57 and VP-58	01/26/15	SW846 9040C	pH	7.43		0.1	No Units	=	
SVP175699	VP-57 and VP-58	01/26/15	EPA 1664	Oil and Grease	2.4		1.6	mg/L	J	F01
SVP175699	VP-57 and VP-58	01/26/15	EPA 1664	TRPH	3		3	mg/L	UJ	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1016	0.38		0.38	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1221	0.38		0.38	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1232	0.38		0.38	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1242	0.38		0.38	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1248	0.38		0.38	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1254	0.18		0.18	µg/L	U	
SVP175699	VP-57 and VP-58	01/26/15	SW846 8082	Aroclor-1260	0.18		0.18	µg/L	U	
SVP175700	VP-57 and VP-58	02/02/15	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175700	VP-57 and VP-58	02/02/15	ML-005	Th-228	0.234	0.213	0.127	pCi/L	J	T04
SVP175700	VP-57 and VP-58	02/02/15	ML-005	Th-230	0.664	0.387	0.326	pCi/L	J	F01, T04
SVP175700	VP-57 and VP-58	02/02/15	ML-005	Th-232	0.187	0.19	0.127	pCi/L	UJ	T02

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175700	VP-57 and VP-58	02/02/15	ML-006	Ra-226	0.25	0.556	1.05	pCi/L	UJ	T06
SVP175700	VP-57 and VP-58	02/02/15	ML-018	Gross Alpha	3.1	4.32	7.14	pCi/L	UJ	T06
SVP175700	VP-57 and VP-58	02/02/15	ML-018	Gross Beta	3.64	5.77	9.54	pCi/L	UJ	T06
SVP175700	VP-57 and VP-58	02/02/15	ML-003	Ac-227	-2.26	5.47	4.63	pCi/L	UJ	T04, T06
SVP175700	VP-57 and VP-58	02/02/15	ML-003	Pa-231	-0.336	18.8	19.3	pCi/L	UJ	T04, T06
SVP175700	VP-57 and VP-58	02/02/15	ML-021	Total U	0.0005	0.00004581	2.45	pCi/L	U	T04, T05
SVP175701	VP-57 and VP-58	02/03/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175701	VP-57 and VP-58	02/03/15	ML-021	Total U	-0.00408	0.000372	2.45	pCi/L	UJ	T06
SVP175702	VP-57 and VP-58	02/04/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175702	VP-57 and VP-58	02/04/15	ML-005	Th-228	0.479	0.352	0.364	pCi/L	J	T04
SVP175702	VP-57 and VP-58	02/04/15	ML-005	Th-230	0.969	0.53	0.527	pCi/L	J	F01, T04
SVP175702	VP-57 and VP-58	02/04/15	ML-005	Th-232	0.122	0.244	0.455	pCi/L	UJ	T06
SVP175702	VP-57 and VP-58	02/04/15	ML-006	Ra-226	0.693	0.61	0.823	pCi/L	U	T04, T05
SVP175702	VP-57 and VP-58	02/04/15	ML-018	Gross Alpha	2.77	4.29	7.14	pCi/L	UJ	T06
SVP175702	VP-57 and VP-58	02/04/15	ML-018	Gross Beta	4.95	5.82	9.54	pCi/L	UJ	T06
SVP175702	VP-57 and VP-58	02/04/15	ML-003	Ac-227	-3.35	5.52	5.27	pCi/L	UJ	T04, T06
SVP175702	VP-57 and VP-58	02/04/15	ML-003	Pa-231	11.8	21.8	21.3	pCi/L	UJ	T04, T06
SVP175702	VP-57 and VP-58	02/04/15	ML-021	Total U	2.99	0.272	1.47	pCi/L	=	
SVP175703	VP-57 and VP-58	02/09/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175703	VP-57 and VP-58	02/09/15	ML-005	Th-228	0.121	0.405	0.812	pCi/L	UJ	T06
SVP175703	VP-57 and VP-58	02/09/15	ML-005	Th-230	0.436	0.365	0.197	pCi/L	J	F01, T04
SVP175703	VP-57 and VP-58	02/09/15	ML-005	Th-232	0	0	0.196	pCi/L	U	
SVP175703	VP-57 and VP-58	02/09/15	ML-006	Ra-226	-0.106	0.348	0.892	pCi/L	UJ	T06
SVP175703	VP-57 and VP-58	02/09/15	ML-018	Gross Alpha	4.73	4.44	7.14	pCi/L	U	T04, T05
SVP175703	VP-57 and VP-58	02/09/15	ML-018	Gross Beta	2.71	5.74	9.54	pCi/L	UJ	T06
SVP175703	VP-57 and VP-58	02/09/15	ML-003	Ac-227	-3.6	6.07	5.31	pCi/L	UJ	T04, T06
SVP175703	VP-57 and VP-58	02/09/15	ML-003	Pa-231	10.2	25.6	24.6	pCi/L	UJ	T04, T06
SVP175703	VP-57 and VP-58	02/09/15	ML-021	Total U	2.42	0.221	1.47	pCi/L	=	
SVP175704	VP-57 and VP-58	02/10/15	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175704	VP-57 and VP-58	02/10/15	ML-005	Th-228	0.464	0.28	0.245	pCi/L	J	T04
SVP175704	VP-57 and VP-58	02/10/15	ML-005	Th-230	1.18	0.462	0.308	pCi/L	J	F01
SVP175704	VP-57 and VP-58	02/10/15	ML-005	Th-232	0.141	0.143	0.0955	pCi/L	UJ	T02
SVP175704	VP-57 and VP-58	02/10/15	ML-006	Ra-226	0.127	0.663	1.31	pCi/L	UJ	T06
SVP175704	VP-57 and VP-58	02/10/15	ML-018	Gross Alpha	2.77	4.29	7.14	pCi/L	UJ	T06
SVP175704	VP-57 and VP-58	02/10/15	ML-018	Gross Beta	6.63	5.88	9.54	pCi/L	U	T04, T05
SVP175704	VP-57 and VP-58	02/10/15	ML-003	Ac-227	0.988	6.15	5.6	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175704	VP-57 and VP-58	02/10/15	ML-003	Pa-231	28.8	26.1	24.9	pCi/L	UJ	T04
SVP175704	VP-57 and VP-58	02/10/15	ML-021	Total U	2.67	0.244	1.47	pCi/L	=	
SVP175705	VP-57 and VP-58	03/10/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175705	VP-57 and VP-58	03/10/15	ML-024	pH	7.07		0.1	No Units	=	
SVP175705	VP-57 and VP-58	03/10/15	ML-005	Th-228	0.35	0.363	0.516	pCi/L	UJ	T06
SVP175705	VP-57 and VP-58	03/10/15	ML-005	Th-230	1.44	0.702	0.421	pCi/L	J	F01
SVP175705	VP-57 and VP-58	03/10/15	ML-005	Th-232	0.175	0.255	0.42	pCi/L	UJ	T06
SVP175705	VP-57 and VP-58	03/10/15	ML-006	Ra-226	0.517	0.607	0.999	pCi/L	UJ	T06
SVP175705	VP-57 and VP-58	03/10/15	ML-018	Gross Alpha	0.979	6.09	10.7	pCi/L	UJ	T06
SVP175705	VP-57 and VP-58	03/10/15	ML-018	Gross Beta	-0.374	7.98	13.7	pCi/L	UJ	T06
SVP175705	VP-57 and VP-58	03/10/15	ML-003	Ac-227	-0.411	6.57	5.49	pCi/L	UJ	T04, T06
SVP175705	VP-57 and VP-58	03/10/15	ML-003	Pa-231	26.2	26.1	24.2	pCi/L	UJ	T04
SVP175705	VP-57 and VP-58	03/10/15	ML-021	Total U	5.48	0.5	2.45	pCi/L	=	
SVP175705	VP-57 and VP-58	03/10/15	SW846 6020	Arsenic	5.7		1.2	µg/L	J	F01
SVP175705	VP-57 and VP-58	03/10/15	SW846 6020	Cadmium	0.14		0.1	µg/L	=	
SVP175705	VP-57 and VP-58	03/10/15	SW846 6020	Chromium	3.3		1	µg/L	=	
SVP175705	VP-57 and VP-58	03/10/15	SW846 9040C	pH	6.94		0.1	No Units	=	
SVP175705	VP-57 and VP-58	03/10/15	EPA 1664	Oil and Grease	1.6		1.6	mg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	EPA 1664	TRPH	2.8		2.8	mg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1016	0.37		0.37	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1221	0.37		0.37	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1232	0.37		0.37	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1242	0.37		0.37	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1248	0.37		0.37	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1254	0.18		0.18	µg/L	U	
SVP175705	VP-57 and VP-58	03/10/15	SW846 8082	Aroclor-1260	0.18		0.18	µg/L	U	
SVP175706	VP-57 and VP-58	03/11/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175706	VP-57 and VP-58	03/11/15	ML-021	Total U	4.47	0.408	2.45	pCi/L	=	
SVP175707	VP-57 and VP-58	03/12/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175707	VP-57 and VP-58	03/12/15	ML-005	Th-228	0.49	0.417	0.452	pCi/L	J	T04
SVP175707	VP-57 and VP-58	03/12/15	ML-005	Th-230	0.226	0.323	0.555	pCi/L	UJ	T06
SVP175707	VP-57 and VP-58	03/12/15	ML-005	Th-232	-0.0753	0.108	0.554	pCi/L	UJ	T06
SVP175707	VP-57 and VP-58	03/12/15	ML-006	Ra-226	0.103	0.427	0.953	pCi/L	UJ	T06
SVP175707	VP-57 and VP-58	03/12/15	ML-018	Gross Alpha	-0.652	5.91	10.7	pCi/L	UJ	T06
SVP175707	VP-57 and VP-58	03/12/15	ML-018	Gross Beta	2.43	8.11	13.7	pCi/L	UJ	T06
SVP175707	VP-57 and VP-58	03/12/15	ML-003	Ac-227	-0.764	6.38	5.41	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175707	VP-57 and VP-58	03/12/15	ML-003	Pa-231	19.3	25.6	23.6	pCi/L	UJ	T04, T06
SVP175707	VP-57 and VP-58	03/12/15	ML-021	Total U	0.872	0.0796	2.45	pCi/L	U	T04, T05
SVP175708	VP-57 and VP-58	03/16/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175708	VP-57 and VP-58	03/16/15	ML-005	Th-228	0.29	0.401	0.695	pCi/L	UJ	T06
SVP175708	VP-57 and VP-58	03/16/15	ML-005	Th-230	0.497	0.507	0.769	pCi/L	UJ	T06
SVP175708	VP-57 and VP-58	03/16/15	ML-005	Th-232	0.248	0.291	0.224	pCi/L	UJ	T02
SVP175708	VP-57 and VP-58	03/16/15	ML-006	Ra-226	0.169	0.546	1.14	pCi/L	UJ	T06
SVP175708	VP-57 and VP-58	03/16/15	ML-018	Gross Alpha	5.22	6.53	10.7	pCi/L	UJ	T06
SVP175708	VP-57 and VP-58	03/16/15	ML-018	Gross Beta	8.41	8.4	13.7	pCi/L	U	T04, T05
SVP175708	VP-57 and VP-58	03/16/15	ML-003	Ac-227	4.84	6.2	5.45	pCi/L	UJ	T04, T06
SVP175708	VP-57 and VP-58	03/16/15	ML-003	Pa-231	-16.6	25.4	24.5	pCi/L	UJ	T04, T06
SVP175708	VP-57 and VP-58	03/16/15	ML-021	Total U	3.58	0.326	2.45	pCi/L	=	
SVP175709	VP-57 and VP-58	03/19/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175709	VP-57 and VP-58	03/19/15	ML-005	Th-228	0.347	0.318	0.188	pCi/L	J	T04
SVP175709	VP-57 and VP-58	03/19/15	ML-005	Th-230	0.174	0.253	0.417	pCi/L	UJ	T06
SVP175709	VP-57 and VP-58	03/19/15	ML-005	Th-232	-0.0694	0.0991	0.511	pCi/L	UJ	T06
SVP175709	VP-57 and VP-58	03/19/15	ML-006	Ra-226	-0.075	0.653	1.71	pCi/L	UJ	T06
SVP175709	VP-57 and VP-58	03/19/15	ML-018	Gross Alpha	5.89	5.64	8.95	pCi/L	U	T04, T05
SVP175709	VP-57 and VP-58	03/19/15	ML-018	Gross Beta	2.95	8.39	14.1	pCi/L	UJ	T06
SVP175709	VP-57 and VP-58	03/19/15	ML-003	Ac-227	-1.19	5.05	4.89	pCi/L	UJ	T04, T06
SVP175709	VP-57 and VP-58	03/19/15	ML-003	Pa-231	-3.14	18.8	20.1	pCi/L	UJ	T04, T06
SVP175709	VP-57 and VP-58	03/19/15	ML-021	Total U	0.679	0.0619	2.45	pCi/L	U	T04, T05
SVP175710	VP-57 and VP-58	03/23/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175710	VP-57 and VP-58	03/23/15	ML-005	Th-228	0.15	0.458	1	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-005	Th-230	0.3	0.429	0.735	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-005	Th-232	-0.1	0.143	0.734	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-006	Ra-226	-5.7E-06	0.304	0.914	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-018	Gross Alpha	3.6	5.36	8.95	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-018	Gross Beta	-2.58	8.14	14.1	pCi/L	UJ	T06
SVP175710	VP-57 and VP-58	03/23/15	ML-003	Ac-227	-3.29	7.1	5.86	pCi/L	UJ	T04, T06
SVP175710	VP-57 and VP-58	03/23/15	ML-003	Pa-231	0.908	28.8	27.5	pCi/L	UJ	T04, T06
SVP175710	VP-57 and VP-58	03/23/15	ML-021	Total U	0.818	0.0746	2.45	pCi/L	U	T04, T05
SVP175711	VP-57 and VP-58	03/25/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175711	VP-57 and VP-58	03/25/15	ML-005	Th-228	-0.0308	0.163	0.518	pCi/L	UJ	T06
SVP175711	VP-57 and VP-58	03/25/15	ML-005	Th-230	0.154	0.224	0.37	pCi/L	UJ	T06
SVP175711	VP-57 and VP-58	03/25/15	ML-005	Th-232	0	0	0.167	pCi/L	U	

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175711	VP-57 and VP-58	03/25/15	ML-006	Ra-226	-0.0741	0.392	1.25	pCi/L	UJ	T06
SVP175711	VP-57 and VP-58	03/25/15	ML-018	Gross Alpha	0.327	4.94	8.95	pCi/L	UJ	T06
SVP175711	VP-57 and VP-58	03/25/15	ML-018	Gross Beta	3.5	8.41	14.1	pCi/L	UJ	T06
SVP175711	VP-57 and VP-58	03/25/15	ML-003	Ac-227	-1.8	7.33	6.71	pCi/L	UJ	T04, T06
SVP175711	VP-57 and VP-58	03/25/15	ML-003	Pa-231	-1.99	29.8	28.2	pCi/L	UJ	T04, T06
SVP175711	VP-57 and VP-58	03/25/15	ML-021	Total U	1.65	0.151	2.45	pCi/L	U	T04, T05
SVP175712	VP-57 and VP-58	03/26/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175712	VP-57 and VP-58	03/26/15	ML-005	Th-228	0.216	0.253	0.195	pCi/L	UJ	T02
SVP175712	VP-57 and VP-58	03/26/15	ML-005	Th-230	0.144	0.271	0.53	pCi/L	UJ	T06
SVP175712	VP-57 and VP-58	03/26/15	ML-005	Th-232	-0.036	0.0723	0.432	pCi/L	UJ	T06
SVP175712	VP-57 and VP-58	03/26/15	ML-006	Ra-226	0.228	0.589	1.28	pCi/L	UJ	T06
SVP175712	VP-57 and VP-58	03/26/15	ML-018	Gross Alpha	11.5	6.27	8.95	pCi/L	J	F01, T04
SVP175712	VP-57 and VP-58	03/26/15	ML-018	Gross Beta	0.921	8.29	14.1	pCi/L	UJ	T06
SVP175712	VP-57 and VP-58	03/26/15	ML-003	Ac-227	-0.401	7.08	6.79	pCi/L	UJ	T04, T06
SVP175712	VP-57 and VP-58	03/26/15	ML-003	Pa-231	-6.78	28.7	29.8	pCi/L	UJ	T04, T06
SVP175712	VP-57 and VP-58	03/26/15	ML-021	Total U	2.31	0.211	2.45	pCi/L	U	T04, T05
SVP175713	VP-57 and VP-58	03/30/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175713	VP-57 and VP-58	03/30/15	ML-005	Th-228	0.107	0.215	0.428	pCi/L	UJ	T06
SVP175713	VP-57 and VP-58	03/30/15	ML-005	Th-230	0.0357	0.16	0.428	pCi/L	UJ	T06
SVP175713	VP-57 and VP-58	03/30/15	ML-005	Th-232	0	0	0.193	pCi/L	U	
SVP175713	VP-57 and VP-58	03/30/15	ML-006	Ra-226	0.0748	0.496	1.26	pCi/L	UJ	T06
SVP175713	VP-57 and VP-58	03/30/15	ML-018	Gross Alpha	7.86	5.87	8.95	pCi/L	U	T04, T05
SVP175713	VP-57 and VP-58	03/30/15	ML-018	Gross Beta	-1.66	8.18	14.1	pCi/L	UJ	T06
SVP175713	VP-57 and VP-58	03/30/15	ML-003	Ac-227	-2.69	7.05	6.34	pCi/L	UJ	T04, T06
SVP175713	VP-57 and VP-58	03/30/15	ML-003	Pa-231	-18.3	31	29.7	pCi/L	UJ	T04, T06
SVP175713	VP-57 and VP-58	03/30/15	ML-021	Total U	0.799	0.0729	2.45	pCi/L	U	T04, T05
SVP175714	VP-57 and VP-58	04/06/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175714	VP-57 and VP-58	04/06/15	ML-005	Th-228	0.295	0.269	0.16	pCi/L	J	T04
SVP175714	VP-57 and VP-58	04/06/15	ML-005	Th-230	0.531	0.367	0.16	pCi/L	J	F01, T04
SVP175714	VP-57 and VP-58	04/06/15	ML-005	Th-232	-0.0589	0.084	0.434	pCi/L	UJ	T06
SVP175714	VP-57 and VP-58	04/06/15	ML-006	Ra-226	0.139	0.652	1.5	pCi/L	UJ	T06
SVP175714	VP-57 and VP-58	04/06/15	ML-018	Gross Alpha	8.51	5.94	8.95	pCi/L	U	T04, T05
SVP175714	VP-57 and VP-58	04/06/15	ML-018	Gross Beta	6.63	8.55	14.1	pCi/L	UJ	T06
SVP175714	VP-57 and VP-58	04/06/15	ML-003	Ac-227	-4.09	6.1	5.45	pCi/L	UJ	T04, T06
SVP175714	VP-57 and VP-58	04/06/15	ML-003	Pa-231	-21.6	26.9	22.8	pCi/L	UJ	T04, T06
SVP175714	VP-57 and VP-58	04/06/15	ML-021	Total U	1.08	0.0985	2.45	pCi/L	U	T04, T05

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175715	VP-57 and VP-58	04/07/15	EPA 160.5	SS	0.4		0.1	mL/L/hr	=	
SVP175715	VP-57 and VP-58	04/07/15	ML-021	Total U	0.583	0.0532	2.45	pCi/L	U	T04, T05
SVP175716	VP-57 and VP-58	04/08/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175716	VP-57 and VP-58	04/08/15	ML-021	Total U	0.235	0.0215	2.45	pCi/L	U	T04, T05
SVP175717	VP-57 and VP-58	04/09/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175717	VP-57 and VP-58	04/09/15	ML-005	Th-228	0.992	0.551	0.505	pCi/L	J	T04
SVP175717	VP-57 and VP-58	04/09/15	ML-005	Th-230	1.45	0.662	0.443	pCi/L	J	F01
SVP175717	VP-57 and VP-58	04/09/15	ML-005	Th-232	0.601	0.395	0.163	pCi/L	J	T04
SVP175717	VP-57 and VP-58	04/09/15	ML-006	Ra-226	0.751	0.832	1.37	pCi/L	UJ	T06
SVP175717	VP-57 and VP-58	04/09/15	ML-018	Gross Alpha	3.27	5.32	8.95	pCi/L	UJ	T06
SVP175717	VP-57 and VP-58	04/09/15	ML-018	Gross Beta	7.37	8.58	14.1	pCi/L	UJ	T06
SVP175717	VP-57 and VP-58	04/09/15	ML-003	Ac-227	-4.18	4.98	4.72	pCi/L	UJ	T04, T06
SVP175717	VP-57 and VP-58	04/09/15	ML-003	Pa-231	9.31	21.1	20.1	pCi/L	UJ	T04, T06
SVP175717	VP-57 and VP-58	04/09/15	ML-021	Total U	0.942	0.0859	2.45	pCi/L	U	T04, T05
SVP175718	VP-57 and VP-58	04/09/15	ML-005	Th-228	0.718	0.481	0.525	pCi/L	J	T04
SVP175718	VP-57 and VP-58	04/09/15	ML-005	Th-230	1.69	0.735	0.46	pCi/L	J	F01
SVP175718	VP-57 and VP-58	04/09/15	ML-005	Th-232	0.53	0.392	0.374	pCi/L	J	T04
SVP175718	VP-57 and VP-58	04/09/15	ML-006	Ra-226	1.07	0.885	1.27	pCi/L	U	T04, T05
SVP175718	VP-57 and VP-58	04/09/15	ML-018	Gross Alpha	8.51	5.94	8.95	pCi/L	U	T04, T05
SVP175718	VP-57 and VP-58	04/09/15	ML-018	Gross Beta	7.18	8.57	14.1	pCi/L	UJ	T06
SVP175718	VP-57 and VP-58	04/09/15	ML-003	Ac-227	-3.24	7.67	7.05	pCi/L	UJ	T04, T06
SVP175718	VP-57 and VP-58	04/09/15	ML-003	Pa-231	-2.96	33	29.6	pCi/L	UJ	T04, T06
SVP175719	NPDES Outfall 002	06/08/15	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175719	NPDES Outfall 002	06/08/15	ML-024	pH	7.25		0.1	No Units	=	
SVP175719	NPDES Outfall 002	06/08/15	ML-005	Th-228	0.168	0.294	0.564	pCi/L	UJ	T06
SVP175719	NPDES Outfall 002	06/08/15	ML-005	Th-230	0.84	0.513	0.403	pCi/L	J	F01, T04
SVP175719	NPDES Outfall 002	06/08/15	ML-005	Th-232	0.268	0.273	0.182	pCi/L	UJ	T02
SVP175719	NPDES Outfall 002	06/08/15	ML-006	Ra-226	0.749	0.595	0.664	pCi/L	J	T04
SVP175719	NPDES Outfall 002	06/08/15	ML-018	Gross Alpha	-3.93	6.08	11.6	pCi/L	UJ	T06
SVP175719	NPDES Outfall 002	06/08/15	ML-018	Gross Beta	-2.39	7.98	13.8	pCi/L	UJ	T06
SVP175719	NPDES Outfall 002	06/08/15	ML-003	Ac-227	-3.82	22.3	19.2	pCi/L	UJ	T04, T06
SVP175719	NPDES Outfall 002	06/08/15	ML-003	Pa-231	71.9	87.7	79.4	pCi/L	UJ	T04, T06
SVP175719	NPDES Outfall 002	06/08/15	ML-021	Total U	0.198	0.0181	0.489	pCi/L	U	T04, T05
SVP175719	NPDES Outfall 002	06/08/15	SW846 6020	Arsenic	2.4		1.2	µg/L	=	
SVP175719	NPDES Outfall 002	06/08/15	SW846 6020	Cadmium	0.12		0.1	µg/L	J	F01
SVP175719	NPDES Outfall 002	06/08/15	SW846 6020	Chromium	2.1		1	µg/L	=	

