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2016 ANNUAL SITE ENVIRONMENTAL REPORT SANDIA NATIONAL LABORATORIES, NEW MEXICO

Prepared by
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Albuquerque, New Mexico 87185

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ENVIRONMENT SAFETY & HEALTH
Sandia National Laboratories
U.S. DEPARTMENT OF ENERGY
NNSA National Nuclear Security Administration
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2016 Annual Site Environmental Report for Sandia National Laboratories, New Mexico

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for
Department of Energy
National Nuclear Security Administration
Sandia Field Office

Abstract

Sandia National Laboratories (SNL) is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's (DOE's), National Nuclear Security Administration (NNSA). The DOE/NNSA Sandia Field Office administers the contract and oversees contractor operations at SNL, New Mexico. This *Annual Site Environmental Report* (ASER) summarizes data and the compliance status of sustainability, environmental protection, and monitoring programs at SNL/NM during calendar year 2016. Major environmental programs include air quality, water quality, groundwater protection, terrestrial and ecological surveillance, waste management, pollution prevention, environmental restoration, oil and chemical spill prevention, and implementation of the National Environmental Policy Act. This ASER is prepared in accordance with and required by DOE O 231.1B, Admin Change 1, *Environment, Safety, and Health Reporting*.

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Note to the Reader

The SNL/NM Annual Site Environmental Report presents summary data regarding environmental performance and compliance with environmental standards and requirements. In addition, the U.S. Department of Energy views this document as a valuable tool for maintaining a dialogue with our community about the environmental health of this site. We continually strive to improve the quality of the contents as well as to include information that is important to you. Please provide feedback, comments, questions, or requests for copies of this report and/or appendices to:

U.S. Department of Energy National Nuclear Security Administration Sandia Field Office
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The SNL/NM Annual Site Environmental Report can be found at the following website:
http://www.sandia.gov/news/publications/environmental/index.html

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Acronyms and Abbreviations

Term	Definition
A	
ABCWUA	Albuquerque Bernalillo County Water Utility Authority
ACRR	Annular Core Research Reactor
AFRL	Air Force Research Laboratory
AFV	alternative fuel vehicle
AHCU	Auxiliary Hot Cell Unit
AMPL	Advanced Manufacturing Process Laboratory
AOC	Area of Concern
AQC	Air Quality Compliance
ARCOC	analysis request and chain of custody
ASER	Annual Site Environmental Report
AST	aboveground storage tank
B	
BBS	breeding bird survey
bgs	below ground surface
BSG	Burn Site Groundwater
C	
C&D	Construction and Demolition
CAA	Clean Air Act
CAC	Corrective Action Complete
CAMU	Corrective Action Management Unit
CEP	Chemical Exchange Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGP	Construction General Permit
CINT	Center for Integrated Nanotechnologies
CIS	Chemical Information System
CO	carbon monoxide
COA	City of Albuquerque
CSS	CWL sanitary sewer
CWA	Clean Water Act
CWL	Chemical Waste Landfill
D	
D&D	decontamination and demolition
DETS	Dynamic Explosives Test Site
DOE	U.S. Department of Energy
DOECAP	DOE Consolidated Audit Program
DP	discharge permit
E	
ECF	Explosives Components Facility
EDE	effective dose equivalent
EHD	Environmental Health Department
EHS	extremely hazardous substance
EISA	Energy Independence and Security Act
ELM	Environmental Life-Cycle Management
EMS	Environmental Management System
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community-Right-to-Know Act
EPEAT	Electronic Product Environmental Assessment Tool
ER	Environmental Restoration
ESA	Endangered Species Act
ES&H	Environment, Safety, and Health
F	
FFCA	Federal Facility Compliance Act
FFCO	Federal Facility Compliance Order
FMOC	Facilities Management and Operations Center
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
G	
GHG	greenhouse gas
H	
HAP	hazardous air pollutant
HDRV	Historical Disposal Requests Validation
HE	high explosive
HERMES	High Energy Radiation Megavolt Electron Source
HME	homemade explosive
HSWA	Hazardous and Solid Waste Amendment
HWHU	Hazardous Waste Handling Unit
I	
IBL	Ion Beam Laboratory
IED	improvised explosive device
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization

Term	Definition
K	
KAFB	Kirtland Air Force Base
L	
LECS	Liquid Effluent Control System
LLMW	low-level radioactive mixed waste
LLW	low-level radioactive waste
LMC	Lockheed Martin Corporation
LTMMP	Long-Term Monitoring and Maintenance Plan
LTS	Long-Term Stewardship
M	
MAPS	Monitoring Avian Productivity and Survivorship
MBTA	Migratory Bird Treaty Act
MCG	Madera Canyon Guzzler
MCL	maximum contaminant level
MEI	maximally exposed individual
MESA	Microsystems and Engineering Sciences Applications
Module IV	Hazardous and Solid Waste Amendments Module
MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
MSP2	Material Sustainability and Pollution Prevention
MTRU	mixed transuranic
MW	mixed waste
MWL	Mixed Waste Landfill
N	
N/A	not applicable
NCDC	National Climatic Data Center
ND	not detected
NELAC	National Environmental Laboratory Accreditation Conference
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGF	Neutron Generation Facility
NM	New Mexico
NMAC	New Mexico Administrative Code
NMED	New Mexico Environment Department
NMFAC	New Mexico facilities
NMSA	New Mexico Statutes Annotated
NMWQCC	New Mexico Water Quality Control Commission
NNSA	National Nuclear Security Administration
NOI	Notice of Intent
NON	Notice of Noncompliance
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System NPN nitrite plus nitrate
NRC	National Response Center
O	
ODS	ozone-depleting substance
Order, the	Compliance Order on Consent
ORPS	Occurrence Reporting and Processing System
P	
PCB	polychlorinated biphenyl
PCCP	Post-Closure Care Permit
Permit, the	Resource Conservation and Recovery Act Facility Operating Permit
PETL	Processing and Environmental Technology Laboratory
PGWS	perched groundwater system
pH	potential of hydrogen
PL	Public Law
$PM_{2.5}$	particulate matter that has a diameter equal to or less than 2.5 microns
PM_{10}	particulate matter that has a diameter equal to or less than 10 microns
POTW	Publicly Owned Treatment Works
PRD	Process and Research Development
PSL	primary subliner
Q	
QA	quality assurance
QC	quality control
R	
Range	Range Wildlife Guzzler
RCRA	Resource Conservation and Recovery Act
RMWMU	Radioactive and Mixed Waste Management Unit
RPDP	Radiation Protection Dosimetry Program
RPICL	Radiation Protection Instrument Calibration Laboratory
RPSD	Radiation Protection Sample Diagnostics
RQ	reportable quantity
RVR	Robotics Vehicle Range

Term	Definition
S	
SAP	sampling and analysis plan
SARA	Superfund Amendments and Reauthorization Act
SC	significance category
SCD	SC Dome
SD	standard deviation
SDS	Safety Data Sheet
SDWA	Safe Drinking Water Act
SDWP	Safe Drinking Water Protection
SFO	Sandia Field Office
SHPO	State Historic Preservation Office
SMO	Sample Management Office
SNL	Sandia National Laboratories
SNL/NM	Sandia National Laboratories, New Mexico
SO_2	sulfur dioxide
SOW	statement of work
SPCC	Spill Prevention, Control, and Countermeasure
SSL	soil screening level
SSPP	Strategic Sustainability Performance Plan
STP	Site Treatment Plan
SUWCO	Sewer Use and Wastewater Control Ordinance
SWCRC	Solid Waste Collection and Recycling Center
SWMU	Solid Waste Management Unit
SWPPP	Stormwater Pollution Prevention Plan
SWSP	stormwater sampling point

Term	Definition
T	
TA	technical area
TAG	Tijeras Arroyo Groundwater
TAVG	Technical Area V Groundwater
TBD	to be determined
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TG	Treatability Group
TLD	thermoluminescent dosimeter
TRI	Toxic Release Inventory
TRU	transuranic
TS	Terrestrial Surveillance (Program)
TTU	Thermal Treatment Unit
U	
U.S.	United States
USAF	U.S. Air Force
USC	United States Code
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
UST	underground storage tank
V	
VA	Veterans Administration
VCA	Voluntary Corrective Action
VOC	volatile organic compound
VSA	vertical sensor array
VZMS	vadose zone monitoring system
W	
WBS	winter bird survey
WIPP	Waste Isolation Pilot Plant
WW	wastewater

Units of Measure

Unit	Definition
°C	degree Celsius
Ci/yr	curies per year
cm	centimeter
°F	degrees Fahrenheit
ft	feet
gal	gallon
J/J+	An estimated quantity
km	kilometer
lb	pound
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
mb	millibar
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mph	miles per hour
mrem	millirem
mrem/yr	millirems per year
mR/yr	milliroentgen per year
m/sec	meters per second
pCi/g	picocuries per gram
pCi/m^3	picocuries per cubic meter
person-rem	person-roentgen equivalent, man
person-rem/yr	person-roentgen equivalent, man per year
ppb	parts per billion
ppm	parts per million
ppm bv	parts per million by volume
scf	standard cubic feet
sq ft	square foot
sq mi	square mile
tpy	tons per year

Executive Summary

Sandia National Laboratories, New Mexico

Sandia National Laboratories (SNL) is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the U.S. Department of Energy's (DOE's) National Nuclear Security Administration (NNSA). The DOE/NNSA/Sandia Field Office (SFO) administers the contract and oversees contractor operations at the site. This Annual Site Environmental Report (ASER) was prepared in accordance with and as required by DOE O 231.1B, Admin Change 1, *Environment, Safety, and Health Reporting*.

This ASER summarizes the environmental protection, restoration, and monitoring programs in place at SNL/NM during calendar year 2016. It also discusses SNL compliance with environmental statutes, regulations, and DOE directives and permit provisions, and it highlights significant environmental program efforts and accomplishments. This report is a key component of DOE efforts to keep the public informed about environmental conditions throughout the DOE/NNSA nuclear weapons complex. While all 2016 program activities were performed continuously, they are reported in this ASER on a calendar year basis unless noted otherwise (programs based on the fiscal year operate from October 1 through September 30, annually).

SNL environmental and waste management programs comply with the requirements of federal, state, and local environmental requirements, as well as with DOE directives in the SNL Prime Contract.

Environmental Management System

The Environmental Management System is the primary management approach for addressing environmental aspects of operations and activities, including environmental programs, energy, and transportation functions. In 2016, environmental management and work processes continued to be improved and an International Organization for Standardization 14001 surveillance audit was completed. See Section 2.1 for more information.

Site Sustainability Plan

Sustainability strategies and goals are defined in the annual Site Sustainability Plan. As of fiscal year 2016, SNL programs are meeting or exceeding sustainability goals in several key areas. See Section 2.2 for more information.

