REVISION 0

NORTH ST. LOUIS COUNTY SITES ANNUAL ENVIRONMENTAL MONITORING DATA AND ANALYSIS REPORT FOR CALENDAR YEAR 2014

ST. LOUIS, MISSOURI

JUNE 30, 2015

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

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prepared by:

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

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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
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)
CEDE	committed effective dose equivalent
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	*Code of Federal Regulations*
Ci	curie(s)
cm	centimeter(s)
COC	contaminant of concern
COD	chemical oxygen demand
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
DOD QSM	*Department of Defense Quality Systems Manual for Environmental Laboratories*
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
EMICY	Environmental Monitoring Implementation for Calendar Year
EMICY14	*Environmental Monitoring Implementation Plan for the North St. Louis County Sites for CY 2014*
EMP	Environmental Monitoring Program

ACRONYMS AND ABBREVIATIONS (Continued)

ft	foot/feet
ft^2	square foot/feet
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
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
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
mSv/yr	millisievert(s) per year
mL	milliliter(s)
mL/L/hr	milliliter(s) per liter per hour
mL/min	milliliter(s) per minute
mrem	millirem
mrem/pCi	millirem per picocurie
mrem/qtr	millirem per quarter
mrem/yr	millirem per year
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

ACRONYMS AND ABBREVIATIONS (Continued)

ORP	oxidation reduction potential
Pa	protactinium
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
QC	quality control
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*
SAIC	Science Application International Corporation
SLAPS	St. Louis Airport Site
SLS	St. Louis Sites
SOP	standard operating procedure
SOR	sum of ratios
SS	settleable solid(s)
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(s)
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
yd^3	cubic yard(s)

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EXECUTIVE SUMMARY

This Annual Environmental Monitoring Data and Analysis Report (EMDAR) for calendar year (CY) 2014 applies to the North St. Louis County (NC) Sites within 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 within the FUSRAP. Environmental monitoring of various media at the St. Louis Airport Site (SLAPS), SLAPS Vicinity Properties (VPs), and the Latty Avenue Properties that include the Hazelwood Interim Storage Site (HISS), Futura Coatings Company (Futura), and 10 Latty Avenue VPs is required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The purpose of this report is:

1) to document the environmental monitoring activities, and
2) to assess whether the 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 2014, 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 of residual contaminants and assessment of the 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 2014* (EMICY14) (USACE 2013) was conducted as planned during CY 2014. The evaluation of environmental monitoring data for all NC Sites demonstrates compliance with *Record of Decision for the North St. Louis County Sites* (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 EMICY14 (USACE 2013). In addition to being used for environmental monitoring purposes, radiological air data were also used as inputs to calculate total effective dose equivalent (TEDE) to the reasonably maximally exposed (RME) member of the public for the NC Sites.

The TEDEs calculated for the RME individual at the NC Sites were all less than 0.1 millirem per year (mrem/yr) (0.001 millisievert per year [mSv/yr]). The calculated TEDE is compliant with the 100 mrem/yr (1 mSv/yr) limit provided in 10 *Code of Federal Regulations (CFR)* 20.1301.

The radiological air monitoring results conducted at the NC Sites demonstrated compliance with all of the ARARs for the NC Sites, as described in Tables 2-1 through 2-4 of the EMICY14 (USACE 2013).

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 EMICY14 (USACE 2013).

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

CY 2014 was the thirteenth year during which 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 2014 (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).

USACE laboratory waste water 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 EMICY14 (USACE 2013). During CY 2014, no exceedances of the discharge limits occurred at the USACE laboratory or the NC Sites.

COLDWATER CREEK MONITORING

The CY 2014 Coldwater Creek (CWC) surface-water and sediment sampling events completed in March and October of 2014 evaluated the physical, radiological, and chemical conditions in the creek. During the March and October sampling events, samples were collected at each of the six surface-water and sediment sampling locations (C002 through C007). For the October sampling event, two additional sampling locations (C008 and C009) were established and sampled. These additional sampling locations are shown on Figure 3-3. The data collected were compared to the monitoring guidelines and/or remediation goals (RGs) as described in Section 2.2.3 of the EMICY14 (USACE 2013).

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

GROUND-WATER MONITORING

Ground water was sampled during CY 2014 at the NC Sites following a protocol for individual wells and analytes, and 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 EMICY14 (USACE 2013) and were used for comparison and discussion purposes. The ROD ground-water monitoring guidelines (i.e., 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 EMICY14 (USACE 2013) and in Section 4.0 and Appendix F of this report. For those wells at which an analyte exceeded the ROD guidelines at least once during CY 2014 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 2014. Five contaminants of concern (COCs), (chromium and molybdenum in HISS-10; uranium (U)-234 in HISS-10 and HW22; U-238 in HISS-10; and total U in HISS-01) were above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties during CY 2014. Because a significant degrading 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 2014. Concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in this well during CY 2014.

The Mann-Kendall Trend Test was performed for two COCs in three HZ-A wells (molybdenum in HISS-10 and total U in HISS-01, HISS-10, and HW22) during CY 2014. The Mann-Kendall Trend Test resulted in no statistically significant trend for molybdenum in HISS-10. A statistically significant increasing trend was identified for total U concentrations in HISS-01, HISS-10, and 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. A trend analysis was not conducted for chromium in HISS-10, because the frequency of non-detect values in the dataset exceeds 50 percent.

Concentrations of all soil COCs were below the NC ROD ground-water criteria in CY 2014 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 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 site, ground water in the HZ-A zone 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 the HZ-C ground water beneath the Latty Avenue Properties is generally toward the northeast at an average horizontal gradient of 0.0015 ft/ft in both May and December of 2014.

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

At the SLAPS and SLAPS VPs, 13 ground-water wells were sampled for various parameters during CY 2014. Eleven (11) wells, screened in HZ-A, were sampled at the SLAPS and the adjacent ballfields. Five inorganic analytes (barium, cadmium, chromium, molybdenum, and nickel) and two radiological contaminants (U-238 and total U) were detected in HZ-A ground water at concentrations above the ROD guidelines. A comparison of the data indicates that the nickel concentrations in B53W13S and the total U concentrations in PW46 have been above the ROD guideline for a period of at least 12 months. Because a significant degrading 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 2014. However, because nickel and total U levels have been above the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent 5-year reviews.

During CY 2014, two wells screened across the deeper HZs (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs. No soil COCs exceeded the ROD guidelines in CY 2014 ground-water samples from these two wells. Therefore, the CY 2014 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 (B53W13S, B53W18S, and B53W19S), molybdenum (B53W18S), nickel (B53W13S, B53W19S, and PW43), and total U (B53W13S and PW46). Statistically significant increasing trends were observed for chromium in B53W13S and B53W18S; molybdenum in B53W18S; nickel in B53W13S and B53W19S; and total U in B53W13S. No trend was observed for barium in B53W19S; chromium in B53W19S; nickel in PW43; or total U in PW46. Trend analysis was not performed for cadmium in B53W19S, because the frequency of non-detect values in the dataset exceeds 50 percent.

Potentiometric surface maps were created from ground-water elevations measured in May and December to illustrate ground-water flow conditions in wet and dry seasons, respectively. The potentiometric data indicated 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) 2014 applies to the North St. Louis County (NC) Sites (Figure 1-1) within 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 within the FUSRAP. The NC Sites consist of the St. Louis Airport Site (SLAPS), its associated vicinity properties (VPs) (i.e., SLAPS VPs) (Figure 1-2), and the Latty Avenue Properties (Figure 1-3). The Latty Avenue Properties include the Futura Coatings Company (Futura), the Hazelwood Interim Storage Site (HISS), and the Latty Avenue VPs. 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 under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

1.2 PURPOSE

The purpose of this report is to document the environmental monitoring activities and to assess whether the remedial actions (RAs) being performed at the NC Sites had a measurable environmental impact. In addition, this report serves to enhance the reader's awareness of the current condition of the NC Sites, summarize the data collection efforts for CY 2014, and provide analysis of the CY 2014 environmental monitoring data results. This document presents the following information:

- Sample collection data for various media at each site and interpretation of CY 2014 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 2014* [EMICY14] [USACE 2013]);
- Dose assessments for radiological contaminants as appropriate;
- A summary of trends based on changes in contaminant concentrations, 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 *National Priorities List, St. Louis Airport/Hazelwood Interim Storage/FUTURA Coatings Co.* (NPL) (USEPA 1989a). The three NPL sites have been involved with some of the following: 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 *Record of Decision for the St. Louis North County Sites* (ROD) (USACE 2005).

During CY 2014, the following documents were finalized for the NC Sites:

- *Review of the Radiation Protection Program Fourth Quarter 2013* (January 9)
- *Pre-Design Investigation Work Plan for Coldwater Creek from Frost Avenue to St. Denis Bridge, St. Louis, Missouri* (February 12);
- *Byassee Properties Pre-Design Investigation Work Plan, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (February 18);
- *CY2013 Fourth Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (March);
- *Pre-Design Investigation Work Plan for Coldwater Creek from McDonnell Boulevard to Frost Avenue, St. Louis, Missouri* (March 31);
- *CY2014 First Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (June);
- *CY2014 Second Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (July);
- *Post-Remedial Action Report and Final Status Survey Evaluation for the St. Louis Airport Site Vicinity Property 16, St. Louis, Missouri* (July 9);
- *North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report For Calendar Year 2013, St. Louis, Missouri* (July 23);
- *Pre-Design Investigation Work Plan for the St. Louis Airport Site Vicinity Property Latty Avenue, St. Louis, Missouri* (August 25);
- *Pre-Design Investigation Work Plan for the St. Louis Airport Site Vicinity Property Pershall Road Property, St. Louis, Missouri* (August 28);
- *Pre-Design Investigation Work Plan for the St. Louis Airport Site Vicinity Properties 02(C), 03(C), 04(C), 05(C), 06(C), 07(C), and 08(C), St. Louis, Missouri* (August 28);
- *Pre-Design Investigation Work Plan for the St. Louis Airport Site Vicinity Properties (VPs) 56, 57, 58, 59, 01(C), VP-55 Area East of VP-55, and the Pershall Road South Ditch, St. Louis, Missouri* (August 28);
- *Pre-Design Investigation Summary Report and Final Status Survey Evaluation for the St. Louis Airport Site Vicinity Properties 01, 02, 07, 13, 14, 15, and Investigation Area 11 (partial), St. Louis, Missouri* (September 3);

- *Post-Remedial Action Report and Final Status Survey Evaluation for the Latty Avenue Property Futura, St. Louis, Missouri* (September 4);
- *Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (September 17);
- *Remedial Design/Remedial Action Work Description, Coldwater Creek – Area 1, Supplement No. 1 to the Remedial Action Work Plan Coldwater Creek Properties, FUSRAP North St. Louis County Sites, St. Louis, Missouri* (September 17);
- *CY2014 Third Quarter Radiation Protection Program Review, St. Louis, Missouri* (October 23)
- *CY2014 Third Quarter Laboratory QA/QC Report for the FUSRAP St. Louis Radioanalytical Laboratory & Associated Satellite Laboratories* (November);
- *Pre-Design Investigation Work Plan for the St. Louis Airport Site Vicinity Property Frost Avenue Property, St. Louis, Missouri* (November 4);
- *Pre-Design Investigation Summary Report for the St. Louis Airport Site Vicinity Property Investigation Area 10, St. Louis, Missouri* (November 6);
- *Addendum to the Post-Remedial Action Report and Final Status Survey Evaluation for the Latty Avenue Vicinity Properties 01(L) and Parcel 10K530087 (including Parcels 10K530065 and 10K530076), St. Louis, Missouri* (December 19); and
- *Environmental Monitoring Implementation Plan for the North St. Louis County Sites for Calendar Year 2014* (December 23).

1.3.1 Latty Avenue Properties Calendar Year 2014 Remedial Actions

During CY 2014, no RAs or *Multi-Agency Radiation Survey and Site Investigation (MARSSIM)* (DOD 2000) Class 1 verifications were performed at the Latty Avenue Properties.

During CY 2014, MARSSIM Class 2 verifications were performed inside the VP-01(L) buildings and in the VP-01(L) right-of-way (ROW). MARSSIM Class 3 verifications were performed at Parcels 10K530065 and 10K530076. Verifications were performed to confirm the ROD remediation goals (RGs) were achieved.

During CY 2014, characterizations/pre-design investigations (PDIs) were performed on Latty Avenue, on the Latty Avenue ROW, and on VP-04(L).

1.3.2 St. Louis Airport Site and St. Louis Airport Site Vicinity Properties Calendar Year 2014 Remedial Actions

During CY 2014, RAs were performed at the following SLAPS-related investigation areas (IAs) and VPs (Figure 1-2): IA-09 (Ballfields) Phase 2B, VP-57 and VP-58, and the Pershall Road South Ditch. RAs at the Ballfields Phase 2B were performed in the first and second quarters. RAs at VP-57 and VP-58 and the Pershall Road South Ditch were performed in the second, third, and fourth quarters. A total of 4,152 cubic yards (yd^3) (3,174 cubic meters [m^3]) of contaminated material were shipped from the SLAPS IAs and VPs via railcar to US Ecology in Idaho for proper disposal.

During CY 2014, MARSSIM Class 1 verifications were performed at the Ballfields (survey unit [SU]-11), VP-57 and VP-58 (SU-1 through SU-4), and the Pershall Road South Ditch (SU-1) to confirm that ROD RGs were achieved. No MARSSIM Class 2 or Class 3 verifications were performed.

During CY 2014, characterizations/PDIs were performed at the following SLAPS VPs: VPs 1, 2, 7, 13, 14, and 15; VP-55 Area East of VP-55, VPs 56, 57, 58, 59, and 1(C); Parcels 10L340133, 10K410132, 10K420021, and 10K130061; the Road ROW; CWC from Frost Avenue to St. Denis Bridge; IA-11; Banshee Road; Byassee Road; and Pershall Road.

During CY 2014, 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, 1,261,406 gallons of excavation water were discharged from the NC Sites in CY 2014. Since the beginning of the project, 27,372,584 gallons have been treated and released to MSD from the NC Sites.

2.0 EVALUATION OF RADIOLOGICAL AIR MONITORING DATA

This section documents environmental monitoring activities related to radiological air data. The radiological air measurements conducted at the NC Sites are 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 measurements conducted at the NC Sites, potential sources of the contaminants to be measured (including natural background), and measurement techniques employed during CY 2014.

All radiological air monitoring required through implementation of the EMICY14 (USACE 2013) was conducted as planned during CY 2014. The evaluations of radiological air monitoring data for all NC Sites demonstrated compliance with ARARs.

A total effective dose equivalent (TEDE) for the reasonably maximally exposed (RME) member of the public was calculated for the SLAPS and for the SLAPS VPs by summing the dose due to gamma radiation, radiological air particulates, and radon, as applicable. The TEDE calculated for the RME individual at the SLAPS and at the SLAPS VPs were all less than 0.1 millirem per year (mrem/yr) (0.001 millisievert per year [mSv/yr]). These calculated TEDEs are compliant with the 100 mrem/yr (1 mSv/yr) limit provided 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 that were conducted at the NC Sites during CY 2014 are 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, respectively.

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 make up 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/yr (0.65 mSv/yr), 35 mrem/yr (0.35 mSv/yr) of which originates from sources on earth and 30 mrem/yr (0.3 mSv/yr) of which originates from cosmic sources (UNSCEAR 1982). The background monitoring locations for the NC Sites (Figure 2-1) are reasonably representative of background gamma radiation for the St. Louis metropolitan area.

Gamma radiation was measured at the NC Sites during CY 2014 using thermoluminescent dosimeters (TLDs). TLDs were located at site boundaries in order to provide input for calculation of TEDE.

The TLDs were placed at the monitoring location approximately 3 feet (ft) (0.9 meter [m]) 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 (0.9 m) 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 2014 NESHAP Report (provided as Appendix A) presents the 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 U.S. Environmental Protection Agency (USEPA) CAP88-PC Version 4.0 modeling code (USEPA 2014) to demonstrate compliance with the 10 mrem/yr ARAR 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 (0.9 m) 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 located 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 levels (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 2014 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

For CY 2014, radiological air monitoring was only conducted at Futura.

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 2014.

2.2.2 Evaluation of Airborne Radioactive Particulate Data

No excavation or loadout activities for the Latty Avenue Properties occurred in CY 2014. Therefore, radioactive particulate emissions were considered negligible, and air sampling for particulate radionuclides was not required.

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 in CY 2014. Therefore, outdoor environmental Rn-222 monitoring was not conducted at the Latty Avenue Properties.

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 (1.2 m) (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 2014 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 radon WLs, 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 determined to be less than the 40 *CFR* 192.12(b) criterion of 0.02 WL in each building (Leidos 2015a). Additional details of the data and calculation methodology used to determine indoor radon WLs in the Futura buildings are located in Table 2-1. Indoor ATD data are located in Appendix B, Table B-4, of this report.

Table 2-1. Summary of Futura Indoor Airborne Radon (Rn-222) Data for CY 2014

Monitoring Location	Monitoring Station	Average Annual Concentration				
		01/10/14 to 07/01/14[a] (pCi/L)	07/01/14 to 01/08/15[a] (pCi/L)	Annual Average (pCi/L)[b]	Building Average (pCi/L)[c]	WL[d]
Futura Building	HF-1	1.2	1.4	1.30	**1.98**	**0.008**
	HF-2	4.1	4.6	4.35		
	HF-3	0.2	0.4	0.3		
Futura Building 2/3	HF-4	0.7	0.9	0.8	**0.64**	**0.003**
	HF-5	0.4	0.5	0.45		
	HF-6	0.4	0.6	0.5		
	HF-7	0.7	0.9	0.8		
Futura Building 4	HF-8	0.4	0.7	0.55	**0.53**	**0.002**
	HF-9	0.3	0.8	0.55		
	HF-10	0.3	0.7	0.5		

[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)).

2.3 SLAPS AND SLAPS VICINITY PROPERTIES

For CY 2014, radiological air monitoring was conducted at the Ballfields, VP-57 and VP-58, the Pershall Road South Ditch, and the SLAPS.

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 during CY 2014 at four site locations surrounding the loadout area (Figure 2-3) and at the background location 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 2014 at the SLAPS is shown in Table 2-2. TLD data are located in Appendix B, Table B-3, of this report.

Table 2-2. Summary of SLAPS Gamma Radiation Data for CY 2014

Monitoring Location	Monitoring Station	First Quarter TLD Data (mrem/qtr) Rpt./Cor.		Second Quarter TLD Data (mrem/qtr) Rpt./Cor.		Third Quarter TLD Data (mrem/qtr) Rpt./Cor.		Fourth Quarter TLD Data (mrem/qtr) Rpt./Cor.		CY 2014 Net TLD Data (mrem/yr)
		Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	Rpt.	Cor.[a,b]	
SLAPS Perimeter	PA-1	18.4	0	17.6	0	20.9	0.6	21.1	0	1
	PA-2	21.6	2.1	22.4	3.7	24.7	4.4	23.8	2.0	13
	PA-2[c]	21.9	2.4	22.1	3.4	24.9	4.6	24.1	2.3	---
	PA-3	19.7	0.2	19.1	0.4	20.9	0.6	21.2	0	1
	PA-4	20.5	1.1	20.1	1.4	22.5	2.2	27.7	5.9	11
Background	BA-1	19.5	---	18.7	---	20.3	---	21.8	---	20.1

[a] All quarterly data reported from the vendor have been normalized to exactly one quarter's exposure.
[b] CY 2014 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 not required.
Cor. – Corrected
mrem/qtr – millirem per quarter
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 the year. 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 2-3. Airborne radioactive particulate data are located in Appendix B, Table B-2, of this report.

Table 2-3. Summary of SLAPS Airborne Radioactive Particulate Data for CY 2014

Monitoring Station	Average Concentration (μCi/mL)[a]	
	Gross Alpha	Gross Beta
Ballfields	3.29E-15	2.67E-14
VP-57 and VP-58	1.29E-15	2.80E-14
Pershall Road South Ditch	4.15E-15	2.42E-14
SLAPS Loadout	3.65E-15	3.22E-14
Background Concentration[b]	3.63E-15	1.92E-14

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

2.3.3 Evaluation of Outdoor Airborne Radon Data

Exposure from 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 2014 outdoor radon data at the SLAPS is shown in Table 2-4. Outdoor ATD data are located in Appendix B, Table B-4, of this report.

Table 2-4. Summary of SLAPS Outdoor Airborne Radon (Rn-222) Data for CY 2014

Monitoring Location	Monitoring Station	Average Annual Concentration (pCi/L)		
		01/10/14 to 07/01/14 [a] (Uncorrected)	07/01/14 to 01/08/15[a] (Uncorrected)	Average Annual Concentration[b]
SLAPS Perimeter	PA-1	0.2	0.2	0.00
	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	0.3	0.05
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 calculation 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, during CY 2014. 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 EMICY14 (USACE 2013).

Section 2.2.2 of the EMICY14 outlines the discharge limits for the storm-water and excavation-water discharged at each site (USACE 2013). 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 EMICY14 (USACE 2013). 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 EMICY14 (USACE 2013). 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 during CY 2014. The monitoring results obtained from these activities are presented and compared with the various authorization letters or permit-equivalent limits as presented in the EMICY14 (USACE 2013). The purpose of storm-water and excavation-water discharge sampling 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 USACE On-Site 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 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

During CY 2014, storm-water sampling 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 (SS), and polychlorinated biphenyls, 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). Effluent monitoring for radon was not performed in CY 2014, because sampling was only performed for two months at Outfall 002 and was scheduled for the spring of 2015 at the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch.

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 from annually (MDNR 2002) to monthly at PN02, 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 2014, un-named moving pumping outfalls were utilized during excavation activities at VP-57 and VP-58 and the Pershall Road South Ditch 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). The 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 presented in Appendix C, Table C-1. Quarterly summaries of the CY 2014 storm-water monitoring events for the NC Sites are presented in the following subsections. NC Site storm-water monitoring results for CY 2014 are presented in Tables 3-1 through 3-4.

During CY 2014, rainfall data were obtained from the http:www.wunderground.com site (Weather Underground, Inc. 2015) for the National Weather Service Lambert – St. Louis International Weather Station, which is located adjacent to the NC Sites. Daily flow and rainfall data are included in Appendix C, Table C-2.

First Quarter

During the first quarter (January, February, and March) of CY 2014, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-1). Samples were collected when flow permitted. One (1) sampling event was conducted at Outfall 002 during the first quarter.

Second Quarter

During the second quarter (April, May, and June) of CY 2014, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-2). Samples were collected when flow permitted. Three (3) sampling events were conducted at Outfall 002 during the second quarter.

Table 3-1. First Quarter CY 2014 NPDES Sampling Events[a,b]

Monitoring Parameter	Final Effluent Limitations			Analytical Results		
				Outfall 002		
	Daily Maximum	Monthly Average	Units	Chemical Parameters		
				January	February	March
Flow	Monitor only	Monitor only	MGD	[m]	[m]	0.055
Oil and Grease	15	10	mg/L	[m]	[m]	non-detect
TPHs	10	10	mg/L	[m]	[m]	non-detect
pH-Units	6.0-9.0	NA	SU	[m]	[m]	7.19
COD[c]	120	90	mg/L	[m]	[m]	69
SSs[d]	1.5	1	mL/L/hr	[m]	[m]	<0.1
Arsenic, Total Recoverable	100	100	µg/L	[m]	[m]	3
Lead, Total Recoverable[e]	190	190	µg/L	[m]	[m]	[e]
Chromium, Total Recoverable	280	280	µg/L	[m]	[m]	<3
Copper, Total Recoverable[e]	84	84	µg/L	[m]	[m]	[e]
Cadmium, Total Recoverable	94	94	µg/L	[m]	[m]	<0.1
Polychlorinated Biphenyls[f]	No release	No release	µg/L	[m]	[m]	non-detect
Event Sampling Date				Radiological Parameters[g,h]		
				Event 1		
				03/12/14		
Total U[i,j]	Monitor only	Monitor only	µg/L	-4.E-01		
Total Ra[i,j,k]	Monitor only	Monitor only	µg/L	2.E-07		
Total Th[i,j,k]	Monitor only	Monitor only	µg/L	2.E+00		
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	-2.E+00		
Gross Beta[i]	Monitor only	Monitor only	pCi/L	3.E+00		
Pa-231[i]	Monitor only	Monitor only	pCi/L	2.E+01		
Ac-227[i]	Monitor only	Monitor only	pCi/L	1.E+00		
Radon[l]	Monitor only	Monitor only	pCi/L	[l]		

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch (0.3 centimeter [cm]) 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 email dated 06/17/14, sampling at Outfall 002 has been reduced to once per year.
[c] Per the USACE letter dated 11/18/03, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[d] Detection Limit (DL) = 0.1 mL/L/hr
[e] Lead and copper sampling no longer necessary per the ROD.
[f] DL = 0.5 µg/L
[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] Negative results are less than the laboratory system's background level.
[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).
[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] Semi-annual reporting requirement only.
[m] Insufficient flow.
NA – not applicable
µg/L – micrograms per liter
MGD – million gallons per day
mg/L – milligrams per liter
mL/L/hr – milliliter per liter per hour

Table 3-2. Second Quarter CY 2014 NPDES Sampling Events[a,b]

Monitoring Parameter	Final Effluent Limitations			Analytical Results		
	Daily Maximum	Monthly Average	Units	Outfall 002 Results		
				Chemical Parameters		
				April	May	June
Flow	Monitor only	Monitor only	MGD	0.011	[m]	[b,m]
Oil and Grease	15	10	mg/L	4	[m]	[b,m]
TPHs	10	10	mg/L	non-detect	[m]	[b,m]
pH-Units	6.0-9.0	NA	SU	7.37	[m]	[b,m]
COD[c]	120	90	mg/L	[c]	[m]	[b,m]
SSs[d]	1.5	1	mL/L/hr	<0.1[n]	[m]	[b,m]
Arsenic, Total Recoverable	100	100	μg/L	12	[m]	[b,m]
Lead, Total Recoverable[e]	190	190	μg/L	[e]	[m]	[b,m]
Chromium, Total Recoverable	280	280	μg/L	28	[m]	[b,m]
Copper, Total Recoverable[e]	84	84	μg/L	[e]	[m]	[b,m]
Cadmium, Total Recoverable	94	94	μg/L	0.3	[m]	[b,m]
Polychlorinated Biphenyls[f]	No release	No release	μg/L	non-detect	[m]	[b,m]
				Radiological Parameters[g,h]		
				Event 1	Event 2	Event 3
Event Sampling Date				04/02/14-04/04/14	04/07/14	04/28/14
Total U[i,j]	Monitor only	Monitor only	μg/L	-4.E-01	-5.E-01	-2.E-02
Total Ra[i,j,k]	Monitor only	Monitor only	μg/L	4.E-07	1.E-06	1.E-07
Total Th[i,j,k]	Monitor only	Monitor only	μg/L	2.E+00	3.E+00	3.E+00
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	2.E+00	-1.E+00	-7.E+00
Gross Beta[i]	Monitor only	Monitor only	pCi/L	5.E-01	7.E+00	2.E+00
Pa-231[i]	Monitor only	Monitor only	pCi/L	4.E+00	4.E+01	-5.E+01
Ac-227[i]	Monitor only	Monitor only	pCi/L	-1.E+00	-2.E+00	6.E+00
Radon[l]	Monitor only	Monitor only	pCi/L	[l]	[l]	[l]

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch (0.3 cm) 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 email dated 06/17/14, sampling at Outfall 002 has been reduced to once per year.
[c] Per the USACE letter dated 11/18/03, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[d] DL = 0.1 mL/L/hr
[e] Lead and copper sampling no longer necessary per the ROD.
[f] DL = 0.5 μg/L
[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] Negative results are less than the laboratory system's background level.
[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).
[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] Semi-annual reporting requirement only.
[m] Insufficient flow.
[n] The SS values for Outfall 002 ranged from 0 to 0.1 mL/L/hr with the weighted average of <0.1 mL/L/hr.
NA – not applicable

Third Quarter

During the third quarter (July, August, and September) of CY 2014, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-3). Samples were collected when flow permitted. Eight (8) sampling events were conducted at Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch during the third quarter.

Fourth Quarter

During the fourth quarter (October, November, and December) of CY 2014, all NPDES sample results were in compliance with permit-equivalent requirements (Table 3-4). Samples were collected when flow permitted. Thirteen (13) sampling events were conducted at Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch during the third quarter.

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Table 3-3. Third Quarter CY 2014 NPDES Sampling Events[a,b]

Monitoring Parameter	Final Effluent Limitations			Analytical Results		
				Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch Results		
				Chemical Parameters		
	Daily Maximum	Monthly Average	Units	July	August	September
Flow	Monitor only	Monitor only	MGD	0.093	0.007	0.009
Oil and Grease	15	10	mg/L	non-detect	3.8	2.4
TPHs	10	10	mg/L	non-detect	non-detect	non-detect
pH-Units	6.0-9.0	NA	SU	8.03	7.52	7.36
COD [c]	120	90	mg/L	[c]	[c]	[c]
SSs [d]	1.5	1	mL/L/hr	<0.1[m]	<0.1[n]	<0.1[o]
Arsenic, Total Recoverable	100	100	µg/L	3	15	3.8
Lead, Total Recoverable [e]	190	190	µg/L	[e]	[e]	[e]
Chromium, Total Recoverable	280	280	µg/L	8	2	2.9
Copper, Total Recoverable [e]	84	84	µg/L	[e]	[e]	[e]
Cadmium, Total Recoverable	94	94	µg/L	0.25	<0.1	0.13
Polychlorinated Biphenyls [f]	No release	No release	µg/L	non-detect	non-detect	non-detect

Event Sampling Date				Radiological Parameters[g,h]							
				Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8
				07/15/14-07/16/14	08/06/14	08/11/14-08/13/14	08/18/14-08/19/14	09/02/14-09/04/14	09/11/14	09/15/14	09/22/14
Total U[i,j]	Monitor only	Monitor only	µg/L	7.E-01	2.E+00	1.E+00	2.E+00	2.E+00	2.E+00	4.E+00	3.E+00
Total Ra[i,j,k]	Monitor only	Monitor only	µg/L	1.E-06	1.E-06	5.E-07	3.E-07	3.E-07	6.E-07	-3.E-07	-1.E-07
Total Th[i,j,k]	Monitor only	Monitor only	µg/L	3.E-01	2.E+00	5.E-01	1.E-01	1.E-01	2.E+00	1.E+00	3.E-01
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	5.E+00	-5.E+00	-3.E+00	-1.E+00	5.E+00	4.E+00	6.E+00	-1.E+00
Gross Beta[i]	Monitor only	Monitor only	pCi/L	5.E+00	2.E-01	1.E+00	3.E+00	3.E+00	6.E+00	1.E+00	4.E+00
Pa-231[i]	Monitor only	Monitor only	pCi/L	3.E+00	9.E+00	-4.E+00	6.E+00	-1.E+01	-5.E+00	1.E+01	-3.E+00
Ac-227[i]	Monitor only	Monitor only	pCi/L	2.E+00	-6.E+00	2.E+00	-3.E+00	-5.E+00	7.E-01	3.E+00	-2.E+00
Radon[l]	Monitor only	Monitor only	pCi/L	[l]	[l]	[l]	[l]	[l]	[l]	[l]	[l]

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch (0.3 cm) 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 email dated 06/17/14, sampling at Outfall 002 has been reduced to once per year. Negative results are less than the laboratory system's background level.
[c] Per the USACE letter dated 11/18/03, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[d] DL = 0.1 mL/L/hr
[e] Lead and copper sampling no longer necessary per the ROD.
[f] DL = 0.5 µg/L
[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] Negative results are less than the laboratory system's background level.
[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).
[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] Semi-annual reporting requirement only.
[m] The SS values for the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch was 0.01 mL/L/hr with the weighted average of <0.1 mL/L/hr.
[n] The SS values for the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch ranged from 0 to 0.3 mL/L/hr with the weighted average of <0.1 mL/L/hr.
[o] The SS values for the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch ranged from 0 to 0.05 mL/L/hr with the weighted average of <0.1 mL/L/hr.
NA – not applicable

Table 3-4. Fourth Quarter CY 2014 NPDES Sampling Events[a,b]

Monitoring Parameter	Final Effluent Limitations			Analytical Results						
				Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch Results						
	Daily Maximum	Monthly Average	Units	Chemical Parameters						
				October		November		December		
Flow	Monitor only	Monitor only	MGD	0.003		0.003		0.005		
Oil and Grease	15	10	mg/L	non-detect		non-detect		1.9		
TPHs	10	10	mg/L	non-detect		non-detect		non-detect		
pH-Units	6.0-9.0	NA	SU	7.69		7.52		8.22		
COD[c]	120	90	mg/L	[c]		[c]		[c]		
SSs[d]	1.5	1	mL/L/hr	<0.1[m]		<0.1[m]		0.1[n]		
Arsenic, Total Recoverable	100	100	µg/L	10		10		1.6		
Lead, Total Recoverable[e]	190	190	µg/L	[e]		[e]		[e]		
Chromium, Total Recoverable	280	280	µg/L	8.5		12		3.4		
Copper, Total Recoverable[e]	84	84	µg/L	[e]		[e]		[e]		
Cadmium, Total Recoverable	94	94	µg/L	0.28		0.35		0.13		
Polychlorinated Biphenyls[f]	No release	No release	µg/L	non-detect		non-detect		non-detect		
Event Sampling Date				Radiological Parameters[g,h]						
				Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7
				10/01/14	10/06/14-10/07/14	10/10/14	10/14/14-10/15/14	10/27/14	10/28/14	11/04/14-11/05/14
Total U[i,j]	Monitor only	Monitor only	µg/L	2.E+00	5.E+00	1.E+00	4.E+00	4.E+00	2.E+00	3.E+00
Total Ra[i,j,k]	Monitor only	Monitor only	µg/L	-1.E-07	-6.E-08	4.E-07	6.E-07	7.E-08	7.E-07	4.E-07
Total Th[i,j,k]	Monitor only	Monitor only	µg/L	5.E-01	5.E-01	2.E-05	2.E+00	-3.E-01	3.E+00	4.E+00
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	1.E+00	1.E+00	-1.E+00	4.E+00	2.E+00	-1.E+00	5.E+00
Gross Beta[i]	Monitor only	Monitor only	pCi/L	1.E+01	6.E+00	6.E+00	7.E+00	5.E+00	9.E+00	8.E+00
Pa-231[i]	Monitor only	Monitor only	pCi/L	6.E+00	-4.E+00	7.E+00	7.E+00	-1.E+01	7.E+00	7.E+00
Ac-227[i]	Monitor only	Monitor only	pCi/L	-6.E+00	3.E+00	8.E+00	-8.E-01	8.E+00	5.E-01	-6.E+00
Radon[l]	Monitor only	Monitor only	pCi/L	[l]	[l]	[l]	[l]	[l]	[l]	[l]
Event Sampling Date				Radiological Parameters[g,h]						
				Event 8	Event 9	Event 10	Event 11	Event 12	Event 13	
				11/24/14	12/08/14-12/09/14	12/15/14	12/18/14	12/23/14-12/24/14	12/29/14	
Total U[i,j]	Monitor only	Monitor only	µg/L	-9.E-02	1.E+00	3.E+00	3.E+00	2.E+00	3.E+00	
Total Ra[i,j,k]	Monitor only	Monitor only	µg/L	4.E-07	9.E-07	-1.E-07	1.E-06	1.E-07	3.E-07	
Total Th[i,j,k]	Monitor only	Monitor only	µg/L	9.E-01	1.E+00	1.E+00	2.E+00	1.E+00	2.E+00	
Gross Alpha[i]	Monitor only	Monitor only	pCi/L	3.E+00	4.E-01	1.E+00	2.E+00	2.E+00	2.E+00	
Gross Beta[i]	Monitor only	Monitor only	pCi/L	7.E+00	8.E-01	1.E+01	3.E+00	7.E+00	1.E+00	
Pa-231[i]	Monitor only	Monitor only	pCi/L	2.E+01	-7.E-01	-2.E+01	2.E+01	4.E+01	-6.E+00	
Ac-227[i]	Monitor only	Monitor only	pCi/L	-7.E-01	-2.E+00	5.E-01	-1.E+00	5.E+00	4.E+00	
Radon[l]	Monitor only	Monitor only	pCi/L	[l]	[l]	[l]	[l]	[l]	[l]	

[a] A rainfall event is defined as a measurable increase in discharge rate from precipitation producing 0.1 inch (0.3 cm) 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 email dated 06/17/14, sampling at Outfall 002 has been reduced to once per year. Negative results are less than the laboratory system's background level.
[c] Per the USACE letter dated 11/18/03, the COD sampling requirement has been reduced from quarterly to annual sampling (USACE 2003).
[d] DL = 0.1 mL/L/hr
[e] Lead and copper sampling no longer necessary per the ROD.
[f] DL = 0.5 µg/L
[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] Negative results are less than the laboratory system's background level.
[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).
[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] Semi-annual reporting requirement only.
[m] The SS values for the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch ranged from 0 to 0.1 mL/L/hr with the weighted average of <0.1 mL/L/hr.
[n] The SS values for the Un-Named Outfall VP-57 and VP-58 and the Pershall Road South Ditch ranged from 0 to 0.20 mL/L/hr with the weighted average of 0.1 mL/L/hr.
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 2014 (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 presented in Appendix C, Table C-3.

During CY 2014, approximately 1,261,406 gallons of treated excavation water from six treatment batches were released to MSD manhole 10L3-043S (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 During CY 2014

Quarter	Number of Discharges	Number of Gallons Discharged[a]	Total Activity (Curies [Ci])		
			Thorium[b]	Uranium (KPA)[c]	Radium[d]
1	1	145,603	4.63E-07	2.76E-06	5.35E-07
2	2	513,847	3.01E-06	1.50E-05	2.67E-06
3	2	331,809	1.96E-06	7.64E-06	2.36E-06
4	1	270,147	1.80E-06	1.10E-05	7.36E-07
Total	6	1,261,406	7.23E-06	3.64E-05	6.30E-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 the surface water and sediment. Surface water and sediment are monitored for the radiological and chemical parameters in specified List 2 of Table 3-3 of the EMICY14 (USACE 2013). 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 EMICY14 (USACE 2013); and,
- to evaluate/determine whether runoff from the SLAPS, the HISS, the SLAPS VPs, and the Latty Avenue Properties affect 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 mouth at the Missouri River to its crossing with U.S. Highway 67 (Lindbergh Boulevard) (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 2013). The sampling events are conducted at six existing CWC monitoring stations (C002 through C007). Due to RA adjacent to CWC near station C007, the furthest downstream station, two new monitoring stations (C008 and C009) were established in October 2014. These stations were first sampled during the second semi-annual event. 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 those VPs located around Latty Avenue. 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 2014. The base flow elevation for CWC at the McDonnell Boulevard Bridge is 508.2 ft (154.9 m) above mean sea level (amsl). The base flow also may be approximated by a depth measurement of 3.2 ft (0.98 m) 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 as listed in Table 3-3 of the EMICY14 (USACE 2013). 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 guide described in the ROD (USACE 2005).

All surface-water monitoring required through implementation of the EMICY14 was conducted as planned during CY 2014 (USACE 2013). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The sample results are presented in Appendix D, Table D-1, of this report.

Water Quality Parameters

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 10.8 and 18.1 degrees Celsius (°C), respectively. The average surface-water pH values were 6.32 and 7.33, 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. The pH value for C006 during the March sampling event was slightly below the acceptable range by 0.08.

Table 3-6. Water Quality Results for CY 2014 Coldwater Creek Surface-Water Sampling

Monitoring Parameter	Unit	Monitoring Station								Average
		C002	C003	C004	C005	C006	C007	C008[a]	C009[a]	
First Sampling Event (03/20/14)										
Temperature	°C	11.4	13.6	10.3	10.0	9.5	10.0	NA	NA	10.8
pH	standard unit	6.46	6.40	6.71	6.12	5.92	6.31			6.32
DO	mg/L	11.15	10.98	9.17	10.15	10.43	7.65			9.92
Specific Conductivity	microSiemens per centimeter (µS/cm)	0.123	0.123	0.143	0.157	0.172	0.185			0.151
ORP	millivolt (mV)	201	226	223	113	213	210			197
Turbidity	nephelometric turbidity units (NTU)	160.0	128.0	263.0	186.0	176.0	288.0			200.1
Second Sampling Event (10/07/14-10/08/14)										
Temperature	°C	19.3	20.7	17.2	16.6	17.1	18.6	18.3	17.0	18.1
pH	standard unit	7.70	7.91	7.31	6.91	6.49	7.41	7.60	7.29	7.33
DO	mg/L	8.18	10.42	8.21	6.28	9.67	7.51	7.53	6.58	8.05
Specific Conductivity	µS/cm	88.1	90.7	79.2	65.6	62.7	67.0	95.2	0.115	68.6
ORP	mV	231	232	236	248	270	252	243	250	245
Turbidity	NTU	26.7	53.5	170.0	37.4	88.3	205.0	145	161.0	110.9

[a] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
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 collected during this event.

Average DO levels were 9.92 milligrams per liter (mg/L) in March and 8.05 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 0.151 microSiemens per centimeter (µS/cm), and the average specific conductivity for the October sampling event was 68.6 µS/cm. The average ORP value during the March sampling event (197 millivolt [mV]) was less than that of the October sampling event (245 mV). The average turbidity value during the March sampling event (200.1 nephelometric turbidity units [NTUs]) was greater than the October sampling event (110.9 NTUs).

Radiological Parameters

The radiological monitoring results for the CY 2014 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 2014, because Ra-228 rapidly achieves equilibrium with Th-228, such that their concentrations are equal.

Table 3-7. Radiological Results for CY 2014 Coldwater Creek Surface-Water Sampling

Monitoring Parameter	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008[c]	C009[c]
Radionuclide Concentration (pCi/L)								
First Sampling Event (03/20/14)								
Ra-226	<2.04[a]	<2.03[a]	1.52	<1.84[a]	0.95	<1.54[a]	NA	NA
Th-228[b]	<0. 55[a]	<0. 26[a]	<0. 97[a]	<0.72[a]	<0.70[a]	<0.42[a]		
Th-230	0.40	0.85	0.68	0.65	0.53	0.67		
Th-232	<0.18[a]	<0.26[a]	<0.63[a]	<0.23[a]	<0.45[a]	<0.19[a]		
U-234	1.71	0.88	1.53	0.85	0.58	0.77		
U-235	<0.63[a]	<0.27[a]	<0.26[a]	<0.70[a]	<0.30[a]	<0.30[a]		
U-238	1.02	0.71	0.49	0.85	0.84	0.63		
Second Sampling Event (10/07/14-10/08/14)								
Ra-226	<1.30[a]	<0.89[a]	<1.46[a]	<1.19[a]	<1.39[a]	<0.98[a]	<0.83[a]	<0.90[a]
Th-228[b]	0.25	<0.56[a]	<0.52[a]	0.37	<0.41[a]	<0.89[a]	<0.54[a]	<0.40[a]
Th-230	<0.38[a]	0.50	<0.42[a]	<0.55[a]	<0.33[a]	<0.57[a]	0.22	<0.49[a]
Th-232	<0.17[a]	<0.18[a]	<0.42[a]	<0.25[a]	<0.15[a]	<0.26[a]	<0.20[a]	<0.18[a]
U-234	0.63	0.87	0.77	0.55	0.81	0.63	<0.49[a]	0.78
U-235	<0.46[a]	<0.44[a]	<0.46[a]	<0.21[a]	<0.23[a]	<0.21[a]	<0.19[a]	<0.20[a]
U-238	0.41	<0.36[a]	<0.45[a]	<0.37[a]	<0.40[a]	0.54	0.75	0.45

[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.
[c] 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 guide for surface water. Radiological monitoring parameter data are collected to monitor COC migration and to calculate total U.
NA – Not applicable, no sample 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 2004 is presented in Table 3-8.

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

Stations	Radionuclide	Units	03/04	10/04	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
	Total U[a]	µg/L	1.0	2.1	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
	Ra-226	pCi/L	<4.7[b]	<2.4[b]	<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]
C002	Th-228[c]	pCi/L	1.8	<1.5[b]	<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
	Th-230	pCi/L	2.0	<1.2[b]	<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]
	Th-232	pCi/L	<1.5[b]	<1.2[b]	<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]
	Total U[a]	µg/L	3.5	2.7	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
	Ra-226	pCi/L	<1.3[b]	<2.0[b]	<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]
C003	Th-228[c]	pCi/L	<1.2[b]	<1.9[b]	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]
	Th-230	pCi/L	<1.1[b]	2.0	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
	Th-232	pCi/L	<1.2[b]	<0.59[b]	<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]
	Total U[a]	µg/L	2.8	4.0	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
	Ra-226	pCi/L	<3.8[b]	1.2	<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]
C004	Th-228[c]	pCi/L	<1.7[b]	<1.6[b]	<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]
	Th-230	pCi/L	1.6	2.2	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]
	Th-232	pCi/L	<0.56[b]	<1.6[b]	<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]
	Total U[a]	µg/L	2.2	2.8	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
	Ra-226	pCi/L	<2.4[b]	2.8	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]
C005	Th-228[c]	pCi/L	0.82	<1.3[b]	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
	Th-230	pCi/L	2.6	1.5	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]
	Th-232	pCi/L	<1.2[b]	<0.59[b]	<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]
	Total U[a]	µg/L	15	1.4	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
	Ra-226	pCi/L	<2.9[b]	<1.9[b]	<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]
C006	Th-228[c]	pCi/L	<1.9[b]	<1.3[b]	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]
	Th-230	pCi/L	1.5	2.4	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]
	Th-232	pCi/L	<1.5[b]	<0.60[b]	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]
	Total U[a]	µg/L	1.2	2.1	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
	Ra-226	pCi/L	<2.2[b]	<1.7[b]	<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]
C007	Th-228[c]	pCi/L	1.8	<1.2[b]	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]
	Th-230	pCi/L	2.5	2.2	<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]
	Th-232	pCi/L	0.86	<0.52[b]	<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]
	Total U[a]	µg/L																						1.32
	Ra-226	pCi/L																						<0.83[b]
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	NA	NA	<0.54[b]
	Th-230	pCi/L																						0.22
	Th-232	pCi/L																						<0.20[b]
	Total U[a]	µg/L																						1.92
	Ra-226	pCi/L																						<0.90[b]
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	NA	NA	<0.40[b]
	Th-230	pCi/L																						<0.49[b]
	Th-232	pCi/L																						<0.18[b]

[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 guide for surface water. The other radiological monitoring parameter data are collected to monitor COC migration.
NA – Not Applicable, no sample collected during this event.

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 2014 CWC surface-water sampling events are presented in Table 3-9.

Table 3-9. Chemical Results for CY 2014 Coldwater Creek Surface-Water Sampling

Monitoring Parameter[a]	Monitoring Stations					
	C002	C003	C004	C005	C006	C007
Target Analyte List Metals Concentration (μg/L)						
First Sampling Event (04/03/14)						
Antimony	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]
Arsenic	3.6	3.6	3.1	2.9	2.3	2.2
Barium	160	160	150	170	150	150
Cadmium	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]
Chromium	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]
Molybdenum	10.0	11.0	10.0	10.0	8.7	8.9
Nickel	2.3	2.2	2.5	3.2	2.7	2.5
Selenium	3.8	2.7	3.7	2.0	5.0	2.4
Thallium	0.69	0.88	0.85	<0.55[b]	<0.55[b]	<055[b]
Vanadium	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]	<2.4[b]
Second Sampling Event (10/17/14)						
Antimony	<1.7[b]	<1.7[b]	<1.7[b]	<1.7[b]	2.4	2.3
Arsenic	3.8	2.9	3.0	2.5	2.1	2.4
Barium	110	110	110	98	84	81
Cadmium	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]	<0. 1[b]
Chromium	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]	<3.3[b]
Molybdenum	16.0	15.0	15.0	11.0	8.9	10.0
Nickel	2.3	2.3	2.3	2.4	2.2	2.5
Selenium	2.5	2.5	2.8	1.8	2.6	2.3
Thallium	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]	<0.55[b]	<055[b]
Vanadium	<2.4[b]	<2.4[b]	<2.4[b]	3.1	2.9	3.4

[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

During CY 2014, 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 EMICY14 (USACE 2013).

All sediment monitoring required through implementation of the EMICY14 was conducted as planned during CY 2014 (USACE 2013). The evaluation of monitoring data demonstrates that all applicable ARARs have been met. The analytical results from these monitoring activities are presented in Appendix D, Table D-2, of this report.

Radiological Parameters

The radiological results for CY 2014 CWC sediment sampling events are presented in Table 3-10. The ROD (USACE 2005) established sediment RGs for Ra-226, Th-230, and U-238 at the NC Sites. 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 2014, because U-234 is assumed to be in equilibrium with U-238.

Table 3-10. Radiological Results for CY 2014 Coldwater Creek Sediment Sampling

Monitoring Parameter	RGs[a]	Monitoring Stations							
		C002	C003	C004	C005	C006	C007	C008[e]	C009[e]
Radionuclide Concentration (picocuries per gram [pCi/g])									
First Sampling Event (03/20/14)									
Ac-227	No RG	<0.19[b]	<0.28[b]	<0.29[b]	<0.33[b]	<0.28[b]	<0.34[b]		
Pa-231	No RG	<0.58[b]	<0.71[b]	<0.82[b]	<0.92[b]	<0.80[b]	<0.92[b]		
Ra-226	15	0.94	1.42	1.62	1.59	1.38	1.55		
Ra-228	No RG	0.26	0.91	0.80	1.00	1.01	0.77		
Th-228[c]	No RG	<0.26[b]	1.21	0.94	1.35	0.60	0.74	NA	NA
Th-230[c]	43	0.69	1.67	3.11	1.53	2.30	3.19		
Th-232[c]	No RG	0.26	0.95	0.57	1.16	0.85	1.21		
U-235	No RG	<0.27[b]	<0.38[b]	<0.36[b]	<0.46[b]	<0.44[b]	<0.42[b]		
U-238[d]	150	<0.84[b]	<1.24[b]	<1.25[b]	<1.49[b]	<1.29[b]	<1.32[b]		
Second Sampling Event (10/07/14-10/08/14)									
Ac-227	No RG	<0.17[b]	<0.21[b]	<0.22[b]	<0.24[b]	<0.28[b]	<0.43[b]	<0.24[b]	<0.27[b]
Pa-231	No RG	<0.47[b]	<0.60[b]	<0.61[b]	<0.66[b]	<0.79[b]	<1.18[b]	<0.62[b]	<0.74[b]
Ra-226	15	0.88	1.22	1.36	1.62	1.36	2.12	1.22	1.43
Ra-228	No RG	0.36	0.63	0.89	0.99	1.05	1.01	0.72	0.80
Th-228[c]	No RG	0.69	0.68	0.73	1.19	1.18	0.80	0.82	0.86
Th-230[c]	43	0.55	1.04	1.82	1.58	2.39	6.81	2.80	3.96
Th-232[c]	No RG	0.55	0.89	1.50	0.69	1.04	0.85	0.56	1.06
U-235	No RG	<0.21[b]	<0.27[b]	<0.29[b]	<0.30[b]	<0.34[b]	<0.48[b]	<0.29[b]	<0.32[b]
U-238[d]	150	0.45	1.01	0.60	0.78	1.30	1.64	1.3	0.86

[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.
[e] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
NA – Not Applicable, no sample collected during this event.

All sediment data results were below the RGs established by the ROD. The historical radiological sediment sampling information for all monitoring stations since 2004 is summarized in Table 3-11.

Chemical Parameters

Chemical monitoring results for CY 2014 CWC sediment sampling events are presented in Table 3-12.

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

Station	Radionuclide	Units	03/04	10/04	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
C002	Total U[a]	pCi/g	1.8	1.1	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
	Ra-226	pCi/g	0.99	0.89	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
	Ra-228	pCi/g	0.28	0.16	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
	Th-228	pCi/g	0.49	0.40	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
	Th-230	pCi/g	1.0	1.0	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
	Th-232	pCi/g	0.12	<0.27[c]	<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
C003	Total U[a]	pCi/g	1.8	0.85	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
	Ra-226	pCi/g	0.81	0.92	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
	Ra-228	pCi/g	0.38	0.33	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
	Th-228	pCi/g	0.74	0.57	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
	Th-230	pCi/g	2.4	3.3	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
	Th-232	pCi/g	0.35	0.41	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
C004	Total U[a]	pCi/g	2.9	1.6	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
	Ra-226	pCi/g	0.93	1.1	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
	Ra-228	pCi/g	0.83	0.72	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
	Th-228	pCi/g	1.7	1.6	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
	Th-230	pCi/g	2.4	1.4	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
	Th-232	pCi/g	1.0	0.92	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
C005	Total U[a]	pCi/g	2.2	1.8	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
	Ra-226	pCi/g	1.3	1.9	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
	Ra-228	pCi/g	0.53	0.53	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
	Th-228	pCi/g	0.98	0.79	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
	Th-230	pCi/g	3.8	3.5	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
	Th-232	pCi/g	0.57	0.20	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
C006	Total U[a]	pCi/g	1.0	1.9	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
	Ra-226	pCi/g	1.1	1.1	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
	Ra-228	pCi/g	0.94	0.74	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
	Th-228	pCi/g	1.6	2.0	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
	Th-230	pCi/g	3.2	3.1	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
	Th-232	pCi/g	0.79	0.64	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
C007	Total U[a]	pCi/g	0.90	0.99	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
	Ra-226	pCi/g	1.4	1.5	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
	Ra-228	pCi/g	1.1	0.90	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
	Th-228	pCi/g	2.1	1.4	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
	Th-230	pCi/g	2.0	3.5	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
	Th-232	pCi/g	1.4	0.94	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
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	NA	NA	2.60
	Ra-226	pCi/g																						1.22
	Ra-228	pCi/g																						0.72
	Th-228	pCi/g																						0.82
	Th-230	pCi/g																						2.80
	Th-232	pCi/g																						0.56

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

Station	Radionuclide	Units	03/04	10/04	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
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	NA	NA	1.79
	Ra-226	pCi/g																						1.43
	Ra-228	pCi/g																						0.80
	Th-228	pCi/g																						0.86
	Th-230	pCi/g																						3.96
	Th-232	pCi/g																						1.06

[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; for Table 3-11, 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 and 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 collected during this event.

Table 3-12. Chemical Results for CY 2014 Coldwater Creek Sediment Sampling

Monitoring Parameter	Monitoring Stations							
	C002	C003	C004	C005	C006	C007	C008[b]	C009[b]
Target Analyte List Metals Concentration (milligrams per kilogram [mg/kg])								
First Sampling Event (03/20/14)								
Antimony	<0.9[a]	<1.0[a]	<1.1[a]	<1.3[a]	<1.1[a]	<1.3[a]	NA	NA
Arsenic	2.0	5.9	7.7	7.7	1.8	5.7		
Barium	260	170	190	330	100	160		
Cadmium	0.53	0.35	0.67	0.60	0.30	0.86		
Chromium	6.2	14.0	22.0	19.0	16.0	35.0		
Molybdenum	1.1	<0.78[a]	1.2	<1.0[a]	<0.82[a]	1.8		
Nickel	4.3	16.0	18.0	28.0	18.0	20.0		
Selenium	<0.87[a]	2.1	<1.0[a]	2.0	1.7	2.2		
Thallium	<0.83[a]	<0.95[a]	<1.0[a]	<1.2[a]	<1.0[a]	<1.2[a]		
Vanadium	<4.0[a]	20.0	21.0	25.0	16.0	22.0		
Second Sampling Event (10/07/14-10/08/14)								
Antimony	1.2	<0.22[a]	0.37	<0.22[a]	<0.22[a]	0.37	0.47	0.51
Arsenic	2.2	1.8	8.0	4.0	1.9	7.9	6.1	6.1
Barium	1,300	63	230	180	110	150	200	170
Cadmium	0.36	0.21	0.89	0.54	0.2	0.59	0.66	0.66
Chromium	55	14.0	26.0	19.0	17.0	28.0	24.0	28.0
Molybdenum	8.0	0.2	1.3	0.47	0.21	2.0	1.3	1.0
Nickel	5.6	12.0	27.0	21.0	17.0	18.0	19.0	17.0
Selenium	0.91	1.9	2.5	2.3	2.7	1.9	2.1	2.1
Thallium	<0.16[a]	<0.2[a]	0.23	<0.21[a]	<0.21[a]	<0.17[a]	<0.26[a]	<0.22[a]
Vanadium	14.0	21.0	31.0	24.0	20.0	22.0	24.0	21.0

[a] Reported result is less than the DL and is therefore set equal to the DL.
[b] Stations C008 and C009 were established and initially sampled during the second semi-annual event of CY 2014.
Note: There are no chemical-specific ROD RGs or monitoring guidelines for sediment. Chemical monitoring parameter data are collected to monitor COC migration.
NA – Not Applicable, no sample collected during this event.

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.

Methodology

Total U results from surface-water and sediment samples from six monitoring stations (C002 through C007) for 2014 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 U Concentration Statistics for Coldwater Creek (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 2014 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 these figures.

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 sample data are collected and available.

Conclusion

The data fit two hypothetical scenarios. First, the post-RA sampling results were not significantly below the pre-RA sampling results for downstream stations at the SLAPS (C003 through C007), so it is unlikely that total U on the SLAPS was 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 could have been observed.

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4.0 EVALUATION OF GROUND-WATER MONITORING DATA

Twenty-one (21) ground-water monitoring wells were sampled at the NC Sites during CY 2014. 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 2014 sampling are presented in Appendix E, Tables E-1 and E-2. Summary tables providing the NC Sites ground-water analytical sampling results for CY 2014 are found in Appendix E, Tables E-3 and E-4.

Ground-Water Guidelines

The CY 2014 ground-water monitoring data for the NC Sites are compared to the ROD ground-water monitoring guidelines (i.e., 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 make up 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 2014 Ground-Water Monitoring Results at the Latty Avenue Properties

Based on an evaluation of the ground-water data at the Latty Avenue Properties, two inorganic soil COCs (chromium and molybdenum) and three radiological soil COCs (U-234, U-238, and total U) were detected at concentrations above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties in CY 2014. Chromium concentrations were detected above the ROD guideline in HISS-10. However, chromium does not exceed its ROD guideline at HISS-10 when measurement error is taken into account. The molybdenum concentration at HISS-10 was above the ROD guideline in CY 2014 and has been above the ROD guideline for more than 12 months.

In addition, three radiological COCs (U-234 at HISS-10 and HW22, U-238 at HISS-10, and total U at HISS-01) were detected above the ROD guidelines in HZ-A ground water in CY 2014. The concentrations of U-234 at HW22 and of total U at HISS-01 in CY 2014 were not above the ROD guidelines when measurement errors are taken into account. Concentrations of U-234 and U-238 were above the ROD guidelines in HISS-10 during the first quarter CY 2014 sampling event, but were not above their ROD guidelines in the previous sampling event (first quarter of CY 2013) when measurement errors are taken into account. Because a significant degrading 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 2014 results for HW23, concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HZ-C during CY 2014. 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 document. 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 2014 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.

Table 4-1. Screened HZs for Ground-Water Monitoring Wells at the Latty Avenue Properties During CY 2014

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

[a] Wells sampled in CY 2014.

Ground-water sampling was conducted at all eight ground-water monitoring wells at the Latty Avenue Properties during CY 2014. First-quarter sampling was conducted on February 18, 2014; second-quarter sampling was conducted on May 19, 2014; third-quarter sampling was conducted on September 2, 2014; and fourth-quarter sampling was conducted on December 9, 2014.

In addition to the ground-water sampling activities, a ground-water monitoring well investigation was conducted in CY 2014 to look into the possible cause(s) of highly variable water levels and higher-than-expected uranium values that had been reported for HW23. Total U levels had increased to detectable levels in the third quarter of 2009 results reported for HW23 and had remained higher than expected (although below the ROD guideline) in all the subsequent sampling events. In addition, a change in the water levels at HW23 was noted beginning in third quarter of 2009. These changes had originally been attributed to changes in site conditions due to remediation. However, over time, a pattern of increased variability in water levels at HW23 was observed, with a corresponding decrease in water level variability at HW22. On December 11, 2014, inspections of HW22 and HW23 were conducted to determine if the changes were caused by remedial activities conducted in the area. Remedial activities had included the removal and replacement of the concrete base for monitoring wells HW22 and HW23. Results of the inspections, which included depth sounding of the wells, indicated that the protective well casings with their affixed well labels were placed on the wrong wells sometime after remediation was initiated in the area in November 2008. Based on the above findings, the elevated total uranium values originally reported for HW23 for the post-2008 period (6.8 to 11.6 µg/L) are in reality associated with HW22, and are consistent with the range of expected uranium values for HW22. The greater variability in water levels reported for HW23 between CY 2009 and CY 2013 is also consistent with a switching of the wells, based on the greater amount of variability observed in pre-2009 HW22 water levels than in HW23 water levels. To correct for the well labeling error, the field data (water level measurements and field parameters) and laboratory analytical data collected for HW22 and HW23 between first quarter of 2009 and fourth quarter of 2013 have been amended. In addition, the changes have been incorporated into the interpretation of trends presented in this EMDAR. To correct the errors in the previous EMDARs, the revised field data (Table E-5) and laboratory analytical data (Table E-6) for HW22 and HW23 for CY2009 through CY2013 have been provided in Appendix E.

HZ-A Ground Water

Ground-water samples were collected from seven HZ-A wells during CY 2014. A summary table presenting the CY 2014 analytical data for all analytes is included in Appendix E (Table E-3).

For response-action monitoring, the CY 2014 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 degrading of CWC surface water is anticipated.

The CY 2014 results were compared to the 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). Those soil COCs with concentrations above the ROD guidelines in HZ-A ground-water samples at the Latty Avenue Properties during CY 2014 are listed in Table 4-2. Because no ground-water sampling data are available for HISS-06A and HISS-11A prior to CY 2011, the ROD guidelines for HISS-06A and HISS-11A were developed using the pre-2006 data from the wells previous at these locations (HISS-06 and HISS-11, respectively).

Table 4-2. Analytes Exceeding ROD Guidelines in HZ-A Ground Water at the Latty Avenue Properties During CY 2014

Analyte	Units	Station	ROD Guidelines[a]	Minimum Detected	Maximum Detected	Mean Detected	No. Detects > ROD Guidelines[a]	Frequency of Detection
Chromium	μg/L	HISS-10	2.4	3.3[b]	3.3[b]	3.3[b]	1	1/1
Molybdenum	μg/L	HISS-10	5.6	18	18	18	1	1/1
U-234	pCi/L	HISS-01	12	9.79[c]	9.79[c]	9.79[c]	0	1/1
	pCi/L	HISS-10	6.6	10.0	10.0	10.0	1	1/1
	pCi/L	HW22	6.4	7.2[b]	7.2[b]	7.2[b]	1	1/1
U-235	pCi/L	HISS-01	---	0.53[c]	0.53[c]	0.53[c]	0	0/1
U-238	pCi/L	HISS-01	13	10.8[c]	10.8[c]	10.8[c]	0	1/1
	pCi/L	HISS-10	5.2	8.41	8.41	8.41	1	1/1
Total U[d]	μg/L	HISS-01	30	32.5[b]	32.5[b]	32.5[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 chromium detected in HISS-10 is not above the ROD guideline when the measurement error (10 μg/L) is taken into account. The concentration of U-234 detected in HW22 and the total U concentration detected in HISS-01 do not exceed the ROD guidelines when the measurement errors are taken into account.
[c] The results for U-234, U-235, and U-238 do not exceed their ROD guidelines at HISS-01. These results are provided because they were used in the total U calculation.
[d] Total U values were calculated from isotopic concentrations in pCi/L and converted to μg/L using radionuclide-specific activities using the following formula: total U (μg/L) = U-234 (pCi/L)/6240 + U-235 (pCi/L)/2.16 + U-238 (pCi/L)/0.335.
--- No monitoring guideline due to insufficient detected results in historical dataset.

Two inorganic soil COCs were detected at concentrations above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties: chromium and molybdenum at HISS-10. The concentration of chromium in HISS-10 (3.3 μg/L) is not above the ROD guideline (2.4 μg/L) when measurement error is taken into account. The concentration of molybdenum at HISS-10 was above the ROD guideline during the first-quarter sampling event conducted in CY 2014, as well as in the previous CY 2013 and CY 2010 sampling events. Therefore, concentrations of molybdenum in HISS-10 have been above the ROD guideline for more than 12 months. However, CWC surface-water and sediment sampling results for CY 2014, 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 COCs U-234 and U-238 were detected above the ROD guidelines in HZ-A ground water in two wells at the Latty Avenue Properties in CY 2014: HISS-10 (U-234 and U-238) and HW22 (U-234). The concentration of U-234 detected at HW22 during the second-quarter sampling event conducted in CY 2014 is not above the ROD guideline when measurement error is taken into account. The concentrations of U-234 and U-238 were above the ROD guidelines in HISS-10 during the first-quarter sampling event conducted in CY 2014, and exceeded the ROD guidelines in the previous 2013 sampling event. However, concentrations of U-234 and U-238 in HISS-10 were not above their ROD guidelines in the previous sampling event (first quarter of CY 2013) when measurement errors are taken into account; therefore, concentrations of U-234 and U-238 in HISS-10 have not been above the ROD guideline for more than 12 months. The total U concentration in HISS-10 (calculated from the isotopic concentrations) did not exceed the total U monitoring guideline of 30 µg/L.

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.

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

Total U concentrations in samples collected from HISS-01 exceeded the 30 µg/L monitoring guideline, and have exceeded the guideline for more than 12 months. However, the concentration of total U in HISS-01 is not above the ROD guideline when measurement error is taken into account. 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) and two radiological COCs (U-234 and U-238 in HISS-10) exceeded the ROD guidelines during CY 2014 when measurement error is taken into account. Based on the CY 2013 results and taking into account the associated measurement errors, the concentrations of U-234 and U-238 in HISS-10 have not been above the ROD guideline for more than 12 months. Concentrations of molybdenum in HISS-10 have been above 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) during CY 2014. 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 2014.

In summary, the CY 2014 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 2014. Statistical analysis was used to assist with identifying trends for those contaminants that exceeded the ROD guidelines during CY 2014.

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-concentration plots for total U in HISS-01, HISS-10, and HW22 are provided on Figure 4-4.

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 2014, 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 2014), and at which the percentage of non-detect results is less than or equal to 50 percent. Five COCs, (chromium and molybdenum in HISS-10; U-234 in HISS-10 and HW22; U-238 in HISS-10; and total U in HISS-01) were above the ROD guidelines in HZ-A ground water at the Latty Avenue Properties during CY 2014. However, a trend analysis was not conducted for chromium in HISS-10, because the frequency of non-detect values in the dataset exceeds 50 percent. For molybdenum at HISS-10, the time period was limited to CY 2002 through CY 2014 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 2014 sample from HW22 (18.0 µg/L) was above the ROD guideline (5.6 µg/L). No trend in molybdenum concentrations was observed for HISS-10 for the period between April of 2002 and December of 2014.

Table 4-3. Results of Mann-Kendall Trend Test[a] for Analytes with Concentrations Above the ROD Guidelines at the Latty Avenue Properties During CY 2014

Analyte	Station	N[b]	Test Statistics[c]		Trend[d]
			S	Z	
Molybdenum	HISS-10	12	24	1.61	No Trend
Total U	HISS-01	32	142	2.29	Upward Trend
	HISS-10	17	66	2.68	Upward Trend
	HW22	15	49	2.38	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 2014. For HISS-10, the molybdenum dataset was restricted to the period between January of 2002 and December of 2014 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>10).
[d] Trend: If N>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.

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.

Total U was detected at concentrations above the ROD guideline in HZ-A well HISS-01 at the Latty Avenue Properties during CY 2014. In addition, U-234 and U-238 concentrations were above the ROD guidelines in HISS-10 during the first quarter CY 2014 sampling event, and U-234 concentrations were above the ROD guideline in HW22 during the second quarter CY 2014 sampling event. A trend analysis was performed for the total U concentrations for HISS-01, HISS-10, and 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.

As shown in Table 4-3, a statistically significant increasing trend in total U concentrations was identified for HISS-01, HISS-10, and HW22 for the 1999 through 2014 datasets. Based on the time-versus-concentration plot for HISS-01 on Figure 4-3, the concentrations were relatively stable prior to 2009, then increased abruptly in February of 2009, possibly as a result of the RA conducted in adjacent areas during this period. Although an overall increasing trend was identified for the entire 1999 through 2014 period, concentrations of total U in HISS-01 have declined from a high of 337 µg/L on May 29, 2009, to 32.5 µg/L on September 2, 2014. Upward trends in total U concentrations were identified for HISS-10 and HW22 for the period between January 1999 and December 2014. The total U concentrations at HISS-10 and HW22 for this period have not exceeded the 30 µg/L monitoring guideline. In addition, 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.

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 2014. Concentrations of all soil COCs were below the NC ROD ground-water criteria in CY 2014 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, September, and December of CY 2014. The potentiometric surface maps for HZ-A and HZ-C created from the May 16 and December 2, 2014, 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 near-radial potentiometric surface contour patterns for 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 site, 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 0.0115 ft/ft (May) to 0.0107 ft/ft (December) in CY 2014.

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 0.0015 ft/ft in both May and December of 2014.

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 ballfields, surficial deposits (Unit 1) include topsoil and anthropogenic fill (rubble, scrap metal, gravel, glass, slag, and concrete) generally less than 14 ft (4.3 m) thick (Figures 4-1, 4-9, and 4-10). Unit 2 is comprised of loess and has a thickness of 11 to 30 ft (3.4 to 9.1 m). 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 (9.1 m). 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 (1.5 to 4.6 m) 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 (16.8 m) on the eastern part of the SLAPS to a maximum of 90 ft (27.4 m) 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 (3 m) 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 2014 Ground-Water Monitoring Results at the St. Louis Airport Site and St. Louis Airport Site Vicinity Properties

Seven soil COCs (barium, cadmium, chromium, molybdenum, nickel, U-238, and total U) were above the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs in CY 2014. One inorganic soil COC (nickel at B53W13S) and one radiological COC (total U at PW46) were above the ROD guidelines for a period of at least 12 months.

Statistically significant increasing trends were observed for chromium concentrations in B53W13S and B53W18S; molybdenum concentrations at B53W18S; and nickel concentrations in B53W13S and B53W19S. In addition, a statistically significant increasing trend in total U concentrations was observed for B53W13S. However, no significant trend exists in total U concentrations at B53W13S when measurement error is taken into account. Based on trend analysis, concentrations of total U have not statistically increased 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 2014. However, because nickel and total U levels have been above 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 2014 results for B53W07D and PW42, concentrations of all inorganic and radiological soil COCs were below the ROD ground-water guidelines in HZ-C during CY 2014. 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 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 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.

Table 4-4. Ground-Water Monitoring Well Network at the SLAPS and SLAPS VPs During CY 2014

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

[a] Wells sampled in CY 2014.

During CY 2014, 13 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 2014, ground-water sampling was conducted on February 18 and 19 (first quarter); May 19 and 21 (second quarter); September 4 and 5 (third quarter); and December 4 and 10 (fourth quarter).

HZ-A Ground Water

Eleven (11) HZ-A wells were sampled at the SLAPS and the adjacent IAs during CY 2014 (B53W01S, B53W06S, B53W07S, B53W09S, B53W13S, B53W18S, B53W19S, MW31-98, MW32-98, PW43, and PW46). The analytical data for the CY 2014 ground-water sampling at the SLAPS and SLAPS VPs are provided in Appendix E, Table E-4.

The CY 2014 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 2014 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 During CY 2014

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	260	670	415	1	2/2
Cadmium	µg/L	B53W19S	0.7	0.66	2.1[b]	1.4	1	2/2
Chromium	µg/L	B53W13S	9.1	9.7[b]	25	18.2	3	3/3
		B53W18S	51	47	330	145	2	3/3
		B53W19S	290	350	370	360	2	2/2
Molybdenum	µg/L	B53W18S	28	22.0	42.0	30.0	1	3/3
Nickel	µg/L	B53W13S	38	62	230	128	3	3/3
		B53W19S	1,100	920	2,900	1,910	1	2/2
		PW43	3.6	6.7[b]	6.7[b]	6.7	1	1/1
U-234	pCi/L	B53W13S	13	10.8[c]	11.9[c]	11.0	0	3/3
		PW46	5,500	156[c]	156[c]	156[c]	0	1/1
U-235	pCi/L	B53W13S	---	0.6	0.6	0.6	0	1/3
		PW46	290	8.9[c]	8.9[c]	8.9[c]	0	1/1
U-238	pCi/L	B53W13S	10	8.7[c]	11.4[b]	10.0	2	3/3
		PW46	5,600	159[c]	159[c]	159[c]	0	1/1
Total U[d]	µg/L	B53W13S	30	26	34[b,c]	30.5	2	3/3
		PW46	30	479[c]	479[c]	479	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 footnoted results for cadmium at B53W19S, chromium at B53W13S, nickel at PW43, U-238 at B53W13S, and total U at B53W13S did not exceed the ROD guideline if the associated measurement errors are taken into account.

[c] 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.

[d] 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.

Five inorganic soil COCs (barium, cadmium, chromium, molybdenum, and nickel) were detected in HZ-A ground water at concentrations above 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 third-quarter sample (670 µg/L), but was below the ROD guideline in the fourth-quarter sample (260 µg/L). Therefore, barium concentrations in B53W19S did not exceed the ROD guideline for more than 12 months. Cadmium was detected at levels above the ROD guideline of 0.7 µg/L in the third-quarter sample (2.1 µg/L) from B53W19S. The cadmium results for the fourth-quarter sample from B53W19S (0.66 µg/L) was below the ROD guideline. Therefore, cadmium concentrations in B53W19S did not exceed the ROD guideline for more than 12 months.

Chromium was detected at concentrations above the ROD guideline in the first-quarter samples from B53W13S (20 µg/L) and B53W18S (58 µg/L). It was also detected above the ROD guideline in the fourth-quarter samples from B53W13S (25 µg/L) and B53W18S (330 µg/L). However, it was detected at concentrations below the ROD guideline in the third-quarter samples from B53W13S (9.7 µg/L) and B53W18S (347 µg/L), when measurement error is taken into account. Therefore, chromium concentrations in B53W13S and B53W18S did not exceed the ROD guideline for more than 12 months. Chromium was detected at concentrations above its ROD guideline in the third- and fourth-quarter samples from B53W19S (370 µg/L and 350 µg/L, respectively). Chromium was not detected above the ROD guideline in the previous samples from this well. Therefore, chromium concentrations in B53W19S have not exceeded the ROD guideline for more than 12 months.

Molybdenum was detected in B53W18S at levels above the ROD guideline of 28 µg/L in the fourth-quarter sample (42.0 µg/L). However, molybdenum concentrations were not above the ROD guideline in the first- and third-quarter samples from B53W18S in CY 2014. Therefore; molybdenum concentrations in B53W18S did not exceed the ROD guideline for more than 12 months.

Nickel was detected in B53W13S at concentrations above the ROD guideline during the first-, third-, and fourth-quarter sampling events in CY 2014. Nickel concentrations were also above the ROD guideline in the samples collected from B53W13S in CY 2013. Therefore, the nickel concentration at B53W13S has been above the ROD guideline for a period of at least 12 months. Nickel was also detected at concentrations above its ROD guideline (1,100 µg/L) in the third-quarter sample from B53W19S (2,900 µg/L). Nickel was not detected above the ROD guideline in the fourth-quarter sample from this well (920 µg/L). Therefore, nickel concentrations in B53W19S have not exceeded the ROD guideline for more than 12 months. Nickel was detected in PW43 at levels above the ROD guideline of 3.6 µg/L in the third-quarter sample (6.7 µg/L). However, the nickel concentration is not above the ROD guideline in PW43 if the associated measurement error is taken into account.

Two radiological soil COCs (U-238 and total U) exceeded the ROD guidelines in HZ-A ground water at the SLAPS and SLAPS VPs. The radiological COC U-238 was detected above the ROD guideline in HZ-A ground water in B53W13S in CY 2014. The concentration of U-238 detected at B53W13S during the first- and third-quarter sampling events conducted in CY 2014 exceeded the ROD guideline. However, the concentration of U-238 in B53W13S was not above the ROD guideline in the fourth-quarter sampling event. Similarly, the total U concentration in B53W13S (converted from pCi/L to µg/L using the isotopic concentrations and radionuclide-specific activities) exceeded the total U monitoring guideline of 30 µg/L in the first- and third-quarter sampling events, but did not exceed the guideline in the fourth-quarter sampling event. Therefore U-238 and total U have not been above their ROD guidelines for a period of more than 12 months in B53W13S.

The total U concentration in PW46 (calculated from the isotopic concentrations) exceeded the 30-µg/L guideline during the first-quarter CY 2014 sampling event. The total U concentration in PW46 was 479 µg/L on February 18, 2014. 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 2014 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 2014.

In summary, one inorganic soil COC (nickel) was above the ROD guideline for a period of at least 12 months in one HZ-A well (B53W13S) at the SLAPS and SLAPS VPs in CY 2014. In addition, total U concentrations were above the total U guideline of 30 µg/L in one HZ-A well (PW46) located at the western edge of the SLAPS and have been above the guideline for a period of at least 12 months. However, comparison of their CY 2014 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 2014. However, because nickel and total U levels have been above the ROD guidelines for a period of at least 12 months, monitoring will continue subject to subsequent CERCLA 5-year reviews.

Lower, HZ-C Through HZ-E, Ground Water

Two wells (B53W07D and PW42) screened across lower ground water (HZ-C through HZ-E) were sampled at the SLAPS and SLAPS VPs during CY 2014. No soil COCs exceeded the ROD guidelines in CY 2014 ground-water samples from these two wells. Therefore, the CY 2014 HZ-C through HZ-E ground-water data from the SLAPS and SLAPS VPs do not indicate significant degradation of lower ground water.

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 between CY 1998 though CY 2014 indicate that various inorganics and radionuclides have been detected above 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 2014. 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 2014. For those monitoring wells at which an analyte exceeded these guidelines in one or more samples during CY 2014 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 report, 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-concentration plots were used to evaluate these factors.

Based on the CY 2014 ground-water monitoring data for the SLAPS and SLAPS VPs, six soil COCs (barium, cadmium, chromium, molybdenum, nickel, U-238 and total U) exceeded the ROD guidelines in HZ-A ground water in CY 2014. The Mann-Kendall Trend Test was performed for barium in B53W19S; chromium in B53W13S, B53W18S, and B53W19S; molybdenum in B53W18S; nickel in B53W13S, B53W19S, and PW43; and total U in B53W13S and PW46. Trend analysis was not performed for cadmium in B53W19S, because the frequency of non-detect values in the dataset exceeds 50 percent. For nickel in PW43, the time period was limited to CY 2003 through CY 2014 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 2014 at the SLAPS and SLAPS VPs.