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175719	NPDES Outfall 002	06/08/15	EPA 410.4	COD	39		4.1	mg/L	=	
SVP175719	NPDES Outfall 002	06/08/15	SW846 9040C	pH	7.19		0.1	No Units	J	A03
SVP175719	NPDES Outfall 002	06/08/15	EPA 1664	Oil and Grease	1.7		1.7	mg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	EPA 1664	TRPH	3.4		3	mg/L	=	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1016	0.36		0.36	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1221	0.36		0.36	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1232	0.36		0.36	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1242	0.36		0.36	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1248	0.36		0.36	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1254	0.17		0.17	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SW846 8082	Aroclor-1260	0.17		0.17	µg/L	U	
SVP175719	NPDES Outfall 002	06/08/15	SM 7500 Rn B	Radon-222	-49.8	53	99.9	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175720	St.Cin Park	08/11/15	ML-024	pH	7.3		0.1	No Units	=	
SVP175720	St.Cin Park	08/11/15	ML-005	Th-228	0.247	0.281	0.427	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	ML-005	Th-230	0.265	0.241	0.144	pCi/L	J	T04
SVP175720	St.Cin Park	08/11/15	ML-005	Th-232	0.106	0.151	0.143	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	ML-006	Ra-226	0.0632	0.521	1.27	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	ML-018	Gross Alpha	-0.327	5.36	9.77	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	ML-018	Gross Beta	-5.89	8.04	14.2	pCi/L	UJ	T06
SVP175720	St.Cin Park	08/11/15	ML-003	Ac-227	-0.554	4.65	4.44	pCi/L	UJ	T04, T06
SVP175720	St.Cin Park	08/11/15	ML-003	Pa-231	4.24	19.5	21.6	pCi/L	UJ	T04, T06
SVP175720	St.Cin Park	08/11/15	ML-021	Total U	0.0058	0.000529	0.489	pCi/L	U	T04, T05
SVP175720	St.Cin Park	08/11/15	SW846 6020	Arsenic	1.3		1.2	µg/L	=	
SVP175720	St.Cin Park	08/11/15	SW846 6020	Cadmium	0.1		0.1	µg/L	U	
SVP175720	St.Cin Park	08/11/15	SW846 6020	Chromium	1.4		1	µg/L	=	
SVP175720	St.Cin Park	08/11/15	SW846 9040C	pH	6.85		0.1	No Units	=	
SVP175720	St.Cin Park	08/11/15	EPA 1664	Oil and Grease	1.5		1.5	mg/L	U	
SVP175720	St.Cin Park	08/11/15	EPA 1664	TRPH	2.6		2.6	mg/L	=	
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1016	0.33		0.33	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1221	0.33		0.33	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1232	0.33		0.33	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1242	0.33		0.33	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1248	0.33		0.33	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1254	0.16		0.16	µg/L	UJ	C05
SVP175720	St.Cin Park	08/11/15	SW846 8082	Aroclor-1260	0.16		0.16	µg/L	UJ	C05, H04

Table C-1. NPDES Analytical Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175721	St.Cin Park	08/12/15	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175721	St.Cin Park	08/12/15	ML-005	Th-228	0.105	0.242	0.486	pCi/L	UJ	T06
SVP175721	St.Cin Park	08/12/15	ML-005	Th-230	1.03	0.521	0.423	pCi/L	J	T04
SVP175721	St.Cin Park	08/12/15	ML-005	Th-232	0.0348	0.178	0.422	pCi/L	UJ	T06
SVP175721	St.Cin Park	08/12/15	ML-006	Ra-226	0.623	0.72	1.16	pCi/L	UJ	T06
SVP175721	St.Cin Park	08/12/15	ML-018	Gross Alpha	0.327	5.44	9.77	pCi/L	UJ	T06
SVP175721	St.Cin Park	08/12/15	ML-018	Gross Beta	-11.8	7.78	14.2	pCi/L	UJ	T06
SVP175721	St.Cin Park	08/12/15	ML-003	Ac-227	0.797	4.62	4.59	pCi/L	UJ	T04, T06
SVP175721	St.Cin Park	08/12/15	ML-003	Pa-231	2.69	20.6	22	pCi/L	UJ	T04, T06
SVP175721	St.Cin Park	08/12/15	ML-021	Total U	-0.249	0.0227	2.45	pCi/L	UJ	T06

TRPH – total recoverable petroleum hydrocarbon

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

A03 Analysis holding times were exceeded.

A04 Analysis holding times were grossly exceeded.

A05 Samples were not preserved properly.

D02 Initial calibration verification (ICV) recovery was above the upper control limit.

E01 Interference check sample recovery was outside the control limit.

F01 Blanks: Sample data were qualified as a result of the method blank.

H01 Matrix Spike/Matrix Spike Duplicate recovery was above the upper control limit.

H03 Matrix Spike/Matrix Spike Duplicate recovery was less than 10 percent.

H04 Matrix Spike/Matrix Spike Duplicate pairs exceed the RPD limit.

T02 Analytical uncertainties were not met and/or not reported.

T03 Inappropriate aliquot sizes were used.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

Table C-2. North St. Louis County Sites Rainfall Data for CY 2015 – First Quarter

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road
2015	24-Hour Total	002[a]	Un-Named[b]
1-Jan	0.02		
2-Jan	0.03		
3-Jan	0.51		
4-Jan	0.01		
5-Jan			0.004
6-Jan	0.02		0.005
7-Jan	0.01		
8-Jan	trace		
9-Jan	trace		
10-Jan			
11-Jan	0.29		
12-Jan	0.03		0.008
13-Jan	trace		
14-Jan			0.003
15-Jan			0.003
16-Jan			
17-Jan			
18-Jan			
19-Jan			0.006
20-Jan			0.004
21-Jan			
22-Jan			0.003
23-Jan			
24-Jan			
25-Jan	0.19		
26-Jan			0.008
27-Jan			
28-Jan			
29-Jan			
30-Jan			
31-Jan	trace		
Monthly Total	**1.11**		**0.044**

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road
2015	24-Hour Total	002[a]	Un-Named[b]
1-Feb	0.66		
2-Feb	trace		0.006
3-Feb			0.021
4-Feb	0.06		0.011
5-Feb			
6-Feb			
7-Feb	trace		
8-Feb	trace		
9-Feb	trace		0.011
10-Feb			0.007
11-Feb			
12-Feb	trace		
13-Feb			
14-Feb	0.01		
15-Feb	0.14		
16-Feb	0.25		
17-Feb	0.02		
18-Feb	0.01		
19-Feb			
20-Feb	0.14		
21-Feb	0.09		
22-Feb			
23-Feb			
24-Feb			
25-Feb	trace		
26-Feb	0.05		
27-Feb			
28-Feb	0.31		
Monthly Total	**1.74**		**0.056**

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road
2015	24-Hour Total	002[a]	Un-Named[b]
1-Mar	0.04		
2-Mar			
3-Mar	0.12		
4-Mar	0.01		
5-Mar			
6-Mar			
7-Mar			
8-Mar			
9-Mar	trace		
10-Mar	0.20		0.008
11-Mar			0.004
12-Mar	0.02		0.002
13-Mar	1.10		
14-Mar	0.15		
15-Mar			
16-Mar			0.016
17-Mar			
18-Mar	0.03		
19-Mar	trace		0.004
20-Mar			
21-Mar			
22-Mar			
23-Mar	0.13		0.008
24-Mar	0.59		
25-Mar	0.52		0.005
26-Mar	0.07		0.005
27-Mar	trace		
28-Mar			
29-Mar	0.02		
30-Mar			0.005
31-Mar			
Monthly Total	**3.00**		**0.056**

[a] Per USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.

[b] Un-Named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2015).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2015 – Second Quarter

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road
2015	**24-Hour Total**	**002[a]**	**Un-Named[b]**	**2015**	**24-Hour Total**	**002[a]**	**Un-Named[b]**	**2015**	**24-Hour Total**	**002[a]**	**Un-Named[b]**
1-Apr				1-May				1-Jun	trace		
2-Apr	0.58			2-May				2-Jun			
3-Apr	0.33			3-May	trace			3-Jun			
4-Apr				4-May	0.01			4-Jun	0.10		
5-Apr				5-May	trace			5-Jun	1.90		
6-Apr	0.01		0.003	6-May				6-Jun			
7-Apr	1.76		0.571	7-May	trace			7-Jun	0.06		
8-Apr	0.48		0.028	8-May	0.30			8-Jun	1.32	0.213	
9-Apr	1.14		0.027	9-May	0.32			9-Jun			
10-Apr				10-May	0.55			10-Jun			
11-Apr				11-May	0.55			11-Jun			
12-Apr				12-May				12-Jun	0.07		
13-Apr	0.06			13-May				13-Jun	0.02		
14-Apr				14-May	0.05			14-Jun	2.43		
15-Apr				15-May	0.35			15-Jun	0.11		
16-Apr	trace			16-May	0.09			16-Jun	0.70		
17-Apr				17-May	0.15			17-Jun	0.08		
18-Apr				18-May				18-Jun	0.87		
19-Apr	0.77			19-May				19-Jun	1.33		
20-Apr	trace			20-May	0.24			20-Jun	Trace		
21-Apr				21-May				21-Jun	0.38		
22-Apr				22-May				22-Jun	Trace		
23-Apr				23-May	trace			23-Jun	trace		
24-Apr				24-May	0.24			24-Jun			
25-Apr	0.29			25-May	trace			25-Jun	1.57		
26-Apr	trace			26-May	0.15			26-Jun	1.11		
27-Apr				27-May	trace			27-Jun	Trace		
28-Apr				28-May	trace			28-Jun	1.02		
29-Apr				29-May	0.08			29-Jun			
30-Apr				30-May	0.54			30-Jun			
				31-May	trace						
Monthly Total	**5.42**		**0.629**	**Monthly Total**	**3.62**			**Monthly Total**	**13.07**	**0.213**	

[a] Per USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.

[b] Un-Named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2015).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2015 – Third Quarter

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Outfall St. Cin Park	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Outfall St. Cin Park	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Outfall St. Cin Park
2015	**24-Hour Total**	**002[a]**	**Un-Named[b]**	**Un-Named[b]**	**2015**	**24-Hour Total**	**002[a]**	**Un-Named[b]**	**Un-Named[b]**	**2015**	**24-Hour Total**	**002[a]**	**Un-Named[b]**	**Un-Named[b]**
1-Jul	0.07				1-Aug					1-Sep				
2-Jul	0.04				2-Aug					2-Sep				
3-Jul					3-Aug					3-Sep				
4-Jul					4-Aug					4-Sep				
5-Jul					5-Aug	3.25				5-Sep				
6-Jul	0.14				6-Aug	trace				6-Sep				
7-Jul	0.06				7-Aug					7-Sep				
8-Jul	1.01				8-Aug					8-Sep	1.35			
9-Jul	trace				9-Aug	1.49				9-Sep	0.11			
10-Jul	0.77				10-Aug	0.05				10-Sep	0.32			
11-Jul					11-Aug				0.024	11-Sep	0.30			
12-Jul					12-Aug				0.008	12-Sep				
13-Jul	trace				13-Aug					13-Sep				
14-Jul					14-Aug					14-Sep				
15-Jul					15-Aug					15-Sep				
16-Jul					16-Aug					16-Sep				
17-Jul					17-Aug	0.06				17-Sep				
18-Jul					18-Aug	0.45				18-Sep	trace			
19-Jul	0.45				19-Aug	0.46				19-Sep	trace			
20-Jul	0.56				20-Aug					20-Sep				
21-Jul					21-Aug					21-Sep				
22-Jul					22-Aug	0.91				22-Sep				
23-Jul					23-Aug	trace				23-Sep				
24-Jul					24-Aug					24-Sep				
25-Jul	trace				25-Aug					25-Sep				
26-Jul	0.21				26-Aug					26-Sep				
27-Jul	0.03				27-Aug					27-Sep	trace			
28-Jul					28-Aug					28-Sep	trace			
29-Jul					29-Aug	trace				29-Sep	1.03			
30-Jul					30-Aug					30-Sep				
31-Jul					31-Aug									
Monthly Total	**3.34**				**Monthly Total**	**6.67**			**0.031**	**Monthly Total**	**3.11**			

[a] Per USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.

[b] Un-Named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.

Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2015).

Table C-2. North St. Louis County Sites Rainfall Data for CY 2015 – Fourth Quarter

Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road	Date	Rainfall (inches)	Outfall	Outfall – VP-57, VP-58, and Pershall Road
2015	24-Hour Total	002[a]	Un-Named[b]	2015	24-Hour Total	002[a]	Un-Named[b]	2015	24-Hour Total	002[a]	Un-Named[b]
1-Oct				1-Nov				1-Dec	trace		
2-Oct				2-Nov				2-Dec	trace		
3-Oct				3-Nov				3-Dec			
4-Oct				4-Nov				4-Dec			
5-Oct				5-Nov	1.37			5-Dec			
6-Oct				6-Nov	trace			6-Dec	trace		
7-Oct				7-Nov				7-Dec			
8-Oct	trace			8-Nov				8-Dec			
9-Oct	trace			9-Nov				9-Dec			
10-Oct				10-Nov				10-Dec			
11-Oct				11-Nov	0.17			11-Dec			
12-Oct	trace			12-Nov				12-Dec			
13-Oct				13-Nov				13-Dec	0.74		
14-Oct				14-Nov				14-Dec	0.38		
15-Oct	trace			15-Nov				15-Dec	trace		
16-Oct				16-Nov	1.04			16-Dec	0.14		
17-Oct				17-Nov	1.85			17-Dec			
18-Oct				18-Nov	0.04			18-Dec			
19-Oct				19-Nov				19-Dec			
20-Oct				20-Nov	0.02			20-Dec	0.01		
21-Oct	0.01			21-Nov	trace			21-Dec	0.26		
22-Oct				22-Nov				22-Dec			
23-Oct	0.01			23-Nov				23-Dec	1.02		
24-Oct	trace			24-Nov				24-Dec			
25-Oct				25-Nov	0.01			25-Dec			
26-Oct				26-Nov	trace			26-Dec	4.87		
27-Oct	0.72			27-Nov	1.24			27-Dec	1.72		
28-Oct	0.02			28-Nov	0.01			28-Dec	trace		
29-Oct	trace			29-Nov	0.09			29-Dec	trace		
30-Oct	trace			30-Nov	0.12			30-Dec	trace		
31-Oct	0.22							31-Dec	trace		
Monthly Total	**0.98**			**Monthly Total**	**5.96**			**Monthly Total**	**9.14**		

[a] Per USACE email dated June 17, 2014, sampling at Outfall 002 has been reduced to once per year.

[b] Un-Named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

Notes:

Flow measurements for the outfalls are reported in MGD. All blank spaces represent zero flow.
Rainfall data are obtained from the www.wunderground.com site (Weather Underground, Inc. 2015).

Table C-3. First Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2015

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge[b] (Ci)	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-295	01/27/15	25	pCi/L	34,347	3.3E-06	3,000	pCi/L	0.01
Gross Beta			<13.9	pCi/L		9.0E-07	NA		
Th-228			<0.4	pCi/L		2.5E-08	2,000	pCi/L	
Th-230			2	pCi/L		2.5E-07	1,000	pCi/L	
Uranium (KPA)			20.9	pCi/L		2.7E-06	3,000	pCi/L	
Ra-226[c]			1.6	pCi/L		2.1E-07	10	pCi/L	
Ra-228[d,e]			<0.4	pCi/L		2.5E-08	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			19	pCi/L		-	-		
TSS			18	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-296	03/23/15 - 03/25/15 (SLAPS VP-57, VP-58, and Pershall Road)	19	pCi/L	151,637	1.1E-05	3,000	pCi/L	0.01
Gross Beta			<14.6	pCi/L		4.2E-06	NA		
Th-228			<0.6	pCi/L		1.6E-07	2,000	pCi/L	
Th-230			1	pCi/L		6.3E-07	1,000	pCi/L	
Uranium (KPA)			17.2	pCi/L		9.9E-06	3,000	pCi/L	
Ra-226[c]			<1.2	pCi/L		3.6E-07	10	pCi/L	
Ra-228[d,e]			<0.6	pCi/L		1.6E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			20	pCi/L		-	-		
TSS			11	mg/L		-	-		

Total Activity Discharged in First Quarter of CY 2015 (Ci)

Th-228	1.9E-07
Th-230	8.8E-07
Uranium (KPA)	1.3E-05
Ra-226	5.6E-07
Ra-228[b]	1.9E-07

Total Activity Discharged through 03/31/15 (Ci)

Th-228	1.9E-07
Th-230	8.8E-07
Uranium (KPA)	1.3E-05
Ra-226	5.6E-07
Ra-228[b]	1.9E-07

Total Volume for First Quarter of CY 2015 (gallons)

Gallons 185,984

Total Volume Discharged through 03/31/15 (gallons)

Gallons 185,984

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
NA – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)

Table C-3. Second Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2015

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge[b] (Ci)	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-297	04/14/15 - 04/27/15 (SLAPS VP-57, VP-58, and Pershall Road)	<19.5	pCi/L	239,835	8.9E-06	3,000	pCi/L	0.01
Gross Beta			<27.4	pCi/L		1.2E-05	NA		
Th-228			<0.6	pCi/L		2.7E-07	2,000	pCi/L	
Th-230			2	pCi/L		1.7E-06	1,000	pCi/L	
Uranium (KPA)			11.5	pCi/L		1.0E-05	3,000	pCi/L	
Ra-226[c]			<1.5	pCi/L		6.9E-07	10	pCi/L	
Ra-228[d,e]			<0.6	pCi/L		2.7E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<19.5	pCi/L		-	-		
TSS			30	mg/L		-	-		

Total Activity Discharged in Second Quarter of CY 2015 (Ci)

Th-228	2.7E-07
Th-230	1.7E-06
Uranium (KPA)	1.0E-05
Ra-226	6.9E-07
Ra-228[b]	2.7E-07

Total Activity Discharged through 06/30/15 (Ci)

Th-228	4.6E-07
Th-230	2.6E-06
Uranium (KPA)	2.3E-05
Ra-226	1.3E-06
Ra-228[b]	4.6E-07

Total Volume for Second Quarter of CY 2015 (gallons)

Gallons 239,835

Total Volume Discharged through 06/30/15 (gallons)

Gallons 425,819

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
NA – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)

Table C-3. Third Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2015

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge[b] (Ci)	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-298	07/06/15 - 07/15/15 (SLAPS VP-57, VP-58, and Pershall Road)	<11	pCi/L	606,608	1.3E-05	3,000	pCi/L	0.00
Gross Beta			<13.9	pCi/L		1.6E-05	NA		
Th-228			<0.6	pCi/L		6.8E-07	2,000	pCi/L	
Th-230			0.9	pCi/L		2.0E-06	1,000	pCi/L	
Uranium (KPA)			2.1	pCi/L		4.9E-06	3,000	pCi/L	
Ra-226[c]			<1.3	pCi/L		1.5E-06	10	pCi/L	
Ra-228[d,e]			<0.6	pCi/L		6.8E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<11	pCi/L		-	-		
TSS			24	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-299	9/8/15 (SLAPS VP St. Cin Park)	<9.8	pCi/L	200	3.7E-09	3,000	pCi/L	0.00
Gross Beta			<13.4	pCi/L		5.1E-09	NA		
Th-228			<0.5	pCi/L		2.0E-10	2,000	pCi/L	
Th-230			1.5	pCi/L		1.1E-09	1,000	pCi/L	
Uranium (KPA)			3.3	pCi/L		2.5E-09	3,000	pCi/L	
Ra-226[c]			<1	pCi/L		3.9E-10	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		2.0E-10	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<8.4	pCi/L		-	-		
TSS			123	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-300	9/8/15 (SLAPS VP St. Cin Park)	<21.5	pCi/L	200	8.1E-09	3,000	pCi/L	0.01
Gross Beta			<26.2	pCi/L		9.9E-09	NA		
Th-228			0.6	pCi/L		4.5E-10	2,000	pCi/L	
Th-230			4.3	pCi/L		3.3E-09	1,000	pCi/L	
Uranium (KPA)			0.5	pCi/L		3.8E-10	3,000	pCi/L	
Ra-226[c]			1.8	pCi/L		1.3E-09	10	pCi/L	
Ra-228[d,e]			0.6	pCi/L		4.5E-10	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<21.5	pCi/L		-	-		
TSS			253	mg/L		-	-		

Total Activity Discharged in Third Quarter of CY 2015 (Ci)		**Total Activity Discharged through 09/30/15 (Ci)**	
Th-228	6.8E-07	**Th-228**	1.1E-06
Th-230	2.0E-06	**Th-230**	4.6E-06
Uranium (KPA)	4.9E-06	**Uranium (KPA)**	2.8E-05
Ra-226	1.5E-06	**Ra-226**	2.8E-06
Ra-228[b]	6.8E-07	**Ra-228[b]**	1.1E-06

Total Volume for Third Quarter of CY 2015 (gallons)		**Total Volume Discharged through 09/30/15 (gallons)**	
Gallons	607,008	**Gallons**	1,032,827

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
NA – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)