Chemical Information System and Chemical Exchange Program

The Chemical Information System is a comprehensive chemical information management tool that provides workplace chemical container tracking as well as information about the chemical hazards found in associated Safety Data Sheets. The Chemical Exchange Program was developed to reduce the amount of usable chemicals disposed as waste, resulting in cost savings for both new acquisitions and disposals. ChemPro, an acquisition request module, was added to improve chemical management by requiring approval to purchase chemicals. See Section 3.1 for more information.

Environmental Education Outreach Program

Environmental Education Outreach Program personnel interact with the community through various events and provide environmental information to Laboratories personnel. Using an integrated approach, program personnel communicate environmental awareness via newsletters, awareness campaigns, and outreach events. In 2016, Outreach Program personnel participated in several outreach and awareness events. See Section 3.2 for more information.

Environmental Life-Cycle Management Program

Environmental Life-Cycle Management Program personnel ensure long-term protection of human health and the environment. This is achieved through implementation of environmental life-cycle management practices focusing on sustainable use and protection of natural and cultural resources. In 2016, Environmental Life-Cycle Program personnel reviewed 35 projects and then documented the environmental impacts. See Section 3.3 for more information.

Environmental Restoration Operations

Environmental Restoration Operations personnel identify, assess, and remediate sites potentially contaminated by past spill, release, or disposal activities. In 2016, 11 Environmental Restoration sites remain that require corrective action, including three groundwater areas of concern, three active test facilities, and five sites that are suitable for Corrective Action Complete. See Section 3.4 for more information.

Long-Term Stewardship Program

The Long-Term Stewardship Program ensures the protection of human health and the environment from hazards associated with residual contamination at legacy sites (former Environmental Restoration sites) and minimizes SNL environmental liability. Program personnel conduct compliance oversight, institutional control, and stakeholder involvement activities. In 2016, Long-Term Stewardship compliance oversight activities encompassed various types of monitoring, including groundwater monitoring, at legacy sites to meet regulatory requirements. Also in 2016, 18 institutional control site inspections were completed. See Section 3.5 for more information.

National Environmental Policy Act Program

National Environmental Policy Act (NEPA) Program personnel provide DOE/NNSA/SFO with technical assistance in support of SNL compliance with NEPA and the National Historic Preservation Act at all SNL locations. In 2016, NEPA Program personnel reviewed a total of 1,561 proposed projects. To support mission activities, 67 NEPA checklists were transmitted to DOE/NNSA/SFO for review and determination. See Section 3.6 for more information. Also in 2016, NEPA program personnel assisted DOE in the continued development of a new

SNL/NM Site-Wide Environmental Impact Statement, creating a project management plan that outlines the support necessary to complete the Statement.

Waste Management Program

Waste at SNL/NM is managed at the following permitted units: the Hazardous Waste Handling Unit, the Thermal Treatment Unit, the Radioactive and Mixed Waste Management Unit, the Auxiliary Hot Cell Unit, and five Manzano Storage Bunkers. Two additional bunkers are used for radioactive storage. Also, recyclable and nonrecyclable solid waste generated by SNL operations is collected and processed at the SNL Solid Waste Collection and Recycling Center. Post-closure care activities are conducted at two permitted units: the Chemical Waste Landfill and the Corrective Action Management Unit. Long-term monitoring and maintenance activities are conducted at numerous solid waste management units and areas of concern. See Section 3.7 for more information.

In February 2016, representatives of the New Mexico Environment Department (NMED) conducted an annual no-notice hazardous waste compliance evaluation inspection and issued one Notice of Violation. See Chapter 2 and Chapter 3 for more information.

Materials Sustainability and Pollution Prevention Program

Materials Sustainability and Pollution Prevention Program personnel provide assessment, guidance, and assistance to the SNL/NM workforce for implementing measures that reduce resource use, reduce generated waste, and enhance the overall efficiency of processes and organizations at SNL/NM. Additionally, Materials Sustainability and Pollution Prevention Program personnel worked with several facilities to investigate or initiate new recycling avenues for certain waste streams. See Section 3.8 for more information.

Terrestrial Surveillance Program

Terrestrial Surveillance Program personnel collect and analyze surface soil, arroyo and river sediment, and vegetation samples to determine whether there has been a radiological or nonradiological release to the environment due to SNL/NM operations. In addition to collecting environmental media (soil, sediment, and vegetation), ambient external gamma radiation levels are measured using thermoluminescent dosimeters. These surveillance activities are conducted at designated locations on and near SNL/NM. Results of the 2016 sampling events are consistent with previous years. See Chapter 4 for more information.

Air Quality Compliance Program

The Air Quality Compliance Program ensures compliance with air quality standards, which are implemented via regulations promulgated by local and federal governments in accordance with the Clean Air Act and the Clean Air Act Amendments of 1990. The Albuquerque Bernalillo County Air Quality Control Board, the State of New Mexico, and the U.S. Environmental Protection Agency (EPA) determine applicable air quality standards for nonradiological pollutants. Air Quality Compliance Program personnel maintain numerous permits from the City of Albuquerque, including open burning/detonation permits, stationary source registrations and permits, and fugitive dust control construction/demolition permits. See Chapter 5 and Chapter 9 for more information.

Ambient Air Surveillance Program

Ambient Air Surveillance Program personnel measure ambient air quality at six locations throughout SNL/NM for particulate matter (PM_{10} and $PM_{2.5}$) and volatile organic compounds. Results of monitoring in 2016 indicate that the PM_{10}, $PM_{2.5}$, and volatile organic compound concentrations are consistent with results from previous years. See Section 5.2 for more information.

Meteorology Program

Meteorology Program personnel provide decision support services, data, and analyses to all SNL programs and operations that require atmospheric information. Monitoring activities within the program provide data that are used to assist with health and safety operations, emergency management and response, regulatory permitting and reporting processes, and general research and development activities. See Section 5.3 for more information.

Radiological National Emission Standards for Hazardous Air Pollutants Program

Subpart H of the National Emission Standards for Hazardous Air Pollutants regulates radionuclide air emissions from DOE/NNSA facilities, with the exception of naturally occurring radon. Facilities that have the potential to release emissions to the environment are evaluated annually. In 2016, the primary radionuclide released from SNL/NM facilities was tritium. Calculated doses are well below the 10 mrem/yr EPA and DOE standards. See Section 5.4 for more information.

Oil Storage Program

The Spill Prevention Control and Countermeasures Plan (required under the Clean Water Act) describes the oil storage facilities on-site and the mitigation controls in place to prevent inadvertent discharges of oil. Forty-nine stationary aboveground storage tanks and three underground storage tanks are currently operated at SNL/NM. Additional oil storage capacity in 55 gal drums, mobile and portable containers, mobile refuelers, and oil-filled operational equipment (transformers, hydraulic elevators, etc.) occurs throughout the site on an as-needed basis.

The Spill Prevention, Control, and Countermeasure Plan was revised in 2016 to update general information, the oil storage container inventory, and other aspects of oil storage management. See Section 6.1 for more information.

Safe Drinking Water Protection Program

Safe Drinking Water Protection Program personnel ensure the availability of safe drinking water to individuals at SNL-operated facilities. Kirtland Air Force Base (KAFB) supplies water to the DOE-owned SNL/NM drinking water distribution system. The KAFB water system is registered with NMED's Drinking Water Bureau as a non-transient non-community Public Water System. Because KAFB is identified as the sole registered party, the DOE-owned and SNL-operated and maintained distribution system on KAFB is regulated by the NMED Drinking Water Bureau as a component of the KAFB Public Water System. See Section 6.2 for more information.

Spill Response and Reporting Program

Spill Response and Reporting Program personnel are contacted in the event of an accidental release or spill to the ground surface. Eight accidental surface releases were reported to NMED in 2016. See Section 6.3 for more information.

Stormwater Program

Sandia's Stormwater Program personnel ensure compliance with three EPA National Pollutant Discharge Elimination System permits: the Middle Rio Grande Watershed-Based Municipal Separate Storm Sewer Permit, the Multi-Sector General Permit, and the Construction General Permit. Compliance with the permits included the following activities: preparing and maintaining Stormwater Pollution Prevention plans and a Stormwater Management Program Plan, conducting site inspections, completing annual reports, and collecting samples for laboratory analysis at the designated stormwater sampling points (including the environmental surveillance sample locations). In 2016, National Pollutant Discharge Elimination System monitoring data was reviewed and submitted to EPA on discharge monitoring reports, as required. Multi-Sector General Permit stormwater sampling was performed from July 1 through October 31, 2016, when there was adequate runoff to collect required samples. Stormwater exceedances for magnesium and iron were consistent with natural background soil concentrations at SNL/NM. See Section 6.4 for more information.

Surface Discharge Program

All water that will be released to the ground surface, either directly or to lined containments, is defined as a surface discharge. These discharges must meet State of New Mexico surface discharge standards. All internally approved discharges in 2016 met NMED New Mexico Water Quality Control Commission standards. Routine surface discharges are made to two evaporation lagoons that service the pulsed power facilities under an existing discharge permit. In 2016, all permit requirements were met for both NMED permitted lagoons. See Section 6.5 for more information.

Wastewater Discharge Program

Wastewater from SNL/NM is discharged from six on-site outfalls permitted by the Albuquerque Bernalillo County Water Utility Authority. Wastewater monitoring is conducted to ensure that all discharges meet the standards set by the Albuquerque Bernalillo County Water Utility Authority's Publicly Owned Treatment Works. In 2016, there were no reportable events. All discharge parameters at the other permitted locations were met. See Section 6.6 for more information.

Ecology Program

Ecology Program personnel monitor biota as an element of the overall environmental monitoring process. Program personnel collect ecological data on plants and wildlife to support documentation, land use decisions, and ecological and wildlife awareness campaigns to ensure safe work environments and sustainable decision-making strategies. Ecology Program personnel help project members comply with wildlife regulations and laws by providing biological evaluations and surveys in support of site activities. See Chapter 7 for more information.

Quality Assurance

All environmental monitoring (which includes sampling) is conducted in accordance with program-specific sampling and analysis plans, work plans, or Quality Assurance Plans, which contain applicable quality assurance elements. These documents meet appropriate federal, state, and local requirements for conducting sampling and analysis activities. Personnel in various programs collect environmental samples and analyze the samples for radiological and nonradiological contaminants. See Chapter 8 for more information.

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Chapter 1. Introduction

Coyote Springs

OVERVIEW ■ Sandia National Laboratories, located on Kirtland Air Force Base in Albuquerque, New Mexico, was designated a national laboratory in 1979. Operating for the National Nuclear Security Administration, the Laboratories' core mission is to provide science and engineering support for the nation's nuclear weapons stockpile. In addition, Laboratories personnel collaborate with government agencies, the industrial sector, and universities to develop and commercialize new technologies.

This Annual Site Environmental Report (ASER) was prepared in accordance with and as required by the U.S. Department of Energy (DOE) per DOE O 231.1B, Admin Change 1, *Environment, Safety, and Health Reporting*. This ASER describes the environmental protection programs currently in place at Sandia National Laboratories, New Mexico (SNL/NM). This report is made available to the public in printed and electronic form.