Inorganics

The Mann-Kendall Trend Test was performed for barium (B53W19S), chromium (B53W13S and B53W18S), molybdenum (B53W18S), and nickel (B53W13S, B53W18S, and PW43). The results of the Mann-Kendall Trend Tests are provided in Table 4-6. As shown in Table 4-6, a statistically significant increasing trend in chromium concentrations (i.e., a trend with a confidence level greater than 95 percent) was observed for B53W13S and B53W18S. In addition, statistically significant increasing trends were observed for molybdenum concentrations at B53W19S and nickel concentrations at B53W13S and 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 4-6. Results of Mann-Kendall Trend Test[a] for Analytes with Concentrations Above ROD Guidelines in Ground Water at the SLAPS and SLAPS VPs During CY 2014

Analyte	Station	N[b]	Test Statistics[c]		Trend[d]
			S	Z	
Barium	B53W19S	17	30	1.19	No Trend
Chromium	B53W13S	25	166	3.86	Upward Trend
	B53W18S	20	86	2.77	Upward Trend
	B53W19S	17	32	1.28	No Trend
Molybdenum	B53W18S	20	94	3.04	Upward Trend
Nickel	B53W13S	25	151	3.51	Upward Trend
	B53W19S	17	41	1.65	Upward Trend
	PW43	12	10	0.63	No Trend
Total U	B53W13S	23	169	4.44	Upward Trend[e]
	PW46	15	-5	-0.20	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 2014. With the exception of nickel at PW43 and Total U at PW46, the time period is between January of 1999 and December of 2014. For PW43, the nickel dataset was restricted to the period between January of 2003 and December of 2014 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 2014.

[c] Test Statistics: S – the S-Statistic; Z – Z-score, or normalized test statistic (used if N>10).

[d] Trend: If N>10, the Z-score is compared to ±1.64 to determine trend significance.

[e] When the measurement error is taken into account, a significant upward trend does not exist.

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 two HZ-A wells (B53W13S and PW46) that had levels above the 30-µg/L ROD guideline in CY 2014. The results of the Mann-Kendall Trend Test are provided in Table 4-6. A statistically significant increasing trend was observed for total U concentrations at B53W13S. However, based on the time-versus-concentration plot for total U in B53W13S (Figure 4-15), no significant trend exists in total U concentrations at B53W13S when measurement error is taken into account.

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 2014 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, September, and December of CY 2014. Ground-water elevation contours were drawn using the May 16, 2014, and December 2, 2014, 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 December of CY 2014, 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 16, 2014) and dry season (December 2, 2014). The hydraulic gradient increases near CWC, where the average horizontal gradient ranges from 0.021 ft/ft (May 16, 2014) to 0.022 ft/ft (December 2, 2014). 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 2014 water-level measurements, the position of the HZ-A ground-water surface averages approximately 0.74 ft (0.23 m) higher in the corresponding shallow wells at the SLAPS and SLAPS VPs in the wet season (May) than in the dry season (December).

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 2014 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 0.0015 ft/ft in both May and December of 2014. 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 7.1 ft (2.2 m) 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 [152.4 m] amsl) or by seasonal changes. These features are likely a result of the overlying clay layers limiting vertical ground-water movement.

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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 St. Louis Sites (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 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 as follows:

- 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 structure 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 EMICY14 outlines the analyses to be performed at the NC Sites for various media (USACE 2013).

Flexibility to address non-periodic environmental sampling, such as 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 in completing 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 2015b). Data entered into the database may be flagged accordingly.

5.5 PERFORMANCE AND SYSTEM AUDITS

Performance and system audits of both field and laboratory activities are 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 Environmental Monitoring Implementation for Calendar Year (EMICY) documents.

5.5.1 Field Assessments

Internal assessments (audit or surveillance) of field activities (sampling and measurements) are conducted by the QA/QC Officer (or designee). Assessments include an examination of field sampling records, field instrument operating records, sample collection, handling and packaging procedures, 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 laboratories are subject to USACE periodic review(s) by the local USACE Chemist to demonstrate compliance with the *Department of Defense Quality Systems Manual for Environmental Laboratories (DOD QSM)* Version 5.0 (DOD 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 Radiological Laboratory* (USACE 2013). These 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 are 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 are to follow the guidance as presented in the *DOD QSM* (DOD 2013).

5.6 SUBCONTRACTED LABORATORY PROGRAMS

All samples collected during environmental monitoring activities were analyzed by USACE-approved 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*, Third Edition (USEPA 1993) and by other documented USEPA or nationally recognized methods. Laboratory SOPs are based on USEPA SW-846 methods.

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 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 2014 environmental monitoring sampling activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-1. Non-Radiological Duplicate Sample Analysis for CY 2014 – Surface and Ground Water[a]

Sample Name	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169444 / CWC169444-1	NC	NC	0.00	NC	NC
CWC176623 / CWC176623-1	NC	17.39	1.01	NC	3.77
SVP173556 / SVP173556-1	NC	NC	0.00	NC	NC
	Molybdenum	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169444 / CWC169444-1	0.00	NC	NC	NC	NC
CWC176623 / CWC176623-1	0.00	13.79	NC	NC	8.00
SVP173556 / SVP173556-1	NC	29.13	NC	NC	NC

[a] RPD criterion for liquid samples is less than or equal to 30 percent.
-1 Sample Duplicate
NC Not calculated due to one or both concentrations being below DLs.

Table 5-2. Non-Radiological Duplicate Sample Analysis for CY 2014 – Sediment[a]

Sample Name[b]	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169445 / CWC169445-1	NC	6.56	19.35	**55.67**	40.00
CWC176624 / CWC176624-1	42.55	11.90	28.57	46.75	**76.92**
	Molybdenum	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169445 / CWC169445-1	NC	6.06	44.44	NC	5.13
CWC176624 / CWC176624-1	**118.37**	**80.00**	10.00	NC	30.77

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent.
[b] Results reported in mg/kg.
-1 Sample Duplicate
NC Not calculated due to one or both concentrations being below DLs.
Bold Values exceed the control limits. Values not in bold are within control limits.

Table 5-3. Radiological Duplicate Sample Analysis for CY 2014 – Surface and Ground Water[a]

Sample Name	Radium-226		Radium-228		Thorium-228		Thorium-230	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169444 / CWC169444-1	NC	NA	*	*	NC	NA	NC	NA
CWC176623 / CWC176623-1	NC	NA	*	*	NC	NA	NC	NA
SVP173556 / SVP173556-1	NC	NA	*	*	NC	NA	NC	NA
	Thorium-232		Uranium-234		Uranium-235		Uranium-238	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169444 / CWC169444-1	NC	NA	36.72	0.42	NC	NA	23.38	NA
CWC176623 / CWC176623-1	NC	NA	45.20	0.42	NC	NA	NC	NA
SVP173556 / SVP173556-1	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.
-1 Sample Duplicate
NC Not calculated due to one or both concentrations being below MDCs.
NA Not applicable; see RPD.
* Not calculated because either parent or split sample was not analyzed.

Table 5-4. Radiological Duplicate Sample Alpha Analysis for CY 2014 – Sediment[a]

Sample Name	Thorium-228		Thorium-230		Thorium-232	
	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-1	4.22	NA	33.83	NA	4.53	NA
CWC176624 / CWC176624-1	56.68	0.93	66.80	1.59	21.40	NA

[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.
-1 Sample Duplicate
NA Not applicable; see RPD.

Table 5-5. Radiological Duplicate Sample Gamma Analysis for CY 2014 – Sediment[a]

Sample Name	Actinium-227		Americium-241		Cesium-137		Potassium-40	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-1	NC	NA	NC	NA	NC	NA	2.11	NA
CWC176624 / CWC176624-1	NC	NA	NC	NA	NC	NA	37.50	NA
	Protactinium-231		Radium-226		Radium-228		Thorium-228	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-1	NC	NA	2.78	NA	11.62	NA	11.62	NA
CWC176624 / CWC176624-1	NC	NA	43.68	NA	35.98	NA	35.98	NA
	Thorium-230		Thorium-232		Uranium-235		Uranium-238	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-1	11.62	NA	NC	NA	NC	NA	11.62	NA
CWC176624 / CWC176624-1	35.98	NA	NC	NA	39.42	NA	35.98	NA

[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.
-1 Sample Duplicate
NC Not calculated due to one or both concentrations being below MDCs.
NA Not applicable; see RPD.

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 2014 environmental monitoring sampling activities was acceptable. See Section 5.9 for the evaluation process.

Table 5-6. Non-Radiological Split Sample Analysis for CY 2014 – Surface and Ground Water

Sample Name	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	RPD	RPD	RPD	RPD
CWC169444 / CWC169444-2	NC	NC	**40.34**	NC	NC
CWC176623 / CWC176623-2	NC	NC	**31.48**	NC	**131.58**
SVP173556 / SVP173556-2	NC	NC	2.17	NC	NC
	Molybdenum	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169444 / CWC169444-2	**44.44**	**70.97**	NC	NC	NC
CWC176623 / CWC176623-2	**26.90**	NC	NC	NC	NC
SVP173556 / SVP173556-2	NC	NC	NC	NC	NC

[a] RPD criterion for liquid samples is less than or equal to 30 percent.
-2 Sample Split
NC Not calculated due to one or both concentrations being below DLs.
Bold Values exceed the control limits. Values not in bold are within control limits.

Table 5-7. Non-Radiological Split Sample Analysis for CY 2014 – Sediment[a]

Sample Name	Antimony	Arsenic	Barium	Cadmium	Chromium
	RPD	RPD	RPD	RPD	RPD
CWC169445 / CWC169445-2	NC	**68.79**	33.68	**97.81**	2.12
CWC176624 / CWC176624-2	**85.36**	**60.94**	30.77	**91.24**	22.22
	Molybdenum	**Nickel**	**Selenium**	**Thallium**	**Vanadium**
	RPD	**RPD**	**RPD**	**RPD**	**RPD**
CWC169445 / CWC169445-2	NC	30.22	NC	NC	3.92
CWC176624 / CWC176624-2	5.35	27.13	**176.54**	NC	17.82

[a] RPD criterion for solid matrix samples is less than or equal to 50 percent.
-2 Sample Split
NC Not calculated due to one or both concentrations being below DLs.
Bold Values exceed the control limits. Values not in bold are within control limits.

Table 5-8. Radiological Split Sample Analysis for CY 2014 – Surface and Ground Water[a]

Sample Name	Radium-226		Radium-228		Thorium-228		Thorium-230	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169444 / CWC169444-2	NC	NA	*	*	NC	NA	NC	NA
CWC176623 / CWC176623-2	NC	NA	*	*	NC	NA	NC	NA
SVP173556 / SVP173556-2	NC	NA	*	*	NC	NA	NC	NA
	Thorium-232		Uranium-234		Uranium-235		Uranium-238	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169444 / CWC169444-2	NC	NA	28.74	NA	NC	NA	0.14	NA
CWC176623 / CWC176623-2	NC	NA	64.16	0.65	NC	NA	40.18	0.42
SVP173556 / SVP173556-2	NC	NA	NC	NA	NC	NA	11.71	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.
-2 Sample Split
NC Not calculated due to one or both concentrations being below MDCs.
NA Not applicable; see RPD.
* Not calculated because either parent or split sample was not analyzed.

Table 5-9. Radiological Split Sample Alpha Analysis for CY 2014 – Sediment[a]

Sample Name[a]	Thorium-228		Thorium-230		Thorium-232	
	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-2	47.57	NA	21.93	NA	33.27	NA
CWC176624 / CWC176624-2	21.04	NA	25.12	NA	6.84	NA

[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.
-2 Sample Split
NA Not applicable; see RPD.

Table 5-10. Radiological Split Sample Gamma Analysis for CY 2014 – Sediment[a]

Sample Name	Actinium-227		Americium-241		Cesium-137		Potassium-40	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-2	NC	NA	NC	NA	NC	NA	0.71	NA
CWC176624 / CWC176624-2	NC	NA	NC	NA	NC	NA	13.75	NA
	Protactinium-231		Radium-226		Radium-228		Thorium-228	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-2	NC	NA	23.62	NA	11.62	NA	11.62	NA
CWC176624 / CWC176624-2	NC	NA	57.75	1.53	1.70	NA	1.70	NA
	Thorium-230		Thorium-232		Uranium-235		Uranium-238	
	RPD	NAD	RPD	NAD	RPD	NAD	RPD	NAD
CWC169445 / CWC169445-2	*	*	11.62	NA	NC	NA	NC	NA
CWC176624 / CWC176624-2	*	*	1.70	NA	NC	NA	NC	NA

[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.
-2 Sample Split
NC Not calculated due to one or both concentrations being below MDCs.
NA Not applicable; see RPD.
* Not calculated because either parent or split sample was not analyzed.

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 2015c). 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, therefore, would 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 contamination potential 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 USEPA regional or National Functional Guidelines, 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 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 that result 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 District Chemist or District 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. The following sub-sections will provide 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 2014 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 report, 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 2014 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 EMICY14; 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 2014 environmental monitoring sampling activities was acceptable for the media and sampling previously listed in this document.

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. These most recent (post CY 1997) analytical data, however, may not be directly comparable to data collected before CY 1997 because of differences in DQOs. Some sample media, such as storm water, and radiological monitoring have values that are primarily useful in the present, thus the comparison to historical data is not as relevant. 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 2014 environmental monitoring sampling activities, the data completeness was 100 percent (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 report, 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 2014[a]

Sample Name[b]	Antimony			Arsenic			Barium			Cadmium			Chromium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC169444	17.00	17.00	U	12.00	12.00	U	140.00	2.20	=	1.00	1.00	U	33.00	33.00	U
CWC169444-1	17.00	17.00	U	12.00	12.00	U	140.00	2.20	=	1.00	1.00	U	33.00	33.00	U
CWC169444-2	10.00	10.00	U	2.00	5.00	J	93.00	2.00	=	1.00	0.30	J	2.00	5.00	=
CWC176623	2.00	1.70	J	2.10	1.20	=	100.00	0.22	=	0.10	0.10	U	2.60	1.00	=
CWC176623-1	1.70	1.70	U	2.50	1.20	=	99.00	0.22	=	0.10	0.10	U	2.70	1.00	=
CWC176623-2	6.20	6.20	U	8.80	8.80	U	72.80	2.00	=	1.90	1.90	U	12.60	2.00	=
SVP173556	1.70	1.70	U	1.20	1.20	U	93.00	0.22	=	0.15	0.10	=	3.30	3.30	U
SVP173556-1	1.70	1.70	U	1.20	1.20	U	93.00	0.22	=	0.10	0.10	U	3.30	3.30	U
SVP173556-2	10.00	10.00	U	5.00	5.00	U	91.00	2.00	=	0.30	0.30	U	2.00	5.00	=
	Molybdenum			Nickel			Selenium			Thallium			Vanadium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC169444	11.00	10.00	=	4.20	4.00	=	16.00	16.00	U	5.50	5.50	U	24.00	24.00	U
CWC169444-1	11.00	10.00	=	4.00	4.00	U	16.00	16.00	U	5.50	5.50	U	24.00	24.00	U
CWC169444-2	7.00	4.00	J	2.00	7.00	=	10.00	10.00	U	10.00	10.00	U	2.00	3.00	=
CWC176623	7.40	1.00	=	3.10	0.40	=	1.60	1.60	U	0.55	0.55	U	3.90	2.40	=
CWC176623-1	7.40	1.00	=	2.70	0.40	=	2.30	1.60	=	0.55	0.55	U	3.60	2.40	=
CWC176623-2	9.70	4.90	=	9.30	9.30	U	28.10	6.80	=	4.30	4.30	U	7.20	7.20	U
SVP173556	1.00	1.00	U	0.59	0.40	=	1.60	1.60	U	0.55	0.55	U	2.40	2.40	U
SVP173556-1	1.00	1.00	U	0.44	0.40	=	1.60	1.60	U	0.55	0.55	U	2.40	2.40	U
SVP173556-2	2.00	4.00	=	7.00	7.00	U	78.00	10.00	=	10.00	10.00	U	1.00	3.00	=

[a] Results are expressed in pCi/L.
[b] Samples ending in “-1” are duplicate samples. Samples ending in “-2” are split samples.
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 2014[a]

Sample Name[b]	Antimony			Arsenic			Barium			Cadmium			Chromium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC169445	1.00	1.00	U	5.90	1.60	=	170.00	0.59	J	0.35	0.10	=	14.00	2.80	=
CWC169445-1	1.20	1.20	U	6.30	1.90	=	140.00	0.69	J	0.62	0.12	=	21.00	3.30	=
CWC169445-2	2.79	2.79	U	2.88	0.53	=	121.00	0.81	=	1.02	0.39	=	14.30	0.89	=
CWC176624	0.37	0.19	=	7.90	0.30	=	150.00	0.11	=	0.59	0.02	=	28.00	0.52	J
CWC176624-1	0.57	0.24	=	8.90	0.37	=	200.00	0.14	=	0.95	0.02	=	63.00	0.65	J
CWC176624-2	0.92	0.68	=	4.21	0.93	=	110.00	0.23	=	1.58	0.19	=	22.40	0.81	=
	Molybdenum			Nickel			Selenium			Thallium			Vanadium		
	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ	Result	DL	VQ
CWC169445	0.78	0.78	U	16.00	0.67	=	2.10	0.99	J	0.95	0.95	U	20.00	4.60	=
CWC169445-1	1.00	0.91	=	17.00	0.79	=	3.30	1.20	J	1.10	1.10	U	19.00	5.40	=
CWC169445-2	0.15	0.15	U	11.80	0.73	=	0.94	0.94	U	1.25	1.25	U	20.80	0.70	=
CWC176624	2.00	0.14	=	18.00	0.12	=	1.90	0.18	=	0.17	0.17	U	22.00	0.84	=
CWC176624-1	7.80	0.18	=	42.00	0.15	=	2.10	0.23	=	0.22	0.22	U	30.00	1.10	=
CWC176624-2	2.11	0.26	=	13.70	0.93	=	30.50	0.68	=	2.50	0.43	=	18.40	0.70	=

[a] Results are expressed in mg/kg.
[b] Samples ending in "-1" are duplicate samples. Samples ending in "-2" are split samples.
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 2014[a]

Sample Name[b]	Radium-226				Radium-228				Thorium-228				Thorium-230			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169444	0.12	0.80	2.03	UJ	*	*	*	*	0.09	0.19	0.26	UJ	0.85	0.59	0.26	J
CWC169444-1	-0.11	0.23	1.36	UJ	*	*	*	*	0.22	0.32	0.53	UJ	0.31	0.37	0.53	UJ
CWC169444-2	0.17	0.14	0.21	U	*	*	*	*	0.18	0.14	0.16	J	0.01	0.04	0.10	UJ
CWC176623	0.40	0.57	0.98	UJ	*	*	*	*	0.19	0.43	0.89	UJ	0.14	0.29	0.57	UJ
CWC176623-1	0.33	0.57	1.09	UJ	*	*	*	*	0.07	0.21	0.49	UJ	0.30	0.31	0.40	UJ
CWC176623-2	0.09	0.05	0.07	J	*	*	*	*	0.11	0.08	0.12	U	0.16	0.13	0.19	U
SVP173556	0.56	0.65	0.50	UJ	*	*	*	*	0.24	0.25	0.32	UJ	0.24	0.25	0.32	UJ
SVP173556-1	0.00	0.00	0.53	U	*	*	*	*	0.12	0.28	0.58	UJ	0.25	0.25	0.17	UJ
SVP173556-2	0.00	0.05	0.10	UJ	*	*	*	*	0.09	0.08	0.05	J	0.23	0.13	0.05	J
	Thorium-232				Uranium-234				Uranium-235				Uranium-238			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169444	0.09	0.19	0.26	UJ	0.88	0.59	0.59	J	0.10	0.20	0.27	UJ	0.71	0.50	0.22	J
CWC169444-1	0.09	0.28	0.65	UJ	1.27	0.73	0.25	J	0.11	0.23	0.30	UJ	0.90	0.60	0.25	J
CWC169444-2	0.03	0.06	0.10	UJ	1.17	0.31	0.05	=	0.04	0.07	0.11	UJ	0.72	0.24	0.11	=
CWC176623	0.00	0.00	0.26	U	0.63	0.45	0.47	J	0.08	0.16	0.21	UJ	0.54	0.40	0.38	J
CWC176623-1	0.00	0.00	0.18	U	0.40	0.34	0.18	J	0.08	0.17	0.22	UJ	0.20	0.23	0.18	UJ
CWC176623-2	0.03	0.05	0.09	UJ	0.33	0.15	0.11	J	0.04	0.06	0.06	UJ	0.36	0.16	0.05	=
SVP173556	0.00	0.00	0.15	U	0.24	0.25	0.16	UJ	0.00	0.00	0.20	U	0.48	0.35	0.16	J
SVP173556-1	0.00	0.00	0.17	U	0.35	0.37	0.52	UJ	-0.04	0.09	0.52	UJ	0.32	0.33	0.42	UJ
SVP173556-2	0.07	0.07	0.08	UJ	0.49	0.20	0.06	=	0.02	0.05	0.07	UJ	0.43	0.19	0.09	=

[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 2014[a]

Sample Name[b]	Thorium-228[c]				Thorium-230[c]				Thorium-232[c]			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169445	1.21	0.55	0.34	J	1.67	0.67	0.34	=	0.95	0.49	0.37	J
CWC169445-1	1.16	0.54	0.26	J	2.35	0.83	0.14	=	0.99	0.50	0.31	=
CWC169445-2	0.75	0.16	0.06	=	1.34	0.23	0.03	=	0.68	0.15	0.04	=
CWC176624	0.80	0.38	0.18	J	6.81	1.87	0.18	=	0.85	0.39	0.09	=
CWC176624-1	1.44	0.57	0.20	=	3.40	1.06	0.20	=	1.05	0.46	0.10	=
CWC176624-2	0.99	0.21	0.07	=	5.29	0.62	0.05	=	0.79	0.18	0.05	=
	Actinium-227				Americium-241				Cesium-137			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169445	-0.03	0.17	0.28	UJ	0.01	0.09	0.14	UJ	0.00	0.02	0.03	UJ
CWC169445-1	0.05	0.17	0.28	UJ	0.16	0.09	0.15	UJ	0.01	0.02	0.03	UJ
CWC169445-2	-0.34	0.47	0.77	UJ	0.07	0.12	0.21	UJ	0.02	0.06	0.11	UJ
CWC176624	-0.04	0.25	0.41	UJ	-0.02	0.06	0.08	UJ	0.02	0.02	0.04	UJ
CWC176624-1	0.10	0.16	0.27	UJ	0.03	0.03	0.05	UJ	0.00	0.02	0.03	UJ
CWC176624-2	0.08	0.49	1.49	UJ	0.09	0.17	0.28	UJ	-0.01	0.08	0.14	UJ
	Potassium-40				Protactinium-231				Radium-226			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169445	14.10	1.30	0.28	=	0.09	0.47	0.71	UJ	1.42	0.38	0.07	=
CWC169445-1	14.40	1.32	0.21	=	0.44	0.52	0.83	UJ	1.46	0.39	0.08	=
CWC169445-2	14.20	2.56	1.07	=	0.16	0.20	2.48	UJ	1.12	0.24	0.11	=
CWC176624	17.10	1.33	0.32	=	-1.31	0.78	1.18	UJ	2.12	0.56	0.11	=
CWC176624-1	11.70	1.01	0.25	=	0.45	0.50	0.76	UJ	1.36	0.36	0.06	=
CWC176624-2	14.90	2.58	1.01	=	-0.59	1.94	3.33	UJ	1.17	0.28	0.23	=
	Radium-228				Thorium-228[c]				Thorium-230[c]			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169445	0.91	0.08	0.10	=	0.91	0.08	0.10	=	-3.06	6.44	10.10	UJ
CWC169445-1	1.02	0.09	0.09	=	1.02	0.09	0.09	=	7.08	6.47	10.80	UJ
CWC169445-2	1.02	0.27	0.17	=	1.02	0.27	0.17	=	*	*	*	*
CWC176624	1.01	0.12	0.13	=	1.01	0.12	0.13	=	22.90	8.85	7.33	=
CWC176624-1	0.70	0.08	0.09	=	0.70	0.08	0.09	=	6.26	5.18	5.03	J
CWC176624-2	0.99	0.25	0.13	=	0.99	0.25	0.13	=	*	*	*	*
	Thorium-232[c]				Uranium-235				Uranium-238			
	Result	Error	MDC	VQ	Result	Error	MDC	VQ	Result	Error	MDC	VQ
CWC169445	0.91	0.08	0.10	=	-0.17	0.23	0.38	UJ	0.45	0.75	1.24	UJ
CWC169445-2	1.02	0.09	0.09	=	0.02	0.23	0.40	UJ	0.59	0.73	1.22	UJ
CWC169445-1	1.02	0.27	0.17	=	0.13	0.23	0.38	UJ	0.59	0.56	2.27	U
CWC176624	1.01	0.12	0.13	=	0.07	0.32	0.48	UJ	1.64	0.84	0.76	J
CWC176624-1	0.70	0.08	0.09	=	0.11	0.19	0.32	UJ	1.10	0.57	0.49	J
CWC176624-2	0.99	0.25	0.13	=	0.07	0.36	0.62	UJ	0.98	1.97	3.40	UJ

[a] Results are expressed in mg/kg. 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/yr, 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 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 NC Sites FUSRAP cleanup operations does not exceed the annual dose limit (i.e., 100 mrem/yr); 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 Part 20; and (*ii*) if an individual were continuously present in an unrestricted area, the dose from external sources would not exceed 2 millirem (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 NC Sites operations (previously listed 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 report.

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 2014 Radionuclide Emissions NESHAP Report").

6.1 SUMMARY OF ASSESSMENT RESULTS AND DOSE TRENDS

No excavation or loadout activities occurred on the Latty Avenue Properties, and soil cleanup activities on the most contaminated Latty Avenue Properties (HISS and Futura) were completed in CY 2011. Additionally, the TEDE from Latty Avenue Properties to a hypothetical maximally exposed receptor was indistinguishable from background radiation dose after the cleanup concluded on the Latty Avenue Properties. Therefore, calculation of TEDE from the Latty Avenue Properties to a hypothetical maximally exposed receptor will not be included in the current and future reports unless excavation or loadout activities occur on those properties.

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/yr, estimated for an individual who works full time at a location approximately 1,640 ft (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/yr, estimated for a youth spending time as a recreational user of CWC.

Annual dose trends from CY 2000 to CY 2014 at applicable NC Sites are documented on Figure 6-1. A comparison of the maximum annual dose from CY 2000 to CY 2014 at each of the applicable NC Sites to the annual average natural background dose of approximately 300 mrem/yr is provided on Figure 6-2.

6.2 PATHWAY ANALYSIS

The six complete pathways for exposure to 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 2014 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 2014 Dose Estimate	
		SLAPS	CWC
Liquid A	Ingestion of ground water from local wells down-gradient from the site.	N	N
Liquid B	Ingestion of fish inhabiting CWC.	NC	N
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	N

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.
NC Not a complete pathway for the respective site.
N Not applicable for the 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 is reviewed to determine whether a potential for exposure was present during CY 2014. If a potential exposure was determined to be possible, the pathway is termed applicable. Only applicable pathways are considered in estimates of dose.

The pathways applicable to the CY 2014 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 2014 for the following reasons:

- Liquid A is not applicable because the aquifer is of naturally low quality, and it 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 (Parker and Szlemp 1987) were fathead minnows.

- The dose equivalent from CWC to the receptor from contaminants in the water/sediment was estimated by using the Microshield Version 5.03 computer-modeling program. The scenario used was a youth playing in the creek bed (1 ft [0.3 m] 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. Therefore, the external gamma pathway (from contaminants in the creek water/sediment) is not applicable for the CWC receptor, because the gamma dose rate emitted from the contaminants is indistinguishable from background gamma radiation.

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 (SLAPS and 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 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 the USEPA *Federal Guidance Report,* No. 11 (USEPA 1989b) and the Oak Ridge National Laboratory (ORNL) *Calculation of Slope Factors and Dose Coefficients* (ORNL 2014) document.

6.4 DETERMINATION OF TOTAL EFFECTIVE DOSE EQUIVALENT FOR EXPOSURE SCENARIOS

TEDEs for the exposure scenarios were calculated using CY 2014 monitoring data. Calculations for dose scenarios are provided in Appendix G. Dose equivalent estimates are well below the standards set by the NRC for annual public exposure and USEPA NESHAP limits.

The CY 2014 TEDEs for hypothetical maximally exposed individuals near the SLAPS and SLAPS VPs and CWC are less than 0.1 mrem/yr and 0.4 mrem/yr, respectively. In comparison, the annual average exposure to natural background radiation in the United States results in a TEDE of approximately 300 mrem/yr (NCRP 2009). Assumptions are detailed in the following sections.

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

There were no excavation or loadout activities at the Latty Avenue Properties during CY 2014; therefore, dose from the Latty Avenue Properties is considered negligible (Leidos 2015d).

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

The SLAPS and SLAPS VPs contributing to dose (i.e., those properties at which RA occurred in CY 2014) include: the Ballfields, VP-57 and VP-58, the Pershall Road South Ditch, and 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 SLAPS VPs 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 and SLAPS VPs.

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 1,640 ft (500 m) west-southwest from the center of the SLAPS Loadout area. Exposure time is 2,000 hours per year (Leidos 2015e).
- 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 2015e).
- Exposure from Rn-222 (and progeny) was calculated using a dispersion factor and Rn-222 (alpha track) monitoring data at the site perimeter between the source and the receptor (Leidos 2015e).

Based on the exposure scenario and assumptions described previously, a maximally exposed individual working outside at the receptor facility 1,640 ft (500 m) west-southwest of the center of the SLAPS Loadout area would have received less than 0.1 mrem/yr from external gamma, less than 0.1 mrem/yr from airborne radioactive particulates, and less than 0.1 mrem/yr from Rn-222, for a TEDE of less than 0.1 mrem/yr (Leidos 2015e).

6.4.3 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 1989c).
- 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 2015f).
- 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/yr from soil/sediment ingestion and 0.3 mrem/yr from water ingestion, for a TEDE of 0.4 mrem/yr (Leidos 2015f).

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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.*

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FIGURES

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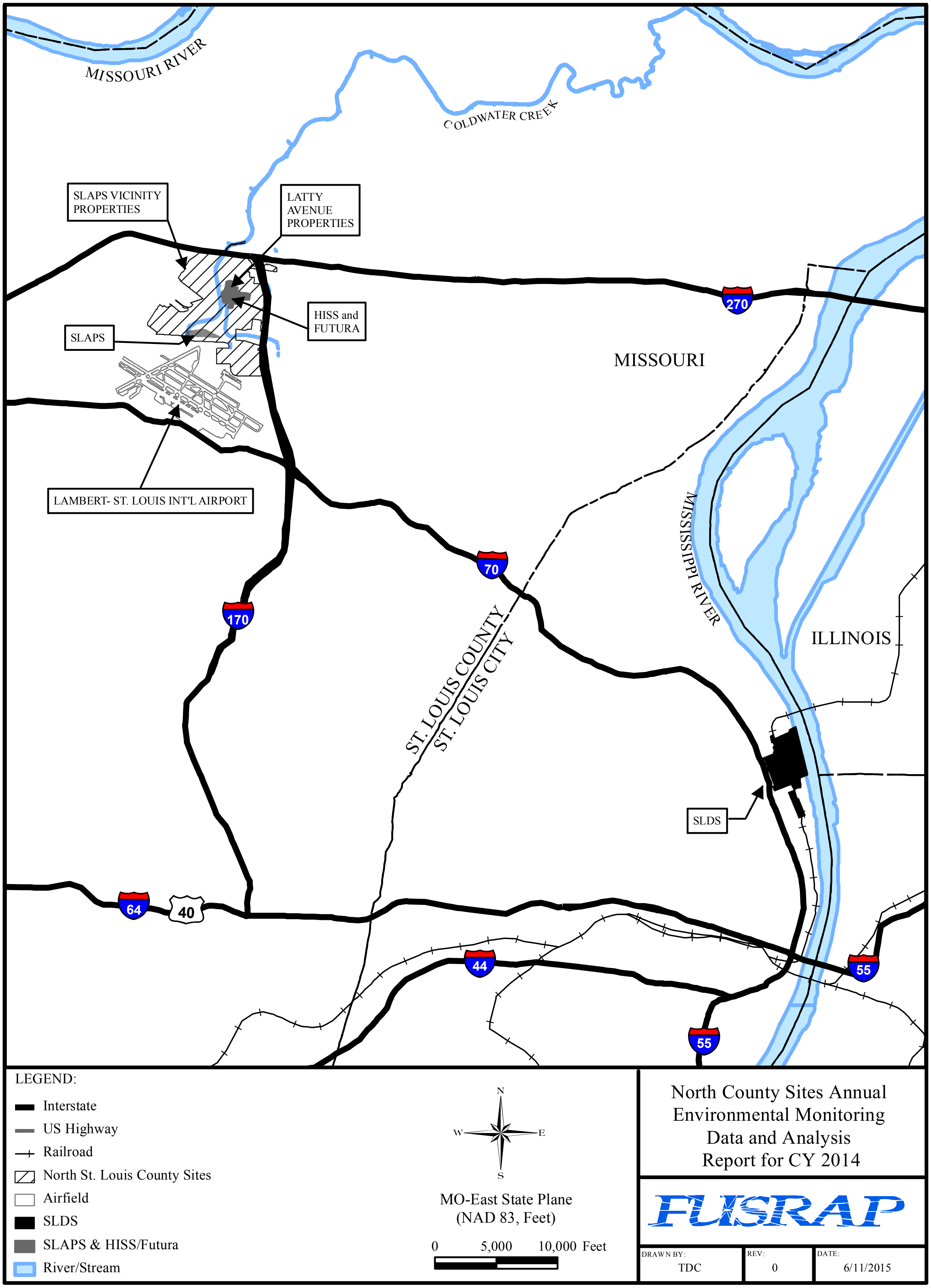

Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure 1-1 Location Map of the St Louis Sites.mxd

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

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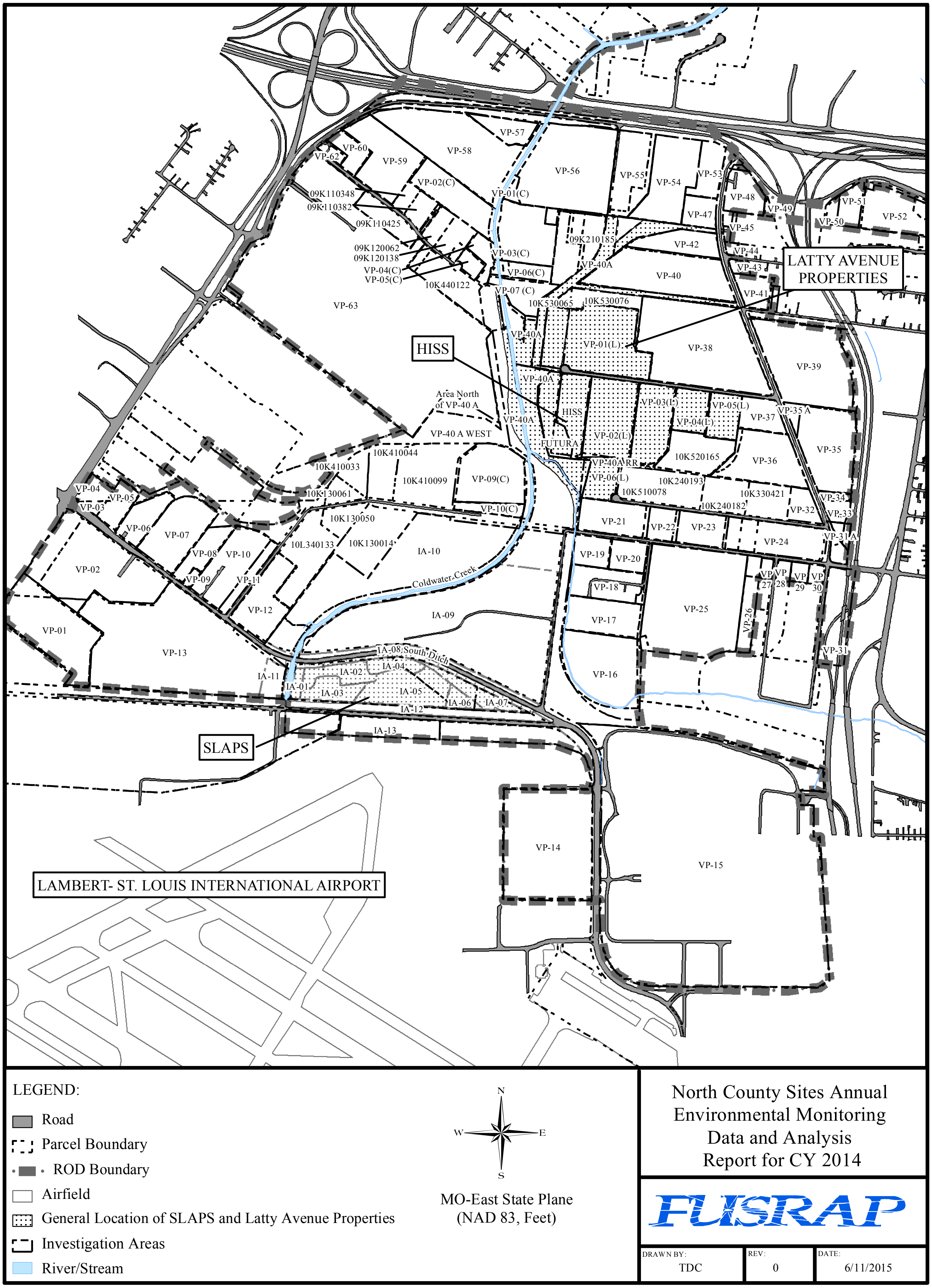

Figure 1-2. Plan View of the SLAPS, SLAPS VPs, and Latty Avenue Properties

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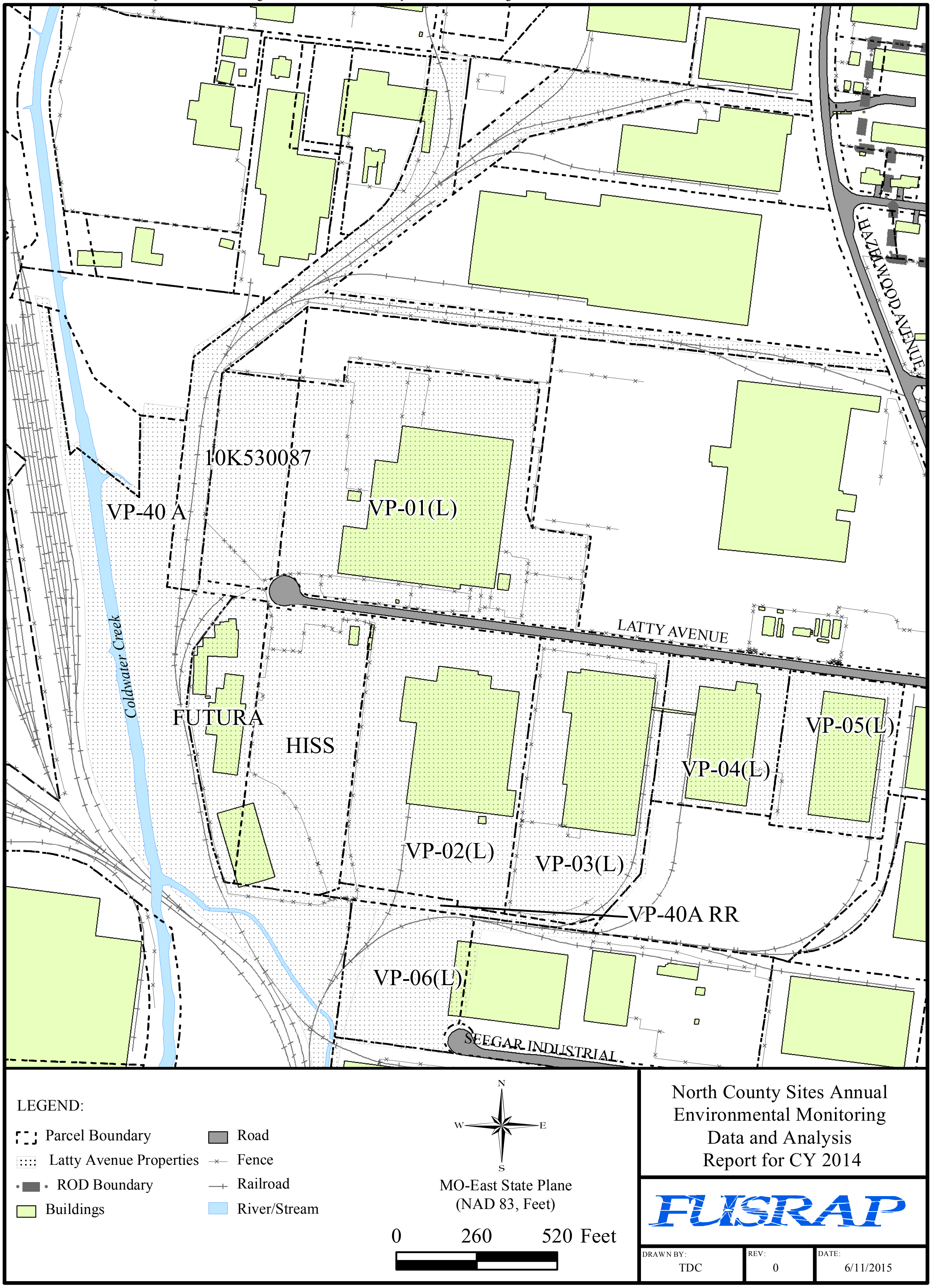

Figure 1-3. Plan View of the Latty Avenue Properties including HISS and Futura

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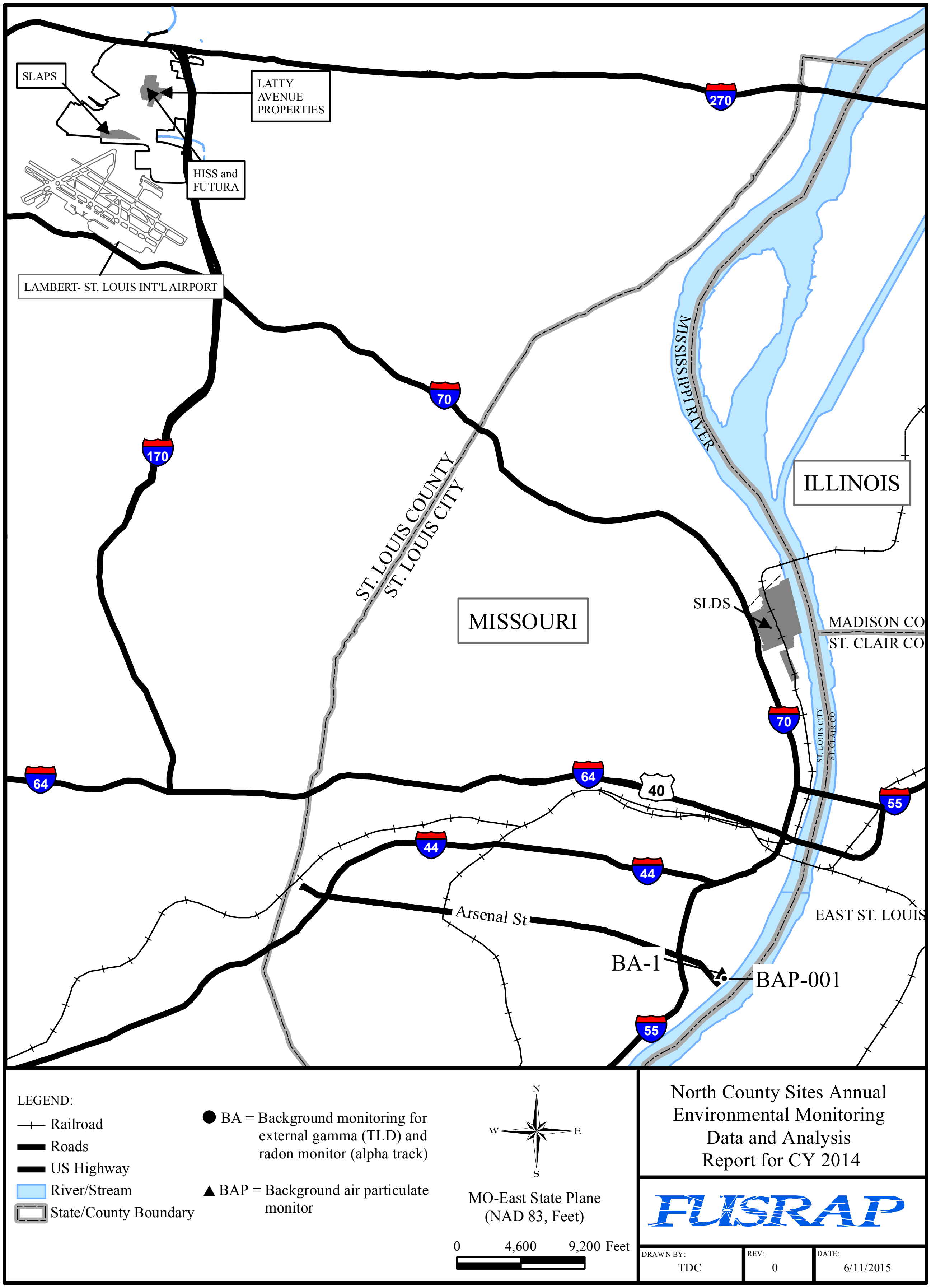

Figure 2-1. Gamma Radiation, Rn, and Particulate Air Monitoring at St. Louis Background Location - USACE Service Base

Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure 2-2 Gamma Radiation, Rn, and Particulate Air Monitoring Locations at the Latty Avenue Properties.mxd

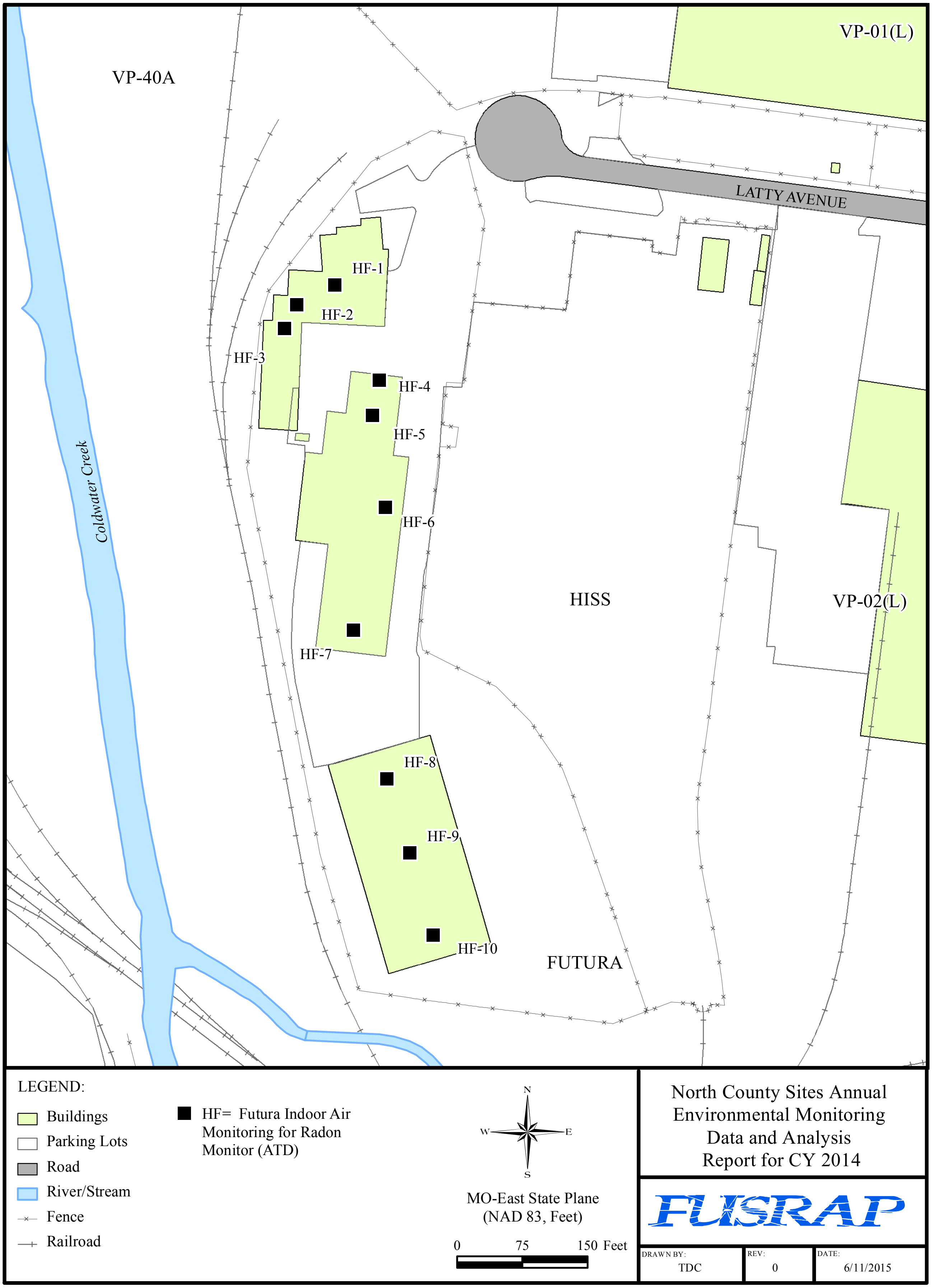

Figure 2-2. Radon Monitoring Locations at the Latty Avenue Properties

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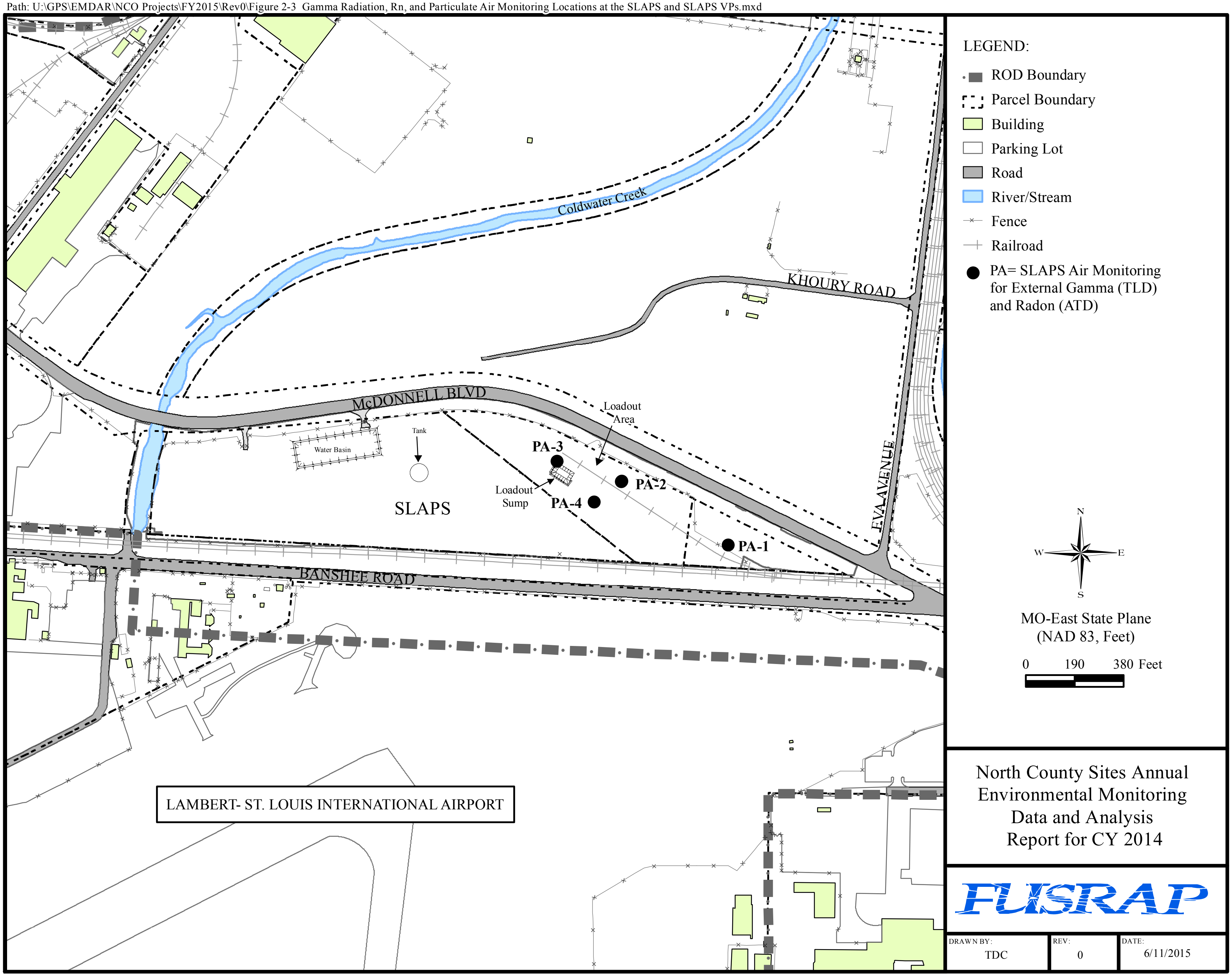

Figure 2-3. Gamma Radiation and Rn Monitoring Locations at the SLAPS

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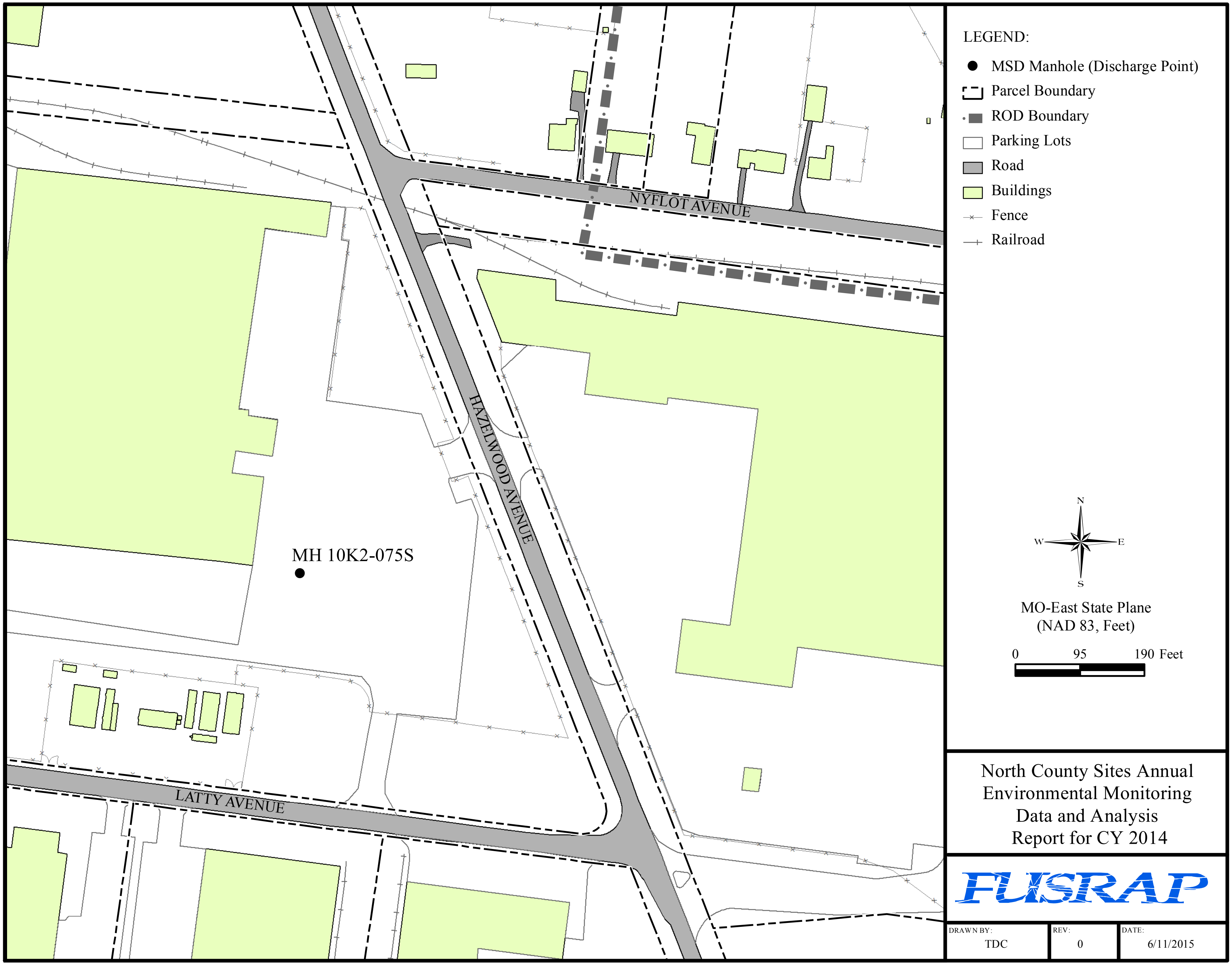


Figure 3-1. MSD Discharge Point for Waste Water from the USACE Laboratory

Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure 3-2 Storm-Water Outfalls and MSD Excavation-Water Discharge Point at SLAPS.mxd

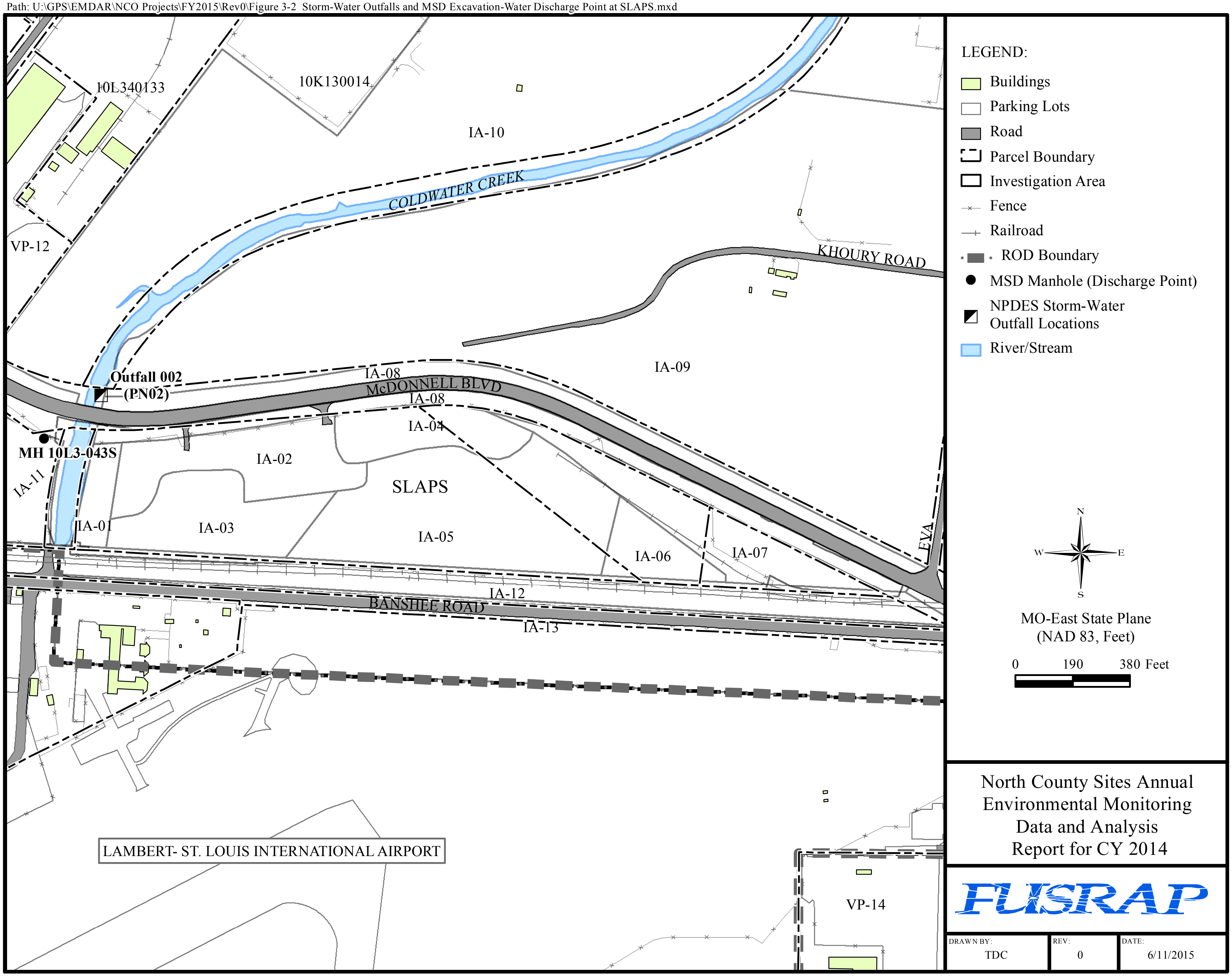
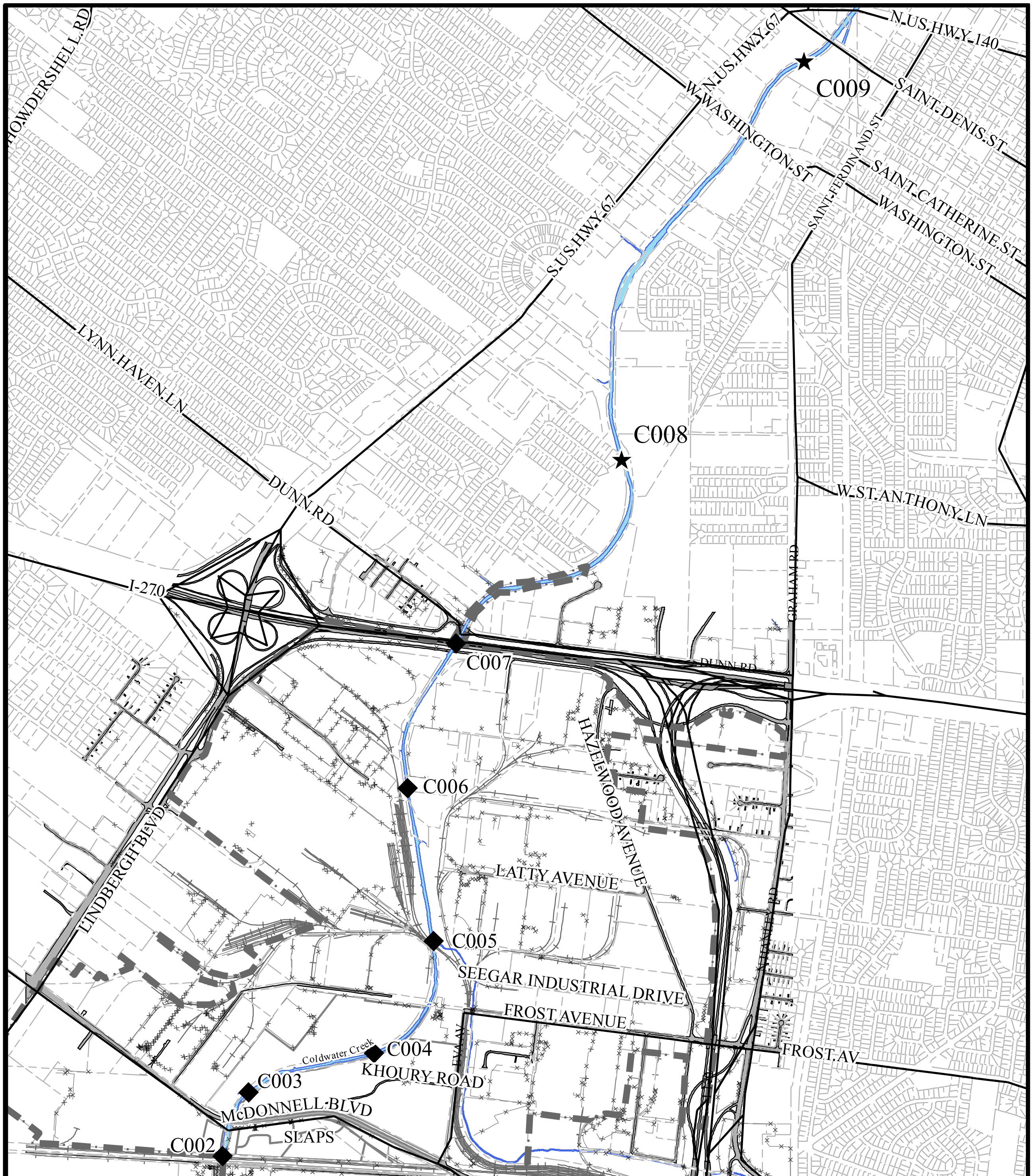


Figure 3-2. Storm-Water Outfall and MSD Excavation-Water Discharge Manhole Locations at the SLAPS



North County Sites Annual Environmental Monitoring Data and Analysis Report for CY 2014

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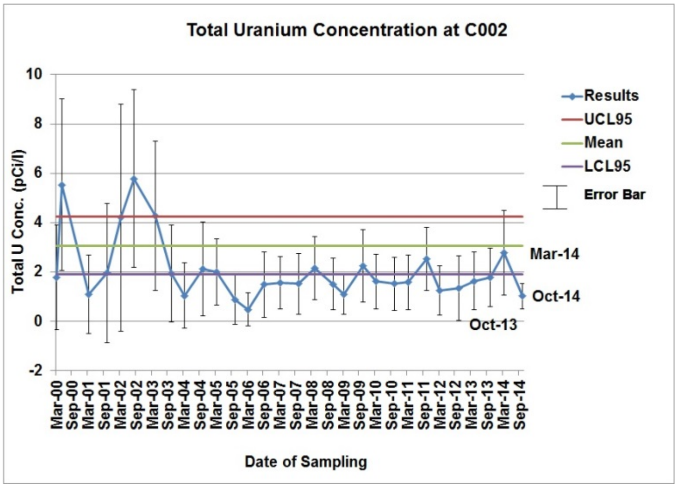
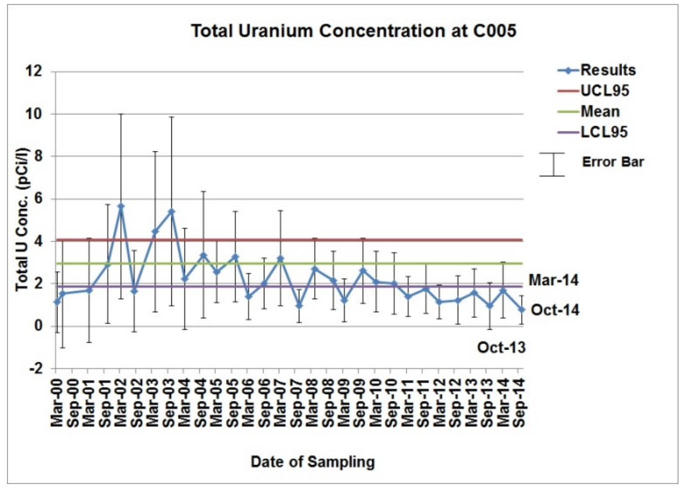
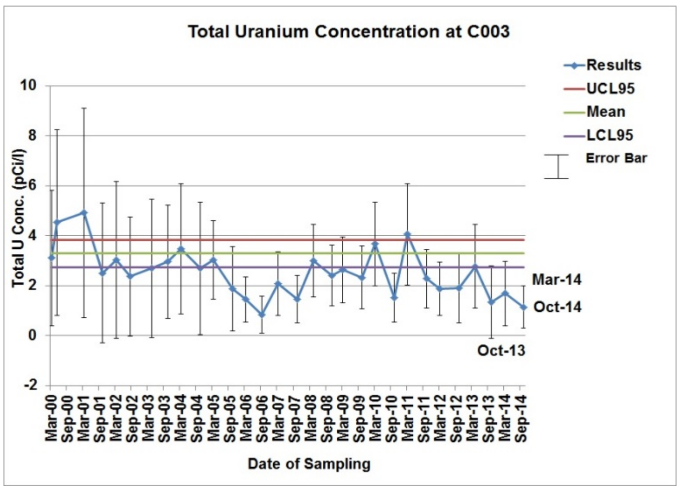
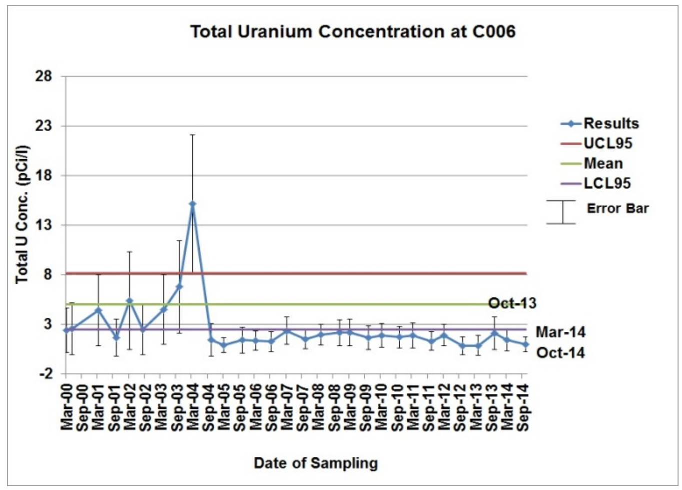
Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure 3-3 Surface-Water and Sediment Sampling Locations at Coldwater Creek.mxd

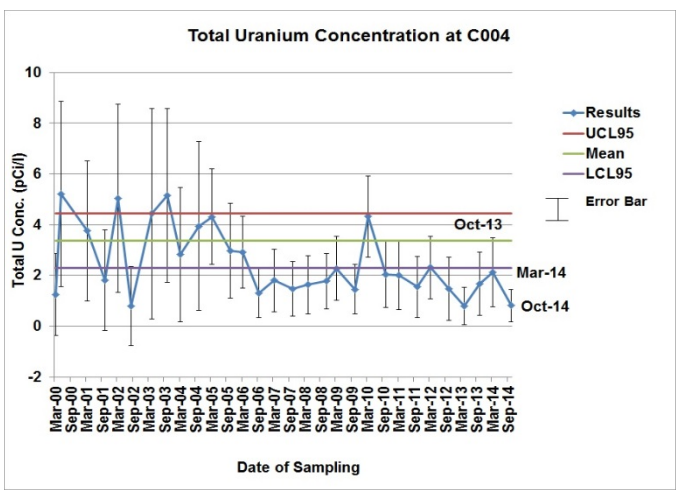
Figure 3-3. Surface-Water and Sediment Sampling Locations at Coldwtater Creek











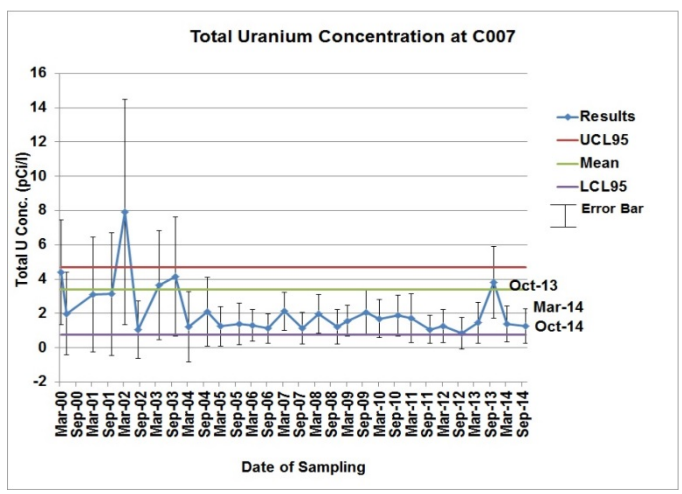
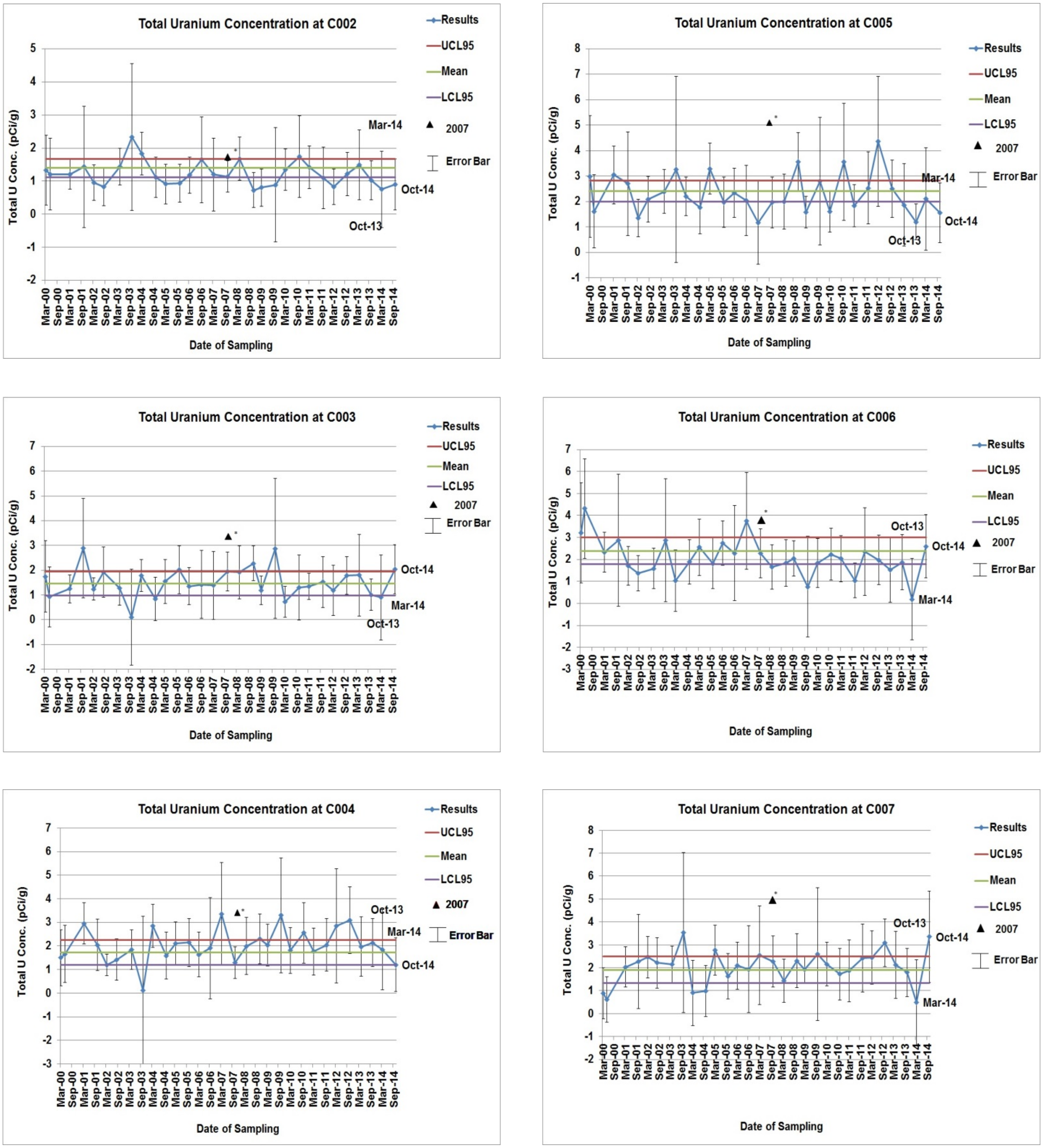


Figure 3-4. Total U Concentrations in Surface Water Versus Sampling Date



* 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.
		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.
			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			VARVED CLAY	0-8	Alternating layers of dark and light clay as much as 1/16 inch thick (3M).
			CLAY	0-26	Dense, stiff, moist, highly plastic clay (3M).
Hydrostratigraphic zone (HZ)-C			SILTY CLAY	10-29	Similar to upper silty clay. Probable unconformable contact with highly plastic clay (3B).
			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.