Table C-3. Fourth Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2015

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge[b] (Ci)	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-301	11/12/15 - 11/19/15 (SLAPS VP-57, VP-58, and Pershall Road)	<22.2	pCi/L	339,441	1.4E-05	3,000	pCi/L	0.01
Gross Beta			<29	pCi/L		1.9E-05	NA		
Th-228			<0.5	pCi/L		3.4E-07	2,000	pCi/L	
Th-230			1.9	pCi/L		2.4E-06	1,000	pCi/L	
Uranium (KPA)			7.1	pCi/L		9.1E-06	3,000	pCi/L	
Ra-226[c]			<1.4	pCi/L		9.2E-07	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		3.4E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<22.2	pCi/L		-	-		
TSS			44	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-302	11/18/15 - 11/19/15 (SLAPS VP St. Cin Park)	<22.2	pCi/L	40,500	1.7E-06	3,000	pCi/L	0.01
Gross Beta			<29	pCi/L		2.2E-06	NA		
Th-228			0.9	pCi/L		1.4E-07	2,000	pCi/L	
Th-230			2.0	pCi/L		3.1E-07	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		1.9E-07	3,000	pCi/L	
Ra-226[c]			<0.8	pCi/L		6.4E-08	10	pCi/L	
Ra-228[d,e]			0.9	pCi/L		1.4E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<22.2	pCi/L		-	-		
TSS			138	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-303	11/30/15 (SLAPS VP St. Cin Park)	<18.2	pCi/L	4,500	1.6E-07	3,000	pCi/L	0.01
Gross Beta			<21.8	pCi/L		1.9E-07	NA		
Th-228			0.4	pCi/L		6.8E-09	2,000	pCi/L	
Th-230			1.5	pCi/L		2.6E-08	1,000	pCi/L	
Uranium (KPA)			<4.9	pCi/L		4.2E-08	3,000	pCi/L	
Ra-226[c]			1.3	pCi/L		2.2E-08	10	pCi/L	
Ra-228[d,e]			0.4	pCi/L		6.8E-09	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<18.2	pCi/L		-	-		
TSS			214	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-304	12/28/15 - 12/31/15 (SLAPS VP-57, VP-58, and Pershall Road)	<18.2	pCi/L	345,351	1.2E-05	3,000	pCi/L	0.01
Gross Beta			<21.6	pCi/L		1.4E-05	NA		
Th-228			<0.5	pCi/L		3.5E-07	2,000	pCi/L	
Th-230			3.9	pCi/L		5.1E-06	1,000	pCi/L	
Uranium (KPA)			5.0	pCi/L		6.5E-06	3,000	pCi/L	
Ra-226[c]			<1.3	pCi/L		8.2E-07	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		3.5E-07	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<18.2	pCi/L		-	-		
TSS			140	mg/L		-	-		

Table C-3. Fourth Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2015

Parameter	Batch Number	Date of Discharge	Batch Results[a]		Amount Discharged (Gallons)	Total Activity per Discharge[b] (Ci)	MSD Discharge Limit		SOR
Gross Alpha (raw water)	SLAPS-305	12/28/15 - 12/31/15 (SLAPS VP St. Cin Park)	<18.2	pCi/L	89,625	3.1E-06	3,000	pCi/L	0.00
Gross Beta			<21.6	pCi/L		3.7E-06	NA		
Th-228			<0.5	pCi/L		9.2E-08	2,000	pCi/L	
Th-230			0.7	pCi/L		2.4E-07	1,000	pCi/L	
Uranium (KPA)			<3.4	pCi/L		5.8E-07	3,000	pCi/L	
Ra-226[c]			<1.5	pCi/L		2.5E-07	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		9.2E-08	30	pCi/L	
Barium			[h]	mg/L		-	10	mg/L	
Lead			[h]	mg/L		-	0.4	mg/L	
Selenium[f]			[h]	mg/L		-	0.2	mg/L[f]	
BOD[g]			-	mg/L		-	-		
COD[g]			-	mg/L		-	-		
Gross Alpha (TSS filtrate)			<18.2	pCi/L		-	-		
TSS			90	mg/L		-	-		

Total Activity Discharged in Fourth Quarter of CY 2015 (Ci)

Th-228	9.3E-07
Th-230	8.1E-06
Uranium (KPA)	1.6E-05
Ra-226	2.1E-06
Ra-228[b]	9.3E-07

Total Activity Discharged through 12/31/15 (Ci)

Th-228	2.1E-06
Th-230	1.3E-05
Uranium (KPA)	4.4E-05
Ra-226	4.9E-06
Ra-228[b]	2.1E-06

Total Volume for Fourth Quarter of CY 2015 (gallons)

Gallons 819,417

Total Volume Discharged through 12/31/15 (gallons)

Gallons 1,852,244

[a] Non-detect sample results are converted to half the DL for total activity.
[b] The weighted average was used to calculate the total activity.
[c] 10 *CFR* 20 limit is 600 pCi/L for Ra-226.
[d] Ra-228 assumed to be in equilibrium with Th-228.
[e] 10 *CFR* 20 limit is 600 pCi/L for Ra-228.
[f] The limit for selenium can be a daily total mass of 76 g, with a concentration not to exceed 0.90 mg/L.
[g] MSD surcharges apply for BOD concentration greater than 300 mg/L and COD concentration greater than 600 mg/L.
[h] Analysis for metals is not required per the MSD letter dated May 24, 2012 (MSD 2012).

Notes:
- No data/No limit
Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
NA – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX D

COLDWATER CREEK SURFACE-WATER AND SEDIMENT DATA

(On the CD-ROM on the Back Cover of this Report)

THIS PAGE INTENTIONALLY LEFT BLANK

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC179884	CWC002	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179884	CWC002	03/31/15	Metals	Arsenic	3.6		1.2	µg/L	=
CWC179884	CWC002	03/31/15	Metals	Barium	180		0.22	µg/L	=
CWC179884	CWC002	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179884	CWC002	03/31/15	Metals	Chromium	1		1	µg/L	U
CWC179884	CWC002	03/31/15	Metals	Molybdenum	8		1	µg/L	=
CWC179884	CWC002	03/31/15	Metals	Nickel	2.9		0.8	µg/L	=
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	Ra-226	0.402	0.657	1.21	pCi/L	UJ
CWC179884	CWC002	03/31/15	Metals	Selenium	1.6		1.6	µg/L	=
CWC179884	CWC002	03/31/15	Metals	Thallium	0.78		0.55	µg/L	=
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	Th-228	0.115	0.231	0.459	pCi/L	UJ
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	Th-230	0.0383	0.171	0.459	pCi/L	UJ
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	Th-232	0.153	0.218	0.207	pCi/L	UJ
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	U-234	0.983	0.607	0.472	pCi/L	J
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	U-235	0.291	0.341	0.263	pCi/L	UJ
CWC179884	CWC002	03/31/15	Alpha Spectroscopy	U-238	0.979	0.605	0.47	pCi/L	J
CWC179884	CWC002	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179886	CWC003	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179886	CWC003	03/31/15	Metals	Arsenic	3.3		1.2	µg/L	=
CWC179886	CWC003	03/31/15	Metals	Barium	180		0.22	µg/L	=
CWC179886	CWC003	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179886	CWC003	03/31/15	Metals	Chromium	1.2		1	µg/L	=
CWC179886	CWC003	03/31/15	Metals	Molybdenum	8.7		1	µg/L	=
CWC179886	CWC003	03/31/15	Metals	Nickel	2.8		0.8	µg/L	=
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	Ra-226	-0.0366	0.501	1.23	pCi/L	UJ
CWC179886	CWC003	03/31/15	Metals	Selenium	2.1		1.6	µg/L	=
CWC179886	CWC003	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	Th-228	0.432	0.362	0.195	pCi/L	J
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	Th-230	0.36	0.33	0.195	pCi/L	J
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	Th-232	0.072	0.228	0.53	pCi/L	UJ
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	U-234	0.489	0.458	0.6	pCi/L	U
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	U-235	-0.101	0.144	0.741	pCi/L	UJ
CWC179886	CWC003	03/31/15	Alpha Spectroscopy	U-238	0.731	0.548	0.598	pCi/L	J
CWC179886	CWC003	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179888	CWC004	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179888	CWC004	03/31/15	Metals	Arsenic	2.8		1.2	µg/L	=
CWC179888	CWC004	03/31/15	Metals	Barium	190		0.22	µg/L	=
CWC179888	CWC004	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC179888	CWC004	03/31/15	Metals	Chromium	1.5		1	µg/L	=
CWC179888	CWC004	03/31/15	Metals	Molybdenum	8.5		1	µg/L	=
CWC179888	CWC004	03/31/15	Metals	Nickel	3		0.8	µg/L	=
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	Ra-226	0.617	0.731	1.22	pCi/L	UJ
CWC179888	CWC004	03/31/15	Metals	Selenium	3.6		1.6	µg/L	=
CWC179888	CWC004	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	Th-228	0.0328	0.218	0.551	pCi/L	UJ
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	Th-230	0.131	0.247	0.483	pCi/L	UJ
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	Th-232	0	0	0.178	pCi/L	U
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	U-234	0.882	0.625	0.557	pCi/L	J
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	U-235	0.0573	0.257	0.687	pCi/L	UJ
CWC179888	CWC004	03/31/15	Alpha Spectroscopy	U-238	0.74	0.548	0.251	pCi/L	J
CWC179888	CWC004	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179890	CWC005	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179890	CWC005	03/31/15	Metals	Arsenic	3.1		1.2	µg/L	=
CWC179890	CWC005	03/31/15	Metals	Barium	180		0.22	µg/L	=
CWC179890	CWC005	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179890	CWC005	03/31/15	Metals	Chromium	1.2		1	µg/L	=
CWC179890	CWC005	03/31/15	Metals	Molybdenum	8.4		1	µg/L	=
CWC179890	CWC005	03/31/15	Metals	Nickel	3		0.8	µg/L	=
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	Ra-226	0.346	0.574	1.05	pCi/L	UJ
CWC179890	CWC005	03/31/15	Metals	Selenium	3.2		1.6	µg/L	=
CWC179890	CWC005	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	Th-228	0.114	0.294	0.636	pCi/L	UJ
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	Th-230	0.0379	0.252	0.637	pCi/L	UJ
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	Th-232	-0.0378	0.076	0.454	pCi/L	UJ
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	U-234	1.11	0.664	0.494	pCi/L	J
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	U-235	0.203	0.29	0.275	pCi/L	UJ
CWC179890	CWC005	03/31/15	Alpha Spectroscopy	U-238	0.82	0.546	0.222	pCi/L	J
CWC179890	CWC005	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179892	CWC006	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179892	CWC006	03/31/15	Metals	Arsenic	2.4		1.2	µg/L	=
CWC179892	CWC006	03/31/15	Metals	Barium	180		0.22	µg/L	=
CWC179892	CWC006	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179892	CWC006	03/31/15	Metals	Chromium	1.2		1	µg/L	=
CWC179892	CWC006	03/31/15	Metals	Molybdenum	7.3		1	µg/L	=
CWC179892	CWC006	03/31/15	Metals	Nickel	3		0.8	µg/L	=
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	Ra-226	0.351	0.59	1.09	pCi/L	UJ

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC179892	CWC006	03/31/15	Metals	Selenium	3.5		1.6	µg/L	=
CWC179892	CWC006	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	Th-228	0.216	0.253	0.195	pCi/L	UJ
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	Th-230	-0.00001669	0.25	0.67	pCi/L	UJ
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	Th-232	-0.036	0.0723	0.432	pCi/L	UJ
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	U-234	1.07	0.664	0.663	pCi/L	J
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	U-235	0.0973	0.196	0.264	pCi/L	UJ
CWC179892	CWC006	03/31/15	Alpha Spectroscopy	U-238	0.707	0.493	0.213	pCi/L	J
CWC179892	CWC006	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179894	CWC007	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179894	CWC007	03/31/15	Metals	Arsenic	2.7		1.2	µg/L	=
CWC179894	CWC007	03/31/15	Metals	Barium	170		0.22	µg/L	=
CWC179894	CWC007	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179894	CWC007	03/31/15	Metals	Chromium	1		1	µg/L	=
CWC179894	CWC007	03/31/15	Metals	Molybdenum	7.2		1	µg/L	=
CWC179894	CWC007	03/31/15	Metals	Nickel	2.8		0.8	µg/L	=
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	Ra-226	0.201	0.649	1.35	pCi/L	UJ
CWC179894	CWC007	03/31/15	Metals	Selenium	1.6		1.6	µg/L	U
CWC179894	CWC007	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	Th-228	0.0375	0.249	0.631	pCi/L	UJ
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	Th-230	0.225	0.264	0.204	pCi/L	UJ
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	Th-232	0.0375	0.168	0.45	pCi/L	UJ
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	U-234	1.49	0.836	0.269	pCi/L	J
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	U-235	0.183	0.369	0.733	pCi/L	UJ
CWC179894	CWC007	03/31/15	Alpha Spectroscopy	U-238	1.23	0.769	0.592	pCi/L	J
CWC179894	CWC007	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179896	CWC008	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179896	CWC008	03/31/15	Metals	Arsenic	2.1		1.2	µg/L	=
CWC179896	CWC008	03/31/15	Metals	Barium	180		0.22	µg/L	=
CWC179896	CWC008	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179896	CWC008	03/31/15	Metals	Chromium	1		1	µg/L	=
CWC179896	CWC008	03/31/15	Metals	Molybdenum	7.5		1	µg/L	=
CWC179896	CWC008	03/31/15	Metals	Nickel	2.7		0.8	µg/L	=
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	Ra-226	0.65	0.769	1.28	pCi/L	UJ
CWC179896	CWC008	03/31/15	Metals	Selenium	2.5		1.6	µg/L	=
CWC179896	CWC008	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	Th-228	0.641	0.448	0.405	pCi/L	J
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	Th-230	0.338	0.35	0.497	pCi/L	UJ

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	Th-232	-0.0337	0.0677	0.404	pCi/L	UJ
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	U-234	1.16	0.721	0.654	pCi/L	J
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	U-235	-0.0548	0.11	0.658	pCi/L	UJ
CWC179896	CWC008	03/31/15	Alpha Spectroscopy	U-238	0.752	0.562	0.531	pCi/L	J
CWC179896	CWC008	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC179898	CWC009	03/31/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC179898	CWC009	03/31/15	Metals	Arsenic	2.2		1.2	µg/L	=
CWC179898	CWC009	03/31/15	Metals	Barium	190		0.22	µg/L	=
CWC179898	CWC009	03/31/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC179898	CWC009	03/31/15	Metals	Chromium	1		1	µg/L	U
CWC179898	CWC009	03/31/15	Metals	Molybdenum	7.1		1	µg/L	=
CWC179898	CWC009	03/31/15	Metals	Nickel	2.8		0.8	µg/L	=
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	Ra-226	0.336	0.563	1.04	pCi/L	UJ
CWC179898	CWC009	03/31/15	Metals	Selenium	3		1.6	µg/L	=
CWC179898	CWC009	03/31/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	Th-228	0.245	0.291	0.451	pCi/L	UJ
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	Th-230	0.368	0.343	0.452	pCi/L	U
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	Th-232	-0.0918	0.107	0.515	pCi/L	UJ
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	U-234	0.69	0.594	0.773	pCi/L	U
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	U-235	0.227	0.325	0.308	pCi/L	UJ
CWC179898	CWC009	03/31/15	Alpha Spectroscopy	U-238	1.47	0.799	0.248	pCi/L	J
CWC179898	CWC009	03/31/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC183527	CWC002	10/21/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183527	CWC002	10/21/15	Metals	Arsenic	3.3		1.2	µg/L	=
CWC183527	CWC002	10/21/15	Metals	Barium	120		0.22	µg/L	=
CWC183527	CWC002	10/21/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183527	CWC002	10/21/15	Metals	Chromium	1		1	µg/L	U
CWC183527	CWC002	10/21/15	Metals	Molybdenum	6		1	µg/L	=
CWC183527	CWC002	10/21/15	Metals	Nickel	2.1		0.8	µg/L	=
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	Ra-226	0.596	0.689	1.11	pCi/L	UJ
CWC183527	CWC002	10/21/15	Metals	Selenium	1.6		1.6	µg/L	U
CWC183527	CWC002	10/21/15	Metals	Thallium	0.81		0.55	µg/L	=
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	Th-228	0.209	0.298	0.513	pCi/L	UJ
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	Th-230	0.628	0.463	0.514	pCi/L	J
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	Th-232	0	0	0.189	pCi/L	U
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	U-234	1.09	0.558	0.173	pCi/L	J
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	U-235	0.0394	0.176	0.472	pCi/L	UJ
CWC183527	CWC002	10/21/15	Alpha Spectroscopy	U-238	0.254	0.258	0.172	pCi/L	UJ

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC183527	CWC002	10/21/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC183529	CWC003	10/21/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183529	CWC003	10/21/15	Metals	Arsenic	3.7		1.2	µg/L	=
CWC183529	CWC003	10/21/15	Metals	Barium	150		0.22	µg/L	=
CWC183529	CWC003	10/21/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183529	CWC003	10/21/15	Metals	Chromium	1.6		1	µg/L	=
CWC183529	CWC003	10/21/15	Metals	Molybdenum	8.2		1	µg/L	=
CWC183529	CWC003	10/21/15	Metals	Nickel	3		0.8	µg/L	=
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	Ra-226	0.136	0.751	1.63	pCi/L	UJ
CWC183529	CWC003	10/21/15	Metals	Selenium	2		1.6	µg/L	=
CWC183529	CWC003	10/21/15	Metals	Thallium	1.2		0.55	µg/L	=
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	Th-228	0.0338	0.151	0.406	pCi/L	UJ
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	Th-230	0.271	0.274	0.184	pCi/L	UJ
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	Th-232	-0.00001409	0.166	0.498	pCi/L	UJ
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	U-234	1.27	0.683	0.55	pCi/L	J
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	U-235	0.0922	0.185	0.25	pCi/L	UJ
CWC183529	CWC003	10/21/15	Alpha Spectroscopy	U-238	0.632	0.467	0.446	pCi/L	J
CWC183529	CWC003	10/21/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC183531	CWC004	10/21/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183531	CWC004	10/21/15	Metals	Arsenic	3.6		1.2	µg/L	=
CWC183531	CWC004	10/21/15	Metals	Barium	170		0.22	µg/L	=
CWC183531	CWC004	10/21/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183531	CWC004	10/21/15	Metals	Chromium	1.4		1	µg/L	=
CWC183531	CWC004	10/21/15	Metals	Molybdenum	8.1		1	µg/L	=
CWC183531	CWC004	10/21/15	Metals	Nickel	3.3		0.8	µg/L	=
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	Ra-226	0.219	0.705	1.47	pCi/L	UJ
CWC183531	CWC004	10/21/15	Metals	Selenium	2.3		1.6	µg/L	=
CWC183531	CWC004	10/21/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	Th-228	0.114	0.295	0.639	pCi/L	UJ
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	Th-230	0.761	0.53	0.56	pCi/L	J
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	Th-232	0.038	0.17	0.455	pCi/L	UJ
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	U-234	0.726	0.481	0.415	pCi/L	J
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	U-235	0.128	0.257	0.512	pCi/L	UJ
CWC183531	CWC004	10/21/15	Alpha Spectroscopy	U-238	0.895	0.521	0.187	pCi/L	J
CWC183531	CWC004	10/21/15	Metals	Vanadium	2.4		2.4	µg/L	U
CWC183533	CWC005	10/21/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183533	CWC005	10/21/15	Metals	Arsenic	3.7		1.2	µg/L	=
CWC183533	CWC005	10/21/15	Metals	Barium	180		0.22	µg/L	=

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC183533	CWC005	10/21/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183533	CWC005	10/21/15	Metals	Chromium	1.4		1	µg/L	=
CWC183533	CWC005	10/21/15	Metals	Molybdenum	8.4		1	µg/L	=
CWC183533	CWC005	10/21/15	Metals	Nickel	3.6		0.8	µg/L	=
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	Ra-226	0.266	0.423	0.74	pCi/L	UJ
CWC183533	CWC005	10/21/15	Metals	Selenium	3.1		1.6	µg/L	=
CWC183533	CWC005	10/21/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	Th-228	-0.0316	0.227	0.635	pCi/L	UJ
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	Th-230	0.694	0.459	0.465	pCi/L	J
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	Th-232	-0.0315	0.0632	0.378	pCi/L	UJ
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	U-234	0.596	0.414	0.376	pCi/L	J
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	U-235	0.0387	0.173	0.464	pCi/L	UJ
CWC183533	CWC005	10/21/15	Alpha Spectroscopy	U-238	0.874	0.49	0.169	pCi/L	J
CWC183533	CWC005	10/21/15	Metals	Vanadium	2.4		2.4	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183535	CWC006	10/20/15	Metals	Arsenic	3		1.2	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Barium	140		0.22	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183535	CWC006	10/20/15	Metals	Chromium	2.1		1	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Molybdenum	6.5		1	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Nickel	3.2		0.8	µg/L	=
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	Ra-226	0.0725	0.781	1.67	pCi/L	UJ
CWC183535	CWC006	10/20/15	Metals	Selenium	2.9		1.6	µg/L	=
CWC183535	CWC006	10/20/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	Th-228	-0.11	0.286	0.84	pCi/L	UJ
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	Th-230	0.405	0.415	0.619	pCi/L	UJ
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	Th-232	0.0735	0.148	0.199	pCi/L	UJ
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	U-234	0.676	0.471	0.427	pCi/L	J
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	U-235	-0.0439	0.0881	0.526	pCi/L	UJ
CWC183535	CWC006	10/20/15	Alpha Spectroscopy	U-238	0.496	0.385	0.192	pCi/L	J
CWC183535	CWC006	10/20/15	Metals	Vanadium	4		2.4	µg/L	=
CWC183537	CWC007	10/20/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183537	CWC007	10/20/15	Metals	Arsenic	3		1.2	µg/L	=
CWC183537	CWC007	10/20/15	Metals	Barium	140		0.22	µg/L	=
CWC183537	CWC007	10/20/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183537	CWC007	10/20/15	Metals	Chromium	1.4		1	µg/L	=
CWC183537	CWC007	10/20/15	Metals	Molybdenum	6.4		1	µg/L	=
CWC183537	CWC007	10/20/15	Metals	Nickel	3		0.8	µg/L	=

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	Ra-226	0.607	0.497	0.274	pCi/L	J
CWC183537	CWC007	10/20/15	Metals	Selenium	1.6		1.6	µg/L	U
CWC183537	CWC007	10/20/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	Th-228	0.23	0.271	0.422	pCi/L	UJ
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	Th-230	0.287	0.296	0.423	pCi/L	UJ
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	Th-232	-0.0287	0.0575	0.344	pCi/L	UJ
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	U-234	0.554	0.436	0.443	pCi/L	J
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	U-235	-0.0456	0.0915	0.547	pCi/L	UJ
CWC183537	CWC007	10/20/15	Alpha Spectroscopy	U-238	0.588	0.429	0.199	pCi/L	J
CWC183537	CWC007	10/20/15	Metals	Vanadium	3		2.4	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183539	CWC008	10/20/15	Metals	Arsenic	2.8		1.2	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Barium	160		0.22	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183539	CWC008	10/20/15	Metals	Chromium	1.2		1	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Molybdenum	7.2		1	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Nickel	3.3		0.8	µg/L	=
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	Ra-226	0.07	0.524	1.18	pCi/L	UJ
CWC183539	CWC008	10/20/15	Metals	Selenium	1.6		1.6	µg/L	=
CWC183539	CWC008	10/20/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	Th-228	0.271	0.348	0.606	pCi/L	UJ
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	Th-230	0.422	0.325	0.163	pCi/L	J
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	Th-232	0.0301	0.135	0.361	pCi/L	UJ
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	U-234	0.949	0.537	0.393	pCi/L	J
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	U-235	-0.0404	0.081	0.484	pCi/L	UJ
CWC183539	CWC008	10/20/15	Alpha Spectroscopy	U-238	0.261	0.265	0.177	pCi/L	UJ
CWC183539	CWC008	10/20/15	Metals	Vanadium	2.9		2.4	µg/L	=
CWC183541	CWC009	10/20/15	Metals	Antimony	1.7		1.7	µg/L	U
CWC183541	CWC009	10/20/15	Metals	Arsenic	2.7		1.2	µg/L	=
CWC183541	CWC009	10/20/15	Metals	Barium	170		0.22	µg/L	=
CWC183541	CWC009	10/20/15	Metals	Cadmium	0.1		0.1	µg/L	U
CWC183541	CWC009	10/20/15	Metals	Chromium	1		1	µg/L	U
CWC183541	CWC009	10/20/15	Metals	Molybdenum	7.2		1	µg/L	=
CWC183541	CWC009	10/20/15	Metals	Nickel	3.4		0.8	µg/L	=
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	Ra-226	0.806	0.571	0.273	pCi/L	J
CWC183541	CWC009	10/20/15	Metals	Selenium	1.6		1.6	µg/L	U
CWC183541	CWC009	10/20/15	Metals	Thallium	0.55		0.55	µg/L	U
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	Th-228	0.302	0.309	0.462	pCi/L	UJ