Sandia National Laboratories is a multimission laboratory managed and operated by National Technology & Engineering Solutions of Sandia, LLC, a wholly owned subsidiary of Honeywell International Inc., for the DOE's National Nuclear Security Administration (NNSA). The DOE/NNSA/Sandia Field Office (SFO) administers the contract and oversees contractor operations at the site. Building on its original nuclear weapons mission, the Laboratories maintain research and development programs to support a wide variety of national security missions, resulting in technologies for nonproliferation, homeland security, energy and infrastructure, and defense systems and assessments.

While all 2016 program activities were performed continuously, they are reported in this ASER on a calendar year basis unless otherwise noted (programs based on the fiscal year [FY] operate from October 1 through September 30, annually).

1.1 History

Operations at SNL/NM began in 1945 as Z Division, the ordnance design, testing, and assembly arm of Los Alamos Scientific Laboratory (now Los Alamos National Laboratory). The division moved to Sandia Base (now merged into Kirtland Air Force Base [KAFB]) on the perimeter of the City of Albuquerque (COA) to be near an airfield and to work closely with the military.

Z Division became a separate branch of Los Alamos in 1948, and was renamed Sandia Laboratory at that time. On November 1, 1949, Sandia, a wholly owned subsidiary of Western Electric, began managing Sandia Laboratory. In 1979, Congress recognized the facility as a national laboratory. In 1993, Sandia became a wholly owned subsidiary of Martin Marietta, now LMC.

Sandia National Laboratories designation

1.2 Mission

The Laboratories' enduring core mission is to provide science and engineering support for the nation's nuclear weapons stockpile. Today, the mission encompasses additional critical aspects of national security, including developing technologies and strategies for responding to emerging threats, protecting and preventing the disruption of critical infrastructures, and supporting the nonproliferation of weapons of mass destruction. SNL personnel also collaborate with representatives from other government agencies, the industrial sector, and universities to develop and commercialize new technologies. Information about recent technologies developed at Sandia National Laboratories can be found at:

http://www.sandia.gov/news/index.html

1.2.1 Operating Contract and DOE Directives

The Prime Contract for management and operations at Sandia National Laboratories defines the contractual obligations for SNL. The DOE directives that pertain to environmental protection and management are as follows:

- DOE O 231.1B, Admin Change 1, *Environment, Safety, and Health Reporting*, ensures that DOE receives information about the events that have affected or could adversely affect the health, safety, and security of the public or workers, the environment, the operations of DOE facilities, or DOE's credibility. This ASER is prepared in accordance with this directive.
- DOE O 232.2 Admin. Change 1, *Occurrence Reporting and Processing of Operations Information*, requires timely notification to the DOE complex about events that could adversely affect the health and safety of the public or workers, the environment, DOE missions, or DOE's credibility.
- DOE O 435.1 Change 1, *Radioactive Waste Management*, ensures that all DOE radioactive waste is managed in a manner that is protective of worker and public health and safety and the environment. Under this directive, contractors that manage and operate DOE facilities

are required to plan, document, execute, and evaluate the management of DOE radioactive waste.

- DOE O 436.1, *Departmental Sustainability*, places Environmental Management Systems and site sustainability at the forefront of environmental excellence. At SNL, this directive is implemented through an International Organization for Standardization (ISO) 14001-certified (ISO 2004) Environmental Management System.
- DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment*, establishes requirements to protect the public and the environment against undue risk from radiation associated with radiological activities under the control of DOE pursuant to the Atomic Energy Act.

1.3 Location Description

The majority of the lands that NNSA and other DOE agencies use for SNL/NM activities are located within the boundaries of KAFB (Figure 1-1). The location, characteristics, and physical setting of SNL/NM are described on a regional basis as follows.

New Mexico is the fifth-largest state in the United States, comprising approximately 121,000 sq mi. Based on recent projections, New Mexico's estimated 2016 population was 2,081,051 (Census 2017b), and it is projected to be approximately 2.1 million by 2030 (Census 2004). The COA is the largest city in the state with approximately 545,852 residents (Census 2017a). The estimated population within a 50-mile radius of SNL/NM's zip code is approximately 950,563 residents (Searchbug 2017). Nine counties are contained or partially included in that radius (Figure 1-2).

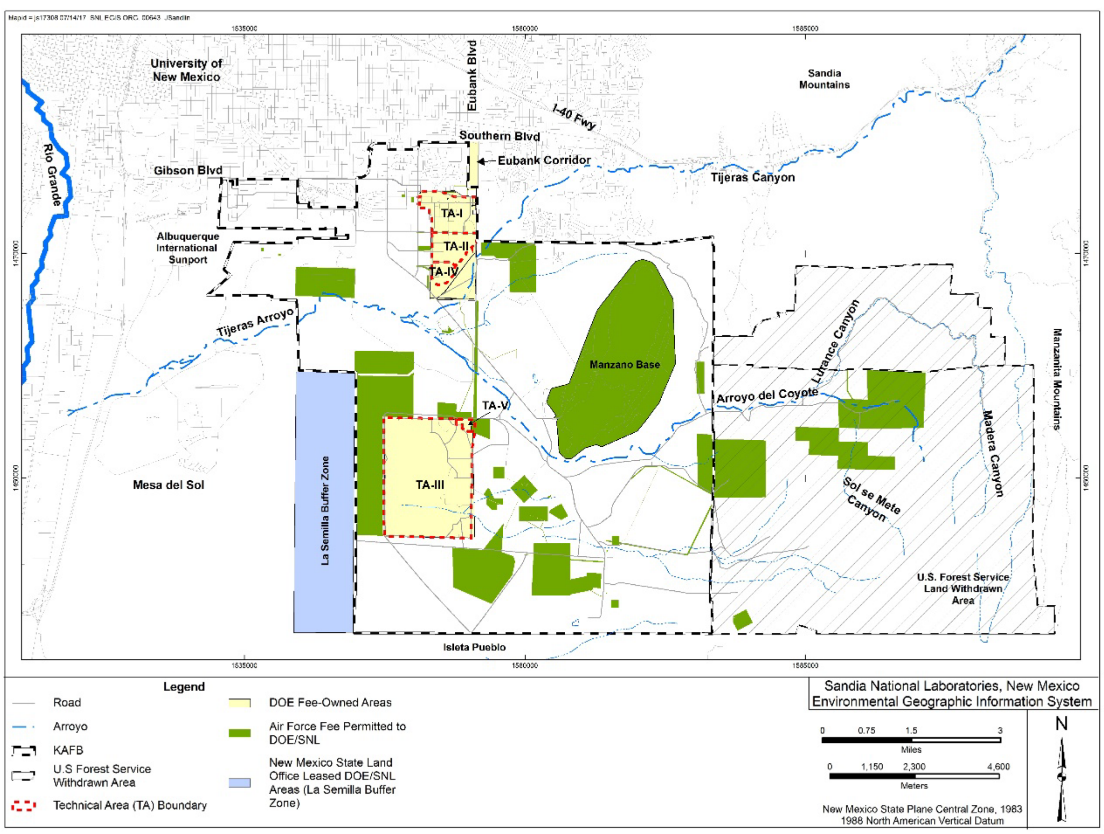


Figure 1-1. SNL/NM, including technical areas and permitted areas

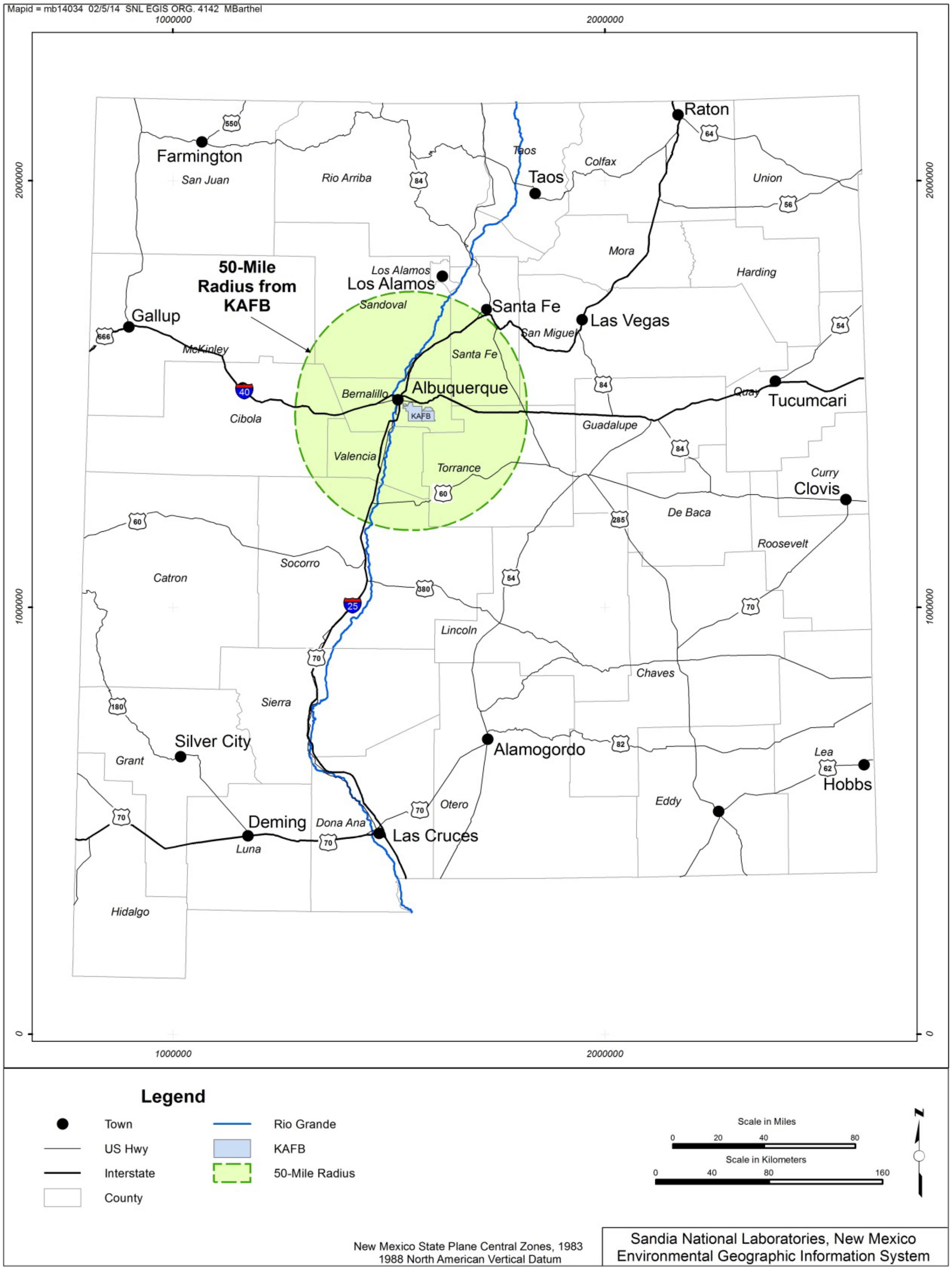


Figure 1-2. State of New Mexico, including counties

KAFB is a military installation that spans 51,559 acres, including 20,486 acres that are withdrawn from the Cibola National Forest through an agreement with the U.S. Forest Service (USFS) (DOE 1999). Located at the foot of the Manzanita Mountains, KAFB has a mean elevation of 5,384 ft and a maximum elevation of 7,986 ft. KAFB is host to more than 450 federal government and private sector tenants and associate units (USAF 2012). KAFB and SNL/NM are adjacent to the COA, which borders KAFB on the base's north, northeast, west, and southwest boundaries. The Albuquerque International Sunport (airport) and Mesa del Sol—a 12,800-acre mixed-use urban area under development—are west of KAFB. Isleta Pueblo is located south of the KAFB boundary.