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

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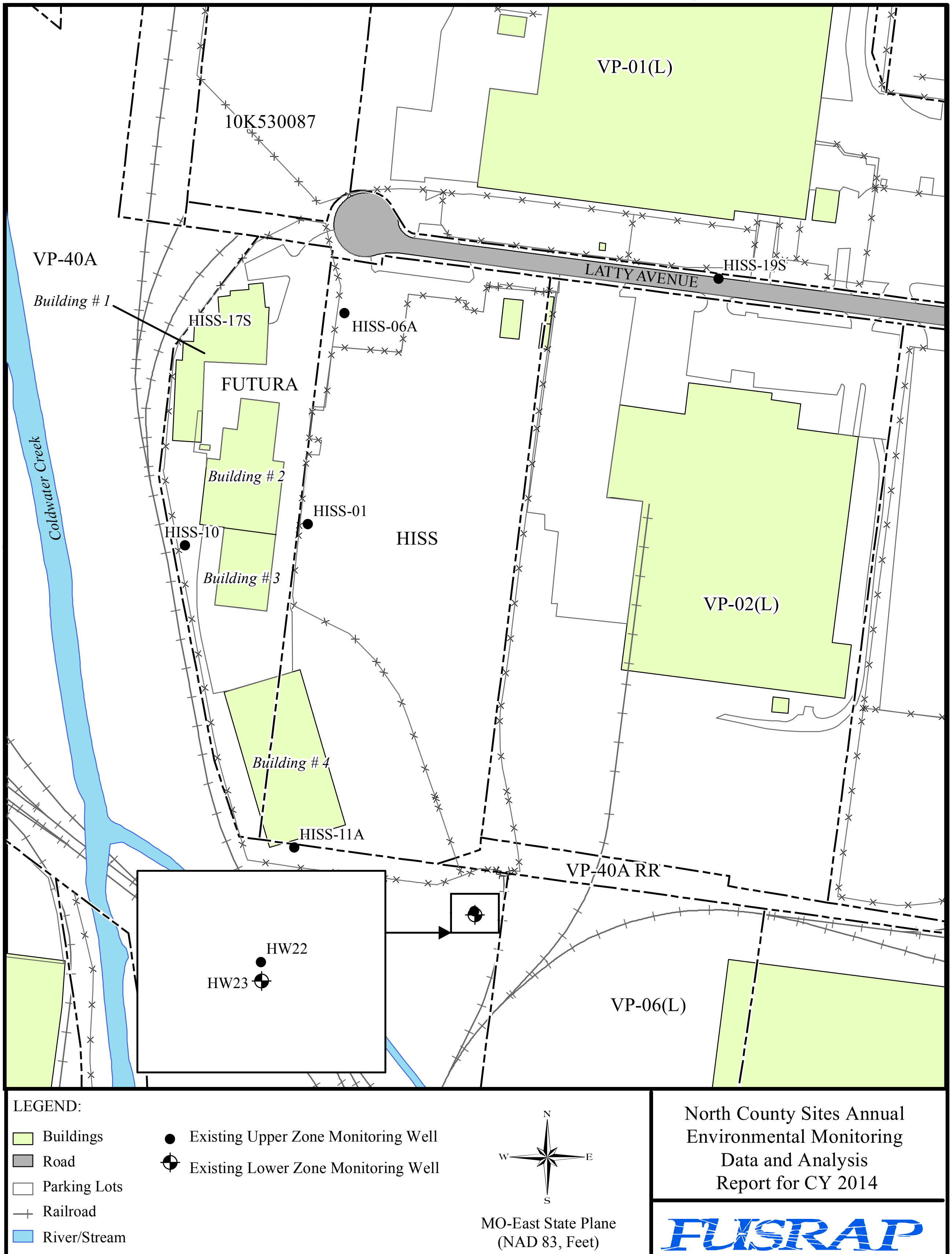

North County Sites Annual Environmental Monitoring Data and Analysis Report for CY 2014

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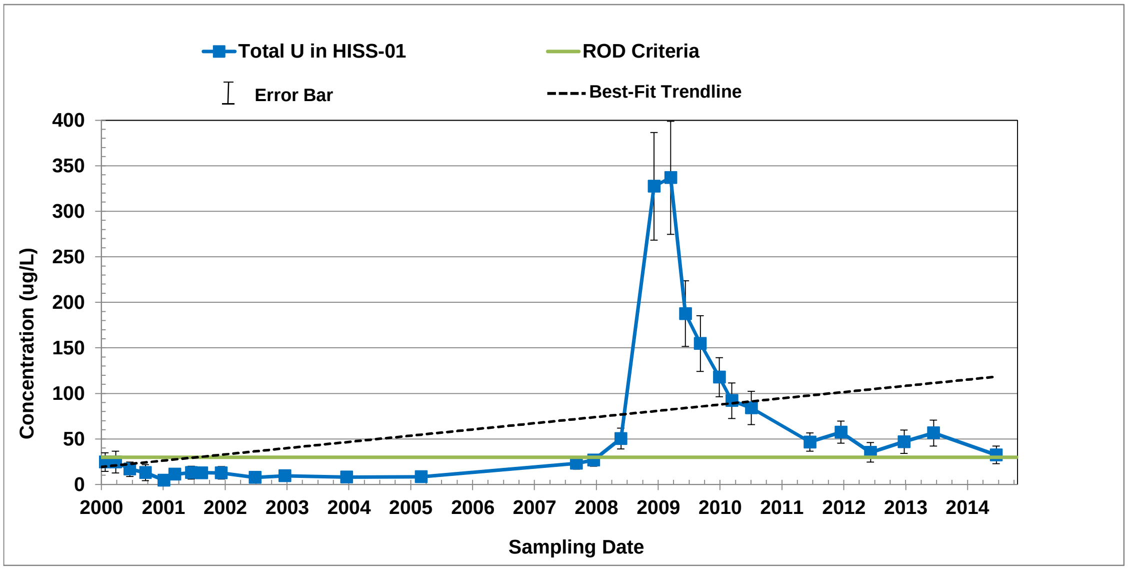
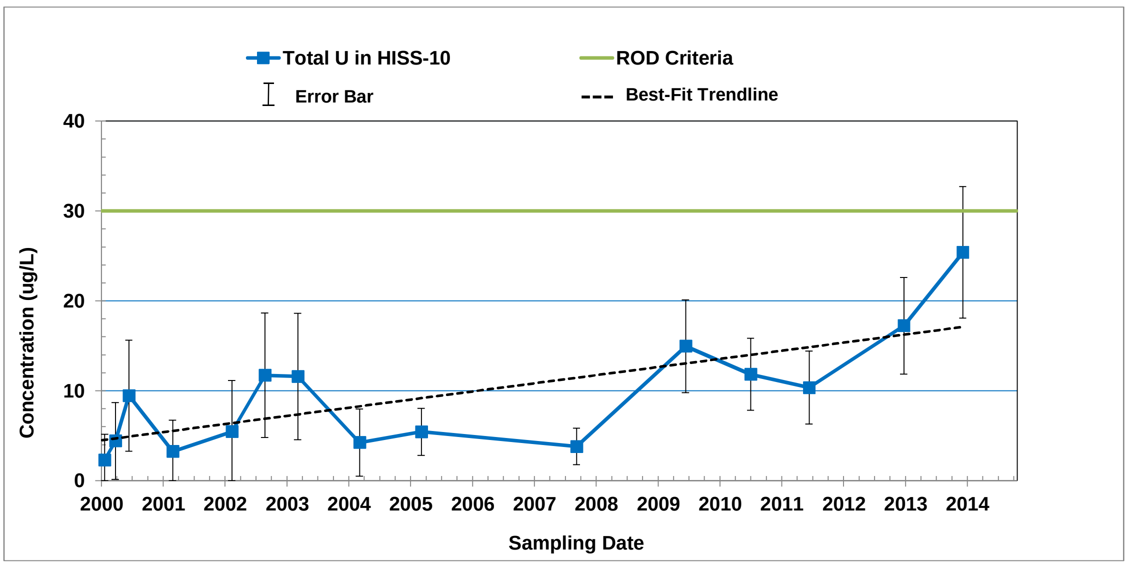
Figure 4-2. Existing Monitoring Well Locations at the Latty Avenue Properties





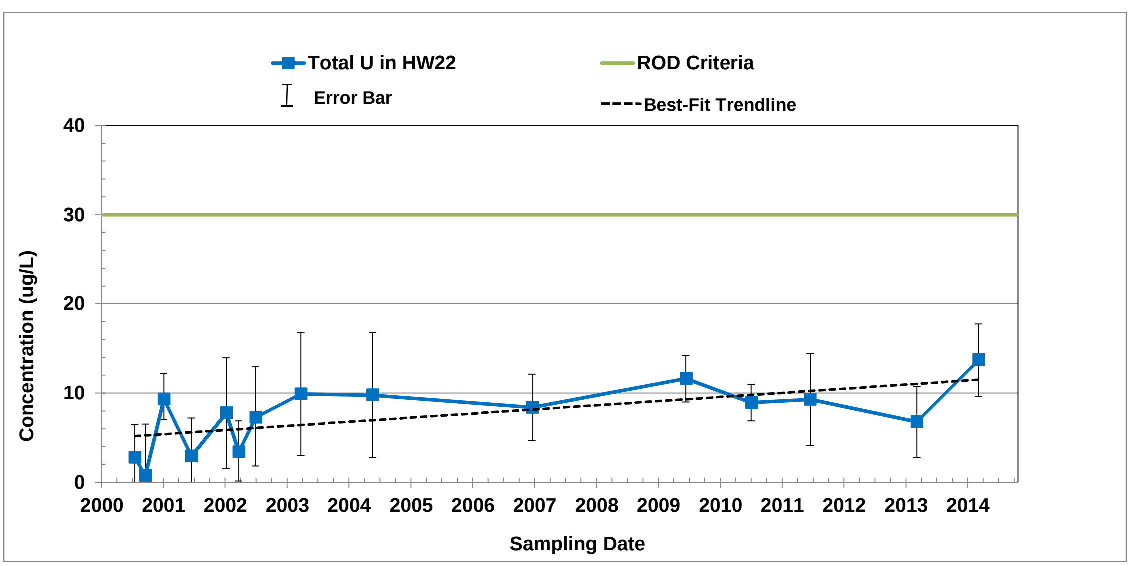


Figure 4-3. Time-Versus-Concentration Graph for Total U in Ground Water at HISS-01, HISS-10, and HW22

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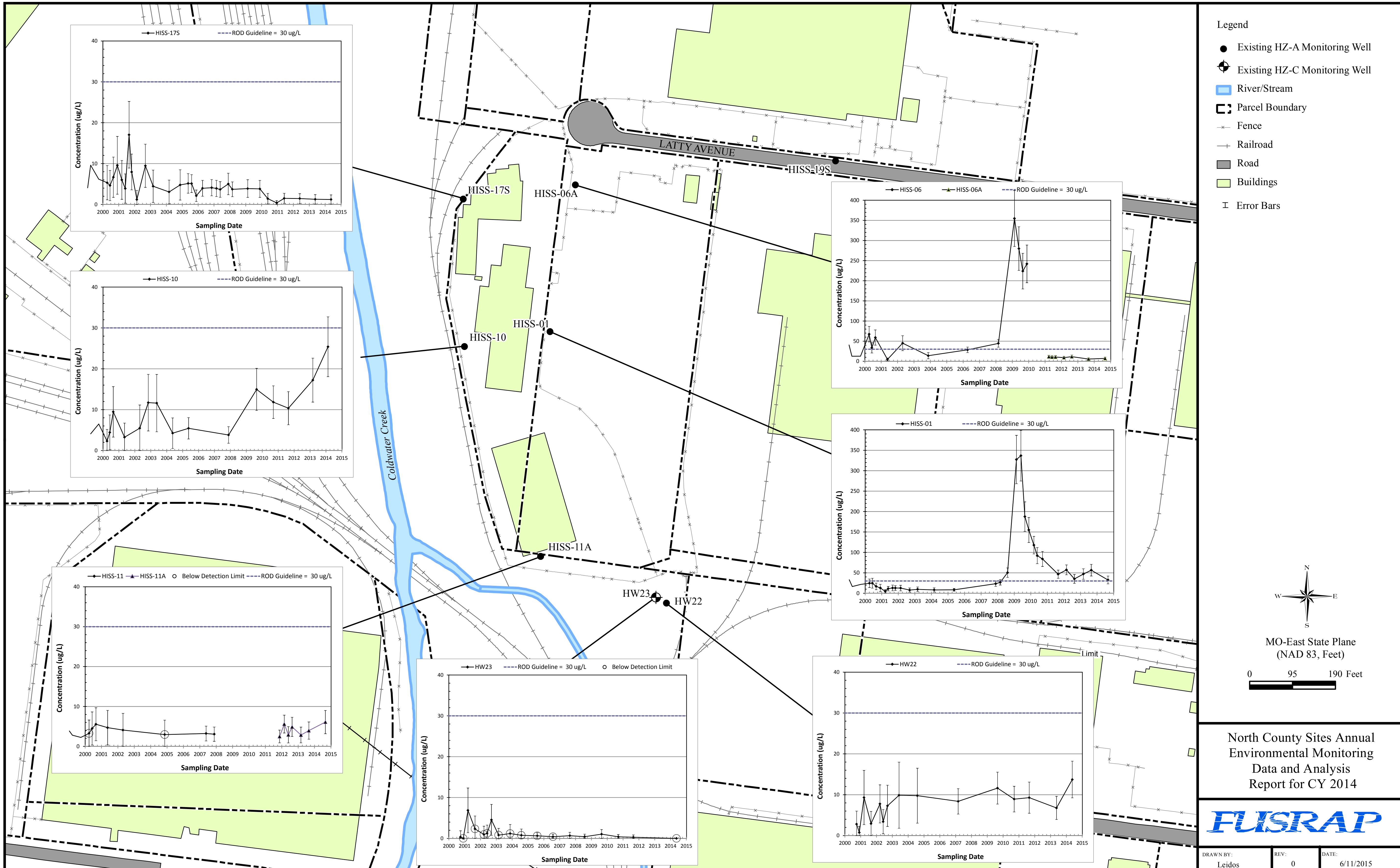


Figure 4-4. Total U Concentrations in Unfiltered Ground Water at the Latty Avenue Properties

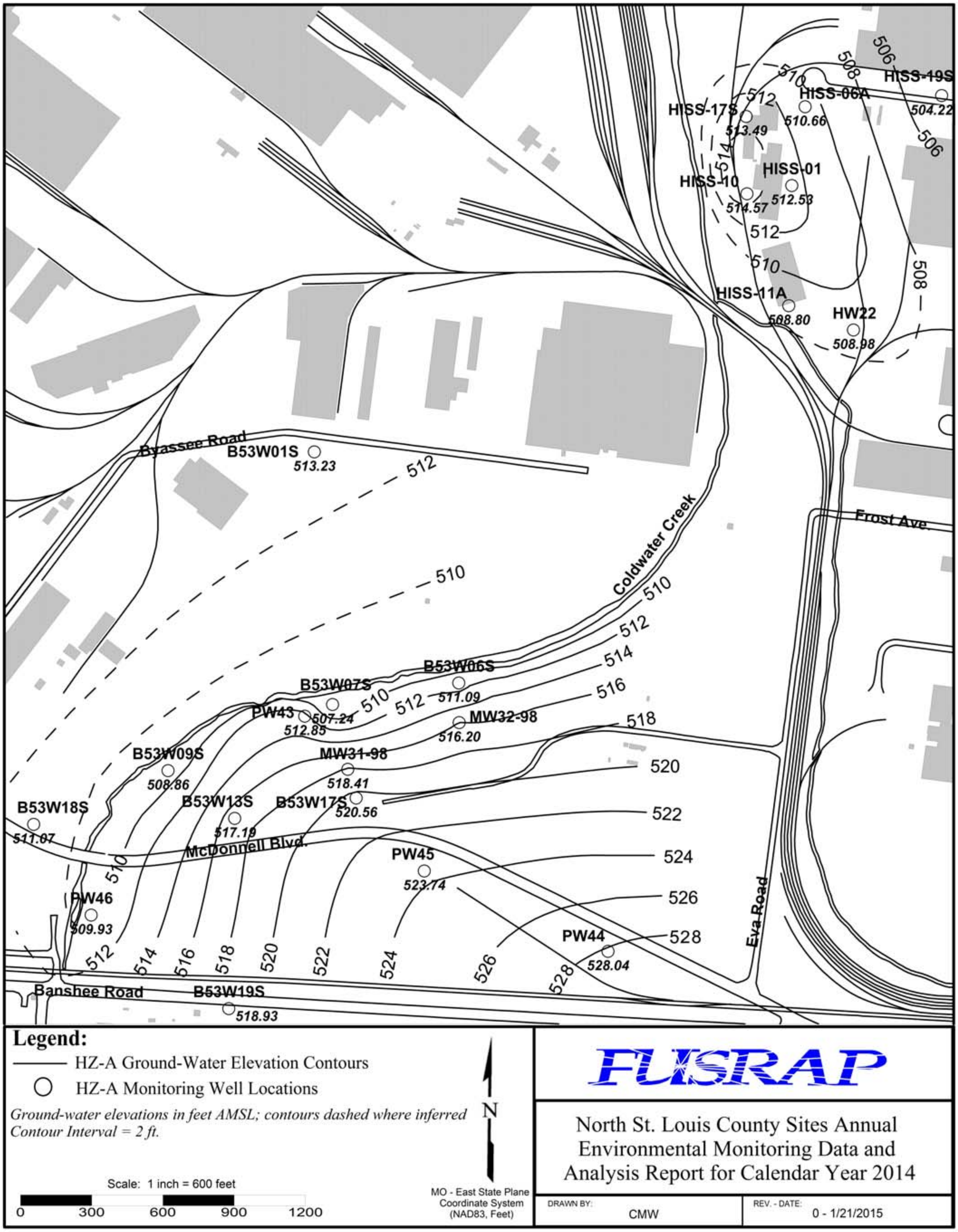


Figure 4-5. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 16, 2014)

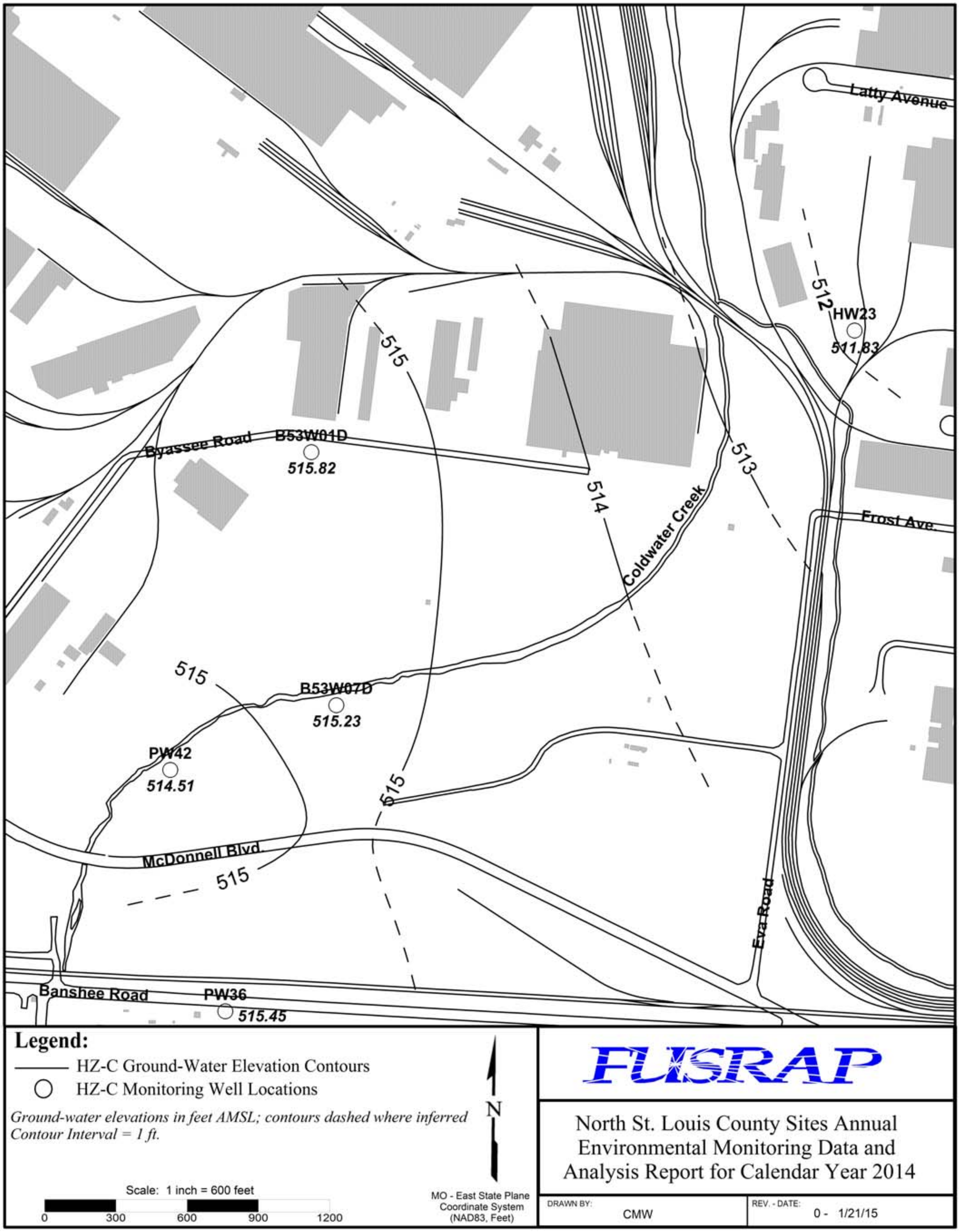


Figure 4-6. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (May 15, 2014)

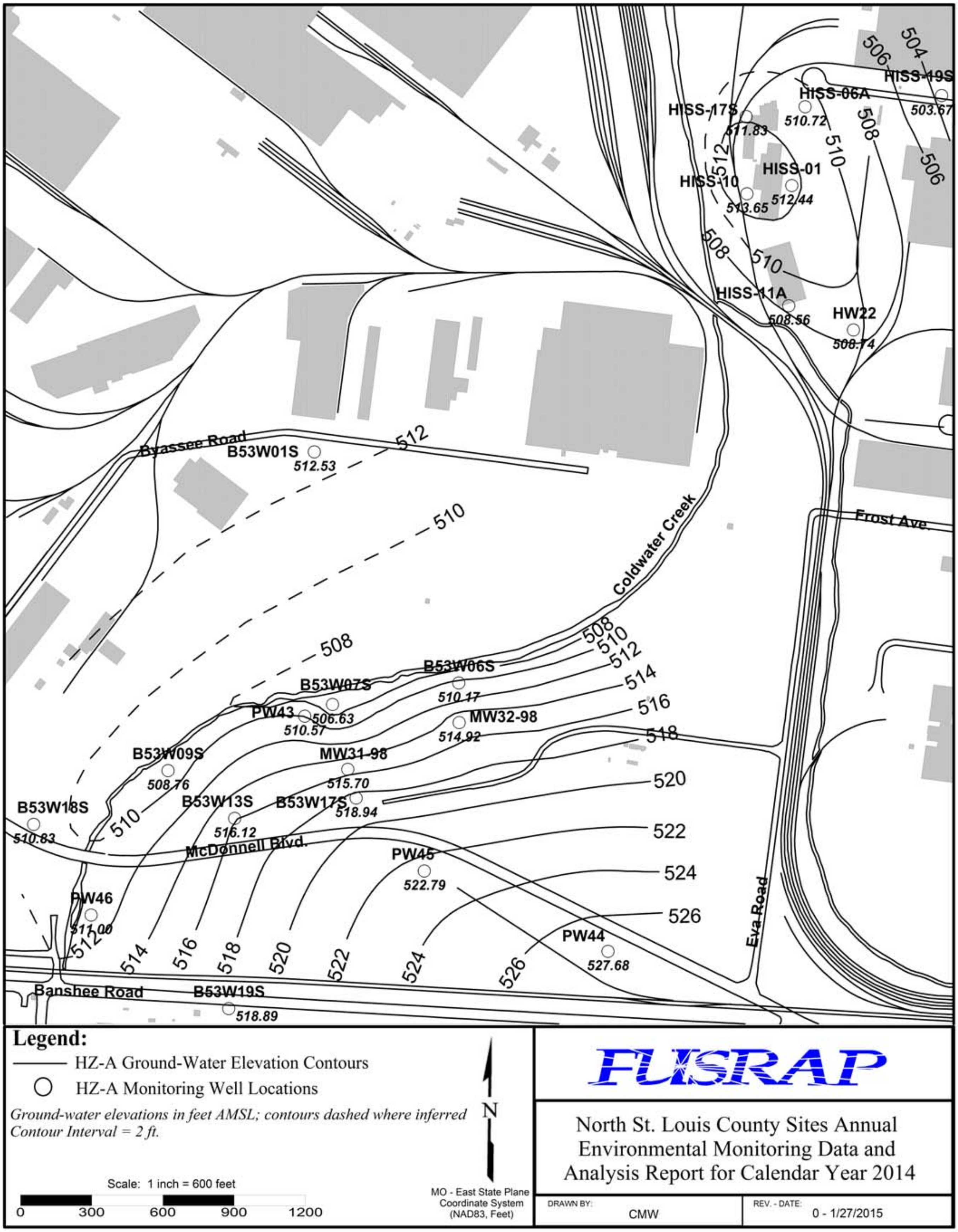


Figure 4-7. HZ-A Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (December 2, 2014)

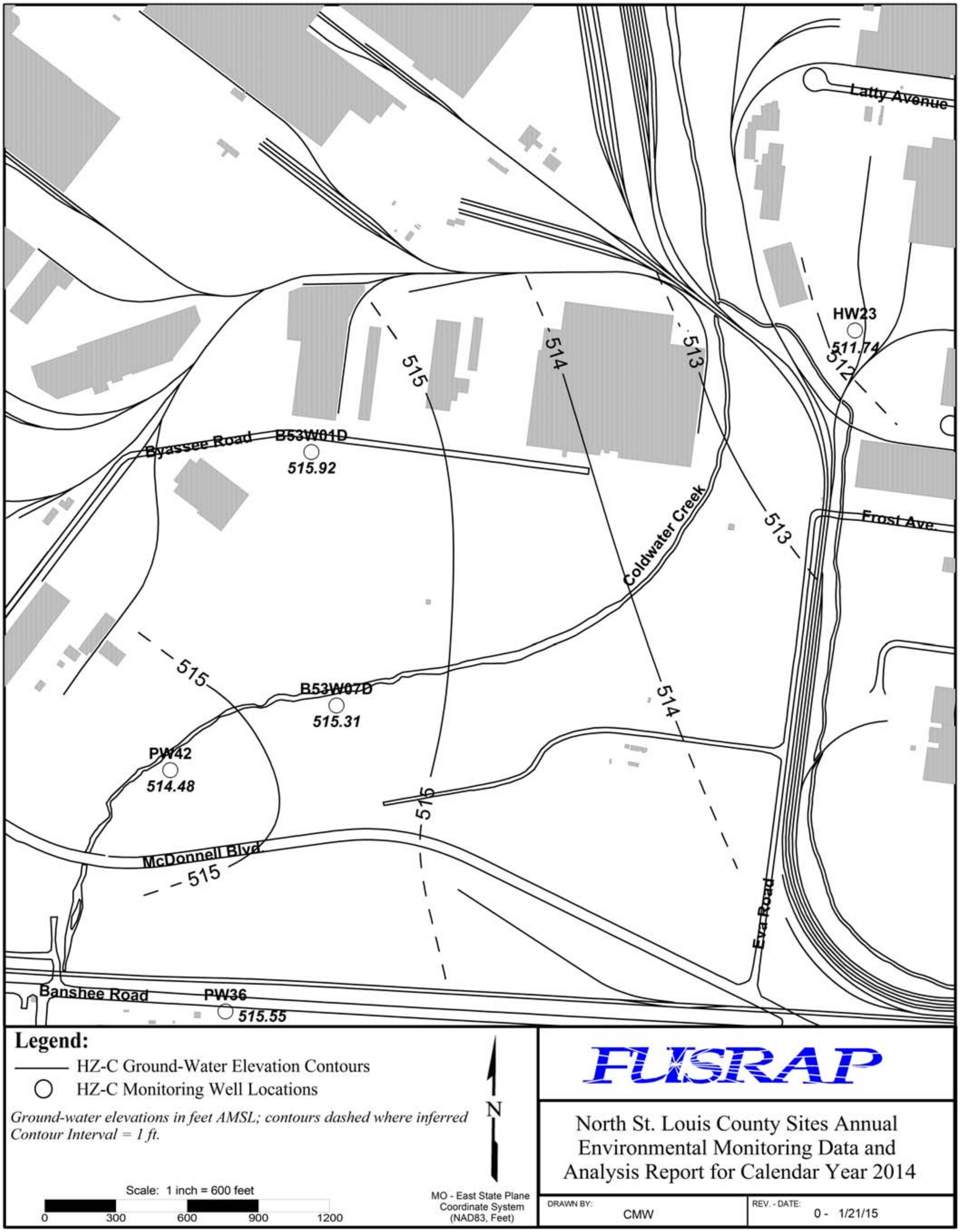


Figure 4-8. HZ-C Potentiometric Surface at the Latty Avenue Properties and the SLAPS and SLAPS VPs (December 2, 2014)

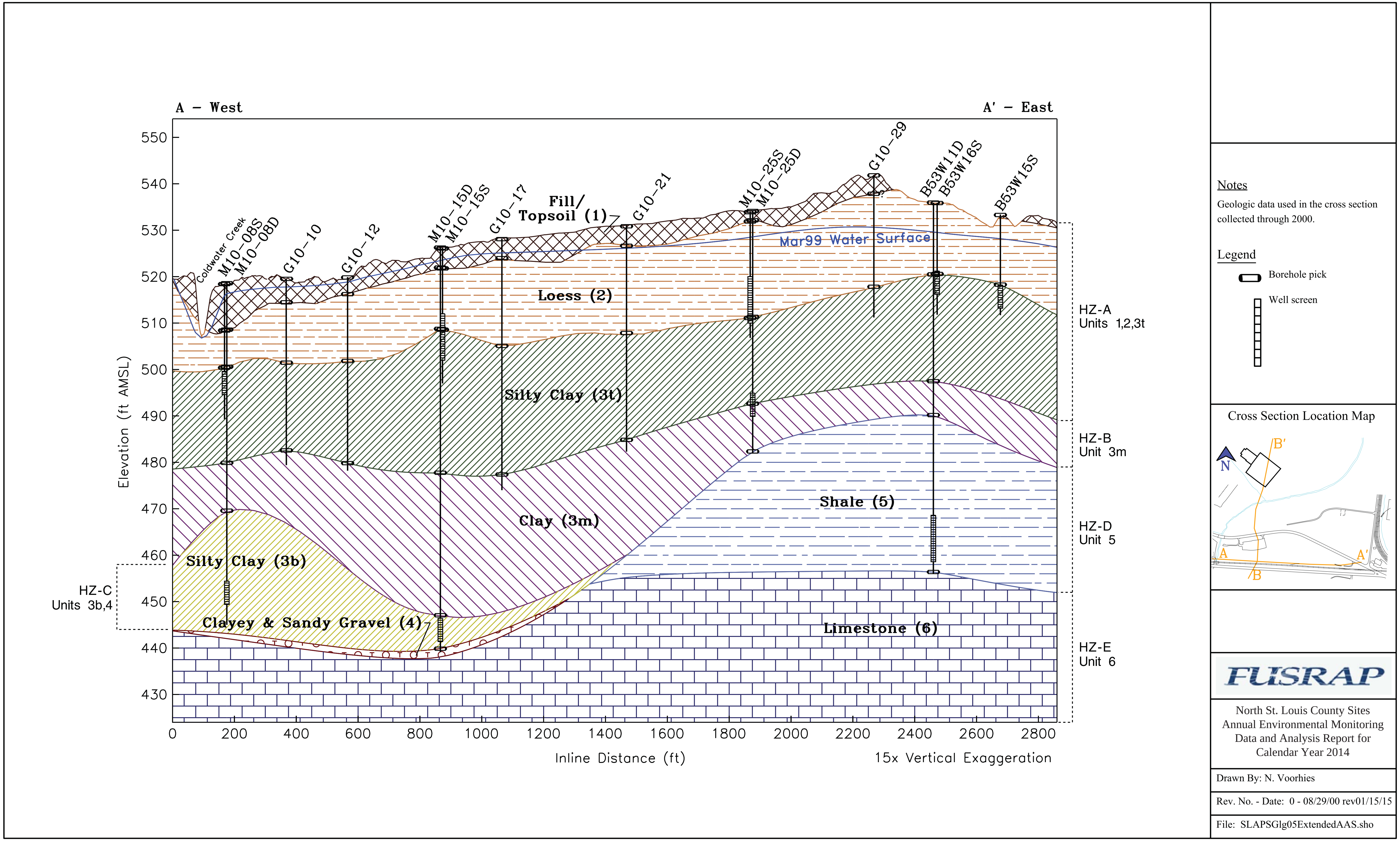
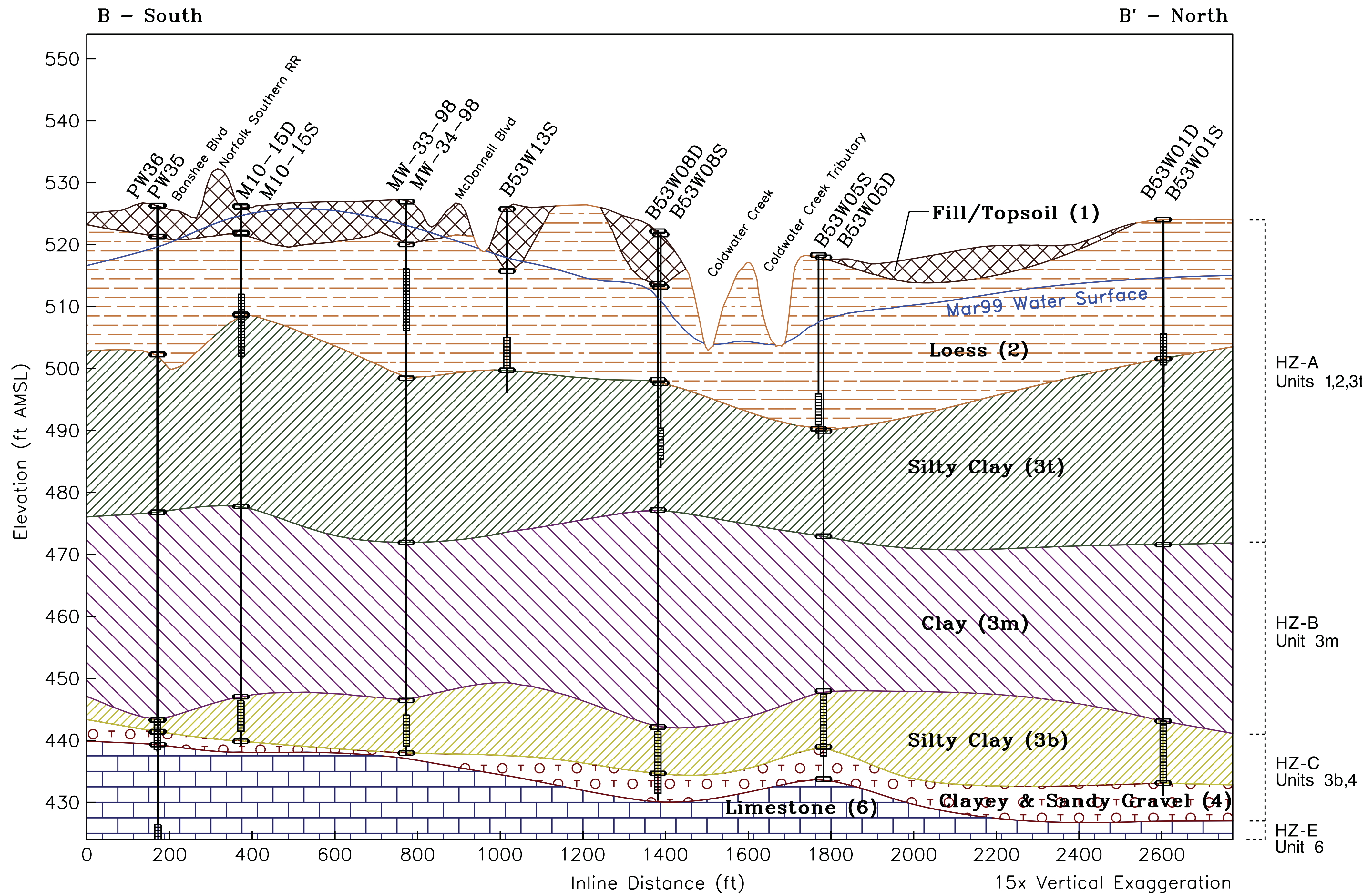


Figure 4-9. Geologic Cross-Section A-A' at the SLAPS



Notes

Geologic data used in the cross section collected through 2000.

Legend

Borehole pick

Well screen

Cross Section Location Map

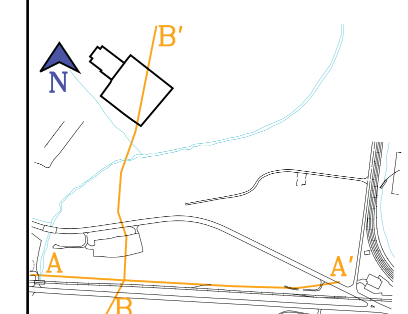


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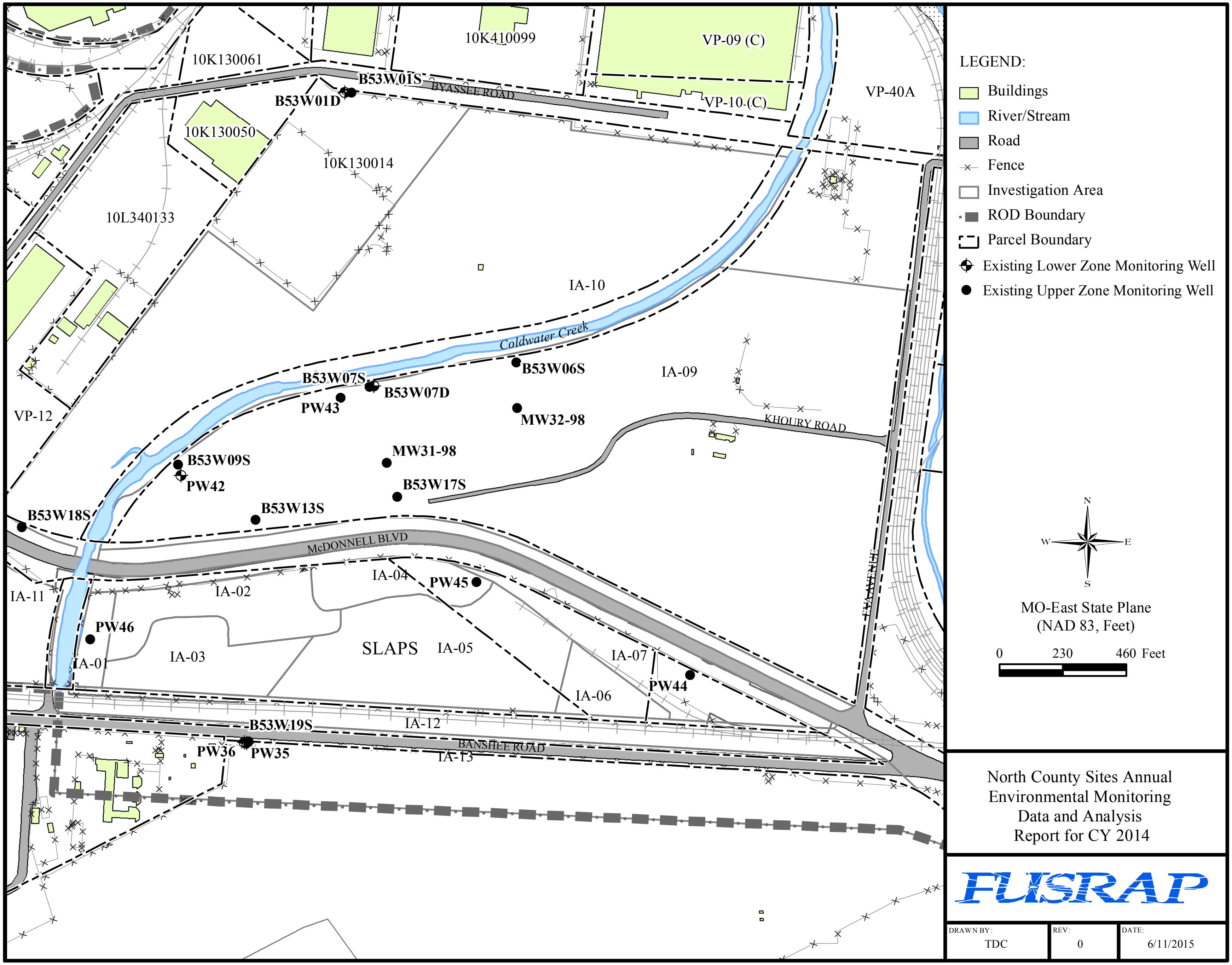
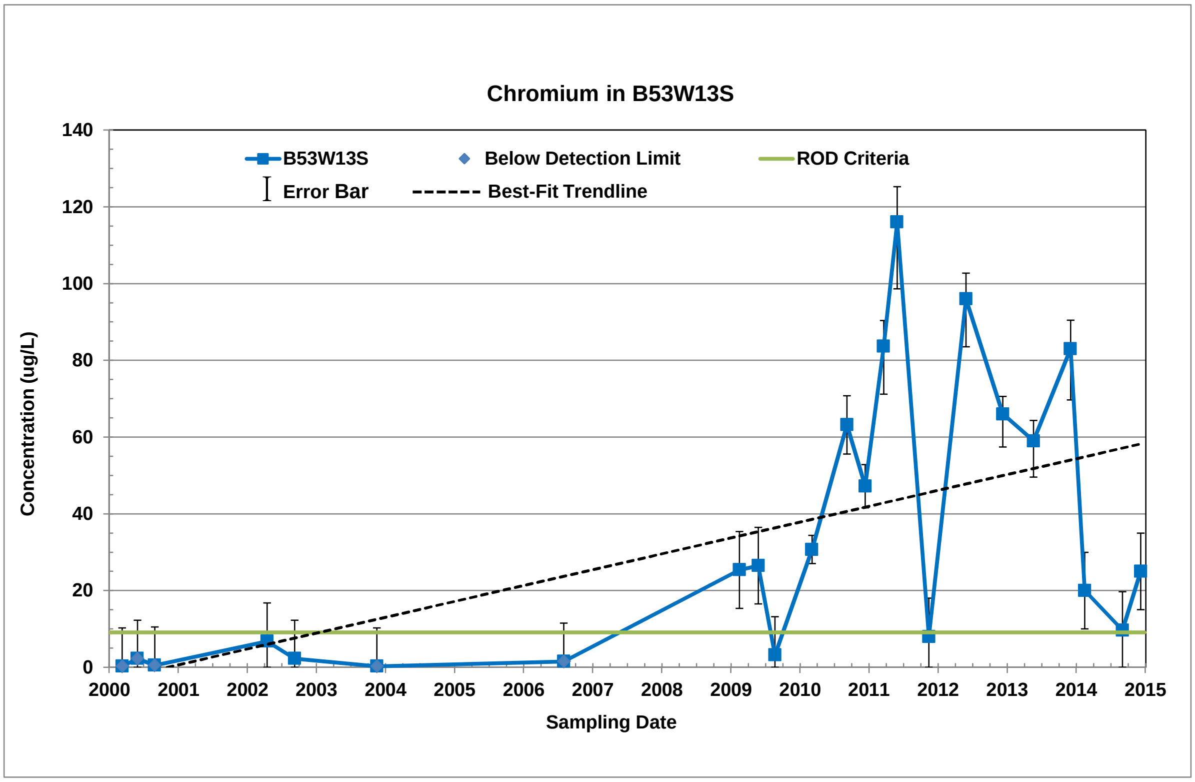
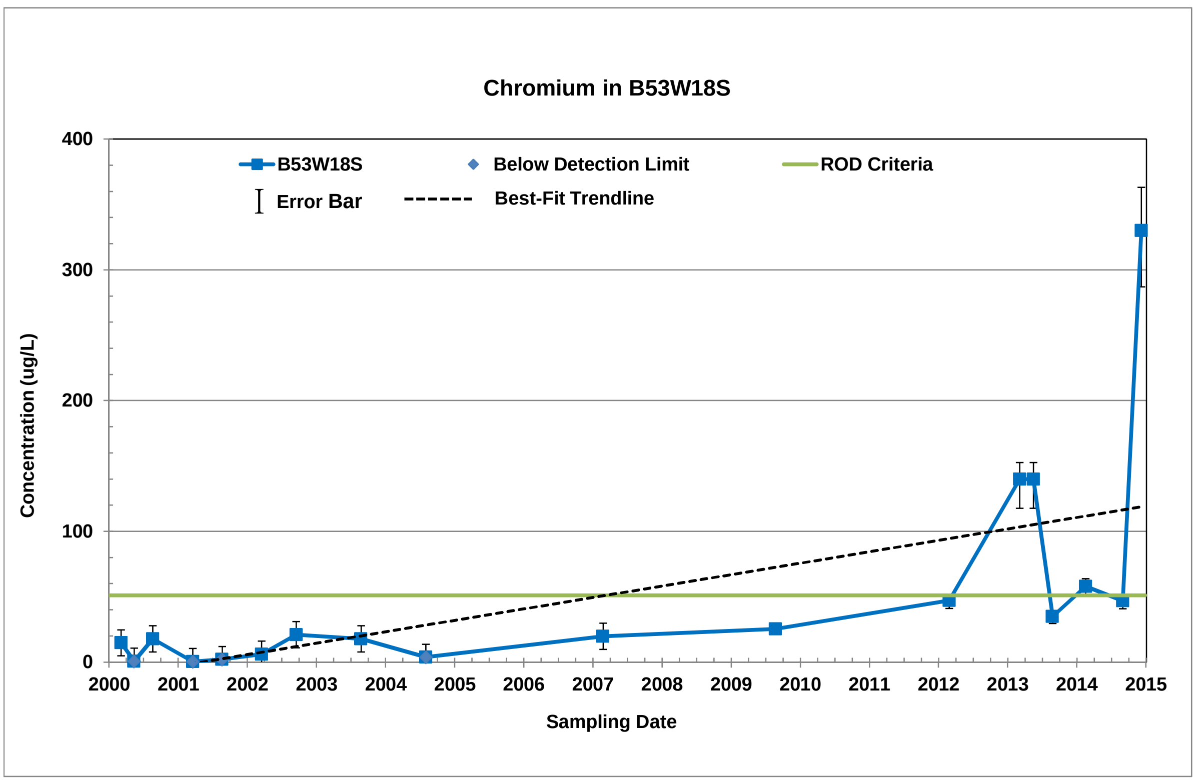
Figure 4-10. Geologic Cross-Section B-B' at the SLAPS and SLAPS VPs



Path: U:\GPS\EMDAR\NCO Projects\FY2015\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 Surrounding SLAPS VPs



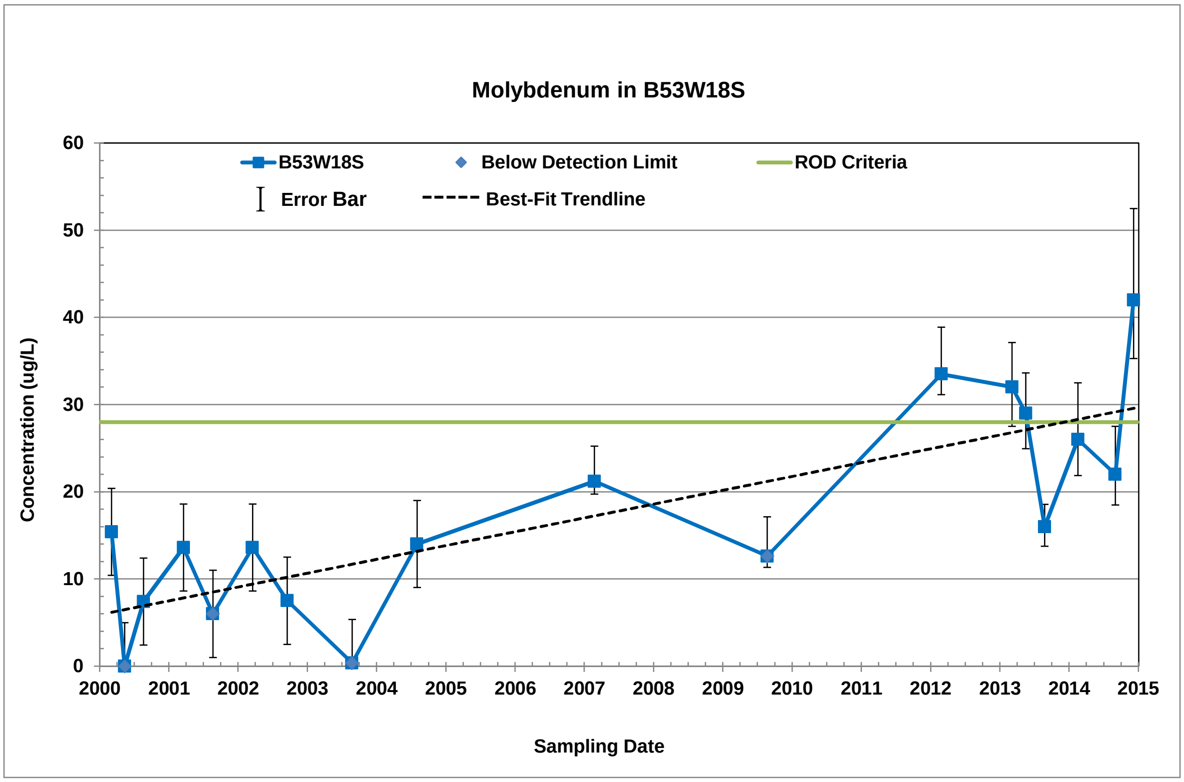


Notes:

For chromium results less than 3 times the reporting limit (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 (nondetect), the value plotted is half the DL.

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

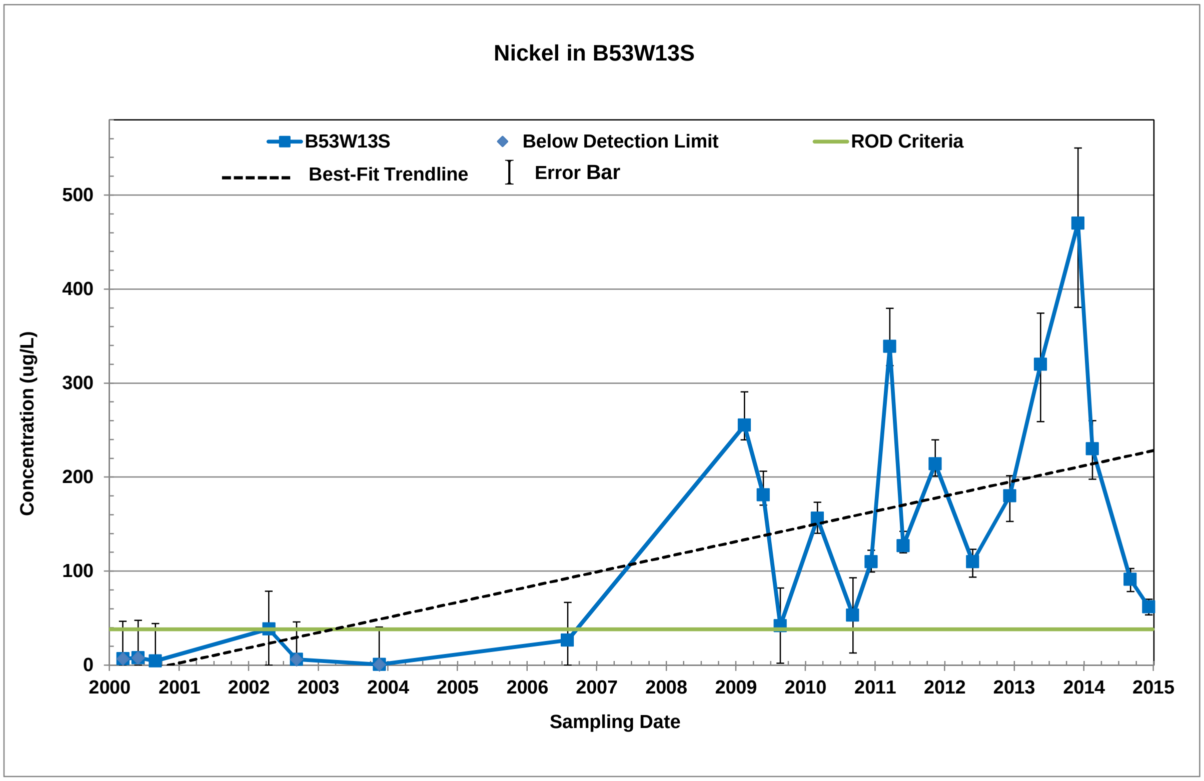


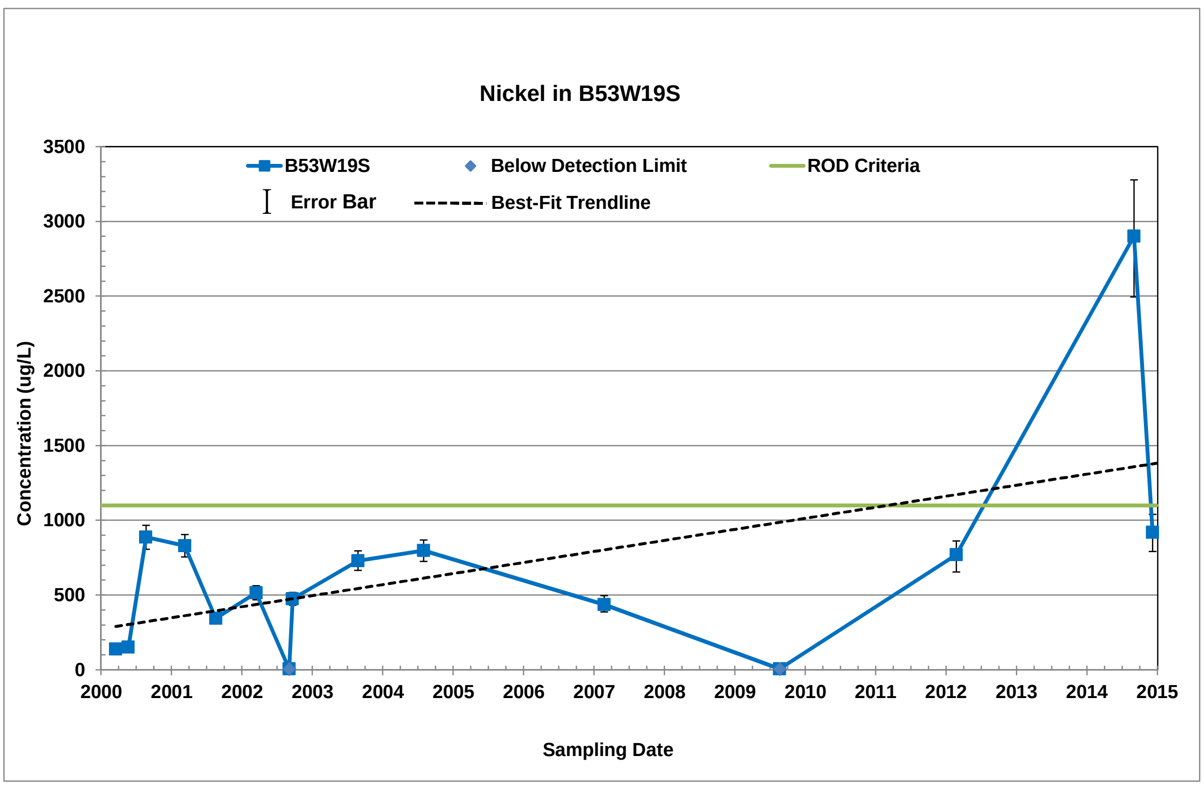
Notes:

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 (nondetect), the value plotted is half the DL.

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



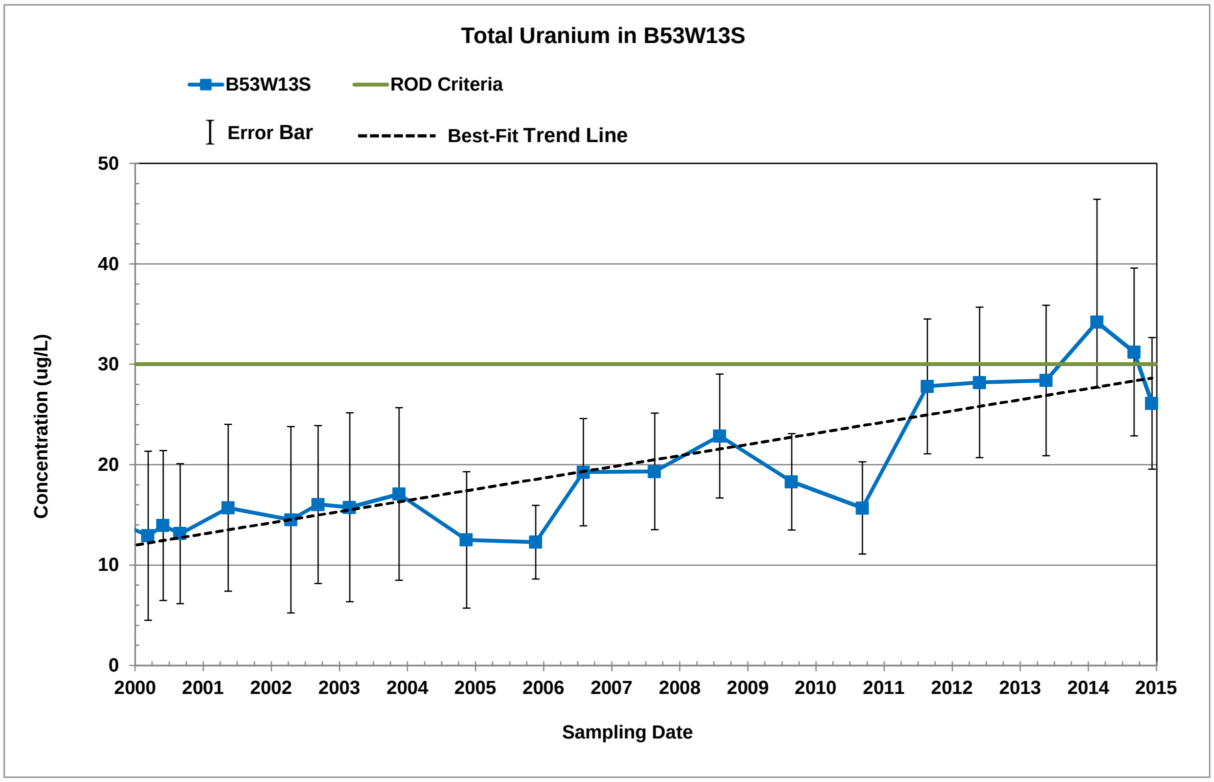


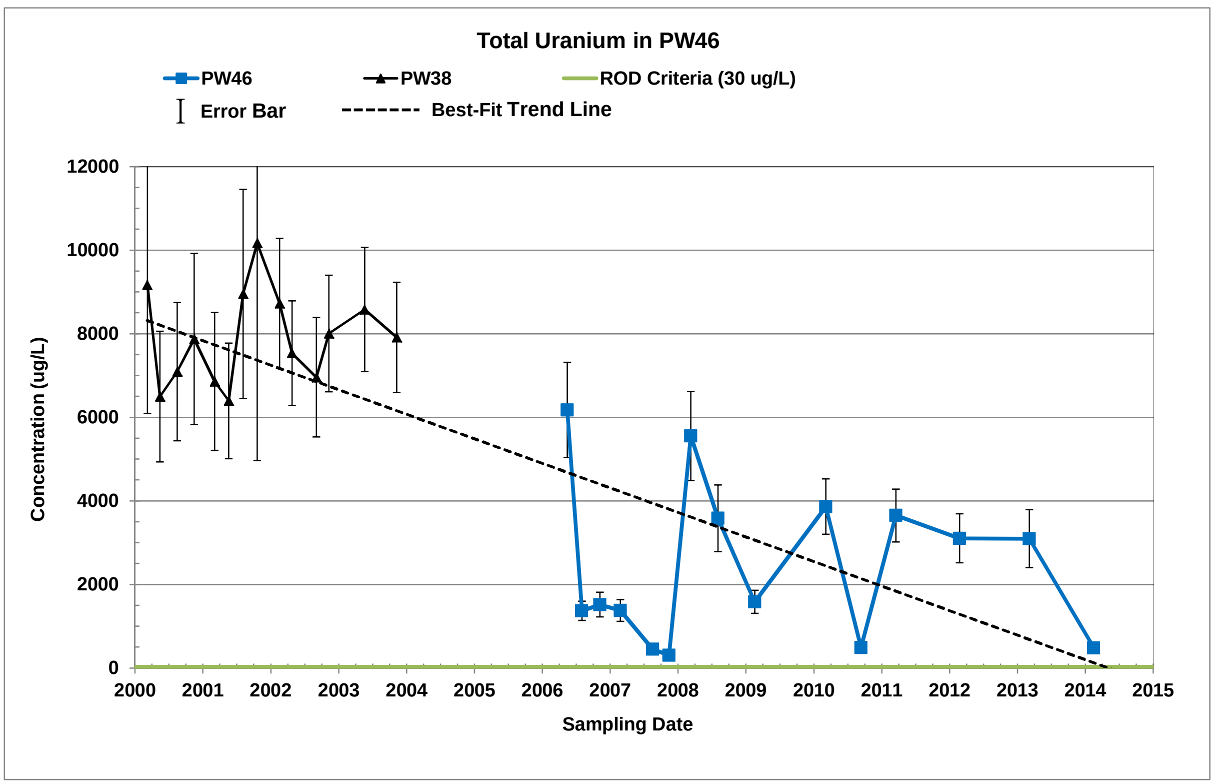
Notes:

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.

For nickel results reported below the DL (nondetect), the value plotted is half the DL.

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





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 and PW46

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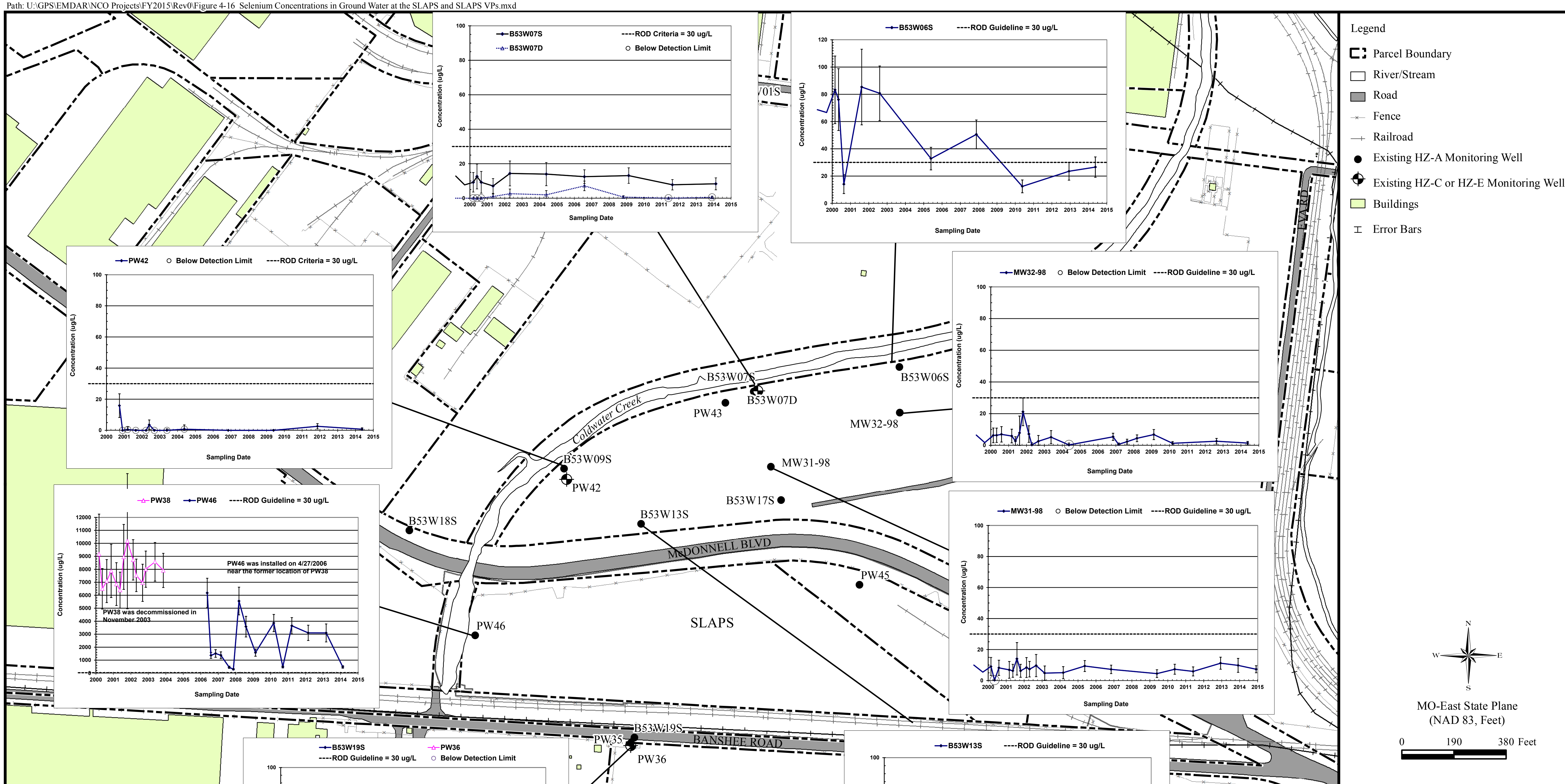

Figure 4-16. Total U Concentrations in Unfiltered Ground Water at the SLAPS and SLAPS VPs

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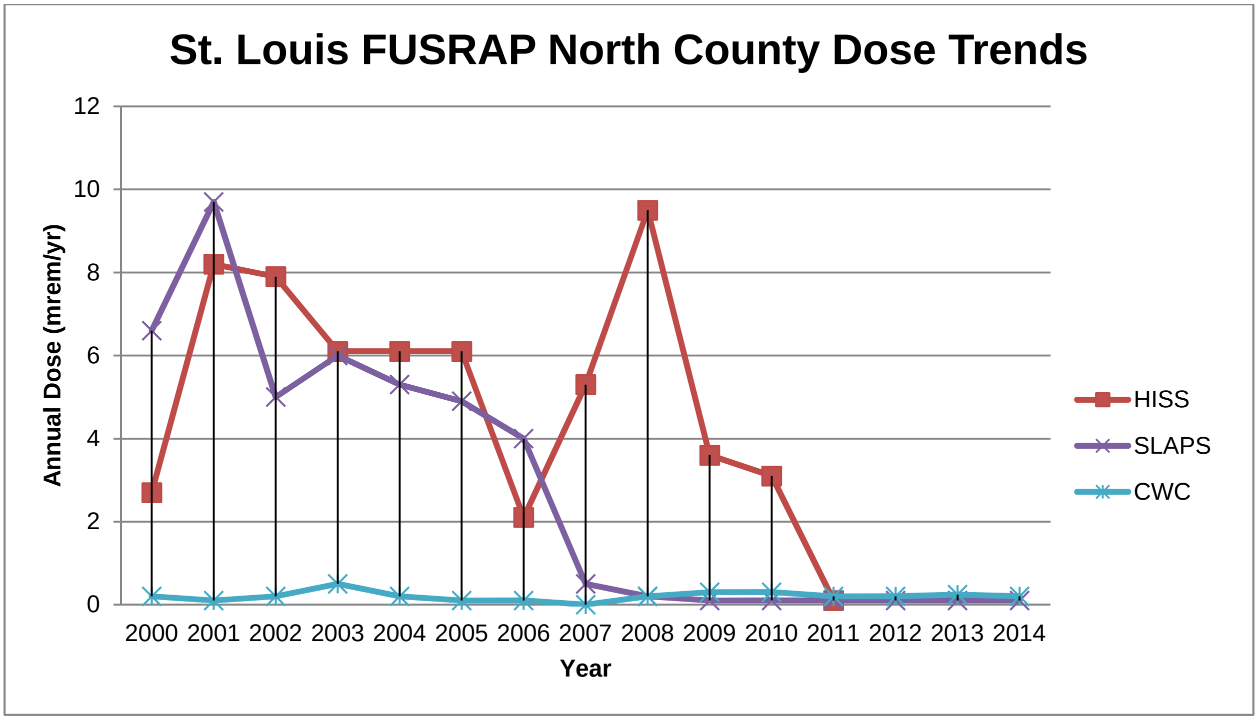

Figure 6-1. St. Louis FUSRAP NC Dose Trends

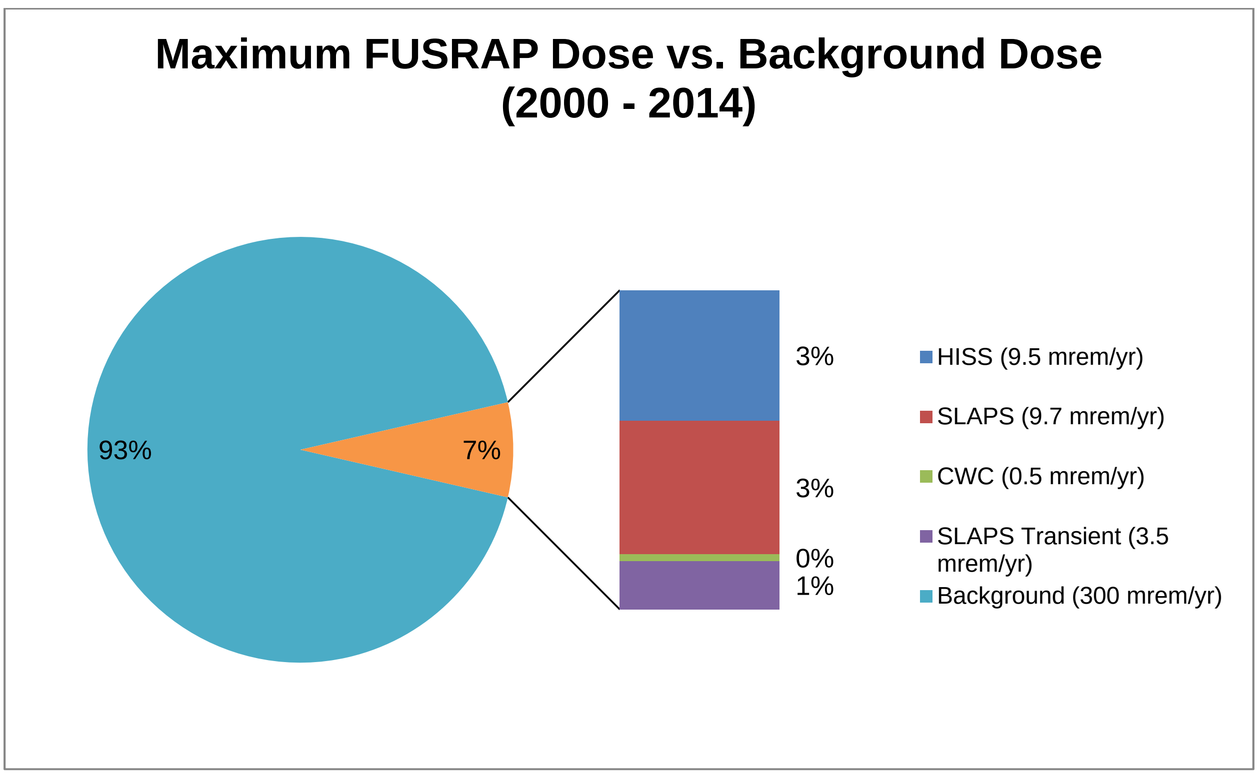

Figure 6-2. St. Louis FUSRAP NC Maximum Dose Versus Background Dose

APPENDIX A

NORTH ST. LOUIS COUNTY FUSRAP SITES
2014 RADIONUCLIDE EMISSIONS NESHAP REPORT

SUBMITTED IN ACCORDANCE WITH REQUIREMENTS OF 40 *CFR* 61, SUBPART I

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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/yr	curie(s) per year
cm	centimeter(s)
cm^3	cubic centimeter(s)
CWC	Coldwater Creek
CY	calendar year
DOE	U.S. Department of Energy
EDE	effective dose equivalent
ft	foot/feet
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)
m	meter(s)
m^2	square meter(s)
m^3	cubic meter(s)
m/min	meter(s) per minute
m^3/min	cubic meter(s) per minute
MED	Manhattan Engineer District
mL	milliliter(s)
mrem/yr	millirem per year
mSv/yr	millisievert(s) per year
NC	North St. Louis County
NC EMDAR CY 2014	*North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014*
NESHAP	National Emission Standard for Hazardous Air Pollutants
Pa	protactinium
pCi/g	picocurie(s) per gram
Ra	radium
RA	remedial action

ACRONYMS AND ABBREVIATIONS (Continued)

SLAPS	St. Louis Airport Site
SLDS	St. Louis Downtown Site
SLDS EMDAR CY 2014	*St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014*
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)

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) 2014. 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* (USEPA 1989).

This report evaluates sites at which a reasonable potential exists for radionuclide emissions due to St. Louis FUSRAP activities. These sites include: the St. Louis Airport Site (SLAPS), the Investigation Area (IA)-09 (Ballfields), Vicinity Property (VP)-57 and VP-58, the Pershall Road South Ditch, and the SLAPS Loadout area. This report also evaluates radionuclide emissions from the United States Army Corps of Engineers (USACE) radioanalytical laboratory operations. Emissions from the sites and laboratory were evaluated for the entire CY 2014 to provide a conservative estimate of total emissions.

The NESHAP standard of EDE to a critical receptor from radionuclide emissions is 10 millirem per year (mrem/yr) (0.1 millisievert per year [mSv/yr]). 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/yr (<0.001 mSv/yr) from the SLAPS and SLAPS VPs. The EDE from the laboratory emissions was calculated using the methodology in Appendix D of 40 *CFR* 61, *Methods for Estimating Radionuclide Emissions*, soil characterization data, and the USEPA CAP88-PC modeling code (USEPA 2014), which resulted in an EDE of less than 0.1 mrem/yr (<0.001 mSv/yr).

Evaluations for the SLAPS VPs and the USACE radioanalytical laboratory resulted in 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
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1.0 PURPOSE

This report calculates the EDE 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: IA-09 Ballfields, VP-57 and VP-58, the Pershall Road South Ditch, the SLAPS Loadout area, and the USACE radioanalytical 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.

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2.0 METHOD

Emission rates for the sites were modeled using guidance documents referenced in 40 *CFR* 61, Appendix E, *Compliance Procedures Methods for Determining Compliance with Subpart I* (USEPA 1989), and 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 standard.

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 3.3 feet (ft) (1 meter [m]) is modeled for the sites, and a stack release was 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.

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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 centimeters (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[a]	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

[a] 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

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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) (9,939 cubic meters [m^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 (10,704 m^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 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 (3,517 m^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 (6,116 m^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 (15 cm) of gravel.

4.2 MATERIAL HANDLING AND PROCESSING FOR CALENDAR YEAR 2014

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. No excavation or loadout activities for the Latty Avenue Properties occurred in CY 2014; therefore, radioactive particulate emissions were considered negligible, air sampling for particulate radionuclides was not conducted, and NESHAP calculations for these properties were not required.

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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 until 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 (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. Government 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 to 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 2014

During CY 2014, excavations were conducted on the Ballfields, VP-57 and VP-58, and the Pershall Road South Ditch; 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 2014. 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 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 report contains a summary table of the radionuclide concentrations used to calculate the emission rate from the site.

5.4 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2014

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 2014. 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-1 and A-2 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. SLAPS Critical Receptors for CY 2014

Sources	Resident		Farm		Business		School	
	Dist.[a]	Dir.[a]	Dist.[a]	Dir.[a]	Dist.[a,b]	Dir.[a]	Dist.[a]	Dir.[a]
Ballfields	490	NE	1,485	NE	775	WSW	2,265	E
VP-57 and VP-58	280	NNW	480	NE	120	SE	1,810	NNW
Pershall Road South Ditch	230	NW	400	NE	140	SE	1,760	NNW
SLAPS Loadout	770	NE	1,710	NE	500	WSW	2,580	E

[a] Dist. – Distance in m; Dir. – Direction.
[b] Distance from business receptor to fenceline is 525 ft (160 m). Distance from business receptor to center of source from the SLAPS Loadout is 1,640 ft (500 m) for emissions determination.

5.6 EMISSIONS DETERMINATION

5.6.1 Measured Airborne Radioactive Particulate Emissions

Particulate air samples were collected from four locations around the perimeter of the SLAPS Loadout area to measure the radionuclide emissions. The samples provide the basis for determining the radionuclide emission rates during all of CY 2014. The average gross alpha and gross beta concentrations (in microcuries per milliliter [μCi/mL]) were determined for each sample location for CY 2014. The site average concentrations are presented in Table A-4.

Table A-4. SLAPS Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2014

Monitoring Location	Average Concentration (μCi/mL)	
	Gross Alpha	Gross Beta
Ballfields	3.29E-15	2.67E-14
VP-57 and VP-58	1.29E-15	2.80E-14
Pershall Road South Ditch	4.15E-15	2.42E-14
SLAPS Loadout	3.65E-15	3.22E-14
Background Concentration[a]	3.63E-15	1.92E-14

[a] These concentrations are provided only for informational purposes. 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 ($\mu Ci/cm^3$). The gross average concentration (in $\mu Ci/cm^3$) is converted to a release (emission) rate (in curies per year [Ci/yr]) using Equations 1 and 2. The emission rates are summarized in Table A-7.

USEPA 1989 (page 3-21, [2]) includes Equation 1 for determination of the effective diameter of a non-circular stack or vent.

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

where:

D is the effective diameter of the release (in m), and
A is the area of the stack, vent, or release point (in square meters [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 SLAPS and SLAPS VPs that were excavated in CY 2014. Calculation of the effective surface area is contained in Attachment A-1 of this report.

Table A-5. SLAPS/SLAPS VPs Excavation Effective Areas and Effective Diameters for CY 2014

Location	Effective Area (m^2)	Effective Diameters (m)
Ballfields	427	24
VP-57 and VP-58	1,435	43
Pershall Road South Ditch	59	9
SLAPS Loadout	600	28

The average annual wind speed for the Lambert – St. Louis International Airport is provided in CAP88-PC as 14.578 ft (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.

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

where:

V is the wind velocity (in meters per minute [m/min]) = 875.20 ft (266.76 m)/min,
F is the flow rate (in cubic meters per minute [m^3/min]),
π is a mathematical constant, and
D is the effective diameter of the release determined using Equation 1 (in m).

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 areas, 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 report contains flow rate and average radionuclide concentration data.

Table A-6. SLAPS/SLAPS VPs Site Release Flow Rates for CY 2014

Location	Site Release Flow Rate (m^3/min)
Ballfields	1.2E+05
VP-57 and VP-58	3.9E+05
Pershall Road South Ditch	1.6E+04
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 SLAPS and SLAPS VPs' total CY 2014 emission/release rates that were input into the USEPA codes 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. SLAPS/SLAPS VPs Total Airborne Radioactive Particulate Emission Rates for CY 2014

Radionuclide	Emission (Ci/yr)[a]			
	Ballfields	VP-57 and VP-58	Pershall Road South Ditch	SLAPS Loadout
Uranium (U)-238	9.9E-06	4.8E-05	6.3E-06	3.5E-05
U-235	1.3E-06	9.9E-08	1.3E-08	1.1E-06
U-234	9.9E-06	2.3E-06	3.0E-07	8.8E-06
Radium (Ra)-226	4.9E-06	1.2E-05	1.6E-06	1.0E-05
Thorium (Th)-232	2.5E-06	9.1E-06	1.2E-06	7.1E-06
Th-230	1.6E-04	1.9E-04	2.5E-05	2.3E-04
Th-228	2.3E-06	1.9E-07	2.5E-08	1.9E-06

Table A-7. SLAPS/SLAPS VPs Total Airborne Radioactive Particulate Emission Rates for CY 2014 (Continued)

Radionuclide	Emission (Ci/yr)[a]			
	Ballfields	VP-57 and VP-58	Pershall Road South Ditch	SLAPS Loadout
Ra-224	2.3E-06	1.9E-07	2.5E-08	1.9E-06
Th-234	6.9E-04	2.9E-03	1.0E-04	1.3E-03
Protactinium (Pa)-234m	6.9E-04	2.9E-03	1.0E-04	1.3E-03
Th-231	9.2E-05	5.9E-06	2.1E-07	3.9E-05
Ra-228	1.0E-04	4.1E-06	1.4E-07	4.4E-05
Actinium (Ac)-228	1.0E-04	4.1E-06	1.4E-07	4.4E-05
Pa-231	9.1E-06	1.5E-06	2.0E-07	7.7E-06
Ac-227	7.9E-06	1.3E-06	1.7E-07	6.7E-06

[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 (14.587 ft [4.446 m] per second) and the effective site area (as presented in Table A-5) for each location.

5.7 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this report. The effective area factor input was taken from Table A-5. Results show compliance with the 10 mrem/yr (0.1 mSv/yr) criterion for all critical receptors. Table A-8 summarizes the results.

Table A-8. SLAPS/SLAPS VPs CAP88-PC Results for Critical Receptors for CY 2014

Source	Dose (mrem/yr)			
	Resident[a]	School[b]	Business[b]	Farm[a]
Ballfields	<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
SLAPS Loadout[c]	<0.1	<0.1	<0.1	<0.1
SLAPS/SLAPS VPs	<0.1	<0.1	<0.1	<0.1

[a] Occupancy factor is 100 percent for resident and farm.
[b] Corrected for the 23 percent occupancy factor (50 weeks per year, 40 hours per week).
[c] Distance from business receptor to fenceline is 525 ft (160 m). Distance from business receptor to center of source is 1,640 ft (500 m) for emissions determination.