Table D-1. CWC Surface-Water Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	Th-230	0.495	0.388	0.511	pCi/L	U
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	Th-232	0.0549	0.174	0.404	pCi/L	UJ
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	U-234	0.879	0.561	0.539	pCi/L	J
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	U-235	0.136	0.272	0.542	pCi/L	UJ
CWC183541	CWC009	10/20/15	Alpha Spectroscopy	U-238	0.657	0.454	0.198	pCi/L	J
CWC183541	CWC009	10/20/15	Metals	Vanadium	3.1		2.4	µg/L	=

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Ac-227	-0.0149	0.0863	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Am-241	-0.00281	0.017	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Metals	Antimony	0.76		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Arsenic	4.1		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Barium	2,900		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Cadmium	0.23		mg/kg	=	
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Cs-137	-0.0036	0.00861	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Metals	Chromium	29		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Molybdenum	2.8		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Nickel	13		mg/kg	=	
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	K-40	4.93	0.485	pCi/g	=	
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Pa-231	-0.168	0.287	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Ra-226	0.774	0.204	pCi/g	=	
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Ra-228	0.176	0.038	pCi/g	J	F01
CWC179885	CWC002	03/31/15	Metals	Selenium	1.1		mg/kg	=	
CWC179885	CWC002	03/31/15	Metals	Thallium	0.85		mg/kg	U	
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Th-228	0.176	0.038	pCi/g	J	F01
CWC179885	CWC002	03/31/15	Alpha Spectroscopy	Th-228	0.176	0.181	pCi/g	UJ	T02
CWC179885	CWC002	03/31/15	Alpha Spectroscopy	Th-230	0.562	0.345	pCi/g	J	T04
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Th-230	-0.35	1.71	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	Th-232	0.176	0.038	pCi/g	J	F01
CWC179885	CWC002	03/31/15	Alpha Spectroscopy	Th-232	0.264	0.224	pCi/g	J	T04
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	U-235	0.00132	0.106	pCi/g	UJ	T04, T06
CWC179885	CWC002	03/31/15	Gamma Spectroscopy	U-238	0.674	0.337	pCi/g	J	T04
CWC179885	CWC002	03/31/15	Metals	Vanadium	11		mg/kg	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Ac-227	0.0805	0.134	pCi/g	UJ	T04, T06
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Am-241	0.0112	0.0288	pCi/g	UJ	T04, T06
CWC179887	CWC003	03/31/15	Metals	Antimony	0.44		mg/kg	U	
CWC179887	CWC003	03/31/15	Metals	Arsenic	3.4		mg/kg	=	
CWC179887	CWC003	03/31/15	Metals	Barium	160		mg/kg	=	
CWC179887	CWC003	03/31/15	Metals	Cadmium	0.26		mg/kg	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Cs-137	-0.00234	0.0152	pCi/g	UJ	T04, T06
CWC179887	CWC003	03/31/15	Metals	Chromium	13		mg/kg	=	
CWC179887	CWC003	03/31/15	Metals	Molybdenum	0.84		mg/kg	U	
CWC179887	CWC003	03/31/15	Metals	Nickel	14		mg/kg	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	K-40	14.7	1.1	pCi/g	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Pa-231	-1.3	0.446	pCi/g	UJ	T04, T06, T07
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Ra-226	0.997	0.268	pCi/g	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Ra-228	0.819	0.0705	pCi/g	=	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179887	CWC003	03/31/15	Metals	Selenium	4.2		mg/kg	=	
CWC179887	CWC003	03/31/15	Metals	Thallium	1		mg/kg	U	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Th-228	0.819	0.0705	pCi/g	=	
CWC179887	CWC003	03/31/15	Alpha Spectroscopy	Th-228	0.843	0.476	pCi/g	J	T04
CWC179887	CWC003	03/31/15	Alpha Spectroscopy	Th-230	2.57	0.98	pCi/g	=	
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Th-230	-1.2	2.92	pCi/g	UJ	T04, T06
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	Th-232	0.819	0.0705	pCi/g	=	
CWC179887	CWC003	03/31/15	Alpha Spectroscopy	Th-232	0.842	0.475	pCi/g	J	T04
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	U-235	0.0605	0.167	pCi/g	UJ	T04, T06
CWC179887	CWC003	03/31/15	Gamma Spectroscopy	U-238	1.31	0.566	pCi/g	=	
CWC179887	CWC003	03/31/15	Metals	Vanadium	21		mg/kg	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Ac-227	-0.148	0.156	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Am-241	-0.00322	0.0322	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Metals	Antimony	0.44		mg/kg	U	
CWC179889	CWC004	03/31/15	Metals	Arsenic	4.5		mg/kg	=	
CWC179889	CWC004	03/31/15	Metals	Barium	140		mg/kg	=	
CWC179889	CWC004	03/31/15	Metals	Cadmium	0.38		mg/kg	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Cs-137	-0.0116	0.0169	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Metals	Chromium	17		mg/kg	=	
CWC179889	CWC004	03/31/15	Metals	Molybdenum	0.85		mg/kg	U	
CWC179889	CWC004	03/31/15	Metals	Nickel	15		mg/kg	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	K-40	16.1	1.2	pCi/g	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Pa-231	0.104	0.473	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Ra-226	0.999	0.273	pCi/g	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Ra-228	0.901	0.0765	pCi/g	=	
CWC179889	CWC004	03/31/15	Metals	Selenium	2		mg/kg	=	
CWC179889	CWC004	03/31/15	Metals	Thallium	1		mg/kg	U	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Th-228	0.901	0.0765	pCi/g	=	
CWC179889	CWC004	03/31/15	Alpha Spectroscopy	Th-228	1.81	0.826	pCi/g	=	
CWC179889	CWC004	03/31/15	Alpha Spectroscopy	Th-230	1.7	0.79	pCi/g	=	
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Th-230	0.411	3.07	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	Th-232	0.901	0.0765	pCi/g	=	
CWC179889	CWC004	03/31/15	Alpha Spectroscopy	Th-232	1.32	0.671	pCi/g	J	T04
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	U-235	0.0845	0.184	pCi/g	UJ	T04, T06
CWC179889	CWC004	03/31/15	Gamma Spectroscopy	U-238	0.795	0.497	pCi/g	J	T04
CWC179889	CWC004	03/31/15	Metals	Vanadium	20		mg/kg	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Ac-227	-0.0102	0.145	pCi/g	UJ	T04, T06
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Am-241	0.0104	0.0314	pCi/g	UJ	T04, T06
CWC179891	CWC005	03/31/15	Metals	Antimony	0.52		mg/kg	U	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179891	CWC005	03/31/15	Metals	Arsenic	3.7		mg/kg	=	
CWC179891	CWC005	03/31/15	Metals	Barium	110		mg/kg	=	
CWC179891	CWC005	03/31/15	Metals	Cadmium	0.27		mg/kg	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Cs-137	-0.0181	0.0163	pCi/g	UJ	T04, T06
CWC179891	CWC005	03/31/15	Metals	Chromium	15		mg/kg	=	
CWC179891	CWC005	03/31/15	Metals	Molybdenum	0.99		mg/kg	U	
CWC179891	CWC005	03/31/15	Metals	Nickel	15		mg/kg	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	K-40	13.9	1.08	pCi/g	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Pa-231	0.411	0.436	pCi/g	UJ	T04, T06
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Ra-226	1.12	0.302	pCi/g	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Ra-228	0.942	0.0761	pCi/g	=	
CWC179891	CWC005	03/31/15	Metals	Selenium	2.3		mg/kg	=	
CWC179891	CWC005	03/31/15	Metals	Thallium	1.2		mg/kg	U	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Th-228	0.942	0.0761	pCi/g	=	
CWC179891	CWC005	03/31/15	Alpha Spectroscopy	Th-228	1.27	0.569	pCi/g	=	
CWC179891	CWC005	03/31/15	Alpha Spectroscopy	Th-230	2.13	0.796	pCi/g	=	
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Th-230	-0.152	2.94	pCi/g	UJ	T04, T06
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	Th-232	0.942	0.0761	pCi/g	=	
CWC179891	CWC005	03/31/15	Alpha Spectroscopy	Th-232	0.879	0.452	pCi/g	J	T04
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	U-235	0.205	0.174	pCi/g	UJ	T04, T05
CWC179891	CWC005	03/31/15	Gamma Spectroscopy	U-238	0.685	0.46	pCi/g	J	T04
CWC179891	CWC005	03/31/15	Metals	Vanadium	19		mg/kg	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Ac-227	-0.0149	0.152	pCi/g	UJ	T04, T06
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Am-241	0.0129	0.0311	pCi/g	UJ	T04, T06
CWC179893	CWC006	03/31/15	Metals	Antimony	0.5		mg/kg	U	
CWC179893	CWC006	03/31/15	Metals	Arsenic	2.1		mg/kg	=	
CWC179893	CWC006	03/31/15	Metals	Barium	97		mg/kg	=	
CWC179893	CWC006	03/31/15	Metals	Cadmium	0.29		mg/kg	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Cs-137	-0.00818	0.0164	pCi/g	UJ	T04, T06
CWC179893	CWC006	03/31/15	Metals	Chromium	13		mg/kg	=	
CWC179893	CWC006	03/31/15	Metals	Molybdenum	0.95		mg/kg	U	
CWC179893	CWC006	03/31/15	Metals	Nickel	11		mg/kg	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	K-40	14.5	1.15	pCi/g	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Pa-231	0.0757	0.469	pCi/g	UJ	T04, T06
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Ra-226	1.06	0.285	pCi/g	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Ra-228	0.852	0.078	pCi/g	=	
CWC179893	CWC006	03/31/15	Metals	Selenium	1.6		mg/kg	=	
CWC179893	CWC006	03/31/15	Metals	Thallium	1.2		mg/kg	U	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Th-228	0.852	0.078	pCi/g	=	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179893	CWC006	03/31/15	Alpha Spectroscopy	Th-228	1.2	0.556	pCi/g	=	
CWC179893	CWC006	03/31/15	Alpha Spectroscopy	Th-230	1.52	0.646	pCi/g	=	
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Th-230	3.2	3.05	pCi/g	UJ	T04, T05
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	Th-232	0.852	0.078	pCi/g	=	
CWC179893	CWC006	03/31/15	Alpha Spectroscopy	Th-232	0.737	0.406	pCi/g	J	T04
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	U-235	0.112	0.179	pCi/g	UJ	T04, T06
CWC179893	CWC006	03/31/15	Gamma Spectroscopy	U-238	1.33	0.559	pCi/g	=	
CWC179893	CWC006	03/31/15	Metals	Vanadium	15		mg/kg	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Ac-227	0.104	0.211	pCi/g	UJ	T04, T06
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Am-241	0.0262	0.0421	pCi/g	UJ	T04, T06
CWC179895	CWC007	03/31/15	Metals	Antimony	0.51		mg/kg	U	
CWC179895	CWC007	03/31/15	Metals	Arsenic	4.6		mg/kg	=	
CWC179895	CWC007	03/31/15	Metals	Barium	120		mg/kg	=	
CWC179895	CWC007	03/31/15	Metals	Cadmium	0.53		mg/kg	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Cs-137	0.0319	0.0242	pCi/g	UJ	T04, T05
CWC179895	CWC007	03/31/15	Metals	Chromium	18		mg/kg	=	
CWC179895	CWC007	03/31/15	Metals	Molybdenum	0.97		mg/kg	U	
CWC179895	CWC007	03/31/15	Metals	Nickel	13		mg/kg	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	K-40	14.5	1.29	pCi/g	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Pa-231	0.649	0.704	pCi/g	UJ	T04, T06
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Ra-226	1.1	0.312	pCi/g	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Ra-228	0.871	0.101	pCi/g	=	
CWC179895	CWC007	03/31/15	Metals	Selenium	2.1		mg/kg	=	
CWC179895	CWC007	03/31/15	Metals	Thallium	1.2		mg/kg	U	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Th-228	0.871	0.101	pCi/g	=	
CWC179895	CWC007	03/31/15	Alpha Spectroscopy	Th-228	1.06	0.623	pCi/g	J	T04
CWC179895	CWC007	03/31/15	Alpha Spectroscopy	Th-230	3.89	1.48	pCi/g	=	
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Th-230	3.64	3.91	pCi/g	UJ	T04, T06
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	Th-232	0.871	0.101	pCi/g	=	
CWC179895	CWC007	03/31/15	Alpha Spectroscopy	Th-232	0.661	0.456	pCi/g	J	T04
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	U-235	-0.275	0.244	pCi/g	UJ	T04, T06
CWC179895	CWC007	03/31/15	Gamma Spectroscopy	U-238	0.773	0.59	pCi/g	J	T04
CWC179895	CWC007	03/31/15	Metals	Vanadium	18		mg/kg	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Ac-227	0.0264	0.151	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Am-241	0.00639	0.0311	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Metals	Antimony	0.48		mg/kg	U	
CWC179897	CWC008	03/31/15	Metals	Arsenic	2.6		mg/kg	=	
CWC179897	CWC008	03/31/15	Metals	Barium	110		mg/kg	=	
CWC179897	CWC008	03/31/15	Metals	Cadmium	0.39		mg/kg	=	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Cs-137	-0.000722	0.0164	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Metals	Chromium	13		mg/kg	=	
CWC179897	CWC008	03/31/15	Metals	Molybdenum	0.91		mg/kg	U	
CWC179897	CWC008	03/31/15	Metals	Nickel	14		mg/kg	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	K-40	13.3	1.08	pCi/g	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Pa-231	0.131	0.479	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Ra-226	1.17	0.311	pCi/g	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Ra-228	0.806	0.0804	pCi/g	=	
CWC179897	CWC008	03/31/15	Metals	Selenium	2.1		mg/kg	=	
CWC179897	CWC008	03/31/15	Metals	Thallium	1.1		mg/kg	U	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Th-228	0.806	0.0804	pCi/g	=	
CWC179897	CWC008	03/31/15	Alpha Spectroscopy	Th-228	1.18	0.575	pCi/g	=	
CWC179897	CWC008	03/31/15	Alpha Spectroscopy	Th-230	2.48	0.94	pCi/g	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Th-230	-0.799	2.93	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	Th-232	0.806	0.0804	pCi/g	=	
CWC179897	CWC008	03/31/15	Alpha Spectroscopy	Th-232	1.19	0.576	pCi/g	=	
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	U-235	-0.0185	0.179	pCi/g	UJ	T04, T06
CWC179897	CWC008	03/31/15	Gamma Spectroscopy	U-238	0.905	0.455	pCi/g	J	T04
CWC179897	CWC008	03/31/15	Metals	Vanadium	14		mg/kg	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Ac-227	0.0625	0.158	pCi/g	UJ	T04, T06
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Am-241	0.0144	0.0332	pCi/g	UJ	T04, T06
CWC179899	CWC009	03/31/15	Metals	Antimony	0.5		mg/kg	U	
CWC179899	CWC009	03/31/15	Metals	Arsenic	4.5		mg/kg	=	
CWC179899	CWC009	03/31/15	Metals	Barium	120		mg/kg	=	
CWC179899	CWC009	03/31/15	Metals	Cadmium	0.4		mg/kg	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Cs-137	-0.000475	0.0181	pCi/g	UJ	T04, T06
CWC179899	CWC009	03/31/15	Metals	Chromium	18		mg/kg	=	
CWC179899	CWC009	03/31/15	Metals	Molybdenum	0.96		mg/kg	U	
CWC179899	CWC009	03/31/15	Metals	Nickel	13		mg/kg	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	K-40	13.8	1.14	pCi/g	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Pa-231	0.0152	0.528	pCi/g	UJ	T04, T06
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Ra-226	1.26	0.337	pCi/g	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Ra-228	0.938	0.0846	pCi/g	=	
CWC179899	CWC009	03/31/15	Metals	Selenium	2.5		mg/kg	=	
CWC179899	CWC009	03/31/15	Metals	Thallium	1.2		mg/kg	U	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Th-228	0.938	0.0846	pCi/g	=	
CWC179899	CWC009	03/31/15	Alpha Spectroscopy	Th-228	1.16	0.533	pCi/g	=	
CWC179899	CWC009	03/31/15	Alpha Spectroscopy	Th-230	2.27	0.823	pCi/g	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Th-230	1.91	3.39	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	Th-232	0.938	0.0846	pCi/g	=	
CWC179899	CWC009	03/31/15	Alpha Spectroscopy	Th-232	1.22	0.547	pCi/g	=	
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	U-235	-0.115	0.199	pCi/g	UJ	T04, T06
CWC179899	CWC009	03/31/15	Gamma Spectroscopy	U-238	0.859	0.672	pCi/g	J	T04
CWC179899	CWC009	03/31/15	Metals	Vanadium	18		mg/kg	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Ac-227	-0.0731	0.156	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Am-241	-0.0173	0.0334	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Metals	Antimony	0.36		mg/kg	U	
CWC183528	CWC002	10/21/15	Metals	Arsenic	10		mg/kg	=	
CWC183528	CWC002	10/21/15	Metals	Barium	440		mg/kg	=	
CWC183528	CWC002	10/21/15	Metals	Cadmium	0.5		mg/kg	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Cs-137	-0.00326	0.0182	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Metals	Chromium	9.4		mg/kg	=	
CWC183528	CWC002	10/21/15	Metals	Molybdenum	3.6		mg/kg	=	
CWC183528	CWC002	10/21/15	Metals	Nickel	9.2		mg/kg	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	K-40	16.1	1.42	pCi/g	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Pa-231	0.318	0.481	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Ra-226	1.26	0.343	pCi/g	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Ra-228	1.01	0.0858	pCi/g	=	
CWC183528	CWC002	10/21/15	Metals	Selenium	0.89		mg/kg	U	
CWC183528	CWC002	10/21/15	Metals	Thallium	0.85		mg/kg	U	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Th-228	1.01	0.0858	pCi/g	=	
CWC183528	CWC002	10/21/15	Alpha Spectroscopy	Th-228	1.52	0.607	pCi/g	=	
CWC183528	CWC002	10/21/15	Alpha Spectroscopy	Th-230	1.53	0.607	pCi/g	J	F01
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Th-230	2.26	3.28	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	Th-232	1.01	0.0858	pCi/g	=	
CWC183528	CWC002	10/21/15	Alpha Spectroscopy	Th-232	1.36	0.563	pCi/g	=	
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	U-235	-0.063	0.202	pCi/g	UJ	T04, T06
CWC183528	CWC002	10/21/15	Gamma Spectroscopy	U-238	0.946	0.493	pCi/g	J	T04
CWC183528	CWC002	10/21/15	Metals	Vanadium	9.2		mg/kg	=	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Ac-227	-0.0569	0.113	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Am-241	0.011	0.0215	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Metals	Antimony	0.42		mg/kg	U	
CWC183530	CWC003	10/21/15	Metals	Arsenic	12		mg/kg	=	
CWC183530	CWC003	10/21/15	Metals	Barium	280		mg/kg	=	
CWC183530	CWC003	10/21/15	Metals	Cadmium	0.44		mg/kg	=	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Cs-137	-0.00543	0.0113	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Metals	Chromium	22		mg/kg	=	
CWC183530	CWC003	10/21/15	Metals	Molybdenum	0.91		mg/kg	=	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC183530	CWC003	10/21/15	Metals	Nickel	31		mg/kg	=	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	K-40	5.84	0.644	pCi/g	=	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Pa-231	-0.216	0.311	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Ra-226	0.92	0.253	pCi/g	=	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Ra-228	0.215	0.0414	pCi/g	J	F01
CWC183530	CWC003	10/21/15	Metals	Selenium	3.1		mg/kg	=	
CWC183530	CWC003	10/21/15	Metals	Thallium	0.99		mg/kg	U	
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Th-228	0.215	0.0414	pCi/g	J	F01
CWC183530	CWC003	10/21/15	Alpha Spectroscopy	Th-228	0.439	0.314	pCi/g	J	T04
CWC183530	CWC003	10/21/15	Alpha Spectroscopy	Th-230	0.565	0.368	pCi/g	J	F01, T04
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Th-230	0.602	2.08	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	Th-232	0.215	0.0414	pCi/g	J	F01
CWC183530	CWC003	10/21/15	Alpha Spectroscopy	Th-232	0.251	0.23	pCi/g	J	T04
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	U-235	0.0679	0.131	pCi/g	UJ	T04, T06
CWC183530	CWC003	10/21/15	Gamma Spectroscopy	U-238	0.459	0.316	pCi/g	J	T04
CWC183530	CWC003	10/21/15	Metals	Vanadium	43		mg/kg	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Ac-227	-0.0833	0.16	pCi/g	UJ	T04, T06
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Am-241	0.00606	0.0335	pCi/g	UJ	T04, T06
CWC183532	CWC004	10/21/15	Metals	Antimony	0.42		mg/kg	U	
CWC183532	CWC004	10/21/15	Metals	Arsenic	8		mg/kg	=	
CWC183532	CWC004	10/21/15	Metals	Barium	200		mg/kg	=	
CWC183532	CWC004	10/21/15	Metals	Cadmium	0.7		mg/kg	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Cs-137	0.0274	0.0243	pCi/g	J	T04
CWC183532	CWC004	10/21/15	Metals	Chromium	29		mg/kg	=	
CWC183532	CWC004	10/21/15	Metals	Molybdenum	0.8		mg/kg	U	
CWC183532	CWC004	10/21/15	Metals	Nickel	21		mg/kg	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	K-40	15.2	1.39	pCi/g	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Pa-231	0.392	0.512	pCi/g	UJ	T04, T06
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Ra-226	1.21	0.331	pCi/g	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Ra-228	1.01	0.0847	pCi/g	=	
CWC183532	CWC004	10/21/15	Metals	Selenium	2.9		mg/kg	=	
CWC183532	CWC004	10/21/15	Metals	Thallium	0.98		mg/kg	U	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Th-228	1.01	0.0847	pCi/g	=	
CWC183532	CWC004	10/21/15	Alpha Spectroscopy	Th-228	1.31	0.582	pCi/g	=	
CWC183532	CWC004	10/21/15	Alpha Spectroscopy	Th-230	3.02	0.983	pCi/g	=	
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Th-230	2.74	3.32	pCi/g	UJ	T04, T06
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	Th-232	1.01	0.0847	pCi/g	=	
CWC183532	CWC004	10/21/15	Alpha Spectroscopy	Th-232	0.806	0.439	pCi/g	J	T04
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	U-235	0.1	0.197	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC183532	CWC004	10/21/15	Gamma Spectroscopy	U-238	1.02	0.493	pCi/g	=	
CWC183532	CWC004	10/21/15	Metals	Vanadium	29		mg/kg	=	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Ac-227	0.0103	0.151	pCi/g	UJ	T04, T06
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Am-241	0.0091	0.0306	pCi/g	UJ	T04, T06
CWC183534	CWC005	10/21/15	Metals	Antimony	0.43		mg/kg	U	
CWC183534	CWC005	10/21/15	Metals	Arsenic	5.9		mg/kg	=	
CWC183534	CWC005	10/21/15	Metals	Barium	130		mg/kg	=	
CWC183534	CWC005	10/21/15	Metals	Cadmium	0.27		mg/kg	=	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Cs-137	-0.0115	0.0193	pCi/g	UJ	T04, T06
CWC183534	CWC005	10/21/15	Metals	Chromium	26		mg/kg	=	
CWC183534	CWC005	10/21/15	Metals	Molybdenum	0.83		mg/kg	U	
CWC183534	CWC005	10/21/15	Metals	Nickel	28		mg/kg	=	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	K-40	12.1	1.16	pCi/g	=	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Pa-231	-0.573	0.467	pCi/g	UJ	T04, T06
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Ra-226	1.05	0.293	pCi/g	=	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Ra-228	0.811	0.0827	pCi/g	=	
CWC183534	CWC005	10/21/15	Metals	Selenium	4.6		mg/kg	=	
CWC183534	CWC005	10/21/15	Metals	Thallium	1		mg/kg	U	
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Th-228	0.811	0.0827	pCi/g	=	
CWC183534	CWC005	10/21/15	Alpha Spectroscopy	Th-228	1.5	0.71	pCi/g	=	
CWC183534	CWC005	10/21/15	Alpha Spectroscopy	Th-230	2.28	0.922	pCi/g	J	F01
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Th-230	4.72	4.09	pCi/g	J	T04
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	Th-232	0.811	0.0827	pCi/g	=	
CWC183534	CWC005	10/21/15	Alpha Spectroscopy	Th-232	0.972	0.552	pCi/g	J	T04
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	U-235	0.0583	0.187	pCi/g	UJ	T04, T06
CWC183534	CWC005	10/21/15	Gamma Spectroscopy	U-238	1.19	0.538	pCi/g	=	
CWC183534	CWC005	10/21/15	Metals	Vanadium	32		mg/kg	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Ac-227	-0.0848	0.147	pCi/g	UJ	T04, T06
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Am-241	0.0186	0.0313	pCi/g	UJ	T04, T06
CWC183536	CWC006	10/20/15	Metals	Antimony	0.4		mg/kg	U	
CWC183536	CWC006	10/20/15	Metals	Arsenic	7.2		mg/kg	=	
CWC183536	CWC006	10/20/15	Metals	Barium	240		mg/kg	=	
CWC183536	CWC006	10/20/15	Metals	Cadmium	0.32		mg/kg	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Cs-137	0.00459	0.016	pCi/g	UJ	T04, T06
CWC183536	CWC006	10/20/15	Metals	Chromium	23		mg/kg	=	
CWC183536	CWC006	10/20/15	Metals	Molybdenum	0.75		mg/kg	U	
CWC183536	CWC006	10/20/15	Metals	Nickel	29		mg/kg	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	K-40	12.5	1.18	pCi/g	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Pa-231	0.172	0.465	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Ra-226	1.28	0.346	pCi/g	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Ra-228	0.9	0.0792	pCi/g	=	
CWC183536	CWC006	10/20/15	Metals	Selenium	3.1		mg/kg	=	
CWC183536	CWC006	10/20/15	Metals	Thallium	0.92		mg/kg	U	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Th-228	0.9	0.0792	pCi/g	=	
CWC183536	CWC006	10/20/15	Alpha Spectroscopy	Th-228	0.878	0.447	pCi/g	J	T04
CWC183536	CWC006	10/20/15	Alpha Spectroscopy	Th-230	2.12	0.765	pCi/g	J	F01
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Th-230	0.151	3.18	pCi/g	UJ	T04, T06
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	Th-232	0.9	0.0792	pCi/g	=	
CWC183536	CWC006	10/20/15	Alpha Spectroscopy	Th-232	1.27	0.553	pCi/g	=	
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	U-235	0.00759	0.19	pCi/g	UJ	T04, T06
CWC183536	CWC006	10/20/15	Gamma Spectroscopy	U-238	0.847	0.475	pCi/g	J	T04
CWC183536	CWC006	10/20/15	Metals	Vanadium	33		mg/kg	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Ac-227	0.0374	0.14	pCi/g	UJ	T04, T06
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Am-241	-1.91E-05	0.0303	pCi/g	UJ	T04, T06
CWC183538	CWC007	10/20/15	Metals	Antimony	0.41		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Arsenic	9.7		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Barium	190		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Cadmium	0.9		mg/kg	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Cs-137	0.0046	0.0157	pCi/g	UJ	T04, T06
CWC183538	CWC007	10/20/15	Metals	Chromium	30		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Molybdenum	2.5		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Nickel	22		mg/kg	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	K-40	11.7	1.09	pCi/g	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Pa-231	0.192	0.444	pCi/g	UJ	T04, T06
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Ra-226	1.08	0.298	pCi/g	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Ra-228	0.644	0.0696	pCi/g	=	
CWC183538	CWC007	10/20/15	Metals	Selenium	2.7		mg/kg	=	
CWC183538	CWC007	10/20/15	Metals	Thallium	0.89		mg/kg	U	
CWC183538	CWC007	10/20/15	Alpha Spectroscopy	Th-228	1.24	0.6	pCi/g	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Th-228	0.644	0.0696	pCi/g	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Th-230	5.05	2.99	pCi/g	UJ	T04
CWC183538	CWC007	10/20/15	Alpha Spectroscopy	Th-230	3.91	1.25	pCi/g	=	
CWC183538	CWC007	10/20/15	Alpha Spectroscopy	Th-232	0.867	0.481	pCi/g	J	T04
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	Th-232	0.644	0.0696	pCi/g	=	
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	U-235	-0.1	0.175	pCi/g	UJ	T04, T06
CWC183538	CWC007	10/20/15	Gamma Spectroscopy	U-238	0.661	0.456	pCi/g	J	T04
CWC183538	CWC007	10/20/15	Metals	Vanadium	27		mg/kg	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Ac-227	0.0149	0.165	pCi/g	UJ	T04, T06