DOE and its management and operating contractor for Sandia National Laboratories are committed to safeguarding environmental protection, compliance, and sustainability and to ensuring the validity and accuracy of the monitoring data presented in this ASER.

SNL operations are conducted on DOE-owned property assigned for operational use, non-DOE-owned property contracted from other federal agencies, and privately owned leased property. SNL/NM sites located on DOE-owned property comprise 2,938 acres and include five technical areas (TAs) (DOE 1999). At non-DOE-owned property, SNL personnel conduct operations on 5,637 acres of land permitted from the U.S. Air Force, a portion of which are on land withdrawn by the USFS (SNL/NM 2006b). DOE leases approximately 2,750 acres from the New Mexico State Land Office (La Semilla Buffer Zone) west of the KAFB boundary. This area serves as a margin of safety and a sound buffer for testing operations. In addition, SNL personnel conduct operations at off-site leased facilities. At the end of FY 2016, the SNL/NM workforce was comprised of approximately 10,856 employees and contractors. This SNL/NM location had approximately 6.48 million gross sq ft of existing facilities (SNL/NM 2015).

1.4 Activities and Facilities at SNL/NM

SNL/NM consists of the five secured TAs (TA-I, TA-II, TA-III, TA-IV, and TA-V); buildings and structures in nonsecured leased areas; and several remote testing areas (Figure 1-1).

1.4.1 The Technical Areas

TA-I is located in the northern portion of KAFB, and operations there include the main SNL administrative center and numerous laboratories and offices. A majority of activities performed in TA-I are dedicated to weapon design, research and development on weapon systems, limited production of weapon systems components, technology transfer, high-performance computing, and energy research programs. Facilities in TA-I include the Ion Beam Laboratory; the main technical library; several assembly and manufacturing areas; environmental test facilities; and various laboratories, such as the Advanced Manufacturing Processes Laboratory, the Neutron Generator Facility, the Processing and Environmental Technology Laboratory, the Joint Computational Engineering Laboratory, the Sandia Tomography and Radionuclide Transport Laboratory, and the Microsystems and Engineering Sciences Applications (MESA) Complex.

TA-II, located south of TA-I, includes both technical facilities and infrastructure support. The Explosives Components Facility, the Hazardous Waste Handling Unit, the Solid Waste Collection and Recycling Center, the Construction and Demolition Recycle Center, and the National Infrastructure Simulation and Analysis Center are in TA-II.

TA-III, located in the south-central part of KAFB, is the largest and most remote of the TAs. There are large outdoor test areas as well as facilities that can accommodate indoor testing.

The area is used for engineering test activities that require large-scale safety and/or security buffers, such as collision testing sled tracks, centrifuges, vibration test facilities, and impact test complexes. A few of the outdoor test areas include the Rocket Sled Test Facility, the Water Impact/Drop Tower Complex, and the Terminal Ballistics Facility. A few of the indoor test facilities include the Centrifuge Facility, the Mechanical Shock Facility, and the Thermal Test Complex. The Radioactive and Mixed Waste Management Unit is located in the southern portion of TA-III. The Mixed Waste Landfill, the Chemical Waste Landfill, and the Corrective Action Management Unit are also located in TA-III.

TA-IV, located south of TA-II, includes facilities used to conduct research and development activities in inertial-confinement fusion, pulsed power, and nuclear particle acceleration. Accelerators located in TA-IV include the Z Accelerator, the Advanced Pulsed Power Research Module, the Radiographic Integrated Test Stand, the High-Energy Radiation Megavolt Electron Source III, the Saturn Accelerator, the Repetitive High Energy Pulsed Power I Accelerator, the High-Power Microwave Laboratory, and the Short-Pulse High Intensity Nanosecond X Radiator.

TA-V, located adjacent to the northeast section of TA-III, includes facilities that routinely handle radioactive materials used in experimental research and development programs. Capabilities include reactor technology, radiation transport techniques, radiation damage on materials, and radiation vulnerability assessments. Some of the facilities in TA-V include the Gamma Irradiation Facility, the Annular Core Research Reactor, and the Auxiliary Hot Cell Unit.

1.4.2 Other Facilities and Areas

Several remote test areas are located east and southeast of TA-III and within the canyons and foothills of the USFS withdrawn area—Arroyo del Coyote, Lurance Canyon, Madera Canyon, and Sol se Mete Canyon (Figure 1-1). The remote test areas are known collectively as the Coyote Test Field and are located in the canyons on the west side of the Manzano Mountains. These areas are used for environmental and developmental testing, including explosive ordnance testing, impact testing, rocket firing experiments, and open-burn thermal testing.

SNL personnel operate several facilities outside the boundaries of KAFB. These are a mixture of properties leased or owned by DOE. The Center for Integrated Nanotechnologies, the MESA Technology and Operations Prototype, the International Programs Building, the Innovation Parkway Office Center, and the National Museum of Nuclear Science and History are all located on Eubank Boulevard Southeast within one mile of KAFB. There are many other small-scale, off-site SNL projects, including the Advanced Materials Laboratory at the University of New Mexico.

Apache plume (*Fallugia paradoxa*)

1.5 Environmental Setting

SNL/NM is set in the high desert region of central New Mexico. The mountains on the east and the plateaus on the west create a diverse range of geological, hydrological, ecological, and climatic settings, as discussed in the following sections. A maximum elevation of 7,986 ft occurs on the eastern edges of KAFB; the mean elevation is 5,384 ft.

The most prominent topographic feature in the Albuquerque region is the Sandia Mountains to the east of the COA. The Sandia Mountains form a 13-mile-long escarpment distinguished by steep cliffs, pinnacles, and narrow canyons; the tallest point is Sandia Crest at 10,678 ft. The Sandia Mountains are divided from the Manzanita Mountains (to the south) by Tijeras Canyon (Figure 1-1).

Tijeras Arroyo is a major topographic feature that is situated diagonally northeast to southwest on KAFB. The watershed drained by Tijeras Arroyo includes the southern Sandia Mountains, the Manzanita Mountains, and the north end of the Manzano Mountains. The arroyo is normally dry except during heavy downpours, which can cause significant flash floods. The arroyo originates in Tijeras Canyon and runs coincident with the Tijeras Fault for several miles before deviating to the southwest; it discharges to the Rio Grande approximately 10 miles from the west boundary of KAFB.

1.5.1 Geology and Hydrology

SNL/NM and KAFB are situated in a geologic setting that has been subjected to relatively recent episodes of basaltic volcanism and ongoing regional rifting (crustal extension). The Rio Grande Rift has formed a series of connected down-dropped basins filled with sedimentary deposits. The Rio Grande Rift extends for about 450 miles from Leadville, Colorado, into New Mexico; the COA and KAFB are within a rift valley.

The Albuquerque Basin, a major structural feature, is approximately 30 miles wide and 100 miles long.

The Albuquerque Basin is a major structural feature and is one of several north–south-trending sediment-filled basins formed by the Rio Grande Rift. The Albuquerque Basin is approximately 30 miles wide, 100 miles long, and 3,000 sq mi in area (Grant 1982). On the east, uplifted fault blocks manifested by the Sandia, Manzanita, and Manzano mountains bound the basin. The western side of the basin is bound by the Lucero Uplift to the south and by the Rio Puerco Fault Belt and the Nacimiento Uplift at the northern end. There is major structural relief, but relatively little topographic relief along the Rio Puerco Fault Belt on the northwestern side of the basin. The Albuquerque Basin is drained to the south through the Rio Puerco and the Rio Grande.

Several faults run through KAFB (Figure 1-3). The Tijeras Fault, which has been traced as far north as Madrid, New Mexico, trends southwesterly through Tijeras Canyon and across KAFB. The Tijeras Fault is a strike-slip fault on which movement is horizontal and parallel to the strike of the fault. Early movement along the Tijeras Fault can be traced to the late Precambrian Period, 570 million years ago, and traces of the fault 20 miles northeast of KAFB have been active as recently as the late Pleistocene epoch, 12,000 years ago. The system of minor faults associated with the Tijeras Fault on KAFB is collectively referred to as the Tijeras Fault Complex. The Tijeras Fault Complex marks a distinct boundary between the Precambrian and Paleozoic bedrock geology on the east and the Tertiary and Quaternary sediment-filled basin to the west. This geologic boundary also forms a boundary between the two major groundwater regimes at KAFB.

The Sandia Fault establishes the eastern boundary of the Albuquerque Basin on KAFB. The upthrown side of the fault is manifested as the Sandia and Manzanita mountains. The total vertical structural offset is on the order of 4.3 miles. South of KAFB, the basin's eastern boundary is the Hubbell Spring Fault. The Sandia Fault and Hubbell Spring Fault systems are north-trending, down-to-the-west, en echelon normal faults, which formed in mid- to late-Tertiary (25 million years and younger) (Lozinsky and Tedford 1991; Woodward 1982; Kelley 1977). The Sandia Fault converges with the Tijeras Fault and the Hubbell Spring Fault in the region of KAFB, identified as the Tijeras Fault Complex.

The hydrogeological system at KAFB is divided into two areas separated by the Tijeras Fault Complex (Figure 1-3; modified from SNL/NM 1995, *Site-Wide Hydrogeologic Characterization Project, Calendar Year 1995 Annual Report*.). To the east of the Tijeras Fault Complex, the hydrogeology is characterized by fractured and faulted bedrock covered by a thin layer of mostly dry alluvium. Depths to groundwater east of the Tijeras Fault Complex range from approximately 44 to 325 ft bgs. On the west side of the Tijeras Fault Complex, groundwater in the regional aquifer is contained in alluvial sediments, and depths to groundwater range from approximately 451 to 571 ft bgs.

A perched groundwater system (PGWS) overlies the regional aquifer in the north portion of KAFB. The PGWS extends from TA-I south to the Tijeras Arroyo Golf Course. The western extent of the PGWS lies between Wyoming Boulevard and the Albuquerque International Sunport's east–west runway. The eastern extent is just east of the KAFB landfill and may be bounded by the West Sandia Fault. The groundwater gradient within the PGWS is to the southeast, and the depth to groundwater is approximately 269 ft bgs in the west and 350 ft bgs in the east.