6.0 U.S. ARMY CORPS OF ENGINEERS RADIOANALYTICAL LABORATORY

6.1 SITE DESCRIPTION

The USACE radioanalytical laboratory is located on VP-38. VP-38 is a SLAPS VP owned by SuperValue Inc. The USACE radioanalytical laboratory is bounded on the north, east, and west by SuperValue Inc. property, and on the south by Latty Avenue. The laboratory site covers approximately 1 acre (4,047 m^2) of VP-38.

6.2 LIST OF ASSUMED AIR RELEASES FOR CALENDAR YEAR 2014

Emissions from the USACE radioanalytical laboratory operations are assumed for the particulate radionuclide emission determinations from the laboratory site. No active excavations occurred on VP-38 during CY 2014.

6.3 EFFLUENT CONTROLS

The effluent controls at the USACE radioanalytical 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-3 and listed in Table A-9. Distances and directions to critical receptors are determined by using tools in a GIS.

Table A-9. Laboratory Critical Receptors for CY 2014

Receptor	Distance (m)	Direction from Site
Nearest Resident	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 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 Appendix D of 40 *CFR* 61, *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 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, even though Appendix D of 40 *CFR* 61 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/yr (0.1 mSv/yr) 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-10. With these data, the following equation was used to calculate laboratory emissions from the operations conducted in CY 2014.

$$Emission\ Rate\ (Ci/yr) = C * \left[N_1 * F_1 + N_2 * F_2\right] * 1{,}000\ grams/sample\ *\ 1E-12\ (curies\ per\ picocuries)$$

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/grinding operation
- N_2 = the number of samples involved in a separations operation
- F = the appropriate correction factor (i.e., 0.001 for drying/grinding [F_1] or 0.005 for dissolution [F_2])

Table A-10. Laboratory Annual Sample Inventory for CY 2014

Site	Type	Gamma Spectroscopy	Isotopic Ra[a]	Isotopic Th[a]	Isotopic U[a]	Total Drying and Grinding[b]	Total Separations[c]
HISS	soil	0	0	0	0	0	0
HISS	water	0	7	7	7	0	21
Latty Avenue Properties	soil	1,154	0	1,029	0	1,154	1,029
Latty Avenue Properties	water	0	0	0	0	0	0
Iowa Army Ammunition Plant (IAAAP)	soil	323	0	0	320	323	320
IAAAP	water	0	0	0	0	0	0
SLAPS	soil	0	0	0	0	0	0
SLAPS	water	4	5	5	1	4	11
SLAPS VPs	soil	2,658	0	2,263	0	2,658	2,263
SLAPS VPs	water	29	51	54	9	29	114
Coldwater Creek (CWC)	sediment (soil)	2,965	0	2,134	0	2,965	2,134
CWC	water	0	16	16	16	0	48
SLDS	soil	545	0	522	0	545	522
SLDS	water	0	69	76	8	0	153
		HISS and Latty Avenue Properties			**Total**	1,154	1,050
		IAAAP			**Total**	323	320
		SLAPS, SLAPS VPs, and CWC			**Total**	5,623	4,570
		SLDS			**Total**	545	675

[a] Assumes isotopic radium, thorium, and uranium occur in separate and distinct processes.
[b] Assumes all soil samples went through a drying/grinding process.
[c] Assumes all soil and water samples for isotopic radium, thorium, and uranium 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 laboratory total CY 2014 emission rate was input into the USEPA CAP88-PC code. The total emission rates are shown in Table A-11 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 report.

Table A-11. Laboratory Total Airborne Radioactive Particulate Emission Rates for CY 2014

Radionuclide	Emission (Ci/yr)[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 attachment.

6.6 CAP88-PC RESULTS

The CAP88-PC report is contained in Attachment A-2 of this report. The stack factor input was 10 ft (3 m) high and 1.0 ft (0.3 m) in diameter. This evaluation demonstrates that all USACE radioanalytical 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). Table A-12 summarizes the results.

Table A-12. Laboratory CAP88-PC Results for Critical Receptors for CY 2014

Receptor	Distance (m)	Direction from Site	Dose (mrem/yr)
Nearest Resident[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 resident and farm.
[b] Corrected for the 23 percent occupancy factor (50 weeks per year; 40 hours per week).

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7.0 REFERENCES

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

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

USACE 2015a. *St. Louis Downtown Site Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014*, St. Louis Missouri. Revision A. April 24.

USACE 2015b. *North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014*, St. Louis Missouri. Revision A. April 24.

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. 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.*

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APPENDIX A

FIGURES

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Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure A-1 SLAPS Crticial Receptors.mxd

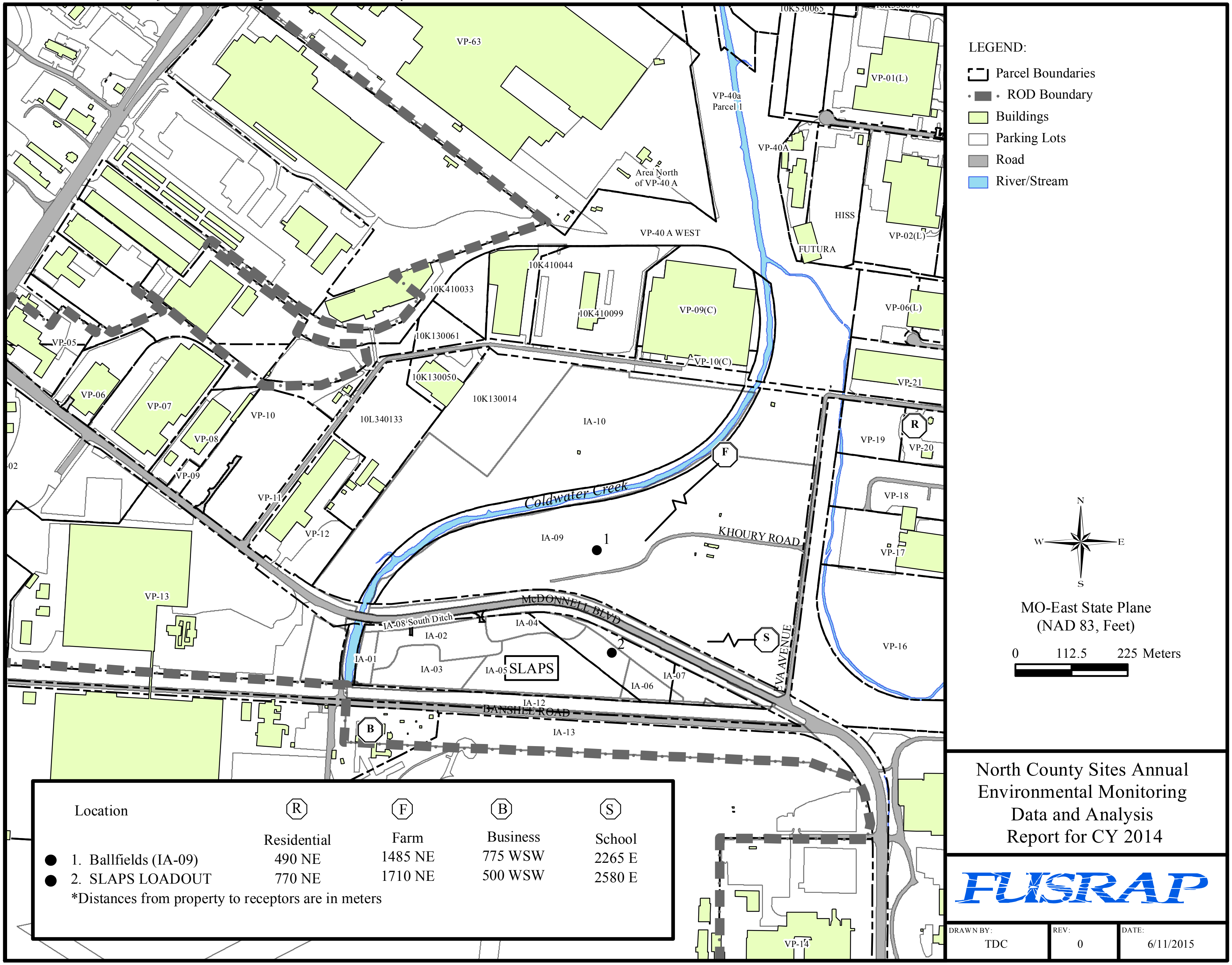

Figure A-1. SLAPS and SLAPS VPs Critical Receptors

Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure A-2 SLAPS Crticial Receptors.mxd

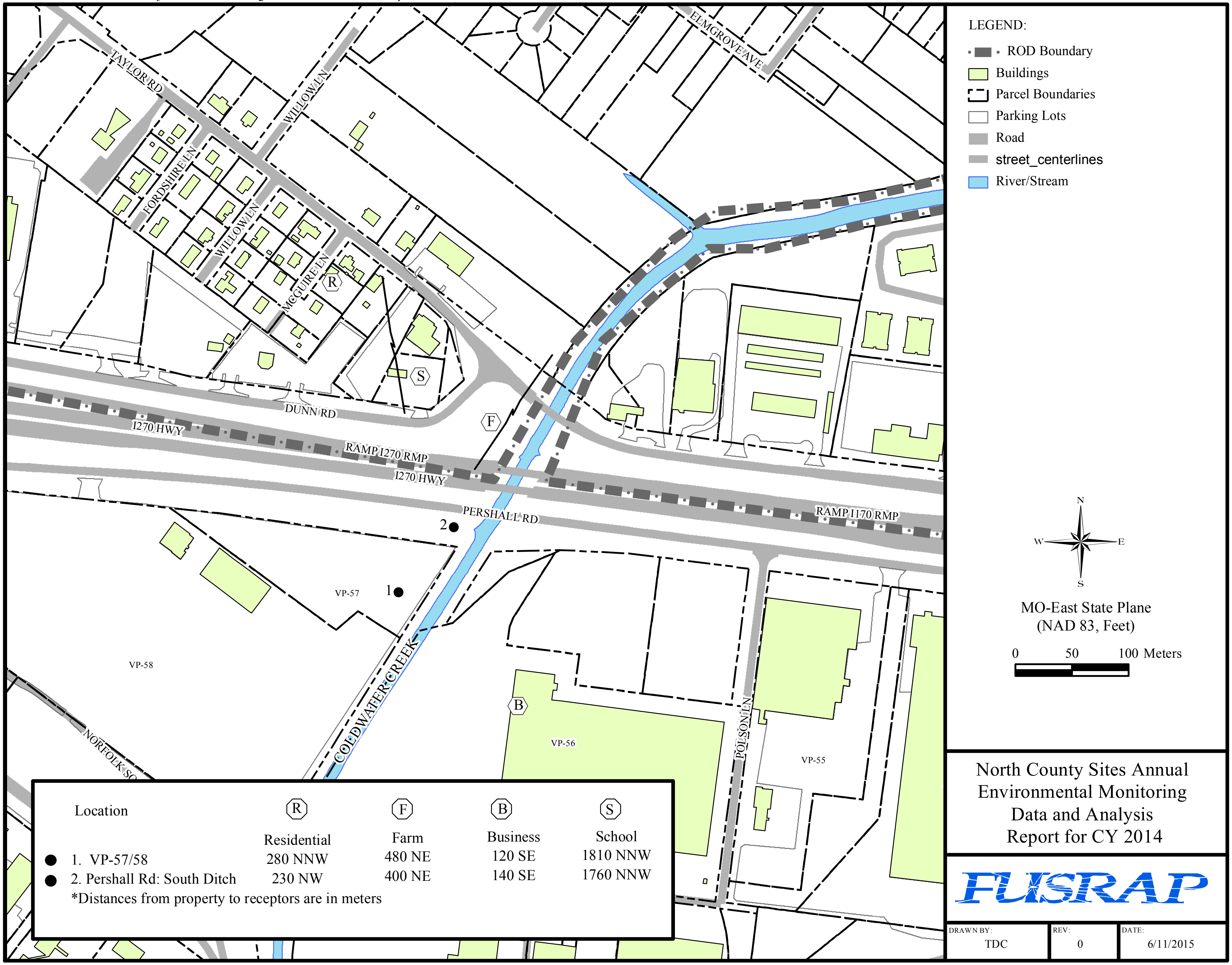

Figure A-2. SLAPS and SLAPS VPs Critical Receptors

Path: U:\GPS\EMDAR\NCO Projects\FY2015\Rev0\Figure A-3 FUSRAP Lab Critical Reports.mxd

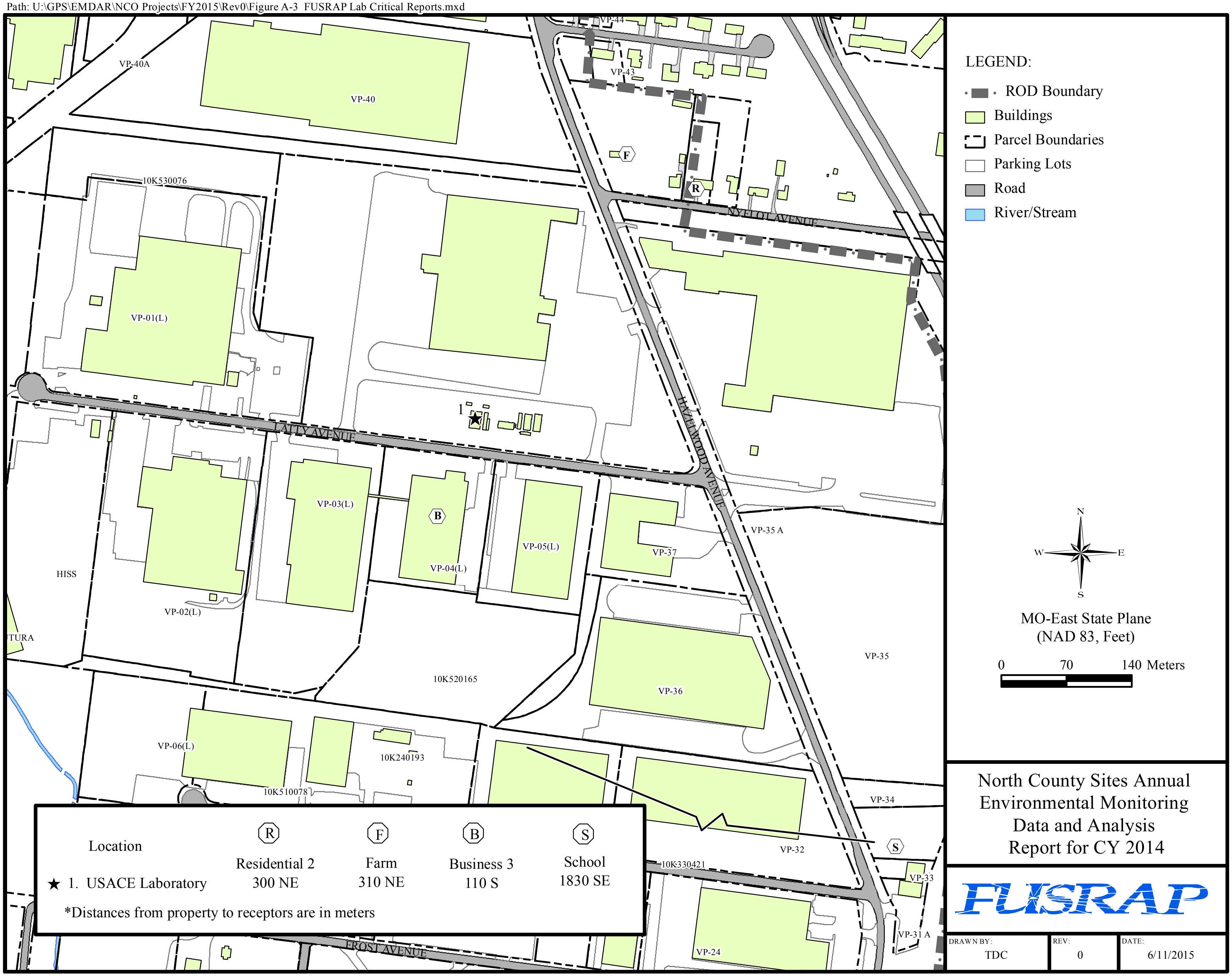

Figure A-3. USACE Radioanalytical Laboratory Critical Receptors

ATTACHMENT A-1

CALCULATED EMISSION RATES FROM NORTH ST. LOUIS COUNTY SITES PROPERTIES

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Table A-1-1. SLAPS Properties Soil Radionuclide Concentrations for CY 2014

Property	Ballfields	VP-57 and VP-58	Pershall Road South Ditch	SLAPS Loadout
Radionuclide	**Average Concentration (pCi/g)[a]**			
U-238	6.6	11.98	11.98	10.2
U-235	0.9	0.02	0.02	0.3
U-234	6.6	0.57	0.57	2.6
Ra-226	3.3	2.95	2.95	3.1
Ra-228	1.0	0.02	0.02	0.3
Th-232	1.7	2.27	2.27	2.1
Th-230	105	47.40	47.40	66.6
Th-228	1.6	0.05	0.05	0.6
Pa-231	6.1	0.38	0.38	2.3
Ac-227	5.3	0.32	0.32	2.0

[a] Radionuclides and concentrations from the FS, Appendix D, Attachment 5 (USACE 2003).

Table A-1-2. SLAPS Properties Average Gross Alpha and Beta Airborne Particulate Emissions for CY 2014

Location	Average Concentration (µCi/mL) for Location[a]	
	Gross Alpha	**Gross Beta**
Ballfields	3.29E-15	2.67E-14
VP-57 and VP-58	1.29E-15	2.80E-14
Pershall Road South Ditch	4.15E-15	2.42E-14
SLAPS Loadout	3.65E-15	3.22E-14
Background Concentration[b]	3.63E-15	1.92E-14

[a] Average concentration values for the sampling period by location.
[b] Negative gross alpha values were less than the laboratory instrument background value and were reported as zero.

Table A-1-3. SLAPS Properties Excavation Data for CY 2014

Location	Area (m^2)	Excavation Start Date	Excavation End Date
Ballfields, Survey Unit (SU)-11A	1,832	01/01/14	03/26/14
Pershall Road South Ditch, EA-1	310	06/30/14	07/10/14
Pershall Road South Ditch, SU-1A	187	07/16/14	08/19/14
Pershall Road South Ditch, SU-1B	115	08/28/14	10/22/14
Pershall Road South Ditch, SU-1C	73	09/29/14	12/09/14
VP-57 and VP-58, SU-1A	344	06/30/14	10/29/14
VP-57 and VP-58, SU-1B	666	06/30/14	08/21/14
VP-57 and VP-58, SU-1C	1,072	07/15/14	08/13/14
VP-57 and VP-58, SU-2A	1,439	08/04/14	09/11/14
VP-57 and VP-58, SU-2B	650	08/04/14	09/22/14
VP-57 and VP-58, SU-2C	467	09/02/14	09/30/14
VP-57 and VP-58, SU-3A	1,395	09/04/14	12/31/14
VP-57 and VP-58, SU-3B	116	09/25/14	12/09/14
VP-57 and VP-58, SU-3C	310	10/23/14	12/31/14
VP-57 and VP-58, SU-4A	599	09/29/14	11/19/14
VP-57 and VP-58, SU-4B	107	10/23/14	11/19/14
VP-57 and VP-58, SU-4C	165	12/09/14	12/31/14
VP-57 and VP-58, SU-4D	789	11/05/14	12/31/14
VP-57 and VP-58, SU-5A	212	12/23/14	12/31/14
VP-57 and VP-58, SU-5B	69	12/23/14	12/31/14
VP-57 and VP-58, SU-5E	251	09/02/14	12/31/14
SLAPS Loadout	600	01/01/14	12/31/14

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

Table A-1-4. SLAPS Properties Average Surface Area and Flow Rate per Location for CY 2014

Location	Total Days	Surface Area * Total Days	Average Surface Area/yr (m^2)	Diameter of Stack $D=(1.3*A)^{1/2}$(m)	Flow Rate $F=V*Pi*(D)^2/4$ (m^3/min.)
Ballfields					
SU-11A	85	155,720			
	Total	155,720	427	24	**1.2E+05**
Pershall Road South Ditch					
EA-1	11	3,406			
SU-1A	35	6,547			
SU-1B	56	6,416			
SU-1C	72	5,221			
	Total	21,590	59	9	**1.6E+04**
VP-57 and VP-58					
SU-1A	122	41,979			
SU-1B	53	35,316			
SU-1C	30	32,160			
SU-2A	39	56,136			
SU-2B	50	32,496			
SU-2C	29	13,537			
SU-3A	119	166,053			
SU-3B	76	8,807			
SU-3C	70	21,666			
SU-4A	52	31,136			
SU-4B	28	2,991			
SU-4C	23	3,786			
SU-4D	57	44,994			
SU-5A	9	1,908			
SU-5B	9	625			
SU-5E	121	30,317			
	Total	523,908	1,435	43	**3.9E+05**
SLAPS Loadout					
SLAPS Loadout	365	219,000			
	Total	219,000	600	28	**1.6E+05**

Table A-1-5. SLAPS Properties Airborne Radioactive Particulate Emissions Based on Site Perimeter Air Samples for CY 2014[a]

Property	Ballfields			VP-57 and VP-58			Pershall Road South Ditch			SLAPS Loadout		
Radionuclide	Activity Fraction[a]	Emission Conc. (µCi/cm³)[b]	Release Rate (Ci/yr)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm³)[b]	Release Rate (Ci/yr)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm³)[b]	Release Rate (Ci/yr)[c]	Activity Fraction[a]	Emission Conc. (µCi/cm³)[b]	Release Rate (Ci/yr)[c]
U-238	0.05	1.6E-16	9.9E-06	0.18	2.3E-16	4.8E-05	0.18	7.5E-16	6.3E-06	0.11	4.1E-16	3.5E-05
U-235	0.01	2.1E-17	1.3E-06	0.00	4.8E-19	9.9E-08	0.00	1.5E-18	1.3E-08	0.00	1.3E-17	1.1E-06
U-234	0.05	1.6E-16	9.9E-06	0.01	1.1E-17	2.3E-06	0.01	3.6E-17	3.0E-07	0.03	1.0E-16	8.8E-06
Ra-226	0.02	7.8E-17	4.9E-06	0.04	5.8E-17	1.2E-05	0.04	1.9E-16	1.6E-06	0.03	1.2E-16	1.0E-05
Th-232	0.01	4.0E-17	2.5E-06	0.03	4.4E-17	9.1E-06	0.03	1.4E-16	1.2E-06	0.02	8.4E-17	7.1E-06
Th-230	0.76	2.5E-15	1.6E-04	0.72	9.3E-16	1.9E-04	0.72	3.0E-15	2.5E-05	0.74	2.7E-15	2.3E-04
Th-228	0.01	3.7E-17	2.3E-06	0.00	9.3E-19	1.9E-07	0.00	3.0E-18	2.5E-08	0.01	2.2E-17	1.9E-06
Ra-224[d]	0.01	3.7E-17	2.3E-06	0.00	9.3E-19	1.9E-07	0.00	3.0E-18	2.5E-08	0.01	2.2E-17	1.9E-06
Th-234[d]	0.41	1.1E-14	6.9E-04	0.50	1.4E-14	2.9E-03	0.50	1.2E-14	1.0E-04	0.48	1.5E-14	1.3E-03
Pa-234m[d]	0.41	1.1E-14	6.9E-04	0.50	1.4E-14	2.9E-03	0.50	1.2E-14	1.0E-04	0.48	1.5E-14	1.3E-03
Th-231[d]	0.05	1.5E-15	9.2E-05	0.00	2.9E-17	5.9E-06	0.00	2.5E-17	2.1E-07	0.01	4.7E-16	3.9E-05
Ra-228	0.06	1.7E-15	1.0E-04	0.00	2.0E-17	4.1E-06	0.00	1.7E-17	1.4E-07	0.02	5.2E-16	4.4E-05
Ac-228[d]	0.06	1.7E-15	1.0E-04	0.00	2.0E-17	4.1E-06	0.00	1.7E-17	1.4E-07	0.02	5.2E-16	4.4E-05
Pa-231	0.04	1.4E-16	9.1E-06	0.01	7.4E-18	1.5E-06	0.01	2.4E-17	2.0E-07	0.03	9.2E-17	7.7E-06
Ac-227	0.04	1.3E-16	7.9E-06	0.00	6.2E-18	1.3E-06	0.00	2.0E-17	1.7E-07	0.02	8.0E-17	6.7E-06

[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 (14.587 ft [4.446 m] per second) and calculated site area (Table A-1-4). (Note: 1 milliliter [mL] = 1 cubic centimeter [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. USACE Laboratory Analyses for CY 2014[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	7	7	7	0	21
Latty Avenue Properties	soil	1,154	0	1,029	0	1,154	1,029
Latty Avenue Properties	water	0	0	0	0	0	0
IAAAP	soil	323	0	0	320	323	320
IAAAP	water	0	0	0	0	0	0
SLAPS	soil	0	0	0	0	0	0
SLAPS	water	4	5	5	1	4	11
SLAPS VPs	soil	2,658	0	2,263	0	2,658	2,263
SLAPS VPs	water	29	51	54	9	29	114
CWC	sediment (soil)	2,965	0	2,134	0	2,965	2,134
CWC	water	0	16	16	16	0	48
SLDS	soil	545	0	522	0	545	522
SLDS	water	0	69	76	8	0	153
		HISS and Latty Avenue Properties			**Total**	1,154	1,050
		IAAAP			**Total**	323	320
		SLAPS, SLAPS VPs, and CWC			**Total**	5,623	4,570
		SLDS			**Total**	545	675

[a] Data provided by the USACE radioanalytical laboratory for CY 2014.
[b] Assumes isotopic radium, thorium, and uranium occur in separate and distinct processes.
[c] Assumes all soil samples went through a drying/grinding process.
[d] Assumes all soil and water samples for isotopic radium, thorium, and uranium went through a separations process.
Note: CWC samples use SLAPS characterization data to determine release rates.

Table A-1-7. SLDS Property Laboratory Samples for CY 2014

Radionuclide	Avg. (pCi/g)	No. Samples (Drying/Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/yr)
U-238[a]	97	545	675	3.8E-07
U-235[a]	5	545	675	1.8E-08
U-234[a]	96	545	675	3.8E-07
Ra-226[a]	22	545	675	8.8E-08
Th-232[a]	4	545	675	1.5E-08
Th-230[a]	30	545	675	1.2E-07
Th-228[a]	4	545	675	1.5E-08
Ra-224[c]	4	545	675	1.5E-08
Th-234[c]	97	545	675	3.8E-07
Pa-234m[c]	97	545	675	3.8E-07
Th-231[c]	5	545	675	1.8E-08
Ra-228[c]	4	545	675	1.5E-08
Ac-228[c]	4	545	675	1.5E-08
Pa-231[c]	5	545	675	1.8E-08
Ac-227[c]	5	545	675	1.8E-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 2014* (SLDS EMDAR CY 2014), Appendix A, Attachment A-1 (USACE 2015a).
[b] Emission Rate = (0.001 * Avg * No. Samples [drying and grinding] + 0.005 * Avg * No. Samples [separations]) * (1,000 g * 1E-12Ci/pCi).
[c] Note: When data were not available, the radionuclide was assumed to be in secular equilibrium with the parent.

Table A-1-8. SLAPS and SLAPS VPs Laboratory Samples for CY 2014

Radionuclide	Avg. (pCi/g)	No. Samples (Drying/Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/yr)
U-238[a]	10	5,623	4,570	2.9E-07
U-235[a]	0.3	5,623	4,570	8.8E-09
U-234[a]	3	5,623	4,570	7.4E-08
Ra-226[a]	3	5,623	4,570	8.7E-08
Th-232[a]	2	5,623	4,570	5.9E-08
Th-230[a]	67	5,623	4,570	1.9E-06
Th-228[a]	1	5,623	4,570	1.6E-08
Ra-224[c]	1	5,623	4,570	1.6E-08
Th-234[c]	10	5,623	4,570	2.9E-07
Pa-234m[c]	10	5,623	4,570	2.9E-07
Th-231[c]	0.3	5,623	4,570	8.8E-09
Ra-228[c]	0	5,623	4,570	9.8E-09
Ac-228[c]	0	5,623	4,570	9.8E-09
Pa-231[a]	2	5,623	4,570	6.5E-08
Ac-227[a]	2	5,623	4,570	5.6E-08

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

Table A-1-9. Latty Avenue Property Laboratory Samples for CY 2014

Radionuclide	Avg. (pCi/g)[a]	No. Samples (Drying/Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/yr)
U-238	18	1,154	1,050	1.2E-07
U-235	1	1,154	1,050	6.1E-09
U-234	17	1,154	1,050	1.1E-07
Ra-226	13	1,154	1,050	8.6E-08
Th-232	2	1,154	1,050	1.3E-08
Th-230	93	1,154	1,050	6.0E-07
Th-228	1	1,154	1,050	6.8E-09
Ra-224	1	1,154	1,050	6.8E-09
Th-234	18	1,154	1,050	1.2E-07
Pa-234m	18	1,154	1,050	1.2E-07
Th-231	1	1,154	1,050	6.1E-09
Ra-228	0.6	1,154	1,050	4.0E-09
Ac-228	0.6	1,154	1,050	4.0E-09
Pa-231	13	1,154	1,050	8.3E-08
Ac-227	11	1,154	1,050	7.1E-08

[a] Average soil concentration from Table A-1-1 of the *North St. Louis County Sites Annual Environmental Monitoring Data and Analysis Report for Calendar Year 2014* (NC EMDAR CY 2014), Appendix A, Attachment A-1 (USACE 2015b).

[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-1-10. Iowa Army Ammunition Plant Laboratory Samples for CY 2014

Radionuclide	Avg. (pCi/g)[a]	No. Samples (Drying/Grinding)	No. Samples (Separations)	Emission Rate[b] (Ci/yr)
U-238	623	323	320	1.2E-06
U-235	6	323	320	1.1E-08
U-234	211	323	320	4.1E-07
Ra-226	0	323	320	0.0E+00
Th-232	0	323	320	0.0E+00
Th-230	0	323	320	0.0E+00
Th-228	0	323	320	0.0E+00
Ra-224	0	323	320	0.0E+00
Th-234	0	323	320	0.0E+00
Pa-234m	0	323	320	0.0E+00
Th-231	0	323	320	0.0E+00
Ra-228	0	323	320	0.0E+00
Ac-228	0	323	320	0.0E+00
Pa-231	0	323	320	0.0E+00
Ac-227	0	323	320	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-1-11. Total Laboratory Airborne Radioactive Particulate Emission Rate for CY 2014

Radionuclide	Emission Rate (Ci/yr)				
	SLDS	SLAPS/ SLAPS VPs	Latty Avenue Properties	IAAAP Property	Total Across Lab[a]
U-238	3.8E-07	2.9E-07	1.2E-07	1.2E-06	2.0E-06
U-235	1.8E-08	8.8E-09	6.1E-09	1.1E-08	4.4E-08
U-234	3.8E-07	7.4E-08	1.1E-07	4.1E-07	9.6E-07
Ra-226	8.8E-08	8.7E-08	8.6E-08	0.0E+00	2.6E-07
Th-232	1.5E-08	5.9E-08	1.3E-08	0.0E+00	8.7E-08
Th-230	1.2E-07	1.9E-06	6.0E-07	0.0E+00	2.6E-06
Th-228	1.5E-08	1.6E-08	6.8E-09	0.0E+00	3.7E-08
Ra-224	1.5E-08	1.6E-08	6.8E-09	0.0E+00	3.7E-08
Th-234	3.8E-07	2.9E-07	1.2E-07	0.0E+00	7.9E-07
Pa-234m	3.8E-07	2.9E-07	1.2E-07	0.0E+00	7.9E-07
Th-231	1.8E-08	8.8E-09	6.1E-09	0.0E+00	3.3E-08
Ra-228	1.5E-08	9.8E-09	4.0E-09	0.0E+00	2.9E-08
Ac-228	1.5E-08	9.8E-09	4.0E-09	0.0E+00	2.9E-08
Pa-231	1.8E-08	6.5E-08	8.3E-08	0.0E+00	1.7E-07
Ac-227	1.8E-08	5.6E-08	7.1E-08	0.0E+00	1.5E-07

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

ATTACHMENT A-2

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

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CAP88-PC RUNS FOR THE SLAPS AND SLAPS VICINITY PROPERTIES

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CAP88 OUTPUT RESULTS

IA-09 Ballfields

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 10 09:04:34 2015

```
     Facility:  IA-09 Ballfields
      Address:  101 James S McDonnell Blvd
         City:  Berkeley
        State:  MO          Zip:  63134

 Source Category:  Area
     Source Type:  Area
   Emission Year:  2014
  DOSE Age Group:  Adult

        Comments:  Air
                 Air

    Dataset Name:  Ballfields 2014.
    Dataset Date:  Mar 10, 2015 09:03 AM
       Wind File:  C:\Users\moserpl\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 10 09:04:34 2015 SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	5.08E-03
UB_Wall	5.38E-03
Bone_Sur	9.01E-01
Brain	5.23E-03
Breasts	5.54E-03
St_Wall	5.27E-03
SI_Wall	5.25E-03
ULI_Wall	5.72E-03
LLI_Wall	6.64E-03
Kidneys	1.52E-02
Liver	6.60E-02
Muscle	5.63E-03
Ovaries	1.28E-02
Pancreas	5.10E-03
R_Marrow	4.37E-02
Skin	3.30E-02
Spleen	5.30E-03
Testes	1.33E-02
Thymus	5.25E-03
Thyroid	5.38E-03
GB_Wall	5.12E-03
Ht_Wall	5.23E-03
Uterus	5.20E-03
ET_Reg	4.16E-02
Lung_66	1.05E-01
Effectiv	3.58E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.77E-03
INHALATION	3.09E-02
AIR IMMERSION	2.03E-07
GROUND SURFACE	3.19E-03
INTERNAL	3.26E-02
EXTERNAL	3.19E-03
TOTAL	3.58E-02

Tue Mar 10 09:04:34 2015

SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	1.49E-04
Th-234	4.64E-05
Pa-234m	6.68E-05
Pa-234	1.32E-06
U-234	1.79E-04
Th-230	1.40E-02
Ra-226	1.31E-04
Rn-222	1.40E-07
Po-218	2.50E-12
Pb-214	9.12E-05
At-218	9.39E-12
Bi-214	5.33E-04
Rn-218	5.44E-14
Po-214	2.95E-08
Tl-210	2.08E-07
Pb-210	4.32E-07
Bi-210	6.99E-06
Hg-206	5.64E-13
Po-210	1.81E-09
Tl-206	1.63E-11
U-235	3.11E-05
Th-231	1.19E-06
Pa-231	5.41E-03
Ac-227	9.00E-03
Th-227	8.26E-05
Fr-223	7.79E-07
Ra-223	9.24E-05
Rn-219	4.00E-05
At-219	0.00E+00
Bi-215	1.80E-10
Po-215	1.22E-07
Pb-211	7.85E-05
Bi-211	3.24E-05
Tl-207	4.07E-05
Po-211	1.56E-08
Th-232	4.01E-04
Ra-228	2.82E-03
Ac-228	8.21E-04
Th-228	4.98E-04
Ra-224	4.06E-05
Rn-220	5.57E-07
Po-216	1.34E-08
Pb-212	1.22E-04
Bi-212	1.43E-04
Po-212	0.00E+00
Tl-208	9.85E-04
TOTAL	3.58E-02

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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.63E-10
INHALATION	5.13E-09
AIR IMMERSION	1.04E-13
GROUND SURFACE	1.63E-09
INTERNAL	5.30E-09
EXTERNAL	1.63E-09
TOTAL	6.93E-09

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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	4.92E-11
Th-234	1.57E-11
Pa-234m	1.17E-11
Pa-234	7.15E-13
U-234	6.15E-11
Th-230	3.09E-09
Ra-226	7.38E-11
Rn-222	7.62E-14
Po-218	1.12E-18
Pb-214	4.88E-11
At-218	1.16E-18
Bi-214	2.82E-10
Rn-218	2.97E-20
Po-214	1.62E-14
Tl-210	1.11E-13
Pb-210	1.94E-13
Bi-210	7.75E-13
Hg-206	2.50E-19
Po-210	9.93E-16
Tl-206	1.83E-18
U-235	1.24E-11
Th-231	5.23E-13
Pa-231	2.34E-10
Ac-227	1.12E-09
Th-227	4.48E-11
Fr-223	2.90E-13
Ra-223	4.99E-11
Rn-219	2.19E-11
At-219	0.00E+00
Bi-215	8.02E-17
Po-215	6.70E-14
Pb-211	2.81E-11
Bi-211	1.77E-11
Tl-207	5.23E-12
Po-211	8.53E-15
Th-232	8.75E-11
Ra-228	3.82E-10
Ac-228	4.35E-10
Th-228	1.79E-10
Ra-224	1.64E-11
Rn-220	3.05E-13
Po-216	7.38E-15
Pb-212	6.65E-11
Bi-212	5.50E-11
Po-212	0.00E+00
Tl-208	5.36E-10
TOTAL	6.93E-09

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

Direction	Distance (m) 490	775	1485	2265	
N	3.6E-02	1.6E-02	6.0E-03	3.6E-03	
NNW	1.9E-02	8.9E-03	3.8E-03	2.5E-03	
NW	2.2E-02	1.0E-02	4.1E-03	2.7E-03	
WNW	2.7E-02	1.2E-02	4.7E-03	3.0E-03	
W	2.0E-02	9.4E-03	3.9E-03	2.6E-03	
WSW	1.1E-02	5.2E-03	2.6E-03	2.0E-03	Business
SW	1.4E-02	6.8E-03	3.0E-03	2.2E-03	
SSW	1.7E-02	8.0E-03	3.5E-03	2.4E-03	
S	1.5E-02	7.3E-03	3.3E-03	2.3E-03	
SSE	1.1E-02	5.5E-03	2.7E-03	2.0E-03	
SE	1.6E-02	7.4E-03	3.3E-03	2.3E-03	
ESE	2.6E-02	1.2E-02	4.6E-03	3.0E-03	
E	3.3E-02	1.5E-02	5.5E-03	3.4E-03	School
ENE	2.8E-02	1.2E-02	4.8E-03	3.1E-03	
NE	1.8E-02	8.2E-03	3.5E-03	2.4E-03	Residence, Farm
NNE	1.5E-02	7.1E-03	3.2E-03	2.3E-03	

Tue Mar 10 09:04:34 2015 SUMMARY
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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 490	775	1485	2265
N	6.9E-09	3.0E-09	1.1E-09	5.9E-10
NNW	3.6E-09	1.6E-09	6.1E-10	3.6E-10
NW	4.2E-09	1.9E-09	6.8E-10	4.0E-10
WNW	5.1E-09	2.2E-09	7.9E-10	4.5E-10
W	3.9E-09	1.7E-09	6.3E-10	3.7E-10
WSW	1.9E-09	8.9E-10	3.7E-10	2.4E-10
SW	2.7E-09	1.2E-09	4.6E-10	2.9E-10
SSW	3.3E-09	1.4E-09	5.4E-10	3.3E-10
S	2.9E-09	1.3E-09	5.1E-10	3.1E-10
SSE	2.1E-09	9.6E-10	3.9E-10	2.6E-10
SE	3.0E-09	1.3E-09	5.1E-10	3.2E-10
ESE	5.0E-09	2.2E-09	7.8E-10	4.5E-10
E	6.4E-09	2.8E-09	9.6E-10	5.4E-10
ENE	5.4E-09	2.3E-09	8.2E-10	4.7E-10
NE	3.3E-09	1.5E-09	5.6E-10	3.4E-10
NNE	2.8E-09	1.3E-09	4.9E-10	3.1E-10

CAP88 OUTPUT RESULTS

VP-57/VP-58

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 10 13:49:00 2015

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

Source Category:  Area
    Source Type:  Area
  Emission Year:  2014
 DOSE Age Group:  Adult

       Comments:  Air
                Air

   Dataset Name:  VP-57_58 2014.
   Dataset Date:  Mar 10, 2015 01:48 PM
      Wind File:  C:\Users\moserpl\Documents\CAP88\Wind Files\13994.WND
```

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	3.39E-02
UB_Wall	3.68E-02
Bone_Sur	6.15E+00
Brain	3.54E-02
Breasts	3.83E-02
St_Wall	3.59E-02
SI_Wall	3.60E-02
ULI_Wall	3.98E-02
LLI_Wall	4.82E-02
Kidneys	1.26E-01
Liver	1.59E-01
Muscle	3.92E-02
Ovaries	7.84E-02
Pancreas	3.41E-02
R_Marrow	2.58E-01
Skin	5.36E-01
Spleen	3.59E-02
Testes	8.36E-02
Thymus	3.55E-02
Thyroid	3.67E-02
GB_Wall	3.43E-02
Ht_Wall	3.54E-02
Uterus	3.51E-02
ET_Reg	5.54E-01
Lung_66	1.44E+00
Effectiv	3.14E-01

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	7.59E-03
INHALATION	2.73E-01
AIR IMMERSION	2.72E-06
GROUND SURFACE	3.28E-02
INTERNAL	2.81E-01
EXTERNAL	3.28E-02
TOTAL	3.14E-01

Tue Mar 10 13:49:00 2015 SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	9.64E-03
Th-234	2.52E-03
Pa-234m	4.01E-03
Pa-234	7.90E-05
U-234	5.57E-04
Th-230	2.23E-01
Ra-226	3.99E-03
Rn-222	3.58E-06
Po-218	6.40E-11
Pb-214	2.34E-03
At-218	2.41E-10
Bi-214	1.37E-02
Rn-218	1.39E-12
Po-214	7.58E-07
Tl-210	5.34E-06
Pb-210	1.13E-05
Bi-210	1.82E-04
Hg-206	1.47E-11
Po-210	4.72E-08
Tl-206	4.25E-10
U-235	3.11E-05
Th-231	1.12E-06
Pa-231	1.20E-02
Ac-227	7.88E-03
Th-227	1.05E-04
Fr-223	9.92E-07
Ra-223	1.18E-04
Rn-219	5.10E-05
At-219	0.00E+00
Bi-215	2.29E-10
Po-215	1.56E-07
Pb-211	1.00E-04
Bi-211	4.13E-05
Tl-207	5.19E-05
Po-211	1.99E-08
Th-232	1.96E-02
Ra-228	1.42E-03
Ac-228	4.58E-03
Th-228	5.64E-04
Ra-224	8.45E-05
Rn-220	3.08E-06
Po-216	7.43E-08
Pb-212	6.77E-04
Bi-212	7.89E-04
Po-212	0.00E+00
Tl-208	5.45E-03
TOTAL	3.14E-01

Tue Mar 10 13:49:00 2015 SUMMARY
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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.82E-09
INHALATION	5.99E-08
AIR IMMERSION	1.10E-12
GROUND SURFACE	1.58E-08
INTERNAL	6.17E-08
EXTERNAL	1.58E-08
TOTAL	7.75E-08

Tue Mar 10 13:49:00 2015 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	3.22E-09
Th-234	8.68E-10
Pa-234m	7.02E-10
Pa-234	4.29E-11
U-234	1.92E-10
Th-230	4.93E-08
Ra-226	2.12E-09
Rn-222	1.95E-12
Po-218	2.86E-17
Pb-214	1.25E-09
At-218	2.97E-17
Bi-214	7.22E-09
Rn-218	7.63E-19
Po-214	4.16E-13
Tl-210	2.85E-12
Pb-210	5.05E-12
Bi-210	2.02E-11
Hg-206	6.52E-18
Po-210	2.59E-14
Tl-206	4.78E-17
U-235	1.24E-11
Th-231	4.97E-13
Pa-231	5.20E-10
Ac-227	9.86E-10
Th-227	5.70E-11
Fr-223	3.70E-13
Ra-223	6.36E-11
Rn-219	2.79E-11
At-219	0.00E+00
Bi-215	1.02E-16
Po-215	8.54E-14
Pb-211	3.58E-11
Bi-211	2.25E-11
Tl-207	6.67E-12
Po-211	1.09E-14
Th-232	4.30E-09
Ra-228	2.04E-10
Ac-228	2.43E-09
Th-228	2.04E-10
Ra-224	3.97E-11
Rn-220	1.69E-12
Po-216	4.08E-14
Pb-212	3.68E-10
Bi-212	3.04E-10
Po-212	0.00E+00
Tl-208	2.97E-09
TOTAL	7.75E-08

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

Direction	Distance (m) 120	280	480	1810	
N	3.1E-01	7.1E-02	2.9E-02	7.5E-03	
NNW	1.6E-01	3.9E-02	1.8E-02	6.4E-03	Residence, School
NW	1.9E-01	4.5E-02	2.0E-02	6.6E-03	
WNW	2.3E-01	5.4E-02	2.3E-02	6.9E-03	
W	1.8E-01	4.2E-02	1.9E-02	6.5E-03	
WSW	8.8E-02	2.3E-02	1.2E-02	5.9E-03	
SW	1.2E-01	3.0E-02	1.4E-02	6.1E-03	
SSW	1.5E-01	3.6E-02	1.6E-02	6.3E-03	
S	1.3E-01	3.2E-02	1.5E-02	6.2E-03	
SSE	9.3E-02	2.4E-02	1.2E-02	5.9E-03	
SE	1.3E-01	3.3E-02	1.5E-02	6.2E-03	Business
ESE	2.3E-01	5.2E-02	2.2E-02	6.9E-03	
E	3.0E-01	6.7E-02	2.8E-02	7.3E-03	
ENE	2.5E-01	5.7E-02	2.4E-02	6.9E-03	
NE	1.5E-01	3.6E-02	1.7E-02	6.3E-03	Farm
NNE	1.3E-01	3.1E-02	1.5E-02	6.2E-03	

Tue Mar 10 13:49:00 2015 SUMMARY
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INDIVIDUAL LIFETIME RISK (deaths)
(All Radionuclides and Pathways)

Direction	Distance (m) 120	280	480	1810
N	7.8E-08	1.8E-08	7.3E-09	1.9E-09
NNW	4.0E-08	9.6E-09	4.4E-09	1.6E-09
NW	4.7E-08	1.1E-08	4.9E-09	1.6E-09
WNW	5.8E-08	1.3E-08	5.7E-09	1.7E-09
W	4.4E-08	1.0E-08	4.6E-09	1.6E-09
WSW	2.2E-08	5.7E-09	2.9E-09	1.5E-09
SW	3.0E-08	7.5E-09	3.5E-09	1.5E-09
SSW	3.7E-08	9.0E-09	4.1E-09	1.6E-09
S	3.3E-08	8.0E-09	3.7E-09	1.5E-09
SSE	2.3E-08	6.0E-09	3.0E-09	1.5E-09
SE	3.3E-08	8.1E-09	3.8E-09	1.5E-09
ESE	5.6E-08	1.3E-08	5.6E-09	1.7E-09
E	7.4E-08	1.7E-08	6.9E-09	1.8E-09
ENE	6.1E-08	1.4E-08	5.9E-09	1.7E-09
NE	3.7E-08	9.0E-09	4.1E-09	1.6E-09
NNE	3.2E-08	7.8E-09	3.7E-09	1.5E-09

CAP88 OUTPUT RESULTS

Pershall Road: South Ditch

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 10 14:20:38 2015

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


 Source Category:  Area
     Source Type:  Area
   Emission Year:  2014
  DOSE Age Group:  Adult

        Comments:  Air
                 Air


   Dataset Name:  Pershall Rd Sout
   Dataset Date:  Mar 10, 2015 02:20 PM
      Wind File:  C:\Users\moserpl\Documents\CAP88\Wind Files\13994.WND
```

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ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	3.34E-03
UB_Wall	3.63E-03
Bone_Sur	6.17E-01
Brain	3.49E-03
Breasts	3.77E-03
St_Wall	3.53E-03
SI_Wall	3.52E-03
ULI_Wall	3.73E-03
LLI_Wall	4.19E-03
Kidneys	1.26E-02
Liver	1.58E-02
Muscle	3.86E-03
Ovaries	7.81E-03
Pancreas	3.37E-03
R_Marrow	2.58E-02
Skin	5.05E-02
Spleen	3.55E-03
Testes	8.33E-03
Thymus	3.50E-03
Thyroid	3.62E-03
GB_Wall	3.38E-03
Ht_Wall	3.49E-03
Uterus	3.46E-03
ET_Reg	5.52E-02
Lung_66	1.42E-01
Effectiv	3.11E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	7.82E-04
INHALATION	2.71E-02
AIR IMMERSION	7.15E-08
GROUND SURFACE	3.20E-03
INTERNAL	2.79E-02
EXTERNAL	3.20E-03
TOTAL	3.11E-02

Tue Mar 10 14:20:38 2015 SUMMARY
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NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	9.66E-04
Th-234	8.69E-05
Pa-234m	3.66E-04
Pa-234	7.22E-06
U-234	5.55E-05
Th-230	2.24E-02
Ra-226	4.22E-04
Rn-222	3.63E-07
Po-218	6.49E-12
Pb-214	2.37E-04
At-218	2.44E-11
Bi-214	1.39E-03
Rn-218	1.41E-13
Po-214	7.68E-08
Tl-210	5.41E-07
Pb-210	1.14E-06
Bi-210	1.85E-05
Hg-206	1.49E-12
Po-210	4.79E-09
Tl-206	4.32E-11
U-235	3.11E-06
Th-231	1.03E-07
Pa-231	1.22E-03
Ac-227	7.84E-04
Th-227	1.06E-05
Fr-223	1.00E-07
Ra-223	1.19E-05
Rn-219	5.14E-06
At-219	0.00E+00
Bi-215	2.31E-11
Po-215	1.57E-08
Pb-211	1.01E-05
Bi-211	4.16E-06
Tl-207	5.23E-06
Po-211	2.00E-09
Th-232	1.97E-03
Ra-228	3.91E-05
Ac-228	4.32E-04
Th-228	5.63E-05
Ra-224	8.18E-06
Rn-220	2.91E-07
Po-216	7.02E-09
Pb-212	6.39E-05
Bi-212	7.45E-05
Po-212	0.00E+00
Tl-208	5.15E-04
TOTAL	3.11E-02

Tue Mar 10 14:20:38 2015 SUMMARY
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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.98E-10
INHALATION	5.93E-09
AIR IMMERSION	2.90E-14
GROUND SURFACE	1.55E-09
INTERNAL	6.13E-09
EXTERNAL	1.55E-09
TOTAL	7.68E-09

Tue Mar 10 14:20:38 2015 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	3.21E-10
Th-234	3.31E-11
Pa-234m	6.41E-11
Pa-234	3.92E-12
U-234	1.91E-11
Th-230	4.94E-09
Ra-226	2.32E-10
Rn-222	1.98E-13
Po-218	2.90E-18
Pb-214	1.27E-10
At-218	3.01E-18
Bi-214	7.32E-10
Rn-218	7.73E-20
Po-214	4.22E-14
Tl-210	2.89E-13
Pb-210	5.12E-13
Bi-210	2.05E-12
Hg-206	6.62E-19
Po-210	2.63E-15
Tl-206	4.85E-18
U-235	1.24E-12
Th-231	4.65E-14
Pa-231	5.26E-11
Ac-227	9.79E-11
Th-227	5.75E-12
Fr-223	3.73E-14
Ra-223	6.42E-12
Rn-219	2.81E-12
At-219	0.00E+00
Bi-215	1.03E-17
Po-215	8.61E-15
Pb-211	3.61E-12
Bi-211	2.27E-12
Tl-207	6.72E-13
Po-211	1.10E-15
Th-232	4.31E-10
Ra-228	5.49E-12
Ac-228	2.30E-10
Th-228	2.04E-11
Ra-224	3.82E-12
Rn-220	1.59E-13
Po-216	3.86E-15
Pb-212	3.47E-11
Bi-212	2.87E-11
Po-212	0.00E+00
Tl-208	2.80E-10
TOTAL	7.68E-09

Tue Mar 10 14:20:38 2015 SUMMARY
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INDIVIDUAL COMMITTED EFFECTIVE DOSE EQUIVALENT (mrem)
(All Radionuclides and Pathways)

Direction	Distance (m) 140	230	400	1760	
N	3.1E-02	1.3E-02	5.0E-03	8.8E-04	
NNW	1.6E-02	6.9E-03	2.8E-03	7.3E-04	School
NW	1.9E-02	8.0E-03	3.2E-03	7.5E-04	Residence
WNW	2.3E-02	9.7E-03	3.8E-03	7.9E-04	
W	1.8E-02	7.4E-03	3.0E-03	7.4E-04	
WSW	8.8E-03	3.9E-03	1.7E-03	6.5E-04	
SW	1.2E-02	5.3E-03	2.2E-03	6.8E-04	
SSW	1.5E-02	6.4E-03	2.6E-03	7.1E-04	
S	1.3E-02	5.6E-03	2.4E-03	7.0E-04	
SSE	9.3E-03	4.1E-03	1.8E-03	6.6E-04	
SE	1.3E-02	5.7E-03	2.4E-03	7.0E-04	Business
ESE	2.2E-02	9.4E-03	3.7E-03	7.9E-04	
E	3.0E-02	1.2E-02	4.7E-03	8.5E-04	
ENE	2.5E-02	1.0E-02	4.0E-03	8.0E-04	
NE	1.5E-02	6.4E-03	2.6E-03	7.1E-04	Farm
NNE	1.3E-02	5.5E-03	2.3E-03	6.9E-04	

Tue Mar 10 14:20:38 2015 SUMMARY
Page 6

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

Direction	Distance (m) 140	230	400	1760
N	7.7E-09	3.2E-09	1.2E-09	2.3E-10
NNW	4.0E-09	1.7E-09	7.1E-10	1.9E-10
NW	4.7E-09	2.0E-09	8.1E-10	1.9E-10
WNW	5.7E-09	2.4E-09	9.5E-10	2.0E-10
W	4.4E-09	1.8E-09	7.5E-10	1.9E-10
WSW	2.2E-09	9.6E-10	4.4E-10	1.7E-10
SW	3.0E-09	1.3E-09	5.6E-10	1.8E-10
SSW	3.7E-09	1.6E-09	6.6E-10	1.8E-10
S	3.2E-09	1.4E-09	5.9E-10	1.8E-10
SSE	2.3E-09	1.0E-09	4.6E-10	1.7E-10
SE	3.3E-09	1.4E-09	6.0E-10	1.8E-10
ESE	5.5E-09	2.3E-09	9.3E-10	2.0E-10
E	7.3E-09	3.0E-09	1.2E-09	2.2E-10
ENE	6.0E-09	2.5E-09	9.9E-10	2.1E-10
NE	3.7E-09	1.6E-09	6.6E-10	1.8E-10
NNE	3.1E-09	1.4E-09	5.8E-10	1.8E-10

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 10 10:12:27 2015

```
     Facility:  SLAPS Loadout
      Address:  104 James S McDonnell Blvd
         City:  Berkeley
        State:  MO          Zip:  63134

Source Category:  Area
    Source Type:  Area
  Emission Year:  2014
 DOSE Age Group:  Adult

       Comments:  Air
                Air

   Dataset Name:  SLAPS Loadout 20
   Dataset Date:  Mar 10, 2015 10:07 AM
      Wind File:  C:\Users\moserpl\Documents\CAP88\Wind Files\13994.WND
```

Tue Mar 10 10:12:27 2015

SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	3.92E-03
UB_Wall	4.19E-03
Bone_Sur	7.85E-01
Brain	4.06E-03
Breasts	4.34E-03
St_Wall	4.10E-03
SI_Wall	4.09E-03
ULI_Wall	4.44E-03
LLI_Wall	5.16E-03
Kidneys	1.43E-02
Liver	3.16E-02
Muscle	4.42E-03
Ovaries	9.80E-03
Pancreas	3.94E-03
R_Marrow	3.43E-02
Skin	3.98E-02
Spleen	4.12E-03
Testes	1.03E-02
Thymus	4.07E-03
Thyroid	4.19E-03
GB_Wall	3.95E-03
Ht_Wall	4.06E-03
Uterus	4.03E-03
ET_Reg	4.99E-02
Lung_66	1.27E-01
Effectiv	3.33E-02

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.24E-03
INHALATION	2.91E-02
AIR IMMERSION	1.51E-07
GROUND SURFACE	3.00E-03
INTERNAL	3.04E-02
EXTERNAL	3.00E-03
TOTAL	3.33E-02

Tue Mar 10 10:12:27 2015 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	5.06E-04
Th-234	9.09E-05
Pa-234m	2.14E-04
Pa-234	4.21E-06
U-234	1.53E-04
Th-230	1.94E-02
Ra-226	2.56E-04
Rn-222	2.48E-07
Po-218	4.44E-12
Pb-214	1.62E-04
At-218	1.67E-11
Bi-214	9.48E-04
Rn-218	9.66E-14
Po-214	5.25E-08
Tl-210	3.70E-07
Pb-210	7.75E-07
Bi-210	1.25E-05
Hg-206	1.01E-12
Po-210	3.24E-09
Tl-206	2.93E-11
U-235	2.53E-05
Th-231	9.06E-07
Pa-231	4.41E-03
Ac-227	2.90E-03
Th-227	4.15E-05
Fr-223	3.91E-07
Ra-223	4.63E-05
Rn-219	2.01E-05
At-219	0.00E+00
Bi-215	9.02E-11
Po-215	6.13E-08
Pb-211	3.94E-05
Bi-211	1.62E-05
Tl-207	2.04E-05
Po-211	7.82E-09
Th-232	1.10E-03
Ra-228	1.19E-03
Ac-228	5.60E-04
Th-228	3.96E-04
Ra-224	3.13E-05
Rn-220	3.80E-07
Po-216	9.17E-09
Pb-212	8.35E-05
Bi-212	9.74E-05
Po-212	0.00E+00
Tl-208	6.73E-04
TOTAL	3.33E-02

Tue Mar 10 10:12:27 2015 SUMMARY
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CANCER RISK SUMMARY

Cancer	Selected Individual Total Lifetime Fatal Cancer Risk

PATHWAY RISK SUMMARY

Pathway	Selected Individual Total Lifetime Fatal Cancer Risk
INGESTION	1.80E-10
INHALATION	5.58E-09
AIR IMMERSION	7.02E-14
GROUND SURFACE	1.49E-09
INTERNAL	5.76E-09
EXTERNAL	1.49E-09
TOTAL	7.25E-09

Tue Mar 10 10:12:27 2015 SUMMARY
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NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	1.67E-10
Th-234	3.20E-11
Pa-234m	3.74E-11
Pa-234	2.29E-12
U-234	5.26E-11
Th-230	4.27E-09
Ra-226	1.44E-10
Rn-222	1.35E-13
Po-218	1.98E-18
Pb-214	8.67E-11
At-218	2.06E-18
Bi-214	5.00E-10
Rn-218	5.28E-20
Po-214	2.88E-14
Tl-210	1.98E-13
Pb-210	3.47E-13
Bi-210	1.39E-12
Hg-206	4.49E-19
Po-210	1.78E-15
Tl-206	3.29E-18
U-235	1.01E-11
Th-231	4.06E-13
Pa-231	1.91E-10
Ac-227	3.62E-10
Th-227	2.25E-11
Fr-223	1.46E-13
Ra-223	2.50E-11
Rn-219	1.10E-11
At-219	0.00E+00
Bi-215	4.03E-17
Po-215	3.36E-14
Pb-211	1.41E-11
Bi-211	8.87E-12
Tl-207	2.62E-12
Po-211	4.28E-15
Th-232	2.39E-10
Ra-228	1.62E-10
Ac-228	2.97E-10
Th-228	1.42E-10
Ra-224	1.25E-11
Rn-220	2.08E-13
Po-216	5.04E-15
Pb-212	4.54E-11
Bi-212	3.76E-11
Po-212	0.00E+00
Tl-208	3.66E-10
TOTAL	7.25E-09

Tue Mar 10 10:12:27 2015 SUMMARY
Page 5

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

	Distance (m)				
Direction	500	770	1710	2580	
N	3.3E-02	1.5E-02	4.5E-03	2.7E-03	
NNW	1.8E-02	8.3E-03	2.8E-03	1.9E-03	
NW	2.0E-02	9.6E-03	3.0E-03	2.0E-03	
WNW	2.5E-02	1.1E-02	3.5E-03	2.2E-03	
W	1.9E-02	8.8E-03	2.9E-03	1.9E-03	
WSW	9.5E-03	4.7E-03	1.9E-03	1.4E-03	Business
SW	1.3E-02	6.3E-03	2.2E-03	1.6E-03	
SSW	1.6E-02	7.5E-03	2.5E-03	1.7E-03	
S	1.4E-02	6.8E-03	2.4E-03	1.7E-03	
SSE	1.0E-02	5.1E-03	2.0E-03	1.4E-03	
SE	1.4E-02	6.9E-03	2.4E-03	1.7E-03	
ESE	2.4E-02	1.1E-02	3.4E-03	2.2E-03	
E	3.1E-02	1.4E-02	4.1E-03	2.5E-03	School
ENE	2.6E-02	1.2E-02	3.6E-03	2.3E-03	
NE	1.6E-02	7.7E-03	2.6E-03	1.8E-03	Residence, Farm
NNE	1.4E-02	6.6E-03	2.3E-03	1.6E-03	

Tue Mar 10 10:12:27 2015 SUMMARY
Page 6

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

	Distance (m)			
Direction	500	770	1710	2580
N	7.2E-09	3.3E-09	9.3E-10	5.4E-10
NNW	3.8E-09	1.8E-09	5.5E-10	3.4E-10
NW	4.4E-09	2.0E-09	6.1E-10	3.7E-10
WNW	5.4E-09	2.4E-09	7.1E-10	4.2E-10
W	4.1E-09	1.9E-09	5.7E-10	3.5E-10
WSW	2.0E-09	9.7E-10	3.4E-10	2.4E-10
SW	2.8E-09	1.3E-09	4.2E-10	2.8E-10
SSW	3.4E-09	1.6E-09	4.9E-10	3.1E-10
S	3.0E-09	1.4E-09	4.6E-10	3.0E-10
SSE	2.2E-09	1.0E-09	3.7E-10	2.5E-10
SE	3.1E-09	1.5E-09	4.7E-10	3.0E-10
ESE	5.2E-09	2.4E-09	7.0E-10	4.2E-10
E	6.7E-09	3.0E-09	8.5E-10	4.9E-10
ENE	5.6E-09	2.5E-09	7.3E-10	4.3E-10
NE	3.5E-09	1.6E-09	5.0E-10	3.2E-10
NNE	2.9E-09	1.4E-09	4.5E-10	2.9E-10

CAP88-PC RUNS FOR THE USACE LAB

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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
Mon Apr 20 14:27:34 2015

```
     Facility:  HISS Laboratory IAAAP EPC
      Address:  Latty Ave
         City:  Berkeley
        State:  MO          Zip:  63134

 Source Category:  Area
     Source Type:  Stack
   Emission Year:  2014
  DOSE Age Group:  Adult