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Am-241	0.0188	0.0338	pCi/g	UJ	T04, T06
CWC183540	CWC008	10/20/15	Metals	Antimony	0.42		mg/kg	U	
CWC183540	CWC008	10/20/15	Metals	Arsenic	16		mg/kg	=	
CWC183540	CWC008	10/20/15	Metals	Barium	260		mg/kg	=	
CWC183540	CWC008	10/20/15	Metals	Cadmium	0.67		mg/kg	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Cs-137	-0.00432	0.02	pCi/g	UJ	T04, T06
CWC183540	CWC008	10/20/15	Metals	Chromium	25		mg/kg	=	
CWC183540	CWC008	10/20/15	Metals	Molybdenum	1.2		mg/kg	=	
CWC183540	CWC008	10/20/15	Metals	Nickel	35		mg/kg	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	K-40	13.5	1.27	pCi/g	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Pa-231	0.271	0.543	pCi/g	UJ	T04, T06
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Ra-226	1.23	0.341	pCi/g	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Ra-228	0.758	0.0902	pCi/g	=	
CWC183540	CWC008	10/20/15	Metals	Selenium	3		mg/kg	=	
CWC183540	CWC008	10/20/15	Metals	Thallium	0.98		mg/kg	U	
CWC183540	CWC008	10/20/15	Alpha Spectroscopy	Th-228	0.858	0.462	pCi/g	J	T04
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Th-228	0.758	0.0902	pCi/g	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Th-230	6.56	4.1	pCi/g	J	T04
CWC183540	CWC008	10/20/15	Alpha Spectroscopy	Th-230	3.36	1.07	pCi/g	=	
CWC183540	CWC008	10/20/15	Alpha Spectroscopy	Th-232	0.545	0.363	pCi/g	J	T04
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	Th-232	0.758	0.0902	pCi/g	=	
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	U-235	-0.0185	0.199	pCi/g	UJ	T04, T06
CWC183540	CWC008	10/20/15	Gamma Spectroscopy	U-238	0.687	0.574	pCi/g	J	T04
CWC183540	CWC008	10/20/15	Metals	Vanadium	48		mg/kg	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Ac-227	-0.0383	0.15	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Am-241	0.00326	0.0313	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Metals	Antimony	0.4		mg/kg	U	
CWC183542	CWC009	10/20/15	Metals	Arsenic	6.6		mg/kg	=	
CWC183542	CWC009	10/20/15	Metals	Barium	200		mg/kg	=	
CWC183542	CWC009	10/20/15	Metals	Cadmium	0.47		mg/kg	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Cs-137	-0.00651	0.0169	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Metals	Chromium	25		mg/kg	=	
CWC183542	CWC009	10/20/15	Metals	Molybdenum	0.77		mg/kg	U	
CWC183542	CWC009	10/20/15	Metals	Nickel	23		mg/kg	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	K-40	13	1.18	pCi/g	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Pa-231	0.183	0.48	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Ra-226	1.19	0.326	pCi/g	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Ra-228	0.813	0.0758	pCi/g	=	

Table D-2. CWC Sediment Data for CY 2015

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC183542	CWC009	10/20/15	Metals	Selenium	3.3		mg/kg	=	
CWC183542	CWC009	10/20/15	Metals	Thallium	0.94		mg/kg	U	
CWC183542	CWC009	10/20/15	Alpha Spectroscopy	Th-228	1.06	0.456	pCi/g	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Th-228	0.813	0.0758	pCi/g	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Th-230	1.88	3.11	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Alpha Spectroscopy	Th-230	2.99	0.884	pCi/g	=	
CWC183542	CWC009	10/20/15	Alpha Spectroscopy	Th-232	0.629	0.345	pCi/g	J	T04
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	Th-232	0.813	0.0758	pCi/g	=	
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	U-235	-0.0481	0.194	pCi/g	UJ	T04, T06
CWC183542	CWC009	10/20/15	Gamma Spectroscopy	U-238	0.816	0.513	pCi/g	J	T04
CWC183542	CWC009	10/20/15	Metals	Vanadium	32		mg/kg	=	

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

F01 Blanks: Sample data were qualified as a result of the method blank.

T02 Analytical uncertainties were not met and/or not reported.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

T07 Negative analytical result where the absolute value exceeds 2 times the associated MDA.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E

GROUND-WATER FIELD PARAMETER DATA AND ANALYTICAL DATA RESULTS FOR CY 2015

(On the CD-ROM on the Back Cover of this Report)

THIS PAGE INTENTIONALLY LEFT BLANK

Table E-1. Ground-Water Monitoring
First Quarter 2015 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 02/24/15
HISS-01	---	---	---	---	---	---	---	---	---	---	7.61
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.82
HISS-10	03/04/15	150	2,700	6.9	0.129	0	4.48	9.7	256	7.04	7.47
HISS-11A	---	---	---	---	---	---	---	---	---	---	12.48
HISS-17S	---	---	---	---	---	---	---	---	---	---	6.80
HISS-19S	---	---	---	---	---	---	---	---	---	---	14.20
HW22	---	---	---	---	---	---	---	---	---	---	13.20
HW23	---	---	---	---	---	---	---	---	---	---	9.95

Table E-1. Ground-Water Monitoring
Second Quarter 2015 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (μS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 05/18/15
HISS-01	---	---	---	---	---	---	---	---	---	---	8.54
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.94
HISS-10	---	---	---	---	---	---	---	---	---	---	5.50
HISS-11A	---	---	---	---	---	---	---	---	---	---	11.35
HISS-17S	---	---	---	---	---	---	---	---	---	---	4.48
HISS-19	---	---	---	---	---	---	---	---	---	---	14.00
HW22	05/18/15	35	420	6.55	0.207	24.8	2.88	19.7	111	13.75	13.17
HW23	05/18/15	80	960	7.2	0.123	48.8	6.42	19.5	-151	9.98	9.58

Table E-1. Ground-Water Monitoring
Third Quarter 2015 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 08/10/15
HISS-01	08/11/15	120	1,800	7.04	0.114	113	2.68	23.8	218	8.92	8.65
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.21
HISS-10	---	---	---	---	---	---	---	---	---	---	4.58
HISS-11A	08/10/15	45	675	6.72	0.117	137	1.42	24.5	174	8.60	7.70
HISS-17S	---	---	---	---	---	---	---	---	---	---	3.20
HISS-19	---	---	---	---	---	---	---	---	---	---	13.16
HW22	---	---	---	---	---	---	---	---	---	---	12.18
HW23	---	---	---	---	---	---	---	---	---	---	9.66

Table E-1. Ground-Water Monitoring
Fourth Quarter 2015 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 11/16/15
HISS-01	---	---	---	---	---	---	---	---	---	---	11.59
HISS-06A	---	---	---	---	---	---	---	---	---	---	8.98
HISS-10	---	---	---	---	---	---	---	---	---	---	8.11
HISS-11A	---	---	---	---	---	---	---	---	---	---	12.43
HISS-17S	---	---	---	---	---	---	---	---	---	---	6.56
HISS-19S	11/18/15	60	900	6.6	0.126	109	1.21	19.5	-144	13.48	14.50
HW22	---	---	---	---	---	---	---	---	---	---	13.84
HW23	---	---	---	---	---	---	---	---	---	---	9.69

--- Monitoring well was not sampled during this event.

BTOC – below top of casing

mL – milliliter(s)

Table E-2. Ground-Water Monitoring
First Quarter 2015 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 02/24/15
B53W01D	03/02/15	120	1,800	6.62	0.112	73.5	2.15	12.7	-132	10.81	10.73
B53W01S	---	---	---	---	---	---	---	---	---	---	12.68
B53W06S	---	---	---	---	---	---	---	---	---	---	15.96
B53W07D	---	---	---	---	---	---	---	---	---	---	10.99
B53W07S	---	---	---	---	---	---	---	---	---	---	18.07
B53W09S	03/04/15	30	540	6.74	0.142	0	4.42	12.3	251	16.46	16.97
B53W13S	03/03/15	60	720	6.67	0.379	0	2.67	12.2	238	9.88	9.4
B53W17S	---	---	---	---	---	---	---	---	---	---	8.84
B53W18S	03/03/15	90	1,620	6.62	0.476	0	3.24	10.2	240	13.51	13.36
B53W19S	03/02/15	150	3,600	6.84	1.07	15.9	1.96	11.9	201	7.29	7.14
MW31-98	---	---	---	---	---	---	---	---	---	---	10.67
MW32-98	---	---	---	---	---	---	---	---	---	---	12.93
PW35	---	---	---	---	---	---	---	---	---	---	*
PW36	---	---	---	---	---	---	---	---	---	---	*
PW42	---	---	---	---	---	---	---	---	---	---	10.84
PW43	---	---	---	---	---	---	---	---	---	---	14.35
PW44	---	---	---	---	---	---	---	---	---	---	4.75
PW45	---	---	---	---	---	---	---	---	---	---	7.7
PW46	03/04/15	50	750	6.43	0.271	0	4.43	6.8	264	12.39	11.89

Table E-2. Ground-Water Monitoring
Second Quarter 2015 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (μS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 05/18/15
B53W01D	---	---	---	---	---	---	---	---	---	---	10.31
B53W01S	---	---	---	---	---	---	---	---	---	---	13.48
B53W06S	05/19/15	22	230	6.72	0.146	0	1.88	18.1	71	15.13	13.85
B53W07D	---	---	---	---	---	---	---	---	---	---	10.81
B53W07S	---	---	---	---	---	---	---	---	---	---	17.70
B53W09S	05/19/15	30	360	6.73	0.113	40.9	2.35	17	170	16.27	15.32
B53W13S	05/19/15	60	720	6.63	0.386	0	1.6	16.9	121	10.06	9.43
B53W17S	---	---	---	---	---	---	---	---	---	---	8.23
B53W18S	05/20/15	90	1,100	6.46	0.457	0	2.22	15.9	208	13.47	13.22
B53W19S	---	---	---	---	---	---	---	---	---	---	6.96
MW31-98	---	---	---	---	---	---	---	---	---	---	9.78
MW32-98	---	---	---	---	---	---	---	---	---	---	12.74
PW35	---	---	---	---	---	---	---	---	---	---	10.40
PW36	05/18/15	300	3,600	6.9	0.111	0	1.43	20.5	-187	10.08	10.02
PW42	05/19/15	35	525	6.9	0.114	0	2.29	17.1	-171	12.74	10.60
PW43	---	---	---	---	---	---	---	---	---	---	12.99
PW44	---	---	---	---	---	---	---	---	---	---	4.02
PW45	---	---	---	---	---	---	---	---	---	---	6.79
PW46	---	---	---	---	---	---	---	---	---	---	12.36

Table E-2. Ground-Water Monitoring
Third Quarter 2015 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (μS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 08/10/15
B53W01D	---	---	---	---	---	---	---	---	---	---	9.98
B53W01S	---	---	---	---	---	---	---	---	---	---	9.97
B53W06S	---	---	---	---	---	---	---	---	---	---	12.96
B53W07D	---	---	---	---	---	---	---	---	---	---	10.40
B53W07S	---	---	---	---	---	---	---	---	---	---	13.70
B53W09S	08/14/15	30	540	6.57	0.126	0	1.34	18.3	171	13.84	12.77
B53W13S	---	---	---	---	---	---	---	---	---	---	6.90
B53W17S	---	---	---	---	---	---	---	---	---	---	6.69
B53W18S	08/12/15	90	1,350	6.38	0.454	167	1.67	24	9	13.02	12.81
B53W19S	08/12/15	150	2,250	6.43	0.328	33.8	1.78	25.1	63	6.2	3.88
MW31-98	---	---	---	---	---	---	---	---	---	---	4.78
MW32-98	---	---	---	---	---	---	---	---	---	---	11.60
PW35	---	---	---	---	---	---	---	---	---	---	10.49
PW36	---	---	---	---	---	---	---	---	---	---	9.70
PW42	---	---	---	---	---	---	---	---	---	---	9.98
PW43	08/14/15	50	600	6.42	0.115	0	1.76	19.8	49	8.18	5.57
PW44	08/11/15	50	600	6.93	85.2	0	1.78	23.4	103	5.56	4.31
PW45	08/11/15	80	1,440	6.76	0.1	80	1.45	20.9	221	5.93	5.63
PW46	---	---	---	---	---	---	---	---	---	---	9.87

Table E-2. Ground-Water Monitoring
Fourth Quarter 2015 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/minute)	Volume Removed (mL)	pH	Conductivity (μS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Depth to Water (BTOC) 11/16/15
B53W01D	11/20/15	120	2,160	6.8	0.115	174	1.15	17.3	-190	9.9	9.5
B53W01S	---	---	---	---	---	---	---	---	---	---	14.9
B53W06S	---	---	---	---	---	---	---	---	---	---	15.13
B53W07D	11/20/15	40	480	6.88	0.116	130	2.89	16.7	-175	10.33	10.39
B53W07S	---	---	---	---	---	---	---	---	---	---	18.88
B53W09S	11/20/15	30	450	6.54	0.129	20.9	2.94	15.9	59	16.03	16.03
B53W13S	11/20/15	60	540	6.5	0.374	12.1	1.54	17	144	11.24	12.91
B53W17S	---	---	---	---	---	---	---	---	---	---	11.31
B53W18S	11/18/15	90	1,350	6.5	0.442	107	1.41	19.9	12	13.3	13.41
B53W19S	11/18/15	150	1,800	6.65	0.196	99.2	1.51	19	278	4.34	7.08
MW31-98	---	---	---	---	---	---	---	---	---	---	13.53
MW32-98	---	---	---	---	---	---	---	---	---	---	15.43
PW35	11/18/15	45	675	7.41	0.228	158	4.02	17.5	203	11.43	9.93
PW36	---	---	---	---	---	---	---	---	---	---	9.55
PW42	---	---	---	---	---	---	---	---	---	---	10.42
PW43	---	---	---	---	---	---	---	---	---	---	16
PW44	---	---	---	---	---	---	---	---	---	---	5.46
PW45	---	---	---	---	---	---	---	---	---	---	8.54
PW46	---	---	---	---	---	---	---	---	---	---	12.99

* Measurement could not be taken due to a well problem (frozen vault).

--- Monitoring well was not sampled during this event.