Sandía means *watermelon* in Spanish, and is popularly believed to be a reference to the reddish color of the mountains at sunset. Also, when viewed from the west, the profile of the mountains is a long ridge, with a thin zone of green conifers near the top, suggesting the rind of the watermelon. However, as Robert Julyan notes, "The most likely explanation is the one believed by the Sandia Indians: the Spaniards, when they encountered the Pueblo in 1540, called it Sandia, because they thought the squash gourds growing there were watermelons, and the name Sandia soon was transferred to the mountains east of the pueblo" (Julyan 1998). He also notes that the Sandia Pueblo Indians call the mountain *Bien Mur*, "big mountain."

Two perennial springs are located on KAFB (Coyote Springs and Sol se Mete Spring). Additionally, one perennial spring (Hubbell Spring) is located immediately south of the KAFB boundary on Isleta Pueblo. Numerous ephemeral springs occur within the foothills and in the eastern reach of Arroyo del Coyote.

The primary regional aquifer in the Albuquerque Basin is within the upper unit and, to a lesser degree, the middle unit of the Santa Fe Group Aquifer System. Most Albuquerque Bernalillo County Water Utility Authority (ABCWUA) water supply wells are located in the most productive portion of the aquifer on the east side of the Rio Grande. The highest-yield wells are screened in the sediments associated with the Ancestral Rio Grande deposits. Prior to extensive urban development in the Albuquerque area beginning in the 1950s, the regional groundwater in the KAFB area primarily flowed to the southwest. As a result of groundwater withdrawal, the local water table has dropped by as much as 141 ft (Thorn, McAda, and Kernodle 1993).

Groundwater withdrawal from KAFB and ABCWUA wells at the north end of KAFB have created a trough-like depression in the water table, causing flow to be diverted northeast in the direction of the well fields.

Until recently, declining water levels approaching 1.5 ft per year were associated with long-term pumping of KAFB and ABCWUA production wells. However, since late 2008, hydrographs for regional aquifer wells in the northern part of KAFB show an increasing trend in groundwater elevations. Presumably, this is in response to the ABCWUA transitioning to surface water withdrawals for potable water supplies and decreasing dependence on production wells immediately north of KAFB.

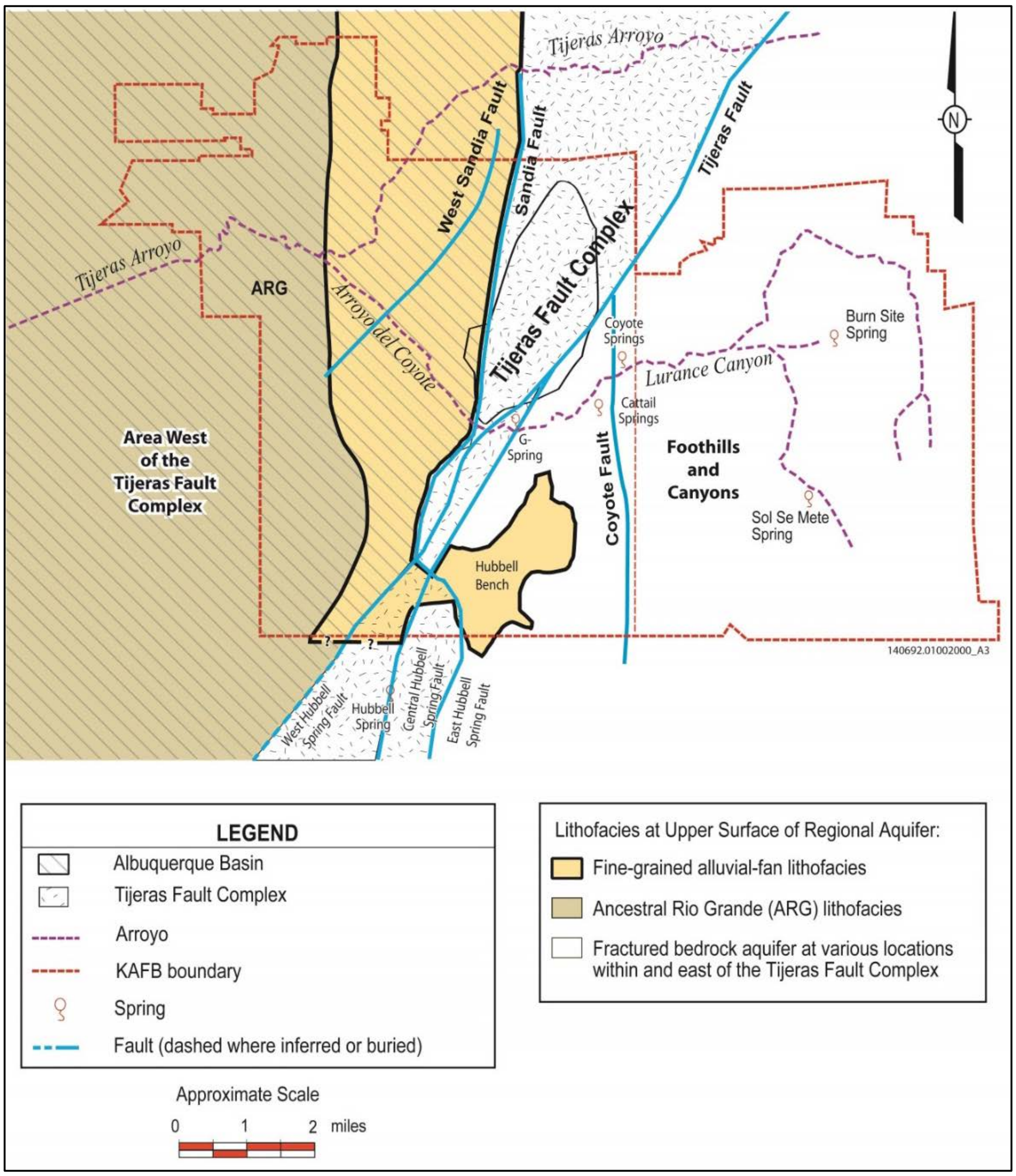


Figure 1-3. Faults and hydrogeologically distinct areas

1.5.2 Ecology

An ecosystem is a network of living organisms and nonliving components that interact with one another to comprise the overall environment. The ecosystem at SNL/NM includes the interactions of human, animal, insect, plant, fungal, and many other living component varieties within several habitat types. Nonliving components within the ecosystem include air, water, mineral soil, buildings, structures, roads, and paved surfaces. The habitats of the SNL/NM ecosystem include: grasslands, woodland, arroyo shrub, scattered piñon-juniper, and closed canopy piñon-juniper. The SNL/NM ecosystem is a dynamic entity that is impacted by external and internal factors. External factors include such things as climate, time, topography, and biota. Internal factors include the introduction of nonnative species to the ecosystem, and human disturbance and interactions (through development) within the various habitats.

An *ecosystem* is a network of living organisms and nonliving components (e.g., air, water, mineral soil, buildings, and roads) that interact to comprise an overall environment.

The desert grasslands of New Mexico have been heavily disturbed over the last 150 years, with a steady transition of what was once extensive grassland into shrubland (Dick-Preddie, Moir, and Spellenberg 1996; McClaran and Van Devender 1997). SNL/NM and KAFB grasslands have been excluded from grazing since the 1940s. Prior to this time, the grasslands were affected by anthropogenic activities. The extent and severity of alteration to the grasslands has not been well documented. Grasslands at SNL/NM and KAFB are found both within and outside the SNL/NM TAs, between elevations of 5,200 and 5,700 ft. The SNL/NM and KAFB grasslands, which can best be described as fragments of historic grasslands, are boarded by urban Albuquerque to the north and west, forest lands to the east, and cattle-grazing shrublands to the south. These grasslands provide necessary habitat to support many species of birds, reptiles, amphibians, and mammals.

SNL/NM and KAFB woodland areas rise to the east from the grassland areas. The woodlands are typical of those in central New Mexico, consisting almost entirely of piñon-pine and juniper species mosaics, commonly referred to as piñon-juniper habitat. At the highest elevations of SNL/NM and KAFB managed lands, some scattered ponderosa pines are present in low numbers.

Sandia foothills

There are large tracts within the SNL/NM and KAFB area that are undeveloped. These undeveloped areas provide the considerable diversity of plant and animal communities found within KAFB. Table 1-1 lists some of the common species of birds, mammals, reptiles, amphibians, and plants that have been encountered on-site. See Chapter 7 for more information on the ecology of the area.

Table 1-1. Plants and animals commonly identified in various life zones across KAFB

Common Name	Scientific Name	Common Name	Scientific Name
Birds			
American Kestrel	*Falco sparverius*	Ladder-backed Woodpecker	*Picoides scalaris*
Black-chinned Hummingbird	*Archilochus alexandri*	Loggerhead Shrike	*Lanius ludovicianus*
Black-throated Sparrow	*Amphispiza bilineata*	Northern Mockingbird	*Mimus polyglottos*
Common Raven	*Corvus corax*	Red-tailed Hawk	*Buteo jamaicensis*
Dark-eyed Junco	*Junco hyemalis*	Spotted Towhee	*Pipilo maculatus*
Horned Lark	*Eremophila alpestris*	Western Kingbird	*Tyrannus verticalis*
House Finch	*Haemorhous mexicanus*	Western Meadowlark	*Sturnella neglecta*
Mammals			
American black bear	*Ursus americanus*	desert cottontail	*Sylvilagus audubonii*
banner-tailed kangaroo rat	*Dipodomys spectabilis*	deer mouse	*Peromyscus maniculatus*
black-tailed jackrabbit	*Lepus californicus*	gray fox	*Urocyon cinereoargenteus*
Bobcat	*Felis rufus*	Gunnison's prairie dog	*Cynomys gunnisoni*
coyote	*Canis Latrans*	mule deer	*Odocoileus hemionus*
Reptiles and Amphibians			
Chihuahuan Spotted Whiptail	*Aspidoscelis exsanguis*	Great Plains Skink	*Eumeces obsoletus*
Desert Side-blotched Lizard	*Uta stansburiana*	Long-nosed Snake	*Rhinocheilus lecontei*
Eastern Collared Lizard	*Crotaphytus collaris*	New Mexico Spadefoot Toad	*Spea multiplicata*
Gopher Snake	*Pituophis catenifer*	New Mexico Whiptail	*Aspidoscelis neomexicana*
Greater Short-horned Lizard	*Phrynosoma hernandesi*	Prairie Rattlesnake	*Crotalus viridis*
Plants			
Apache plume	*Fallugia paradoxa*	New Mexico feathergrass	*Hesperostipa neomexicana*
Black grama	*Bouteloua eriopoda*	One-seed juniper	*Juniperus monosperma*
Blue grama	*Bouteloua gracilis*	Piñon pine	*Pinus edulis*
Bush muhly	*Muhlenbergia porteri*	Purple three-awn	*Aristida purpurea*
James' Galleta	*Hilaria jamesii*	Ring muhly	*Muhlenbergia torreyi*
Intermediate yucca	*Yucca intermedia*	Shrub live oak	*Quercus turbinella*

1.5.3 Climate

Large diurnal temperature ranges, summer monsoons, and frequent drying winds are characteristic of the regional climate in the Albuquerque Basin and the Sandia, Manzanito, and Manzano mountains.