        Comments:  Air
                 Air

    Dataset Name:  HISS Lab 2014 IA
    Dataset Date:  Apr 20, 2015 02:27 PM
       Wind File:  C:\Users\moserpl\Documents\CAP88\Wind Files\13994.WND
```

Mon Apr 20 14:27:34 2015

SUMMARY
Page 1

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem)
Adrenal	5.95E-04
UB_Wall	6.31E-04
Bone_Sur	1.17E-01
Brain	6.14E-04
Breasts	6.57E-04
St_Wall	6.19E-04
SI_Wall	6.15E-04
ULI_Wall	6.61E-04
LLI_Wall	7.52E-04
Kidneys	2.23E-03
Liver	5.85E-03
Muscle	6.66E-04
Ovaries	1.50E-03
Pancreas	5.96E-04
R_Marrow	4.97E-03
Skin	1.20E-02
Spleen	6.23E-04
Testes	1.58E-03
Thymus	6.16E-04
Thyroid	6.35E-04
GB_Wall	6.00E-04
Ht_Wall	6.14E-04
Uterus	6.10E-04
ET_Reg	6.52E-03
Lung_66	1.78E-02
Effectiv	4.94E-03

PATHWAY COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem)
INGESTION	1.01E-04
INHALATION	4.37E-03
AIR IMMERSION	1.19E-09
GROUND SURFACE	4.74E-04
INTERNAL	4.47E-03
EXTERNAL	4.74E-04
TOTAL	4.94E-03

Mon Apr 20 14:27:34 2015 SUMMARY
Page 2

NUCLIDE COMMITTED EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem)
U-238	2.83E-04
Th-234	8.14E-06
Pa-234m	1.05E-04
Pa-234	2.08E-06
U-234	1.64E-04
Th-230	2.15E-03
Ra-226	6.22E-05
Rn-222	5.16E-08
Po-218	9.22E-13
Pb-214	3.37E-05
At-218	3.47E-12
Bi-214	1.97E-04
Rn-218	2.01E-14
Po-214	1.09E-08
Tl-210	7.69E-08
Pb-210	1.64E-07
Bi-210	2.64E-06
Hg-206	2.13E-13
Po-210	6.84E-10
Tl-206	6.17E-12
U-235	9.76E-06
Th-231	3.16E-07
Pa-231	9.56E-04
Ac-227	6.39E-04
Th-227	8.59E-06
Fr-223	8.10E-08
Ra-223	9.61E-06
Rn-219	4.16E-06
At-219	0.00E+00
Bi-215	1.87E-11
Po-215	1.27E-08
Pb-211	8.17E-06
Bi-211	3.37E-06
Tl-207	4.23E-06
Po-211	1.62E-09
Th-232	1.32E-04
Ra-228	7.28E-06
Ac-228	3.06E-05
Th-228	7.56E-05
Ra-224	5.17E-06
Rn-220	2.12E-08
Po-216	5.12E-10
Pb-212	4.66E-06
Bi-212	5.43E-06
Po-212	0.00E+00
Tl-208	3.75E-05
TOTAL	4.94E-03

Mon Apr 20 14:27:34 2015 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	2.63E-11
INHALATION	8.12E-10
AIR IMMERSION	5.71E-16
GROUND SURFACE	2.09E-10
INTERNAL	8.38E-10
EXTERNAL	2.09E-10
TOTAL	1.05E-09

Mon Apr 20 14:27:34 2015 SUMMARY
Page 4

NUCLIDE RISK SUMMARY

Nuclide	Selected Individual Total Lifetime Fatal Cancer Risk
U-238	9.41E-11
Th-234	4.13E-12
Pa-234m	1.84E-11
Pa-234	1.13E-12
U-234	5.62E-11
Th-230	4.74E-10
Ra-226	3.38E-11
Rn-222	2.81E-14
Po-218	4.12E-19
Pb-214	1.80E-11
At-218	4.27E-19
Bi-214	1.04E-10
Rn-218	1.10E-20
Po-214	5.99E-15
Tl-210	4.10E-14
Pb-210	7.32E-14
Bi-210	2.93E-13
Hg-206	9.46E-20
Po-210	3.76E-16
Tl-206	6.94E-19
U-235	3.90E-12
Th-231	1.44E-13
Pa-231	4.13E-11
Ac-227	7.98E-11
Th-227	4.65E-12
Fr-223	3.02E-14
Ra-223	5.19E-12
Rn-219	2.28E-12
At-219	0.00E+00
Bi-215	8.35E-18
Po-215	6.97E-15
Pb-211	2.92E-12
Bi-211	1.84E-12
Tl-207	5.44E-13
Po-211	8.88E-16
Th-232	2.89E-11
Ra-228	1.03E-12
Ac-228	1.63E-11
Th-228	2.72E-11
Ra-224	1.94E-12
Rn-220	1.16E-14
Po-216	2.81E-16
Pb-212	2.53E-12
Bi-212	2.10E-12
Po-212	0.00E+00
Tl-208	2.04E-11
TOTAL	1.05E-09

Mon Apr 20 14:27:34 2015 SUMMARY
Page 5

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

	Distance (m)				
Direction	110	300	310	1830	
N	4.9E-03	1.3E-03	1.2E-03	1.2E-04	
NNW	2.7E-03	6.9E-04	6.6E-04	9.8E-05	
NW	2.8E-03	7.9E-04	7.5E-04	1.0E-04	
WNW	3.3E-03	9.5E-04	9.0E-04	1.1E-04	
W	2.6E-03	7.4E-04	7.0E-04	1.0E-04	
WSW	1.3E-03	3.9E-04	3.8E-04	8.6E-05	
SW	1.7E-03	5.2E-04	5.0E-04	9.1E-05	
SSW	2.0E-03	6.3E-04	6.0E-04	9.5E-05	
S	2.2E-03	5.7E-04	5.4E-04	9.3E-05	Business
SSE	1.6E-03	4.2E-04	4.0E-04	8.7E-05	
SE	2.2E-03	5.7E-04	5.5E-04	9.3E-05	School
ESE	3.3E-03	9.2E-04	8.8E-04	1.1E-04	
E	3.9E-03	1.2E-03	1.1E-03	1.2E-04	
ENE	3.1E-03	9.9E-04	9.4E-04	1.1E-04	
NE	2.2E-03	6.4E-04	6.1E-04	9.6E-05	Residence, Farm
NNE	2.0E-03	5.5E-04	5.2E-04	9.2E-05	

Mon Apr 20 14:27:34 2015 SUMMARY
Page 6

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

Direction	Distance (m) 110	300	310	1830
N	1.0E-09	2.7E-10	2.6E-10	3.0E-11
NNW	5.8E-10	1.5E-10	1.4E-10	2.5E-11
NW	5.9E-10	1.7E-10	1.6E-10	2.6E-11
WNW	6.9E-10	2.0E-10	1.9E-10	2.7E-11
W	5.6E-10	1.6E-10	1.5E-10	2.5E-11
WSW	2.9E-10	8.7E-11	8.4E-11	2.2E-11
SW	3.6E-10	1.1E-10	1.1E-10	2.3E-11
SSW	4.3E-10	1.4E-10	1.3E-10	2.4E-11
S	4.6E-10	1.2E-10	1.2E-10	2.4E-11
SSE	3.4E-10	9.3E-11	8.9E-11	2.3E-11
SE	4.7E-10	1.3E-10	1.2E-10	2.4E-11
ESE	7.0E-10	2.0E-10	1.9E-10	2.7E-11
E	8.3E-10	2.5E-10	2.4E-10	2.9E-11
ENE	6.6E-10	2.1E-10	2.0E-10	2.8E-11
NE	4.8E-10	1.4E-10	1.3E-10	2.5E-11
NNE	4.2E-10	1.2E-10	1.1E-10	2.4E-11

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APPENDIX B

ENVIRONMENTAL TLD, ALPHA TRACK, AND PERIMETER AIR DATA

(On the CD-ROM on the Back Cover of this Report)

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Table B-1. Background Air Particulate Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	Detection Limit	Units	Validation Qualifier	Validation Reason Code	Sampling Event Name
HIS167273	BAP-001	01/08/14	Gross Alpha/Beta	Gross Alpha	7.095E-15	1.254E-15	3.5E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.9E-14	1.626E-15	1.013E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167274	BAP-001	01/13/14	Gross Alpha/Beta	Gross Alpha	7.182E-15	1.7E-15	6.78E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.815E-14	2.792E-15	1.961E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167275	BAP-001	01/21/14	Gross Alpha/Beta	Gross Alpha	2.792E-15	7.91E-16	3.83E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.275E-14	1.435E-15	1.109E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167276	BAP-001	01/28/14	Gross Alpha/Beta	Gross Alpha	3.169E-15	9.4E-16	4.78E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.245E-14	1.621E-15	1.384E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167277	BAP-001	02/03/14	Gross Alpha/Beta	Gross Alpha	2.67E-15	9.08E-16	5.3E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.908E-14	2.054E-15	1.535E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167278	BAP-001	02/10/14	Gross Alpha/Beta	Gross Alpha	3.693E-15	9.65E-16	4.29E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.194E-14	1.939E-15	1.241E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167279	BAP-001	02/18/14	Gross Alpha/Beta	Gross Alpha	3.727E-15	9.46E-16	4.08E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.498E-14	2.004E-15	1.18E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167280	BAP-001	02/24/14	Gross Alpha/Beta	Gross Alpha	2.698E-15	8.94E-16	5.09E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.295E-14	1.71E-15	1.473E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167281	BAP-001	03/05/14	Gross Alpha/Beta	Gross Alpha	3.319E-15	8.37E-16	3.58E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.35E-14	1.817E-15	1.036E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167282	BAP-001	03/10/14	Gross Alpha/Beta	Gross Alpha	3.164E-15	1.076E-15	6.29E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.701E-14	2.629E-15	1.819E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167283	BAP-001	03/17/14	Gross Alpha/Beta	Gross Alpha	2.447E-15	7.92E-16	4.4E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.845E-14	1.82E-15	1.273E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167284	BAP-001	03/24/14	Gross Alpha/Beta	Gross Alpha	2.049E-15	7.27E-16	4.42E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.66E-14	1.743E-15	1.278E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167285	BAP-001	03/31/14	Gross Alpha/Beta	Gross Alpha	1.345E-15	6.39E-16	5.08E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.332E-14	2.187E-15	1.469E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167286	BAP-001	04/06/14	Gross Alpha/Beta	Gross Alpha	4.193E-15	1.164E-15	5.36E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.293E-14	1.881E-15	1.617E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167287	BAP-001	04/14/14	Gross Alpha/Beta	Gross Alpha	2.382E-15	1.116E-15	8.17E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	9.29E-15	2.296E-15	2.464E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167288	BAP-001	04/24/14	Gross Alpha/Beta	Gross Alpha	5.417E-15	1.02E-15	3.05E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.705E-14	1.485E-15	9.2E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167289	BAP-001	04/30/14	Gross Alpha/Beta	Gross Alpha	2.846E-15	1.004E-15	5.81E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.022E-14	1.84E-15	1.75E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167290	BAP-001	05/07/14	Gross Alpha/Beta	Gross Alpha	3.79E-15	1.011E-15	4.47E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.514E-14	1.774E-15	1.348E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167291	BAP-001	05/13/14	Gross Alpha/Beta	Gross Alpha	4.921E-15	1.247E-15	5.23E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.165E-14	2.245E-15	1.577E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167292	BAP-001	05/19/14	Gross Alpha/Beta	Gross Alpha	2.589E-15	9.41E-16	5.58E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.115E-14	1.84E-15	1.683E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	Detection Limit	Units	Validation Qualifier	Validation Reason Code	Sampling Event Name
HIS167293	BAP-001	05/27/14	Gross Alpha/Beta	Gross Alpha	3.596E-15	9.38E-16	4.05E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.735E-14	1.763E-15	1.221E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167294	BAP-001	06/02/14	Gross Alpha/Beta	Gross Alpha	3.893E-15	1.152E-15	5.65E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.933E-14	2.251E-15	1.703E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167295	BAP-001	06/09/14	Gross Alpha/Beta	Gross Alpha	2.679E-15	8.74E-16	4.7E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.351E-14	1.755E-15	1.417E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167296	BAP-001	06/16/14	Gross Alpha/Beta	Gross Alpha	1.546E-15	6.74E-16	4.67E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.483E-14	1.807E-15	1.407E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167297	BAP-001	06/23/14	Gross Alpha/Beta	Gross Alpha	1.126E-15	6.12E-16	5E-16	µCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.335E-14	1.817E-15	1.507E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167298	BAP-001	06/30/14	Gross Alpha/Beta	Gross Alpha	8.45E-16	5.39E-16	4.91E-16	µCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.592E-14	1.916E-15	1.48E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167299	BAP-001	07/07/14	Gross Alpha/Beta	Gross Alpha	5.679E-15	1.287E-15	4.89E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.568E-14	1.87E-15	1.447E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167300	BAP-001	07/14/14	Gross Alpha/Beta	Gross Alpha	5.601E-15	1.262E-15	4.76E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.708E-14	1.904E-15	1.411E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167301	BAP-001	07/21/14	Gross Alpha/Beta	Gross Alpha	4.349E-15	1.121E-15	4.9E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.584E-14	1.881E-15	1.45E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167302	BAP-001	07/28/14	Gross Alpha/Beta	Gross Alpha	5.691E-15	1.276E-15	4.79E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.086E-14	2.071E-15	1.418E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167303	BAP-001	08/04/14	Gross Alpha/Beta	Gross Alpha	6.104E-15	1.355E-15	5.02E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.127E-14	2.147E-15	1.488E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167304	BAP-001	08/12/14	Gross Alpha/Beta	Gross Alpha	6.534E-15	1.29E-15	4.17E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.541E-14	2.082E-15	1.234E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167305	BAP-001	08/18/14	Gross Alpha/Beta	Gross Alpha	4.442E-15	1.207E-15	5.58E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.906E-14	2.187E-15	1.652E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167306	BAP-001	08/25/14	Gross Alpha/Beta	Gross Alpha	4.332E-15	1.093E-15	4.67E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.234E-14	2.1E-15	1.384E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167307	BAP-001	09/02/14	Gross Alpha/Beta	Gross Alpha	3.183E-15	8.79E-16	4.13E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.691E-14	1.741E-15	1.224E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167308	BAP-001	09/08/14	Gross Alpha/Beta	Gross Alpha	1.288E-15	6.67E-16	5.5E-16	µCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.449E-14	1.956E-15	1.628E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167310	BAP-001	09/22/14	Gross Alpha/Beta	Gross Alpha	1.907E-15	7.89E-16	5.42E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.574E-14	2.43E-15	1.605E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167311	BAP-001	09/29/14	Gross Alpha/Beta	Gross Alpha	2.124E-15	7.89E-16	4.93E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.331E-14	2.207E-15	1.461E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167312	BAP-001	10/06/14	Gross Alpha/Beta	Gross Alpha	5.171E-15	1.153E-15	5.71E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.679E-14	1.721E-15	9.31E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167313	BAP-001	10/13/14	Gross Alpha/Beta	Gross Alpha	4.285E-15	1.214E-15	7.45E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.483E-14	1.88E-15	1.213E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

Table B-1. Background Air Particulate Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	Detection Limit	Units	Validation Qualifier	Validation Reason Code	Sampling Event Name
HIS167314	BAP-001	10/20/14	Gross Alpha/Beta	Gross Alpha	4.066E-15	1.035E-15	5.78E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.463E-14	1.626E-15	9.42E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167315	BAP-001	10/27/14	Gross Alpha/Beta	Gross Alpha	5.404E-15	1.205E-15	5.97E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.392E-14	2.083E-15	9.73E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167316	BAP-001	11/04/14	Gross Alpha/Beta	Gross Alpha	3.663E-15	9.11E-16	4.98E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.312E-14	1.427E-15	8.12E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167317	BAP-001	11/10/14	Gross Alpha/Beta	Gross Alpha	3.053E-15	9.78E-16	6.65E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	1.856E-14	1.957E-15	1.084E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167318	BAP-001	11/17/14	Gross Alpha/Beta	Gross Alpha	3.754E-15	1.014E-15	5.97E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.096E-14	1.955E-15	9.73E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167319	BAP-001	11/25/14	Gross Alpha/Beta	Gross Alpha	4.325E-15	1.03E-15	5.41E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.527E-14	2.035E-15	8.82E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167320	BAP-001	12/01/14	Gross Alpha/Beta	Gross Alpha	4.352E-15	1.166E-15	6.81E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	3.33E-14	2.618E-15	1.109E-15	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167321	BAP-001	12/08/14	Gross Alpha/Beta	Gross Alpha	3.31E-15	9.57E-16	5.97E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.961E-14	2.312E-15	9.73E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167322	BAP-001	12/15/14	Gross Alpha/Beta	Gross Alpha	4.306E-15	1.096E-15	6.12E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	3.571E-14	2.57E-15	9.98E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167323	BAP-001	12/22/14	Gross Alpha/Beta	Gross Alpha	2.099E-15	7.78E-16	5.96E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.492E-14	2.122E-15	9.7E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring
HIS167324	BAP-001	12/29/14	Gross Alpha/Beta	Gross Alpha	1.006E-15	5.66E-16	5.85E-16	µCi/mL	J	T04	HISS Air (Particulate Air)-Environmental Monitoring
				Gross Beta	2.023E-14	1.903E-15	9.54E-16	µCi/mL	=		HISS Air (Particulate Air)-Environmental Monitoring

Validation Qualifiers:

= 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.

Validation Reason Code:

T04 Radionuclide Quantitation: Professional judgment was used to qualify the data.

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA167164	SLAPS Loadout	01/08/14	Gross Alpha/Beta	Gross Alpha	9.745E-15	1.052E-14	1.228E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.212E-14	1.486E-14	1.941E-14	uCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA167165	SLAPS Loadout	01/08/14	Gross Alpha/Beta	Gross Alpha	3.563E-15	9.164E-15	1.265E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.309E-14	1.531E-14	2E-14	uCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA167166	SLAPS Loadout	01/14/14	Gross Alpha/Beta	Gross Alpha	5.747E-15	9.217E-15	1.182E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.198E-14	1.211E-14	1.868E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167167	SLAPS Loadout	01/14/14	Gross Alpha/Beta	Gross Alpha	3.359E-15	8.64E-15	1.193E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.057E-14	1.204E-14	1.886E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167168	SLAPS Loadout	01/15/14	Gross Alpha/Beta	Gross Alpha	4.715E-15	9.243E-15	1.228E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.684E-14	1.536E-14	1.941E-14	uCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA167169	SLAPS Loadout	01/15/14	Gross Alpha/Beta	Gross Alpha	7.23E-15	9.903E-15	1.228E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	5.257E-14	1.691E-14	1.941E-14	uCi/mL	=		SLAPS Loadout (General Area)-Perimeter Air
SLA167170	SLAPS Loadout	01/16/14	Gross Alpha/Beta	Gross Alpha	-2.429E-15	1.134E-14	1.898E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	9.522E-15	1.819E-14	3E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167171	SLAPS Loadout	01/16/14	Gross Alpha/Beta	Gross Alpha	-4.008E-15	9.762E-15	1.74E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	6.5E-15	1.638E-14	2.75E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167172	SLAPS Loadout	01/16/14	Gross Alpha/Beta	Gross Alpha	6.97E-15	1.366E-14	1.815E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.26E-14	1.786E-14	2.869E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167173	SLAPS Loadout	01/16/14	Gross Alpha/Beta	Gross Alpha	6.68E-15	1.309E-14	1.74E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.43E-14	1.741E-14	2.75E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167174	SLAPS Loadout	01/16/14	Gross Alpha/Beta	Gross Alpha	1.374E-15	1.188E-14	1.789E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.7E-14	1.82E-14	2.828E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167175	SLAPS Loadout	01/20/14	Gross Alpha/Beta	Gross Alpha	2.523E-15	6.086E-15	1.09E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.204E-14	2.032E-14	2.753E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167176	SLAPS Loadout	01/20/14	Gross Alpha/Beta	Gross Alpha	0	4.927E-15	1.09E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.044E-14	2.019E-14	2.753E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167177	SLAPS Loadout	01/20/14	Gross Alpha/Beta	Gross Alpha	0	9.297E-15	2.056E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.471E-14	3.624E-14	5.194E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167178	SLAPS Loadout	01/20/14	Gross Alpha/Beta	Gross Alpha	4.76E-15	1.148E-14	2.056E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.502E-14	3.456E-14	5.194E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167179	SLAPS Loadout	01/20/14	Gross Alpha/Beta	Gross Alpha	-2.38E-15	7.988E-15	2.056E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.562E-14	3.547E-14	5.194E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167180	SLAPS Loadout	01/21/14	Gross Alpha/Beta	Gross Alpha	-1.855E-15	6.226E-15	1.602E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	5.804E-15	2.641E-14	4.048E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167181	SLAPS Loadout	01/21/14	Gross Alpha/Beta	Gross Alpha	-5.549E-15	3.361E-15	1.598E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	8.141E-15	2.654E-14	4.036E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167182	SLAPS Loadout	01/22/14	Gross Alpha/Beta	Gross Alpha	0	4.898E-15	1.083E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.19E-14	1.855E-14	2.736E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167183	SLAPS Loadout	01/22/14	Gross Alpha/Beta	Gross Alpha	0	5.028E-15	1.112E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.713E-14	1.946E-14	2.809E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167184	SLAPS Loadout	01/23/14	Gross Alpha/Beta	Gross Alpha	3.537E-15	6.16E-15	1.018E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	5.189E-15	1.692E-14	2.573E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167185	SLAPS Loadout	01/23/14	Gross Alpha/Beta	Gross Alpha	4.615E-15	8.038E-15	1.329E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	5.792E-15	2.199E-14	3.357E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167186	SLAPS Loadout	01/27/14	Gross Alpha/Beta	Gross Alpha	-1.566E-15	7.307E-15	1.223E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	6.921E-15	1.183E-14	1.933E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167187	SLAPS Loadout	01/27/14	Gross Alpha/Beta	Gross Alpha	9.39E-16	8.12E-15	1.223E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	-1.31E-16	1.086E-14	1.933E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167188	SLAPS Loadout	01/28/14	Gross Alpha/Beta	Gross Alpha	2.213E-15	8.582E-15	1.235E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.36E-14	1.399E-14	1.952E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA167189	SLAPS Loadout	01/28/14	Gross Alpha/Beta	Gross Alpha	3.541E-15	9.109E-15	1.258E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.839E-14	1.358E-14	1.988E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167190	SLAPS Loadout	01/29/14	Gross Alpha/Beta	Gross Alpha	-1.572E-15	7.336E-15	1.228E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.324E-14	1.269E-14	1.941E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167191	SLAPS Loadout	01/29/14	Gross Alpha/Beta	Gross Alpha	2.222E-15	8.616E-15	1.24E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.893E-14	1.349E-14	1.96E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167192	SLAPS Loadout	01/30/14	Gross Alpha/Beta	Gross Alpha	6.346E-15	1.018E-14	1.305E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.326E-14	1.458E-14	2.062E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167193	SLAPS Loadout	01/30/14	Gross Alpha/Beta	Gross Alpha	1.017E-15	8.79E-15	1.324E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.124E-14	1.565E-14	2.093E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167194	SLAPS Loadout	02/03/14	Gross Alpha/Beta	Gross Alpha	1.069E-15	9.239E-15	1.392E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.768E-14	1.471E-14	2.2E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167195	SLAPS Loadout	02/03/14	Gross Alpha/Beta	Gross Alpha	5.171E-15	1.014E-14	1.347E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.005E-14	1.573E-14	2.129E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167196	SLAPS Loadout	02/04/14	Gross Alpha/Beta	Gross Alpha	1.547E-14	1.022E-14	1.02E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.587E-14	2.229E-14	3.098E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167197	SLAPS Loadout	02/10/14	Gross Alpha/Beta	Gross Alpha	6.844E-15	7.265E-15	9.817E-15	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.576E-14	2.153E-14	2.983E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167198	SLAPS Loadout	02/11/14	Gross Alpha/Beta	Gross Alpha	3.99E-15	5.931E-15	9.417E-15	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.307E-14	2.052E-14	2.861E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167199	SLAPS Loadout	02/12/14	Gross Alpha/Beta	Gross Alpha	3.97E-15	5.901E-15	9.369E-15	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.643E-14	1.988E-14	2.846E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167200	SLAPS Loadout	02/13/14	Gross Alpha/Beta	Gross Alpha	2.296E-14	1.979E-14	2.366E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.327E-14	4.954E-14	7.189E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167201	SLAPS Loadout	02/13/14	Gross Alpha/Beta	Gross Alpha	-6.566E-15	3.797E-15	2.528E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	4.215E-14	5.348E-14	7.681E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167202	SLAPS Loadout	02/13/14	Gross Alpha/Beta	Gross Alpha	1.081E-14	8.599E-15	9.765E-15	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	9.485E-15	2.009E-14	2.967E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167203	SLAPS Loadout	02/13/14	Gross Alpha/Beta	Gross Alpha	3.23E-16	9.805E-15	2.366E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	6.621E-14	5.221E-14	7.189E-14	uCi/mL	U	T04, T05	SLAPS Loadout (General Area)-Perimeter Air
SLA167204	SLAPS Loadout	02/13/14	Gross Alpha/Beta	Gross Alpha	5.877E-15	7.205E-15	1.049E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.664E-14	2.371E-14	3.186E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167205	SLAPS Loadout	02/17/14	Gross Alpha/Beta	Gross Alpha	5.357E-15	7.963E-15	1.264E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	4.307E-14	2.85E-14	3.841E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
SLA167206	SLAPS Loadout	02/17/14	Gross Alpha/Beta	Gross Alpha	2.442E-14	1.812E-14	1.963E-14	uCi/mL	J	T04	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.249E-14	4.068E-14	5.965E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167207	SLAPS Loadout	02/18/14	Gross Alpha/Beta	Gross Alpha	5.12E-15	6.278E-15	9.137E-15	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.205E-14	1.906E-14	2.776E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167208	SLAPS Loadout	02/18/14	Gross Alpha/Beta	Gross Alpha	1.423E-15	4.7E-15	9.465E-15	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.084E-14	1.961E-14	2.876E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167209	SLAPS Loadout	02/18/14	Gross Alpha/Beta	Gross Alpha	2.77E-16	8.404E-15	2.028E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	3.029E-14	4.261E-14	6.162E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167210	SLAPS Loadout	02/18/14	Gross Alpha/Beta	Gross Alpha	3.016E-15	9.961E-15	2.006E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	1.949E-14	4.127E-14	6.095E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA167211	SLAPS Loadout	02/18/14	Gross Alpha/Beta	Gross Alpha	-2.468E-15	6.249E-15	2.006E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
				Gross Beta	2.647E-14	4.185E-14	6.095E-14	uCi/mL	UJ	T06	SLAPS Loadout (General Area)-Perimeter Air
SLA170728	SLAPS Loadout	04/09/14	Gross Alpha/Beta	Gross Alpha	2.12E-16	6.164E-15	1.079E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.865E-14	2.078E-14	2.916E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170729	SLAPS Loadout	04/09/14	Gross Alpha/Beta	Gross Alpha	1.247E-15	5.597E-15	9.054E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.29E-14	1.667E-14	2.447E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170730	SLAPS Loadout	04/09/14	Gross Alpha/Beta	Gross Alpha	1.297E-15	5.819E-15	9.413E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.665E-15	1.613E-14	2.544E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170731	SLAPS Loadout	04/09/14	Gross Alpha/Beta	Gross Alpha	1.402E-15	6.29E-15	1.018E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.497E-14	1.867E-14	2.749E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170732	SLAPS Loadout	04/09/14	Gross Alpha/Beta	Gross Alpha	1.87E-16	5.425E-15	9.497E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.616E-15	1.563E-14	2.566E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170733	SLAPS Loadout	04/08/14	Gross Alpha/Beta	Gross Alpha	-1.13E-15	5.976E-15	1.149E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.043E-14	2.043E-14	3.104E-14	uCi/mL	U		SLAPS (General Area)-Perimeter Air
SLA170734	SLAPS Loadout	04/07/14	Gross Alpha/Beta	Gross Alpha	2.06E-16	5.983E-15	1.047E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.099E-14	1.882E-14	2.83E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170735	SLAPS Loadout	04/01/14	Gross Alpha/Beta	Gross Alpha	1.388E-15	6.231E-15	1.008E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.077E-15	1.707E-14	2.724E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170736	SLAPS Loadout	04/10/14	Gross Alpha/Beta	Gross Alpha	5.532E-15	8.344E-15	1.125E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.845E-14	2.07E-14	3.039E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170737	SLAPS Loadout	04/28/14	Gross Alpha/Beta	Gross Alpha	2.336E-15	4.76E-15	8.817E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.809E-14	1.784E-14	2.677E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170738	SLAPS Loadout	04/28/14	Gross Alpha/Beta	Gross Alpha	4.983E-15	6.188E-15	9.404E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.533E-14	1.869E-14	2.856E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170739	SLAPS Loadout	04/29/14	Gross Alpha/Beta	Gross Alpha	0	3.892E-15	1.002E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.211E-14	1.956E-14	3.044E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170740	SLAPS Loadout	04/30/14	Gross Alpha/Beta	Gross Alpha	2.875E-15	5.859E-15	1.085E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.879E-15	2.045E-14	3.295E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170741	SLAPS Loadout	05/01/14	Gross Alpha/Beta	Gross Alpha	0	4.086E-15	1.052E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.424E-14	2.151E-14	3.195E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170742	SLAPS Loadout	05/05/14	Gross Alpha/Beta	Gross Alpha	1.08E-14	1.046E-14	1.399E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.013E-14	1.298E-14	2.011E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170743	SLAPS Loadout	05/05/14	Gross Alpha/Beta	Gross Alpha	0	7.625E-15	1.493E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.803E-15	1.263E-14	2.147E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170744	SLAPS Loadout	05/05/14	Gross Alpha/Beta	Gross Alpha	0	6.653E-15	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.517E-14	1.4E-14	1.873E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170745	SLAPS Loadout	05/05/14	Gross Alpha/Beta	Gross Alpha	1.336E-15	7.557E-15	1.384E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.34E-14	1.449E-14	1.99E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170746	SLAPS Loadout	05/05/14	Gross Alpha/Beta	Gross Alpha	-3.772E-15	5.029E-15	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.438E-15	1.209E-14	1.873E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170747	SLAPS Loadout	05/06/14	Gross Alpha/Beta	Gross Alpha	-2.443E-15	5.462E-15	1.266E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.063E-14	1.316E-14	1.82E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170748	SLAPS Loadout	05/07/14	Gross Alpha/Beta	Gross Alpha	0	6.198E-15	1.214E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.03E-14	1.483E-14	1.745E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170749	SLAPS Loadout	05/08/14	Gross Alpha/Beta	Gross Alpha	-2.515E-15	5.623E-15	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.326E-14	1.592E-14	1.873E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170750	SLAPS Loadout	05/12/14	Gross Alpha/Beta	Gross Alpha	-1.654E-15	4.504E-15	1.331E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.356E-14	1.808E-14	2.257E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170751	SLAPS Loadout	05/13/14	Gross Alpha/Beta	Gross Alpha	7.439E-15	7.618E-15	1.096E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.963E-15	1.385E-14	1.859E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170752	SLAPS Loadout	05/14/14	Gross Alpha/Beta	Gross Alpha	7.665E-15	7.848E-15	1.13E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.837E-14	1.517E-14	1.915E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170753	SLAPS Loadout	05/15/14	Gross Alpha/Beta	Gross Alpha	-1.05E-16	4.482E-15	1.096E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.154E-14	1.403E-14	1.859E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170754	SLAPS Loadout	05/19/14	Gross Alpha/Beta	Gross Alpha	1.093E-14	1.032E-14	1.401E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.441E-14	1.524E-14	2.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170755	SLAPS Loadout	05/20/14	Gross Alpha/Beta	Gross Alpha	9.05E-16	6.71E-15	1.335E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.731E-14	1.604E-14	2.065E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170756	SLAPS Loadout	05/21/14	Gross Alpha/Beta	Gross Alpha	3.098E-15	9.913E-15	1.828E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.926E-14	2.108E-14	2.828E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170757	SLAPS Loadout	05/22/14	Gross Alpha/Beta	Gross Alpha	4.774E-15	7.86E-15	1.281E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.887E-14	1.458E-14	1.981E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170758	SLAPS Loadout	05/27/14	Gross Alpha/Beta	Gross Alpha	5.468E-15	9.003E-15	1.467E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.534E-14	1.712E-14	2.269E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170759	SLAPS Loadout	05/28/14	Gross Alpha/Beta	Gross Alpha	-2.877E-15	4.35E-15	1.213E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.401E-14	1.337E-14	1.876E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170760	SLAPS Loadout	05/29/14	Gross Alpha/Beta	Gross Alpha	-1.188E-15	1.611E-14	3.504E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.38E-14	3.785E-14	5.419E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170761	SLAPS Loadout	06/02/14	Gross Alpha/Beta	Gross Alpha	5.089E-15	8.514E-15	1.25E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.19E-14	1.36E-14	1.848E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170762	SLAPS Loadout	06/03/14	Gross Alpha/Beta	Gross Alpha	-1.181E-15	7.578E-15	1.45E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.921E-14	1.506E-14	2.144E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170763	SLAPS Loadout	06/04/14	Gross Alpha/Beta	Gross Alpha	4.242E-15	1.248E-14	2.004E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.941E-15	1.835E-14	2.962E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170764	SLAPS Loadout	06/05/14	Gross Alpha/Beta	Gross Alpha	1.527E-15	7.916E-15	1.339E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.364E-14	1.342E-14	1.98E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170765	SLAPS Loadout	06/09/14	Gross Alpha/Beta	Gross Alpha	6.276E-15	7.291E-15	9.474E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.855E-14	1.919E-14	2.913E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170766	SLAPS Loadout	06/10/14	Gross Alpha/Beta	Gross Alpha	-3.765E-15	1.169E-14	2.842E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-3.894E-14	4.602E-14	8.74E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170767	SLAPS Loadout	06/10/14	Gross Alpha/Beta	Gross Alpha	3.234E-15	1.358E-14	2.442E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.184E-14	4.399E-14	7.507E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170768	SLAPS Loadout	06/10/14	Gross Alpha/Beta	Gross Alpha	1.364E-14	1.858E-14	2.574E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.549E-14	4.757E-14	7.913E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170769	SLAPS Loadout	06/10/14	Gross Alpha/Beta	Gross Alpha	5.766E-15	7.857E-15	1.088E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.261E-14	2.028E-14	3.346E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170770	SLAPS Loadout	06/10/14	Gross Alpha/Beta	Gross Alpha	7.835E-15	9.103E-15	1.183E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.271E-14	2.196E-14	3.637E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170771	SLAPS Loadout	06/11/14	Gross Alpha/Beta	Gross Alpha	-1.281E-15	3.975E-15	9.667E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.691E-14	1.853E-14	2.972E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170772	SLAPS Loadout	06/12/14	Gross Alpha/Beta	Gross Alpha	1.707E-14	1.267E-14	1.555E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.978E-14	1.951E-14	2.55E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170773	SLAPS Loadout	06/16/14	Gross Alpha/Beta	Gross Alpha	-3.848E-15	1.912E-14	4.79E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.396E-14	5.353E-14	7.854E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170774	SLAPS Loadout	06/16/14	Gross Alpha/Beta	Gross Alpha	-1.037E-14	9.154E-15	3.522E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-3.343E-15	3.58E-14	5.775E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170775	SLAPS Loadout	06/16/14	Gross Alpha/Beta	Gross Alpha	-8.978E-15	1.613E-14	4.79E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.337E-15	4.911E-14	7.854E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170776	SLAPS Loadout	06/16/14	Gross Alpha/Beta	Gross Alpha	6.413E-15	2.4E-14	4.79E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-4.546E-15	4.869E-14	7.854E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170777	SLAPS Loadout	06/16/14	Gross Alpha/Beta	Gross Alpha	6.413E-15	7.518E-15	1.141E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.532E-14	1.926E-14	1.87E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170778	SLAPS Loadout	06/17/14	Gross Alpha/Beta	Gross Alpha	7.526E-15	7.794E-15	1.124E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.091E-14	1.699E-14	1.844E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170779	SLAPS Loadout	06/18/14	Gross Alpha/Beta	Gross Alpha	2.871E-15	6.493E-15	1.192E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.202E-14	1.486E-14	1.954E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170780	SLAPS Loadout	06/19/14	Gross Alpha/Beta	Gross Alpha	7.44E-15	8.723E-15	1.323E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.293E-14	1.521E-14	2.17E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170781	SLAPS Loadout	06/25/14	Gross Alpha/Beta	Gross Alpha	2.748E-15	6.215E-15	1.141E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.502E-15	1.218E-14	1.87E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170782	SLAPS Loadout	06/24/14	Gross Alpha/Beta	Gross Alpha	-9.77E-16	4.852E-15	1.216E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.468E-14	1.643E-14	1.994E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170783	SLAPS Loadout	06/23/14	Gross Alpha/Beta	Gross Alpha	7.32E-15	7.581E-15	1.094E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.168E-14	1.38E-14	1.793E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170784	SLAPS Loadout	06/26/14	Gross Alpha/Beta	Gross Alpha	4.086E-15	6.874E-15	1.174E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.136E-14	1.664E-14	1.925E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170785	Loadout	06/30/14	Gross Alpha/Beta	Gross Alpha	4.061E-15	7.914E-15	1.313E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.029E-14	1.615E-14	1.938E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170786	Loadout	06/30/14	Gross Alpha/Beta	Gross Alpha	1.846E-14	3.597E-14	5.966E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.379E-14	6.45E-14	8.81E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170787	Loadout	07/01/14	Gross Alpha/Beta	Gross Alpha	-2.305E-15	5.346E-15	1.287E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.419E-14	1.528E-14	1.9E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170788	Loadout	07/01/14	Gross Alpha/Beta	Gross Alpha	3.474E-14	9.358E-14	1.641E-13	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.755E-14	1.619E-13	2.423E-13	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170789	Loadout	07/02/14	Gross Alpha/Beta	Gross Alpha	5.509E-15	8.576E-15	1.353E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.882E-14	1.536E-14	1.998E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170790	Loadout	07/02/14	Gross Alpha/Beta	Gross Alpha	5.971E-15	9.295E-15	1.467E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.502E-14	1.606E-14	2.166E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170791	Loadout	07/03/14	Gross Alpha/Beta	Gross Alpha	-3.703E-15	8.587E-15	2.067E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.232E-14	2.162E-14	3.052E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170792	Loadout	07/02/14	Gross Alpha/Beta	Gross Alpha	-2.642E-15	6.126E-15	1.475E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.887E-15	1.532E-14	2.178E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170793	Loadout	07/02/14	Gross Alpha/Beta	Gross Alpha	1.73E-15	8.131E-15	1.517E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.832E-14	1.692E-14	2.241E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170794	Loadout	07/02/14	Gross Alpha/Beta	Gross Alpha	2.42E-16	7.4E-15	1.483E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.156E-14	1.583E-14	2.19E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170795	Loadout	07/03/14	Gross Alpha/Beta	Gross Alpha	3.26E-16	9.998E-15	2.004E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.052E-14	2.194E-14	2.959E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170796	Loadout	07/03/14	Gross Alpha/Beta	Gross Alpha	4.275E-15	1.152E-14	2.019E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.042E-14	2.423E-14	2.982E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170797	Loadout	07/03/14	Gross Alpha/Beta	Gross Alpha	1.027E-14	1.35E-14	2.035E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.959E-14	2.214E-14	3.005E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170798	Loadout	07/03/14	Gross Alpha/Beta	Gross Alpha	8.76E-15	1.364E-14	2.152E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.151E-14	2.235E-14	3.177E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170799	Loadout	07/07/14	Gross Alpha/Beta	Gross Alpha	9.845E-15	8.095E-15	9.29E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.195E-14	2.175E-14	2.862E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170800	Loadout	07/07/14	Gross Alpha/Beta	Gross Alpha	9.198E-15	8.226E-15	9.919E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.787E-14	2.113E-14	3.056E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170801	Loadout	07/07/14	Gross Alpha/Beta	Gross Alpha	3.942E-15	6.302E-15	9.919E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.791E-14	2.191E-14	3.056E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170802	Loadout	07/07/14	Gross Alpha/Beta	Gross Alpha	1.314E-14	9.423E-15	9.919E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.867E-14	2.038E-14	3.056E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170803	Loadout	07/07/14	Gross Alpha/Beta	Gross Alpha	7.884E-15	7.788E-15	9.919E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.372E-14	2.159E-14	3.056E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170804	Loadout	07/08/14	Gross Alpha/Beta	Gross Alpha	9.01E-15	8.058E-15	9.716E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.321E-14	2.037E-14	2.994E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170805	Loadout	07/08/14	Gross Alpha/Beta	Gross Alpha	1.243E-14	8.913E-15	9.381E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.241E-14	1.966E-14	2.89E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170806	Loadout	07/08/14	Gross Alpha/Beta	Gross Alpha	1.84E-14	1.083E-14	9.919E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.376E-14	2.235E-14	3.056E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170807	Loadout	07/08/14	Gross Alpha/Beta	Gross Alpha	9.246E-15	8.269E-15	9.971E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.045E-14	2.063E-14	3.072E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170808	Loadout	07/08/14	Gross Alpha/Beta	Gross Alpha	1.183E-14	9.041E-15	9.919E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.122E-14	2.139E-14	3.056E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170809	Loadout	07/09/14	Gross Alpha/Beta	Gross Alpha	8.531E-15	7.63E-15	9.2E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.818E-14	1.978E-14	2.834E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170810	Loadout	07/09/14	Gross Alpha/Beta	Gross Alpha	6.094E-15	6.794E-15	9.2E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.593E-14	2.038E-14	2.834E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170811	Loadout	07/09/14	Gross Alpha/Beta	Gross Alpha	1.102E-14	8.427E-15	9.245E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.351E-14	1.867E-14	2.848E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170812	Loadout	07/09/14	Gross Alpha/Beta	Gross Alpha	1.213E-14	8.698E-15	9.156E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.19E-14	1.999E-14	2.821E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170813	Loadout	07/09/14	Gross Alpha/Beta	Gross Alpha	4.65E-15	6.045E-15	8.776E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.948E-14	1.828E-14	2.704E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170814	Loadout	07/10/14	Gross Alpha/Beta	Gross Alpha	6.214E-15	6.928E-15	9.381E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.292E-14	1.888E-14	2.89E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170815	Loadout	07/10/14	Gross Alpha/Beta	Gross Alpha	3.861E-15	6.174E-15	9.716E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.502E-14	1.97E-14	2.994E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170816	Loadout	07/10/14	Gross Alpha/Beta	Gross Alpha	5.122E-15	6.659E-15	9.667E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.227E-14	2.02E-14	2.978E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170817	Loadout	07/10/14	Gross Alpha/Beta	Gross Alpha	5.978E-15	6.666E-15	9.025E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.688E-14	1.934E-14	2.781E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170818	Loadout	07/10/14	Gross Alpha/Beta	Gross Alpha	3.334E-15	5.33E-15	8.389E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.367E-14	1.706E-14	2.585E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170819	Loadout	07/17/14	Gross Alpha/Beta	Gross Alpha	6.123E-15	6.827E-15	9.245E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.611E-14	2.048E-14	2.848E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170820	Loadout	07/17/14	Gross Alpha/Beta	Gross Alpha	8.742E-15	7.819E-15	9.428E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	-2.914E-15	1.759E-14	2.905E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170821	Loadout	07/17/14	Gross Alpha/Beta	Gross Alpha	-2.426E-15	2.094E-15	9.156E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.204E-15	1.797E-14	2.821E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170822	Loadout	07/17/14	Gross Alpha/Beta	Gross Alpha	9.991E-15	8.215E-15	9.428E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.285E-14	2.058E-14	2.905E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170823	Loadout	07/17/14	Gross Alpha/Beta	Gross Alpha	3.604E-15	5.762E-15	9.068E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.631E-14	1.857E-14	2.794E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170824	Loadout	07/16/14	Gross Alpha/Beta	Gross Alpha	2.273E-15	4.951E-15	8.578E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.181E-14	1.727E-14	2.643E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170825	Loadout	07/16/14	Gross Alpha/Beta	Gross Alpha	1.009E-14	8.297E-15	9.522E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.311E-14	1.917E-14	2.934E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170826	Loadout	07/16/14	Gross Alpha/Beta	Gross Alpha	6.123E-15	6.827E-15	9.245E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.273E-14	1.861E-14	2.848E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170827	Loadout	07/16/14	Gross Alpha/Beta	Gross Alpha	0	4.055E-15	9.245E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.818E-14	1.906E-14	2.848E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170828	Loadout	07/16/14	Gross Alpha/Beta	Gross Alpha	2.449E-15	5.336E-15	9.245E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-5.2E-16	1.746E-14	2.848E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170829	Loadout	07/15/14	Gross Alpha/Beta	Gross Alpha	1.135E-14	8.679E-15	9.522E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.9E-15	1.89E-14	2.934E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170830	Loadout	07/15/14	Gross Alpha/Beta	Gross Alpha	7.334E-15	8.177E-15	1.107E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.618E-14	2.237E-14	3.411E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170831	Loadout	07/15/14	Gross Alpha/Beta	Gross Alpha	2.852E-14	1.752E-14	1.656E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.303E-14	3.25E-14	5.102E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170832	Loadout	07/15/14	Gross Alpha/Beta	Gross Alpha	4.426E-15	9.641E-15	1.671E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.286E-14	3.444E-14	5.147E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170833	Loadout	07/15/14	Gross Alpha/Beta	Gross Alpha	6.698E-15	1.071E-14	1.685E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.036E-14	3.368E-14	5.192E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170834	Loadout	07/14/14	Gross Alpha/Beta	Gross Alpha	1.097E-14	8.386E-15	9.2E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.112E-14	1.839E-14	2.834E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170835	Loadout	07/14/14	Gross Alpha/Beta	Gross Alpha	1.126E-14	1.256E-14	1.7E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.058E-14	3.482E-14	5.239E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170836	Loadout	07/14/14	Gross Alpha/Beta	Gross Alpha	2.478E-14	1.679E-14	1.7E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.635E-14	3.61E-14	5.239E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170837	Loadout	07/14/14	Gross Alpha/Beta	Gross Alpha	2.273E-15	8.793E-15	1.716E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.941E-14	3.502E-14	5.286E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170838	Loadout	07/14/14	Gross Alpha/Beta	Gross Alpha	4.387E-15	9.558E-15	1.656E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.537E-14	3.437E-14	5.102E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170839	SLAPS Loadout	07/21/14	Gross Alpha/Beta	Gross Alpha	7.437E-15	7.343E-15	9.978E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.66E-14	1.894E-14	2.768E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170840	SLAPS Loadout	07/21/14	Gross Alpha/Beta	Gross Alpha	5.057E-15	6.515E-15	9.978E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.6E-14	1.807E-14	2.768E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170841	SLAPS Loadout	07/21/14	Gross Alpha/Beta	Gross Alpha	6.247E-15	6.941E-15	9.978E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.994E-14	1.755E-14	2.768E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170842	SLAPS Loadout	07/21/14	Gross Alpha/Beta	Gross Alpha	5.709E-15	6.342E-15	9.117E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.037E-14	1.786E-14	2.529E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170843	SLAPS Loadout	07/21/14	Gross Alpha/Beta	Gross Alpha	2.95E-16	4.393E-15	9.884E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.751E-14	1.965E-14	2.742E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170844	SLAPS Loadout	07/22/14	Gross Alpha/Beta	Gross Alpha	6.398E-15	7.108E-15	1.022E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.981E-14	1.959E-14	2.834E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170845	SLAPS Loadout	07/22/14	Gross Alpha/Beta	Gross Alpha	6.189E-15	6.876E-15	9.884E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.501E-14	1.784E-14	2.742E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170846	SLAPS Loadout	07/22/14	Gross Alpha/Beta	Gross Alpha	3.831E-15	6.004E-15	9.884E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.476E-14	1.865E-14	2.742E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170847	SLAPS Loadout	07/22/14	Gross Alpha/Beta	Gross Alpha	8.547E-15	7.652E-15	9.884E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.201E-14	1.758E-14	2.742E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170848	SLAPS Loadout	07/22/14	Gross Alpha/Beta	Gross Alpha	9.726E-15	8.014E-15	9.884E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.551E-14	1.871E-14	2.742E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170849	SLAPS Loadout	07/23/14	Gross Alpha/Beta	Gross Alpha	4.787E-15	6.166E-15	9.443E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.034E-14	1.758E-14	2.619E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170850	SLAPS Loadout	07/23/14	Gross Alpha/Beta	Gross Alpha	3.761E-15	5.894E-15	9.703E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.16E-14	1.726E-14	2.691E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170851	SLAPS Loadout	07/23/14	Gross Alpha/Beta	Gross Alpha	6.218E-15	6.908E-15	9.931E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.306E-14	1.688E-14	2.755E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170852	SLAPS Loadout	07/23/14	Gross Alpha/Beta	Gross Alpha	3.867E-15	6.061E-15	9.978E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.388E-14	1.702E-14	2.768E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170853	SLAPS Loadout	07/23/14	Gross Alpha/Beta	Gross Alpha	4.84E-15	7.723E-15	1.254E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.983E-14	1.465E-14	1.876E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170854	SLAPS Loadout	07/24/14	Gross Alpha/Beta	Gross Alpha	3.754E-15	7.584E-15	1.297E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.588E-15	1.237E-14	1.94E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA170855	SLAPS Loadout	07/24/14	Gross Alpha/Beta	Gross Alpha	6.256E-15	8.369E-15	1.297E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.285E-14	1.314E-14	1.94E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170856	SLAPS Loadout	07/24/14	Gross Alpha/Beta	Gross Alpha	1.251E-15	6.708E-15	1.297E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.128E-14	1.295E-14	1.94E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170857	SLAPS Loadout	07/24/14	Gross Alpha/Beta	Gross Alpha	2.332E-15	6.671E-15	1.208E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.197E-14	1.224E-14	1.808E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170858	SLAPS Loadout	07/24/14	Gross Alpha/Beta	Gross Alpha	2.42E-15	6.923E-15	1.254E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.697E-14	1.324E-14	1.876E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA170878	SLAPS Loadout	08/04/14	Gross Alpha/Beta	Gross Alpha	3.58E-16	6.355E-15	1.338E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-2.614E-15	1.375E-14	2.157E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170879	SLAPS Loadout	08/04/14	Gross Alpha/Beta	Gross Alpha	1.572E-15	6.117E-15	1.174E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.231E-14	1.597E-14	1.893E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170880	SLAPS Loadout	08/04/14	Gross Alpha/Beta	Gross Alpha	9.161E-15	8.724E-15	1.18E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.88E-14	1.667E-14	1.902E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170881	SLAPS Loadout	08/04/14	Gross Alpha/Beta	Gross Alpha	5.047E-15	7.092E-15	1.109E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.166E-14	1.616E-14	1.788E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170882	SLAPS Loadout	08/04/14	Gross Alpha/Beta	Gross Alpha	1.324E-14	9.388E-15	1.099E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.275E-14	1.615E-14	1.772E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170883	SLAPS Loadout	08/05/14	Gross Alpha/Beta	Gross Alpha	6.338E-15	8.906E-15	1.392E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.247E-14	1.729E-14	2.245E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170884	SLAPS Loadout	08/05/14	Gross Alpha/Beta	Gross Alpha	4.847E-15	8.392E-15	1.392E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.406E-15	1.582E-14	2.245E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA170885	SLAPS Loadout	08/05/14	Gross Alpha/Beta	Gross Alpha	1.529E-14	1.152E-14	1.392E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.247E-14	1.729E-14	2.245E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170886	SLAPS Loadout	08/05/14	Gross Alpha/Beta	Gross Alpha	7.651E-15	9.179E-15	1.361E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.107E-14	1.786E-14	2.194E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA170887	SLAPS Loadout	08/05/14	Gross Alpha/Beta	Gross Alpha	3.97E-15	6.873E-15	1.141E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.827E-14	1.619E-14	1.839E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170888	SLAPS Loadout	08/06/14	Gross Alpha/Beta	Gross Alpha	9.161E-15	9.686E-15	1.369E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.317E-14	1.916E-14	2.207E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170889	SLAPS Loadout	08/06/14	Gross Alpha/Beta	Gross Alpha	1.058E-14	9.219E-15	1.198E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.024E-14	1.882E-14	1.931E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170890	SLAPS Loadout	08/06/14	Gross Alpha/Beta	Gross Alpha	1.315E-14	9.907E-15	1.198E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.703E-14	1.854E-14	1.931E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170891	SLAPS Loadout	08/06/14	Gross Alpha/Beta	Gross Alpha	8.302E-15	7.906E-15	1.069E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.232E-14	1.578E-14	1.724E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA170892	SLAPS Loadout	08/06/14	Gross Alpha/Beta	Gross Alpha	5.625E-15	6.339E-15	9.465E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.266E-14	1.949E-14	2.533E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA171346	SLAPS Loadout	04/14/14	Gross Alpha/Beta	Gross Alpha	2.166E-15	9.116E-15	1.762E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.141E-14	1.73E-14	2.707E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA171347	SLAPS Loadout	04/15/14	Gross Alpha/Beta	Gross Alpha	3.21E-16	6.239E-15	1.304E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.745E-14	1.3E-14	2.003E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA171348	SLAPS Loadout	04/16/14	Gross Alpha/Beta	Gross Alpha	3.038E-15	7.597E-15	1.373E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.428E-14	1.44E-14	2.108E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA171349	SLAPS Loadout	04/17/14	Gross Alpha/Beta	Gross Alpha	3.34E-16	6.499E-15	1.359E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.486E-14	1.435E-14	2.086E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA171350	SLAPS Loadout	04/21/14	Gross Alpha/Beta	Gross Alpha	2.93E-16	5.698E-15	1.191E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.766E-14	1.325E-14	1.829E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA171351	SLAPS Loadout	04/22/14	Gross Alpha/Beta	Gross Alpha	1.724E-15	7.254E-15	1.402E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.531E-14	1.354E-14	2.154E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA171352	SLAPS Loadout	04/23/14	Gross Alpha/Beta	Gross Alpha	3.49E-16	6.782E-15	1.418E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.374E-15	1.289E-14	2.177E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175366	SLAPS Loadout	08/11/14	Gross Alpha/Beta	Gross Alpha	2.075E-15	6.744E-15	1.225E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.505E-14	1.581E-14	1.837E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175367	SLAPS Loadout	08/11/14	Gross Alpha/Beta	Gross Alpha	6.988E-15	8.303E-15	1.213E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.536E-14	1.47E-14	1.819E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175368	SLAPS Loadout	08/11/14	Gross Alpha/Beta	Gross Alpha	3.32E-15	7.189E-15	1.225E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.025E-14	1.425E-14	1.837E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175369	SLAPS Loadout	08/11/14	Gross Alpha/Beta	Gross Alpha	2.545E-15	8.269E-15	1.502E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.59E-16	1.275E-14	2.252E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175370	SLAPS Loadout	08/11/14	Gross Alpha/Beta	Gross Alpha	1.148E-14	9.3E-15	1.168E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.445E-14	1.522E-14	1.752E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175371	SLAPS Loadout	08/12/14	Gross Alpha/Beta	Gross Alpha	-2.771E-15	4.336E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.993E-14	1.257E-14	1.752E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175372	SLAPS Loadout	08/12/14	Gross Alpha/Beta	Gross Alpha	-1.541E-15	4.81E-15	1.136E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.289E-14	1.143E-14	1.704E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175373	SLAPS Loadout	08/12/14	Gross Alpha/Beta	Gross Alpha	-4.05E-16	5.615E-15	1.196E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.052E-14	1.164E-14	1.793E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175374	SLAPS Loadout	08/12/14	Gross Alpha/Beta	Gross Alpha	8.066E-15	8.498E-15	1.19E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.686E-15	1.108E-14	1.785E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175375	SLAPS Loadout	08/12/14	Gross Alpha/Beta	Gross Alpha	-4.03E-16	5.588E-15	1.19E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.031E-14	1.281E-14	1.785E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175376	SLAPS Loadout	08/13/14	Gross Alpha/Beta	Gross Alpha	3.196E-15	6.92E-15	1.179E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.062E-14	1.389E-14	1.768E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175377	SLAPS Loadout	08/13/14	Gross Alpha/Beta	Gross Alpha	7.917E-15	8.341E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.513E-14	1.318E-14	1.752E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175378	SLAPS Loadout	08/13/14	Gross Alpha/Beta	Gross Alpha	8.22E-16	6.207E-15	1.213E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.301E-14	1.333E-14	1.819E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175379	SLAPS Loadout	08/13/14	Gross Alpha/Beta	Gross Alpha	7.95E-16	6.005E-15	1.173E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.644E-14	1.446E-14	1.76E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175380	SLAPS Loadout	08/13/14	Gross Alpha/Beta	Gross Alpha	7.171E-15	7.116E-15	8.779E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.432E-14	2.156E-14	2.715E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175381	SLAPS Loadout	08/14/14	Gross Alpha/Beta	Gross Alpha	1.04E-16	4.351E-15	9.254E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.219E-14	2.176E-14	2.862E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175382	SLAPS Loadout	08/14/14	Gross Alpha/Beta	Gross Alpha	7.56E-15	7.501E-15	9.254E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.168E-14	2.245E-14	2.862E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175383	SLAPS Loadout	08/14/14	Gross Alpha/Beta	Gross Alpha	7.56E-15	7.501E-15	9.254E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.592E-14	2.343E-14	2.862E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175384	SLAPS Loadout	08/14/14	Gross Alpha/Beta	Gross Alpha	-1.112E-15	3.486E-15	9.032E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.653E-14	2.158E-14	2.793E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175385	SLAPS Loadout	08/18/14	Gross Alpha/Beta	Gross Alpha	4.682E-15	6.104E-15	8.539E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.512E-14	2.107E-14	2.64E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175386	SLAPS Loadout	08/18/14	Gross Alpha/Beta	Gross Alpha	3.776E-15	6.037E-15	9.12E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.306E-14	2.293E-14	2.82E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175387	SLAPS Loadout	08/18/14	Gross Alpha/Beta	Gross Alpha	6.225E-15	6.969E-15	9.12E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.78E-15	2.099E-14	2.82E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175388	SLAPS Loadout	08/18/14	Gross Alpha/Beta	Gross Alpha	6.225E-15	6.969E-15	9.12E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.526E-14	2.239E-14	2.82E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175389	SLAPS Loadout	08/18/14	Gross Alpha/Beta	Gross Alpha	4.976E-15	6.488E-15	9.076E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.918E-14	2.391E-14	2.806E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175390	SLAPS Loadout	08/19/14	Gross Alpha/Beta	Gross Alpha	3.722E-15	5.951E-15	8.989E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.105E-14	2.25E-14	2.779E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175391	SLAPS Loadout	08/19/14	Gross Alpha/Beta	Gross Alpha	2.411E-15	5.211E-15	8.618E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.786E-14	2.212E-14	2.665E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175392	SLAPS Loadout	08/19/14	Gross Alpha/Beta	Gross Alpha	3.568E-15	5.705E-15	8.618E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.523E-14	2.261E-14	2.665E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175393	SLAPS Loadout	08/19/14	Gross Alpha/Beta	Gross Alpha	9.354E-15	7.726E-15	8.618E-15	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.976E-14	2.157E-14	2.665E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175394	SLAPS Loadout	08/20/14	Gross Alpha/Beta	Gross Alpha	2.92E-15	6.312E-15	1.044E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.07E-14	2.575E-14	3.227E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175395	SLAPS Loadout	08/20/14	Gross Alpha/Beta	Gross Alpha	-2.492E-15	2.689E-15	9.684E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.172E-14	2.48E-14	2.994E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175396	SLAPS Loadout	08/20/14	Gross Alpha/Beta	Gross Alpha	2.445E-15	5.284E-15	8.738E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.018E-14	2.187E-14	2.702E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175397	SLAPS Loadout	08/20/14	Gross Alpha/Beta	Gross Alpha	5.965E-15	6.677E-15	8.738E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.466E-14	2.217E-14	2.702E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175398	SLAPS Loadout	08/20/14	Gross Alpha/Beta	Gross Alpha	9.8E-17	4.108E-15	8.738E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.346E-14	2.14E-14	2.702E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175399	SLAPS Loadout	08/21/14	Gross Alpha/Beta	Gross Alpha	3.096E-15	6.745E-15	1.187E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.78E-14	1.369E-14	1.885E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175400	SLAPS Loadout	08/21/14	Gross Alpha/Beta	Gross Alpha	6.692E-15	7.921E-15	1.187E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.556E-14	1.344E-14	1.885E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175401	SLAPS Loadout	08/21/14	Gross Alpha/Beta	Gross Alpha	1.376E-14	9.769E-15	1.176E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.16E-14	1.289E-14	1.867E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175402	SLAPS Loadout	08/21/14	Gross Alpha/Beta	Gross Alpha	6.8E-16	5.672E-15	1.155E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.413E-14	1.299E-14	1.834E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175403	SLAPS Loadout	08/21/14	Gross Alpha/Beta	Gross Alpha	9.089E-15	8.616E-15	1.187E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.131E-14	1.173E-14	1.885E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175404	SLAPS Loadout	08/26/14	Gross Alpha/Beta	Gross Alpha	3.803E-15	7.143E-15	1.095E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.329E-14	1.909E-14	2.725E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175405	SLAPS Loadout	08/26/14	Gross Alpha/Beta	Gross Alpha	7.606E-15	8.397E-15	1.095E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.62E-14	2.016E-14	2.725E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175406	SLAPS Loadout	08/26/14	Gross Alpha/Beta	Gross Alpha	4.922E-15	7.361E-15	1.063E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.95E-14	1.744E-14	2.645E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175407	SLAPS Loadout	08/26/14	Gross Alpha/Beta	Gross Alpha	5.046E-15	7.545E-15	1.09E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.388E-14	1.907E-14	2.711E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175408	SLAPS Loadout	08/26/14	Gross Alpha/Beta	Gross Alpha	9.845E-15	8.875E-15	1.063E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.197E-14	2.168E-14	2.645E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175409	SLAPS Loadout	08/25/14	Gross Alpha/Beta	Gross Alpha	7.106E-15	7.845E-15	1.023E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.668E-14	1.752E-14	2.546E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175410	SLAPS Loadout	08/25/14	Gross Alpha/Beta	Gross Alpha	9.52E-15	8.582E-15	1.028E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.957E-14	1.947E-14	2.558E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175411	SLAPS Loadout	08/25/14	Gross Alpha/Beta	Gross Alpha	5.922E-15	7.474E-15	1.023E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.422E-14	1.816E-14	2.546E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175412	SLAPS Loadout	08/25/14	Gross Alpha/Beta	Gross Alpha	1.184E-14	9.188E-15	1.023E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.532E-14	1.985E-14	2.546E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175413	SLAPS Loadout	08/25/14	Gross Alpha/Beta	Gross Alpha	9.174E-15	8.27E-15	9.904E-15	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.573E-14	1.782E-14	2.465E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175414	SLAPS Loadout	08/27/14	Gross Alpha/Beta	Gross Alpha	0	5.544E-15	1.079E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.47E-14	1.812E-14	2.684E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175415	SLAPS Loadout	08/27/14	Gross Alpha/Beta	Gross Alpha	6.244E-15	7.881E-15	1.079E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.98E-14	1.941E-14	2.684E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175416	SLAPS Loadout	08/27/14	Gross Alpha/Beta	Gross Alpha	8.573E-15	8.479E-15	1.058E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.728E-14	1.89E-14	2.632E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175417	SLAPS Loadout	08/28/14	Gross Alpha/Beta	Gross Alpha	4.805E-15	7.186E-15	1.038E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.632E-14	1.935E-14	2.582E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175418	SLAPS Loadout	08/28/14	Gross Alpha/Beta	Gross Alpha	2.333E-15	6.801E-15	1.172E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.801E-14	1.589E-14	1.819E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175419	SLAPS Loadout	08/28/14	Gross Alpha/Beta	Gross Alpha	3.516E-15	7.155E-15	1.16E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.761E-14	1.472E-14	1.801E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175420	SLAPS Loadout	08/28/14	Gross Alpha/Beta	Gross Alpha	1.095E-15	6.231E-15	1.15E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.729E-14	1.559E-14	1.784E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175421	SLAPS Loadout	08/28/14	Gross Alpha/Beta	Gross Alpha	4.722E-15	7.55E-15	1.16E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.147E-14	1.512E-14	1.801E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175422	SLAPS Loadout	09/02/14	Gross Alpha/Beta	Gross Alpha	4.338E-15	8.876E-15	1.34E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.238E-14	1.235E-14	1.88E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175423	SLAPS Loadout	09/02/14	Gross Alpha/Beta	Gross Alpha	4.318E-15	8.835E-15	1.333E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.795E-15	1.172E-14	1.872E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175424	SLAPS Loadout	09/02/14	Gross Alpha/Beta	Gross Alpha	-3.94E-16	7.51E-15	1.34E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.042E-15	1.128E-14	1.88E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175425	SLAPS Loadout	09/02/14	Gross Alpha/Beta	Gross Alpha	7.81E-16	7.801E-15	1.327E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.503E-15	1.097E-14	1.863E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175426	SLAPS Loadout	09/02/14	Gross Alpha/Beta	Gross Alpha	-5.351E-15	6.088E-15	1.398E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.966E-15	1.24E-14	1.963E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175427	SLAPS Loadout	09/03/14	Gross Alpha/Beta	Gross Alpha	6.767E-15	9.576E-15	1.352E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.621E-14	1.511E-14	1.898E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175428	SLAPS Loadout	09/03/14	Gross Alpha/Beta	Gross Alpha	5.599E-15	9.317E-15	1.359E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.408E-14	1.387E-14	1.907E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175429	SLAPS Loadout	09/03/14	Gross Alpha/Beta	Gross Alpha	7.961E-15	9.87E-15	1.352E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.31E-14	1.58E-14	1.898E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175430	SLAPS Loadout	09/03/14	Gross Alpha/Beta	Gross Alpha	1.918E-15	7.997E-15	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.457E-14	1.347E-14	1.829E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175431	SLAPS Loadout	09/03/14	Gross Alpha/Beta	Gross Alpha	1.545E-14	1.109E-14	1.28E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.223E-14	1.509E-14	1.796E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175432	SLAPS Loadout	09/04/14	Gross Alpha/Beta	Gross Alpha	9.705E-15	1.076E-14	1.433E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.514E-14	1.568E-14	2.012E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175433	SLAPS Loadout	09/04/14	Gross Alpha/Beta	Gross Alpha	3.376E-15	9.154E-15	1.433E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.433E-14	1.56E-14	2.012E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175434	SLAPS Loadout	09/04/14	Gross Alpha/Beta	Gross Alpha	5.791E-15	9.637E-15	1.405E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.935E-14	1.372E-14	1.972E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175435	SLAPS Loadout	09/04/14	Gross Alpha/Beta	Gross Alpha	7.57E-16	7.556E-15	1.286E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.933E-14	1.384E-14	1.804E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175436	Loadout	09/08/14	Gross Alpha/Beta	Gross Alpha	1.091E-15	4.95E-15	1.038E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.774E-14	2.113E-14	2.681E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175437	Loadout	09/08/14	Gross Alpha/Beta	Gross Alpha	9.421E-15	8.035E-15	1.038E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.395E-14	2.086E-14	2.681E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175438	Loadout	09/08/14	Gross Alpha/Beta	Gross Alpha	2.292E-15	5.52E-15	1.043E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.205E-14	1.928E-14	2.694E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175439	Loadout	09/08/14	Gross Alpha/Beta	Gross Alpha	-1.301E-15	3.664E-15	1.047E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.81E-14	2.133E-14	2.706E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175440	Loadout	09/08/14	Gross Alpha/Beta	Gross Alpha	5.878E-15	6.911E-15	1.043E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.955E-14	2.062E-14	2.694E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175441	Loadout	09/09/14	Gross Alpha/Beta	Gross Alpha	2.572E-15	6.195E-15	1.17E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.024E-14	2.438E-14	3.023E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175442	Loadout	09/09/14	Gross Alpha/Beta	Gross Alpha	4.065E-15	7.016E-15	1.215E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.735E-14	2.351E-14	3.14E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175443	Loadout	09/09/14	Gross Alpha/Beta	Gross Alpha	2.545E-15	6.13E-15	1.158E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.042E-14	2.346E-14	2.991E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175444	Loadout	09/09/14	Gross Alpha/Beta	Gross Alpha	7.815E-15	8.084E-15	1.152E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.76E-14	2.24E-14	2.976E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175445	Loadout	09/11/14	Gross Alpha/Beta	Gross Alpha	-2.576E-15	2.851E-15	1.078E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.272E-14	1.784E-14	2.786E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175446	Loadout	09/11/14	Gross Alpha/Beta	Gross Alpha	-1.34E-15	3.772E-15	1.078E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.56E-16	1.899E-14	2.786E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175447	Loadout	09/11/14	Gross Alpha/Beta	Gross Alpha	4.844E-15	6.702E-15	1.078E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-3.279E-15	1.866E-14	2.786E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175448	Loadout	09/11/14	Gross Alpha/Beta	Gross Alpha	-1.34E-15	3.772E-15	1.078E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.31E-16	1.892E-14	2.786E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175449	Loadout	09/11/14	Gross Alpha/Beta	Gross Alpha	2.394E-15	5.766E-15	1.089E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-2.517E-15	1.891E-14	2.814E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175450	SLAPS Loadout	09/15/14	Gross Alpha/Beta	Gross Alpha	1.357E-14	9.464E-15	1.092E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.784E-14	1.562E-14	1.817E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175451	SLAPS Loadout	09/15/14	Gross Alpha/Beta	Gross Alpha	7.032E-15	9.47E-15	1.463E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.451E-14	1.778E-14	2.434E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175452	SLAPS Loadout	09/15/14	Gross Alpha/Beta	Gross Alpha	5.406E-15	8.863E-15	1.454E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.429E-14	1.767E-14	2.419E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175453	SLAPS Loadout	09/15/14	Gross Alpha/Beta	Gross Alpha	8.571E-15	9.929E-15	1.454E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.01E-14	1.595E-14	2.419E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175454	SLAPS Loadout	09/15/14	Gross Alpha/Beta	Gross Alpha	7.261E-15	9.778E-15	1.511E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.405E-14	1.697E-14	2.513E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175455	SLAPS Loadout	09/16/14	Gross Alpha/Beta	Gross Alpha	5.844E-15	9.581E-15	1.572E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.023E-14	2.056E-14	2.615E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175456	SLAPS Loadout	09/16/14	Gross Alpha/Beta	Gross Alpha	5.481E-15	7.381E-15	1.14E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.167E-14	1.44E-14	1.897E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175457	SLAPS Loadout	09/16/14	Gross Alpha/Beta	Gross Alpha	3.187E-15	6.898E-15	1.212E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.773E-14	1.463E-14	2.016E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175458	SLAPS Loadout	09/16/14	Gross Alpha/Beta	Gross Alpha	4.505E-15	7.386E-15	1.212E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.618E-14	1.558E-14	2.016E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175459	SLAPS Loadout	09/16/14	Gross Alpha/Beta	Gross Alpha	3.187E-15	6.898E-15	1.212E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.436E-14	1.423E-14	2.016E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175460	SLAPS Loadout	09/17/14	Gross Alpha/Beta	Gross Alpha	6.408E-15	7.424E-15	1.087E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.019E-14	1.372E-14	1.808E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175461	SLAPS Loadout	09/17/14	Gross Alpha/Beta	Gross Alpha	-6.9E-16	4.638E-15	1.087E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.701E-14	1.446E-14	1.808E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175462	SLAPS Loadout	09/17/14	Gross Alpha/Beta	Gross Alpha	4.042E-15	6.626E-15	1.087E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.625E-14	1.438E-14	1.808E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175463	SLAPS Loadout	09/17/14	Gross Alpha/Beta	Gross Alpha	1.152E-14	9.102E-15	1.124E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.393E-14	1.652E-14	1.87E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175464	SLAPS Loadout	09/17/14	Gross Alpha/Beta	Gross Alpha	8.996E-15	8.265E-15	1.051E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.117E-14	1.772E-14	2.604E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175465	SLAPS Loadout	09/18/14	Gross Alpha/Beta	Gross Alpha	4.983E-15	1.013E-14	1.674E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.797E-14	2.892E-14	4.147E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175466	SLAPS Loadout	09/18/14	Gross Alpha/Beta	Gross Alpha	-4.393E-15	5.76E-15	1.687E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.043E-14	2.761E-14	4.178E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175467	SLAPS Loadout	09/18/14	Gross Alpha/Beta	Gross Alpha	1.246E-15	8.632E-15	1.674E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.916E-14	2.902E-14	4.147E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175468	SLAPS Loadout	09/18/14	Gross Alpha/Beta	