Table E-3. CY 2015 Ground-Water Sampling Data for the Latty Avenue Properties

Site: Latty Avenue Properties											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
HIS182128	HISS-01	08/11/15	ML-006	Ra-226	1.21	0.938	1.2	pCi/L	J	F01, T04	No
HIS182128	HISS-01	08/11/15	ML-005	Th-228	0.119	0.169	0.161	pCi/L	UJ	T06	No
HIS182128	HISS-01	08/11/15	ML-005	Th-230	0.357	0.297	0.161	pCi/L	J	F01, T04	No
HIS182128	HISS-01	08/11/15	ML-005	Th-232	0	0	0.161	pCi/L	U		No
HIS182128	HISS-01	08/11/15	ML-015	U-234	10	2.4	0.181	pCi/L	=		No
HIS182128	HISS-01	08/11/15	ML-015	U-235	0.578	0.54	0.766	pCi/L	U	T04, T05	No
HIS182128	HISS-01	08/11/15	ML-015	U-238	8.08	2.04	0.433	pCi/L	=		No
HIS179609	HISS-10	03/04/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS179609	HISS-10	03/04/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS179609	HISS-10	03/04/15	SW846 6020	Barium	99		0.22	µg/L	=		No
HIS179609	HISS-10	03/04/15	SW846 6020	Cadmium	0.16		0.1	µg/L	=		No
HIS179609	HISS-10	03/04/15	SW846 6020	Chromium	1		1	µg/L	U		No
HIS179609	HISS-10	03/04/15	SW846 6020	Molybdenum	19		1	µg/L	=		No
HIS179609	HISS-10	03/04/15	SW846 6020	Nickel	1.7		0.8	µg/L	=		No
HIS179609	HISS-10	03/04/15	ML-006	Ra-226	0.764	0.793	1.24	pCi/L	UJ	T06	No
HIS179609	HISS-10	03/04/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS179609	HISS-10	03/04/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS179609	HISS-10	03/04/15	ML-005	Th-228	0.148	0.215	0.355	pCi/L	UJ	T06	No
HIS179609	HISS-10	03/04/15	ML-005	Th-230	0.415	0.353	0.436	pCi/L	U	T04, T05	No
HIS179609	HISS-10	03/04/15	ML-005	Th-232	0.0591	0.119	0.16	pCi/L	UJ	T06	No
HIS179609	HISS-10	03/04/15	ML-015	U-234	4.84E+00	1.61	0.909	pCi/L	=		No
HIS179609	HISS-10	03/04/15	ML-015	U-235	0.125	0.293	0.607	pCi/L	UJ	T06	No
HIS179609	HISS-10	03/04/15	ML-015	U-238	4.92	1.58	0.49	pCi/L	=		No
HIS179609	HISS-10	03/04/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Barium	150		0.22	µg/L	=		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Cadmium	0.6		0.1	µg/L	=		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Chromium	1		1	µg/L	U		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Molybdenum	3.6		1	µg/L	=		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Nickel	3.3		0.8	µg/L	=		No
HIS182129	HISS-11A	08/10/15	ML-006	Ra-226	1.49	0.944	0.403	pCi/L	J	F01, T04	No
HIS182129	HISS-11A	08/10/15	SW846 6020	Selenium	38		1.6	µg/L	=		No
HIS182129	HISS-11A	08/10/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS182129	HISS-11A	08/10/15	ML-005	Th-228	0.388	0.323	0.175	pCi/L	J	T04	No
HIS182129	HISS-11A	08/10/15	ML-005	Th-230	0.292	0.3	0.389	pCi/L	UJ	T06	No

Table E-3. CY 2015 Ground-Water Sampling Data for the Latty Avenue Properties

Site: Latty Avenue Properties											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
HIS182129	HISS-11A	08/10/15	ML-005	Th-232	-0.0323	0.0649	0.388	pCi/L	UJ	T06	No
HIS182129	HISS-11A	08/10/15	ML-015	U-234	1.8	0.746	0.174	pCi/L	=		No
HIS182129	HISS-11A	08/10/15	ML-015	U-235	0.158	0.226	0.214	pCi/L	UJ	T06	No
HIS182129	HISS-11A	08/10/15	ML-015	U-238	1.79	0.743	0.173	pCi/L	J	F01	No
HIS182129	HISS-11A	08/10/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Arsenic	330		1.2	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Barium	640		0.22	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Cadmium	1.9		0.1	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Chromium	1.9		1	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Molybdenum	9.9		1	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Nickel	5.8		0.8	µg/L	=		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS184164	HISS-19S	11/18/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS180861	HW22	05/18/15	SW846 6020	Antimony	1.7		1.7	µg/L	=		No
HIS180861	HW22	05/18/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS180861	HW22	05/18/15	SW846 6020	Barium	160		0.22	µg/L	=		No
HIS180861	HW22	05/18/15	SW846 6020	Cadmium	0.43		0.1	µg/L	=		No
HIS180861	HW22	05/18/15	SW846 6020	Chromium	1		1	µg/L	U		No
HIS180861	HW22	05/18/15	SW846 6020	Molybdenum	1		1	µg/L	U		No
HIS180861	HW22	05/18/15	SW846 6020	Nickel	1.3		0.8	µg/L	J	D04	No
HIS180861	HW22	05/18/15	ML-006	Ra-226	1.5	1.08	1.44	pCi/L	J	F01, T04	No
HIS180861	HW22	05/18/15	SW846 6020	Selenium	1.7		1.6	µg/L	J	D04	No
HIS180861	HW22	05/18/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS180861	HW22	05/18/15	ML-005	Th-228	0.17	0.243	0.418	pCi/L	UJ	T06	No
HIS180861	HW22	05/18/15	ML-005	Th-230	0.597	0.42	0.478	pCi/L	J	T04	No
HIS180861	HW22	05/18/15	ML-005	Th-232	0	0	0.418	pCi/L	U		No
HIS180861	HW22	05/18/15	ML-015	U-234	7.17	1.63	0.108	pCi/L	=		No
HIS180861	HW22	05/18/15	ML-015	U-235	0.156	0.215	0.342	pCi/L	UJ	T06	No
HIS180861	HW22	05/18/15	ML-015	U-238	4.65	1.18	0.276	pCi/L	=		No
HIS180861	HW22	05/18/15	SW846 6020	Vanadium	2.6		2.4	µg/L	=		No
HIS180862	HW23	05/18/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS180862	HW23	05/18/15	SW846 6020	Arsenic	150		1.2	µg/L	=		No
HIS180862	HW23	05/18/15	SW846 6020	Barium	390		0.22	µg/L	=		No
HIS180862	HW23	05/18/15	SW846 6020	Cadmium	0.47		0.1	µg/L	=		No

Table E-3. CY 2015 Ground-Water Sampling Data for the Latty Avenue Properties

Site: Latty Avenue Properties											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
HIS180862	HW23	05/18/15	SW846 6020	Chromium	1		1	µg/L	U		No
HIS180862	HW23	05/18/15	SW846 6020	Molybdenum	6.3		1	µg/L	=		No
HIS180862	HW23	05/18/15	SW846 6020	Nickel	2		0.8	µg/L	J	D04	No
HIS180862	HW23	05/18/15	ML-006	Ra-226	0.761	0.618	0.796	pCi/L	U	T04, T05	No
HIS180862	HW23	05/18/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS180862	HW23	05/18/15	SW846 6020	Thallium	0.55		0.55	µg/L	=		No
HIS180862	HW23	05/18/15	ML-005	Th-228	0.125	0.281	0.582	pCi/L	UJ	T06	No
HIS180862	HW23	05/18/15	ML-005	Th-230	0.471	0.371	0.377	pCi/L	J	T04	No
HIS180862	HW23	05/18/15	ML-005	Th-232	-0.0627	0.0894	0.461	pCi/L	UJ	T06	No
HIS180862	HW23	05/18/15	ML-015	U-234	0.158	0.183	0.264	pCi/L	UJ	T06	No
HIS180862	HW23	05/18/15	ML-015	U-235	0.0156	0.173	0.408	pCi/L	UJ	T06	No
HIS180862	HW23	05/18/15	ML-015	U-238	0.114	0.132	0.103	pCi/L	UJ	T02	No
HIS180862	HW23	05/18/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

D04 Continuing calibration verification (CCV) recovery was above the upper control limit.

F01 Blanks: Sample data were qualified as a result of the method blank.

T02 Analytical uncertainties were not met and/or not reported.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP179612	B53W01D	03/02/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP179612	B53W01D	03/02/15	SW846 6020	Arsenic	97		1.2	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Barium	460		0.22	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Cadmium	5.7		0.1	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Chromium	8.5		1	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Molybdenum	1.4		1	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Nickel	9.8		0.8	µg/L	=		No
SVP179612	B53W01D	03/02/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP179612	B53W01D	03/02/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP179612	B53W01D	03/02/15	SW846 6020	Vanadium	5.5		2.4	µg/L	=		No
SVP184174	B53W01D	11/20/15	ML-006	Ra-226	0.373	0.774	1.5	pCi/L	UJ	T06	No
SVP184174	B53W01D	11/20/15	ML-005	Th-228	0.192	0.315	0.594	pCi/L	UJ	T06	No
SVP184174	B53W01D	11/20/15	ML-005	Th-230	0.288	0.297	0.384	pCi/L	UJ	T06	No
SVP184174	B53W01D	11/20/15	ML-005	Th-232	0	0	0.173	pCi/L	U		No
SVP184174	B53W01D	11/20/15	ML-015	U-234	0.214	0.361	0.661	pCi/L	UJ	T06	No
SVP184174	B53W01D	11/20/15	ML-015	U-235	0	0	0.238	pCi/L	U		No
SVP184174	B53W01D	11/20/15	ML-015	U-238	0.166	0.265	0.461	pCi/L	UJ	T06	No
SVP180863	B53W06S	05/19/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP180863	B53W06S	05/19/15	SW846 6020	Arsenic	1.9		1.2	µg/L	=		No
SVP180863	B53W06S	05/19/15	SW846 6020	Barium	63		0.22	µg/L	=		No
SVP180863	B53W06S	05/19/15	SW846 6020	Cadmium	1.5		0.1	µg/L	=		No
SVP180863	B53W06S	05/19/15	SW846 6020	Chromium	14		1	µg/L	=		No
SVP180863	B53W06S	05/19/15	SW846 6020	Molybdenum	7.4		1	µg/L	=		No
SVP180863	B53W06S	05/19/15	SW846 6020	Nickel	10		0.8	µg/L	J	D04	No
SVP180863	B53W06S	05/19/15	SW846 6020	Selenium	2.5		1.6	µg/L	J	D04	No
SVP180863	B53W06S	05/19/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180863	B53W06S	05/19/15	SW846 6020	Vanadium	6.6		2.4	µg/L	=		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP184176	B53W07D	11/20/15	SW846 6020	Antimony	4.2		4.2	µg/L	U		No
SVP184176	B53W07D	11/20/15	SW846 6020	Arsenic	110		3	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Barium	400		0.56	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Cadmium	0.44		0.25	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Chromium	8.1		2.5	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Molybdenum	2.8		2.5	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Nickel	14		2	µg/L	=		No
SVP184176	B53W07D	11/20/15	SW846 6020	Selenium	4		4	µg/L	U		No
SVP184176	B53W07D	11/20/15	SW846 6020	Thallium	1.4		1.4	µg/L	U		No
SVP184176	B53W07D	11/20/15	SW846 6020	Vanadium	7.5		5.9	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP179614	B53W09S	03/04/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP179614	B53W09S	03/04/15	SW846 6020	Barium	330		0.22	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Cadmium	0.85		0.1	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Chromium	21		1	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Molybdenum	6.9		1	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Nickel	40		0.8	µg/L	=		No
SVP179614	B53W09S	03/04/15	ML-006	Ra-226	0.275	0.456	0.833	pCi/L	UJ	T06	No
SVP179614	B53W09S	03/04/15	SW846 6020	Selenium	12		1.6	µg/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP179614	B53W09S	03/04/15	ML-005	Th-228	0.412	0.384	0.506	pCi/L	U	T04, T05	No
SVP179614	B53W09S	03/04/15	ML-005	Th-230	0.963	0.571	0.506	pCi/L	J	F01, T04	No
SVP179614	B53W09S	03/04/15	ML-005	Th-232	0.206	0.241	0.186	pCi/L	UJ	T02	No
SVP179614	B53W09S	03/04/15	ML-015	U-234	2.73	0.899	0.403	pCi/L	=		No
SVP179614	B53W09S	03/04/15	ML-015	U-235	0.144	0.23	0.401	pCi/L	UJ	T06	No
SVP179614	B53W09S	03/04/15	ML-015	U-238	1.66	0.655	0.323	pCi/L	=		No
SVP179614	B53W09S	03/04/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP180864	B53W09S	05/19/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP180864	B53W09S	05/19/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP180864	B53W09S	05/19/15	SW846 6020	Barium	270		0.22	µg/L	=		No
SVP180864	B53W09S	05/19/15	SW846 6020	Cadmium	0.51		0.1	µg/L	=		No
SVP180864	B53W09S	05/19/15	SW846 6020	Chromium	25		1	µg/L	=		No
SVP180864	B53W09S	05/19/15	SW846 6020	Molybdenum	4.3		1	µg/L	=		No
SVP180864	B53W09S	05/19/15	SW846 6020	Nickel	78		0.8	µg/L	J	D04	No
SVP180864	B53W09S	05/19/15	ML-006	Ra-226	0.506	0.585	0.926	pCi/L	UJ	T06	No
SVP180864	B53W09S	05/19/15	SW846 6020	Selenium	10		1.6	µg/L	J	D04	No
SVP180864	B53W09S	05/19/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180864	B53W09S	05/19/15	ML-005	Th-228	-0.0277	0.0556	0.332	pCi/L	UJ	T06	No
SVP180864	B53W09S	05/19/15	ML-005	Th-230	0.333	0.278	0.15	pCi/L	J	T04	No
SVP180864	B53W09S	05/19/15	ML-005	Th-232	0	0	0.15	pCi/L	U		No
SVP180864	B53W09S	05/19/15	ML-015	U-234	1.41	0.573	0.127	pCi/L	=		No
SVP180864	B53W09S	05/19/15	ML-015	U-235	0.00964	0.151	0.402	pCi/L	UJ	T06	No
SVP180864	B53W09S	05/19/15	ML-015	U-238	1.32	0.561	0.325	pCi/L	=		No
SVP180864	B53W09S	05/19/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP182130	B53W09S	08/14/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP182130	B53W09S	08/14/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP182130	B53W09S	08/14/15	SW846 6020	Barium	350		0.22	µg/L	=		No
SVP182130	B53W09S	08/14/15	SW846 6020	Cadmium	0.99		0.1	µg/L	=		No
SVP182130	B53W09S	08/14/15	SW846 6020	Chromium	23		1	µg/L	=		No
SVP182130	B53W09S	08/14/15	SW846 6020	Molybdenum	5.1		1	µg/L	=		No
SVP182130	B53W09S	08/14/15	SW846 6020	Nickel	110		0.8	µg/L	=		No
SVP182130	B53W09S	08/14/15	ML-006	Ra-226	0.757	0.934	1.63	pCi/L	UJ	T06	No
SVP182130	B53W09S	08/14/15	SW846 6020	Selenium	3		1.6	µg/L	=		No
SVP182130	B53W09S	08/14/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP182130	B53W09S	08/14/15	ML-005	Th-228	0.312	0.321	0.415	pCi/L	UJ	T06	No
SVP182130	B53W09S	08/14/15	ML-005	Th-230	0.936	0.57	0.583	pCi/L	J	F01, T04	No
SVP182130	B53W09S	08/14/15	ML-005	Th-232	0.173	0.251	0.415	pCi/L	UJ	T06	No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP182130	B53W09S	08/14/15	ML-015	U-234	1.63	0.717	0.418	pCi/L	=		No
SVP182130	B53W09S	08/14/15	ML-015	U-235	0.0264	0.19	0.515	pCi/L	UJ	T06	No
SVP182130	B53W09S	08/14/15	ML-015	U-238	1.41	0.646	0.173	pCi/L	J	F01	No
SVP182130	B53W09S	08/14/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP184170	B53W09S	11/20/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP184170	B53W09S	11/20/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP184170	B53W09S	11/20/15	SW846 6020	Barium	360		0.22	µg/L	=		No
SVP184170	B53W09S	11/20/15	SW846 6020	Cadmium	1.3		0.1	µg/L	=		No
SVP184170	B53W09S	11/20/15	SW846 6020	Chromium	6.90E+00		1	µg/L	=		No
SVP184170	B53W09S	11/20/15	SW846 6020	Molybdenum	5.1		1	µg/L	=		No
SVP184170	B53W09S	11/20/15	SW846 6020	Nickel	59		0.8	µg/L	=		No
SVP184170	B53W09S	11/20/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP184170	B53W09S	11/20/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP184170	B53W09S	11/20/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP179613	B53W13S	03/03/15	SW846 6020	Antimony	8.4		8.4	µg/L	U		No
SVP179613	B53W13S	03/03/15	SW846 6020	Arsenic	5.9		5.9	µg/L	U		No
SVP179613	B53W13S	03/03/15	SW846 6020	Barium	420		1.1	µg/L	=		No
SVP179613	B53W13S	03/03/15	SW846 6020	Cadmium	0.5		0.5	µg/L	U		No
SVP179613	B53W13S	03/03/15	SW846 6020	Chromium	15		5	µg/L	=		No
SVP179613	B53W13S	03/03/15	SW846 6020	Molybdenum	5		5	µg/L	U		No
SVP179613	B53W13S	03/03/15	SW846 6020	Nickel	80		4	µg/L	=		No
SVP179613	B53W13S	03/03/15	ML-006	Ra-226	0.737	0.774	1.24	pCi/L	UJ	T06	No
SVP179613	B53W13S	03/03/15	SW846 6020	Selenium	110		8	µg/L	=		No
SVP179613	B53W13S	03/03/15	SW846 6020	Thallium	2.8		2.8	µg/L	U		No
SVP179613	B53W13S	03/03/15	ML-005	Th-228	0.355	0.369	0.523	pCi/L	UJ	T06	No
SVP179613	B53W13S	03/03/15	ML-005	Th-230	0.996	0.617	0.661	pCi/L	J	F01, T04	No
SVP179613	B53W13S	03/03/15	ML-005	Th-232	0.071	0.143	0.193	pCi/L	UJ	T06	No
SVP179613	B53W13S	03/03/15	ML-015	U-234	9.38	2.03	0.111	pCi/L	=		No
SVP179613	B53W13S	03/03/15	ML-015	U-235	0.604	0.364	0.136	pCi/L	J	T04	No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP179613	B53W13S	03/03/15	ML-015	U-238	7.63	1.72	0.11	pCi/L	=		No
SVP179613	B53W13S	03/03/15	SW846 6020	Vanadium	12		12	µg/L	U		No
SVP180865	B53W13S	05/19/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP180865	B53W13S	05/19/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP180865	B53W13S	05/19/15	SW846 6020	Barium	350		0.22	µg/L	=		No
SVP180865	B53W13S	05/19/15	SW846 6020	Cadmium	0.3		0.1	µg/L	=		No
SVP180865	B53W13S	05/19/15	SW846 6020	Chromium	31		1	µg/L	=		No
SVP180865	B53W13S	05/19/15	SW846 6020	Molybdenum	2.1		1	µg/L	=		No
SVP180865	B53W13S	05/19/15	SW846 6020	Nickel	80		0.8	µg/L	J	D04	No
SVP180865	B53W13S	05/19/15	ML-006	Ra-226	0.601	0.669	1.07	pCi/L	UJ	T06	No
SVP180865	B53W13S	05/19/15	SW846 6020	Selenium	91		1.6	µg/L	J	D04	No
SVP180865	B53W13S	05/19/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180865	B53W13S	05/19/15	ML-005	Th-228	0.441	0.37	0.199	pCi/L	J	T04	No
SVP180865	B53W13S	05/19/15	ML-005	Th-230	0.736	0.519	0.542	pCi/L	J	T04	No
SVP180865	B53W13S	05/19/15	ML-005	Th-232	0.0367	0.165	0.441	pCi/L	UJ	T06	No
SVP180865	B53W13S	05/19/15	ML-015	U-234	9.81	2.15	0.295	pCi/L	=		No
SVP180865	B53W13S	05/19/15	ML-015	U-235	0.48	0.352	0.364	pCi/L	J	T04	No
SVP180865	B53W13S	05/19/15	ML-015	U-238	8.24	1.87	0.294	pCi/L	=		No
SVP180865	B53W13S	05/19/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP184173	B53W13S	11/20/15	ML-006	Ra-226	0.666	0.597	0.361	pCi/L	J	T04	No
SVP184173	B53W13S	11/20/15	ML-005	Th-228	0.334	0.308	0.364	pCi/L	U	T04, T05	No
SVP184173	B53W13S	11/20/15	ML-005	Th-230	0.365	0.337	0.447	pCi/L	U	T04, T05	No
SVP184173	B53W13S	11/20/15	ML-005	Th-232	-2.8E-06	0.149	0.447	pCi/L	UJ	T06	No
SVP184173	B53W13S	11/20/15	ML-015	U-234	9.34	2.06	0.349	pCi/L	=		No
SVP184173	B53W13S	11/20/15	ML-015	U-235	0.396	0.33	0.179	pCi/L	J	T04	No
SVP184173	B53W13S	11/20/15	ML-015	U-238	8.92	1.99	0.347	pCi/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP179611	B53W18S	03/03/15	SW846 6020	Arsenic	1.2		1.2	µg/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020	Barium	550		0.22	µg/L	=		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP179611	B53W18S	03/03/15	SW846 6020	Cadmium	0.67		0.1	µg/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020	Chromium	260		1	µg/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020DIS	Chromium	5		5	µg/L	U		Yes
SVP179611	B53W18S	03/03/15	SW846 6020	Molybdenum	59		1	µg/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020DIS	Molybdenum	43		5	µg/L	=		Yes
SVP179611	B53W18S	03/03/15	SW846 6020	Nickel	1,000		0.8	µg/L	=		No
SVP179611	B53W18S	03/03/15	SW846 6020DIS	Nickel	1,000		4	µg/L	=		Yes
SVP179611	B53W18S	03/03/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP179611	B53W18S	03/03/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP179611	B53W18S	03/03/15	SW846 6020	Vanadium	3.4		2.4	µg/L	=		No
SVP180866	B53W18S	05/20/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP180866	B53W18S	05/20/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP180866	B53W18S	05/20/15	SW846 6020	Barium	440		0.22	µg/L	=		No
SVP180866	B53W18S	05/20/15	SW846 6020	Cadmium	0.75		0.1	µg/L	=		No
SVP180866	B53W18S	05/20/15	SW846 6020	Chromium	250		1	µg/L	=		No
SVP180866	B53W18S	05/20/15	SW846 6020	Molybdenum	43		1	µg/L	=		No
SVP180866	B53W18S	05/20/15	SW846 6020	Nickel	1,000		0.8	µg/L	J	D04	No
SVP180866	B53W18S	05/20/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP180866	B53W18S	05/20/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180866	B53W18S	05/20/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP182131	B53W18S	08/12/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP182131	B53W18S	08/12/15	SW846 6020	Arsenic	1.6		1.2	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Barium	580		0.22	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Cadmium	1.7		0.1	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Chromium	380		1	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Molybdenum	38		1	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Nickel	1,100		0.8	µg/L	=		No
SVP182131	B53W18S	08/12/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP182131	B53W18S	08/12/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP182131	B53W18S	08/12/15	SW846 6020	Vanadium	3.9		2.4	µg/L	=		No
SVP184171	B53W18S	11/18/15	ML-006	Ra-226	0.631	0.565	0.342	pCi/L	J	T04	No
SVP184171	B53W18S	11/18/15	ML-005	Th-228	0.269	0.319	0.496	pCi/L	UJ	T06	No
SVP184171	B53W18S	11/18/15	ML-005	Th-230	0.742	0.491	0.496	pCi/L	J	F01, T04	No
SVP184171	B53W18S	11/18/15	ML-005	Th-232	-1.4E-05	0.165	0.495	pCi/L	UJ	T06	No
SVP184171	B53W18S	11/18/15	ML-015	U-234	1.19	0.539	0.332	pCi/L	=		No
SVP184171	B53W18S	11/18/15	ML-015	U-235	-0.063	0.193	0.585	pCi/L	UJ	T06	No
SVP184171	B53W18S	11/18/15	ML-015	U-238	1.54	0.62	0.331	pCi/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020	Antimony	17		17	µg/L	U		No
SVP179610	B53W19S	03/02/15	SW846 6020	Arsenic	12		12	µg/L	U		No
SVP179610	B53W19S	03/02/15	SW846 6020	Barium	640		2.2	µg/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020	Cadmium	1.2		1	µg/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020	Chromium	100		10	µg/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020DIS	Chromium	10		10	µg/L	U		Yes
SVP179610	B53W19S	03/02/15	SW846 6020	Molybdenum	23		10	µg/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020DIS	Molybdenum	17		10	µg/L	=		Yes
SVP179610	B53W19S	03/02/15	SW846 6020	Nickel	380		8	µg/L	=		No
SVP179610	B53W19S	03/02/15	SW846 6020DIS	Nickel	410		8	µg/L	=		Yes
SVP179610	B53W19S	03/02/15	SW846 6020	Selenium	16		16	µg/L	U		No
SVP179610	B53W19S	03/02/15	SW846 6020	Thallium	5.5		5.5	µg/L	U		No
SVP179610	B53W19S	03/02/15	SW846 6020	Vanadium	24		24	µg/L	U		No
SVP182132	B53W19S	08/12/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP182132	B53W19S	08/12/15	SW846 6020	Arsenic	1.2		1.2	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Barium	210		0.22	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Cadmium	0.45		0.1	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Chromium	180		1	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Molybdenum	180		1	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Nickel	2,200		0.8	µg/L	=		No
SVP182132	B53W19S	08/12/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP182132	B53W19S	08/12/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP182132	B53W19S	08/12/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP184175	B53W19S	11/18/15	ML-006	Ra-226	0.893	0.837	1.25	pCi/L	U	T04, T05	No
SVP184175	B53W19S	11/18/15	ML-005	Th-228	0.0926	0.239	0.519	pCi/L	UJ	T06	No
SVP184175	B53W19S	11/18/15	ML-005	Th-230	0.494	0.357	0.168	pCi/L	J	F01, T04	No
SVP184175	B53W19S	11/18/15	ML-005	Th-232	-0.0308	0.0619	0.37	pCi/L	UJ	T06	No
SVP184175	B53W19S	11/18/15	ML-015	U-234	0.749	0.404	0.135	pCi/L	J	T04	No
SVP184175	B53W19S	11/18/15	ML-015	U-235	0	0	0.167	pCi/L	U		No
SVP184175	B53W19S	11/18/15	ML-015	U-238	0.613	0.377	0.323	pCi/L	J	T04	No
SVP184172	PW35	11/18/15	SW846 6020	Antimony	4.2		4.2	µg/L	U		No
SVP184172	PW35	11/18/15	SW846 6020	Arsenic	36		3	µg/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Barium	3,000		0.56	µg/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Cadmium	3.6		0.25	µg/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Chromium	2.7		2.5	µg/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Molybdenum	5.1		2.5	µg/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Nickel	6.4		2	µg/L	=		No
SVP184172	PW35	11/18/15	ML-006	Ra-226	4.1	1.44	1.13	pCi/L	=		No
SVP184172	PW35	11/18/15	SW846 6020	Selenium	4		4	µg/L	U		No
SVP184172	PW35	11/18/15	SW846 6020	Thallium	1.4		1.4	µg/L	U		No
SVP184172	PW35	11/18/15	ML-005	Th-228	0.0893	0.231	0.5	pCi/L	UJ	T06	No
SVP184172	PW35	11/18/15	ML-005	Th-230	0.179	0.254	0.439	pCi/L	UJ	T06	No
SVP184172	PW35	11/18/15	ML-005	Th-232	0.0595	0.119	0.161	pCi/L	UJ	T06	No
SVP184172	PW35	11/18/15	ML-015	U-234	1.31E-01	0.152	0.118	pCi/L	UJ	T02	No
SVP184172	PW35	11/18/15	ML-015	U-235	0	0	0.146	pCi/L	U		No
SVP184172	PW35	11/18/15	ML-015	U-238	0.0867	0.123	0.118	pCi/L	UJ	T06	No
SVP184172	PW35	11/18/15	SW846 6020	Vanadium	5.9		5.9	µg/L	U		No
SVP180867	PW36	05/18/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP180867	PW36	05/18/15	SW846 6020	Arsenic	120		1.2	µg/L	=		No
SVP180867	PW36	05/18/15	SW846 6020	Barium	450		0.22	µg/L	=		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP180867	PW36	05/18/15	SW846 6020	Cadmium	0.1		0.1	µg/L	U		No
SVP180867	PW36	05/18/15	SW846 6020	Chromium	1.2		1	µg/L	=		No
SVP180867	PW36	05/18/15	SW846 6020	Molybdenum	1.7		1	µg/L	=		No
SVP180867	PW36	05/18/15	SW846 6020	Nickel	0.83		0.8	µg/L	J	D04	No
SVP180867	PW36	05/18/15	ML-006	Ra-226	1.72	0.892	0.979	pCi/L	J	F01, T04	No
SVP180867	PW36	05/18/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP180867	PW36	05/18/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180867	PW36	05/18/15	ML-005	Th-228	0.0913	0.183	0.365	pCi/L	UJ	T06	No
SVP180867	PW36	05/18/15	ML-005	Th-230	0.061	0.193	0.449	pCi/L	UJ	T06	No
SVP180867	PW36	05/18/15	ML-005	Th-232	0.122	0.174	0.165	pCi/L	UJ	T06	No
SVP180867	PW36	05/18/15	ML-015	U-234	0.119	0.164	0.26	pCi/L	UJ	T06	No
SVP180867	PW36	05/18/15	ML-015	U-235	0.0154	0.17	0.403	pCi/L	UJ	T06	No
SVP180867	PW36	05/18/15	ML-015	U-238	0.112	0.131	0.101	pCi/L	UJ	T02	No
SVP180867	PW36	05/18/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Arsenic	110		1.2	µg/L	=		No
SVP180868	PW42	05/19/15	SW846 6020	Barium	270		0.22	µg/L	=		No
SVP180868	PW42	05/19/15	SW846 6020	Cadmium	0.2		0.1	µg/L	=		No
SVP180868	PW42	05/19/15	SW846 6020	Chromium	1		1	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Molybdenum	1		1	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Nickel	0.8		0.8	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Selenium	1.8		1.6	µg/L	J	D04	No
SVP180868	PW42	05/19/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP180868	PW42	05/19/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP182133	PW43	08/14/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP182133	PW43	08/14/15	SW846 6020	Arsenic	6.3		1.2	µg/L	=		No
SVP182133	PW43	08/14/15	SW846 6020	Barium	220		0.22	µg/L	=		No
SVP182133	PW43	08/14/15	SW846 6020	Cadmium	0.24		0.1	µg/L	=		No
SVP182133	PW43	08/14/15	SW846 6020	Chromium	1		1	µg/L	U		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SVP182133	PW43	08/14/15	SW846 6020	Molybdenum	1.9		1	µg/L	=		No
SVP182133	PW43	08/14/15	SW846 6020	Nickel	11		0.8	µg/L	=		No
SVP182133	PW43	08/14/15	ML-006	Ra-226	0.94	0.85	1.25	pCi/L	U	T04, T05	No
SVP182133	PW43	08/14/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP182133	PW43	08/14/15	SW846 6020	Thallium	1		0.55	µg/L	U		No
SVP182133	PW43	08/14/15	ML-005	Th-228	0.205	0.412	0.822	pCi/L	UJ	T06	No
SVP182133	PW43	08/14/15	ML-005	Th-230	1	0.55	0.933	pCi/L	UJ	T06	No
SVP182133	PW43	08/14/15	ML-005	Th-232	-0.0684	0.0974	0.504	pCi/L	UJ	T06	No
SVP182133	PW43	08/14/15	ML-015	U-234	3.8	1.15	0.164	pCi/L	=		No
SVP182133	PW43	08/14/15	ML-015	U-235	0.248	0.317	0.485	pCi/L	UJ	T06	No
SVP182133	PW43	08/14/15	ML-015	U-238	2.95	0.976	0.163	pCi/L	=		No
SVP182133	PW43	08/14/15	SW846 6020	Vanadium	2.4		2.4	µg/L	=		No
SLA182126	PW44	08/11/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SLA182126	PW44	08/11/15	SW846 6020	Arsenic	1.4		1.2	µg/L	=		No
SLA182126	PW44	08/11/15	SW846 6020	Barium	99		0.22	µg/L	=		No
SLA182126	PW44	08/11/15	SW846 6020	Cadmium	0.94		0.1	µg/L	=		No
SLA182126	PW44	08/11/15	SW846 6020	Chromium	1		1	µg/L	U		No
SLA182126	PW44	08/11/15	SW846 6020	Molybdenum	2		1	µg/L	=		No
SLA182126	PW44	08/11/15	SW846 6020	Nickel	1.5		0.8	µg/L	=		No
SLA182126	PW44	08/11/15	ML-006	Ra-226	0.446	0.611	1.07	pCi/L	UJ	T06	No
SLA182126	PW44	08/11/15	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SLA182126	PW44	08/11/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SLA182126	PW44	08/11/15	ML-005	Th-228	0.105	0.21	0.418	pCi/L	UJ	T06	No
SLA182126	PW44	08/11/15	ML-005	Th-230	0.244	0.29	0.419	pCi/L	UJ	T06	No
SLA182126	PW44	08/11/15	ML-005	Th-232	0	0	0.189	pCi/L	U		No
SLA182126	PW44	08/11/15	ML-015	U-234	1.59	0.735	0.196	pCi/L	=		No
SLA182126	PW44	08/11/15	ML-015	U-235	0.356	0.362	0.241	pCi/L	UJ	T02	No
SLA182126	PW44	08/11/15	ML-015	U-238	1.44	0.693	0.195	pCi/L	J	F01	No
SLA182126	PW44	08/11/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SLA182127	PW45	08/11/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SLA182127	PW45	08/11/15	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SLA182127	PW45	08/11/15	SW846 6020	Barium	72		0.22	µg/L	=		No
SLA182127	PW45	08/11/15	SW846 6020	Cadmium	0.11		0.1	µg/L	=		No
SLA182127	PW45	08/11/15	SW846 6020	Chromium	1		1	µg/L	U		No
SLA182127	PW45	08/11/15	SW846 6020	Molybdenum	100		1	µg/L	=		No
SLA182127	PW45	08/11/15	SW846 6020	Nickel	7.7		0.8	µg/L	=		No
SLA182127	PW45	08/11/15	ML-006	Ra-226	0.705	0.814	1.32	pCi/L	UJ	T06	No
SLA182127	PW45	08/11/15	SW846 6020	Selenium	22		1.6	µg/L	=		No
SLA182127	PW45	08/11/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SLA182127	PW45	08/11/15	ML-005	Th-228	0.296	0.299	0.2	pCi/L	UJ	T02	No
SLA182127	PW45	08/11/15	ML-005	Th-230	0.222	0.316	0.545	pCi/L	UJ	T06	No
SLA182127	PW45	08/11/15	ML-005	Th-232	0.148	0.277	0.544	pCi/L	UJ	T06	No
SLA182127	PW45	08/11/15	ML-015	U-234	2.82	0.972	0.404	pCi/L	=		No
SLA182127	PW45	08/11/15	ML-015	U-235	0.23	0.268	0.208	pCi/L	UJ	T02	No
SLA182127	PW45	08/11/15	ML-015	U-238	2.37	0.874	0.403	pCi/L	J	F01	No
SLA182127	PW45	08/11/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SLA179616	PW46	03/04/15	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SLA179616	PW46	03/04/15	SW846 6020	Arsenic	1.6		1.2	µg/L	=		No
SLA179616	PW46	03/04/15	SW846 6020	Barium	68		0.22	µg/L	=		No
SLA179616	PW46	03/04/15	SW846 6020	Cadmium	0.5		0.1	µg/L	=		No
SLA179616	PW46	03/04/15	SW846 6020	Chromium	1		1	µg/L	U		No
SLA179616	PW46	03/04/15	SW846 6020	Molybdenum	1		1	µg/L	U		No
SLA179616	PW46	03/04/15	SW846 6020	Nickel	1.4		0.8	µg/L	=		No
SLA179616	PW46	03/04/15	ML-006	Ra-226	1.15	0.701	0.732	pCi/L	J	T04	No
SLA179616	PW46	03/04/15	SW846 6020	Selenium	23		1.6	µg/L	=		No
SLA179616	PW46	03/04/15	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SLA179616	PW46	03/04/15	ML-005	Th-228	-1.5E-05	0.286	0.767	pCi/L	UJ	T06	No
SLA179616	PW46	03/04/15	ML-005	Th-230	1.36	0.819	0.944	pCi/L	J	F01, T04	No