Temperatures are typical of midlatitude dry continental climates, with summer high temperatures in the basin around 90°F and winter high temperatures around 50°F. Daily low temperatures range from around 60°F in the summer to around 20°F in the winter. The dry continental climate also produces low average humidity in the late spring and early summer prior to the onset of the monsoon season. Daytime relative humidity can be between 10 and 20 percent in the spring and early summer, with an average humidity near 30 percent. Winter relative humidity averages near 50 percent.

Precipitation varies across the region, with many locations in the higher elevations of the mountains receiving annual rainfall twice that of locations in the Albuquerque Basin. The winter season in the Albuquerque Basin and around SNL/NM is generally dry, with an average of less than 1.5 inches of precipitation falling between December and February. Most precipitation falls between July and October, mainly in the form of brief, heavy rain showers. According to the National Climatic Data Center (NCDC), the average annual precipitation is approximately 9.45 inches for the Albuquerque area (NCDC 2015).

Site-specific meteorology at SNL/NM is influenced by the proximity to topographic features, such as mountains, canyons, and arroyos. These features influence local wind patterns across the site. Canyons and arroyos tend to channel or funnel wind, whereas mountains create upslope and downslope diurnal wind flow patterns. Winds tend to blow toward the mountains or up the Rio Grande Valley during the day, and nocturnal winds tend to blow down the mountain toward the Rio Grande Valley. These topographically induced wind flows can be enhanced or negated by weather systems that move across the southwestern United States. The strongest winds occur in the spring when monthly wind speeds average 10.3 mph. Wind gusts commonly reach 50 mph.

Chapter 2. Compliance Summary

Singing barn owls (*Tito alba*)

OVERVIEW ■ Sandia National Laboratories operations comply with federal, state, and local environmental regulations, statutes, Executive Orders, and DOE directives. Regular audits, appraisals, and inspections identify areas for improvement as well as noteworthy practices.

Sandia National Laboratories (SNL) operations at SNL, New Mexico (SNL/NM) are in compliance with federal, state, and local environmental requirements, including U.S. Department of Energy (DOE) directives and Presidential Executive Orders (EOs). As a part of this compliance, SNL operations adhere to reporting and permitting requirements. Current permits held for SNL/NM are listed in Chapter 9.

SNL compliance with federal, state, and local environmental requirements and with the NMED DOE Oversight Bureau (NMED DOE OB) ensures that activities at DOE facilities in New Mexico are managed and controlled in a manner that is protective of public health and safety as well as the environment. The NMED DOE OB achieves this through the following:

- Assessing DOE management of its New Mexico facilities to ensure attainment of public health and environmental standards
- Providing inputs to DOE for prioritization of its cleanup and compliance activities
- Developing and implementing an independent monitoring and oversight program
- Increasing public knowledge and awareness of environmental matters at DOE facilities in New Mexico

The NMED DOE OB provides independent verification of environmental monitoring results obtained by SNL personnel on behalf of DOE/National Nuclear Security Administration

(NNSA)/ Sandia Field Office (SFO). The NMED DOE OB performs sampling and monitoring activities in conjunction with SNL environmental programs. In 2016, this included air, water, vegetation, and soil/sediment sampling. The samples were analyzed by independent laboratories under contract to the NMED DOE OB. More information can be found on the NMED DOE OB website:

https://www.env.nm.gov/doeob/

All SNL/NM operations and activities, including those that are part of environmental programs, are performed under the Environment, Safety, and Health (ES&H) policy, ESH100, which states:

> It is the policy of Sandia National Laboratories to perform work in a safe and environmentally responsible manner by committing to: maintain a safe workplace, prevent incidents, and protect the public; protect the environment, conserve resources, and prevent pollution; maintain compliance with legal and other requirements; and strive for continual improvement. DOE's Integrated Safety Management System (ISMS) is a key element of the Sandia Management Model. ISMS provides the framework for managing ES&H activities and functions while integrating them into all SNL operations.

SNL personnel practice follows the DOE ISMS methodology for managing and implementing its ES&H policies and procedures. The following five core ISMS functions guide management in integrating safety into all work practices: define the scope of work, analyze the hazards, develop and implement hazard controls, perform work within controls, and provide feedback and continuous improvement.

2.1 Environmental Management System

SNL management takes the responsibility of protecting the environment seriously and requires employees, contractors, and visitors to prevent pollution and conserve natural resources by adhering to the ES&H policy. The Environmental Management System (EMS)—the primary management approach to minimizing environmental impact and supporting environmental compliance and sustainability practices—is also implemented through environmental programs.

The EMS encompasses all SNL activities, products, and services that have the potential to interact with the environment. Specifically, the EMS is a set of interrelated elements used to establish policy, objectives, and targets that enable personnel to reduce environmental impacts and increase operating efficiencies through a continuing cycle of planning, implementing, evaluating, and improving processes.

DOE O 436.1, *Departmental Sustainability*, was established to ensure that environment management systems and site sustainability are at the forefront of environmental excellence. This directive is implemented through an International Organization for Standardization (ISO) 14001-certified (ISO 2004) EMS. Sandia National Laboratories received initial ISO 14001 certification in June 2009 and retained certification in the 2015 recertification audit.

In May 2016, the ISO 14001 third-party surveillance audit was completed. A surveillance audit is scheduled for fiscal year (FY) 2017, with the next ISO 14001 recertification audit due in FY 2018. Additional information can be found on the SNL external EMS website:

www.sandia.gov/about/environment/environmental_management_system/index.html

The benefits of the SNL EMS include:

- Improved environmental performance
- Enhanced compliance with environmental regulations
- Strengthened pollution prevention efforts
- Improved resource conservation
- Increased environmental efficiencies and reduced costs
- Enhanced image with the public, regulators, and potential new hires
- Heightened awareness of environmental issues and responsibilities

For FY 2016, the EMS identified natural resource use, hazardous materials use, and hazardous waste production as the top three significant *aspects* (any elements of activities, products, or services that can interact with the environment). When significant aspects and negative *impacts* (any changes in the environment, whether adverse or beneficial, wholly or partially resulting from activities, products, or services) have been identified, objectives and measurable targets—at all operating levels—are established to guide efforts toward minimizing those aspects and impacts.

In fiscal years 2008–2016, greenhouse gas emissions were reduced by 53 percent—equal to taking 65,000 cars off the road each year. This was accomplished in part by repairing leaks in sulfur hexafluoride gas-handling systems, increasing use of renewable energy, and improving heating and cooling efficiencies.

2.2 Site Sustainability Plan

Sustainability strategies and goals are defined in the annual Site Sustainability Plan, and many of these efforts have been adopted as EMS objectives and targets. The Site Sustainability Plan (SNL/NM 2015) articulates the performance status and planned actions for meeting DOE's Strategic Sustainability Performance Plan (DOE 2016) goals and broader sustainability program set forth in EO 13693. The EMS is used as a platform for implementing the Site Sustainability Plan and other programs with objectives and measurable targets that contribute to meeting sustainability goals. Table 2-1 presents performance status for several key areas.

2.3 Environmental Performance Measures

Environmental performance at SNL/NM is tracked through performance measures and indicators. The results are reported through the internal ES&H Assurance Dashboard, the Sandia Performance Scorecard, the management review process, and management reports.

Environmental performance and the performance measures are also assessed as part of the SNL Performance Evaluation Measurement Plan with DOE/NNSA/SFO. On the basis of the Performance Evaluation Measurement Plan, DOE/NNSA/SFO prepares an annual Performance Evaluation Report that assesses the management and operating contractor's performance for the fiscal year. For FY 2016, expectations were met or exceeded in the areas of environment, safety, and health.

Table 2-1. Site Sustainability Plan performance status for key areas

DOE SSPP and NNSA Goal/ SNL Objective	SNL/NM Performance Status through FY 2016[a]
Greenhouse Gas Reduction	
Reduce Scope 1 and Scope 2 GHG emissions 50% by FY 2025 from an FY 2008 baseline. (2016 target: reduce by 22%)	Met this objective by reducing Scope 1 and Scope 2 GHG emissions 53% in FY 2016 relative to an FY 2008 baseline.
Sustainable Buildings	
Reduce energy intensity by 25%, and achieve 2.5% reductions annually, by FY 2025 from an FY 2015 baseline.	Met this objective by reducing energy intensity 2.49% in FY 2016 relative to an FY 2015 revised baseline for goal-subject buildings.
Clean and Renewable Energy	
Use not less than 10% clean energy in FY 2016, working toward a 25% reduction by FY 2025.	Met this objective by purchasing renewable energy credits in FY 2016.
Water Use Efficiency and Management	
Reduce potable water intensity 36% by FY 2025 from an FY 2007 baseline. (2016 target: reduce by 18%)	Exceeded this objective with a 43.44% decrease in potable water intensity in FY 2016 relative to an FY 2007 baseline.
Fleet Management	
Purchase light-duty vehicles so that 75% are alternative fuel vehicles. (FY 2016 target: 75%)	Exceeded this objective by purchasing 100% alternative fuel and using light-duty vehicles in FY 2016.
Sustainable Acquisition	
Promote sustainable acquisition and procurement to the maximum extent practicable, ensuring BioPreferred and biobased provisions and clauses are included in 95% of applicable contracts.	Met this objective by awarding a new contract in FY 2016 for paper shredders and shredder maintenance that included the provision that 100% of the lubricating oil for the shredder options be biobased.
Pollution Prevention and Waste Reduction	
Divert at least 50% of nonhazardous solid waste, excluding C&D debris.	Met this objective by diverting 67.6% of waste from landfills in FY 2016.
Electronic Stewardship	
Purchase eligible acquisitions so that 95% are EPEAT-registered products each year.	Met this objective with 97.6% of eligible electronics acquisitions being EPEAT-registered products in FY 2016.
Climate Change Resilience	
Update policies to provide incentives for planning for and addressing the impacts of climate change.	Developing a climate change resilience plan in order to meet this objective.

NOTES: [a]SNL/NM (Sandia National Laboratories, New Mexico). 2017. *FY 2017 Site Sustainability Plan.* Albuquerque, NM: SNL/NM.