Gross Alpha	3.504E-15	7.12E-15	1.177E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.989E-14	1.941E-14	2.916E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175469	SLAPS Loadout	09/22/14	Gross Alpha/Beta	Gross Alpha	-4.06E-16	5.074E-15	1.092E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.393E-14	1.854E-14	2.705E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175470	SLAPS Loadout	09/22/14	Gross Alpha/Beta	Gross Alpha	-4.14E-16	5.174E-15	1.113E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.776E-14	1.917E-14	2.758E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175471	SLAPS Loadout	09/22/14	Gross Alpha/Beta	Gross Alpha	7.93E-16	5.497E-15	1.066E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.898E-15	1.594E-14	2.641E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175472	SLAPS Loadout	09/22/14	Gross Alpha/Beta	Gross Alpha	-2.9E-15	3.802E-15	1.113E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.957E-14	1.759E-14	2.758E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175473	SLAPS Loadout	09/22/14	Gross Alpha/Beta	Gross Alpha	-1.665E-15	4.562E-15	1.119E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.365E-15	1.634E-14	2.772E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175474	SLAPS Loadout	09/23/14	Gross Alpha/Beta	Gross Alpha	5.799E-15	7.604E-15	1.113E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.59E-14	1.816E-14	2.758E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175475	SLAPS Loadout	09/23/14	Gross Alpha/Beta	Gross Alpha	5.828E-15	7.641E-15	1.119E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.067E-14	2.029E-14	2.772E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175476	SLAPS Loadout	09/23/14	Gross Alpha/Beta	Gross Alpha	5.633E-15	7.385E-15	1.081E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.13E-14	1.816E-14	2.679E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175477	SLAPS Loadout	09/23/14	Gross Alpha/Beta	Gross Alpha	-4.14E-16	5.174E-15	1.113E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.957E-14	1.759E-14	2.758E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175478	SLAPS Loadout	09/24/14	Gross Alpha/Beta	Gross Alpha	2.021E-15	6.106E-15	1.087E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.068E-14	1.819E-14	2.692E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175479	SLAPS Loadout	09/24/14	Gross Alpha/Beta	Gross Alpha	-4.33E-16	5.414E-15	1.165E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.545E-14	1.885E-14	2.886E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175480	SLAPS Loadout	09/24/14	Gross Alpha/Beta	Gross Alpha	8.12E-16	5.629E-15	1.092E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.54E-14	1.781E-14	2.705E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175481	SLAPS Loadout	09/24/14	Gross Alpha/Beta	Gross Alpha	-4.33E-16	5.414E-15	1.165E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.538E-14	1.971E-14	2.886E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175482	SLAPS Loadout	09/24/14	Gross Alpha/Beta	Gross Alpha	8.67E-16	6.007E-15	1.165E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.041E-14	1.929E-14	2.886E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175483	SLAPS Loadout	09/25/14	Gross Alpha/Beta	Gross Alpha	4.199E-15	6.884E-15	1.129E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.789E-14	1.599E-14	1.879E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175484	SLAPS Loadout	09/25/14	Gross Alpha/Beta	Gross Alpha	5.12E-16	5.409E-15	1.129E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.191E-14	1.317E-14	1.879E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175485	SLAPS Loadout	09/25/14	Gross Alpha/Beta	Gross Alpha	4.199E-15	6.884E-15	1.129E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.923E-14	1.511E-14	1.879E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175486	SLAPS Loadout	09/25/14	Gross Alpha/Beta	Gross Alpha	-4.239E-15	2.173E-15	1.087E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.686E-14	1.547E-14	1.808E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175487	SLAPS Loadout	09/29/14	Gross Alpha/Beta	Gross Alpha	1.226E-14	9.636E-15	1.136E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.014E-14	1.969E-14	2.813E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175488	SLAPS Loadout	09/29/14	Gross Alpha/Beta	Gross Alpha	6.94E-15	7.888E-15	1.097E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.163E-14	1.755E-14	2.718E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175489	SLAPS Loadout	09/29/14	Gross Alpha/Beta	Gross Alpha	4.49E-15	7.077E-15	1.097E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.202E-14	2.008E-14	2.718E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175490	SLAPS Loadout	09/29/14	Gross Alpha/Beta	Gross Alpha	8.16E-16	5.657E-15	1.097E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.579E-14	1.959E-14	2.718E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175491	SLAPS Loadout	09/30/14	Gross Alpha/Beta	Gross Alpha	8.625E-15	8.731E-15	1.159E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.907E-14	2.153E-14	2.871E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175492	SLAPS Loadout	09/30/14	Gross Alpha/Beta	Gross Alpha	1.92E-15	5.8E-15	1.032E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.28E-14	1.758E-14	2.557E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175493	SLAPS Loadout	09/30/14	Gross Alpha/Beta	Gross Alpha	5.351E-15	7.016E-15	1.027E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.236E-14	1.909E-14	2.545E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175494	SLAPS Loadout	09/30/14	Gross Alpha/Beta	Gross Alpha	3.188E-15	6.479E-15	1.071E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.6E-14	2.076E-14	2.653E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175495	SLAPS Loadout	09/30/14	Gross Alpha/Beta	Gross Alpha	7.331E-15	8.333E-15	1.159E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.307E-14	2.259E-14	2.871E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175496	SLAPS Loadout	10/01/14	Gross Alpha/Beta	Gross Alpha	-4.16E-16	5.2E-15	1.119E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.384E-14	2.054E-14	2.772E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175497	SLAPS Loadout	10/01/14	Gross Alpha/Beta	Gross Alpha	5.828E-15	7.641E-15	1.119E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.908E-14	2.016E-14	2.772E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175498	SLAPS Loadout	10/01/14	Gross Alpha/Beta	Gross Alpha	5.828E-15	7.641E-15	1.119E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.861E-14	2.091E-14	2.772E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175499	SLAPS Loadout	10/01/14	Gross Alpha/Beta	Gross Alpha	-1.869E-15	5.119E-15	1.256E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.329E-14	2.249E-14	3.11E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175500	SLAPS Loadout	10/01/14	Gross Alpha/Beta	Gross Alpha	9.14E-16	6.333E-15	1.228E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.039E-14	2.186E-14	3.043E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175501	Loadout	10/06/14	Gross Alpha/Beta	Gross Alpha	7.171E-15	8.101E-15	1.218E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.791E-14	1.67E-14	1.959E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175502	Loadout	10/06/14	Gross Alpha/Beta	Gross Alpha	-3.07E-16	5.241E-15	1.2E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.765E-14	1.646E-14	1.931E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175503	Loadout	10/06/14	Gross Alpha/Beta	Gross Alpha	6.329E-15	8.234E-15	1.301E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.596E-14	1.849E-14	2.093E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175504	Loadout	10/06/14	Gross Alpha/Beta	Gross Alpha	-3.33E-16	5.682E-15	1.301E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.828E-14	1.776E-14	2.093E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175505	Loadout	10/06/14	Gross Alpha/Beta	Gross Alpha	-1.666E-15	5.018E-15	1.301E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.511E-14	1.841E-14	2.093E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175506	Loadout	10/07/14	Gross Alpha/Beta	Gross Alpha	3.607E-15	7.207E-15	1.281E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.136E-14	1.781E-14	2.061E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175507	Loadout	10/07/14	Gross Alpha/Beta	Gross Alpha	-1.521E-15	4.584E-15	1.189E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.138E-14	1.667E-14	1.912E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175508	Loadout	10/07/14	Gross Alpha/Beta	Gross Alpha	9.338E-15	9.403E-15	1.351E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.114E-14	2.047E-14	2.173E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175509	Loadout	10/07/14	Gross Alpha/Beta	Gross Alpha	2.32E-15	6.783E-15	1.294E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.753E-14	1.855E-14	2.082E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175510	Loadout	10/07/14	Gross Alpha/Beta	Gross Alpha	6.231E-15	8.106E-15	1.281E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.228E-14	1.882E-14	2.061E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175511	Loadout	10/08/14	Gross Alpha/Beta	Gross Alpha	8.216E-15	8.273E-15	1.189E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.046E-14	1.562E-14	1.912E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175512	Loadout	10/08/14	Gross Alpha/Beta	Gross Alpha	2.161E-15	6.319E-15	1.206E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.932E-14	1.669E-14	1.94E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175513	Loadout	10/08/14	Gross Alpha/Beta	Gross Alpha	3.396E-15	6.785E-15	1.206E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.406E-14	1.714E-14	1.94E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175514	Loadout	10/08/14	Gross Alpha/Beta	Gross Alpha	3.396E-15	6.785E-15	1.206E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.299E-14	1.608E-14	1.94E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175515	Loadout	10/08/14	Gross Alpha/Beta	Gross Alpha	-2.97E-16	5.069E-15	1.161E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.088E-14	1.628E-14	1.867E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175516	SLAPS Loadout	10/14/14	Gross Alpha/Beta	Gross Alpha	7.129E-15	7.486E-15	1.088E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.358E-14	1.598E-14	1.777E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175517	SLAPS Loadout	10/14/14	Gross Alpha/Beta	Gross Alpha	4.817E-15	6.734E-15	1.088E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.062E-14	1.57E-14	1.777E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175518	SLAPS Loadout	10/14/14	Gross Alpha/Beta	Gross Alpha	3.661E-15	6.324E-15	1.088E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-4.94E-16	1.461E-14	1.777E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175519	SLAPS Loadout	10/14/14	Gross Alpha/Beta	Gross Alpha	4.884E-15	6.827E-15	1.103E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.377E-14	1.62E-14	1.802E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175520	SLAPS Loadout	10/14/14	Gross Alpha/Beta	Gross Alpha	-3.465E-15	2.978E-15	1.151E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.312E-15	1.623E-14	1.88E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175521	SLAPS Loadout	10/15/14	Gross Alpha/Beta	Gross Alpha	7.228E-15	7.59E-15	1.103E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.052E-14	1.682E-14	1.802E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175522	SLAPS Loadout	10/15/14	Gross Alpha/Beta	Gross Alpha	5.146E-15	7.194E-15	1.162E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.01E-15	1.616E-14	1.899E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175523	SLAPS Loadout	10/15/14	Gross Alpha/Beta	Gross Alpha	2.663E-15	6.258E-15	1.157E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.994E-14	1.749E-14	1.889E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175524	SLAPS Loadout	10/15/14	Gross Alpha/Beta	Gross Alpha	2.08E-16	5.28E-15	1.174E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.625E-14	1.738E-14	1.917E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175525	SLAPS Loadout	10/15/14	Gross Alpha/Beta	Gross Alpha	1.127E-14	9.026E-15	1.157E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.758E-14	1.728E-14	1.889E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175526	SLAPS Loadout	10/16/14	Gross Alpha/Beta	Gross Alpha	2.702E-15	6.35E-15	1.174E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.305E-14	1.709E-14	1.917E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175527	SLAPS Loadout	10/16/14	Gross Alpha/Beta	Gross Alpha	7.885E-15	8.28E-15	1.203E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.464E-15	1.705E-14	1.966E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175528	SLAPS Loadout	10/16/14	Gross Alpha/Beta	Gross Alpha	-4.877E-15	1.767E-15	1.197E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.309E-14	1.832E-14	1.956E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175529	SLAPS Loadout	10/16/14	Gross Alpha/Beta	Gross Alpha	1.484E-15	5.957E-15	1.197E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.168E-14	1.728E-14	1.956E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175530	SLAPS Loadout	10/16/14	Gross Alpha/Beta	Gross Alpha	2.77E-15	6.51E-15	1.203E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.239E-14	1.834E-14	1.966E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175531	SLAPS Loadout	10/20/14	Gross Alpha/Beta	Gross Alpha	6.54E-15	7.796E-15	1.191E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.298E-14	1.823E-14	1.946E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175532	SLAPS Loadout	10/20/14	Gross Alpha/Beta	Gross Alpha	-1.005E-15	4.499E-15	1.135E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.265E-14	1.743E-14	1.853E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175533	SLAPS Loadout	10/21/14	Gross Alpha/Beta	Gross Alpha	-1.335E-15	5.979E-15	1.508E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.42E-16	2.036E-14	2.463E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175534	SLAPS Loadout	10/21/14	Gross Alpha/Beta	Gross Alpha	-1.005E-15	4.499E-15	1.135E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.501E-14	1.85E-14	1.853E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175535	SLAPS Loadout	10/21/14	Gross Alpha/Beta	Gross Alpha	1.155E-14	9.251E-15	1.185E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.044E-14	1.792E-14	1.936E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175536	SLAPS Loadout	10/21/14	Gross Alpha/Beta	Gross Alpha	7.767E-15	8.156E-15	1.185E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.77E-14	1.857E-14	1.936E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175537	SLAPS Loadout	10/21/14	Gross Alpha/Beta	Gross Alpha	-2.309E-15	3.968E-15	1.185E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.496E-14	1.919E-14	1.936E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175538	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	2.11E-16	5.359E-15	1.191E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.136E-15	1.657E-14	1.946E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175539	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	3.93E-15	6.789E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.625E-15	1.64E-14	1.908E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175540	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	3.93E-15	6.789E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	8.215E-15	1.655E-14	1.908E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175541	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	2.689E-15	6.319E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.805E-15	1.67E-14	1.908E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175542	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	3.93E-15	6.789E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.06E-14	1.678E-14	1.908E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175543	SLAPS Loadout	10/22/14	Gross Alpha/Beta	Gross Alpha	-1.034E-15	4.631E-15	1.168E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.65E-15	1.601E-14	1.908E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175544	SLAPS Loadout	10/23/14	Gross Alpha/Beta	Gross Alpha	3.677E-15	6.353E-15	1.093E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.852E-14	1.738E-14	1.785E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175545	SLAPS Loadout	10/23/14	Gross Alpha/Beta	Gross Alpha	-3.149E-15	4.824E-15	1.256E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.883E-14	1.389E-14	1.98E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175546	SLAPS Loadout	10/23/14	Gross Alpha/Beta	Gross Alpha	6.3E-16	6.504E-15	1.256E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.237E-14	1.311E-14	1.98E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175547	SLAPS Loadout	10/23/14	Gross Alpha/Beta	Gross Alpha	-3.133E-15	4.8E-15	1.25E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.954E-14	1.391E-14	1.971E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175548	SLAPS Loadout	10/23/14	Gross Alpha/Beta	Gross Alpha	6.24E-16	6.44E-15	1.243E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.784E-14	1.366E-14	1.961E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175549	SLAPS Loadout	10/27/14	Gross Alpha/Beta	Gross Alpha	7.568E-15	8.768E-15	1.09E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.87E-14	2.636E-14	2.651E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175550	SLAPS Loadout	10/27/14	Gross Alpha/Beta	Gross Alpha	7.493E-15	8.681E-15	1.079E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.225E-14	2.381E-14	2.625E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175551	SLAPS Loadout	10/27/14	Gross Alpha/Beta	Gross Alpha	5.02E-15	7.96E-15	1.084E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.721E-14	2.424E-14	2.638E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175552	SLAPS Loadout	10/27/14	Gross Alpha/Beta	Gross Alpha	3.747E-15	7.513E-15	1.079E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.179E-14	2.444E-14	2.625E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175553	SLAPS Loadout	10/27/14	Gross Alpha/Beta	Gross Alpha	4.851E-15	7.692E-15	1.048E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.679E-14	2.477E-14	2.549E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA175554	SLAPS Loadout	10/28/14	Gross Alpha/Beta	Gross Alpha	1.081E-14	1.253E-14	1.556E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.768E-14	3.443E-14	3.788E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175555	SLAPS Loadout	10/28/14	Gross Alpha/Beta	Gross Alpha	1.777E-15	9.427E-15	1.535E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.797E-14	3.333E-14	3.734E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175556	SLAPS Loadout	10/28/14	Gross Alpha/Beta	Gross Alpha	9.01E-15	9.315E-15	1.112E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.505E-14	2.398E-14	2.705E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175557	SLAPS Loadout	10/28/14	Gross Alpha/Beta	Gross Alpha	5.33E-15	1.069E-14	1.535E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.423E-14	3.167E-14	3.734E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175558	SLAPS Loadout	10/28/14	Gross Alpha/Beta	Gross Alpha	5.406E-15	1.084E-14	1.556E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.819E-14	3.31E-14	3.788E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175559	SLAPS Loadout	10/29/14	Gross Alpha/Beta	Gross Alpha	2.473E-15	7.014E-15	1.068E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.194E-14	2.357E-14	2.599E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175560	SLAPS Loadout	10/29/14	Gross Alpha/Beta	Gross Alpha	0	5.903E-15	1.038E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.032E-14	2.217E-14	2.525E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175561	SLAPS Loadout	10/29/14	Gross Alpha/Beta	Gross Alpha	0	5.848E-15	1.028E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.922E-14	2.258E-14	2.501E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA175562	SLAPS Loadout	10/29/14	Gross Alpha/Beta	Gross Alpha	-1.213E-15	5.445E-15	1.048E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.853E-15	2.135E-14	2.549E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA175563	SLAPS Loadout	10/29/14	Gross Alpha/Beta	Gross Alpha	1.237E-15	6.562E-15	1.068E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.092E-14	2.282E-14	2.599E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA175564	SLAPS Loadout	10/30/14	Gross Alpha/Beta	Gross Alpha	3.234E-15	9.172E-15	1.397E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.044E-14	3.006E-14	3.399E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA175565	SLAPS Loadout	10/30/14	Gross Alpha/Beta	Gross Alpha	-4.069E-15	8.18E-15	1.757E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.442E-14	3.755E-14	4.276E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177126	SLAPS Loadout	10/30/14	Gross Alpha/Beta	Gross Alpha	0	9.392E-15	1.651E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.747E-14	3.493E-14	4.017E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177127	SLAPS Loadout	10/30/14	Gross Alpha/Beta	Gross Alpha	3.822E-15	1.084E-14	1.651E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.747E-14	3.493E-14	4.017E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177128	SLAPS Loadout	11/03/14	Gross Alpha/Beta	Gross Alpha	1.035E-14	1.008E-14	1.194E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.411E-15	1.155E-14	1.914E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177129	SLAPS Loadout	11/03/14	Gross Alpha/Beta	Gross Alpha	1.965E-15	8.032E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.895E-14	1.491E-14	1.971E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177130	SLAPS Loadout	11/03/14	Gross Alpha/Beta	Gross Alpha	6.796E-15	9.261E-15	1.205E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.904E-14	1.359E-14	1.933E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177131	SLAPS Loadout	11/03/14	Gross Alpha/Beta	Gross Alpha	9.32E-15	9.977E-15	1.217E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.293E-14	1.297E-14	1.952E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177132	SLAPS Loadout	11/03/14	Gross Alpha/Beta	Gross Alpha	3.114E-15	8.167E-15	1.194E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.886E-14	1.346E-14	1.914E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177133	SLAPS Loadout	11/05/14	Gross Alpha/Beta	Gross Alpha	-1.724E-15	6.654E-15	1.205E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.684E-14	1.446E-14	1.933E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177134	SLAPS Loadout	11/05/14	Gross Alpha/Beta	Gross Alpha	6.929E-15	9.443E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.691E-15	1.23E-14	1.971E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177135	SLAPS Loadout	11/05/14	Gross Alpha/Beta	Gross Alpha	1.927E-15	7.878E-15	1.205E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.202E-14	1.275E-14	1.933E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177136	SLAPS Loadout	11/05/14	Gross Alpha/Beta	Gross Alpha	4.447E-15	8.766E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.716E-15	1.178E-14	1.971E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177137	SLAPS Loadout	11/10/14	Gross Alpha/Beta	Gross Alpha	2.551E-15	6.071E-15	1.048E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.754E-14	1.905E-14	2.768E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177138	SLAPS Loadout	11/10/14	Gross Alpha/Beta	Gross Alpha	6.286E-15	7.489E-15	1.058E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.295E-14	1.796E-14	2.795E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177139	SLAPS Loadout	11/11/14	Gross Alpha/Beta	Gross Alpha	7.378E-15	7.741E-15	1.038E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.303E-15	1.613E-14	2.742E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177140	SLAPS Loadout	11/11/14	Gross Alpha/Beta	Gross Alpha	1.03E-16	5.032E-15	1.058E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	9.575E-15	1.675E-14	2.795E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177141	SLAPS Loadout	11/12/14	Gross Alpha/Beta	Gross Alpha	3.635E-15	6.304E-15	1.008E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.913E-14	1.858E-14	2.665E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177142	SLAPS Loadout	11/13/14	Gross Alpha/Beta	Gross Alpha	3.813E-15	6.614E-15	1.058E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.115E-14	1.69E-14	2.795E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177143	SLAPS Loadout	11/17/14	Gross Alpha/Beta	Gross Alpha	7.008E-15	9.804E-15	1.468E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.076E-14	2.483E-14	3.879E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177144	SLAPS Loadout	11/17/14	Gross Alpha/Beta	Gross Alpha	4.395E-15	7.622E-15	1.219E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.686E-15	1.87E-14	3.222E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177145	SLAPS Loadout	11/18/14	Gross Alpha/Beta	Gross Alpha	9.7E-17	4.752E-15	9.991E-15	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.945E-14	1.677E-14	2.64E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177146	SLAPS Loadout	11/19/14	Gross Alpha/Beta	Gross Alpha	1.618E-14	1.03E-14	1.058E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.332E-14	2.197E-14	2.795E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177147	SLAPS Loadout	11/20/14	Gross Alpha/Beta	Gross Alpha	5.05E-15	7.065E-15	1.058E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.184E-14	1.956E-14	2.795E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177148	SLAPS Loadout	11/20/14	Gross Alpha/Beta	Gross Alpha	2.576E-15	6.131E-15	1.058E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.476E-14	1.898E-14	2.795E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177149	SLAPS Loadout	11/24/14	Gross Alpha/Beta	Gross Alpha	3.077E-15	9.63E-15	1.221E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.717E-14	1.505E-14	2.031E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177150	SLAPS Loadout	11/24/14	Gross Alpha/Beta	Gross Alpha	6.819E-15	1.034E-14	1.184E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.471E-14	1.441E-14	1.97E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177151	SLAPS Loadout	11/25/14	Gross Alpha/Beta	Gross Alpha	8.908E-15	1.171E-14	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.25E-14	1.752E-14	2.167E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177152	SLAPS Loadout	11/25/14	Gross Alpha/Beta	Gross Alpha	1.172E-14	1.237E-14	1.303E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.727E-14	1.468E-14	2.167E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177153	SLAPS Loadout	11/25/14	Gross Alpha/Beta	Gross Alpha	7.86E-15	1.033E-14	1.15E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.783E-14	1.649E-14	1.912E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177154	SLAPS Loadout	11/25/14	Gross Alpha/Beta	Gross Alpha	5.485E-15	9.914E-15	1.173E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.636E-14	1.658E-14	1.95E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177155	SLAPS Loadout	11/25/14	Gross Alpha/Beta	Gross Alpha	1.655E-15	8.717E-15	1.15E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.239E-14	1.381E-14	1.912E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177156	SLAPS Loadout	11/26/14	Gross Alpha/Beta	Gross Alpha	8.283E-15	1.256E-14	1.439E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.394E-14	1.903E-14	2.392E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177157	SLAPS Loadout	11/12/14	Gross Alpha/Beta	Gross Alpha	7.252E-15	9.776E-15	1.315E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	6.413E-14	1.959E-14	2.127E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177158	SLAPS Loadout	12/02/14	Gross Alpha/Beta	Gross Alpha	5.585E-15	8.86E-15	1.237E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.219E-14	1.476E-14	2.002E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177159	SLAPS Loadout	12/02/14	Gross Alpha/Beta	Gross Alpha	1.862E-15	7.746E-15	1.237E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.656E-15	1.191E-14	2.002E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177160	SLAPS Loadout	12/03/14	Gross Alpha/Beta	Gross Alpha	5.585E-15	8.86E-15	1.237E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.604E-14	1.715E-14	2.002E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177161	SLAPS Loadout	12/03/14	Gross Alpha/Beta	Gross Alpha	7.988E-15	9.438E-15	1.225E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.819E-14	1.812E-14	1.983E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177162	SLAPS Loadout	12/04/14	Gross Alpha/Beta	Gross Alpha	-2.11E-15	7.303E-15	1.402E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.948E-14	1.918E-14	2.269E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177163	SLAPS Loadout	12/08/14	Gross Alpha/Beta	Gross Alpha	-1.862E-15	6.444E-15	1.237E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.684E-14	1.723E-14	2.002E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177164	SLAPS Loadout	12/08/14	Gross Alpha/Beta	Gross Alpha	1.862E-15	7.746E-15	1.237E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.809E-14	1.639E-14	2.002E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177165	SLAPS Loadout	12/09/14	Gross Alpha/Beta	Gross Alpha	2.999E-15	6.457E-15	1.14E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.493E-14	2.012E-14	2.016E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177166	SLAPS Loadout	12/10/14	Gross Alpha/Beta	Gross Alpha	1.256E-15	1.316E-14	2.769E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	-1.448E-15	3.103E-14	4.896E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177167	SLAPS Loadout	12/10/14	Gross Alpha/Beta	Gross Alpha	4.17E-15	1.414E-14	2.705E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.367E-14	3.213E-14	4.782E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177168	SLAPS Loadout	12/10/14	Gross Alpha/Beta	Gross Alpha	1.331E-14	1.785E-14	2.769E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.524E-14	3.531E-14	4.896E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177169	SLAPS Loadout	12/10/14	Gross Alpha/Beta	Gross Alpha	5.02E-16	5.265E-15	1.108E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.576E-14	1.726E-14	1.958E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177170	SLAPS Loadout	12/10/14	Gross Alpha/Beta	Gross Alpha	2.913E-15	6.273E-15	1.108E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.035E-14	1.676E-14	1.958E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177171	SLAPS Loadout	12/11/14	Gross Alpha/Beta	Gross Alpha	5.563E-15	7.46E-15	1.157E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.942E-14	1.817E-14	2.046E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177172	SLAPS Loadout	12/11/14	Gross Alpha/Beta	Gross Alpha	5.508E-15	7.386E-15	1.146E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.535E-14	1.674E-14	2.026E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177173	SLAPS Loadout	12/15/14	Gross Alpha/Beta	Gross Alpha	4.447E-15	8.869E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.325E-14	1.349E-14	1.91E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SLA177174	SLAPS Loadout	12/15/14	Gross Alpha/Beta	Gross Alpha	7.24E-16	7.757E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	7.354E-15	1.145E-14	1.91E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
SLA177175	SLAPS Loadout	12/16/14	Gross Alpha/Beta	Gross Alpha	1.946E-15	8.066E-15	1.217E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.067E-14	1.307E-14	1.891E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177176	SLAPS Loadout	12/16/14	Gross Alpha/Beta	Gross Alpha	9.411E-15	1.017E-14	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.087E-14	1.32E-14	1.91E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177177	SLAPS Loadout	12/17/14	Gross Alpha/Beta	Gross Alpha	3.144E-15	8.351E-15	1.205E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.359E-14	1.332E-14	1.873E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177178	SLAPS Loadout	12/17/14	Gross Alpha/Beta	Gross Alpha	9.32E-15	1.007E-14	1.217E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.507E-14	1.575E-14	1.891E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177179	SLAPS Loadout	12/18/14	Gross Alpha/Beta	Gross Alpha	5.04E-15	1.005E-14	1.393E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.987E-14	1.681E-14	2.164E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177180	SLAPS Loadout	12/18/14	Gross Alpha/Beta	Gross Alpha	7.94E-16	8.508E-15	1.348E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.335E-14	1.569E-14	2.095E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177181	SLAPS Loadout	12/23/14	Gross Alpha/Beta	Gross Alpha	7.24E-16	7.757E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.689E-14	1.271E-14	1.91E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177182	SLAPS Loadout	12/23/14	Gross Alpha/Beta	Gross Alpha	1.965E-15	8.145E-15	1.229E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	1.212E-14	1.21E-14	1.91E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SLA177183	SLAPS Loadout	12/24/14	Gross Alpha/Beta	Gross Alpha	6.67E-15	1.33E-14	1.843E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.515E-14	2.25E-14	2.865E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177184	SLAPS Loadout	12/24/14	Gross Alpha/Beta	Gross Alpha	1.039E-14	1.431E-14	1.843E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	5.038E-14	2.199E-14	2.865E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177185	SLAPS Loadout	12/24/14	Gross Alpha/Beta	Gross Alpha	1.393E-15	1.493E-14	2.365E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.169E-14	2.559E-14	3.675E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177186	SLAPS Loadout	12/25/14	Gross Alpha/Beta	Gross Alpha	-3.383E-15	1.331E-14	2.365E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.169E-14	2.559E-14	3.675E-14	uCi/mL	J	T04	SLAPS (General Area)-Perimeter Air
SLA177187	SLAPS Loadout	12/29/14	Gross Alpha/Beta	Gross Alpha	8.46E-15	1.021E-14	1.273E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	3.231E-14	1.491E-14	1.978E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177188	SLAPS Loadout	12/29/14	Gross Alpha/Beta	Gross Alpha	9.696E-15	1.047E-14	1.266E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	4.689E-14	1.639E-14	1.968E-14	uCi/mL	=		SLAPS (General Area)-Perimeter Air
SLA177189	SLAPS Loadout	12/30/14	Gross Alpha/Beta	Gross Alpha	-1.262E-15	5.612E-15	1.015E-14	uCi/mL	UJ	T06	SLAPS (General Area)-Perimeter Air
				Gross Beta	2.308E-14	1.859E-14	2.632E-14	uCi/mL	U	T04, T05	SLAPS (General Area)-Perimeter Air
SVP166433	Ballfields	01/08/14	Gross Alpha/Beta	Gross Alpha	-4.851E-15	1.628E-14	4.19E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	8.619E-14	7.516E-14	1.059E-13	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166434	Ballfields	01/09/14	Gross Alpha/Beta	Gross Alpha	-3.319E-15	1.114E-14	2.867E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	5.475E-14	5.108E-14	7.244E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166435	Ballfields	01/14/14	Gross Alpha/Beta	Gross Alpha	4.205E-15	7.323E-15	1.211E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.509E-14	2.089E-14	3.058E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166436	Ballfields	01/15/14	Gross Alpha/Beta	Gross Alpha	1.051E-14	1.25E-14	1.816E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	6.143E-14	3.45E-14	4.588E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166437	Ballfields	01/20/14	Gross Alpha/Beta	Gross Alpha	9.01E-15	9.429E-15	1.297E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.337E-14	2.381E-14	3.277E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166438	Ballfields	01/21/14	Gross Alpha/Beta	Gross Alpha	2.742E-14	3.262E-14	4.737E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.199E-15	7.682E-14	1.197E-13	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166439	Ballfields	01/22/14	Gross Alpha/Beta	Gross Alpha	-2.772E-15	3.74E-15	1.197E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	-9.56E-16	1.926E-14	3.025E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166440	Ballfields	01/23/14	Gross Alpha/Beta	Gross Alpha	0	6.659E-15	1.472E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	5.333E-15	2.427E-14	3.72E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166441	Ballfields	01/28/14	Gross Alpha/Beta	Gross Alpha	-3.054E-15	4.12E-15	1.319E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.061E-14	2.226E-14	3.332E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP166442	Ballfields	01/29/14	Gross Alpha/Beta	Gross Alpha	-1.605E-15	5.386E-15	1.386E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	-6.213E-15	2.182E-14	3.502E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166443	Ballfields	01/30/14	Gross Alpha/Beta	Gross Alpha	7.884E-15	1.373E-14	2.27E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	4.167E-14	4.03E-14	5.735E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166444	Ballfields	01/30/14	Gross Alpha/Beta	Gross Alpha	3.369E-15	1.189E-14	1.534E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.178E-14	2.244E-14	3.619E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166445	Ballfields	02/03/14	Gross Alpha/Beta	Gross Alpha	6.823E-15	1.687E-14	2.099E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.981E-14	3.07E-14	4.952E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166446	Ballfields	02/12/14	Gross Alpha/Beta	Gross Alpha	-1.606E-15	1.136E-14	1.661E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	6.875E-15	2.272E-14	3.92E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166447	Ballfields	02/17/14	Gross Alpha/Beta	Gross Alpha	2.1E-16	1.712E-14	2.392E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.916E-14	3.456E-14	5.645E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166448	Ballfields	02/26/14	Gross Alpha/Beta	Gross Alpha	9.236E-15	1.049E-14	1.393E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	4.688E-14	1.89E-14	2.457E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166449	Ballfields	02/27/14	Gross Alpha/Beta	Gross Alpha	-1.74E-15	5.938E-15	1.312E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.804E-14	1.478E-14	2.314E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166450	Ballfields	02/28/14	Gross Alpha/Beta	Gross Alpha	-5.09E-16	1.361E-14	2.687E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.356E-14	2.852E-14	4.739E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166451	Pershall Rd.	05/07/14	Gross Alpha/Beta	Gross Alpha	-2.983E-15	1.461E-14	3.091E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.493E-14	2.769E-14	4.443E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166453	Pershall Rd.	06/25/14	Gross Alpha/Beta	Gross Alpha	1.514E-14	2.074E-14	3.326E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.136E-14	3.69E-14	5.455E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166454	Pershall Rd.	06/30/14	Gross Alpha/Beta	Gross Alpha	3.218E-15	1.513E-14	2.823E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	4.27E-14	3.242E-14	4.168E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166455	Pershall Rd.	07/01/14	Gross Alpha/Beta	Gross Alpha	-2.892E-14	2.395E-14	7.721E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.186E-14	7.907E-14	1.14E-13	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166456	Pershall Rd.	07/02/14	Gross Alpha/Beta	Gross Alpha	-2.776E-15	1.565E-14	3.409E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	-5.21E-16	3.313E-14	5.034E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166457	Pershall Rd.	07/03/14	Gross Alpha/Beta	Gross Alpha	-1.069E-14	2.478E-14	5.966E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	-9.12E-16	5.797E-14	8.81E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166458	SVP166458	06/30/14	Gross Alpha/Beta	Gross Alpha	1.781E-15	8.373E-15	1.563E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.796E-14	1.942E-14	2.307E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166459	SVP166459	07/02/14	Gross Alpha/Beta	Gross Alpha	2.38E-16	7.277E-15	1.458E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	8.691E-15	1.525E-14	2.154E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166460	VP-57/VP-58	07/07/14	Gross Alpha/Beta	Gross Alpha	3.269E-14	1.396E-14	1.201E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	7.787E-14	1.987E-14	1.979E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166461	VP-57/VP-58	07/07/14	Gross Alpha/Beta	Gross Alpha	1.603E-14	1.096E-14	1.277E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.591E-14	1.589E-14	2.103E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166462	VP-57/VP-58	07/08/14	Gross Alpha/Beta	Gross Alpha	3.967E-15	7.392E-15	1.263E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	9.098E-15	1.387E-14	2.081E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166463	VP-57/VP-58	07/09/14	Gross Alpha/Beta	Gross Alpha	9.772E-15	8.745E-15	1.167E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.063E-14	1.42E-14	1.922E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166464	VP-57/VP-58	07/09/14	Gross Alpha/Beta	Gross Alpha	2.515E-15	6.565E-15	1.201E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.517E-14	1.504E-14	1.979E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166465	VP-57/VP-58	07/09/14	Gross Alpha/Beta	Gross Alpha	5.029E-15	7.466E-15	1.201E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.573E-14	1.401E-14	1.979E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166466	VP-57/VP-58	07/10/14	Gross Alpha/Beta	Gross Alpha	0	5.36E-15	1.167E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.757E-14	1.387E-14	1.922E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166467	Pershall Rd.	07/07/14	Gross Alpha/Beta	Gross Alpha	3.31E-14	2.962E-14	3.953E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.364E-14	4.402E-14	6.512E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP166468	Pershall Rd.	07/08/14	Gross Alpha/Beta	Gross Alpha	1.34E-14	1.316E-14	1.829E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.592E-14	2.265E-14	3.013E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166469	Pershall Rd.	07/09/14	Gross Alpha/Beta	Gross Alpha	1.115E-14	1.656E-14	2.664E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.093E-14	2.946E-14	4.388E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166470	Pershall Rd.	07/10/14	Gross Alpha/Beta	Gross Alpha	0	2.085E-14	4.539E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	5.943E-15	4.653E-14	7.476E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166471	Pershall Rd.	07/16/14	Gross Alpha/Beta	Gross Alpha	6.543E-15	8.2E-15	1.25E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	7.368E-15	1.353E-14	2.06E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166472	VP-57/VP-58	07/16/14	Gross Alpha/Beta	Gross Alpha	2.478E-15	6.47E-15	1.184E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.008E-14	1.318E-14	1.95E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166473	VP-57/VP-58	07/15/14	Gross Alpha/Beta	Gross Alpha	-2.138E-13	3.586E-13	1.021E-12	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.343E-13	1.072E-12	1.682E-12	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166474	VP-57/VP-58	07/14/14	Gross Alpha/Beta	Gross Alpha	1.14E-14	1.25E-14	1.815E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.566E-15	1.876E-14	2.991E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166475	VP-57/VP-58	07/14/14	Gross Alpha/Beta	Gross Alpha	-1.644E-15	6.423E-15	1.571E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.366E-14	1.867E-14	2.588E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166476	VP-57/VP-58	07/17/14	Gross Alpha/Beta	Gross Alpha	3.375E-15	6.819E-15	1.166E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.366E-14	1.206E-14	1.744E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP166477	VP-57/VP-58	07/22/14	Gross Alpha/Beta	Gross Alpha	8.716E-15	9.043E-15	1.29E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.525E-14	1.449E-14	1.931E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP166478	VP-57/VP-58	07/23/14	Gross Alpha/Beta	Gross Alpha	3.664E-15	7.404E-15	1.266E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.547E-14	1.533E-14	1.894E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP166479	VP-57/VP-58	07/24/14	Gross Alpha/Beta	Gross Alpha	-2.443E-15	4.998E-15	1.266E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.254E-14	1.283E-14	1.894E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP166480	Pershall Rd.	07/17/14	Gross Alpha/Beta	Gross Alpha	9.161E-15	1.851E-14	3.165E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.99E-14	3.066E-14	4.735E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP166481	Pershall Rd.	07/21/14	Gross Alpha/Beta	Gross Alpha	9.961E-15	9.379E-15	1.29E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.394E-14	1.64E-14	1.931E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP166482	Pershall Rd.	07/22/14	Gross Alpha/Beta	Gross Alpha	3.772E-15	7.621E-15	1.303E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.673E-14	1.679E-14	1.95E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP166483	Pershall Rd.	07/24/14	Gross Alpha/Beta	Gross Alpha	0	6.254E-15	1.303E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.134E-14	1.301E-14	1.95E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP166484	VP-57/VP-58	07/23/14	Gross Alpha/Beta	Gross Alpha	7.782E-15	8.228E-15	1.163E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.655E-14	1.526E-14	1.875E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166485	VP-57/VP-58	07/23/14	Gross Alpha/Beta	Gross Alpha	2.775E-15	6.486E-15	1.151E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.941E-14	1.641E-14	1.857E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166486	VP-57/VP-58	07/28/14	Gross Alpha/Beta	Gross Alpha	8.415E-15	8.013E-15	1.084E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.749E-14	1.346E-14	1.747E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166487	VP-57/VP-58	07/29/14	Gross Alpha/Beta	Gross Alpha	8.941E-15	8.514E-15	1.151E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.244E-14	1.471E-14	1.857E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166488	VP-57/VP-58	07/30/14	Gross Alpha/Beta	Gross Alpha	2.775E-15	6.486E-15	1.151E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	4.095E-14	1.656E-14	1.857E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166489	VP-57/VP-58	07/30/14	Gross Alpha/Beta	Gross Alpha	3.932E-15	6.809E-15	1.13E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	8.388E-15	1.292E-14	1.822E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166490	VP-57/VP-58	07/30/14	Gross Alpha/Beta	Gross Alpha	1.527E-15	5.942E-15	1.141E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	2.146E-14	1.449E-14	1.839E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166491	VP-57/VP-58	07/31/14	Gross Alpha/Beta	Gross Alpha	7.859E-15	8.309E-15	1.174E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.861E-14	1.659E-14	1.893E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166492	VP-57/VP-58	07/31/14	Gross Alpha/Beta	Gross Alpha	8.941E-15	8.514E-15	1.151E-14	uCi/mL	U	T04, T05	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.941E-14	1.641E-14	1.857E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP166493	Pershall Rd.	07/29/14	Gross Alpha/Beta	Gross Alpha	4.65E-16	8.243E-15	1.736E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	3.498E-14	2.23E-14	2.798E-14	uCi/mL	J	T04	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166494	VP-57/VP-58	08/04/14	Gross Alpha/Beta	Gross Alpha	4.905E-15	6.445E-15	1.028E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	4.326E-14	2.093E-14	2.751E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166495	VP-57/VP-58	07/31/14	Gross Alpha/Beta	Gross Alpha	-2.409E-15	7.755E-15	2.248E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.937E-14	3.989E-14	6.017E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166496	VP-57/VP-58	08/04/14	Gross Alpha/Beta	Gross Alpha	3.504E-15	5.653E-15	9.721E-15	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	1.705E-14	1.797E-14	2.602E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
SVP166497	VP-57/VP-58	08/05/14	Gross Alpha/Beta	Gross Alpha	6.095E-15	8.009E-15	1.277E-14	uCi/mL	UJ	T06	IA-09 (Ballfields)(General Area)-Perimeter Air
				Gross Beta	6.04E-14	2.65E-14	3.418E-14	uCi/mL	=		IA-09 (Ballfields)(General Area)-Perimeter Air
SVP175166	VP-57/VP-58	08/05/14	Gross Alpha/Beta	Gross Alpha	8.72E-15	8.652E-15	1.067E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.416E-14	2.721E-14	3.301E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175167	VP-57/VP-58	08/06/14	Gross Alpha/Beta	Gross Alpha	1.371E-14	9.323E-15	9.209E-15	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.912E-14	2.421E-14	2.848E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175168	VP-57/VP-58	08/06/14	Gross Alpha/Beta	Gross Alpha	4.905E-15	6.395E-15	8.946E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.007E-14	2.301E-14	2.766E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175169	VP-57/VP-58	08/11/14	Gross Alpha/Beta	Gross Alpha	7.105E-15	7.05E-15	8.697E-15	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.45E-14	2.207E-14	2.689E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175170	VP-57/VP-58	08/11/14	Gross Alpha/Beta	Gross Alpha	4.769E-15	6.217E-15	8.697E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.49E-14	2.277E-14	2.689E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175171	VP-57/VP-58	08/12/14	Gross Alpha/Beta	Gross Alpha	-1.101E-15	3.453E-15	8.946E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.402E-14	2.191E-14	2.766E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175172	VP-57/VP-58	08/12/14	Gross Alpha/Beta	Gross Alpha	5.937E-15	6.646E-15	8.697E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	6.256E-15	2.007E-14	2.689E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175173	VP-57/VP-58	08/13/14	Gross Alpha/Beta	Gross Alpha	3.601E-15	5.758E-15	8.697E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.524E-14	2.212E-14	2.689E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175174	VP-57/VP-58	08/13/14	Gross Alpha/Beta	Gross Alpha	6.286E-15	7.037E-15	9.209E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	6.624E-15	2.125E-14	2.848E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175175	VP-57/VP-58	08/14/14	Gross Alpha/Beta	Gross Alpha	3.601E-15	5.758E-15	8.697E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-7.866E-15	1.9E-14	2.689E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175176	VP-57/VP-58	08/14/14	Gross Alpha/Beta	Gross Alpha	7.523E-15	7.464E-15	9.209E-15	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.866E-14	2.283E-14	2.848E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175177	VP-57/VP-58	08/18/14	Gross Alpha/Beta	Gross Alpha	1.88E-15	6.246E-15	1.176E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.2E-14	1.405E-14	1.867E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175178	VP-57/VP-58	08/18/14	Gross Alpha/Beta	Gross Alpha	7.33E-16	6.117E-15	1.245E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.894E-14	1.318E-14	1.977E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175179	VP-57/VP-58	08/19/14	Gross Alpha/Beta	Gross Alpha	-5.24E-16	5.576E-15	1.245E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.074E-14	1.453E-14	1.977E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175180	VP-57/VP-58	08/19/14	Gross Alpha/Beta	Gross Alpha	4.506E-15	7.509E-15	1.245E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.411E-14	1.593E-14	1.977E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175181	VP-57/VP-58	08/20/14	Gross Alpha/Beta	Gross Alpha	3.068E-15	6.683E-15	1.176E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.235E-14	1.297E-14	1.867E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175182	VP-57/VP-58	08/20/14	Gross Alpha/Beta	Gross Alpha	9.005E-15	8.536E-15	1.176E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.612E-14	1.549E-14	1.867E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175183	VP-57/VP-58	08/21/14	Gross Alpha/Beta	Gross Alpha	5.763E-15	7.919E-15	1.245E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.31E-14	1.479E-14	1.977E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175184	VP-57/VP-58	08/21/14	Gross Alpha/Beta	Gross Alpha	4.377E-15	7.295E-15	1.21E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.063E-14	1.42E-14	1.921E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175185	VP-57/VP-58	08/14/14	Gross Alpha/Beta	Gross Alpha	1.138E-15	6.475E-15	1.195E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-1.789E-15	1.154E-14	1.854E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175186	VP-57/VP-58	08/25/14	Gross Alpha/Beta	Gross Alpha	1.396E-14	1.049E-14	1.231E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.075E-14	1.678E-14	1.91E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175187	VP-57/VP-58	08/25/14	Gross Alpha/Beta	Gross Alpha	7.565E-15	8.787E-15	1.231E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.403E-14	1.709E-14	1.91E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175188	VP-57/VP-58	08/26/14	Gross Alpha/Beta	Gross Alpha	9.12E-15	9.438E-15	1.269E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.935E-14	1.601E-14	1.97E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175189	VP-57/VP-58	08/26/14	Gross Alpha/Beta	Gross Alpha	-4.14E-16	7.878E-15	1.405E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.445E-15	1.172E-14	1.972E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175190	VP-57/VP-58	08/26/14	Gross Alpha/Beta	Gross Alpha	8.27E-16	8.26E-15	1.405E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.65E-14	1.452E-14	1.972E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175191	VP-57/VP-58	08/26/14	Gross Alpha/Beta	Gross Alpha	8.27E-16	8.26E-15	1.405E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.65E-15	1.162E-14	1.972E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175192	VP-57/VP-58	08/27/14	Gross Alpha/Beta	Gross Alpha	-4.14E-16	7.878E-15	1.405E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	7.42E-15	1.225E-14	1.972E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175193	VP-57/VP-58	08/28/14	Gross Alpha/Beta	Gross Alpha	8.27E-16	8.26E-15	1.405E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.696E-14	1.344E-14	1.972E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175194	Pershall Road	08/28/14	Gross Alpha/Beta	Gross Alpha	4.991E-15	1.021E-14	1.541E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.342E-14	1.64E-14	2.163E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175195	VP-57/VP-58	09/03/14	Gross Alpha/Beta	Gross Alpha	5.906E-15	6.944E-15	1.047E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.669E-14	1.973E-14	2.706E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175196	VP-57/VP-58	09/02/14	Gross Alpha/Beta	Gross Alpha	4.705E-15	6.51E-15	1.047E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.051E-14	2.003E-14	2.706E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175197	VP-57/VP-58	09/04/14	Gross Alpha/Beta	Gross Alpha	1.134E-15	5.144E-15	1.078E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.19E-14	2.068E-14	2.786E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175198	VP-57/VP-58	09/03/14	Gross Alpha/Beta	Gross Alpha	3.607E-15	6.225E-15	1.078E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.403E-14	2.007E-14	2.786E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175199	VP-57/VP-58	09/04/14	Gross Alpha/Beta	Gross Alpha	1.303E-14	9.634E-15	1.146E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.829E-14	2.235E-14	2.96E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175200	Pershall Rd.	09/04/14	Gross Alpha/Beta	Gross Alpha	5.489E-15	7.595E-15	1.222E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.75E-14	2.364E-14	3.157E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175201	VP-57/VP-58	09/08/14	Gross Alpha/Beta	Gross Alpha	2.07E-16	6.687E-15	1.27E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.942E-14	1.438E-14	1.979E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175202	VP-57/VP-58	09/08/14	Gross Alpha/Beta	Gross Alpha	1.014E-14	9.697E-15	1.27E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.26E-14	1.473E-14	1.979E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175203	VP-57/VP-58	09/09/14	Gross Alpha/Beta	Gross Alpha	3.227E-15	9.063E-15	1.524E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.816E-14	1.758E-14	2.375E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175204	VP-57/VP-58	09/11/14	Gross Alpha/Beta	Gross Alpha	2.051E-15	1.011E-14	1.799E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.464E-14	1.712E-14	2.804E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175205	VP-57/VP-58	09/11/14	Gross Alpha/Beta	Gross Alpha	-2.763E-15	6.912E-15	1.542E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.545E-14	1.505E-14	2.404E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175206	Pershall Rd.	09/09/14	Gross Alpha/Beta	Gross Alpha	5.171E-15	8.329E-15	1.27E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	9.54E-15	1.198E-14	1.979E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175207	Pershall Rd.	09/08/14	Gross Alpha/Beta	Gross Alpha	1.496E-14	1.223E-14	1.506E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.243E-14	1.788E-14	2.348E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175208	VP-57/VP-58	09/16/14	Gross Alpha/Beta	Gross Alpha	5.946E-15	7.796E-15	1.141E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.52E-14	1.759E-14	2.828E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175209	VP-57/VP-58	09/15/14	Gross Alpha/Beta	Gross Alpha	-1.716E-15	4.701E-15	1.153E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.355E-14	1.852E-14	2.857E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175210	VP-57/VP-58	09/17/14	Gross Alpha/Beta	Gross Alpha	-4.33E-16	5.414E-15	1.165E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.793E-14	1.907E-14	2.886E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175211	VP-57/VP-58	09/18/14	Gross Alpha/Beta	Gross Alpha	-1.649E-15	4.517E-15	1.108E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.184E-14	1.772E-14	2.745E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175212	Pershall Road	09/15/14	Gross Alpha/Beta	Gross Alpha	2.503E-15	7.56E-15	1.345E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.034E-14	2.185E-14	3.333E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175213	Pershall Road	09/17/14	Gross Alpha/Beta	Gross Alpha	-4.67E-16	5.835E-15	1.256E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.386E-14	2E-14	3.11E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175214	VP-57/VP-58	09/22/14	Gross Alpha/Beta	Gross Alpha	2.97E-15	6.43E-15	1.129E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.01E-14	1.167E-14	1.879E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175215	VP-57/VP-58	09/24/14	Gross Alpha/Beta	Gross Alpha	7.591E-15	7.792E-15	1.087E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.564E-14	1.321E-14	1.808E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175216	VP-57/VP-58	09/25/14	Gross Alpha/Beta	Gross Alpha	7.33E-16	7.738E-15	1.615E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.684E-14	1.829E-14	2.687E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175217	VP-57/VP-58	09/25/14	Gross Alpha/Beta	Gross Alpha	1.993E-15	6.799E-15	1.292E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.355E-15	1.234E-14	2.15E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175218	Pershall Road	09/22/14	Gross Alpha/Beta	Gross Alpha	5.647E-15	7.605E-15	1.175E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.853E-14	1.437E-14	1.954E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175219	Pershall Road	09/23/14	Gross Alpha/Beta	Gross Alpha	8.55E-15	8.776E-15	1.224E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	5.833E-15	1.194E-14	2.037E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175220	VP-57/VP-58	09/29/14	Gross Alpha/Beta	Gross Alpha	5.764E-15	7.762E-15	1.199E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.163E-14	1.495E-14	1.995E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175221	VP-57/VP-58	09/30/14	Gross Alpha/Beta	Gross Alpha	5.12E-16	5.409E-15	1.129E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.766E-14	1.494E-14	1.879E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175222	VP-57/VP-58	10/01/14	Gross Alpha/Beta	Gross Alpha	2.038E-15	6.954E-15	1.322E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	5.974E-14	1.908E-14	2.199E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175223	Pershall Road	09/30/14	Gross Alpha/Beta	Gross Alpha	5.27E-16	5.571E-15	1.163E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.636E-14	1.513E-14	1.935E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175224	Pershall Road	10/01/14	Gross Alpha/Beta	Gross Alpha	1.888E-15	6.441E-15	1.224E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.144E-14	1.517E-14	2.037E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175225	VP57/VP-58	10/06/14	Gross Alpha/Beta	Gross Alpha	-6.21E-16	6.479E-15	1.332E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.153E-14	1.392E-14	1.926E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175226	VP57/VP-59	10/06/14	Gross Alpha/Beta	Gross Alpha	-2.02E-15	6.495E-15	1.446E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	8.195E-15	1.46E-14	2.09E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175227	VP57/VP-60	10/07/14	Gross Alpha/Beta	Gross Alpha	-1.666E-15	1.739E-14	3.577E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.241E-14	3.637E-14	5.17E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175228	VP57/VP-61	10/07/14	Gross Alpha/Beta	Gross Alpha	6.826E-15	8.886E-15	1.332E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.584E-14	1.547E-14	1.926E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175229	VP57/VP-62	10/08/14	Gross Alpha/Beta	Gross Alpha	-3.103E-15	5.446E-15	1.332E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.948E-14	1.48E-14	1.926E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175230	VP-57/VP-58	10/14/14	Gross Alpha/Beta	Gross Alpha	2.07E-16	5.254E-15	1.168E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-1.325E-15	1.561E-14	1.908E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175231	VP-57/VP-58	10/15/14	Gross Alpha/Beta	Gross Alpha	2.05E-16	5.203E-15	1.157E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	8.135E-15	1.639E-14	1.889E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175232	VP-57/VP-58	10/16/14	Gross Alpha/Beta	Gross Alpha	-7.032E-15	1.209E-14	3.61E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.014E-14	5.255E-14	5.897E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175233	VP-57/VP-58	10/21/14	Gross Alpha/Beta	Gross Alpha	6.33E-16	6.537E-15	1.262E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.622E-14	1.478E-14	1.99E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175234	VP-57/VP-58	10/21/14	Gross Alpha/Beta	Gross Alpha	-1.918E-15	1.826E-14	3.824E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.259E-14	4.053E-14	6.031E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175235	VP57/VP-58	10/22/14	Gross Alpha/Beta	Gross Alpha	5.754E-15	8.352E-15	1.275E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.42E-14	1.351E-14	2.01E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175236	VP-57/VP-58	10/22/14	Gross Alpha/Beta	Gross Alpha	-1.055E-14	1.616E-14	4.207E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.145E-14	4.392E-14	6.634E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175237	VP-57/VP-58	10/23/14	Gross Alpha/Beta	Gross Alpha	-1.937E-15	5.581E-15	1.288E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	6.895E-15	1.271E-14	2.031E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175238	VP-57/VP-58	10/27/14	Gross Alpha/Beta	Gross Alpha	5.618E-15	8.37E-15	1.417E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.554E-14	1.74E-14	2.131E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175239	VP-57/VP-58	10/27/14	Gross Alpha/Beta	Gross Alpha	-1.271E-14	7.26E-15	3.343E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.297E-14	3.387E-14	5.028E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175240	VP-57/VP-58	10/28/14	Gross Alpha/Beta	Gross Alpha	3.3E-16	1.813E-14	4.074E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-3.379E-15	3.373E-14	6.128E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175241	VP-57/VP-58	10/28/14	Gross Alpha/Beta	Gross Alpha	1.459E-15	6.733E-15	1.387E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.438E-14	1.362E-14	2.086E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175242	VP-57/VP-58	10/29/14	Gross Alpha/Beta	Gross Alpha	-3.846E-15	3.956E-15	1.358E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.746E-14	1.376E-14	2.043E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175243	VP-57/VP-58	10/30/14	Gross Alpha/Beta	Gross Alpha	-2.763E-15	1.243E-14	3.104E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-2.574E-15	2.57E-14	4.669E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175244	VP-57/VP-58	11/08/14	Gross Alpha/Beta	Gross Alpha	-1.445E-15	5.588E-15	1.349E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.325E-14	2.237E-14	3.564E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175245	VP-57/VP-58	11/06/14	Gross Alpha/Beta	Gross Alpha	1.06E-16	5.184E-15	1.09E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-3.108E-15	1.599E-14	2.88E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175246	VP-57/VP-58	11/07/14	Gross Alpha/Beta	Gross Alpha	4.61E-15	1.097E-14	1.893E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	8.684E-15	2.916E-14	5.002E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175247	VP-57/VP-58	11/05/14	Gross Alpha/Beta	Gross Alpha	7.751E-15	8.132E-15	1.09E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.757E-15	1.648E-14	2.88E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175248	Pershall Road	11/06/14	Gross Alpha/Beta	Gross Alpha	1.518E-15	6.355E-15	1.199E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.085E-14	1.898E-14	3.168E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175249	VP-57/VP-58	11/10/14	Gross Alpha/Beta	Gross Alpha	6.603E-15	9.238E-15	1.383E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.487E-14	2.304E-14	3.655E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175250	VP-57/VP-58	11/11/14	Gross Alpha/Beta	Gross Alpha	2.316E-15	9.694E-15	1.829E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	-1.134E-15	2.724E-14	4.833E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175251	VP-57/VP-58	11/20/14	Gross Alpha/Beta	Gross Alpha	5.538E-15	7.748E-15	1.16E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.985E-14	2.096E-14	3.066E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air
SVP175252	VP-57/VP-58	11/24/14	Gross Alpha/Beta	Gross Alpha	4.395E-15	9.984E-15	1.221E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.646E-14	1.607E-14	2.031E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175253	VP-57/VP-58	11/25/14	Gross Alpha/Beta	Gross Alpha	-2.281E-15	2.2E-14	3.169E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.447E-14	3.348E-14	5.27E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175254	VP-57/VP-58	11/26/14	Gross Alpha/Beta	Gross Alpha	4.22E-16	8.523E-15	1.173E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.068E-14	1.601E-14	1.95E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175255	VP-57/VP-58	11/20/14	Gross Alpha/Beta	Gross Alpha	3.836E-15	1.596E-14	2.55E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.427E-14	2.915E-14	4.125E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175256	VP-57/VP-58	12/03/14	Gross Alpha/Beta	Gross Alpha	1.862E-15	7.746E-15	1.237E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.968E-14	1.655E-14	2.002E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175257	VP-57/VP-58	12/04/14	Gross Alpha/Beta	Gross Alpha	-1.899E-15	6.573E-15	1.262E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3.399E-14	1.624E-14	2.042E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175258	VP-57/VP-58	12/08/14	Gross Alpha/Beta	Gross Alpha	5.754E-15	9.128E-15	1.275E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	4.416E-14	1.736E-14	2.063E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175259	VP-57/VP-58	12/09/14	Gross Alpha/Beta	Gross Alpha	5.977E-15	9.135E-15	1.536E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	6.157E-14	2.039E-14	2.259E-14	uCi/mL	=		North County Air (General Area Air)-Perimeter Air
SVP175260	VP-57/VP-58	12/10/14	Gross Alpha/Beta	Gross Alpha	5.633E-15	8.609E-15	1.447E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	3E-14	1.653E-14	2.129E-14	uCi/mL	J	T04	North County Air (General Area Air)-Perimeter Air

Table B-2. SLAPS Perimeter Air Data Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
SVP175261	VP-57/VP-58	12/11/14	Gross Alpha/Beta	Gross Alpha	1.615E-15	7.097E-15	1.41E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.517E-14	1.459E-14	2.075E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175262	VP-57/VP-58	12/15/14	Gross Alpha/Beta	Gross Alpha	1.201E-15	5.845E-15	8.254E-15	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.625E-14	1.587E-14	2.288E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175263	VP-57/VP-58	12/16/14	Gross Alpha/Beta	Gross Alpha	2.473E-15	6.263E-15	1.068E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.164E-14	1.755E-14	2.631E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175264	VP-57/VP-58	12/17/14	Gross Alpha/Beta	Gross Alpha	1.314E-15	6.112E-15	1.135E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	2.383E-14	1.873E-14	2.795E-14	uCi/mL	U	T04, T05	North County Air (General Area Air)-Perimeter Air
SVP175265	VP-57/VP-58	12/23/14	Gross Alpha/Beta	Gross Alpha	5.799E-15	8.417E-15	1.252E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.615E-14	1.973E-14	3.084E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
SVP175266	VP-57/VP-58	12/24/14	Gross Alpha/Beta	Gross Alpha	-2.102E-14	3.265E-14	9.079E-14	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air
				Gross Beta	1.104E-13	1.424E-13	2.236E-13	uCi/mL	UJ	T06	North County Air (General Area Air)-Perimeter Air

Table B-3. NC Sites External Gamma Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS167398	BA-1	04/09/14	Radiological	External gamma radiation	19.5	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS167399	BA-1	07/01/14	Radiological	External gamma radiation	18.7	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS167400	BA-1	10/07/14	Radiological	External gamma radiation	20.3	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
HIS178371	BA-1	01/08/15	Radiological	External gamma radiation	21.8	0	0.1	mrem	J	Y01	HISS Air (TLDs)-Environmental Monitoring
SLA167405	PA-1	04/09/14	Radiological	External gamma radiation	18.4	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167409	PA-1	07/01/14	Radiological	External gamma radiation	17.6	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167413	PA-1	10/07/14	Radiological	External gamma radiation	20.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178385	PA-1	01/08/15	Radiological	External gamma radiation	21.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167406	PA-2	04/09/14	Radiological	External gamma radiation	21.6	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167410	PA-2	07/01/14	Radiological	External gamma radiation	22.4	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167414	PA-2	10/07/14	Radiological	External gamma radiation	24.7	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178386	PA-2	01/08/15	Radiological	External gamma radiation	23.8	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167406-1	PA-2dup	04/09/14	Radiological	External gamma radiation	21.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167410-1	PA-2dup	07/01/14	Radiological	External gamma radiation	22.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167414-1	PA-2dup	10/07/14	Radiological	External gamma radiation	24.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178386-1	PA-2dup	01/08/15	Radiological	External gamma radiation	24.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167407	PA-3	04/09/14	Radiological	External gamma radiation	19.7	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167411	PA-3	07/01/14	Radiological	External gamma radiation	19.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167415	PA-3	10/07/14	Radiological	External gamma radiation	20.9	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178387	PA-3	01/08/15	Radiological	External gamma radiation	21.2	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167408	PA-4	04/09/14	Radiological	External gamma radiation	20.5	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167412	PA-4	07/01/14	Radiological	External gamma radiation	20.1	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA167416	PA-4	10/07/14	Radiological	External gamma radiation	22.5	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring
SLA178388	PA-4	01/08/15	Radiological	External gamma radiation	27.7	0	0.1	mrem	J	Y01	SLAPS Air (TLDs)-Environmental Monitoring

Table B-4. NC Sites Radon-222 Results for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Sampling Event Name
HIS178375	BA-1	01/08/15	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167336	BA-1	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178429	HF-1	01/08/15	Radiological	Radon-222	1.4	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167337	HF-1	07/01/14	Radiological	Radon-222	1.2	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178430	HF-2	01/08/15	Radiological	Radon-222	4.6	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167338	HF-2	07/01/14	Radiological	Radon-222	4.1	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178431	HF-3	01/08/15	Radiological	Radon-222	0.4	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167339	HF-3	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178432	HF-4	01/08/15	Radiological	Radon-222	0.9	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167340	HF-4	07/01/14	Radiological	Radon-222	0.7	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178433	HF-5	01/08/15	Radiological	Radon-222	0.5	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167341	HF-5	07/01/14	Radiological	Radon-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178434	HF-6	01/08/15	Radiological	Radon-222	0.6	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167342	HF-6	07/01/14	Radiological	Radon-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178435	HF-7	01/08/15	Radiological	Radon-222	0.9	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167343	HF-7	07/01/14	Radiological	Radon-222	0.7	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178436	HF-8	01/08/15	Radiological	Radon-222	0.7	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167344	HF-8	07/01/14	Radiological	Radon-222	0.4	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178437	HF-9	01/08/15	Radiological	Radon-222	0.8	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167345	HF-9	07/01/14	Radiological	Radon-222	0.3	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
HIS178438	HF-10	01/08/15	Radiological	Radon-222	0.7	0	0.2	pCi/L	J	Y01	HISS Air (Alpha Tracks)-Environmental Monitoring
HIS167346	HF-10	07/01/14	Radiological	Radon-222	0.3	0	0.2	pCi/L	J	Y01	HISS/Futura (Alpha Tracks)-Environmental Monitoring
SLA167373	PA-1	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA167374	PA-2	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178378	PA-2	01/08/15	Radiological	Radon-222	0.2	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA167374-1	PA-2 dup	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA167375	PA-3	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178379	PA-3	01/08/15	Radiological	Radon-222	0.2	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA167376	PA-4	07/01/14	Radiological	Radon-222	0.2	0	0.2	pCi/L	UJ	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring
SLA178380	PA-4	01/08/15	Radiological	Radon-222	0.3	0	0.2	pCi/L	J	Y01	SLAPS Air (Alpha Tracks)-Environmental Monitoring

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APPENDIX C

STORM-WATER, WASTE-WATER AND EXCAVATION-WATER DATA

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Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP130898	NPDES Outfall 002	03/12/14	ML-003	Actinium-227	1.46	6.08	5.52	pCi/L	UJ	T04, T06
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1016	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1221	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1232	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1242	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1248	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1254	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 8082	Aroclor-1260	1.2		1.2	µg/L	UJ	T03
SVP130898	NPDES Outfall 002	03/12/14	SW846 6020	Arsenic	2.7		1.2	µg/L	=	
SVP130898	NPDES Outfall 002	03/12/14	SW846 6020	Cadmium	0.1		0.1	µg/L	U	
SVP130898	NPDES Outfall 002	03/12/14	EPA 410.4	COD	69		20	mg/L	J	H01
SVP130898	NPDES Outfall 002	03/12/14	SW846 6020	Chromium	3.3		3.3	µg/L	U	
SVP130898	NPDES Outfall 002	03/12/14	ML-018	Gross Alpha	-1.92	5.51	10.3	pCi/L	UJ	T06
SVP130898	NPDES Outfall 002	03/12/14	ML-018	Gross Beta	3.21	7.07	11.8	pCi/L	UJ	T06
SVP130898	NPDES Outfall 002	03/12/14	EPA 1664	Oil and Grease	6.2		6.2	mg/L	U	
SVP130898	NPDES Outfall 002	03/12/14	ML-024	pH	7.31		0.1	No Units	J	A03
SVP130898	NPDES Outfall 002	03/12/14	SW846 9040C	pH	7.19		0.1	No Units	J	A03
SVP130898	NPDES Outfall 002	03/12/14	ML-003	Protactinium-231	18.9	22.2	24.3	pCi/L	UJ	T04, T06
SVP130898	NPDES Outfall 002	03/12/14	ML-006	Radium-226	0.236	0.472	0.64	pCi/L	UJ	T06
SVP130898	NPDES Outfall 002	03/12/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	UJ	A04, T03
SVP130898	NPDES Outfall 002	03/12/14	ML-005	Thorium-228	0.412	0.347	0.38	pCi/L	J	T04
SVP130898	NPDES Outfall 002	03/12/14	ML-005	Thorium-230	0.571	0.391	0.172	pCi/L	J	T04
SVP130898	NPDES Outfall 002	03/12/14	ML-005	Thorium-232	0.19	0.221	0.172	pCi/L	UJ	T02
SVP130898	NPDES Outfall 002	03/12/14	ML-021	Total Uranium	-0.302	0.0275	2.45	pCi/L	UJ	T06
SVP130898	NPDES Outfall 002	03/12/14	EPA 1664	Total Recoverable Petroleum Hydrocarbons (TRPH)	7.5		7.5	mg/L	UJ	H03
SVP130899	NPDES Outfall 002	04/02/14	ML-003	Actinium-227	-1.33	7.06	6.8	pCi/L	UJ	T04, T06
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1016	1		1	µg/L	UJ	H04
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1221	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1232	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1242	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1248	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1254	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 8082	Aroclor-1260	1		1	µg/L	U	
SVP130899	NPDES Outfall 002	04/02/14	SW846 6020	Arsenic	12		1.2	µg/L	=	

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP130899	NPDES Outfall 002	04/02/14	SW846 6020	Cadmium	0.28		0.1	µg/L	=	
SVP130899	NPDES Outfall 002	04/02/14	SW846 6020	Chromium	28		3.3	µg/L	=	
SVP130899	NPDES Outfall 002	04/02/14	ML-018	Gross Alpha	1.6	5.24	9.16	pCi/L	UJ	T06
SVP130899	NPDES Outfall 002	04/02/14	ML-018	Gross Beta	16.3	7.69	11.9	pCi/L	J	F01
SVP130899	NPDES Outfall 002	04/02/14	EPA 1664	Oil and Grease	4.4		10	mg/L	=	
SVP130899	NPDES Outfall 002	04/02/14	SW846 9040C	pH	7.37		0.1	No Units	=	
SVP130899	NPDES Outfall 002	04/02/14	ML-024	pH	7.29		0.1	No Units	J	A03
SVP130899	NPDES Outfall 002	04/02/14	ML-003	Protactinium-231	-10.4	30.2	28.6	pCi/L	UJ	T04, T06
SVP130899	NPDES Outfall 002	04/02/14	ML-006	Radium-226	-9E-05	1.08	2.74	pCi/L	UJ	T06
SVP130899	NPDES Outfall 002	04/02/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	UJ	A03
SVP130899	NPDES Outfall 002	04/02/14	ML-005	Thorium-228	1.15	0.572	0.444	pCi/L	=	
SVP130899	NPDES Outfall 002	04/02/14	ML-005	Thorium-230	1.84	0.729	0.362	pCi/L	J	F01
SVP130899	NPDES Outfall 002	04/02/14	ML-005	Thorium-232	1.06	0.539	0.362	pCi/L	J	T04
SVP130899	NPDES Outfall 002	04/02/14	ML-021	Total Uranium	-0.177	0.0162	2.45	pCi/L	UJ	T06
SVP130899	NPDES Outfall 002	04/02/14	EPA 1664	TRPH	12		12	mg/L	U	
SVP130900	NPDES Outfall 002	04/03/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	U	
SVP130900	NPDES Outfall 002	04/03/14	ML-021	Total Uranium	-0.33	0.0301	2.45	pCi/L	UJ	T06
SVP130901	NPDES Outfall 002	04/04/14	ML-003	Actinium-227	-2.26	6.82	6.07	pCi/L	UJ	T04, T06
SVP130901	NPDES Outfall 002	04/04/14	ML-018	Gross Alpha	3.52	5.47	9.16	pCi/L	UJ	T06
SVP130901	NPDES Outfall 002	04/04/14	ML-018	Gross Beta	0.641	6.98	11.9	pCi/L	UJ	T06
SVP130901	NPDES Outfall 002	04/04/14	ML-024	pH	7.78		0.1	No Units	J	A04
SVP130901	NPDES Outfall 002	04/04/14	ML-003	Protactinium-231	8.41	29.5	29.3	pCi/L	UJ	T04, T06