Table E-4. CY 2015 Ground-Water Sampling Data for the SLAPS and SLAPS VPs

Site: SLAPS and SLAPS VPs											
Sample Name	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
SLA179616	PW46	03/04/15	ML-005	Th-232	0	0	0.224	pCi/L	U		No
SLA179616	PW46	03/04/15	ML-015	U-234	540	96	0.376	pCi/L	=		No
SLA179616	PW46	03/04/15	ML-015	U-235	27.4	5.45	0.374	pCi/L	=		No
SLA179616	PW46	03/04/15	ML-015	U-238	536	95.2	0.302	pCi/L	=		No
SLA179616	PW46	03/04/15	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No

VQs:

= Indicates that the data met all QA/QC requirements, and that the parameter has been positively identified and the associated concentration value is accurate.

J Indicates that the parameter was positively identified; the associated numerical value is the approximate concentration of the parameter in the sample.

U Indicates that the data met all QA/QC requirements, and that the parameter was analyzed for but was not detected above the reported sample quantitation limit.

UJ Indicates that the parameter was not detected above the reported sample quantitation limit and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Validation Reason Codes:

D04 Continuing CCV recovery was above the upper control limit.

F01 Blanks: Sample data were qualified as a result of the method blank.

T02 Radionuclide Quantitation: Analytical uncertainties were not met and/or not reported.

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

T05 Radionuclide Quantitation: Analytical result is less than the associated MDA, but greater than the counting uncertainty.

T06 Radionuclide Quantitation: Analytical result is less than both the associated counting uncertainty and MDA.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX F

CALCULATION OF THE RECORD OF DECISION GROUND-WATER EVALUATION GUIDELINES

THIS PAGE INTENTIONALLY LEFT BLANK

CALCULATION OF THE RECORD OF DECISION GROUND-WATER MONITORING GUIDELINES

This appendix briefly outlines the methodology used to develop the ground-water monitoring guidelines for select wells and analytes at the NC Sites. The development of these guidelines was necessary to meet the requirements of response-action monitoring and long-term monitoring specified in the ROD (USACE 2005). These requirements are also identified in the EMICY15 (USACE 2014). The results of these calculations are used in the EMDAR to evaluate ground-water monitoring data at the Latty Avenue Properties and the SLAPS and SLAPS VPs for CY 2015.

INTRODUCTION

Response-action monitoring is conducted for HZ-A and HZ-C ground water at the NC Sites to assess if water quality has improved due to source removals or if ground-water conditions have significantly degraded. Based on the ROD, a significantly degraded ground-water condition requires all of the following:

1) that soil COC concentrations have statistically increased in ground water (relative to the well's historical data and accounting for uncertainty) for more than a 12-month period. Significantly increased concentrations are defined as doubling of an individual COC concentration above the UCL of the mean (based on the historical concentration before remedial activity) for a period of 12 months;
2) that the degraded well is close enough to impact CWC; and
3) that a significant degradation of CWC surface water is anticipated (USACE 2005).

In addition to the previous requirements, the ROD specifies that the maximum contaminant level for total U of 30 µg/L be used as a monitoring guideline for both response-action and long-term monitoring of ground water. If ground-water monitoring indicates the presence of COCs at significantly increased concentrations and total U significantly above 30 µg/L, then an evaluation of potential response actions would be conducted.

METHODOLOGY

In order to evaluate ground water for significant degradation, the UCL must be calculated using the historical ground-water data (i.e., data collected before remedial activity). The UCL is used to represent a historical average concentration for an analyte in a particular well. As stated in the USEPA's *Supplemental Guidance to RAGS: Calculating the Concentration Term,* "because of the uncertainty associated with estimating the true average concentration at a site, the UCL_{95} of the arithmetic mean should be used for this variable" (USEPA 1992). Based on the previously specified guidance, a 95 percent confidence interval was used in the UCL calculations.

Consistent with the ROD, UCL_{95} values for the soil COCs are used in the EMDAR to evaluate if concentrations have statistically increased in ground water for more than a 12-month period. The soil COCs defined in the ROD include antimony, arsenic, barium, cadmium, chromium, molybdenum, nickel, selenium, thallium, total U, vanadium, Ra-226, Ra-228, Th-228, Th-230, Th-232, U-234, U-235, and U-238. Because the SLAPS well PW46 is a replacement well, pre-2006 data from PW38 were used to develop the ground-water monitoring guideline to compare with the PW46 results. PW46 was installed in April of 2006 near the former location of PW38 and is screened across the same interval. Similarly, pre-2006 data from HISS-06 and HISS-11 were used to develop the ground-water monitoring guidelines for the two replacement wells (HISS-06A and HISS-11A) installed in CY 2011 at the HISS. For wells located in areas in which a response action has occurred, significant degradation is defined as occurring if the concentration of any COC in a recent sample from that well is double its UCL_{95}, and the total U is significantly above 30 µg/L. The ROD ground-water monitoring guideline for the soil COC for a particular well is defined as equivalent to two times the UCL_{95} value.

The dataset used for this evaluation was reduced prior to performing the statistical analysis. Filtered data, results qualified with an "R" designation, and QC samples were removed from each of the datasets. The analytical result was used when the VQ was assigned an "=" or a "J". For nondetect chemical data (i.e., the VQ was assigned a "U" or "UJ"), the value used in the UCL_{95} calculation was half the DL. For nondetect radiological data, the reported value was used, except in cases in which the value reported was negative. In those cases, a value of zero was substituted for the negative value.

RESULTS

The USEPA software package ProUCL (Version 5.0) was used to calculate the UCL_{95} value. ProUCL computes parametric UCLs (for normal, lognormal, and gamma distributions) and nonparametric UCLs using several nonparametric methods (USEPA 2013). Based upon the data distribution and the associated skewness, ProUCL performs and recommends the appropriate UCL.

The UCL_{95} values are those recommended by ProUCL with the following exceptions.

- If the calculated UCL_{95} exceeded the maximum detected value, then the maximum detected value was used, as recommended in the USEPA's *Risk Assessment Guidance for Superfund Volume 1 Human Health Evaluation Manual (Part A)* (USEPA 1989c).
- If no values were detected for the COC in the historical database for that well, then the UCL_{95} was not determined. If only one value of the COC was detected, then the detected value was used.

The ground-water monitoring guidelines based on these UCL_{95} values are listed in Tables F-1 and F-2 for the Latty Avenue Properties and the SLAPS and SLAPS VPs, respectively.

Table F-1. ROD Monitoring Guidelines for Ground Water at the Latty Avenue Properties

Analyte Type	Soil COCs	HISS-01	HISS-06A[a]	HISS-09	HISS-10	HISS-11A[a]	HISS-14
Inorganics (µg/L)	Antimony	12	---	---	---	---	---
	Arsenic	---	---	---	---	5.2	---
	Barium	250	240	420	270	370	1,080
	Cadmium	---	---	---	1.4	---	---
	Chromium	13	2.2	---	2.4	7.0	---
	Molybdenum	23	40	22	5.6	4.8	---
	Nickel	20	34	21	3.8	20	11
	Selenium	570	770	19	7.6	---	610
	Thallium	4.6	---	---	---	---	5.8
	Total U	30	30	30	30	30	30
	Vanadium	37	31	17	16	---	250
Radionuclides (pCi/L)	Ra-226	5.3	---	---	---	16	4.2
	Th-228	1.9	2.4	3.2	3.4	3.4	2.0
	Th-230	4.2	7.0	7.4	6.0	5.0	21
	Th-232	---	1.8	---	0.2	---	---
	U-234	12	32	1.8	6.6	4.8	14
	U-235	---	4.2	---	---	---	---
	U-238	13	31	1.4	5.2	3.0	11

Table F-1. ROD Monitoring Guidelines for Ground Water at the Latty Avenue Properties

Analyte Type	Soil COCs	HISS-17S	HISS-18S	HISS-19S	HW21	HW22	HW23
Inorganics (µg/L)	Antimony	---	---	7.4	---	---	4.6
	Arsenic	---	6.6	510	6.8	2.4	320
	Barium	500	410	1,200	3,700	460	810
	Cadmium	---	---	---	2.8	1.6	3.4
	Chromium	12	---	3.0	7.0	9.0	8.1
	Molybdenum	16	---	10	5.6	3.4	26
	Nickel	30	39	7.0	44	7.0	12
	Selenium	250	---	---	110	17	---
	Thallium	---	---	8.0	6.2	---	5.4
	Total U	30	30	30	30	30	30
	Vanadium	18	16	4.4	12	4.0	6.4
Radionuclides (pCi/L)	Ra-226	5.7	5.5	2.5	8.4	11	2.4
	Th-228	2.4	3.2	10	4.2	1.8	2.6
	Th-230	3.8	5.8	12	5.2	3.8	5.2
	Th-232	---	1.9	---	---	---	1.0
	U-234	8.2	8.2	---	24	6.4	3.8
	U-235	---	---	---	2.0	---	---
	U-238	5.6	3.7	---	16	5.4	3.2

[a] The ROD evaluation criteria for HISS-06A and HISS-11A were calculated using historical data from the previous wells at these locations (HISS-06 and HISS-11).

Ground-Water Monitoring Guideline = 2 x UCL_{95}

Total U monitoring guide = 30 µg/L.

--- The analyte was not detected in the historical database, so a monitoring guideline was not developed.

Table F-2. ROD Monitoring Guidelines for Ground Water at the SLAPS and SLAPS VPs

Analyte Type	Soil COCs	B53W01D	B53W01S	B53W06S	B53W07D	B53W07S	B53W09S	B53W13S	B53W17S	B53W18S
Inorganics (µg/L)	Antimony	---	---	105	5.0	---	---	---	---	---
	Arsenic	170	---	---	150	140	---	---	---	3.6
	Barium	840	390	190	730	530	630	510	450	1,200
	Cadmium	---	---	---	---	---	---	---	8.8	---
	Chromium	7.2	15	47	5.6	11	9.6	9.1	7.0	51
	Molybdenum	---	---	22	4.0	4.4	14	3.2	21	28
	Nickel	---	30	16	12	5.2	83	38	5.2	910
	Selenium	---	---	---	4.0	5.2	700	790	140	---
	Thallium	---	8.0	---	7.4	---	---	7.0	---	---
	Total U	30	30	30	30	30	30	30	30	30
	Vanadium	19	44	48	12	17	24	---	83	54
Radionuclides (pCi/L)	Ra-226	4.4	---	3.8	3.4	7.2	2.5	---	---	7.2
	Th-228	1.6	1.0	1.5	---	2.2	3.0	4.4	3.8	7.0
	Th-230	5.8	2.9	3.9	4.4	4.0	5.0	6.0	5.6	8.0
	Th-232	---	---	---	---	---	---	---	---	1.4
	U-234	3.4	8.2	66	3.6	11	18	13	5.4	4.5
	U-235	---	---	2.9	---	---	6.1	---	4.4	---
	U-238	2.7	2.7	57	4.6	8.2	13	10	4.2	3.4

Table F-2. ROD Monitoring Guidelines for Ground Water at the SLAPS and SLAPS VPs

Analyte Type	Soil COCs	B53W19S	MW31-98	MW32-98	PW35	PW36	PW42	PW43	PW44	PW45	PW46[a]
Inorganics (µg/L)	Antimony	---	---	---	---	---	---	---	---	---	---
	Arsenic	36	---	5.8	90	220	280	53	13	---	7.0
	Barium	510	1,300	700	3,300	1,500	670	260	260	610	250
	Cadmium	0.7	3.8	3.8	0.6	---	0.8	---	---	---	1.2
	Chromium	290	4.6	5.6	16	3.2	52	3.5	---	---	37
	Molybdenum	130	35	3.0	32	8.0	6.0	6.4	12	1,500	2.2
	Nickel	1,100	7.8	4.0	35	13	28	3.6	---	67	3.4
	Selenium	4.2	390	740	2.8	3.8	---	---	---	7,200	710
	Thallium	7.7	---	9.8	7.4	14	7.6	---	---	---	---
	Total U	30	30	30	30	30	30	30	30	30	30
	Vanadium	36	110	54	35	13	12	3.1	---	---	67
Radionuclides (pCi/L)	Ra-226	1.4	3.4	1.6	8.0	2.0	4.0	6.1	1.8	2.4	22
	Th-228	5.2	4.6	1.4	2.6	2.6	1.6	2.4	3.4	2.5	2.1
	Th-230	6.0	4.0	4.0	4.1	3.6	3.4	2.6	12	5.8	60
	Th-232	2.2	---	0.4	2.3	---	---	---	---	---	7.0
	U-234	2.4	7.0	21	4.3	3.2	9.0	29	4.7	79	5,500
	U-235	---	5.9	9.4	---	---	---	2.2	---	3.0	290
	U-238	1.8	5.7	19	4.7	4.9	6.6	26	3.4	64	5,600

[a] The ROD evaluation criteria for PW46 were calculated using historical data from the previous well at this location (PW38).