AFV = alternative fuel vehicle
C&D = Construction and Demolition
DOE = U.S. Department of Energy
EPEAT = Electronic Product Environmental Assessment Tool
FY = fiscal year
GHG = greenhouse gas
NNSA = National Nuclear Security Administration
SNL/NM = Sandia National Laboratories, New Mexico
SSPP = Strategic Sustainability Performance Plan

2.4 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to consider human health and environmental issues associated with proposed actions, be aware of the potential environmental impacts associated with these issues, and include this information in early project planning and decision making. NEPA review of federally funded proposed actions is conducted in accordance with 10 Code of Federal Regulations [CFR] 1021 ([10 CFR 1021), *National Environmental Policy Act Implementing Procedures* (DOE 2011). Additional information is provided in Chapter 3.

2.5 Air Quality

Air quality at SNL/NM is monitored and assessed to ensure compliance with clean air requirements.

2.5.1 Clean Air Act

The Clean Air Act (CAA) of 1970, as amended, is the comprehensive federal law that regulates air emissions from stationary and mobile sources. EPA is responsible for describing and regulating air pollutants from stationary and mobile sources and for setting ambient air quality standards. The City of Albuquerque (COA) has direct delegation from EPA Region VI to administer these standards as well as specific air emission permits and registrations, as shown in Table 9-1. See Chapter 5 for further information on SNL compliance with the CAA.

The CAA requires EPA to develop a list of air pollutants from all sources that could harm public health or the environment. EPA identified six substances as criteria pollutants, and subsequently developed National Ambient Air Quality Standards for these pollutants.

The EPA program for the attainment and maintenance of National Ambient Air Quality Standards requires local agencies to develop a comprehensive permitting program. The Albuquerque Bernalillo County Air Quality Control Board has developed a set of regulations that govern mobile and stationary sources of air pollution.

In addition to the regulations for criteria pollutants, the EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) Program prescribes emission limitations for hazardous air pollutants (HAPs).

Fugitive Dust Permitting

The COA enforces 20.11.20 New Mexico Administrative Code (NMAC). This code ensures that all persons conducting active operations that result in disturbed surface areas or that involve bulk material handling use reasonably available control measures (or other effective measures) on an ongoing basis. This is to prevent or abate injury to human health or to animal and plant life, and to prevent or abate unreasonable interference with public welfare, visibility, and the reasonable use of property.

New Source Performance Standard Requirements

As part of an effort to control pollution in the U.S., EPA provides New Source Performance Standard requirements that dictate the level of pollution that a new stationary source may produce. These standards are authorized by Section 111 of the CAA, and the regulations are published in 40 CFR 60, which the COA implements in Bernalillo County. A New Source Performance Standard has been established for a number of individual industrial or source categories, including boilers and generators.

New Source Review Requirements

The New Source Review permitting program was established as part of the CAA Amendments of 1977; the COA implements this program in Bernalillo County. New Source Review requirements provide assurance to the public that any large, new, or modified industrial source in their neighborhood will be protective of human health and the environment, and that advances in pollution control will occur concurrently with industrial expansion.

Open Burn Permitting

The COA enforces 20.11.21 NMAC to ensure that all persons conduct open burning in a manner that prevents or abates emissions that are visible and that produce noxious by-products of combustion.

Ozone-Depleting Substances Requirements

Based on the requirements of the CAA, EPA has established regulations to phase out production and use of ozone-destroying chemicals.

Radionuclide Emissions

The *National Emissions Standards for Hazardous Air Pollutants*, Subpart H, "National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities" (40 CFR 61), establishes radiation protection standards, monitoring requirements, and annual reporting requirements for radionuclide air emissions. Additional requirements pertaining to radionuclide emissions are contained in DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment.* An annual NESHAP report summarizes radionuclide air emission releases from SNL/NM facilities and the results of the annual dose assessment.

Sunflower *(Helianthus annuus)* and bumblebee *(Bombus sp.)*

Reciprocating Internal Combustion Engine NESHAP Requirements

As part of an effort to control pollution in the U.S., EPA provides NESHAP requirements that dictate the level of pollution that stationary sources may produce within an area source for HAPs. These standards are authorized by Section 111 of the CAA, and the regulations are published in 40 CFR 63, which the COA implements in Bernalillo County. The Reciprocating Internal Combustion Engine NESHAP has been established to address stationary generators and the potential ambient air impact within an area source for HAPs.

Title V Operating Permit

The CAA Amendments of 1990 contained provisions under Title V that require all existing major air emission sources to obtain an operating permit. A *major* source is defined as the combined emissions from any facility with the potential to emit one of the following:

- 100 tpy or greater of any criteria pollutant
- 10 tpy of any HAP
- 25 tpy of any combination of HAPs

Details on the applicability of Title V to SNL/NM activities are in Chapter 5.

2.6 Cultural and Natural Resources

Cultural and natural resources are protected at SNL/NM.

2.6.1 Cultural Resources Acts

Cultural resources management responsibilities are applicable at SNL/NM. The three primary relevant cultural resources acts are:

- National Historic Preservation Act, enacted in 1966 and amended in 2000
- American Indian Religious Freedom Act, enacted in 1978 and amended in 1994
- Archaeological Resources Protection Act, enacted in 1979 and amended in 1988

NEPA Program personnel coordinate cultural resources compliance. Actions that could adversely affect cultural resources are analyzed initially in a NEPA checklist. Historic properties, as defined by the National Historic Preservation Act and its implementing regulations, include both archaeological sites and historic buildings and structures. Historic buildings and structures may include structures over 50 years of age that are significant historically or younger structures of exceptional significance. There are historic buildings on property owned by DOE/NNSA and on Kirtland Air Force Base (KAFB) land permitted to DOE/NNSA. Planning through the NEPA process identifies potential impacts to these sites, and appropriate historic documentation is undertaken to mitigate adverse effects when necessary.

Archaeological sites have been identified on DOE/NNSA land in the Cibola National Forest in the U.S. Forest Service withdrawn area, as well as on and in close proximity to DOE/NNSA-permitted property and Environmental Restoration (ER) sites. SNL personnel plan activities to avoid potential impacts to these cultural resources sites. DOE/NNSA/SFO is responsible for ensuring that impacts to cultural resources are assessed and appropriate actions are taken to mitigate impacts.

Historic Building Assessment

In 2010, SNL personnel performed a site-wide survey and historic building assessment to determine areas and structures that may be eligible for the National Register of Historic Places. The final recommendation to DOE/NNSA/SFO included identification of eight historic districts and three individually eligible buildings. DOE/NNSA/SFO consults with the New Mexico State Historic Preservation Office (SHPO) on properties that face renovation. DOE/NNSA/SFO has not completed the consultation with SHPO regarding the 2010 recommendation. As the cumulative effect of actions taken since the 2010 survey have resulted in changes to the built environment, the survey will be revised in 2017. The current recommendation to DOE/NNSA/SFO is that there are seven historic districts and two individually eligible buildings at SNL/NM. The properties recommended for eligible status are being treated as historic until final determinations are made. Documentation continues on buildings previously determined to be eligible for the National Register of Historic Places.

In 2016, SNL personnel provided historic building assessments in response to 13 actions on 12 properties at SNL/NM. DOE/NNSA/SFO consulted with SHPO on actions at 7 of the properties; five consultations were completed and two are ongoing. DOE/NNSA/SFO did not consult on the other actions based on the results of previous consultations.

In 2015, SNL personnel proposed removal of test structures at 15 ER sites. In 2016, SNL personnel provided historic property assessments of the sites, and KAFB consulted with SHPO. One of the sites includes historic properties, and SNL personnel are documenting it in coordination with KAFB prior to demolition. Consultation regarding archaeological sites at the ER sites is ongoing.

Archaeological Assessment

In 2016, DOE/NNSA/SFO did not have occasion to consult with SHPO on any archaeological resources. DOE/NNSA/SFO did complete consultation with SHPO regarding the 2015 bar ditch damage near previously identified archaeological sites.

2.6.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (U.S. Code [USC] 668-668d), enacted in 1940 and later amended, prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. Ecology Program personnel coordinate compliance with this act.

2.6.3 Endangered Species Act

The Endangered Species Act of 1973, amended in 1982, applies to both private individuals and federal agencies. Federal agencies must ensure that any action authorized, funded, or carried out by them will not jeopardize the continued existence of a threatened or endangered species, or result in adverse modifications of its habitat. NEPA Program and Ecology Program personnel address Endangered Species Act compliance. If potentially significant impacts to sensitive species or habitats are found as a result of a proposed action, an environmental assessment or an environmental impact statement must be prepared. See Chapter 7 for more information on the Endangered Species Act and the Ecology Program at SNL/NM.

2.6.4 Fish and Wildlife Coordination Act

The Fish and Wildlife Conservation Act (Public Law [PL] 96-366), enacted in 1980, and the Lacey Act Amendments (PL 97-79), enacted in 1981, were established so that wildlife will receive equal consideration with other natural resources in regard to maintenance of the ecosystem. Relevancy toward an ecological program is stated in 16 USC 661; the purpose is: "(1) to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species . . . (2) to make surveys and investigations of the wildlife public domain." Ecology Program personnel consider Fish and Wildlife Conservation Act compliance when evaluating NEPA checklists.

2.6.5 Floodplain Management

As amended, EO 11988 of 1977, *Floodplain Management*, requires federal agencies to consider impacts associated with the occupancy and modification of floodplains; reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. All active SNL/NM facilities located on KAFB are outside the 500-year floodplain, as described by the U.S. Army Corps of Engineers (USACE 1979). This applies to both major on-site drainages: Tijeras Arroyo and Arroyo del Coyote.

2.6.6 Memorandum of Understanding between the U.S. Department of Energy and the U.S. Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds"

The purpose of the Memorandum of Understanding between the U.S. Department of Energy and the U.S. Fish and Wildlife Service [FWS] Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds," signed in 2013, is to strengthen migratory bird conservation through enhanced collaboration between DOE and the FWS, in coordination with state, tribal, and local governments. The Memorandum of Understanding identifies specific areas in which cooperation between DOE and the FWS will substantially contribute to the conservation and management of migratory birds and their habitats. Ecology Program personnel coordinate this Memorandum of Understanding with requirements of the the MBTA through NEPA reviews.

Black-chinned Hummingbird (*Archilochus alexandri*)

2.6.7 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) of 1918 (and amendments) implemented the 1916 Convention for the Protection of Migratory Birds. The original statute implemented the agreement between the U.S. and Great Britain (for Canada), and later amendments implemented treaties between the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia. The MBTA prevents taking, killing, possessing, transporting, and importing migratory birds, their eggs, parts, or nests. Federal institutions are not exempt from the MBTA. At SNL/NM, the MBTA is coordinated through NEPA reviews and the Ecology Program.