SVP130901	NPDES Outfall 002	04/04/14	ML-006	Radium-226	0.787	0.91	0.711	pCi/L	UJ	T02
SVP130901	NPDES Outfall 002	04/04/14	EPA 160.5	SS	0		0.1	mL/L/hr	UJ	A03
SVP130901	NPDES Outfall 002	04/04/14	ML-005	Thorium-228	0.248	0.251	0.168	pCi/L	UJ	T02
SVP130901	NPDES Outfall 002	04/04/14	ML-005	Thorium-230	1.12	0.553	0.168	pCi/L	J	F01
SVP130901	NPDES Outfall 002	04/04/14	ML-005	Thorium-232	0.341	0.314	0.372	pCi/L	U	T04, T05
SVP130901	NPDES Outfall 002	04/04/14	ML-021	Total Uranium	-0.261	0.0238	2.45	pCi/L	UJ	T06
SVP130902	NPDES Outfall 002	04/07/14	ML-003	Actinium-227	-1.94	7.09	6.43	pCi/L	UJ	T04, T06
SVP130902	NPDES Outfall 002	04/07/14	ML-018	Gross Alpha	-0.96	4.92	9.16	pCi/L	UJ	T06
SVP130902	NPDES Outfall 002	04/07/14	ML-018	Gross Beta	7.37	7.29	11.9	pCi/L	U	T04, T05
SVP130902	NPDES Outfall 002	04/07/14	ML-024	pH	7.84		0.1	No Units	=	
SVP130902	NPDES Outfall 002	04/07/14	ML-003	Protactinium-231	42.4	34.9	28.3	pCi/L	UJ	T04
SVP130902	NPDES Outfall 002	04/07/14	ML-006	Radium-226	1.16	1.36	2.14	pCi/L	UJ	T06
SVP130902	NPDES Outfall 002	04/07/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	U	

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP130902	NPDES Outfall 002	04/07/14	ML-005	Thorium-228	0.262	0.337	0.587	pCi/L	UJ	T06
SVP130902	NPDES Outfall 002	04/07/14	ML-005	Thorium-230	1.05	0.519	0.158	pCi/L	J	F01
SVP130902	NPDES Outfall 002	04/07/14	ML-005	Thorium-232	0.379	0.319	0.349	pCi/L	J	T04
SVP130902	NPDES Outfall 002	04/07/14	ML-021	Total Uranium	-0.367	0.0335	2.45	pCi/L	UJ	T06
SVP130903	NPDES Outfall 002	04/28/14	ML-003	Actinium-227	6.18	8.22	6.99	pCi/L	UJ	T04, T06
SVP130903	NPDES Outfall 002	04/28/14	ML-018	Gross Alpha	-7.04	11.4	21.7	pCi/L	UJ	T06
SVP130903	NPDES Outfall 002	04/28/14	ML-018	Gross Beta	1.6	14.4	24.4	pCi/L	UJ	T06
SVP130903	NPDES Outfall 002	04/28/14	ML-003	Protactinium-231	-47.2	29.9	33.2	pCi/L	UJ	T04, T06
SVP130903	NPDES Outfall 002	04/28/14	ML-006	Radium-226	0.105	0.47	1.26	pCi/L	UJ	T06
SVP130903	NPDES Outfall 002	04/28/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	U	
SVP130903	NPDES Outfall 002	04/28/14	ML-005	Thorium-228	0.811	0.435	0.147	pCi/L	J	F01, T04
SVP130903	NPDES Outfall 002	04/28/14	ML-005	Thorium-230	0.596	0.393	0.399	pCi/L	J	F01, T04
SVP130903	NPDES Outfall 002	04/28/14	ML-005	Thorium-232	0.378	0.291	0.147	pCi/L	J	T04
SVP130903	NPDES Outfall 002	04/28/14	ML-021	Total Uranium	-0.014	0.00127	2.45	pCi/L	UJ	T06
SVP174496	VP-57/VP-58	07/15/14	ML-003	Actinium-227	2.46	5.69	4.73	pCi/L	UJ	T04, T06
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1016	0.25		0.25	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1221	0.25		0.25	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1232	0.25		0.25	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1242	0.25		0.25	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1248	0.25		0.25	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1254	0.17		0.17	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 8082	Aroclor-1260	0.17		0.17	µg/L	U	
SVP174496	VP-57/VP-58	07/15/14	SW846 6020	Arsenic	2.8		1.2	µg/L	=	
SVP174496	VP-57/VP-58	07/15/14	SW846 6020	Cadmium	0.25		0.1	µg/L	=	
SVP174496	VP-57/VP-58	07/15/14	SW846 6020	Chromium	8.2		1	µg/L	J	D02
SVP174496	VP-57/VP-58	07/15/14	ML-018	Gross Alpha	3.52	5.47	9.16	pCi/L	UJ	T06
SVP174496	VP-57/VP-58	07/15/14	ML-018	Gross Beta	7.21	7.06	11.5	pCi/L	U	T04, T05
SVP174496	VP-57/VP-58	07/15/14	EPA 1664	Oil and Grease	1.9		1.9	mg/L	UJ	A05
SVP174496	VP-57/VP-58	07/15/14	SW846 9040C	pH	7.43		0.1	No Units	=	
SVP174496	VP-57/VP-58	07/15/14	ML-024	pH	8.03		0.1	No Units	=	
SVP174496	VP-57/VP-58	07/15/14	ML-003	Protactinium-231	0.652	22.1	23.2	pCi/L	UJ	T04, T06
SVP174496	VP-57/VP-58	07/15/14	ML-006	Radium-226	1.74	1.44	1.6	pCi/L	J	T04
SVP174496	VP-57/VP-58	07/15/14	EPA 160.5	SS	0.01		0.1	mL/L/hr	U	
SVP174496	VP-57/VP-58	07/15/14	ML-005	Thorium-228	0.423	0.358	0.445	pCi/L	U	T04, T05
SVP174496	VP-57/VP-58	07/15/14	ML-005	Thorium-230	1.24	0.588	0.363	pCi/L	J	F01

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP174496	VP-57/VP-58	07/15/14	ML-005	Thorium-232	0.0604	0.121	0.164	pCi/L	UJ	T06
SVP174496	VP-57/VP-58	07/15/14	ML-021	Total Uranium	0.247	0.0225	2.45	pCi/L	U	T04, T05
SVP174496	VP-57/VP-58	07/15/14	EPA 1664	TRPH	3.3		3.3	mg/L	UJ	A05
SVP174497	SVP174497	07/16/14	ML-003	Actinium-227	1.73	5.29	4.64	pCi/L	UJ	T04, T06
SVP174497	SVP174497	07/16/14	ML-018	Gross Alpha	6.4	6.78	11	pCi/L	UJ	T06
SVP174497	SVP174497	07/16/14	ML-018	Gross Beta	1.12	7	11.9	pCi/L	UJ	T06
SVP174497	SVP174497	07/16/14	ML-024	pH	7.41		0.1	No Units	=	
SVP174497	SVP174497	07/16/14	ML-003	Protactinium-231	7.11	20.9	19.9	pCi/L	UJ	T04, T06
SVP174497	SVP174497	07/16/14	ML-006	Radium-226	0.921	0.922	0.624	pCi/L	UJ	T02
SVP174497	SVP174497	07/16/14	EPA 160.5	SS	0.01		0.1	mL/L/hr	U	
SVP174497	SVP174497	07/16/14	ML-005	Thorium-228	0.134	0.252	0.493	pCi/L	UJ	T06
SVP174497	SVP174497	07/16/14	ML-005	Thorium-230	0.571	0.418	0.403	pCi/L	J	F01, T04
SVP174497	SVP174497	07/16/14	ML-005	Thorium-232	0	0	0.182	pCi/L	U	
SVP174497	SVP174497	07/16/14	ML-021	Total Uranium	0.91	0.083	0.489	pCi/L	=	
SVP174498	VP-57/VP-58	08/06/14	ML-003	Actinium-227	-6.48	7.39	6.45	pCi/L	UJ	T04, T06
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1016	0.23		0.23	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1221	0.23		0.23	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1232	0.23		0.23	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1242	0.23		0.23	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1248	0.23		0.23	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1254	0.16		0.16	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 8082	Aroclor-1260	0.16		0.16	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 6020	Arsenic	15		1.2	µg/L	=	
SVP174498	VP-57/VP-58	08/06/14	SW846 6020	Cadmium	0.1		0.1	µg/L	U	
SVP174498	VP-57/VP-58	08/06/14	SW846 6020	Chromium	2		1	µg/L	=	
SVP174498	VP-57/VP-58	08/06/14	ML-018	Gross Alpha	-4.8	6.18	11.8	pCi/L	UJ	T06
SVP174498	VP-57/VP-58	08/06/14	ML-018	Gross Beta	0.16	7.47	12.7	pCi/L	UJ	T06
SVP174498	VP-57/VP-58	08/06/14	EPA 1664	Oil and Grease	3.8		2.9	mg/L	=	
SVP174498	VP-57/VP-58	08/06/14	SW846 9040C	pH	7.31		0.1	No Units	=	
SVP174498	VP-57/VP-58	08/06/14	ML-024	pH	7.52		0.1	No Units	=	
SVP174498	VP-57/VP-58	08/06/14	ML-003	Protactinium-231	8.96	28.8	27.7	pCi/L	UJ	T04, T06
SVP174498	VP-57/VP-58	08/06/14	ML-006	Radium-226	1.08	1.43	2.5	pCi/L	UJ	T06
SVP174498	VP-57/VP-58	08/06/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	U	
SVP174498	VP-57/VP-58	08/06/14	ML-005	Thorium-228	0.353	0.359	0.239	pCi/L	UJ	T02
SVP174498	VP-57/VP-58	08/06/14	ML-005	Thorium-230	0.398	0.411	0.53	pCi/L	UJ	T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP174498	VP-57/VP-58	08/06/14	ML-005	Thorium-232	0.176	0.251	0.239	pCi/L	UJ	T06
SVP174498	VP-57/VP-58	08/06/14	ML-021	Total Uranium	1.15	0.105	2.45	pCi/L	U	T04, T05
SVP174498	VP-57/VP-58	08/06/14	EPA 1664	TRPH	2.8		2.8	mg/L	U	
SVP174499	VP-57/VP-58	08/11/14	ML-003	Actinium-227	3.19	6.46	5.94	pCi/L	UJ	T04, T06
SVP174499	VP-57/VP-58	08/11/14	ML-018	Gross Alpha	-4.8	5.84	11.3	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	ML-018	Gross Beta	1.44	6.99	11.8	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	ML-003	Protactinium-231	-4.7	29.3	27	pCi/L	UJ	T04, T06
SVP174499	VP-57/VP-58	08/11/14	ML-006	Radium-226	0.688	1.2	2.31	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	EPA 160.5	SS	0.01		0.1	mL/L/hr	U	
SVP174499	VP-57/VP-58	08/11/14	ML-005	Thorium-228	0.224	0.266	0.384	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	ML-005	Thorium-230	0.128	0.287	0.595	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	ML-005	Thorium-232	0.0639	0.128	0.173	pCi/L	UJ	T06
SVP174499	VP-57/VP-58	08/11/14	ML-021	Total Uranium	0.584	0.0533	2.45	pCi/L	U	T04, T05
SVP174500	VP-57/VP-58	08/12/14	EPA 160.5	SS	0.01		0.1	mL/L/hr	U	
SVP174500	VP-57/VP-58	08/12/14	ML-021	Total Uranium	0.667	0.0608	2.45	pCi/L	U	T04, T05
SVP174501	VP-57/VP-58	08/13/14	ML-003	Actinium-227	6.03	5.4	4.77	pCi/L	UJ	T04
SVP174501	VP-57/VP-58	08/13/14	ML-018	Gross Alpha	4.16	6.75	11.3	pCi/L	UJ	T06
SVP174501	VP-57/VP-58	08/13/14	ML-018	Gross Beta	3.53	7.08	11.8	pCi/L	UJ	T06
SVP174501	VP-57/VP-58	08/13/14	ML-003	Protactinium-231	-9.24	19.3	18.6	pCi/L	UJ	T04, T06
SVP174501	VP-57/VP-58	08/13/14	ML-006	Radium-226	0.146	0.965	2.45	pCi/L	UJ	T06
SVP174501	VP-57/VP-58	08/13/14	EPA 160.5	SS	0.3		0.1	mL/L/hr	=	
SVP174501	VP-57/VP-58	08/13/14	ML-005	Thorium-228	0.414	0.344	0.187	pCi/L	J	F01, T04
SVP174501	VP-57/VP-58	08/13/14	ML-005	Thorium-230	3.07	1.06	0.414	pCi/L	=	
SVP174501	VP-57/VP-58	08/13/14	ML-005	Thorium-232	0.207	0.241	0.187	pCi/L	UJ	T02
SVP174501	VP-57/VP-58	08/13/14	ML-021	Total Uranium	1.88	0.171	2.45	pCi/L	U	T04, T05
SVP174502	VP-57/VP-58	08/18/14	ML-003	Actinium-227	-4.77	6.53	5.42	pCi/L	UJ	T04, T06
SVP174502	VP-57/VP-58	08/18/14	ML-018	Gross Alpha	-0.64	6.27	11.3	pCi/L	UJ	T06
SVP174502	VP-57/VP-58	08/18/14	ML-018	Gross Beta	1.76	7	11.8	pCi/L	UJ	T06
SVP174502	VP-57/VP-58	08/18/14	ML-003	Protactinium-231	6.51	26.2	24.5	pCi/L	UJ	T04, T06
SVP174502	VP-57/VP-58	08/18/14	ML-006	Radium-226	0.374	0.966	2.1	pCi/L	UJ	T06
SVP174502	VP-57/VP-58	08/18/14	EPA 160.5	SS	0.01		0.1	mL/L/hr	U	
SVP174502	VP-57/VP-58	08/18/14	ML-005	Thorium-228	0.125	0.325	0.703	pCi/L	UJ	T06
SVP174502	VP-57/VP-58	08/18/14	ML-005	Thorium-230	0.0418	0.278	0.704	pCi/L	UJ	T06
SVP174502	VP-57/VP-58	08/18/14	ML-005	Thorium-232	0	0	0.226	pCi/L	U	
SVP174502	VP-57/VP-58	08/18/14	ML-021	Total Uranium	1.37	0.125	2.45	pCi/L	U	T04, T05

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP174503	VP-57/VP-58	08/19/14	ML-003	Actinium-227	0.669	7.44	5.94	pCi/L	UJ	T04, T06
SVP174503	VP-57/VP-58	08/19/14	ML-018	Gross Alpha	-2.24	6.11	11.3	pCi/L	UJ	T06
SVP174503	VP-57/VP-58	08/19/14	ML-018	Gross Beta	4.49	7.13	11.8	pCi/L	UJ	T06
SVP174503	VP-57/VP-58	08/19/14	ML-003	Protactinium-231	6.34	29.7	27.8	pCi/L	UJ	T04, T06
SVP174503	VP-57/VP-58	08/19/14	ML-006	Radium-226	2E-05	0.584	1.75	pCi/L	UJ	T06
SVP174503	VP-57/VP-58	08/19/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	U	
SVP174503	VP-57/VP-58	08/19/14	ML-005	Thorium-228	0.451	0.467	0.601	pCi/L	UJ	T06
SVP174503	VP-57/VP-58	08/19/14	ML-005	Thorium-230	0.402	0.408	0.272	pCi/L	UJ	T02
SVP174503	VP-57/VP-58	08/19/14	ML-005	Thorium-232	0.0501	0.224	0.601	pCi/L	UJ	T06
SVP174503	VP-57/VP-58	08/19/14	ML-021	Total Uranium	1.45	0.132	2.45	pCi/L	U	T04, T05
SVP175666	VP-57/VP-58	09/02/14	ML-003	Actinium-227	-7.12	20.2	17.3	pCi/L	UJ	T04, T06
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1016	0.27		0.27	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1221	0.27		0.27	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1232	0.27		0.27	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1242	0.27		0.27	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1248	0.27		0.27	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1254	0.19		0.19	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 8082	Aroclor-1260	0.19		0.19	µg/L	U	
SVP175666	VP-57/VP-58	09/02/14	SW846 6020	Arsenic	3.8		1.2	µg/L	=	
SVP175666	VP-57/VP-58	09/02/14	SW846 6020	Cadmium	0.13		0.1	µg/L	=	
SVP175666	VP-57/VP-58	09/02/14	SW846 6020	Chromium	2.9		1	µg/L	=	
SVP175666	VP-57/VP-58	09/02/14	ML-018	Gross Alpha	6.52	5.84	9.2	pCi/L	U	T04, T05
SVP175666	VP-57/VP-58	09/02/14	ML-018	Gross Beta	4.11	8.03	13.4	pCi/L	UJ	T06
SVP175666	VP-57/VP-58	09/02/14	EPA 1664	Oil and Grease	2.4		1.9	mg/L	J	F01
SVP175666	VP-57/VP-58	09/02/14	SW846 9040C	pH	7.41		0.1	No Units	J	A04
SVP175666	VP-57/VP-58	09/02/14	ML-024	pH	7.36		0.1	No Units	=	
SVP175666	VP-57/VP-58	09/02/14	ML-003	Protactinium-231	-17.3	83	74.6	pCi/L	UJ	T04, T06
SVP175666	VP-57/VP-58	09/02/14	ML-006	Radium-226	0.57	0.822	1.37	pCi/L	UJ	T06
SVP175666	VP-57/VP-58	09/02/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175666	VP-57/VP-58	09/02/14	ML-005	Thorium-228	0.0956	0.192	0.382	pCi/L	UJ	T06
SVP175666	VP-57/VP-58	09/02/14	ML-005	Thorium-230	0.319	0.329	0.47	pCi/L	UJ	T06
SVP175666	VP-57/VP-58	09/02/14	ML-005	Thorium-232	0.0319	0.143	0.382	pCi/L	UJ	T06
SVP175666	VP-57/VP-58	09/02/14	ML-021	Total Uranium	1.14	0.104	1.47	pCi/L	U	T04, T05
SVP175666	VP-57/VP-58	09/02/14	EPA 1664	TRPH	3.3		3.3	mg/L	U	
SVP175667	VP-57/VP-58	09/03/14	EPA 160.5	SS	0.05		0.1	mL/L/hr	U	

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175667	VP-57/VP-58	09/03/14	ML-021	Total Uranium	0.264	0.0241	2.45	pCi/L	U	T04, T05
SVP175668	VP-57/VP-58	09/04/14	ML-003	Actinium-227	-5.01	6.43	4.84	pCi/L	UJ	T04, T06
SVP175668	VP-57/VP-58	09/04/14	ML-018	Gross Alpha	5.55	5.73	9.2	pCi/L	UJ	T06
SVP175668	VP-57/VP-58	09/04/14	ML-018	Gross Beta	2.05	7.93	13.4	pCi/L	UJ	T06
SVP175668	VP-57/VP-58	09/04/14	ML-003	Protactinium-231	-4.32	20.4	20.2	pCi/L	UJ	T04, T06
SVP175668	VP-57/VP-58	09/04/14	ML-006	Radium-226	-1E-05	0.863	2.31	pCi/L	UJ	T06
SVP175668	VP-57/VP-58	09/04/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175668	VP-57/VP-58	09/04/14	ML-005	Thorium-228	0.166	0.311	0.61	pCi/L	UJ	T06
SVP175668	VP-57/VP-58	09/04/14	ML-005	Thorium-230	0.29	0.346	0.498	pCi/L	UJ	T06
SVP175668	VP-57/VP-58	09/04/14	ML-005	Thorium-232	0	0	0.224	pCi/L	U	
SVP175668	VP-57/VP-58	09/04/14	ML-021	Total Uranium	1.63	0.148	2.45	pCi/L	U	T04, T05
SVP175669	VP-57/VP-58	09/11/14	ML-003	Actinium-227	0.744	5.16	4.57	pCi/L	UJ	T04, T06
SVP175669	VP-57/VP-58	09/11/14	ML-018	Gross Alpha	3.91	5.54	9.2	pCi/L	UJ	T06
SVP175669	VP-57/VP-58	09/11/14	ML-018	Gross Beta	5.98	8.13	13.4	pCi/L	UJ	T06
SVP175669	VP-57/VP-58	09/11/14	ML-003	Protactinium-231	-5.09	20.6	23.4	pCi/L	UJ	T04, T06
SVP175669	VP-57/VP-58	09/11/14	ML-006	Radium-226	0.551	0.796	1.32	pCi/L	UJ	T06
SVP175669	VP-57/VP-58	09/11/14	EPA 160.5	SS	0.05		0.1	mL/L/hr	U	
SVP175669	VP-57/VP-58	09/11/14	ML-005	Thorium-228	0.355	0.327	0.387	pCi/L	U	T04, T05
SVP175669	VP-57/VP-58	09/11/14	ML-005	Thorium-230	2.26	0.846	0.175	pCi/L	J	F01
SVP175669	VP-57/VP-58	09/11/14	ML-005	Thorium-232	0.258	0.261	0.175	pCi/L	UJ	T02
SVP175669	VP-57/VP-58	09/11/14	ML-021	Total Uranium	1.28	0.117	2.45	pCi/L	U	T04, T05
SVP175670	VP-57/VP-58	09/15/14	ML-003	Actinium-227	2.68	5.42	5.36	pCi/L	UJ	T04, T06
SVP175670	VP-57/VP-58	09/15/14	ML-018	Gross Alpha	5.55	5.73	9.2	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	ML-018	Gross Beta	1.31	7.9	13.4	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	ML-003	Protactinium-231	14.4	21	20.1	pCi/L	UJ	T04, T06
SVP175670	VP-57/VP-58	09/15/14	ML-006	Radium-226	-0.255	1.3	3.34	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	EPA 160.5	SS	0.05		0.1	mL/L/hr	U	
SVP175670	VP-57/VP-58	09/15/14	ML-005	Thorium-228	0.328	0.468	0.805	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	ML-005	Thorium-230	0.274	0.398	0.656	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	ML-005	Thorium-232	0.109	0.22	0.296	pCi/L	UJ	T06
SVP175670	VP-57/VP-58	09/15/14	ML-021	Total Uranium	3.03	0.277	2.45	pCi/L	=	
SVP175672	VP-57/VP-58	09/22/14	ML-003	Actinium-227	-1.76	5.69	4.76	pCi/L	UJ	T04, T06
SVP175672	VP-57/VP-58	09/22/14	ML-018	Gross Alpha	-1.3	5.98	11	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	ML-018	Gross Beta	3.92	7.94	13.2	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	ML-003	Protactinium-231	-2.6	20.3	21.9	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175672	VP-57/VP-58	09/22/14	ML-006	Radium-226	-0.12	0.17	0.882	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	EPA 160.5	SS	0.05		0.1	mL/L/hr	U	
SVP175672	VP-57/VP-58	09/22/14	ML-005	Thorium-228	0.248	0.257	0.331	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	ML-005	Thorium-230	0.111	0.158	0.15	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	ML-005	Thorium-232	0.0276	0.123	0.331	pCi/L	UJ	T06
SVP175672	VP-57/VP-58	09/22/14	ML-021	Total Uranium	1.77	0.162	2.45	pCi/L	U	T04, T05
SVP175673	VP-57/VP-58	10/01/14	ML-003	Actinium-227	-6.02	5.93	5.13	pCi/L	UJ	T04, T06
SVP175673	VP-57/VP-58	10/01/14	ML-018	Gross Alpha	1.3	6.26	11	pCi/L	UJ	T06
SVP175673	VP-57/VP-58	10/01/14	ML-018	Gross Beta	11.6	8.33	13.2	pCi/L	U	T04, T05
SVP175673	VP-57/VP-58	10/01/14	ML-003	Protactinium-231	5.56	20.4	21.9	pCi/L	UJ	T04, T06
SVP175673	VP-57/VP-58	10/01/14	ML-006	Radium-226	-0.136	0.193	1	pCi/L	UJ	T06
SVP175673	VP-57/VP-58	10/01/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175673	VP-57/VP-58	10/01/14	ML-005	Thorium-228	0.12	0.171	0.162	pCi/L	UJ	T06
SVP175673	VP-57/VP-58	10/01/14	ML-005	Thorium-230	0.329	0.306	0.359	pCi/L	U	T04, T05
SVP175673	VP-57/VP-58	10/01/14	ML-005	Thorium-232	0.0597	0.12	0.162	pCi/L	UJ	T06
SVP175673	VP-57/VP-58	10/01/14	ML-021	Total Uranium	1.36	0.124	0.489	pCi/L	=	
SVP175674	VP-57/VP-58	10/06/14	ML-003	Actinium-227	0.788	5.7	5.01	pCi/L	UJ	T04, T06
SVP175674	VP-57/VP-58	10/06/14	ML-018	Gross Alpha	1.63	6.29	11	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	ML-018	Gross Beta	1.87	7.84	13.2	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	ML-003	Protactinium-231	-4.64	21.7	21.6	pCi/L	UJ	T04, T06
SVP175674	VP-57/VP-58	10/06/14	ML-006	Radium-226	0.143	0.453	1.06	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175674	VP-57/VP-58	10/06/14	ML-005	Thorium-228	0.118	0.237	0.471	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	ML-005	Thorium-230	0.197	0.287	0.472	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	ML-005	Thorium-232	0.0785	0.158	0.213	pCi/L	UJ	T06
SVP175674	VP-57/VP-58	10/06/14	ML-021	Total Uranium	4.02	0.367	0.489	pCi/L	=	
SVP175675	VP-57/VP-58	10/07/14	ML-003	Actinium-227	6.82	6.21	5.81	pCi/L	UJ	T04
SVP175675	VP-57/VP-58	10/07/14	ML-018	Gross Alpha	0.979	6.22	11	pCi/L	UJ	T06
SVP175675	VP-57/VP-58	10/07/14	ML-018	Gross Beta	11.8	8.34	13.2	pCi/L	U	T04, T05
SVP175675	VP-57/VP-58	10/07/14	ML-003	Protactinium-231	-3.19	26.5	26.5	pCi/L	UJ	T04, T06
SVP175675	VP-57/VP-58	10/07/14	ML-006	Radium-226	-0.306	0.307	1.42	pCi/L	UJ	T06
SVP175675	VP-57/VP-58	10/07/14	EPA 160.5	SS	0.05		0.1	mL/L/hr	U	
SVP175675	VP-57/VP-58	10/07/14	ML-005	Thorium-228	0.185	0.217	0.167	pCi/L	UJ	T02
SVP175675	VP-57/VP-58	10/07/14	ML-005	Thorium-230	0.278	0.288	0.37	pCi/L	UJ	T06
SVP175675	VP-57/VP-58	10/07/14	ML-005	Thorium-232	0.0308	0.138	0.37	pCi/L	UJ	T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175675	VP-57/VP-58	10/07/14	ML-021	Total Uranium	2.5	0.228	0.489	pCi/L	=	
SVP175676	Pershall Rd.	10/10/14	ML-003	Actinium-227	8.35	7.04	6.97	pCi/L	UJ	T04
SVP175676	Pershall Rd.	10/10/14	ML-018	Gross Alpha	-0.979	6.02	11	pCi/L	UJ	T06
SVP175676	Pershall Rd.	10/10/14	ML-018	Gross Beta	5.6	8.02	13.2	pCi/L	UJ	T06
SVP175676	Pershall Rd.	10/10/14	ML-003	Protactinium-231	7.23	33	32.6	pCi/L	UJ	T04, T06
SVP175676	Pershall Rd.	10/10/14	ML-006	Radium-226	0.367	0.639	1.23	pCi/L	UJ	T06
SVP175676	Pershall Rd.	10/10/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	J	A03
SVP175676	Pershall Rd.	10/10/14	ML-005	Thorium-228	0.0279	0.125	0.334	pCi/L	UJ	T06
SVP175676	Pershall Rd.	10/10/14	ML-005	Thorium-230	0.418	0.33	0.335	pCi/L	J	T04
SVP175676	Pershall Rd.	10/10/14	ML-005	Thorium-232	0	0	0.151	pCi/L	U	
SVP175676	Pershall Rd.	10/10/14	ML-021	Total Uranium	0.973	0.0888	2.45	pCi/L	U	T04, T05
SVP175677	VP-57/VP-58	10/14/14	ML-003	Actinium-227	-0.511	5.41	4.69	pCi/L	UJ	T04, T06
SVP175677	VP-57/VP-58	10/14/14	ML-018	Gross Alpha	4.24	6.56	11	pCi/L	UJ	T06
SVP175677	VP-57/VP-58	10/14/14	ML-018	Gross Beta	7.47	8.12	13.2	pCi/L	UJ	T06
SVP175677	VP-57/VP-58	10/14/14	ML-003	Protactinium-231	12.7	21.3	20.3	pCi/L	UJ	T04, T06
SVP175677	VP-57/VP-58	10/14/14	ML-006	Radium-226	0.595	0.607	0.793	pCi/L	UJ	T06
SVP175677	VP-57/VP-58	10/14/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175677	VP-57/VP-58	10/14/14	ML-005	Thorium-228	0.313	0.326	0.417	pCi/L	UJ	T06
SVP175677	VP-57/VP-58	10/14/14	ML-005	Thorium-230	1.01	0.584	0.418	pCi/L	J	T04
SVP175677	VP-57/VP-58	10/14/14	ML-005	Thorium-232	0.209	0.245	0.189	pCi/L	UJ	T02
SVP175677	VP-57/VP-58	10/14/14	ML-021	Total Uranium	2.38	0.217	0.489	pCi/L	=	
SVP175678	VP-57/VP-58	10/15/14	ML-003	Actinium-227	-2.76	5.01	4.67	pCi/L	UJ	T04, T06
SVP175678	VP-57/VP-58	10/15/14	ML-018	Gross Alpha	2.61	6.39	11	pCi/L	UJ	T06
SVP175678	VP-57/VP-58	10/15/14	ML-018	Gross Beta	6.35	8.06	13.2	pCi/L	UJ	T06
SVP175678	VP-57/VP-58	10/15/14	ML-003	Protactinium-231	-25.3	20.8	17.7	pCi/L	UJ	T04, T06
SVP175678	VP-57/VP-58	10/15/14	ML-006	Radium-226	0.619	0.554	0.335	pCi/L	J	F01, T04
SVP175678	VP-57/VP-58	10/15/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175678	VP-57/VP-58	10/15/14	ML-005	Thorium-228	0.253	0.326	0.565	pCi/L	UJ	T06
SVP175678	VP-57/VP-58	10/15/14	ML-005	Thorium-230	1.63	0.708	0.522	pCi/L	=	
SVP175678	VP-57/VP-58	10/15/14	ML-005	Thorium-232	0.196	0.234	0.336	pCi/L	UJ	T06
SVP175678	VP-57/VP-58	10/15/14	ML-021	Total Uranium	3.21	0.293	0.489	pCi/L	=	
SVP175679	VP-57/VP-58	10/27/14	ML-003	Actinium-227	7.86	6.28	4.75	pCi/L	UJ	T04
SVP175679	VP-57/VP-58	10/27/14	ML-018	Gross Alpha	1.63	6.94	12	pCi/L	UJ	T06
SVP175679	VP-57/VP-58	10/27/14	ML-018	Gross Beta	5.04	8.3	13.8	pCi/L	UJ	T06
SVP175679	VP-57/VP-58	10/27/14	ML-003	Protactinium-231	-10.6	25.9	25.2	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175679	VP-57/VP-58	10/27/14	ML-006	Radium-226	0.0722	0.323	0.866	pCi/L	UJ	T06
SVP175679	VP-57/VP-58	10/27/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175679	VP-57/VP-58	10/27/14	ML-005	Thorium-228	0.255	0.396	0.733	pCi/L	UJ	T06
SVP175679	VP-57/VP-58	10/27/14	ML-005	Thorium-230	0.876	0.539	0.198	pCi/L	J	T04
SVP175679	VP-57/VP-58	10/27/14	ML-005	Thorium-232	-0.036	0.0733	0.437	pCi/L	UJ	T06
SVP175679	VP-57/VP-58	10/27/14	ML-021	Total Uranium	2.96	0.27	0.489	pCi/L	=	
SVP175680	VP-57/VP-58	10/28/14	ML-003	Actinium-227	0.475	6.96	6.23	pCi/L	UJ	T04, T06
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1016	0.24		0.24	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1221	0.24		0.24	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1232	0.24		0.24	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1242	0.24		0.24	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1248	0.24		0.24	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1254	0.16		0.16	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 8082	Aroclor-1260	0.16		0.16	µg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 6020	Arsenic	10		1.2	µg/L	=	
SVP175680	VP-57/VP-58	10/28/14	SW846 6020	Cadmium	0.28		0.1	µg/L	=	
SVP175680	VP-57/VP-58	10/28/14	SW846 6020	Chromium	8.5		1	µg/L	=	
SVP175680	VP-57/VP-58	10/28/14	ML-018	Gross Alpha	-1.3	6.65	12	pCi/L	UJ	T06
SVP175680	VP-57/VP-58	10/28/14	ML-018	Gross Beta	9.15	8.5	13.8	pCi/L	U	T04, T05
SVP175680	VP-57/VP-58	10/28/14	EPA 1664	Oil and Grease	3.2		3.2	mg/L	U	
SVP175680	VP-57/VP-58	10/28/14	SW846 9040C	pH	7.69		0.1	No Units	J	A03
SVP175680	VP-57/VP-58	10/28/14	ML-003	Protactinium-231	7.2	29.5	28.4	pCi/L	UJ	T04, T06
SVP175680	VP-57/VP-58	10/28/14	ML-006	Radium-226	0.72	0.92	1.61	pCi/L	UJ	T06
SVP175680	VP-57/VP-58	10/28/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175680	VP-57/VP-58	10/28/14	ML-005	Thorium-228	0.263	0.273	0.388	pCi/L	UJ	T06
SVP175680	VP-57/VP-58	10/28/14	ML-005	Thorium-230	2.43	0.849	0.143	pCi/L	=	
SVP175680	VP-57/VP-58	10/28/14	ML-005	Thorium-232	0.316	0.265	0.143	pCi/L	J	T04
SVP175680	VP-57/VP-58	10/28/14	ML-021	Total Uranium	1.18	0.108	0.489	pCi/L	=	
SVP175680	VP-57/VP-58	10/28/14	EPA 1664	TRPH	5.5		5.5	mg/L	U	
SVP175681	VP-57/VP-58	11/04/14	ML-003	Actinium-227	-0.732	4.91	4.91	pCi/L	UJ	T04, T06
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1016	0.26		0.26	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1221	0.26		0.26	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1232	0.26		0.26	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1242	0.26		0.26	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1248	0.26		0.26	µg/L	U	

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1254	0.18		0.18	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 8082	Aroclor-1260	0.18		0.18	µg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 6020	Arsenic	10		1.2	µg/L	=	
SVP175681	VP-57/VP-58	11/04/14	SW846 6020	Cadmium	0.35		0.1	µg/L	=	
SVP175681	VP-57/VP-58	11/04/14	SW846 6020	Chromium	12		1	µg/L	=	
SVP175681	VP-57/VP-58	11/04/14	ML-018	Gross Alpha	4.57	7.21	12	pCi/L	UJ	T06
SVP175681	VP-57/VP-58	11/04/14	ML-018	Gross Beta	9.53	8.52	13.8	pCi/L	U	T04, T05
SVP175681	VP-57/VP-58	11/04/14	EPA 1664	Oil and Grease	4.5		4.5	mg/L	U	
SVP175681	VP-57/VP-58	11/04/14	SW846 9040C	pH	7.52		0.1	No Units	=	
SVP175681	VP-57/VP-58	11/04/14	ML-003	Protactinium-231	-0.436	21	21.7	pCi/L	UJ	T04, T06
SVP175681	VP-57/VP-58	11/04/14	ML-006	Radium-226	1	0.838	1.13	pCi/L	U	T04, T05
SVP175681	VP-57/VP-58	11/04/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175681	VP-57/VP-58	11/04/14	ML-005	Thorium-228	0.758	0.446	0.158	pCi/L	J	T04
SVP175681	VP-57/VP-58	11/04/14	ML-005	Thorium-230	3.15	1.06	0.158	pCi/L	=	
SVP175681	VP-57/VP-58	11/04/14	ML-005	Thorium-232	0.583	0.386	0.158	pCi/L	J	T04
SVP175681	VP-57/VP-58	11/04/14	ML-021	Total Uranium	2.37	0.216	1.47	pCi/L	=	
SVP175681	VP-57/VP-58	11/04/14	EPA 1664	TRPH	7.9		7.9	mg/L	U	
SVP175682	VP-57/VP-58	11/05/14	ML-003	Actinium-227	-8.59	6.58	5.81	pCi/L	UJ	T04, T06
SVP175682	VP-57/VP-58	11/05/14	ML-018	Gross Alpha	5.55	7.3	12	pCi/L	UJ	T06
SVP175682	VP-57/VP-58	11/05/14	ML-018	Gross Beta	7.1	8.4	13.8	pCi/L	UJ	T06
SVP175682	VP-57/VP-58	11/05/14	ML-003	Protactinium-231	10.2	27.4	27.9	pCi/L	UJ	T04, T06
SVP175682	VP-57/VP-58	11/05/14	ML-006	Radium-226	0.151	0.604	1.4	pCi/L	UJ	T06
SVP175682	VP-57/VP-58	11/05/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175682	VP-57/VP-58	11/05/14	ML-005	Thorium-228	0.549	0.432	0.213	pCi/L	J	T04
SVP175682	VP-57/VP-58	11/05/14	ML-005	Thorium-230	1.06	0.637	0.471	pCi/L	J	T04
SVP175682	VP-57/VP-58	11/05/14	ML-005	Thorium-232	0.392	0.361	0.213	pCi/L	J	T04
SVP175682	VP-57/VP-58	11/05/14	ML-021	Total Uranium	2.14	0.195	1.47	pCi/L	=	
SVP175683	VP-57/VP-58	11/24/14	ML-003	Actinium-227	-0.667	6.39	5.51	pCi/L	UJ	T04, T06
SVP175683	VP-57/VP-58	11/24/14	ML-018	Gross Alpha	3.26	4.59	7.6	pCi/L	UJ	T06
SVP175683	VP-57/VP-58	11/24/14	ML-018	Gross Beta	7.19	5.97	9.65	pCi/L	U	T04, T05
SVP175683	VP-57/VP-58	11/24/14	ML-003	Protactinium-231	23.9	26.1	23.6	pCi/L	UJ	T02, T04
SVP175683	VP-57/VP-58	11/24/14	ML-006	Radium-226	0.356	0.596	1.1	pCi/L	UJ	T06
SVP175683	VP-57/VP-58	11/24/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175683	VP-57/VP-58	11/24/14	ML-005	Thorium-228	0.199	0.232	0.356	pCi/L	UJ	T06
SVP175683	VP-57/VP-58	11/24/14	ML-005	Thorium-230	2.55	0.713	0.0898	pCi/L	=	

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175683	VP-57/VP-58	11/24/14	ML-005	Thorium-232	0.0992	0.149	0.243	pCi/L	UJ	T06
SVP175683	VP-57/VP-58	11/24/14	ML-021	Total Uranium	-0.063	0.00575	2.45	pCi/L	UJ	T06
SVP175684	VP-57/VP-58	12/08/14	ML-003	Actinium-227	-0.034	5.91	3.88	pCi/L	UJ	T04, T06
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1016	0.37		0.37	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1221	0.37		0.37	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1232	0.37		0.37	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1242	0.37		0.37	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1248	0.37		0.37	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1254	0.18		0.18	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 8082	Aroclor-1260	0.18		0.18	µg/L	U	
SVP175684	VP-57/VP-58	12/08/14	SW846 6020	Arsenic	1.6		1.2	µg/L	=	
SVP175684	VP-57/VP-58	12/08/14	SW846 6020	Cadmium	0.13		0.1	µg/L	J	E01
SVP175684	VP-57/VP-58	12/08/14	SW846 6020	Chromium	3.4		1	µg/L	=	
SVP175684	VP-57/VP-58	12/08/14	ML-018	Gross Alpha	1.47	4.46	7.6	pCi/L	UJ	T06
SVP175684	VP-57/VP-58	12/08/14	ML-018	Gross Beta	-0.841	5.69	9.65	pCi/L	UJ	T06
SVP175684	VP-57/VP-58	12/08/14	EPA 1664	Oil and Grease	1.9		1.6	mg/L	J	F01
SVP175684	VP-57/VP-58	12/08/14	SW846 9040C	pH	7.97		0.1	No Units	J	A04
SVP175684	VP-57/VP-58	12/08/14	ML-024	pH	8.22		0.1	No Units	=	
SVP175684	VP-57/VP-58	12/08/14	ML-003	Protactinium-231	2.46	22.1	20.6	pCi/L	UJ	T04, T06
SVP175684	VP-57/VP-58	12/08/14	ML-006	Radium-226	1.47	0.81	0.667	pCi/L	J	T04
SVP175684	VP-57/VP-58	12/08/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175684	VP-57/VP-58	12/08/14	ML-005	Thorium-228	0.218	0.264	0.404	pCi/L	UJ	T06
SVP175684	VP-57/VP-58	12/08/14	ML-005	Thorium-230	0.566	0.33	0.118	pCi/L	J	T04
SVP175684	VP-57/VP-58	12/08/14	ML-005	Thorium-232	0.13	0.196	0.32	pCi/L	UJ	T06
SVP175684	VP-57/VP-58	12/08/14	ML-021	Total Uranium	1.29	0.117	0.978	pCi/L	=	
SVP175684	VP-57/VP-58	12/08/14	EPA 1664	TRPH	3		3	mg/L	U	
SVP175685	VP-57/VP-58	12/09/14	ML-003	Actinium-227	-5.84	7.03	6.37	pCi/L	UJ	T04, T06
SVP175685	VP-57/VP-58	12/09/14	ML-018	Gross Alpha	-1.14	4.27	7.6	pCi/L	UJ	T06
SVP175685	VP-57/VP-58	12/09/14	ML-018	Gross Beta	3.27	5.83	9.65	pCi/L	UJ	T06
SVP175685	VP-57/VP-58	12/09/14	ML-003	Protactinium-231	-5.5	28.8	30.2	pCi/L	UJ	T04, T06
SVP175685	VP-57/VP-58	12/09/14	ML-006	Radium-226	0.109	0.452	1.01	pCi/L	UJ	T06
SVP175685	VP-57/VP-58	12/09/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175685	VP-57/VP-58	12/09/14	ML-005	Thorium-228	0.145	0.193	0.312	pCi/L	UJ	T06
SVP175685	VP-57/VP-58	12/09/14	ML-005	Thorium-230	0.638	0.29	0.0786	pCi/L	=	
SVP175685	VP-57/VP-58	12/09/14	ML-005	Thorium-232	0.0868	0.101	0.0784	pCi/L	UJ	T02

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175685	VP-57/VP-58	12/09/14	ML-021	Total Uranium	0.59	0.0538	2.45	pCi/L	U	T04, T05
SVP175686	VP-57/VP-58	12/15/14	ML-003	Actinium-227	0.524	6.22	5.27	pCi/L	UJ	T04, T06
SVP175686	VP-57/VP-58	12/15/14	ML-018	Gross Alpha	1.3	4.45	7.6	pCi/L	UJ	T06
SVP175686	VP-57/VP-58	12/15/14	ML-018	Gross Beta	9.99	6.08	9.65	pCi/L	J	F01, T04
SVP175686	VP-57/VP-58	12/15/14	ML-003	Protactinium-231	-23.4	26.2	25	pCi/L	UJ	T04, T06
SVP175686	VP-57/VP-58	12/15/14	ML-006	Radium-226	-0.119	0.567	1.43	pCi/L	UJ	T06
SVP175686	VP-57/VP-58	12/15/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175686	VP-57/VP-58	12/15/14	ML-005	Thorium-228	0.0902	0.16	0.279	pCi/L	UJ	T06
SVP175686	VP-57/VP-58	12/15/14	ML-005	Thorium-230	0.482	0.267	0.222	pCi/L	J	T04
SVP175686	VP-57/VP-58	12/15/14	ML-005	Thorium-232	0.12	0.122	0.0814	pCi/L	UJ	T02
SVP175686	VP-57/VP-58	12/15/14	ML-021	Total Uranium	2.34	0.213	2.45	pCi/L	U	T04, T05
SVP175687	VP-57/VP-58	12/18/14	ML-003	Actinium-227	-1.46	5.68	4.71	pCi/L	UJ	T04, T06
SVP175687	VP-57/VP-58	12/18/14	ML-018	Gross Alpha	1.96	4.5	7.6	pCi/L	UJ	T06
SVP175687	VP-57/VP-58	12/18/14	ML-018	Gross Beta	2.8	5.81	9.65	pCi/L	UJ	T06
SVP175687	VP-57/VP-58	12/18/14	ML-003	Protactinium-231	22.6	17.9	19.4	pCi/L	J	T04
SVP175687	VP-57/VP-58	12/18/14	ML-006	Radium-226	0.944	0.776	0.995	pCi/L	U	T04, T05
SVP175687	VP-57/VP-58	12/18/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	=	
SVP175687	VP-57/VP-58	12/18/14	ML-005	Thorium-228	0.173	0.157	0.0937	pCi/L	J	T04
SVP175687	VP-57/VP-58	12/18/14	ML-005	Thorium-230	0.761	0.348	0.0938	pCi/L	=	
SVP175687	VP-57/VP-58	12/18/14	ML-005	Thorium-232	0.173	0.157	0.0936	pCi/L	J	T04
SVP175687	VP-57/VP-58	12/18/14	ML-021	Total Uranium	2.31	0.21	2.45	pCi/L	U	T04, T05
SVP175688	VP-57/VP-58	12/23/14	ML-003	Actinium-227	6.55	20.7	17.6	pCi/L	UJ	T04, T06
SVP175688	VP-57/VP-58	12/23/14	ML-018	Gross Alpha	2.94	4.35	7.23	pCi/L	UJ	T06
SVP175688	VP-57/VP-58	12/23/14	ML-018	Gross Beta	9.9	6.11	9.72	pCi/L	J	F01, T04
SVP175688	VP-57/VP-58	12/23/14	ML-003	Protactinium-231	63.1	76.2	75.4	pCi/L	UJ	T04, T06
SVP175688	VP-57/VP-58	12/23/14	ML-006	Radium-226	0.0776	0.396	0.941	pCi/L	UJ	T06
SVP175688	VP-57/VP-58	12/23/14	EPA 160.5	SS	0.2		0.1	mL/L/hr	J	A03
SVP175688	VP-57/VP-58	12/23/14	ML-005	Thorium-228	0.248	0.29	0.46	pCi/L	UJ	T06
SVP175688	VP-57/VP-58	12/23/14	ML-005	Thorium-230	0.661	0.396	0.323	pCi/L	J	T04
SVP175688	VP-57/VP-58	12/23/14	ML-005	Thorium-232	0.165	0.211	0.322	pCi/L	UJ	T06
SVP175688	VP-57/VP-58	12/23/14	ML-021	Total Uranium	1.73	0.158	1.47	pCi/L	=	
SVP175689	VP-57/VP-58	12/24/14	ML-003	Actinium-227	2.15	6.5	5.57	pCi/L	UJ	T04, T06
SVP175689	VP-57/VP-58	12/24/14	ML-018	Gross Alpha	1.63	4.25	7.23	pCi/L	UJ	T06
SVP175689	VP-57/VP-58	12/24/14	ML-018	Gross Beta	1.96	5.82	9.72	pCi/L	UJ	T06
SVP175689	VP-57/VP-58	12/24/14	ML-003	Protactinium-231	13	26.5	24.3	pCi/L	UJ	T04, T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175689	VP-57/VP-58	12/24/14	ML-006	Radium-226	0.121	0.801	1.7	pCi/L	UJ	T06
SVP175689	VP-57/VP-58	12/24/14	EPA 160.5	SS	0.1		0.1	mL/L/hr	J	A03
SVP175689	VP-57/VP-58	12/24/14	ML-005	Thorium-228	0.25	0.273	0.375	pCi/L	UJ	T06
SVP175689	VP-57/VP-58	12/24/14	ML-005	Thorium-230	0.288	0.264	0.156	pCi/L	J	T04
SVP175689	VP-57/VP-58	12/24/14	ML-005	Thorium-232	0.0576	0.116	0.156	pCi/L	UJ	T06
SVP175689	VP-57/VP-58	12/24/14	ML-021	Total Uranium	0.423	0.0386	2.45	pCi/L	U	T04, T05
SVP175690	VP-57/VP-58	12/29/14	ML-003	Actinium-227	3.74	6.02	5.86	pCi/L	UJ	T04, T06
SVP175690	VP-57/VP-58	12/29/14	ML-018	Gross Alpha	2.28	4.3	7.23	pCi/L	UJ	T06
SVP175690	VP-57/VP-58	12/29/14	ML-018	Gross Beta	1.21	5.8	9.72	pCi/L	UJ	T06

Table C-1. NPDES Analytical Data for 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code
SVP175690	VP-57/VP-58	12/29/14	ML-003	Protactinium-231	-6.36	26.3	23.2	pCi/L	UJ	T04, T06
SVP175690	VP-57/VP-58	12/29/14	ML-006	Radium-226	0.314	0.651	1.26	pCi/L	UJ	T06
SVP175690	VP-57/VP-58	12/29/14	EPA 160.5	SS	0		0.1	mL/L/hr	U	
SVP175690	VP-57/VP-58	12/29/14	ML-005	Thorium-228	-0.045	0.138	0.42	pCi/L	UJ	T06
SVP175690	VP-57/VP-58	12/29/14	ML-005	Thorium-230	0.166	0.222	0.366	pCi/L	UJ	T06
SVP175690	VP-57/VP-58	12/29/14	ML-005	Thorium-232	0.181	0.184	0.123	pCi/L	UJ	T02
SVP175690	VP-57/VP-58	12/29/14	ML-021	Total Uranium	2.19	0.2	2.45	pCi/L	U	T04, T05

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 2014

First Quarter CY 2014 Data

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a]	Un-Named[b]
1-Jan	0.11		
2-Jan	0.09		
3-Jan			
4-Jan	trace		
5-Jan	0.64		
6-Jan			
7-Jan			
8-Jan			
9-Jan	0.07		
10-Jan	0.55		
11-Jan	0.02		
12-Jan			
13-Jan			
14-Jan	0.01		
15-Jan	trace		
16-Jan	0.03		
17-Jan	trace		
18-Jan	0.06		
19-Jan			
20-Jan			
21-Jan	0.09		
22-Jan	trace		
23-Jan	trace		
24-Jan			
25-Jan	trace		
26-Jan	trace		
27-Jan			
28-Jan			
29-Jan			
30-Jan			
31-Jan	trace		
Monthly Total	**1.67**		

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a]	Un-Named[b]
1-Feb	0.53		
2-Feb	trace		
3-Feb			
4-Feb	0.37		
5-Feb	0.11		
6-Feb			
7-Feb			
8-Feb	0.04		
9-Feb	0.02		
10-Feb	trace		
11-Feb			
12-Feb			
13-Feb			
14-Feb	0.09		
15-Feb			
16-Feb			
17-Feb	0.09		
18-Feb			
19-Feb	trace		
20-Feb	0.23		
21-Feb			
22-Feb			
23-Feb			
24-Feb			
25-Feb	trace		
26-Feb			
27-Feb			
28-Feb			
Monthly Total	**1.48**		

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a]	Un-Named[b]
1-Mar	trace		
2-Mar	0.32		
3-Mar			
4-Mar			
5-Mar			
6-Mar			
7-Mar			
8-Mar			
9-Mar			
10-Mar			
11-Mar	0.68		
12-Mar	0.34	0.055	
13-Mar			
14-Mar			
15-Mar			
16-Mar	trace		
17-Mar			
18-Mar	0.01		
19-Mar			
20-Mar			
21-Mar			
22-Mar			
23-Mar			
24-Mar	trace		
25-Mar	trace		
26-Mar	0.02		
27-Mar	0.17		
28-Mar	0.01		
29-Mar			
30-Mar			
31-Mar	trace		
Monthly Total	**1.55**	**0.055**	

[a] Per USACE email dated 11/26/13, sampling at Outfall 002 has been increased from yearly to monthly.

[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 2014

Second Quarter CY 2014 Data

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a]	Un-Named[b]
1-Apr	0.07		
2-Apr	2.53	0.011	
3-Apr	2.23	0.409	
4-Apr	trace	0.360	
5-Apr			
6-Apr			
7-Apr	0.66	0.107	
8-Apr	trace		
9-Apr			
10-Apr			
11-Apr			
12-Apr			
13-Apr	0.49		
14-Apr	0.07		
15-Apr			
16-Apr			
17-Apr			
18-Apr			
19-Apr			
20-Apr			
21-Apr	0.09		
22-Apr			
23-Apr			
24-Apr	0.50		
25-Apr	trace		
26-Apr	trace		
27-Apr	0.59		
28-Apr	1.15	0.095	
29-Apr	trace		
30-Apr	trace		
Monthly Total	**8.38**	**0.982**	

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a]	Un-Named[b]
1-May	trace		
2-May			
3-May			
4-May			
5-May			
6-May			
7-May			
8-May	0.02		
9-May	trace		
10-May	0.32		
11-May	0.17		
12-May	0.17		
13-May	0.15		
14-May	0.53		
15-May	0.35		
16-May			
17-May			
18-May			
19-May			
20-May			
21-May	0.13		
22-May			
23-May			
24-May	trace		
25-May	1.48		
26-May	0.52		
27-May			
28-May			
29-May			
30-May	trace		
31-May	0.14		
Monthly Total	**3.98**		

Date	Rainfall (inches)	Outfall	Outfall Ballfields
2014	24-hour total	002[a,c]	Un-Named[b]
1-Jun	trace		
2-Jun	trace		
3-Jun			
4-Jun	0.87		
5-Jun			
6-Jun			
7-Jun	0.66		
8-Jun			
9-Jun	0.90		
10-Jun	0.43		
11-Jun	trace		
12-Jun	0.15		
13-Jun			
14-Jun			
15-Jun	trace		
16-Jun	trace		
17-Jun			
18-Jun			
19-Jun			
20-Jun			
21-Jun	0.73		
22-Jun	trace		
23-Jun	0.06		
24-Jun	0.51		
25-Jun			
26-Jun	trace		
27-Jun	0.95		
28-Jun			
29-Jun	trace		
30-Jun			
Monthly Total	**5.26**		

[a] Per USACE email dated 11/26/13, sampling at Outfall 002 has been increased from yearly to monthly.

[b] Un-named moving outfall is an outfall sampled during pumping activities or from a rain event producing a measurable flow offsite.

[c] Per USACE email dated 06/17/14, sampling at Outfall 002 has been reduced to once a year.

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 2014

Third Quarter CY 2014 Data

Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch
2014	**24-hour total**	**002[a]**	**Un-Named[b]**
1-Jul	0.02		
2-Jul			
3-Jul			
4-Jul			
5-Jul	trace		
6-Jul	trace		
7-Jul	trace		
8-Jul	0.33		
9-Jul			
10-Jul			
11-Jul			
12-Jul			
13-Jul	0.11		
14-Jul	1.11		
15-Jul			0.093
16-Jul			0.056
17-Jul			
18-Jul			
19-Jul			
20-Jul			
21-Jul			
22-Jul			
23-Jul	trace		
24-Jul			
25-Jul	0.02		
26-Jul	trace		
27-Jul			
28-Jul			
29-Jul			
30-Jul			
31-Jul			
Monthly Total	**1.59**		**0.149**

Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch
2014	**24-hour total**	**002[a]**	**Un-Named[b]**
1-Aug	trace		
2-Aug			
3-Aug			
4-Aug			
5-Aug	0.23		
6-Aug	1.14		0.007
7-Aug	1.79		
8-Aug	0.01		
9-Aug	0.01		
10-Aug			
11-Aug			0.088
12-Aug			0.031
13-Aug			0.005
14-Aug			
15-Aug	0.09		
16-Aug	0.98		
17-Aug	0.19		
18-Aug			0.015
19-Aug	trace		0.006
20-Aug	0.02		
21-Aug			
22-Aug	trace		
23-Aug			
24-Aug			
25-Aug			
26-Aug	0.07		
27-Aug	0.18		
28-Aug	0.19		
29-Aug	trace		
30-Aug	0.16		
31-Aug			
Monthly Total	**5.06**		**0.152**

Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch
2014	**24-hour total**	**002[a]**	**Un-Named[b]**
1-Sep	2.15		
2-Sep	0.21		0.009
3-Sep			0.003
4-Sep			0.006
5-Sep	0.01		
6-Sep	0.02		
7-Sep			
8-Sep			
9-Sep	0.56		
10-Sep	1.13		
11-Sep	trace		0.011
12-Sep	0.01		
13-Sep			
14-Sep			
15-Sep	0.03		0.008
16-Sep	trace		
17-Sep	0.08		
18-Sep			
19-Sep			
20-Sep			
21-Sep			
22-Sep			0.004
23-Sep			
24-Sep			
25-Sep			
26-Sep			
27-Sep			
28-Sep			
29-Sep			
30-Sep			
Monthly Total	**4.20**		**0.041**

[a] Per USACE email dated 06/17/14, sampling at Outfall 002 has been reduced to once a 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 2014

Fourth Quarter CY 2014 Data

Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch	Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch	Date	Rainfall (inches)	Outfall	Outfall – VP-57 and VP-58 and the Pershall Road South Ditch
2014	**24-hour total**	**002[a]**	**Un-Named[b]**	**2014**	**24-hour total**	**002[a]**	**Un-Named[b]**	**2014**	**24-hour total**	**002[a,c]**	**Un-Named[b]**
1-Oct	0.31		0.002	1-Nov				1-Dec	0.08		
2-Oct	1.23			2-Nov	trace			2-Dec			
3-Oct	0.27			3-Nov	trace			3-Dec			
4-Oct				4-Nov	0.58		0.003	4-Dec	0.03		
5-Oct				5-Nov			0.007	5-Dec	1.35		
6-Oct	trace		0.009	6-Nov				6-Dec	trace		
7-Oct	0.14		0.007	7-Nov				7-Dec			
8-Oct				8-Nov				8-Dec	trace		0.005
9-Oct	0.70			9-Nov				9-Dec			0.004
10-Oct	0.81		0.263	10-Nov				10-Dec			
11-Oct	trace			11-Nov	trace			11-Dec	trace		
12-Oct	0.06			12-Nov				12-Dec			
13-Oct	0.84			13-Nov	trace			13-Dec			
14-Oct	0.19		0.039	14-Nov				14-Dec			
15-Oct	0.04		0.007	15-Nov	0.04			15-Dec	0.33		0.008
16-Oct				16-Nov	0.13			16-Dec	trace		
17-Oct				17-Nov	trace			17-Dec			
18-Oct				18-Nov				18-Dec	0.01		0.005
19-Oct				19-Nov				19-Dec			
20-Oct				20-Nov				20-Dec			
21-Oct				21-Nov	0.04			21-Dec	trace		
22-Oct				22-Nov	0.10			22-Dec	0.68		
23-Oct				23-Nov	0.85			23-Dec			0.012
24-Oct				24-Nov	0.47		0.004	24-Dec	0.02		0.009
25-Oct				25-Nov				25-Dec			
26-Oct				26-Nov	0.24			26-Dec	0.08		
27-Oct	trace		0.005	27-Nov	trace			27-Dec	0.14		
28-Oct	0.47		0.003	28-Nov				28-Dec			
29-Oct				29-Nov				29-Dec			0.009
30-Oct	trace			30-Nov	0.01			30-Dec			
31-Oct								31-Dec			
Monthly Total	**5.06**		**0.335**	**Monthly Total**	**2.46**		**0.014**	**Monthly Total**	**2.72**		**0.051**

[a] Per USACE email dated 06/17/14, sampling at Outfall 002 has been reduced to once a 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 2014

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-289	02/19/14 - 02/20/14 (Ballfields SLAPS VP)	<12	pCi/L	145,603	3.2E-06	3,000	pCi/L	0.00
Gross Beta			<12	pCi/L		3.3E-06	N/A		
Th-228			<0.5	pCi/L		1.3E-07	2,000	pCi/L	
Th-230			0.6	pCi/L		3.3E-07	1,000	pCi/L	
Uranium (KPA)			5.0	pCi/L		2.8E-06	3,000	pCi/L	
Ra-226[c]			<1.5	pCi/L		4.0E-07	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		1.3E-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)			<12	pCi/L		-	-		
TSS			8	mg/L		-	-		

Total Activity Discharged in First Quarter of CY 2014 (Ci)

Th-228	1.3E-07
Th-230	3.3E-07
Uranium (KPA)	2.8E-06
Ra-226	4.0E-07
Ra-228[b]	1.3E-07

Total Activity Discharged through 03/31/14 (Ci)

Th-228	1.3E-07
Th-230	3.3E-07
Uranium (KPA)	2.8E-06
Ra-226	4.0E-07
Ra-228[b]	1.3E-07

Total Volume for First Quarter of CY 2014 (gallons)

Gallons 145,603

Total Volume Discharged through 03/31/14 (gallons)

Gallons 145,603

[a] Non-detect sample results are converted to half the detection limit 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 05/24/12 (MSD 2012).

Notes:

Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
N/A – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)
- No data/No limit

Table C-3. Second Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2014

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-290	04/16/14 - 04/22/14 (Ballfields SLAPS VP)	<11.3	pCi/L	281,877	6.0E-06	3,000	pCi/L	0.01
Gross Beta			<14.6	pCi/L		7.8E-06	N/A		
Th-228			<0.9	pCi/L		5.1E-07	2,000	pCi/L	
Th-230			<0.9	pCi/L		4.9E-07	1,000	pCi/L	
Uranium (KPA)			8.7	pCi/L		9.3E-06	3,000	pCi/L	
Ra-226[c]			<2.3	pCi/L		1.2E-06	10	pCi/L	
Ra-228[d,e]			<0.9	pCi/L		5.1E-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)			<11.3	pCi/L		-	-		
TSS			8	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-291	06/11/14 - 06/16/14 (Ballfields SLAPS VP)	<9.7	pCi/L	231,970	4.2E-06	3,000	pCi/L	0.01
Gross Beta			<12.7	pCi/L		5.6E-06	N/A		
Th-228			<0.6	pCi/L		2.6E-07	2,000	pCi/L	
Th-230			2.0	pCi/L		1.8E-06	1,000	pCi/L	
Uranium (KPA)			6.5	pCi/L		5.7E-06	3,000	pCi/L	
Ra-226[c]			<1.5	pCi/L		6.7E-07	10	pCi/L	
Ra-228[d,e]			<0.6	pCi/L		2.6E-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)			<9.7	pCi/L		-	-		
TSS			28	mg/L		-	-		

Total Activity Discharged in Second Quarter of CY 2014 (Ci)		Total Activity Discharged through 06/30/14 (Ci)	
Th-228	7.7E-07	**Th-228**	9.0E-07
Th-230	2.2E-06	**Th-230**	2.6E-06
Uranium (KPA)	1.5E-05	**Uranium (KPA)**	1.8E-05
Ra-226	1.9E-06	**Ra-226**	2.3E-06
Ra-228[b]	7.7E-07	**Ra-228[b]**	9.0E-07

Total Volume for Second Quarter of CY 2014 (gallons)		Total Volume Discharged through 06/30/14 (gallons)	
Gallons	513,847	**Gallons**	659,450

[a] Non-detect sample results are converted to half the detection limit 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 05/24/12 (MSD 2012).

Notes:
Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
N/A – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)
- No data/No limit

Table C-3. Third Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2014

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-292	09/16/14 (SLAPS VP-57 and VP-58 and the Pershall Road South Ditch)	<10.7	pCi/L	20,364	4.1E-07	3,000	pCi/L	0.00
Gross Beta			<14	pCi/L		5.4E-07	N/A		
Th-228			<0.5	pCi/L		1.9E-08	2,000	pCi/L	
Th-230			1.9	pCi/L		1.5E-07	1,000	pCi/L	
Uranium (KPA)			<2.5	pCi/L		9.4E-08	3,000	pCi/L	
Ra-226[c]			<2	pCi/L		7.6E-08	10	pCi/L	
Ra-228[d,e]			<0.5	pCi/L		1.9E-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)			<10.7	pCi/L		-	-		
TSS			45	mg/L		-	-		
Gross Alpha (raw water)	SLAPS-293	09/16/14 - 09/22/14 (SLAPS VP-57 and VP-58 and the Pershall Road South Ditch)	<11	pCi/L	311,445	6.5E-06	3,000	pCi/L	0.01
Gross Beta			<14.1	pCi/L		8.3E-06	N/A		
Th-228			<0.7	pCi/L		3.8E-07	2,000	pCi/L	
Th-230			1.2	pCi/L		1.4E-06	1,000	pCi/L	
Uranium (KPA)			6.4	pCi/L		7.5E-06	3,000	pCi/L	
Ra-226[c]			<3.2	pCi/L		1.9E-06	10	pCi/L	
Ra-228[d,e]			<0.7	pCi/L		3.8E-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			27	mg/L		-	-		

Total Activity Discharged in Third Quarter of CY 2014 (Ci)

Th-228	4.0E-07
Th-230	1.6E-06
Uranium (KPA)	7.6E-06
Ra-226	2.0E-06
Ra-228[b]	4.0E-07

Total Activity Discharged through 09/30/14 (Ci)

Th-228	1.3E-06
Th-230	4.1E-06
Uranium (KPA)	2.5E-05
Ra-226	4.3E-06
Ra-228[b]	1.3E-06

Total Volume for Third Quarter of CY 2014 (gallons)

Gallons 20,364

Total Volume Discharged through 09/30/14 (gallons)

Gallons 679,814

[a] Non-detect sample results are converted to half the detection limit 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 05/24/12 (MSD 2012).

Notes:

Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
N/A – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)
- No data/No limit

Table C-3. Fourth Quarter Self-Monitoring Report for Excavation-Water Discharge at North St. Louis County Sites During CY 2014

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-294	12/03/14 - 12/09/14 (SLAPS VP-57 and VP-58 and the Pershall Road South Ditch)	<10.1	pCi/L	270,147	5.2E-06	3,000	pCi/L	0.01
Gross Beta			<13.6	pCi/L		7.0E-06	N/A		
Th-228			<0.3	pCi/L		1.6E-07	2,000	pCi/L	
Th-230			2	pCi/L		1.6E-06	1,000	pCi/L	
Uranium (KPA)			11	pCi/L		1.1E-05	3,000	pCi/L	
Ra-226[c]			<1.1	pCi/L		5.7E-07	10	pCi/L	
Ra-228[d,e]			<0.3	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)			10	pCi/L		-	-		
TSS			21	mg/L		-	-		

Total Activity Discharged in Fourth Quarter of CY 2014 (Ci)

Th-228	1.6E-07
Th-230	1.6E-06
Uranium (KPA)	1.1E-05
Ra-226	5.7E-07
Ra-228[b]	1.6E-07

Total Activity Discharged through 12/31/14 (Ci)

Th-228	2.6E-06
Th-230	8.3E-06
Uranium (KPA)	5.1E-05
Ra-226	8.5E-06
Ra-228[b]	2.6E-06

Total Volume for Fourth Quarter of CY 2014 (gallons)

Gallons 270,147

Total Volume Discharged through 12/31/14 (gallons)

Gallons 949,961

[a] Non-detect sample results are converted to half the detection limit 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 05/24/12 (MSD 2012).

Notes:

Ci - curie(s)
BOD – biological oxygen demand
COD - chemical oxygen demand
mg/L - milligram(s) per liter
N/A – Not applicable
pCi/L - picocurie(s) per liter
SOR - sum of ratios
TSS – total suspended solid(s)
- No data/No limit

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APPENDIX D

COLDWATER CREEK SURFACE-WATER AND SEDIMENT DATA

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Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC169434	CWC002	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169434	CWC002	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169434	CWC002	03/20/14	Metals	Barium	100		2.2	µg/L	=
CWC169434	CWC002	03/20/14	Metals	Cadmium	4.9		1	µg/L	=
CWC169434	CWC002	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169434	CWC002	03/20/14	Metals	Molybdenum	13		10	µg/L	=
CWC169434	CWC002	03/20/14	Metals	Nickel	4.8		4	µg/L	=
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Radium-226	-0.121	0.642	2.04	pCi/L	UJ
CWC169434	CWC002	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169434	CWC002	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Thorium-228	0.033	0.219	0.554	pCi/L	UJ
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Thorium-230	0.396	0.329	0.179	pCi/L	J
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Thorium-232	0.0659	0.132	0.179	pCi/L	UJ
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Uranium-234	1.71	0.849	0.232	pCi/L	=
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Uranium-235	0.0529	0.237	0.634	pCi/L	UJ
CWC169434	CWC002	03/20/14	Alpha Spectroscopy	Uranium-238	1.02	0.63	0.231	pCi/L	J
CWC169434	CWC002	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Barium	140		2.2	µg/L	=
CWC169444	CWC003	03/20/14	Metals	Cadmium	1		1	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Molybdenum	11		10	µg/L	=
CWC169444	CWC003	03/20/14	Metals	Nickel	4.2		4	µg/L	=
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Radium-226	0.121	0.8	2.03	pCi/L	UJ
CWC169444	CWC003	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169444	CWC003	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Thorium-228	0.0944	0.189	0.256	pCi/L	UJ
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Thorium-230	0.85	0.586	0.256	pCi/L	J
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Thorium-232	0.0943	0.189	0.256	pCi/L	UJ
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Uranium-234	0.876	0.592	0.586	pCi/L	J
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Uranium-235	0.0983	0.198	0.266	pCi/L	UJ
CWC169444	CWC003	03/20/14	Alpha Spectroscopy	Uranium-238	0.714	0.499	0.215	pCi/L	J
CWC169444	CWC003	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC169436	CWC004	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169436	CWC004	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169436	CWC004	03/20/14	Metals	Barium	150		2.2	µg/L	=
CWC169436	CWC004	03/20/14	Metals	Cadmium	1		1	µg/L	U

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC169436	CWC004	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169436	CWC004	03/20/14	Metals	Molybdenum	14		10	µg/L	=
CWC169436	CWC004	03/20/14	Metals	Nickel	5.3		4	µg/L	=
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Radium-226	1.52	1.27	1.41	pCi/L	J
CWC169436	CWC004	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169436	CWC004	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Thorium-228	0.313	0.514	0.968	pCi/L	UJ
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Thorium-230	0.678	0.575	0.626	pCi/L	J
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Thorium-232	-0.0521	0.105	0.625	pCi/L	UJ
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Uranium-234	1.53	0.752	0.207	pCi/L	=
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Uranium-235	0.0942	0.189	0.255	pCi/L	UJ
CWC169436	CWC004	03/20/14	Alpha Spectroscopy	Uranium-238	0.494	0.422	0.456	pCi/L	J
CWC169436	CWC004	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Barium	170		2.2	µg/L	=
CWC169438	CWC005	03/20/14	Metals	Cadmium	1		1	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Molybdenum	10		10	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Nickel	4		4	µg/L	U
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Radium-226	-0.109	0.578	1.84	pCi/L	UJ
CWC169438	CWC005	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169438	CWC005	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Thorium-228	0.129	0.333	0.722	pCi/L	UJ
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Thorium-230	0.645	0.506	0.516	pCi/L	J
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Thorium-232	0	0	0.233	pCi/L	U
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Uranium-234	0.851	0.598	0.256	pCi/L	J
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Uranium-235	-0.0583	0.117	0.699	pCi/L	UJ
CWC169438	CWC005	03/20/14	Alpha Spectroscopy	Uranium-238	0.847	0.595	0.255	pCi/L	J
CWC169438	CWC005	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Barium	190		2.2	µg/L	=
CWC169440	CWC006	03/20/14	Metals	Cadmium	1		1	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Molybdenum	10		10	µg/L	=
CWC169440	CWC006	03/20/14	Metals	Nickel	4.3		4	µg/L	=
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Radium-226	0.945	0.947	0.64	pCi/L	UJ

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC169440	CWC006	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169440	CWC006	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Thorium-228	0.0753	0.301	0.699	pCi/L	UJ
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Thorium-230	0.528	0.408	0.204	pCi/L	J
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Thorium-232	-0.0376	0.0755	0.451	pCi/L	UJ
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Uranium-234	0.575	0.492	0.531	pCi/L	J
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Uranium-235	0	0	0.296	pCi/L	U
CWC169440	CWC006	03/20/14	Alpha Spectroscopy	Uranium-238	0.837	0.592	0.528	pCi/L	J
CWC169440	CWC006	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Antimony	17		17	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Arsenic	12		12	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Barium	200		2.2	µg/L	=
CWC169442	CWC007	03/20/14	Metals	Cadmium	1		1	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Chromium	33		33	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Molybdenum	12		10	µg/L	=
CWC169442	CWC007	03/20/14	Metals	Nickel	4.3		4	µg/L	=
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Radium-226	0.629	0.89	1.54	pCi/L	UJ
CWC169442	CWC007	03/20/14	Metals	Selenium	16		16	µg/L	U
CWC169442	CWC007	03/20/14	Metals	Thallium	5.5		5.5	µg/L	U
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Thorium-228	0.245	0.291	0.42	pCi/L	UJ
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Thorium-230	0.666	0.461	0.42	pCi/L	J
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Thorium-232	0.07	0.14	0.19	pCi/L	UJ
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Uranium-234	0.765	0.572	0.54	pCi/L	J
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Uranium-235	0	0	0.301	pCi/L	U
CWC169442	CWC007	03/20/14	Alpha Spectroscopy	Uranium-238	0.627	0.493	0.243	pCi/L	J
CWC169442	CWC007	03/20/14	Metals	Vanadium	24		24	µg/L	U
CWC176623	CWC007	10/07/14	Metals	Antimony	2		1.7	µg/L	J
CWC176623	CWC007	10/07/14	Metals	Arsenic	2.1		1.2	µg/L	=
CWC176623	CWC007	10/07/14	Metals	Barium	100		0.22	µg/L	=
CWC176623	CWC007	10/07/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176623	CWC007	10/07/14	Metals	Chromium	2.6		1	µg/L	=
CWC176623	CWC007	10/07/14	Metals	Molybdenum	7.4		1	µg/L	=
CWC176623	CWC007	10/07/14	Metals	Nickel	3.1		0.4	µg/L	=
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Radium-226	0.4	0.566	0.981	pCi/L	UJ
CWC176623	CWC007	10/07/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176623	CWC007	10/07/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Thorium-228	0.191	0.43	0.887	pCi/L	UJ
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Thorium-230	0.144	0.289	0.574	pCi/L	UJ

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Thorium-232	0	0	0.259	pCi/L	U
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Uranium-234	0.632	0.446	0.466	pCi/L	J
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Uranium-235	0.078	0.157	0.211	pCi/L	UJ
CWC176623	CWC007	10/07/14	Alpha Spectroscopy	Uranium-238	0.535	0.397	0.378	pCi/L	J
CWC176623	CWC007	10/07/14	Metals	Vanadium	3.9		2.4	µg/L	=
CWC176625	CWC008	10/07/14	Metals	Antimony	1.7		1.7	µg/L	U
CWC176625	CWC008	10/07/14	Metals	Arsenic	3.2		1.2	µg/L	=
CWC176625	CWC008	10/07/14	Metals	Barium	130		0.22	µg/L	=
CWC176625	CWC008	10/07/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176625	CWC008	10/07/14	Metals	Chromium	15		1	µg/L	=
CWC176625	CWC008	10/07/14	Metals	Molybdenum	9.7		1	µg/L	=
CWC176625	CWC008	10/07/14	Metals	Nickel	2.8		0.4	µg/L	=
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Radium-226	0.348	0.502	0.834	pCi/L	UJ
CWC176625	CWC008	10/07/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176625	CWC008	10/07/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Thorium-228	0.146	0.275	0.537	pCi/L	UJ
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Thorium-230	0.219	0.257	0.198	pCi/L	UJ
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Thorium-232	0.146	0.208	0.197	pCi/L	UJ
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Uranium-234	0.145	0.254	0.486	pCi/L	UJ
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Uranium-235	0	0	0.193	pCi/L	U
CWC176625	CWC008	10/07/14	Alpha Spectroscopy	Uranium-238	0.749	0.438	0.156	pCi/L	J
CWC176625	CWC008	10/07/14	Metals	Vanadium	2.9		2.4	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Antimony	1.7		1.7	µg/L	U
CWC176627	CWC009	10/07/14	Metals	Arsenic	3.1		1.2	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Barium	170		0.22	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176627	CWC009	10/07/14	Metals	Chromium	1.3		1	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Molybdenum	14		1	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Nickel	3.9		0.4	µg/L	=
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Radium-226	0.0751	0.336	0.901	pCi/L	UJ
CWC176627	CWC009	10/07/14	Metals	Selenium	1.7		1.6	µg/L	=
CWC176627	CWC009	10/07/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Thorium-228	0.234	0.28	0.401	pCi/L	UJ
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Thorium-230	0.0669	0.212	0.492	pCi/L	UJ
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Thorium-232	0	0	0.181	pCi/L	U
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Uranium-234	0.781	0.481	0.442	pCi/L	J
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Uranium-235	0.0741	0.149	0.201	pCi/L	UJ
CWC176627	CWC009	10/07/14	Alpha Spectroscopy	Uranium-238	0.448	0.354	0.359	pCi/L	J

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC176627	CWC009	10/07/14	Metals	Vanadium	2.9		2.4	µg/L	=
CWC176613	CWC002	10/08/14	Metals	Antimony	1.7		1.7	µg/L	U
CWC176613	CWC002	10/08/14	Metals	Arsenic	3.3		1.2	µg/L	=
CWC176613	CWC002	10/08/14	Metals	Barium	110		0.22	µg/L	=
CWC176613	CWC002	10/08/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176613	CWC002	10/08/14	Metals	Chromium	1		1	µg/L	U
CWC176613	CWC002	10/08/14	Metals	Molybdenum	13		1	µg/L	=
CWC176613	CWC002	10/08/14	Metals	Nickel	2		0.4	µg/L	=
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Radium-226	0.323	0.646	1.3	pCi/L	UJ
CWC176613	CWC002	10/08/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176613	CWC002	10/08/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Thorium-228	0.254	0.259	0.172	pCi/L	UJ
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Thorium-230	0.0953	0.192	0.381	pCi/L	UJ
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Thorium-232	0	0	0.172	pCi/L	U
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Uranium-234	0.628	0.442	0.462	pCi/L	J
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Uranium-235	-0.0387	0.0778	0.464	pCi/L	UJ
CWC176613	CWC002	10/08/14	Alpha Spectroscopy	Uranium-238	0.406	0.345	0.375	pCi/L	J
CWC176613	CWC002	10/08/14	Metals	Vanadium	2.4		2.4	µg/L	U
CWC176615	CWC003	10/08/14	Metals	Antimony	3.1		1.7	µg/L	J
CWC176615	CWC003	10/08/14	Metals	Arsenic	3.8		1.2	µg/L	=
CWC176615	CWC003	10/08/14	Metals	Barium	120		0.22	µg/L	=
CWC176615	CWC003	10/08/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176615	CWC003	10/08/14	Metals	Chromium	1.7		1	µg/L	=
CWC176615	CWC003	10/08/14	Metals	Molybdenum	13		1	µg/L	=
CWC176615	CWC003	10/08/14	Metals	Nickel	2.1		0.4	µg/L	=
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Radium-226	0.373	0.538	0.894	pCi/L	UJ
CWC176615	CWC003	10/08/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176615	CWC003	10/08/14	Metals	Thallium	1.2		0.55	µg/L	=
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Thorium-228	-0.1	0.118	0.562	pCi/L	UJ
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Thorium-230	0.502	0.398	0.401	pCi/L	J
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Thorium-232	0	0	0.181	pCi/L	U
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Uranium-234	0.867	0.495	0.359	pCi/L	J
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Uranium-235	-0.0369	0.0741	0.442	pCi/L	UJ
CWC176615	CWC003	10/08/14	Alpha Spectroscopy	Uranium-238	0.268	0.278	0.357	pCi/L	UJ
CWC176615	CWC003	10/08/14	Metals	Vanadium	2.4		2.4	µg/L	=
CWC176617	CWC004	10/08/14	Metals	Antimony	1.7		1.7	µg/L	J
CWC176617	CWC004	10/08/14	Metals	Arsenic	2.9		1.2	µg/L	=
CWC176617	CWC004	10/08/14	Metals	Barium	120		0.22	µg/L	=

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC176617	CWC004	10/08/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176617	CWC004	10/08/14	Metals	Chromium	2		1	µg/L	=
CWC176617	CWC004	10/08/14	Metals	Molybdenum	12		1	µg/L	=
CWC176617	CWC004	10/08/14	Metals	Nickel	2.5		0.4	µg/L	=
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Radium-226	-0.0728	0.525	1.46	pCi/L	UJ
CWC176617	CWC004	10/08/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176617	CWC004	10/08/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Thorium-228	0.14	0.264	0.515	pCi/L	UJ
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Thorium-230	0.035	0.157	0.421	pCi/L	UJ
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Thorium-232	0.035	0.157	0.42	pCi/L	UJ
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Uranium-234	0.771	0.472	0.37	pCi/L	J
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Uranium-235	0.038	0.17	0.456	pCi/L	UJ
CWC176617	CWC004	10/08/14	Alpha Spectroscopy	Uranium-238	0	0	0.452	pCi/L	U
CWC176617	CWC004	10/08/14	Metals	Vanadium	2.7		2.4	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Antimony	1.8		1.7	µg/L	J
CWC176619	CWC005	10/08/14	Metals	Arsenic	3		1.2	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Barium	100		0.22	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Cadmium	0.15		0.1	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Chromium	2		1	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Molybdenum	9.7		1	µg/L	=
CWC176619	CWC005	10/08/14	Metals	Nickel	2.7		0.4	µg/L	=
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Radium-226	0.0708	0.47	1.19	pCi/L	UJ
CWC176619	CWC005	10/08/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176619	CWC005	10/08/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Thorium-228	0.365	0.375	0.247	pCi/L	UJ
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Thorium-230	0.32	0.384	0.548	pCi/L	UJ
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Thorium-232	0	0	0.247	pCi/L	U
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Uranium-234	0.554	0.413	0.453	pCi/L	J
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Uranium-235	0	0	0.206	pCi/L	U
CWC176619	CWC005	10/08/14	Alpha Spectroscopy	Uranium-238	0.215	0.256	0.368	pCi/L	UJ
CWC176619	CWC005	10/08/14	Metals	Vanadium	2.7		2.4	µg/L	=
CWC176621	CWC006	10/08/14	Metals	Antimony	1.7		1.7	µg/L	U
CWC176621	CWC006	10/08/14	Metals	Arsenic	2.4		1.2	µg/L	=
CWC176621	CWC006	10/08/14	Metals	Barium	92		0.22	µg/L	=
CWC176621	CWC006	10/08/14	Metals	Cadmium	0.1		0.1	µg/L	U
CWC176621	CWC006	10/08/14	Metals	Chromium	1.6		1	µg/L	=
CWC176621	CWC006	10/08/14	Metals	Molybdenum	6.9		1	µg/L	=
CWC176621	CWC006	10/08/14	Metals	Nickel	2.4		0.4	µg/L	=

Table D-1. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	Error	DL	Units	VQ
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Radium-226	-0.345	0.309	1.39	pCi/L	UJ
CWC176621	CWC006	10/08/14	Metals	Selenium	1.6		1.6	µg/L	U
CWC176621	CWC006	10/08/14	Metals	Thallium	0.55		0.55	µg/L	U
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Thorium-228	0.0556	0.176	0.409	pCi/L	UJ
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Thorium-230	0.0835	0.168	0.334	pCi/L	UJ
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Thorium-232	0	0	0.151	pCi/L	U
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Uranium-234	0.807	0.492	0.182	pCi/L	J
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Uranium-235	0	0	0.225	pCi/L	U
CWC176621	CWC006	10/08/14	Alpha Spectroscopy	Uranium-238	0.167	0.244	0.402	pCi/L	UJ
CWC176621	CWC006	10/08/14	Metals	Vanadium	2.9		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 precisely measure the analyte in the sample. However, the reported quantitation limit is approximate.

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC169435	CWC002	03/20/14	Alpha Spectroscopy	Thorium-228	0.243	0.261	pCi/g	U	T04, T05
CWC169435	CWC002	03/20/14	Alpha Spectroscopy	Thorium-230	0.689	0.196	pCi/g	J	F01, T04
CWC169435	CWC002	03/20/14	Alpha Spectroscopy	Thorium-232	0.262	0.195	pCi/g	J	T04
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Actinium-227	-0.0287	0.192	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Americium-241	-0.0347	0.0827	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Cesium-137	0.00242	0.0183	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Potassium-40	6.9	0.156	pCi/g	=	
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Protactinium-231	0.0252	0.578	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Radium-226	0.942	0.0496	pCi/g	=	
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Radium-228	0.261	0.0715	pCi/g	J	F01
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Thorium-228	0.261	0.0715	pCi/g	J	F01
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Thorium-230	-2.6	6.4	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Thorium-232	0.261	0.0715	pCi/g	J	F01
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Uranium-235	0.0219	0.27	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Gamma Spectroscopy	Uranium-238	0.363	0.837	pCi/g	UJ	T04, T06
CWC169435	CWC002	03/20/14	Metals	Antimony	0.9	0.9	mg/kg	U	
CWC169435	CWC002	03/20/14	Metals	Arsenic	2	1.4	mg/kg	=	
CWC169435	CWC002	03/20/14	Metals	Barium	260	0.52	mg/kg	J	H01, H02, H04
CWC169435	CWC002	03/20/14	Metals	Cadmium	0.53	0.088	mg/kg	=	
CWC169435	CWC002	03/20/14	Metals	Chromium	6.2	2.5	mg/kg	=	
CWC169435	CWC002	03/20/14	Metals	Molybdenum	1.1	0.68	mg/kg	=	
CWC169435	CWC002	03/20/14	Metals	Nickel	4.3	0.59	mg/kg	=	
CWC169435	CWC002	03/20/14	Metals	Selenium	0.87	0.87	mg/kg	UJ	H02, H04
CWC169435	CWC002	03/20/14	Metals	Thallium	0.83	0.83	mg/kg	U	
CWC169435	CWC002	03/20/14	Metals	Vanadium	4	4	mg/kg	U	
CWC169445	CWC003	03/20/14	Alpha Spectroscopy	Thorium-228	1.21	0.337	pCi/g	J	F01
CWC169445	CWC003	03/20/14	Alpha Spectroscopy	Thorium-230	1.67	0.338	pCi/g	=	
CWC169445	CWC003	03/20/14	Alpha Spectroscopy	Thorium-232	0.95	0.368	pCi/g	J	T04
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Actinium-227	-0.0255	0.281	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Americium-241	0.0101	0.139	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Cesium-137	-0.00146	0.0303	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Potassium-40	14.1	0.276	pCi/g	=	
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Protactinium-231	0.0862	0.709	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Radium-226	1.42	0.0718	pCi/g	=	
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Radium-228	0.908	0.1	pCi/g	=	
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Thorium-228	0.908	0.1	pCi/g	=	
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Thorium-230	-3.06	10.1	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Thorium-232	0.908	0.1	pCi/g	=	
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Uranium-235	-0.167	0.376	pCi/g	UJ	T04, T06

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC169445	CWC003	03/20/14	Gamma Spectroscopy	Uranium-238	0.449	1.24	pCi/g	UJ	T04, T06
CWC169445	CWC003	03/20/14	Metals	Antimony	1	1	mg/kg	U	
CWC169445	CWC003	03/20/14	Metals	Arsenic	5.9	1.6	mg/kg	=	
CWC169445	CWC003	03/20/14	Metals	Barium	170	0.59	mg/kg	J	H01, H02, H04
CWC169445	CWC003	03/20/14	Metals	Cadmium	0.35	0.1	mg/kg	=	
CWC169445	CWC003	03/20/14	Metals	Chromium	14	2.8	mg/kg	=	
CWC169445	CWC003	03/20/14	Metals	Molybdenum	0.78	0.78	mg/kg	U	
CWC169445	CWC003	03/20/14	Metals	Nickel	16	0.67	mg/kg	=	
CWC169445	CWC003	03/20/14	Metals	Selenium	2.1	0.99	mg/kg	J	H02, H04
CWC169445	CWC003	03/20/14	Metals	Thallium	0.95	0.95	mg/kg	U	
CWC169445	CWC003	03/20/14	Metals	Vanadium	20	4.6	mg/kg	=	
CWC169437	CWC004	03/20/14	Alpha Spectroscopy	Thorium-228	0.938	0.121	pCi/g	J	F01
CWC169437	CWC004	03/20/14	Alpha Spectroscopy	Thorium-230	3.11	0.268	pCi/g	=	
CWC169437	CWC004	03/20/14	Alpha Spectroscopy	Thorium-232	0.569	0.225	pCi/g	J	T04
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Actinium-227	0.00717	0.289	pCi/g	UJ	T04, T06
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Americium-241	-0.00174	0.134	pCi/g	UJ	T04, T06
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Cesium-137	0.0516	0.0235	pCi/g	J	T04
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Potassium-40	14.7	0.207	pCi/g	=	
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Protactinium-231	0.246	0.817	pCi/g	UJ	T04, T06
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Radium-226	1.62	0.0717	pCi/g	=	
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Radium-228	0.801	0.0949	pCi/g	=	
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Thorium-228	0.801	0.0949	pCi/g	=	
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Thorium-230	4.6	10.2	pCi/g	UJ	T04, T06
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Thorium-232	0.801	0.0949	pCi/g	=	
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Uranium-235	-0.145	0.362	pCi/g	UJ	T04, T06
CWC169437	CWC004	03/20/14	Gamma Spectroscopy	Uranium-238	0.92	1.25	pCi/g	UJ	T04, T05
CWC169437	CWC004	03/20/14	Metals	Antimony	1.1	1.1	mg/kg	U	
CWC169437	CWC004	03/20/14	Metals	Arsenic	7.7	1.7	mg/kg	=	
CWC169437	CWC004	03/20/14	Metals	Barium	190	0.62	mg/kg	J	H01, H02, H04
CWC169437	CWC004	03/20/14	Metals	Cadmium	0.67	0.11	mg/kg	=	
CWC169437	CWC004	03/20/14	Metals	Chromium	22	3	mg/kg	=	
CWC169437	CWC004	03/20/14	Metals	Molybdenum	1.2	0.82	mg/kg	=	
CWC169437	CWC004	03/20/14	Metals	Nickel	18	0.71	mg/kg	=	
CWC169437	CWC004	03/20/14	Metals	Selenium	1	1	mg/kg	UJ	H02, H04
CWC169437	CWC004	03/20/14	Metals	Thallium	1	1	mg/kg	U	
CWC169437	CWC004	03/20/14	Metals	Vanadium	21	4.9	mg/kg	=	
CWC169439	CWC005	03/20/14	Alpha Spectroscopy	Thorium-228	1.35	0.274	pCi/g	J	F01
CWC169439	CWC005	03/20/14	Alpha Spectroscopy	Thorium-230	1.53	0.274	pCi/g	=	
CWC169439	CWC005	03/20/14	Alpha Spectroscopy	Thorium-232	1.16	0.274	pCi/g	=	

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Actinium-227	-0.0392	0.33	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Americium-241	-0.0207	0.154	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Cesium-137	-0.00651	0.0336	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Potassium-40	15.5	0.236	pCi/g	=	
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Protactinium-231	-0.0253	0.918	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Radium-226	1.59	0.0875	pCi/g	=	
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Radium-228	0.995	0.103	pCi/g	=	
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Thorium-228	0.995	0.103	pCi/g	=	
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Thorium-230	2.4	12.2	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Thorium-232	0.995	0.103	pCi/g	=	
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Uranium-235	0.124	0.46	pCi/g	UJ	T04, T06
CWC169439	CWC005	03/20/14	Gamma Spectroscopy	Uranium-238	0.988	1.49	pCi/g	UJ	T04, T05
CWC169439	CWC005	03/20/14	Metals	Antimony	1.3	1.3	mg/kg	U	
CWC169439	CWC005	03/20/14	Metals	Arsenic	7.7	2.1	mg/kg	=	
CWC169439	CWC005	03/20/14	Metals	Barium	330	0.76	mg/kg	J	H01, H02, H04
CWC169439	CWC005	03/20/14	Metals	Cadmium	0.6	0.13	mg/kg	=	
CWC169439	CWC005	03/20/14	Metals	Chromium	19	3.6	mg/kg	=	
CWC169439	CWC005	03/20/14	Metals	Molybdenum	1	1	mg/kg	U	
CWC169439	CWC005	03/20/14	Metals	Nickel	28	0.87	mg/kg	=	
CWC169439	CWC005	03/20/14	Metals	Selenium	2	1.3	mg/kg	J	H02, H04
CWC169439	CWC005	03/20/14	Metals	Thallium	1.2	1.2	mg/kg	U	
CWC169439	CWC005	03/20/14	Metals	Vanadium	25	5.9	mg/kg	=	
CWC169441	CWC006	03/20/14	Alpha Spectroscopy	Thorium-228	0.603	0.374	pCi/g	J	F01, T04
CWC169441	CWC006	03/20/14	Alpha Spectroscopy	Thorium-230	2.3	0.284	pCi/g	=	
CWC169441	CWC006	03/20/14	Alpha Spectroscopy	Thorium-232	0.85	0.128	pCi/g	J	T04
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Actinium-227	-0.0865	0.282	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Americium-241	-0.11	0.141	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Cesium-137	0.0077	0.0315	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Potassium-40	15.1	0.244	pCi/g	=	
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Protactinium-231	0.204	0.8	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Radium-226	1.38	0.0735	pCi/g	=	
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Radium-228	1.01	0.115	pCi/g	=	
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Thorium-228	1.01	0.115	pCi/g	=	
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Thorium-230	-3.4	10.9	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Thorium-232	1.01	0.115	pCi/g	=	
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Uranium-235	0.248	0.436	pCi/g	UJ	T04, T05
CWC169441	CWC006	03/20/14	Gamma Spectroscopy	Uranium-238	-0.031	1.29	pCi/g	UJ	T04, T06
CWC169441	CWC006	03/20/14	Metals	Antimony	1.1	1.1	mg/kg	U	
CWC169441	CWC006	03/20/14	Metals	Arsenic	1.8	1.7	mg/kg	=	

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC169441	CWC006	03/20/14	Metals	Barium	100	0.62	mg/kg	J	H01, H02, H04
CWC169441	CWC006	03/20/14	Metals	Cadmium	0.3	0.11	mg/kg	=	
CWC169441	CWC006	03/20/14	Metals	Chromium	16	3	mg/kg	=	
CWC169441	CWC006	03/20/14	Metals	Molybdenum	0.82	0.82	mg/kg	U	
CWC169441	CWC006	03/20/14	Metals	Nickel	18	0.71	mg/kg	=	
CWC169441	CWC006	03/20/14	Metals	Selenium	1.7	1	mg/kg	J	H02, H04
CWC169441	CWC006	03/20/14	Metals	Thallium	1	1	mg/kg	U	
CWC169441	CWC006	03/20/14	Metals	Vanadium	16	4.9	mg/kg	=	
CWC169443	CWC007	03/20/14	Alpha Spectroscopy	Thorium-228	0.744	0.291	pCi/g	J	F01, T04
CWC169443	CWC007	03/20/14	Alpha Spectroscopy	Thorium-230	3.19	0.217	pCi/g	=	
CWC169443	CWC007	03/20/14	Alpha Spectroscopy	Thorium-232	1.21	0.117	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Actinium-227	-0.0728	0.335	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Americium-241	-0.00297	0.151	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Cesium-137	0.0399	0.0338	pCi/g	J	T04
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Potassium-40	13.3	0.242	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Protactinium-231	0.26	0.924	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Radium-226	1.55	0.0843	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Radium-228	0.772	0.098	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Thorium-228	0.772	0.098	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Thorium-230	-1.83	11.1	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Thorium-232	0.772	0.098	pCi/g	=	
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Uranium-235	-0.0718	0.424	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Gamma Spectroscopy	Uranium-238	0.247	1.32	pCi/g	UJ	T04, T06
CWC169443	CWC007	03/20/14	Metals	Antimony	1.3	1.3	mg/kg	U	
CWC169443	CWC007	03/20/14	Metals	Arsenic	5.7	2.1	mg/kg	=	
CWC169443	CWC007	03/20/14	Metals	Barium	160	0.75	mg/kg	J	H01, H02, H04
CWC169443	CWC007	03/20/14	Metals	Cadmium	0.86	0.13	mg/kg	=	
CWC169443	CWC007	03/20/14	Metals	Chromium	35	3.6	mg/kg	=	
CWC169443	CWC007	03/20/14	Metals	Molybdenum	1.8	0.99	mg/kg	=	
CWC169443	CWC007	03/20/14	Metals	Nickel	20	0.85	mg/kg	=	
CWC169443	CWC007	03/20/14	Metals	Selenium	2.2	1.3	mg/kg	J	H02, H04
CWC169443	CWC007	03/20/14	Metals	Thallium	1.2	1.2	mg/kg	U	
CWC169443	CWC007	03/20/14	Metals	Vanadium	22	5.9	mg/kg	=	
CWC176614	CWC002	10/08/14	Alpha Spectroscopy	Thorium-228	0.685	0.109	pCi/g	J	F01, T04
CWC176614	CWC002	10/08/14	Alpha Spectroscopy	Thorium-230	0.551	0.218	pCi/g	J	F01, T04
CWC176614	CWC002	10/08/14	Alpha Spectroscopy	Thorium-232	0.55	0.217	pCi/g	J	T04
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Actinium-227	0.107	0.171	pCi/g	UJ	T04, T05
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Americium-241	0.0179	0.0323	pCi/g	UJ	T04, T06
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Cesium-137	-0.00608	0.0153	pCi/g	UJ	T04, T06

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Potassium-40	7.58	0.146	pCi/g	=	
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Protactinium-231	-0.0707	0.466	pCi/g	UJ	T04, T06
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Radium-226	0.884	0.0402	pCi/g	=	
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Radium-228	0.355	0.0544	pCi/g	=	
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Thorium-228	0.355	0.0544	pCi/g	=	
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Thorium-230	-0.342	2.99	pCi/g	UJ	T04, T06
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Thorium-232	0.355	0.0544	pCi/g	=	
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Uranium-235	-0.00107	0.205	pCi/g	UJ	T04, T06
CWC176614	CWC002	10/08/14	Gamma Spectroscopy	Uranium-238	0.45	0.307	pCi/g	J	T04
CWC176614	CWC002	10/08/14	Metals	Antimony	1.2	0.17	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Arsenic	2.2	0.27	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Barium	1,300	0.25	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Cadmium	0.36	0.017	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Chromium	55	0.47	mg/kg	J	H02
CWC176614	CWC002	10/08/14	Metals	Molybdenum	8	0.13	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Nickel	5.6	0.11	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Selenium	0.91	0.17	mg/kg	=	
CWC176614	CWC002	10/08/14	Metals	Thallium	0.16	0.16	mg/kg	U	
CWC176614	CWC002	10/08/14	Metals	Vanadium	14	0.77	mg/kg	=	
CWC176616	CWC003	10/08/14	Alpha Spectroscopy	Thorium-228	0.68	0.177	pCi/g	J	F01
CWC176616	CWC003	10/08/14	Alpha Spectroscopy	Thorium-230	1.04	0.178	pCi/g	J	F01
CWC176616	CWC003	10/08/14	Alpha Spectroscopy	Thorium-232	0.887	0.0891	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Actinium-227	-0.00156	0.21	pCi/g	UJ	T04, T06
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Americium-241	0.0458	0.0458	pCi/g	UJ	T04
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Cesium-137	-0.000354	0.022	pCi/g	UJ	T04, T06
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Potassium-40	11.3	0.196	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Protactinium-231	0.286	0.601	pCi/g	UJ	T04, T06
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Radium-226	1.22	0.0484	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Radium-228	0.631	0.0794	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Thorium-228	0.631	0.0794	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Thorium-230	1.8	4.29	pCi/g	UJ	T04, T06
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Thorium-232	0.631	0.0794	pCi/g	=	
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Uranium-235	0.0238	0.269	pCi/g	UJ	T04, T06
CWC176616	CWC003	10/08/14	Gamma Spectroscopy	Uranium-238	1.01	0.41	pCi/g	=	
CWC176616	CWC003	10/08/14	Metals	Antimony	0.22	0.22	mg/kg	U	
CWC176616	CWC003	10/08/14	Metals	Arsenic	1.8	0.34	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Barium	63	0.12	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Cadmium	0.21	0.021	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Chromium	14	0.6	mg/kg	J	H02

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Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176616	CWC003	10/08/14	Metals	Molybdenum	0.2	0.16	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Nickel	12	0.14	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Selenium	1.9	0.21	mg/kg	=	
CWC176616	CWC003	10/08/14	Metals	Thallium	0.2	0.2	mg/kg	U	
CWC176616	CWC003	10/08/14	Metals	Vanadium	21	0.97	mg/kg	=	
CWC176618	CWC004	10/08/14	Alpha Spectroscopy	Thorium-228	0.734	0.224	pCi/g	J	F01, T04
CWC176618	CWC004	10/08/14	Alpha Spectroscopy	Thorium-230	1.82	0.224	pCi/g	J	F01
CWC176618	CWC004	10/08/14	Alpha Spectroscopy	Thorium-232	1.5	0.113	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Actinium-227	-0.0365	0.224	pCi/g	UJ	T04, T06
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Americium-241	0.0514	0.0484	pCi/g	UJ	T04
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Cesium-137	-0.0038	0.0265	pCi/g	UJ	T04, T06
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Potassium-40	13.5	0.232	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Protactinium-231	0.0284	0.607	pCi/g	UJ	T04, T06
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Radium-226	1.36	0.0603	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Radium-228	0.888	0.0801	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Thorium-228	0.888	0.0801	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Thorium-230	1.91	4.69	pCi/g	UJ	T04, T06
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Thorium-232	0.888	0.0801	pCi/g	=	
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Uranium-235	-0.0288	0.293	pCi/g	UJ	T04, T06
CWC176618	CWC004	10/08/14	Gamma Spectroscopy	Uranium-238	0.6	0.453	pCi/g	J	T04
CWC176618	CWC004	10/08/14	Metals	Antimony	0.37	0.22	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Arsenic	8	0.35	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Barium	230	0.13	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Cadmium	0.89	0.022	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Chromium	26	0.61	mg/kg	J	H02
CWC176618	CWC004	10/08/14	Metals	Molybdenum	1.3	0.17	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Nickel	27	0.14	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Selenium	2.5	0.21	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Thallium	0.23	0.21	mg/kg	=	
CWC176618	CWC004	10/08/14	Metals	Vanadium	31	0.99	mg/kg	=	
CWC176620	CWC005	10/08/14	Alpha Spectroscopy	Thorium-228	1.19	0.322	pCi/g	=	
CWC176620	CWC005	10/08/14	Alpha Spectroscopy	Thorium-230	1.58	0.299	pCi/g	J	F01
CWC176620	CWC005	10/08/14	Alpha Spectroscopy	Thorium-232	0.688	0.199	pCi/g	J	T04