Ground-Water Monitoring Guideline = 2 x UCL_{95}

Total U monitoring guide = 30 µg/L.

--- The analyte was not detected in the historical database, so a monitoring guideline was not developed.

APPENDIX G

WELL MAINTENANCE CHECKLISTS FOR THE ANNUAL GROUND-WATER MONITORING WELL INSPECTIONS CONDUCTED AT THE NORTH ST. LOUIS COUNTY SITES IN CY 2015

(On the CD-ROM on the Back Cover of this Report)

THIS PAGE INTENTIONALLY LEFT BLANK

CY 2015 WELL MAINTENANCE CHECKLISTS FOR THE HAZELWOOD INTERIM STORAGE SITE

THIS PAGE INTENTIONALLY LEFT BLANK

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1320

Monitoring Well Station Identification: HISS-01 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 7.61, TD – 26.25 (Estimated TD – 25.0)

Semi-soft bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1330

Monitoring Well Station Identification: HISS-06A ☐SLAPS* ☐SLDS ☒HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 7.82, TD – 22.10 (Estimated TD – 22.90)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1310

Monitoring Well Station Identification: HISS-10 ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 7.47, TD – 25.90 (Estimated TD – 25.7)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1300

Monitoring Well Station Identification: HISS-11A ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 12.48, TD – 23.50 (Estimated TD – 23.2)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1340

Monitoring Well Station Identification: HISS-17S ☐SLAPS* ☐SLDS ☒HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 6.80, TD – 22.2 (Estimated TD – 22.6)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1245

Monitoring Well Station Identification: HISS-19S ☐SLAPS* ☐SLDS ☒HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 14.20, TD – 29.10 (Estimated TD – 29.6)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1350

Monitoring Well Station Identification: HW22 ☐ SLAPS* ☐ SLDS ☒ HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – 13.20, TD – 27.70 (Estimated TD - 30.0)

HW22 ID tag/label need to be swapped with the ID tag/label for HW23

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1350

Monitoring Well Station Identification: HW23 ☐SLAPS* ☐SLDS ☒HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – 9.95, TD – 91.8 (Estimated TD – 93.5)

HW23 ID tag/label need to be swapped with the ID tag/label for HW22

* - SLAPS and SLAPS Vicinity Properties (VPs)

WELL MAINTENANCE CHECKLISTS FOR CY 2015
THE ST. LOUIS AIRPORT SITE

THIS PAGE INTENTIONALLY LEFT BLANK

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1040

Monitoring Well Station Identification: B53W01D ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 10.73, TD – 95.6 (Estimated TD – 96.0)

Soft bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1040

Monitoring Well Station Identification: B53W01S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 12.68, TD – 28.5 (Estimated TD – 28.5)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0955

Monitoring Well Station Identification: B53W06S ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 15.96, TD – 36.0 (Estimated TD – 36.0)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0945

Monitoring Well Station Identification: B53W07D ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 10.99, TD – 87.55 (Estimated TD – 89.0)

Soft bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0945

Monitoring Well Station Identification: B53W07S ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 18.07, TD – 36.0 (Estimated TD – 36.0)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0915

Monitoring Well Station Identification: B53W09S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – 16.97, TD – 35.85 (Estimated TD – 36.0)

Paint needed.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1015

Monitoring Well Station Identification: B53W13S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☒	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☒	☐	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☐	☒	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – 9.40, TD – 29.05 (Estimated TD – 29.0)

Protective casing in need of repair/retrofit. Lock is routinely sheared off by mowers.

Addition of protective bollards recommended.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0900

Monitoring Well Station Identification: B53W17S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 8.84, TD – 37.40 (Estimated TD – 35.5)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1030

Monitoring Well Station Identification: B53W18S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 13.36, TD – 27.45 (Estimated TD – 27.3)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1220

Monitoring Well Station Identification: B53W19S ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 7.14, TD – 22.25 (Estimated TD – 22.5)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1005

Monitoring Well Station Identification: MW31-98 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	X		
2.	Is well identification visible on top of well casing for flush mount well?			X
3.	Is well accessible?	X		
4.	Is well covered/surrounded by vegetation?		X	
5.	Is there standing water or debris inside well casing? If so, remove water.		X	
6.	Is the weep hole open? If not, clear blockage.	X		
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?		X	
8.	Is the riser casing dented or damaged?		X	
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	X		
10.	Does the pad move or is it unstable?		X	
11.	Are there gaps between pad and well casing?		X	
12.	Are there signs of erosion around the well or pad?		X	
13.	Is riser cap present?	X		
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?			X
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?			X
16.	Is the well secure (shut properly or locked, if applicable)?	X		
17.	Do the locks work properly?	X		
18.	Are the locks rusted?		X	
19.	Does surface water flow away from well casing (i.e., no ponding)?	X		
20.	Is TOC elevation mark clearly visible?	X		
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.		X	
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.		X	

Comments / Observations regarding this well.

WL – 10.67, TD – 35.7 (Estimated TD – 34.0)

Semi-soft bottom

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1000

Monitoring Well Station Identification: MW32-98 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 12.93, TD – 23.0 (Estimated TD – 20.3)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1220

Monitoring Well Station Identification: PW35 ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☒	☐	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☐	☒	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☒	☐	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – unable to get (see below), TD - unable to get (see below)

Protective vault is full of frozen water over the top of the compression cap.

Needs well pad repair/replacement.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1220

Monitoring Well Station Identification: PW36 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☐	☐	☒
2.	Is well identification visible on top of well casing for flush mount well?	☒	☐	☐
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☒	☐	☐
6.	Is the weep hole open? If not, clear blockage.	☐	☐	☒
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☐	☒	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☒	☐	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☒	☐	☐

Comments / Observations regarding this well.

WL – unable to get (see below) TD – unable to get (see below)

Protective vault is full of frozen water over the top of the compression cap.

Needs well pad repair/replacement.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0915

Monitoring Well Station Identification: PW42 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 10.84, TD – 87.5 (Estimated TD – 85.1)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 0930

Monitoring Well Station Identification: PW43 ☒SLAPS* ☐SLDS ☐HISS

	Question	Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☒	☐	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 14.35, TD – 27.75 (Estimated TD – 25.5)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1210

Monitoring Well Station Identification: PW44 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☒	☐	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☒	☐	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☐	☒	☐
10.	Does the pad move or is it unstable?	☒	☐	☐
11.	Are there gaps between pad and well casing?	☒	☐	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 4.75, TD – 20.4 (Estimated TD – 20.1)

Well has frozen water inside the protective casing even though the weep hole is open and unobstructed.

Well pad needs to be replaced.

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1200

Monitoring Well Station Identification: PW45 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 7.70, TD – 22.65 (Estimated TD – 22.3)

* - SLAPS and SLAPS Vicinity Properties (VPs)

Well Maintenance Checklist

Name of Observer(s): L. Hoover, N. Gross Date: 02/24/15 Time: 1050

Monitoring Well Station Identification: PW46 ☒SLAPS* ☐SLDS ☐HISS

		Yes	No	N/A
1.	Is well identification number visible on outer casing for a stick up well?	☒	☐	☐
2.	Is well identification visible on top of well casing for flush mount well?	☐	☐	☒
3.	Is well accessible?	☒	☐	☐
4.	Is well covered/surrounded by vegetation?	☐	☒	☐
5.	Is there standing water or debris inside well casing? If so, remove water.	☐	☒	☐
6.	Is the weep hole open? If not, clear blockage.	☒	☐	☐
7.	Is the protective casing dented, damaged, rusted, or covered in other matter (i.e., bird droppings)?	☐	☒	☐
8.	Is the riser casing dented or damaged?	☐	☒	☐
9.	Is the concrete pad intact (free of cracks, chips, etc.)?	☒	☐	☐
10.	Does the pad move or is it unstable?	☐	☒	☐
11.	Are there gaps between pad and well casing?	☐	☒	☐
12.	Are there signs of erosion around the well or pad?	☐	☒	☐
13.	Is riser cap present?	☒	☐	☐
14.	Do the wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☒	☐	☐
15.	Do the flush mount wells in the Mississippi River and Coldwater Creek floodplain have a properly working pressure cap?	☐	☐	☒
16.	Is the well secure (shut properly or locked, if applicable)?	☒	☐	☐
17.	Do the locks work properly?	☒	☐	☐
18.	Are the locks rusted?	☐	☒	☐
19.	Does surface water flow away from well casing (i.e., no ponding)?	☒	☐	☐
20.	Is TOC elevation mark clearly visible?	☒	☐	☐
21.	Has there been a change in land use that impacts the well? If yes, describe in comment section.	☐	☒	☐
22.	Will the well need any type of attention before the next groundwater surface measurement? If yes, describe in comment section.	☐	☒	☐

Comments / Observations regarding this well.

WL – 11.89, TD – 22.25 (Estimated TD – 23.1)

* - SLAPS and SLAPS Vicinity Properties (VPs)

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX H

DOSE ASSESSMENT ASSUMPTIONS

THIS PAGE INTENTIONALLY LEFT BLANK

DOSE ASSESSMENT ASSUMPTIONS

DOSE FROM THE LATTY AVENUE PROPERTIES TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time-employee business receptor was evaluated to determine the maximally exposed individual from the Latty Avenue Properties, because the RA conducted on the Latty Avenue Properties occurred in the vicinity of the receptor. The business receptor worked full-time outside of the facility, located approximately 30 m south of the center of the VP-04(L) excavation area. Exposure time was 2,000 hours per year (250 days per year).

Gamma radiation and radon exposure were considered negligible at the excavation area. Therefore, only exposure to airborne radioactive particulates was considered in the dose estimate calculation.

Airborne Radioactive Particulates

The EDE of less than 0.1 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 30 m south of the center of the VP-04(L) excavation (Leidos 2016b). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

Total Effective Dose Equivalent

$$\text{TEDE} = \text{CEDE (airborne particulates)} + H_{MEI}\text{ (external gamma)} + S_{MEI}\text{ (airborne radon)}$$

$$\text{TEDE} = <0.1\text{ mrem/year} + 0\text{ mrem/year} + 0\text{ mrem/year} = <0.1\text{ mrem/year}$$

DOSE FROM THE ST. LOUIS AIRPORT SITE TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time-employee business receptor was evaluated to determine the maximally exposed individual from the SLAPS. The business receptor worked full time outside of the facility, located approximately 500 m west-southwest of the center of the SLAPS Loadout area. Exposure time was 2,000 hours per year (250 days per year).

Gamma radiation and radon exposure measured at the SLAPS perimeter assumes a hypothetical member of the public would be at the same location 24 hours per day, 365 days per year. Off-site dose to the nearest member of the public is dependent upon the member’s proximity to the gamma source and amount of time spent at the affected site. A more realistic approach to project dose is to evaluate members of the public as either residence-based or off-site-worker-based receptors. A residence-based, off-site exposure assumes a 100-percent occupancy rate at a given location. No public areas or residences exist near the SLAPS; therefore, exposure to a residence-based receptor is greatly reduced due to the distance relative to the site. An off-site-worker exposure assumes that a worker’s occupancy rate is 23 percent, based on 40 hours per week for 50 weeks per year. The off-site-worker-based receptor is a more realistic choice to represent the hypothetical maximally exposed individual, because of the proximity of the receptor. A realistic assessment of dose can be performed using conservative assumptions of occupancy rate and distance from the source.

The following dose assessment is for a maximally exposed individual who works full time (2,000 hours per year) at a location approximately 500 m west-southwest of the center of the SLAPS Loadout area.

Airborne Radioactive Particulates

The EDE of less than 0.1 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 500 m west-southwest of the center of the SLAPS Loadout area (Leidos 2016c). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

External Gamma Pathway

The SLAPS TLDs measured an above background annual exposure of 12 mrem per year based on 8,760 hours of continuous exposure. The dose equivalent due to gamma exposure for the maximally exposed individual is estimated by assuming the site approximates a line source with a source strength (H_1) that is the average of the TLD measurements between the source and the receptor (Cember 1996).

$$H_1 = 12 \text{ mrem/year}$$

Based on a 100-percent occupancy rate, the exposure rate (H_2) to the receptor was calculated.

$$H_2 = H_1 \times \frac{h_1}{h_2} * \frac{\tan^{-1}(L/h_2)}{\tan^{-1}(L/h_1)}$$

$$H_2 = 2.4\text{E-03 mrem/year}$$

where:

- H_2 = exposure rate to the receptor (continuous exposure)
- H_1 = exposure rate to TLDs
- h_2 = distance from source to receptor = 500 m
- h_1 = distance from source to TLDs = 1.6 m
- L = average distance from centerline of the line source (H_1) to the end of the line source = 50 m

The actual dose to the maximally exposed individual, who is present during a normal work year only, was calculated.

$$H_{MEI} = H_2 \times \frac{2{,}000 \text{ hours per work year}}{8{,}760 \text{ hours per total year}} = 6\text{E-04 mrem/year}$$

$$H_{MEI} = <0.1 \text{ mrem/year}$$

Airborne Radon Pathway

The SLAPS ATDs measured an above background annual exposure of 0.04 pCi/L based on 8,760 hours of continuous exposure. Exposure to the receptor from radon (and progeny) was estimated using a dispersion factor (C_2) and the average ATD monitoring data (S_1) at the site perimeter between the source and the receptor (Leidos 2016c).

$$S_1 = 0.04 \text{ pCi/L}$$

The actual radon exposure dose to the hypothetical maximally exposed individual was calculated.

$$S_{MEI} = S_1 \times F \times DCF \times T \times C_1 \times C_2$$

$$S_{MEI} = 0.01\ \text{pCi/L} \times 0.0005 \frac{\text{WL}}{\text{pCi/L}} \times 1{,}250 \frac{\text{mrem}}{\text{WLM}} \times \frac{2{,}000\ \text{hours}}{\text{year}} \times \frac{1\ \text{month}}{170\ \text{hours}} \times 0.0048 = 0\ \text{mrem/year}$$

where:

- S_{MEI} = radon exposure to the hypothetical maximally exposed individual
- S_1 = fenceline average of ATD measurements between source and receptor
- F = equilibrium fraction of 0.05 WL per 100 pCi/L (DOE 1998)
- DCF = dose conversion factor (USEPA 1989b) = 1,250 mrem per working level month (WLM)
- T = exposure time = 2,000 hours per year
- C_1 = occupancy factor constant = 1 month per 170 hours
- C_2 = constant derived using CAP-88PC Version 4.0, the Lambert – St. Louis International Airport wind file (assuming a distance of 500 m), and an impacted surface area of 2,522 m^2). Calculation assumes a 1 curie (Ci) per year radon release rate, then ratios the concentrations at 1 m and 500 m to determine the constant.
- WL = working level (concentration unit)
- WLM = working level month (exposure unit)

Total Effective Dose Equivalent

$$\text{TEDE} = \text{CEDE (airborne particulates)} + H_{MEI}\ \text{(external gamma)} + S_{MEI}\ \text{(airborne radon)}$$

$$\text{TEDE} = <0.1\ \text{mrem/year} + <0.1\ \text{mrem/year} + <0.1\ \text{mrem/year} = <0.1\ \text{mrem/year}$$

DOSE FROM THE ST. LOUIS AIRPORT SITE VICINITY PROPERTIES TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time, residence-based receptor was evaluated to determine the maximally exposed individual from the SLAPS VPs, because the RA work conducted on the SLAPS VPs occurred in the vicinity of the receptor. The residence-based receptor lived full-time outside (approximately 100 m northwest) of the St. Cin Park excavation area. Exposure time was 8,760 hours per year (365 days per year).

Gamma radiation and radon exposure were considered negligible at the excavation area. Therefore, only exposure to airborne radioactive particulates was considered in the dose estimate calculation.

Airborne Radioactive Particulates

The EDE of 0.1 mrem per year to the receptor was calculated using activity fraction and air particulate monitoring data to determine a source term, and then using the USEPA CAP88-PC modeling code to calculate dose to the receptor at 100 m northwest of the center of the St. Cin Park excavation area (Leidos 2016c). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A of this EMDAR.

Total Effective Dose Equivalent

$$TEDE = CEDE \text{ (airborne particulates)} + H_{MEI} \text{ (external gamma)} + S_{MEI} \text{ (airborne radon)}$$

$$TEDE = 0.1 \text{ mrem/year} + 0 \text{ mrem/year} + 0 \text{ mrem/year} = 0.1 \text{ mrem/year}$$

DOSE FROM COLDWATER CREEK TO A MAXIMALLY EXPOSED INDIVIDUAL

The following dose assessment is for a maximally exposed individual assumed to be a youth who spends time at CWC for recreational purposes.

Contaminated Water Ingestion (Leidos 2016d)

The UCL_{95} values of the average contamination values measured in CWC surface water in CY 2015 at each monitoring station (Table H-1) were used to calculate the EDE to the receptor from an intake of contaminated water. Assumptions follow:

The receptor visits CWC as a recreational user once every 2 weeks (26 visits per year), and the receptor drinks 2 L per day of contaminated water from CWC during each visit (USEPA 1989c).

The TEDE due to ingestion of surface water ($TEDE_w$) was calculated.

$$TEDE_W = \Sigma\ (TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$$TEDE_i = (UCL_{95}) \text{ pCi/L} \times 2.0 \text{ L/day} \times 26 \text{ days/year} \times \text{DCF mrem/pCi}$$

Table H-1. UCL_{95} Values for Radionuclides for CY 2015

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.30	pCi/L
Th-228	0.61	pCi/L
Th-230	0.57	pCi/L
Th-232	0.43	pCi/L
Total U	2.35	pCi/L

The DCFs (ORNL 2014) for radionuclides present in CWC surface water are presented in Table H-2.

Table H-2. Radionuclide Dose Conversion Factors for CY 2015

Radionuclides	DCF	Unit
Ra-226	2.97E-03	mrem/pCi
Th-228	5.07E-04	mrem/pCi
Th-230	9.10E-04	mrem/pCi
Th-232	1.07E-03	mrem/pCi
Total U	2.63E-04	mrem/pCi

The USEPA software ProUCL, Version 5.0, software was used to determine the UCL_{95} values for radiological contaminants present in CWC (Leidos 2016d). The UCL_{95} values are presented in Table H-1.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.30 \text{ pCi/L} \times 2.0 \text{ L/day} \times 26 \text{ days/year} \times 2.97\text{E-03 mrem/pCi} = 2.01\text{E-01 mrem/year}$$

$$TEDE_{Th\text{-}228} = 0.61 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 5.07\text{E-04 mrem/pCi}$$
$$= 1.61\text{E-02 mrem/year}$$

$$TEDE_{Th\text{-}230} = 0.57 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 9.10\text{E-04mrem/pCi}$$
$$= 2.70\text{E-02 mrem/year}$$

$$TEDE_{Th\text{-}232} = 0.43 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 1.07\text{E-3 mrem/pCi}$$
$$= 2.39\text{E-02 mrem/year}$$

$$TEDE_{Tot\text{-}U} = 2.35 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 2.63\text{E-04 mrem/pCi}$$
$$= 3.21\text{E-02 mrem/year}$$

$$TEDE_{W} = 3.00\text{E-01 mrem/year}$$

Contaminated Sediment Ingestion (Leidos 2106d)

The UCL_{95} values of the average contamination values measured in CWC sediment in CY 2015 at each monitoring station (Table H-3) were used to calculate the EDE to the receptor from an intake of contaminated sediment. Assumptions follow:

The receptor visits CWC as a recreational user once every 2 weeks (26 visits per year). The receptor ingests 50 mg per day of contaminated sediment from CWC during each visit (USEPA 1989c).

The TEDE due to ingestion of contaminated sediment ($TEDE_S$) was calculated.

$$TEDE_S = \Sigma\ (TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$$TEDE_i = (UCL_{95}) \text{ picocuries per gram (pCi/g)} \times 0.05 \text{ gram (g)/day} \times 26 \text{ days/year} \times \text{DCF mrem/pCi}$$

Table H-3. UCL_{95} Values for Radionuclide for CY 2015

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.17	pCi/g
Ra-228	1.05	pCi/g
Th-228	1.27	pCi/g
Th-230	2.74	pCi/g
Th-232	1.02	pCi/g
Total U	2.15	pCi/g

The DCFs (ORNL 2014) for radionuclides present in CWC sediment are presented in Table H-4.

Table H-4. Radionuclide Dose Conversion Factors for CY 2015

Radionuclides	DCF	Unit
Ra-226	2.97E-03	mrem/pCi
Ra-228	1.45E-02	mrem/pCi
Th-228	5.07E-04	mrem/pCi
Th-230	9.10E-04	mrem/pCi
Th-232	1.07E-03	mrem/pCi
Total U	2.63E-04	mrem/pCi

The USEPA ProUCL, Version 5.0, software was used to determine UCL_{95} values for radiological contaminants present in CWC sediment (Leidos 2016d). The UCL_{95} values are presented in Table H-3.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.17 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ days/year} \times 2.97\text{E-03 mrem/pCi} = 4.52\text{E-03 mrem/year}$$

$$TEDE_{Ra\text{-}228} = 1.05 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ day/year} \times 1.45\text{E-02 mrem/pCi} = 1.98\text{E-02 mrem/year}$$

$$TEDE_{Th\text{-}228} = 1.27 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ day/year} \times 5.07\text{E-04 mrem/pCi} = 8.37\text{E-04 mrem/year}$$

$$TEDE_{Th\text{-}230} = 2.74 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ day/year} \times 9.10\text{E-04 mrem/pCi} = 3.24\text{E-03 mrem/year}$$

$$TEDE_{Th\text{-}232} = 1.02 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ day/year} \times 1.07\text{E-3 mrem/pCi} = 1.42\text{E-03 mrem/year}$$

$$TEDE_{Tot\text{-}U} = 2.15 \text{ pCi/g} \times 0.05 \text{ g/day} \times 26 \text{ day/year} \times 2.63\text{E-4 mrem/pCi} = 7.35\text{E-04 mrem/year}$$

$$TEDE_S = 3.05\text{E-02 mrem/year}$$

Total Effective Dose Equivalent

$$TEDE = TEDE_W + TEDE_S$$

$$TEDE = 3.00\text{E-01 mrem/year} + 3.05\text{E-02 mrem/year} = 0.3 \text{ mrem/year}$$