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Actinium-227	0.0577	0.24	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Americium-241	0.00827	0.0477	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Cesium-137	-0.0158	0.0251	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Potassium-40	13.7	0.27	pCi/g	=	
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Protactinium-231	-0.0237	0.658	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Radium-226	1.62	0.06	pCi/g	=	

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Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Radium-228	0.989	0.0949	pCi/g	=	
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Thorium-228	0.989	0.0949	pCi/g	=	
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Thorium-230	2.5	4.81	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Thorium-232	0.989	0.0949	pCi/g	=	
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Uranium-235	-0.0508	0.302	pCi/g	UJ	T04, T06
CWC176620	CWC005	10/08/14	Gamma Spectroscopy	Uranium-238	0.777	0.472	pCi/g	J	T04
CWC176620	CWC005	10/08/14	Metals	Antimony	0.22	0.22	mg/kg	U	
CWC176620	CWC005	10/08/14	Metals	Arsenic	4	0.36	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Barium	180	0.13	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Cadmium	0.54	0.022	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Chromium	19	0.62	mg/kg	J	H02
CWC176620	CWC005	10/08/14	Metals	Molybdenum	0.47	0.17	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Nickel	21	0.15	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Selenium	2.3	0.22	mg/kg	=	
CWC176620	CWC005	10/08/14	Metals	Thallium	0.21	0.21	mg/kg	U	
CWC176620	CWC005	10/08/14	Metals	Vanadium	24	1	mg/kg	=	
CWC176622	CWC006	10/08/14	Alpha Spectroscopy	Thorium-228	1.18	0.31	pCi/g	=	
CWC176622	CWC006	10/08/14	Alpha Spectroscopy	Thorium-230	2.39	0.341	pCi/g	J	F01
CWC176622	CWC006	10/08/14	Alpha Spectroscopy	Thorium-232	1.04	0.227	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Actinium-227	-0.0369	0.279	pCi/g	UJ	T04, T06
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Americium-241	0.0444	0.0585	pCi/g	UJ	T04, T05
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Cesium-137	0.00606	0.0327	pCi/g	UJ	T04, T06
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Potassium-40	15.1	0.274	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Protactinium-231	0.371	0.786	pCi/g	UJ	T04, T06
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Radium-226	1.36	0.0758	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Radium-228	1.05	0.105	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Thorium-228	1.05	0.105	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Thorium-230	3.09	5.53	pCi/g	UJ	T04, T06
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Thorium-232	1.05	0.105	pCi/g	=	
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Uranium-235	-0.0771	0.34	pCi/g	UJ	T04, T06
CWC176622	CWC006	10/08/14	Gamma Spectroscopy	Uranium-238	1.3	0.538	pCi/g	=	
CWC176622	CWC006	10/08/14	Metals	Antimony	0.22	0.22	mg/kg	U	
CWC176622	CWC006	10/08/14	Metals	Arsenic	1.9	0.35	mg/kg	=	
CWC176622	CWC006	10/08/14	Metals	Barium	110	0.13	mg/kg	=	
CWC176622	CWC006	10/08/14	Metals	Cadmium	0.2	0.022	mg/kg	=	
CWC176622	CWC006	10/08/14	Metals	Chromium	17	0.61	mg/kg	J	H02
CWC176622	CWC006	10/08/14	Metals	Molybdenum	0.21	0.17	mg/kg	=	
CWC176622	CWC006	10/08/14	Metals	Nickel	17	0.15	mg/kg	=	
CWC176622	CWC006	10/08/14	Metals	Selenium	2.7	0.21	mg/kg	=	

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176622	CWC006	10/08/14	Metals	Thallium	0.21	0.21	mg/kg	U	
CWC176622	CWC006	10/08/14	Metals	Vanadium	20	1	mg/kg	=	
CWC176624	CWC007	10/07/14	Alpha Spectroscopy	Thorium-228	0.804	0.176	pCi/g	J	F01
CWC176624	CWC007	10/07/14	Alpha Spectroscopy	Thorium-230	6.81	0.176	pCi/g	=	
CWC176624	CWC007	10/07/14	Alpha Spectroscopy	Thorium-232	0.847	0.0883	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Actinium-227	-0.036	0.413	pCi/g	UJ	T04, T06
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Americium-241	-0.0223	0.0819	pCi/g	UJ	T04, T06
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Cesium-137	0.0206	0.0429	pCi/g	UJ	T04, T06
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Potassium-40	17.1	0.315	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Protactinium-231	-1.31	1.18	pCi/g	UJ	T04, T06
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Radium-226	2.12	0.107	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Radium-228	1.01	0.13	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Thorium-228	1.01	0.13	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Thorium-230	22.9	7.33	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Thorium-232	1.01	0.13	pCi/g	=	
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Uranium-235	0.0742	0.475	pCi/g	UJ	T04, T06
CWC176624	CWC007	10/07/14	Gamma Spectroscopy	Uranium-238	1.64	0.756	pCi/g	J	T04
CWC176624	CWC007	10/07/14	Metals	Antimony	0.37	0.19	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Arsenic	7.9	0.3	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Barium	150	0.11	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Cadmium	0.59	0.018	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Chromium	28	0.52	mg/kg	J	H02
CWC176624	CWC007	10/07/14	Metals	Molybdenum	2	0.14	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Nickel	18	0.12	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Selenium	1.9	0.18	mg/kg	=	
CWC176624	CWC007	10/07/14	Metals	Thallium	0.17	0.17	mg/kg	U	
CWC176624	CWC007	10/07/14	Metals	Vanadium	22	0.84	mg/kg	=	
CWC176626	CWC008	10/07/14	Alpha Spectroscopy	Thorium-228	0.822	0.187	pCi/g	J	F01
CWC176626	CWC008	10/07/14	Alpha Spectroscopy	Thorium-230	2.8	0.188	pCi/g	=	
CWC176626	CWC008	10/07/14	Alpha Spectroscopy	Thorium-232	0.555	0.094	pCi/g	J	T04
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Actinium-227	-0.023	0.238	pCi/g	UJ	T04, T06
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Americium-241	0.00928	0.0458	pCi/g	UJ	T04, T06
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Cesium-137	0.0146	0.0271	pCi/g	UJ	T04, T06
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Potassium-40	11.6	0.18	pCi/g	=	
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Protactinium-231	-0.0142	0.624	pCi/g	UJ	T04, T06
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Radium-226	1.22	0.059	pCi/g	=	
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Radium-228	0.72	0.0791	pCi/g	=	
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Thorium-228	0.72	0.0791	pCi/g	=	
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Thorium-230	3.03	4.68	pCi/g	UJ	T04, T05

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Thorium-232	0.72	0.0791	pCi/g	=	
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Uranium-235	-0.0613	0.288	pCi/g	UJ	T04, T06
CWC176626	CWC008	10/07/14	Gamma Spectroscopy	Uranium-238	1.3	0.43	pCi/g	=	
CWC176626	CWC008	10/07/14	Metals	Antimony	0.47	0.28	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Arsenic	6.1	0.44	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Barium	200	0.16	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Cadmium	0.66	0.027	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Chromium	24	0.76	mg/kg	J	H02
CWC176626	CWC008	10/07/14	Metals	Molybdenum	1.3	0.21	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Nickel	19	0.18	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Selenium	2.1	0.27	mg/kg	=	
CWC176626	CWC008	10/07/14	Metals	Thallium	0.26	0.26	mg/kg	U	
CWC176626	CWC008	10/07/14	Metals	Vanadium	24	1.2	mg/kg	=	
CWC176628	CWC009	10/07/14	Alpha Spectroscopy	Thorium-228	0.862	0.106	pCi/g	J	F01
CWC176628	CWC009	10/07/14	Alpha Spectroscopy	Thorium-230	3.96	0.106	pCi/g	=	
CWC176628	CWC009	10/07/14	Alpha Spectroscopy	Thorium-232	1.06	0.106	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Actinium-227	-0.00833	0.265	pCi/g	UJ	T04, T06
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Americium-241	0.0141	0.0521	pCi/g	UJ	T04, T06
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Cesium-137	0.0707	0.025	pCi/g	J	T04
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Potassium-40	12.9	0.187	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Protactinium-231	0.622	0.744	pCi/g	UJ	T04, T05
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Radium-226	1.43	0.0679	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Radium-228	0.802	0.0934	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Thorium-228	0.802	0.0934	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Thorium-230	7.55	4.75	pCi/g	J	T04
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Thorium-232	0.802	0.0934	pCi/g	=	
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Uranium-235	0.0776	0.32	pCi/g	UJ	T04, T06
CWC176628	CWC009	10/07/14	Gamma Spectroscopy	Uranium-238	0.857	0.489	pCi/g	J	T04
CWC176628	CWC009	10/07/14	Metals	Antimony	0.51	0.23	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Arsenic	6.1	0.37	mg/kg	=	

Table D-2. Coldwater Creek Surface Water Data for CY 2014

Sample Name	Station Name	Collection Date	Method	Analyte	Result	DL	Units	VQ	Validation Reason Code
CWC176628	CWC009	10/07/14	Metals	Barium	170	0.13	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Cadmium	0.66	0.023	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Chromium	28	0.64	mg/kg	J	H02
CWC176628	CWC009	10/07/14	Metals	Molybdenum	1	0.18	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Nickel	17	0.15	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Selenium	2.1	0.22	mg/kg	=	
CWC176628	CWC009	10/07/14	Metals	Thallium	0.22	0.22	mg/kg	U	
CWC176628	CWC009	10/07/14	Metals	Vanadium	21	1	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.

H01 Matrix Spike/Matrix Spike Duplicate recovery was above the upper control limit.

H02 Matrix Spike/Matrix Spike Duplicate recovery was below the lower control limit.

H04 Matrix Spike/Matrix Spike Duplicate pairs exceed the RPD limit.

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.

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APPENDIX E

GROUND-WATER FIELD PARAMETER DATA AND ANALYTICAL DATA RESULTS FOR CY 2014

(On the CD-ROM on the Back Cover of this Report)

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Table E-1. Ground-Water Monitoring
First Quarter 2014 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/min)	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) 02/18/14
HISS-01	---	---	---	---	---	---	---	---	---	---	7.44
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.05
HISS-10	02/18/14	150	2,250	6.37	0.15	22.8	4.51	6.6	165	7.58	7.45
HISS-11A	---	---	---	---	---	---	---	---	---	---	12.29
HISS-17S	---	---	---	---	---	---	---	---	---	---	6.30
HISS-19S	---	---	---	---	---	---	---	---	---	---	13.01
HW22	---	---	---	---	---	---	---	---	---	---	13.67
HW23	---	---	---	---	---	---	---	---	---	---	10.00

Table E-1. Ground-Water Monitoring
Second Quarter 2014 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/min)	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) 05/16/14
HISS-01	---	---	---	---	---	---	---	---	---	---	8.28
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.99
HISS-10	---	---	---	---	---	---	---	---	---	---	4.97
HISS-11A	---	---	---	---	---	---	---	---	---	---	10.66
HISS-17S	05/19/14	80	1,200	6.73	0.251	15	17.29	12.1	115	6.53	3.85
HISS-19	---	---	---	---	---	---	---	---	---	---	13.45
HW22	05/19/14	80	1,200	6.18	0.332	22	10.13	10.2	95	13.18	12.84
HW23	05/19/14	35	420	6.69	0.107	45	8.52	10.8	74	10.23	10.10

Table E-1. Ground-Water Monitoring
Third Quarter 2014 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/min)	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) 09/02/14
HISS-01	09/02/14	120	1,440	7.14	0.113	52.3	6.18	23.5	253	10.37	10.20
HISS-06A	09/02/14	70	1,050	6.81	0.211	22,3	4.31	23	236	8.05	7.90
HISS-10	---	---	---	---	---	---	---	---	---	---	8.58
HISS-11A	09/02/14	60	720	6.89	0.107	29.9	3.86	23.2	254	9.34	8.60
HISS-17S	---	---	---	---	---	---	---	---	---	---	3.75
HISS-19	---	---	---	---	---	---	---	---	---	---	13.21
HW22	---	---	---	---	---	---	---	---	---	---	13.77
HW23	---	---	---	---	---	---	---	---	---	---	10.19

Table E-1. Ground-Water Monitoring
Fourth Quarter 2014 - Field Parameters for the Latty Avenue Properties

Station ID	Date Sampled	Purge Rate (mL/min)	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) 12/02/14
HISS-01	---	---	---	---	---	---	---	---	---	---	8.37
HISS-06A	---	---	---	---	---	---	---	---	---	---	7.93
HISS-10	---	---	---	---	---	---	---	---	---	---	5.89
HISS-11A	---	---	---	---	---	---	---	---	---	---	10.9
HISS-17S	---	---	---	---	---	---	---	---	---	---	5.51
HISS-19	12/02/14	60	900	6.68	0.119	0	1.68	12.7	-98	14.36	14.00
HW22	---	---	---	---	---	---	---	---	---	---	13.08
HW23	---	---	---	---	---	---	---	---	---	---	10.19

--- monitoring well was not sampled during this event.

BTOC - below top of casing

mL - milliliter(s)

mL/min - milliliter(s) per minute

Table E-2. Ground-Water Monitoring
First Quarter 2014 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/min)	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) 02/18/14
B53W01D	---	---	---	---	---	---	---	---	---	---	11.25
B53W01S	---	---	---	---	---	---	---	---	---	---	16.41
B53W06S	---	---	---	---	---	---	---	---	---	---	16.91
B53W07D	---	---	---	---	---	---	---	---	---	---	11.4
B53W07S	02/19/14	13	156	6.52	0.148	14.6	3.77	13.1	147	20.63	20.46
B53W09S	02/19/14	30	450	6.53	0.152	119.6	3.21	15.6	140	17.33	17.31
B53W13S	02/18/14	60	720	6.87	1.26	45.9	5.05	14.2	234	14.33	14.13
B53W17S	---	---	---	---	---	---	---	---	---	---	13.55
B53W18S	02/19/14	92	1,104	6.15	0.53	36.4	1.97	15.5	62	13.68	13.53
B53W19S	---	---	---	---	---	---	---	---	---	---	7
MW31-98	---	---	---	---	---	---	---	---	---	---	15.85
MW32-98	---	---	---	---	---	---	---	---	---	---	17.63
PW35	---	---	---	---	---	---	---	---	---	---	11.18
PW36	---	---	---	---	---	---	---	---	---	---	11.01
PW42	---	---	---	---	---	---	---	---	---	---	11.36
PW43	---	---	---	---	---	---	---	---	---	---	18.95
PW44	---	---	---	---	---	---	---	---	---	---	6.41
PW45	---	---	---	---	---	---	---	---	---	---	9.45
PW46	02/18/14	50	750	6.36	0.139	15.5	3.87	7.7	164	13.6	13.46

Table E-2. Ground-Water Monitoring
Second Quarter 2014 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/min)	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) 05/16/14
B53W01D	---	---	---	---	---	---	---	---	---	---	11.28
B53W01S	---	---	---	---	---	---	---	---	---	---	13.77
B53W06S	05/21/14	22	396	6.47	0.11	12	7.25	12.2	49	15.36	14.78
B53W07D	---	---	---	---	---	---	---	---	---	---	11.30
B53W07S	---	---	---	---	---	---	---	---	---	---	17.97
B53W09S	---	---	---	---	---	---	---	---	---	---	15.49
B53W13S	---	---	---	---	---	---	---	---	---	---	9.81
B53W17S	---	---	---	---	---	---	---	---	---	---	8.98
B53W18S	---	---	---	---	---	---	---	---	---	---	13.00
B53W19S	---	---	---	---	---	---	---	---	---	---	6.81
MW31-98	---	---	---	---	---	---	---	---	---	---	10.60
MW32-98	05/21/14	88	1,056	6.18	0.122	10	6.95	12.5	60	14.37	14.27
PW35	---	---	---	---	---	---	---	---	---	---	10.88
PW36	---	---	---	---	---	---	---	---	---	---	10.45
PW42	05/19/14	35	525	5.98	0.175	17	8.06	9.7	196	11.32	11.10
PW43	---	---	---	---	---	---	---	---	---	---	13.72
PW44	---	---	---	---	---	---	---	---	---	---	3.39
PW45	---	---	---	---	---	---	---	---	---	---	6.62
PW46	---	---	---	---	---	---	---	---	---	---	12.53

Table E-2. Ground-Water Monitoring
Third Quarter 2014 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/min)	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) 09/02/14
B53W01D	---	---	---	---	---	---	---	---	---	---	11.28
B53W01S	---	---	---	---	---	---	---	---	---	---	17.93
B53W06S	---	---	---	---	---	---	---	---	---	---	15.87
B53W07D	---	---	---	---	---	---	---	---	---	---	11.32
B53W07S	---	---	---	---	---	---	---	---	---	---	18.21
B53W09S	---	---	---	---	---	---	---	---	---	---	16.02
B53W13S	09/05/14	60	1,080	6.63	0.377	112	2.79	18.7	253	13.66	13.39
B53W17S	---	---	---	---	---	---	---	---	---	---	12.60
B53W18S	09/04/14	92	1,104	6.49	0.465	22.9	5.39	19.9	52	13.64	13.20
B53W19S	09/05/14	166	2,490	6.53	0.676	87.8	2.61	21.7	225	6.8	5.45
MW31-98	---	---	---	---	---	---	---	---	---	---	14.34
MW32-98	---	---	---	---	---	---	---	---	---	---	16.57
PW35	---	---	---	---	---	---	---	---	---	---	11.10
PW36	---	---	---	---	---	---	---	---	---	---	10.60
PW42	---	---	---	---	---	---	---	---	---	---	10.98
PW43	09/04/14	50	750	6.73	0.121	46.1	3.67	23.5	70	16.36	18.22
PW44	---	---	---	---	---	---	---	---	---	---	3.36
PW45	---	---	---	---	---	---	---	---	---	---	7.49
PW46	---	---	---	---	---	---	---	---	---	---	10.10

Table E-2. Ground-Water Monitoring
Fourth Quarter 2014 - Field Parameters for SLAPS and SLAPS VPs

Station ID	Date Sampled	Purge Rate (mL/min)	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) 12/02/14
B53W01D	---	---	---	---	---	---	---	---	---	---	11.18
B53W01S	12/04/14	48	576	6.55	87.1	14	2.22	11.8	225	15.12	14.47
B53W06S	---	---	---	---	---	---	---	---	---	---	15.7
B53W07D	12/04/14	40	840	7.05	0.113	43.3	1.27	12.6	-143	11.26	11.22
B53W07S	---	---	---	---	---	---	---	---	---	---	18.58
B53W09S	---	---	---	---	---	---	---	---	---	---	15.59
B53W13S	12/10/14	60	540	6.73	0.355	28.8	4.8	11.8	243	9.43	10.88
B53W17S	---	---	---	---	---	---	---	---	---	---	10.6
B53W18S	12/10/14	92	1,656	6.6	0.451	32.3	4.78	12.3	240	13.32	13.24
B53W19S	12/10/14	150	3,150	6.92	0.287	20.5	4.42	14	237	6.27	6.85
MW31-98	12/04/14	60	900	6.59	0.376	42.4	1.73	11.7	233	13.45	13.31
MW32-98	---	---	---	---	---	---	---	---	---	---	15.55
PW35	---	---	---	---	---	---	---	---	---	---	10.39
PW36	---	---	---	---	---	---	---	---	---	---	10.35
PW42	---	---	---	---	---	---	---	---	---	---	11.13
PW43	---	---	---	---	---	---	---	---	---	---	16
PW44	---	---	---	---	---	---	---	---	---	---	3.75
PW45	---	---	---	---	---	---	---	---	---	---	7.57
PW46	---	---	---	---	---	---	---	---	---	---	11.46

--- monitoring well was not sampled during this event.

Table E-3. CY 2014 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**
HIS175875	HISS-01	09/02/14	ML-006	Radium-226	1.14	1.46	2.55	pCi/L	UJ	T06	No
HIS175875	HISS-01	09/02/14	ML-005	Thorium-228	0.0479	0.214	0.574	pCi/L	UJ	T06	No
HIS175875	HISS-01	09/02/14	ML-005	Thorium-230	0.192	0.275	0.26	pCi/L	UJ	T06	No
HIS175875	HISS-01	09/02/14	ML-005	Thorium-232	-0.191	0.197	0.889	pCi/L	UJ	T06	No
HIS175875	HISS-01	09/02/14	ML-015	Uranium-234	9.79	2.89	0.26	pCi/L	=		No
HIS175875	HISS-01	09/02/14	ML-015	Uranium-235	0.533	0.555	0.71	pCi/L	UJ	T06	No
HIS175875	HISS-01	09/02/14	ML-015	Uranium-238	10.8	3.12	0.259	pCi/L	=		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Barium	93		0.22	µg/L	=		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Cadmium	0.58		0.1	µg/L	=		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Chromium	1		1	µg/L	U		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Molybdenum	3.7		1	µg/L	=		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Nickel	7.5		0.4	µg/L	=		No
HIS175876	HISS-06A	09/02/14	ML-006	Radium-226	0.552	1.1	2.21	pCi/L	UJ	T06	No
HIS175876	HISS-06A	09/02/14	SW846 6020	Selenium	370		1.6	µg/L	J	E07	No
HIS175876	HISS-06A	09/02/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS175876	HISS-06A	09/02/14	ML-005	Thorium-228	0.246	0.341	0.59	pCi/L	UJ	T06	No
HIS175876	HISS-06A	09/02/14	ML-005	Thorium-230	0	0	0.191	pCi/L	U		No
HIS175876	HISS-06A	09/02/14	ML-005	Thorium-232	-0.0351	0.0706	0.421	pCi/L	UJ	T06	No
HIS175876	HISS-06A	09/02/14	ML-015	Uranium-234	3.28E+00	1.18	0.197	pCi/L	=		No
HIS175876	HISS-06A	09/02/14	ML-015	Uranium-235	0.18	0.257	0.244	pCi/L	UJ	T06	No
HIS175876	HISS-06A	09/02/14	ML-015	Uranium-238	2.36	0.961	0.435	pCi/L	=		No
HIS175876	HISS-06A	09/02/14	SW846 6020	Vanadium	2.8		2.4	µg/L	=		No
HIS168012	HISS-10	02/18/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS168012	HISS-10	02/18/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS168012	HISS-10	02/18/14	SW846 6020	Barium	130		0.22	µg/L	=		No
HIS168012	HISS-10	02/18/14	SW846 6020	Cadmium	0.36		0.1	µg/L	=		No
HIS168012	HISS-10	02/18/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
HIS168012	HISS-10	02/18/14	SW846 6020	Molybdenum	18		1	µg/L	=		No
HIS168012	HISS-10	02/18/14	SW846 6020	Nickel	2.2		0.4	µg/L	=		No
HIS168012	HISS-10	02/18/14	ML-006	Radium-226	0.329	0.659	1.32	pCi/L	UJ	T06	No

Table E-3. CY 2014 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**
HIS168012	HISS-10	02/18/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS168012	HISS-10	02/18/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS168012	HISS-10	02/18/14	ML-005	Thorium-228	0.195	0.277	0.478	pCi/L	UJ	T06	No
HIS168012	HISS-10	02/18/14	ML-005	Thorium-230	0.13	0.185	0.176	pCi/L	UJ	T06	No
HIS168012	HISS-10	02/18/14	ML-005	Thorium-232	-0.0325	0.172	0.546	pCi/L	UJ	T06	No
HIS168012	HISS-10	02/18/14	ML-015	Uranium-234	10	2.73	0.465	pCi/L	=		No
HIS168012	HISS-10	02/18/14	ML-015	Uranium-235	0.621	0.531	0.573	pCi/L	J	T04	No
HIS168012	HISS-10	02/18/14	ML-015	Uranium-238	8.41	2.37	0.209	pCi/L	=		No
HIS168012	HISS-10	02/18/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Barium	150		0.22	µg/L	=		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Cadmium	0.71		0.1	µg/L	=		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Chromium	1		1	µg/L	U		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Molybdenum	2.9		1	µg/L	=		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Nickel	5.2		0.4	µg/L	=		No
HIS175877	HISS-11A	09/02/14	ML-006	Radium-226	0.448	0.634	0.607	pCi/L	UJ	T06	No
HIS175877	HISS-11A	09/02/14	SW846 6020	Selenium	28		1.6	µg/L	J	E07	No
HIS175877	HISS-11A	09/02/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS175877	HISS-11A	09/02/14	ML-005	Thorium-228	0.0527	0.167	0.388	pCi/L	UJ	T06	No
HIS175877	HISS-11A	09/02/14	ML-005	Thorium-230	0.158	0.185	0.143	pCi/L	UJ	T02	No
HIS175877	HISS-11A	09/02/14	ML-005	Thorium-232	-0.0263	0.0529	0.316	pCi/L	UJ	T06	No
HIS175877	HISS-11A	09/02/14	ML-015	Uranium-234	1.23	0.736	0.546	pCi/L	J	T04	No
HIS175877	HISS-11A	09/02/14	ML-015	Uranium-235	0	0	0.304	pCi/L	U		No
HIS175877	HISS-11A	09/02/14	ML-015	Uranium-238	2.04	0.978	0.544	pCi/L	=		No
HIS175877	HISS-11A	09/02/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Barium	53		0.22	µg/L	=		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Cadmium	0.22		0.1	µg/L	=		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Molybdenum	10		1	µg/L	=		No

Table E-3. CY 2014 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**
HIS173560	HISS-17S	05/19/14	SW846 6020	Nickel	2		0.4	µg/L	=		No
HIS173560	HISS-17S	05/19/14	ML-006	Radium-226	0.984	0.882	0.533	pCi/L	J	T04	No
HIS173560	HISS-17S	05/19/14	SW846 6020	Selenium	21		1.6	µg/L	=		No
HIS173560	HISS-17S	05/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS173560	HISS-17S	05/19/14	ML-005	Thorium-228	0.189	0.269	0.464	pCi/L	UJ	T06	No
HIS173560	HISS-17S	05/19/14	ML-005	Thorium-230	0.473	0.37	0.379	pCi/L	J	F01, T04	No
HIS173560	HISS-17S	05/19/14	ML-005	Thorium-232	-0.063	0.0896	0.464	pCi/L	UJ	T06	No
HIS173560	HISS-17S	05/19/14	ML-015	Uranium-234	0.53	0.453	0.489	pCi/L	J	T04	No
HIS173560	HISS-17S	05/19/14	ML-015	Uranium-235	0	0	0.273	pCi/L	U		No
HIS173560	HISS-17S	05/19/14	ML-015	Uranium-238	0.406	0.373	0.22	pCi/L	J	T04	No
HIS173560	HISS-17S	05/19/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Arsenic	350		1.2	µg/L	=		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Barium	630		0.22	µg/L	=		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Cadmium	0.83		0.1	µg/L	=		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Chromium	1		1	µg/L	U		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Molybdenum	8.6		1	µg/L	=		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Nickel	3.8		0.4	µg/L	=		No
HIS177494	HISS-19S	12/02/14	ML-006	Radium-226	1.42	0.811	0.876	pCi/L	J	T04	No
HIS177494	HISS-19S	12/02/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS177494	HISS-19S	12/02/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS177494	HISS-19S	12/02/14	ML-005	Thorium-228	0.122	0.151	0.224	pCi/L	UJ	T06	No
HIS177494	HISS-19S	12/02/14	ML-005	Thorium-230	0.214	0.165	0.0827	pCi/L	J	F01, T04	No
HIS177494	HISS-19S	12/02/14	ML-005	Thorium-232	0.0609	0.0867	0.0826	pCi/L	UJ	T06	No
HIS177494	HISS-19S	12/02/14	ML-015	Uranium-234	0.473	0.272	0.0915	pCi/L	J	T04	No
HIS177494	HISS-19S	12/02/14	ML-015	Uranium-235	-0.0417	0.0838	0.307	pCi/L	UJ	T06	No
HIS177494	HISS-19S	12/02/14	ML-015	Uranium-238	0.269	0.198	0.0911	pCi/L	J	F01, T04	No
HIS177494	HISS-19S	12/02/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
HIS173562	HW22	05/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS173562	HW22	05/19/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
HIS173562	HW22	05/19/14	SW846 6020	Barium	200		0.22	µg/L	=		No
HIS173562	HW22	05/19/14	SW846 6020	Cadmium	0.1		0.1	µg/L	U		No

Table E-3. CY 2014 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**
HIS173562	HW22	05/19/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
HIS173562	HW22	05/19/14	SW846 6020	Molybdenum	1		1	µg/L	U		No
HIS173562	HW22	05/19/14	SW846 6020	Nickel	1.2		0.4	µg/L	=		No
HIS173562	HW22	05/19/14	ML-006	Radium-226	0.642	0.909	1.58	pCi/L	UJ	T06	No
HIS173562	HW22	05/19/14	SW846 6020	Selenium	4.1		1.6	µg/L	=		No
HIS173562	HW22	05/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS173562	HW22	05/19/14	ML-005	Thorium-228	0.0772	0.244	0.568	pCi/L	UJ	T06	No
HIS173562	HW22	05/19/14	ML-005	Thorium-230	0.309	0.313	0.209	pCi/L	UJ	T02	No
HIS173562	HW22	05/19/14	ML-005	Thorium-232	0.116	0.232	0.463	pCi/L	UJ	T06	No
HIS173562	HW22	05/19/14	ML-015	Uranium-234	7.22	2.05	0.604	pCi/L	=		No
HIS173562	HW22	05/19/14	ML-015	Uranium-235	0.0886	0.281	0.652	pCi/L	UJ	T06	No
HIS173562	HW22	05/19/14	ML-015	Uranium-238	4.58	1.46	0.194	pCi/L	=		No
HIS173562	HW22	05/19/14	SW846 6020	Vanadium	3.3		2.4	µg/L	=		No
HIS173561	HW23	05/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
HIS173561	HW23	05/19/14	SW846 6020	Arsenic	140		1.2	µg/L	=		No
HIS173561	HW23	05/19/14	SW846 6020	Barium	400		0.22	µg/L	=		No
HIS173561	HW23	05/19/14	SW846 6020	Cadmium	0.14		0.1	µg/L	=		No
HIS173561	HW23	05/19/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
HIS173561	HW23	05/19/14	SW846 6020	Molybdenum	6.2		1	µg/L	=		No
HIS173561	HW23	05/19/14	SW846 6020	Nickel	5.5		0.4	µg/L	=		No
HIS173561	HW23	05/19/14	ML-006	Radium-226	0.00003061	0.764	2.05	pCi/L	UJ	T06	No
HIS173561	HW23	05/19/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
HIS173561	HW23	05/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
HIS173561	HW23	05/19/14	ML-005	Thorium-228	0.384	0.354	0.419	pCi/L	U	T04, T05	No
HIS173561	HW23	05/19/14	ML-005	Thorium-230	0.35	0.317	0.19	pCi/L	J	F01, T04	No
HIS173561	HW23	05/19/14	ML-005	Thorium-232	0.0698	0.14	0.189	pCi/L	UJ	T06	No
HIS173561	HW23	05/19/14	ML-015	Uranium-234	-0.0452	0.091	0.543	pCi/L	UJ	T06	No

Table E-3. CY 2014 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**
HIS173561	HW23	05/19/14	ML-015	Uranium-235	0	0	0.303	pCi/L	U		No
HIS173561	HW23	05/19/14	ML-015	Uranium-238	0	0	0.244	pCi/L	U		No
HIS173561	HW23	05/19/14	SW846 6020	Vanadium	5		2.4	µg/L	=		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:

E07 ICP and Furnace Requirements: Serial Dilution criteria were not met.

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.

Table E-4. CY 2014 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**
SVP177495	B53W01S	12/04/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP177495	B53W01S	12/04/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP177495	B53W01S	12/04/14	SW846 6020	Barium	86		0.22	µg/L	=		No
SVP177495	B53W01S	12/04/14	SW846 6020	Cadmium	0.19		0.1	µg/L	=		No
SVP177495	B53W01S	12/04/14	SW846 6020	Chromium	1		1	µg/L	U		No
SVP177495	B53W01S	12/04/14	SW846 6020	Molybdenum	1.1		1	µg/L	=		No
SVP177495	B53W01S	12/04/14	SW846 6020	Nickel	7.8		0.4	µg/L	=		No
SVP177495	B53W01S	12/04/14	ML-006	Radium-226	0.22	0.311	0.298	pCi/L	UJ	T06	No
SVP177495	B53W01S	12/04/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP177495	B53W01S	12/04/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP177495	B53W01S	12/04/14	ML-005	Thorium-228	0.0751	0.107	0.102	pCi/L	UJ	T06	No
SVP177495	B53W01S	12/04/14	ML-005	Thorium-230	0.15	0.214	0.349	pCi/L	UJ	T06	No
SVP177495	B53W01S	12/04/14	ML-005	Thorium-232	8.68E-07	0.106	0.276	pCi/L	UJ	T06	No
SVP177495	B53W01S	12/04/14	ML-015	Uranium-234	0.259	0.204	0.1	pCi/L	J	T04	No
SVP177495	B53W01S	12/04/14	ML-015	Uranium-235	0.0913	0.131	0.124	pCi/L	UJ	T06	No
SVP177495	B53W01S	12/04/14	ML-015	Uranium-238	0.368	0.247	0.1	pCi/L	J	F01, T04	No
SVP177495	B53W01S	12/04/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP173554	B53W06S	05/21/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Barium	58		0.22	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Barium	48		0.22	µg/L	=		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Cadmium	0.92		0.1	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Cadmium	0.35		0.1	µg/L	=		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Chromium	17		3.3	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Chromium	19		3.3	µg/L	=		Yes

Table E-4. CY 2014 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
SVP173554	B53W06S	05/21/14	SW846 6020	Molybdenum	6.5		1	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Molybdenum	6.4		1	µg/L	=		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Nickel	4.6		0.4	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Nickel	2.9		0.4	µg/L	=		Yes
SVP173554	B53W06S	05/21/14	ML-006	Radium-226	-0.242	0.343	1.78	pCi/L	UJ	T06	No
SVP173554	B53W06S	05/21/14	SW846 6020	Selenium	3.5		1.6	µg/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Selenium	2.6		1.6	µg/L	=		Yes
SVP173554	B53W06S	05/21/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP173554	B53W06S	05/21/14	ML-005	Thorium-228	0.0818	0.259	0.602	pCi/L	UJ	T06	No
SVP173554	B53W06S	05/21/14	ML-005	Thorium-230	0.205	0.297	0.491	pCi/L	UJ	T06	No
SVP173554	B53W06S	05/21/14	ML-005	Thorium-232	0.0818	0.164	0.222	pCi/L	UJ	T06	No
SVP173554	B53W06S	05/21/14	ML-015	Uranium-234	10.3	2.76	0.21	pCi/L	=		No
SVP173554	B53W06S	05/21/14	ML-015	Uranium-235	0.239	0.348	0.573	pCi/L	UJ	T06	No
SVP173554	B53W06S	05/21/14	ML-015	Uranium-238	8.86	2.45	0.209	pCi/L	=		No
SVP173554	B53W06S	05/21/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP173554	B53W06S	05/21/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP177496	B53W07D	12/04/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP177496	B53W07D	12/04/14	SW846 6020	Arsenic	86		1.2	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Barium	380		0.22	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Cadmium	1.2		0.1	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Chromium	3.3		1	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Molybdenum	2.2		1	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Nickel	8.8		0.4	µg/L	=		No
SVP177496	B53W07D	12/04/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP177496	B53W07D	12/04/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP177496	B53W07D	12/04/14	SW846 6020	Vanadium	2.5		2.4	µg/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No

Table E-4. CY 2014 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
SVP168004	B53W07S	02/19/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP168004	B53W07S	02/19/14	SW846 6020	Barium	190		0.22	µg/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Cadmium	0.1		0.1	µg/L	U		No
SVP168004	B53W07S	02/19/14	SW846 6020	Chromium	4.2		3.3	µg/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Molybdenum	1.7		1	µg/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Nickel	1.5		0.4	µg/L	=		No
SVP168004	B53W07S	02/19/14	ML-006	Radium-226	-0.426	0.853	2.56	pCi/L	UJ	T06	No
SVP168004	B53W07S	02/19/14	SW846 6020	Selenium	3.5		1.6	µg/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP168004	B53W07S	02/19/14	ML-005	Thorium-228	0.104	0.147	0.14	pCi/L	UJ	T06	No
SVP168004	B53W07S	02/19/14	ML-005	Thorium-230	0.519	0.337	0.141	pCi/L	J	T04	No
SVP168004	B53W07S	02/19/14	ML-005	Thorium-232	0	0	0.14	pCi/L	U		No
SVP168004	B53W07S	02/19/14	ML-015	Uranium-234	4.16	1.45	0.217	pCi/L	=		No
SVP168004	B53W07S	02/19/14	ML-015	Uranium-235	0.296	0.348	0.268	pCi/L	UJ	T02	No
SVP168004	B53W07S	02/19/14	ML-015	Uranium-238	2.75	1.11	0.478	pCi/L	=		No
SVP168004	B53W07S	02/19/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP168005	B53W09S	02/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Barium	320		0.22	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Barium	320		0.22	µg/L	=		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Cadmium	1.8		0.1	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Cadmium	0.2		0.1	µg/L	=		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Chromium	5.2		3.3	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Chromium	5.2		3.3	µg/L	=		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Molybdenum	4.2		1	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Molybdenum	5.1		1	µg/L	=		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Nickel	14		0.4	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Nickel	14		0.4	µg/L	=		Yes

Table E-4. CY 2014 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**
SVP168005	B53W09S	02/19/14	SW846 6020	Selenium	6		1.6	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Selenium	6.3		1.6	µg/L	=		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Thallium	0.83		0.55	µg/L	=		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP168005	B53W09S	02/19/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP168005	B53W09S	02/19/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Antimony	1.70E+00		1.7	µg/L	U		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Barium	290		0.22	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Barium	300		0.22	µg/L	=		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Cadmium	0.75		0.1	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Cadmium	0.29		0.1	µg/L	=		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Chromium	20		3.3	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Chromium	3.3		3.3	µg/L	U		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Molybdenum	2.4		1	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Molybdenum	2.1		1	µg/L	=		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Nickel	230		0.4	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Nickel	190		0.4	µg/L	=		Yes
SVP168007	B53W13S	02/18/14	ML-006	Radium-226	0.491	0.857	1.65	pCi/L	UJ	T06	No
SVP168007	B53W13S	02/18/14	SW846 6020	Selenium	100		1.6	µg/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Selenium	110		1.6	µg/L	=		Yes
SVP168007	B53W13S	02/18/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP168007	B53W13S	02/18/14	ML-005	Thorium-228	0.326	0.271	0.147	pCi/L	J	T04	No
SVP168007	B53W13S	02/18/14	ML-005	Thorium-230	0.544	0.354	0.147	pCi/L	J	T04	No
SVP168007	B53W13S	02/18/14	ML-005	Thorium-232	-0.0272	0.0544	0.326	pCi/L	UJ	T06	No
SVP168007	B53W13S	02/18/14	ML-015	Uranium-234	11.9	4.16	0.423	pCi/L	=		No
SVP168007	B53W13S	02/18/14	ML-015	Uranium-235	0.385	0.554	0.522	pCi/L	UJ	T06	No

Table E-4. CY 2014 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**
SVP168007	B53W13S	02/18/14	ML-015	Uranium-238	11.4	4.01	0.421	pCi/L	=		No
SVP168007	B53W13S	02/18/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP168007	B53W13S	02/18/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Barium	280		0.22	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Barium	280		0.22	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Cadmium	0.29		0.1	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Cadmium	0.3		0.1	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Chromium	9.7		1	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Chromium	1		1	µg/L	U		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Molybdenum	1.7		1	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Molybdenum	1.5		1	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Nickel	91		0.4	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Nickel	80		0.4	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	ML-006	Radium-226	0.778	0.917	1.33	pCi/L	UJ	T06	No
SVP175878	B53W13S	09/05/14	SW846 6020	Selenium	110		1.6	µg/L	J	E07	No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Selenium	95		1.6	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	SW846 6020	Thallium	1.2		0.55	µg/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Thallium	1.3		0.55	µg/L	=		Yes
SVP175878	B53W13S	09/05/14	ML-005	Thorium-228	0.196	0.229	0.177	pCi/L	UJ	T02	No
SVP175878	B53W13S	09/05/14	ML-005	Thorium-230	0.0653	0.131	0.177	pCi/L	UJ	T06	No
SVP175878	B53W13S	09/05/14	ML-005	Thorium-232	-0.0326	0.0655	0.391	pCi/L	UJ	T06	No
SVP175878	B53W13S	09/05/14	EPA 160.2	uspended Solids	2.5		5.33	mg/L	U		No
SVP175878	B53W13S	09/05/14	ML-015	Uranium-234	10.8	2.83	0.202	pCi/L	=		No
SVP175878	B53W13S	09/05/14	ML-015	Uranium-235	0.368	0.375	0.249	pCi/L	UJ	T02	No
SVP175878	B53W13S	09/05/14	ML-015	Uranium-238	10.4	2.74	0.201	pCi/L	=		No
SVP175878	B53W13S	09/05/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No

Table E-4. CY 2014 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**
SVP175878	B53W13S	09/05/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Arsenic	1.3		1.2	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Barium	380		0.22	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Barium	390		0.22	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Cadmium	0.29		0.1	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Cadmium	0.29		0.1	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Chromium	25		1	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Chromium	28		1	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Molybdenum	2.8		1	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Molybdenum	2.5		1	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Nickel	62		0.4	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Nickel	57		0.4	µg/L	J	E07	Yes
SVP177500	B53W13S	12/10/14	ML-006	Radium-226	0.72	0.589	0.325	pCi/L	J	T04	No
SVP177500	B53W13S	12/10/14	SW846 6020	Selenium	81		1.6	µg/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Selenium	99		1.6	µg/L	=		Yes
SVP177500	B53W13S	12/10/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP177500	B53W13S	12/10/14	ML-005	Thorium-228	0.038	0.132	0.28	pCi/L	UJ	T06	No
SVP177500	B53W13S	12/10/14	ML-005	Thorium-230	0.304	0.289	0.41	pCi/L	U	T04, T05	No
SVP177500	B53W13S	12/10/14	ML-005	Thorium-232	0	0	0.103	pCi/L	U		No
SVP177500	B53W13S	12/10/14	ML-015	Uranium-234	10.9	2.62	0.261	pCi/L	=		No
SVP177500	B53W13S	12/10/14	ML-015	Uranium-235	0.612	0.352	0.119	pCi/L	J	T04	No
SVP177500	B53W13S	12/10/14	ML-015	Uranium-238	8.65	2.14	0.26	pCi/L	=		No
SVP177500	B53W13S	12/10/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP177500	B53W13S	12/10/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes

Table E-4. CY 2014 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**
SVP168006	B53W18S	02/19/14	SW846 6020	Arsenic	1.3		1.2	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Barium	500		0.22	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Barium	500		0.22	µg/L	=		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Cadmium	0.25		0.1	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Cadmium	0.13		0.1	µg/L	=		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Chromium	58		3.3	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Chromium	3.3		3.3	µg/L	U		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Molybdenum	26		1	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Molybdenum	24		1	µg/L	=		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Nickel	480		0.4	µg/L	=		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Nickel	480		0.4	µg/L	=		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Selenium	1.6		1.6	µg/L	U		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP168006	B53W18S	02/19/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP168006	B53W18S	02/19/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Arsenic	1.3		1.2	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Arsenic	1.7		1.2	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Barium	610		0.22	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Barium	640		0.22	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Cadmium	0.34		0.1	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Cadmium	0.31		0.1	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Chromium	47		1	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Chromium	2		1	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Molybdenum	22		1	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Molybdenum	20		1	µg/L	=		Yes

Table E-4. CY 2014 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**
SVP175879	B53W18S	09/04/14	SW846 6020	Nickel	760		0.4	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Nickel	790		0.4	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	ML-006	Radium-226	1.12	1.12	0.756	pCi/L	UJ	T02	No
SVP175879	B53W18S	09/04/14	SW846 6020	Selenium	1.6		1.6	µg/L	UJ	E07	No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Selenium	1.9		1.6	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	SW846 6020	Thallium	1.6		0.55	µg/L	=		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Thallium	2		0.55	µg/L	=		Yes
SVP175879	B53W18S	09/04/14	ML-005	Thorium-228	0.302	0.313	0.402	pCi/L	UJ	T06	No
SVP175879	B53W18S	09/04/14	ML-005	Thorium-230	0.268	0.32	0.494	pCi/L	UJ	T06	No
SVP175879	B53W18S	09/04/14	ML-005	Thorium-232	0	0	0.182	pCi/L	U		No
SVP175879	B53W18S	09/04/14	EPA 160.2	uspended Solid	4.53		5.33	mg/L	U		No
SVP175879	B53W18S	09/04/14	ML-015	Uranium-234	1.51	0.8	0.241	pCi/L	J	T04	No
SVP175879	B53W18S	09/04/14	ML-015	Uranium-235	0.11	0.22	0.297	pCi/L	UJ	T06	No
SVP175879	B53W18S	09/04/14	ML-015	Uranium-238	1.5	0.796	0.24	pCi/L	J	T04	No
SVP175879	B53W18S	09/04/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP175879	B53W18S	09/04/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Antimony	1.70E+00		1.7	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Arsenic	1.2		1.2	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Barium	610		0.22	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Barium	620		0.22	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Cadmium	0.74		0.1	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Cadmium	0.75		0.1	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Chromium	330		1	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Chromium	390		1	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Molybdenum	42		1	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Molybdenum	45		1	µg/L	=		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Nickel	470		0.4	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Nickel	430		0.4	µg/L	J	E07	Yes

Table E-4. CY 2014 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
SVP177499	B53W18S	12/10/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Selenium	2.5		1.6	µg/L	J	F01	Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP177499	B53W18S	12/10/14	SW846 6020	Vanadium	3.3		2.4	µg/L	=		No
SVP177499	B53W18S	12/10/14	SW846 6020DIS	Vanadium	3.6		2.4	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Arsenic	3.4		1.2	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Arsenic	1.6		1.2	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Barium	670		0.22	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Barium	640		0.22	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Cadmium	2.1		0.1	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Cadmium	1.8		0.1	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Chromium	370		1	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Chromium	2.2		1	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Molybdenum	87		1	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Molybdenum	70		1	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Nickel	2900		0.4	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Nickel	2900		0.4	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	ML-006	Radium-226	0.838	0.988	1.44	pCi/L	UJ	T06	No
SVP175880	B53W19S	09/05/14	SW846 6020	Selenium	1.7		1.6	µg/L	J	E07	No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Selenium	2.1		1.6	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	SW846 6020	Thallium	0.84		0.55	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Thallium	0.98		0.55	µg/L	=		Yes
SVP175880	B53W19S	09/05/14	ML-005	Thorium-228	0.237	0.283	0.406	pCi/L	UJ	T06	No
SVP175880	B53W19S	09/05/14	ML-005	Thorium-230	0.305	0.317	0.406	pCi/L	UJ	T06	No
SVP175880	B53W19S	09/05/14	ML-005	Thorium-232	0	0.204	0.405	pCi/L	UJ	T06	No
SVP175880	B53W19S	09/05/14	EPA 160.2	uspended Solid	22		5.33	mg/L	=		No
SVP175880	B53W19S	09/05/14	ML-015	Uranium-234	1	0.548	0.269	pCi/L	J	T04	No

Table E-4. CY 2014 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**
SVP175880	B53W19S	09/05/14	ML-015	Uranium-235	0	0	0.332	pCi/L	U		No
SVP175880	B53W19S	09/05/14	ML-015	Uranium-238	0.149	0.299	0.594	pCi/L	UJ	T06	No
SVP175880	B53W19S	09/05/14	SW846 6020	Vanadium	3.7		2.4	µg/L	=		No
SVP175880	B53W19S	09/05/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Antimony	1.7		1.7	µg/L	U		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Arsenic	1.5		1.2	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Arsenic	1.2		1.2	µg/L	U		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Barium	260		0.22	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Barium	210		0.22	µg/L	=		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Cadmium	0.66		0.1	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Cadmium	0.4		0.1	µg/L	=		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Chromium	350		1	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Chromium	1.4		1	µg/L	=		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Molybdenum	130		1	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Molybdenum	94		1	µg/L	=		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Nickel	920		0.4	µg/L	=		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Nickel	730		0.4	µg/L	J	E07	Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Selenium	2.9		1.6	µg/L	J	F01	Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Thallium	0.55		0.55	µg/L	U		Yes
SVP177498	B53W19S	12/10/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP177498	B53W19S	12/10/14	SW846 6020DIS	Vanadium	2.4		2.4	µg/L	U		Yes
SVP177497	MW31-98	12/04/14	ML-006	Radium-226	0.301	0.48	0.84	pCi/L	UJ	T06	No
SVP177497	MW31-98	12/04/14	ML-005	Thorium-228	-0.037	0.166	0.399	pCi/L	UJ	T06	No
SVP177497	MW31-98	12/04/14	ML-005	Thorium-230	0.297	0.216	0.101	pCi/L	J	F01, T04	No
SVP177497	MW31-98	12/04/14	ML-005	Thorium-232	0.037	0.128	0.272	pCi/L	UJ	T06	No
SVP177497	MW31-98	12/04/14	ML-015	Uranium-234	2.85	0.839	0.0859	pCi/L	=		No
SVP177497	MW31-98	12/04/14	ML-015	Uranium-235	0.0782	0.112	0.106	pCi/L	UJ	T06	No

Table E-4. CY 2014 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**
SVP177497	MW31-98	12/04/14	ML-015	Uranium-238	2.43	0.745	0.0856	pCi/L	=		No
SVP173556	MW32-98	05/21/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP173556	MW32-98	05/21/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP173556	MW32-98	05/21/14	SW846 6020	Barium	93		0.22	µg/L	=		No
SVP173556	MW32-98	05/21/14	SW846 6020	Cadmium	0.15		0.1	µg/L	=		No
SVP173556	MW32-98	05/21/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
SVP173556	MW32-98	05/21/14	SW846 6020	Molybdenum	1		1	µg/L	U		No
SVP173556	MW32-98	05/21/14	SW846 6020	Nickel	0.59		0.4	µg/L	=		No
SVP173556	MW32-98	05/21/14	ML-006	Radium-226	0.558	0.645	0.504	pCi/L	UJ	T02	No
SVP173556	MW32-98	05/21/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP173556	MW32-98	05/21/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP173556	MW32-98	05/21/14	ML-005	Thorium-228	0.242	0.249	0.322	pCi/L	UJ	T06	No
SVP173556	MW32-98	05/21/14	ML-005	Thorium-230	0.242	0.249	0.323	pCi/L	UJ	T06	No
SVP173556	MW32-98	05/21/14	ML-005	Thorium-232	0	0	0.146	pCi/L	U		No
SVP173556	MW32-98	05/21/14	ML-015	Uranium-234	0.241	0.245	0.163	pCi/L	UJ	T02	No
SVP173556	MW32-98	05/21/14	ML-015	Uranium-235	0	0	0.201	pCi/L	U		No
SVP173556	MW32-98	05/21/14	ML-015	Uranium-238	0.479	0.351	0.162	pCi/L	J	T04	No
SVP173556	MW32-98	05/21/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Barium	92		0.22	µg/L	=		No
SVP173555	PW42	05/19/14	SW846 6020	Cadmium	0.1		0.1	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Molybdenum	1		1	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Nickel	0.4		0.4	µg/L	U		No
SVP173555	PW42	05/19/14	ML-006	Radium-226	0.321	0.642	1.28	pCi/L	UJ	T06	No
SVP173555	PW42	05/19/14	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
SVP173555	PW42	05/19/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP173555	PW42	05/19/14	ML-005	Thorium-228	0.243	0.289	0.416	pCi/L	UJ	T06	No
SVP173555	PW42	05/19/14	ML-005	Thorium-230	0.486	0.375	0.188	pCi/L	J	F01, T04	No

Table E-4. CY 2014 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**
SVP173555	PW42	05/19/14	ML-005	Thorium-232	0.0694	0.139	0.188	pCi/L	UJ	T06	No
SVP173555	PW42	05/19/14	ML-015	Uranium-234	0.163	0.233	0.221	pCi/L	UJ	T06	No
SVP173555	PW42	05/19/14	ML-015	Uranium-235	-0.0503	0.101	0.604	pCi/L	UJ	T06	No
SVP173555	PW42	05/19/14	ML-015	Uranium-238	0.244	0.286	0.22	pCi/L	UJ	T02	No
SVP173555	PW42	05/19/14	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
SVP175881	PW43	09/04/14	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
SVP175881	PW43	09/04/14	SW846 6020	Arsenic	2		1.2	µg/L	=		No
SVP175881	PW43	09/04/14	SW846 6020	Barium	190		0.22	µg/L	=		No
SVP175881	PW43	09/04/14	SW846 6020	Cadmium	0.56		0.1	µg/L	=		No
SVP175881	PW43	09/04/14	SW846 6020	Chromium	1		1	µg/L	U		No
SVP175881	PW43	09/04/14	SW846 6020	Molybdenum	3.1		1	µg/L	=		No
SVP175881	PW43	09/04/14	SW846 6020	Nickel	6.7		0.4	µg/L	=		No
SVP175881	PW43	09/04/14	SW846 6020	Selenium	1.6		1.6	µg/L	UJ	E07	No
SVP175881	PW43	09/04/14	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
SVP175881	PW43	09/04/14	SW846 6020	Vanadium	3.1		2.4	µg/L	=		No
SLA168003	PW46	02/18/14	ML-006	Radium-226	0.201	0.636	1.48	pCi/L	UJ	T06	No
SLA168003	PW46	02/18/14	ML-005	Thorium-228	0.0857	0.172	0.232	pCi/L	UJ	T06	No
SLA168003	PW46	02/18/14	ML-005	Thorium-230	0.729	0.536	0.514	pCi/L	J	T04	No
SLA168003	PW46	02/18/14	ML-005	Thorium-232	0	0	0.232	pCi/L	U		No
SLA168003	PW46	02/18/14	ML-015	Uranium-234	156	32	0.189	pCi/L	=		No

Table E-4. CY 2014 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**
SLA168003	PW46	02/18/14	ML-015	Uranium-235	8.88	2.51	0.721	pCi/L	=		No
SLA168003	PW46	02/18/14	ML-015	Uranium-238	159	32.5	0.416	pCi/L	=		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:

E07 ICP and Furnace Requirements: Serial Dilution criteria were not met.

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.

Table E-5. Ground-Water Monitoring Field Parameters for HW22 and HW23 at the Latty Avenue Properties: First Quarter of 2009 to Fourth Quarter of 2013

Station ID	Date Sampled	Purge Rate (mL/min)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Quarterly Water Levels	
											Date of Measurement	Depth to Water (BTOC)
HW22	---	---	---	---	---	---	---	---	---	---	05/22/09	13.30
HW22	08/26/09	50	1,050	6.41	1.82	20.2	4.48	23.4	70	14.3	08/21/09	14.16
HW22	---	---	---	---	---	---	---	---	---	---	11/20/09	11.88
HW22	---	---	---	---	---	---	---	---	---	---	03/05/10	12.78
HW22	---	---	---	---	---	---	---	---	---	---	05/21/10	12.24
HW22	09/15/10	80	1,200	6.63	0.193	7.3	6.13	20.3	86	14.06	09/08/10	13.84
HW22	12/17/10	80	720	6.6	0.2	3.7	1.94	10.5	228	14.25	12/13/10	13.61
HW22	---	---	---	---	---	---	---	---	---	---	03/21/11	12.2
HW22	---	---	---	---	---	---	---	---	---	---	06/01/11	12.97
HW22	08/29/11	75	1,350	6.37	0.198	1.5	1.43	20.5	154	17.16	08/22/11	16.19
HW22	---	---	---	---	---	---	---	---	---	---	11/14/11	13.39
HW22	---	---	---	---	---	---	---	---	---	---	02/27/12	12.95
HW22	---	---	---	---	---	---	---	---	---	---	05/24/12	13.42
HW22	---	---	---	---	---	---	---	---	---	---	08/20/12	17.87
HW22	---	---	---	---	---	---	---	---	---	---	12/07/12	13.85
HW22	---	---	---	---	---	---	---	---	---	---	03/04/13	12.65
HW22	05/20/13	80	960	6.48	1.13	65.8	5.01	18.3	-157	13.26	05/17/13	12.55
HW22	---	---	---	---	---	---	---	---	---	---	08/26/13	14.48
HW22	---	---	---	---	---	---	---	---	---	---	12/03/13	14.9

Table E-5. Ground-Water Monitoring Field Parameters for HW22 and HW23 at the Latty Avenue Properties: First Quarter of 2009 to Fourth Quarter of 2013

Station ID	Date Sampled	Purge Rate (mL/min)	Volume Removed (mL)	pH	Conductivity (µS/cm)	Turbidity (NTU)	DO (mg/L)	Temp (°C)	ORP (mV)	Depth to Water at Sampling Time	Quarterly Water Levels	
											Date of Measurement	Depth to Water (BTOC)
HW23	---	---	---	---	---	---	---	---	---	---	02/16/09	13.94
HW23	---	---	---	---	---	---	---	---	---	---	05/22/09	10.36
HW23	08/26/09	35	420	6.88	0.888	205	5.11	20.2	-189	10.49	08/21/09	10.39
HW23	11/24/09	40	840	7.13	1.52	18	4.67	15.8	158	10.56	11/20/09	9.93
HW23	03/08/10	35	630	6.73	0.122	45.4	5.23	13	-127	10.09	03/05/10	9.96
HW23	---	---	---	---	---	---	---	---	---	---	05/21/10	9.83
HW23	09/15/10	35	735	8.63	0.121	54.2	4.88	19.6	-160	10.20	09/08/10	10.04
HW23	---	---	---	---	---	---	---	---	---	---	12/13/10	9.89
HW23	03/28/11	35	525	7.2	0.122	51.8	560	13.3	-157	10.06	03/21/11	9.72
HW23	---	---	---	---	---	---	---	---	---	---	06/01/11	10.1
HW23	08/29/11	50	750	7.03	0.113	30.6	3.99	21.2	-168	10.05	08/22/11	9.8
HW23	---	---	---	---	---	---	---	---	---	---	11/14/11	9.8
HW23	---	---	---	---	---	---	---	---	---	---	02/27/12	9.64
HW23	---	---	---	---	---	---	---	---	---	---	05/24/12	9.85
HW23	08/21/12	35	630	6.93	0.116	104	4.12	22.9	-185	10.43	08/20/12	10.28
HW23	---	---	---	---	---	---	---	---	---	---	12/07/12	10.06
HW23	---	---	---	---	---	---	---	---	---	---	03/04/13	9.94
HW23	---	---	---	---	---	---	---	---	---	---	05/17/13	9.99
HW23	08/29/13	35	525	6.32	1.01	42.6	5.98	19.5	-137	10.36	08/26/13	10.32
HW23	---	---	---	---	---	---	---	---	---	---	12/03/13	10.14

--- monitoring well was not sampled during this event.

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	**Sample Name**	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
						HW22						
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Aluminum	79.9		79.9	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Antimony	19.9		19.9	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Arsenic	2		2	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Barium	268		4	µg/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Beryllium	0.61		0.61	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Boron	108		108	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Cadmium	0.91		0.91	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Calcium	194,000		1060	µg/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Chromium	3.1		3.1	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Cobalt	4		4	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Copper	4.6		4.6	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Iron	35.9		28.2	µg/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Lead	1.3		1.3	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Lithium	96.2		96.2	µg/L	U	E07	No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Magnesium	89,500		660	µg/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Manganese	25.5		3.3	µg/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 7470A	Mercury	0.044		0.044	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Molybdenum	25.1		25.1	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Nickel	13.3		13.3	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Potassium	16,500		16500	µg/L	UJ	H01, H02, H04	No
3Q2009	HIS119725	HW22	08/26/09	ML-006	Radium-226	-3.52E-02	0.186	0.592	pCi/L	UJ	T06	No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Selenium	2.7		2.7	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Silver	6		6	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Sodium	90,500		3240	µg/L	J	E07	No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Strontium	473		5.4	µg/L	J	E07	No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Thallium	4		4	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	ML-005	Thorium-228	0.0611	0.194	0.45	pCi/L	UJ	T06	No
3Q2009	HIS119725	HW22	08/26/09	ML-005	Thorium-230	0.49	0.354	0.166	pCi/L	J	F01, T04	No
3Q2009	HIS119725	HW22	08/26/09	ML-005	Thorium-232	0.122	0.174	0.166	pCi/L	UJ	T06	No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Uranium	118		118	µg/L	U	E07	No
3Q2009	HIS119725	HW22	08/26/09	ML-015	Uranium-234	6.9	1.87	0.434	pCi/L	=		No
3Q2009	HIS119725	HW22	08/26/09	ML-015	Uranium-235	0.268	0.313	0.242	pCi/L	J	T02	No
3Q2009	HIS119725	HW22	08/26/09	ML-015	Uranium-238	3.85	1.26	0.432	pCi/L	=		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Vanadium	4.1		4.1	µg/L	U		No
3Q2009	HIS119725	HW22	08/26/09	SW846 6010B	Zinc	8.1		5.2	µg/L	=		No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
3Q2010	HIS130584	HW22	09/15/10	ML-006	Radium-226	-0.129	0.257	0.946	pCi/L	UJ	T06	No
3Q2010	HIS130584	HW22	09/15/10	ML-005	Thorium-228	0.0649	0.13	0.176	pCi/L	UJ	T06	No
3Q2010	HIS130584	HW22	09/15/10	ML-005	Thorium-230	0.553	0.404	0.39	pCi/L	J	F01, T04	No
3Q2010	HIS130584	HW22	09/15/10	ML-005	Thorium-232	0	0	0.176	pCi/L	U		No
3Q2010	HIS130584	HW22	09/15/10	ML-015	Uranium-234	5.48	1.56	0.419	pCi/L	=		No
3Q2010	HIS130584	HW22	09/15/10	ML-015	Uranium-235	0	0	0.233	pCi/L	U		No
3Q2010	HIS130584	HW22	09/15/10	ML-015	Uranium-238	2.99	1.05	0.188	pCi/L	=		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Antimony	1.1		1.1	µg/L	U		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Arsenic	0.95		0.95	µg/L	U		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Barium	262		0.2	µg/L	=		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Cadmium	0.48		0.1	µg/L	=		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Molybdenum	1.2		0.41	µg/L	=		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Nickel	2.7		0.4	µg/L	=		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Selenium	2.2		1.3	µg/L	J	E07	No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
4Q2010	HIS133116	HW22	12/17/10	SW846 6020	Vanadium	2.9		2.4	µg/L	=		No
3Q2011	HIS138649	HW22	08/29/11	ML-006	Radium-226	0.214	1.01	2.31	pCi/L	UJ	T06	No
3Q2011	HIS138649	HW22	08/29/11	ML-005	Thorium-228	0.28	0.283	0.19	pCi/L	J	F01, T02	No
3Q2011	HIS138649	HW22	08/29/11	ML-005	Thorium-230	0.595	0.436	0.42	pCi/L	J	T04	No
3Q2011	HIS138649	HW22	08/29/11	ML-005	Thorium-232	0	0	0.189	pCi/L	U		No
3Q2011	HIS138649	HW22	08/29/11	ML-015	Uranium-234	4.81	1.64	0.256	pCi/L	=		No
3Q2011	HIS138649	HW22	08/29/11	ML-015	Uranium-235	0.0582	0.261	0.698	pCi/L	UJ	T06	No
3Q2011	HIS138649	HW22	08/29/11	ML-015	Uranium-238	3.1	1.24	0.255	pCi/L	=		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Arsenic	1.2		1.2	µg/L	U		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Barium	220		0.22	µg/L	=		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Cadmium	1.1		0.1	µg/L	=		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Molybdenum	1		1	µg/L	U		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Nickel	6.8		0.4	µg/L	=		No
2Q2013	HIS154807	HW22	05/20/13	ML-006	Radium-226	0.278	0.556	0.753	pCi/L	UJ	T06	No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Selenium	1.9		1.6	µg/L	=		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
2Q2013	HIS154807	HW22	05/20/13	ML-005	Thorium-228	0.156	0.227	0.375	pCi/L	UJ	T06	No
2Q2013	HIS154807	HW22	05/20/13	ML-005	Thorium-230	0.282	0.29	0.376	pCi/L	UJ	T06	No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
2Q2013	HIS154807	HW22	05/20/13	ML-005	Thorium-232	0	0	0.17	pCi/L	U		No
2Q2013	HIS154807	HW22	05/20/13	ML-015	Uranium-234	6.62	1.92	0.425	pCi/L	=		No
2Q2013	HIS154807	HW22	05/20/13	ML-015	Uranium-235	0.0437	0.196	0.524	pCi/L	UJ	T06	No
2Q2013	HIS154807	HW22	05/20/13	ML-015	Uranium-238	2.26	0.92	0.191	pCi/L	=		No
2Q2013	HIS154807	HW22	05/20/13	SW846 6020	Vanadium	2.6		2.4	µg/L	=		No
HW23												
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Aluminum	3130		79.9	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Antimony	19.9		19.9	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Arsenic	99.8		2	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Barium	405		4	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Beryllium	0.61		0.61	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Boron	283		108	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Cadmium	0.91		0.91	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Calcium	109,000		1060	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Chromium	7.1		3.1	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Cobalt	4		4	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Copper	7		4.6	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Iron	13,900		28.2	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Lead	3.7		1.3	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Lithium	96.2		96.2	µg/L	U	E07	No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Magnesium	45,500		660	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Manganese	158		3.3	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 7470A	Mercury	0.1		0.044	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Molybdenum	25.1		25.1	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Nickel	13.3		13.3	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Potassium	16,500		16500	µg/L	UJ	H01, H02, H04	No
3Q2009	HIS119724	HW23	08/26/09	ML-006	Radium-226	1.82	0.735	0.197	pCi/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Selenium	2.7		2.7	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Silver	6		6	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Sodium	106,000		3240	µg/L	J	E07	No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Strontium	862		5.4	µg/L	J	E07	No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Thallium	4		4	µg/L	U		No
3Q2009	HIS119724	HW23	08/26/09	ML-005	Thorium-228	0.627	0.412	0.358	pCi/L	J	T04	No
3Q2009	HIS119724	HW23	08/26/09	ML-005	Thorium-230	1.11	0.551	0.359	pCi/L	J	F01	No
3Q2009	HIS119724	HW23	08/26/09	ML-005	Thorium-232	0.119	0.17	0.162	pCi/L	UJ	T06	No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Uranium	126		118	µg/L	J	E07, F01	No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	Sample Name	Station Name	Collection Date	Method	Analyte	Result	Measurement Error	DL	Units	VQ	Validation Reason Code	Filtered
3Q2009	HIS119724	HW23	08/26/09	ML-015	Uranium-234	0.3	0.304	0.203	pCi/L	J	T02	No
3Q2009	HIS119724	HW23	08/26/09	ML-015	Uranium-235	0.0924	0.185	0.25	pCi/L	UJ	T06	No
3Q2009	HIS119724	HW23	08/26/09	ML-015	Uranium-238	0.335	0.347	0.447	pCi/L	UJ	T06	No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Vanadium	11.1		4.1	µg/L	=		No
3Q2009	HIS119724	HW23	08/26/09	SW846 6010B	Zinc	21.9		5.2	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Aluminum	2,720		79.9	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Antimony	4		4	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Arsenic	94.2		2	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Barium	373		4	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Beryllium	0.61		0.61	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Boron	195		10.8	µg/L	J	F01	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Cadmium	1.2		0.91	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Calcium	98,300		530	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Chromium	5.7		3.1	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Cobalt	4		4	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Copper	4.6		4.6	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Iron	12,500		28.2	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Lead	2.3		1.3	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Lithium	9.6		9.6	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Magnesium	39,500		132	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Manganese	141		3.3	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 7470A	Mercury	0.044		0.044	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Molybdenum	6.9		5	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Nickel	13.3		13.3	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Potassium	2,950		1650	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Selenium	2.7		2.7	µg/L	UJ	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Silver	6		6	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Sodium	90,200		324	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Strontium	782		0.54	µg/L	J	E07	No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Thallium	4		4	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Uranium	23.5		23.5	µg/L	U		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Vanadium	8.9		4.1	µg/L	=		No
4Q2009	HIS122091	HW23	11/24/09	SW846 6010B	Zinc	19.9		5.2	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Antimony	1.1		1.1	µg/L	U		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Arsenic	128		0.95	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Barium	446		0.2	µg/L	=		No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	**Sample Name**	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Cadmium	0.56		0.055	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Chromium	4.9		3.3	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Molybdenum	7.3		0.22	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Nickel	8.1		0.23	µg/L	=		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Selenium	1.2		0.31	µg/L	J	E07, F01	No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
1Q2010	HIS125886	HW23	03/08/10	SW846 6020	Vanadium	9.1		2.4	µg/L	=		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Antimony	1.1		1.1	µg/L	U		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Arsenic	122		0.95	µg/L	=		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Barium	389		0.2	µg/L	J	E07	No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Cadmium	0.16		0.055	µg/L	=		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Molybdenum	7.5		0.41	µg/L	J	E07	No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Nickel	3.8		0.4	µg/L	=		No
3Q2010	HIS130583	HW23	09/15/10	ML-006	Radium-226	1.32	0.866	0.88	pCi/L	J	T04	No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Selenium	1.3		1.3	µg/L	U		No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
3Q2010	HIS130583	HW23	09/15/10	ML-005	Thorium-228	0.639	0.468	0.451	pCi/L	J	T04	No
3Q2010	HIS130583	HW23	09/15/10	ML-005	Thorium-230	0.414	0.382	0.452	pCi/L	U	T04, T05	No
3Q2010	HIS130583	HW23	09/15/10	ML-005	Thorium-232	0.188	0.273	0.451	pCi/L	UJ	T06	No
3Q2010	HIS130583	HW23	09/15/10	ML-015	Uranium-234	0.265	0.269	0.18	pCi/L	J	T02	No
3Q2010	HIS130583	HW23	09/15/10	ML-015	Uranium-235	0	0	0.222	pCi/L	U		No
3Q2010	HIS130583	HW23	09/15/10	ML-015	Uranium-238	0.132	0.188	0.179	pCi/L	UJ	T06	No
3Q2010	HIS130583	HW23	09/15/10	SW846 6020	Vanadium	2.7		2.4	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Arsenic	139		0.95	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Barium	431		0.2	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Cadmium	0.26		0.1	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Molybdenum	7.5		0.41	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Nickel	4.2		0.4	µg/L	=		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Selenium	1.3		1.3	µg/L	U		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
1Q2011	HIS135303	HW23	03/28/11	SW846 6020	Vanadium	2.7		2.4	µg/L	=		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Arsenic	112		0.95	µg/L	=		No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	**Sample Name**	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Barium	366		0.2	µg/L	=		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Cadmium	0.1		0.1	µg/L	U		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Molybdenum	6.4		1	µg/L	=		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Nickel	1.6		0.4	µg/L	=		No
3Q2011	HIS138648	HW23	08/29/11	ML-006	Radium-226	1.09	1.11	1.61	pCi/L	UJ	T06	No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Selenium	1.6		1.6	µg/L	=		No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
3Q2011	HIS138648	HW23	08/29/11	ML-005	Thorium-228	0.361	0.373	0.532	pCi/L	UJ	T06	No
3Q2011	HIS138648	HW23	08/29/11	ML-005	Thorium-230	0.579	0.419	0.196	pCi/L	J	T04	No
3Q2011	HIS138648	HW23	08/29/11	ML-005	Thorium-232	0	0	0.196	pCi/L	U		No
3Q2011	HIS138648	HW23	08/29/11	ML-015	Uranium-234	0.188	0.219	0.17	pCi/L	J	T02	No
3Q2011	HIS138648	HW23	08/29/11	ML-015	Uranium-235	0	0	0.209	pCi/L	U		No
3Q2011	HIS138648	HW23	08/29/11	ML-015	Uranium-238	0.0935	0.188	0.374	pCi/L	UJ	T06	No
3Q2011	HIS138648	HW23	08/29/11	SW846 6020	Vanadium	2.4		2.4	µg/L	U		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Arsenic	119		1.2	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Barium	394		0.22	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Cadmium	0.12		0.1	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Chromium	3.3		3.3	µg/L	U		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Molybdenum	6.7		1	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Nickel	3.5		0.4	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Selenium	1.6		1.6	µg/L	U		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Thallium	3.5		0.55	µg/L	=		No
3Q2012	HIS145173	HW23	08/21/12	SW846 6020	Vanadium	3.3		2.4	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Antimony	1.7		1.7	µg/L	U		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Arsenic	130		1.2	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Barium	430		0.22	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Cadmium	0.13		0.1	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Chromium	4.6		3.3	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Molybdenum	6.5		1	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Nickel	6.4		0.4	µg/L	=		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Selenium	1.6		1.6	µg/L	U		No

Table E-6. Ground-Water Sampling Data for HW22 and HW23 at the Latty Avenue Properties: CY 2009 - CY 2013

Site: Latty Avenue Properties												
Sampling Event	**Sample Name**	**Station Name**	**Collection Date**	**Method**	**Analyte**	**Result**	**Measurement Error**	**DL**	**Units**	**VQ**	**Validation Reason Code**	**Filtered**
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Thallium	0.55		0.55	µg/L	U		No
3Q2013	HIS156505	HW23	08/29/13	SW846 6020	Vanadium	7.6		2.4	µg/L	=		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:

E07 ICP and Furnace Requirements: Serial Dilution criteria were not met.

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.

H02 Matrix Spike/Matrix Spike Duplicate recovery was below the lower control limit.

H04 Matrix Spike/Matrix Spike Duplicate pairs exceed the RPD limit.

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.

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APPENDIX F

CALCULATION OF THE RECORD OF DECISION GROUND-WATER EVALUATION GUIDELINES

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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 EMICY14 (USACE 2013). 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 2014.

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 4.0) 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 2004). 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 1989d).
- If no values were detected for the COC in the historical database for that well, then the UCL_{95} was not determined. If there was only one detected value of the COC, 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 Uranium	30	30	30	30	30	30
	Vanadium	37	31	17	16	---	250
Radionuclides (pCi/L)	Radium-226	5.3	---	---	---	16	4.2
	Thorium-228	1.9	2.4	3.2	3.4	3.4	2.0
	Thorium-230	4.2	7.0	7.4	6.0	5.0	21
	Thorium-232	---	1.8	---	0.2	---	---
	Uranium-234	12	32	1.8	6.6	4.8	14
	Uranium-235	---	4.2	---	---	---	---
	Uranium-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 Uranium	30	30	30	30	30	30
	Vanadium	18	16	4.4	12	4.0	6.4
Radionuclides (pCi/L)	Radium-226	5.7	5.5	2.5	8.4	11	2.4
	Thorium-228	2.4	3.2	10	4.2	1.8	2.6
	Thorium-230	3.8	5.8	12	5.2	3.8	5.2
	Thorium-232	---	1.9	---	---	---	1.0
	Uranium-234	8.2	8.2	---	24	6.4	3.8
	Uranium-235	---	---	---	2.0	---	---
	Uranium-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 Uranium	30	30	30	30	30	30	30	30	30
	Vanadium	19	44	48	12	17	24	---	83	54
Radionuclides (pCi/L)	Radium-226	4.4	---	3.8	3.4	7.2	2.5	---	---	7.2
	Thorium-228	1.6	1.0	1.5	---	2.2	3.0	4.4	3.8	7.0
	Thorium-230	5.8	2.9	3.9	4.4	4.0	5.0	6.0	5.6	8.0
	Thorium-232	---	---	---	---	---	---	---	---	1.4
	Uranium-234	3.4	8.2	66	3.6	11	18	13	5.4	4.5
	Uranium-235	---	---	2.9	---	---	6.1	---	4.4	---
	Uranium-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 Uranium	30	30	30	30	30	30	30	30	30	30
	Vanadium	36	110	54	35	13	12	3.1	---	---	67
Radionuclides (pCi/L)	Radium-226	1.4	3.4	1.6	8.0	2.0	4.0	6.1	1.8	2.4	22
	Thorium-228	5.2	4.6	1.4	2.6	2.6	1.6	2.4	3.4	2.5	2.1
	Thorium-230	6.0	4.0	4.0	4.1	3.6	3.4	2.6	12	5.8	60
	Thorium-232	2.2	---	0.4	2.3	---	---	---	---	---	7.0
	Uranium-234	2.4	7.0	21	4.3	3.2	9.0	29	4.7	79	5,500
	Uranium-235	---	5.9	9.4	---	---	---	2.2	---	3.0	290
	Uranium-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

DOSE ASSESSMENT ASSUMPTIONS

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DOSE FROM THE ST. LOUIS AIRPORT SITE/ST. LOUIS AIRPORT SITE VICINITY PROPERTIES TO A MAXIMALLY EXPOSED INDIVIDUAL

A full-time employee business receptor was evaluated to determine the maximally exposed individual from the SLAPS, because the RA work conducted on the SLAPS VPs occurred in the vicinity of the receptor. The business receptor worked full-time outside of the facility, located approximately 1,640 ft (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 8 hours per day, 5 days per week, and 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 1,640 ft (500 m) west-southwest of the center of the SLAPS Loadout area.

Airborne Radioactive Particulates

The EDE of less than 0.1 mrem/yr 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 1,640 m (500 m) west-southwest of the center of the SLAPS Loadout area (Leidos 2015e). Details related to calculation of EDEs for the exposed receptors are presented in Appendix A.

External Gamma Pathway

The SLAPS TLDs measured an annual exposure, above background, of 6.5 mrem/yr 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).

$$H_1 = 6.5 \text{ mrem/yr}$$

Based on a 100-percent occupancy rate, the exposure rate (H_2) to the receptor was calculated as follows:

$$H_2 = H_1 \times \frac{h_1}{h_2} * \frac{\tan^{-1}(L/h_2)}{\tan^{-1}(L/h_1)}$$

$$H_2 = 1.4\text{E-03 mrem/yr}$$

where:

- H_2 = exposure rate to the receptor (continuous exposure)
- H_1 = exposure rate to TLDs
- h_2 = distance from source to receptor = 1,640 ft (500 m)
- h_1 = distance from source to TLDs = 5.2 ft (1.6 m)
- L = average distance from centerline of the line source (H_1) to the end of the line source = 164 ft (50 m)

The actual dose to the maximally exposed individual, who is only present during a normal work year, is calculated as follows:

$$H_{MEI} = H_2 \times \frac{2{,}000 \text{ hours per work year}}{8{,}760 \text{ hours per total year}} = 3E\text{-}04 \text{ mrem/yr}$$

$$H_{MEI} = <0.1 \text{ mrem/yr}$$

Airborne Radon Pathway

The SLAPS ATDs measured an above background annual exposure of 0.01 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 2015e).

$$S_1 = 0.01 \text{ pCi/L}$$

The actual radon exposure dose to the hypothetical maximally exposed individual was calculated as follows:

$$S_{MEI} = S_1 \times F \times DCF \times T \times C_1 \times C_2$$

$$S_{MEI} = 0.01 \text{ pCi/L} \times 0.0005 \frac{\text{WL}}{\text{pCi/L}} \times 1{,}250 \frac{\text{mrem}}{\text{WLM}} \times \frac{2{,}000 \text{ hours}}{\text{year}} \times \frac{1 \text{ month}}{170 \text{ hours}} \times 0.0048 = 0 \text{ mrem/yr}$$

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/working level month (WLM)
- T = Exposure time = 2,000 hours/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 1,640 ft [500 m]), and an impacted surface area of 27,146 square feet (ft^2) (2,522 square meters [m^2]). Calculation assumes a 1 curie (Ci)/year radon release rate, then ratios the concentrations at 3.3 ft (1 m) and 1,640 ft (500 m) to determine the constant.
- WL = working level (concentration unit)
- WLM = working level month (exposure unit)

Total Effective Dose Equivalent

$$TEDE = CEDE \text{ (airborne particulates)} + H_{MEI} \text{ (external gamma)} + S_{MEI} \text{ (airborne radon)}$$

$$TEDE = <0.1 \text{ mrem/yr} + <0.1 \text{ mrem/yr} + <0.1 \text{ mrem/yr} = <0.1 \text{ mrem/yr}$$

DOSE FROM COLDWATER CREEK TO 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 2015f)

The UCL_{95} values of the average contamination values measured in CWC in 2014 at each monitoring station (Table G-1) were used to calculate the EDE to the receptor from an intake of contaminated water. Assumptions are:

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 the creek during each visit (USEPA 1989c).

The TEDE due to ingestion of surface water ($TEDE_w$) was calculated as follows:

$$TEDE_W = \Sigma\ (TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$$TEDE_i = (UCL_{95}) \text{ pCi/L} \times 2.0 \text{ L per day} \times 26 \text{ days per year} \times \text{DCF mrem/pCi}$$

Table G-1. UCL_{95} Values for Radionuclides for CY 2014

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.55	pCi/L
Th-228	0.63	pCi/L
Th-230	0.60	pCi/L
Th-232	0.34	pCi/L
Total U	2.16	pCi/L

DCFs (ORNL 2014) for radionuclides present in CWC surface water are presented in Table G-2.

Table G-2. Radionuclide Dose Conversion Factor for CY 2014

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's software ProUCL Version 5.0 software was used to determine the UCL_{95} values for radiological contaminants present in CWC (Leidos 2015f). The UCL_{95} values are presented in Table G-1.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.55 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 2.97E\text{-}03 \text{ mrem/pCi}$$
$$= 2.38E\text{-}01 \text{ mrem/yr}$$

$$TEDE_{Th\text{-}228} = 0.63 \text{ pCi/L} \times 2.0 \text{ L/d} \times 26 \text{ d/yr} \times 5.07E\text{-}04 \text{ mrem/pCi}$$

$= 1.65E\text{-}02$ mrem/yr

$TEDE_{Th\text{-}230}$ = 0.60 pCi/L × 2.0 L/d × 26 d/yr × 9.10E-04mrem/pCi
= 2.82E-02 mrem/yr

$TEDE_{Th\text{-}232}$ = 0.34 pCi/L × 2.0 L/d × 26 d/yr × 1.07E-3 mrem/pCi
= 1.87E-02 mrem/yr

$TEDE_{Tot\text{-}U}$ = 2.16 pCi/L × 2.0 L/d × 26 d/yr × 2.63E-04 mrem/pCi
= 2.95E-02 mrem/yr

$TEDE_W$ = 3.31E-01 mrem/yr

Contaminated Sediment Ingestion (Leidos 2015f)

The UCL_{95} values of the average contamination values measured in CWC in 2014 at each monitoring station (Table G-3) were used to calculate the EDE to the receptor from an intake of contaminated sediment. Assumptions are:

The receptor visits CWC as a recreational user once every 2 weeks (26 visits per year). The receptor ingests 50 mg/day of contaminated sediment from the creek during each visit (USEPA 1989c).

The TEDE due to ingestion of contaminated sediment ($TEDE_S$) was calculated as follows:

$$TEDE_S = \Sigma\ (TEDE_{Tot\text{-}U}, TEDE_{Th\text{-}228}, TEDE_{Th\text{-}230}, TEDE_{Th\text{-}232}, TEDE_{Ra\text{-}226}, TEDE_{Ra\text{-}228})$$

$TEDE_i$ = (UCL_{95}) picocuries per gram (pCi/g) × 0.05 gram (g)/day × 26 days per year × DCF mrem/pCi

Table G-3. UCL_{95} Values for Radionuclide for CY 2014

Radionuclides	UCL_{95} Concentration	Unit
Ra-226	1.55	pCi/g
Ra-228	0.92	pCi/g
Th-228	1.00	pCi/g
Th-230	3.15	pCi/g
Th-232	1.02	pCi/g
Total U	2.91	pCi/g

DCFs (ORNL 2014) for radionuclides present in CWC sediment are presented in Table G-4.

Table G-4. Radionuclide Dose Conversion Factors for CY 2014

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's ProUCL Version 5.0 software was used to determine UCL_{95} values for radiological contaminants present in CWC sediment (Leidos 2014d). The UCL_{95} values are presented in Table G-3.

Therefore:

$$TEDE_{Ra\text{-}226} = 1.55\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 2.97E\text{-}03\ mrem/pCi$$
$$= 5.99E\text{-}03\ mrem/yr$$

$$TEDE_{Ra\text{-}228} = 0.92\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 1.45E\text{-}02\ mrem/pCi$$
$$= 1.73E\text{-}02\ mrem/yr$$

$$TEDE_{Th\text{-}228} = 1.00\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 5.07E\text{-}04\ mrem/pCi$$
$$= 6.58E\text{-}04\ mrem/yr$$

$$TEDE_{Th\text{-}230} = 3.15\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 9.10E\text{-}04\ mrem/pCi$$
$$= 3.73E\text{-}03\ mrem/yr$$

$$TEDE_{Th\text{-}232} = 1.02\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 1.07E\text{-}3\ mrem/pCi$$
$$= 1.42E\text{-}03\ mrem/yr$$

$$TEDE_{Tot\text{-}U} = 2.91\ pCi/g \times 0.05\ g/d \times 26\ d/yr \times 2.63E\text{-}4\ mrem/pCi$$
$$= 9.94E\text{-}04\ mrem/yr$$

$$TEDE_S = 3.00E\text{-}02\ mrem/yr$$

Total Effective Dose Equivalent

$$TEDE = TEDE_W + TEDE_S$$

$$TEDE = 3.31E\text{-}01\ mrem/yr + 3.00E\text{-}02\ mrem/yr = 0.4\ mrem/yr$$

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