2.6.8 New Mexico State Statutes Related to Natural Resources

The following New Mexico statutes related to natural resources are applicable to operations at SNL/NM:

- Hunting and Fishing, New Mexico Statutes Annotated (NMSA) 1978, §§ 17-2-13 through 17-2-15 protecting songbirds, hawks, vultures, owls and horned toads, respectively
- Wildlife Conservation Act, NMSA 1978, §§ 17-2-37 through 17-2-46
- Habitat Protection, NMSA 1978, §§ 17-6-1 through 17-6-11
- Endangered Plants, NMSA 1978, § 75-6-1
- Protection of Native American Plants, NMSA 1978, §§ 76-8-1 through 76-8-4

2.6.9 Planning for Federal Sustainability in the Next Decade

Issued in March 2015, EO 13693 establishes an integrated strategy toward sustainability to safeguard the health of our environment and make the reduction of greenhouse gas emissions and enhanced climate resilience a priority for all federal agencies. EO 13693 sets goals in the areas of promoting sustainable buildings, increasing renewable energy, reducing water use, promoting electronics stewardship through sustainable acquisition, preventing pollution, and reducing solid waste. Sustainability-related data was reported to the Site Sustainability Plan team for submittal to DOE/NNSA/SFO.

2.6.10 Protection of Wetlands

As amended, EO 11990 of 1977, *Protection of Wetlands*, requires federal agencies to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural and beneficial values of wetlands. There are several natural springs on KAFB with a limited wetland setting. These springs, located on lands withdrawn from Cibola National Forest, are managed by the U.S. Air Force and the U.S. Forest Service. These springs provide an important source of drinking water for wildlife and create a unique biological niche in an otherwise arid habitat.

2.6.11 Sikes Act

The Sikes Act (PL 86-97), enacted in 1960 and the amendments of 1986 (PL 99-561) and 1997 (PL 105-85 Title XXIX) were reauthorized in 2013. The Sikes Act protects and enhances fish, wildlife, and other natural resources that exist on and are associated with military lands in the U.S. Ecology Program personnel consider the Sikes Act when evaluating NEPA checklists.

2.7 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, and amended in 1986, also known as the "Superfund," provides cleanup funds and/or assessment requirements for inactive hazardous waste sites at all federal facilities. A Preliminary Assessment/Site Inspection, as required by CERCLA, was performed at SNL/NM in 1988. This inspection confirmed that there are no sites that would qualify for the National Priorities List, which lists the nation's high-priority cleanup, or Superfund, sites. Therefore, with respect to inactive hazardous waste sites, there are no CERCLA reporting requirements. The Superfund Amendments and Reauthorization Act (SARA) requires reporting of toxic chemical usage and releases. In 2016, full compliance with CERCLA/SARA was met.

2.8 Chemical Management

Chemicals are managed through compliance with several requirements. Reporting is specified in these requirements.

2.8.1 Emergency Planning and Community Right-to-Know Act

The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, also known as SARA Title III, establishes emergency planning requirements for federal, state, and local governments and industry.

EPCRA ensures that communities have the right to know and be informed of potential hazards, including the type and location of large quantities of toxic chemicals used and stored by facilities in or near the community. EPCRA specifically mandates that chemical information be made available to local emergency planning committees, which include police, fire, civil defense, and public health professionals. Any inadvertent release above established threshold levels must be reported to appropriate state and local authorities. The four major reporting requirements designated by specific sections of EPCRA are shown in Table 2-2.

Table 2-2. EPCRA reporting requirements applicable to SNL/NM, 2016

Section	EPCRA Section Title	Requires Reporting? Yes	No	Description
302–303	Emergency Planning	✓		Prepare an annual report that lists chemical inventories above the reportable Threshold Planning Quantities listed in 40 CFR 355 (Appendix B), including the location of the chemicals and emergency contacts. DOE/NNSA/SFO distributes the report to the required entities.
304	Emergency Release Notification		✓	Notification of reportable quantity releases of an EHS, as defined by CERCLA, to the required entities.
311–312	Hazardous Chemical Inventory	✓		Report on two "Community Right-to-Know" requirements: • Complete EPA Tier II forms for (1) all hazardous chemicals present at the SNL/NM facility at any one time in amounts equal to or greater than 10,000 lb and (2) all EHSs present at the facility in amounts equal to or greater than 500 lb or the Threshold Planning Quantity, whichever is lower. This report is provided to DOE/NNSA/SFO prior to distribution to the required entities. • Record SDSs for each chemical entry on a Tier II form and provide the report to DOE/NNSA/SFO prior to distribution to the required entities.
313	Toxic Release Inventory	✓		Submit a TRI report to the required entities for facilities that release toxic chemicals listed in SARA Title III over a threshold value.

NOTES: CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
DOE = U.S. Department of Energy
EHS = extremely hazardous substance
EPA = U.S. Environmental Protection Agency
EPCRA = Emergency Planning and Community Right-to-Know Act
NNSA = National Nuclear Security Administration
SARA = Superfund Amendments and Reauthorization Act
SDS = Safety Data Sheet
SFO = Sandia Field Office
SNL/NM = Sandia National Laboratories, New Mexico
TRI = Toxic Release Inventory

Information on EPCRA can be found at the following EPA website:

http://www.epa.gov/epcra

Emergency Release Notification

The Emergency Release Notification requirements were established under Section 304 of EPCRA. An accidental release of an extremely hazardous substance that exceeds the applicable reporting quantity must be reported. In 2016, there were no reportable quantity releases of an extremely hazardous substances requiring notification.

Toxic Release Inventory Reporting

The Toxic Release Inventory (TRI) reporting requirement was established under Section 313 of EPCRA. Environmental releases and other waste management quantities of chemicals listed on the EPCRA Section 313 list of toxic chemicals must be reported for certain facilities in covered industry sectors if they manufacture, process, or otherwise use more than established threshold quantities of these chemicals.

In 2016, the use, potential releases, and other waste management activities at SNL/NM met the threshold that required a TRI report for lead and lead compounds.

2.8.2 Toxic Substances Control Act

The Toxic Substances Control Act, enacted in 1976 and later amended, provides regulations regarding the manufacture, processing, distribution, use, and disposal of specific chemical substances and/or mixtures. At SNL/NM, compliance with the Toxic Substances Control Act primarily involves the handling and disposal of polychlorinated biphenyls. Details related to the Toxic Substances Control Act are in Chapter 3.

2.8.3 Federal Insecticide, Fungicide, and Rodenticide Act

The Federal Insecticide, Fungicide, and Rodenticide Act, enacted in 1910 and amended in 1972, regulates pesticide use and is enforced under the New Mexico Pesticide Control Act. Pesticide use at SNL/NM includes the use of herbicides for weed control, rodenticides for controlling mice, and insecticides for the control of insects in food service and work areas. EPA-registered pesticides are applied by licensed pest control applicators. In 2016, full compliance with the Federal Insecticide, Fungicide, and Rodenticide Act was achieved.

Sandia Mountains

2.9 Hazardous Waste

Hazardous waste at SNL/NM is handled and managed in compliance with the following requirements.

2.9.1 Federal Facility Compliance Act

The Federal Facility Compliance Act (FFCA) of 1992 requires federal facilities to comply with all federal, state, and local requirements for hazardous and solid waste, including full compliance with the restrictions and prohibitions on extended storage of wastes that do not meet the applicable hazardous waste treatment standards. On October 4, 1995, NMED issued a Federal Facilities Compliance Order to DOE and SNL (NMED 1995). The order was developed pursuant to the FFCA, and provides requirements for achieving compliance with the requirements of 40 CFR 268.50 for mixed waste at SNL/NM. A Site Treatment Plan was developed with a schedule for processing the waste.

2.9.2 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), enacted in 1976, regulates (1) the generation, transportation, treatment, storage, and disposal of hazardous chemical waste and nonhazardous solid waste and (2) the storage of hazardous or petroleum products in underground storage tanks. Under the authority of the New Mexico Hazardous Waste Act and with delegated authority from EPA under RCRA, NMED administers hazardous and solid waste regulatory programs in New Mexico. Hazardous and solid waste management activities at SNL/NM are conducted under NMED regulations. Applicable regulations are listed in Chapter 9.

The hazardous waste component of hazardous and radioactive mixed waste is subject to the requirements of state and federal regulations for hazardous waste. The radioactive component of mixed waste is regulated under the Atomic Energy Act.

Hazardous waste and mixed waste are generated at SNL/NM through normal operations and through ongoing ER Operations, which is responsible for cleanup of sites that were formerly used for operations, such as testing and disposal. An active and successful program minimizes hazardous waste and mixed waste through product substitutions, process changes, material reuse, and recycling. See Chapter 3 for more information on hazardous waste management activities.

New Mexico Hazardous Waste Act

On April 29, 2004, NMED, DOE, and SNL entered into a Compliance Order on Consent (NMED 2004). This order provides requirements and establishes schedules and deliverables for corrective action pursuant to the New Mexico Hazardous Waste Act, as well as requirements concerning perchlorate and nitrate pursuant to the New Mexico Solid Waste Act.

Operating Permits

Hazardous and mixed waste management units at SNL/NM are currently operated under two permits issued by NMED:

- Resource Conservation and Recovery Act Facility Operating Permit (the Permit) (NMED 2015)
- Post-Closure Care Permit, effective June 2, 2011, for the Chemical Waste Landfill

Thirty-nine thousand pounds of ceiling tiles recycled

Resource Conservation and Recovery Act Facility Operating Permit

The Permit addresses operations at the following SNL/NM waste management units: the Hazardous Waste Handling Unit, the Hazardous Waste Management Facility, the Thermal Treatment Unit, the Radioactive and Mixed Waste Management Unit, the Auxiliary Hot Cell Unit, and five Manzano Storage Bunkers. The permit also requires post-closure care at the Corrective Action Management Unit and corrective actions at solid waste management units and areas of concern facility-wide. Finally, the Permit addresses long-term monitoring and maintenance at sites where corrective action has been completed. Semiannual DOE Public Meetings are conducted as described in the Permit Community Relations Plan.

Post-Closure Care Permit for the Chemical Waste Landfill

The Chemical Waste Landfill was used for hazardous waste disposal under interim status until 1985. Closure activities included two voluntary corrective measures: extraction of solvent vapors (primarily trichloroethylene) and excavation. In 2011, NMED issued a Post-Closure Care Permit. Details about post-closure care activities are provided in Chapter 3.

2.10 Pollution Prevention and Waste Minimization

Pollution prevention concepts first appeared in RCRA. An expressed concern was to minimize the generation of hazardous waste through process substitution, materials recovery, recycling, reuse, and treatment. RCRA established the reduction or elimination of hazardous waste as national policy, and required that hazardous waste generators and RCRA permit holders have a program in place to minimize waste. As required, waste generation and recycling information is reported annually to DOE through the Site Sustainability Plan.

2.10.1 Pollution Prevention Goals of Site Sustainability Plan

The Site Sustainability Plan establishes a commitment to meet pollution prevention goals identified in DOE's Strategic Sustainability Performance Plan and EO 13693. Pollution prevention and waste minimization data are reported in the Site Sustainability Plan. Additional information about pollution prevention activities is provided in Chapter 3.

2.10.2 Pollution Prevention Act

The Pollution Prevention Act of 1990 declares, as national policy, that pollution should be prevented or reduced at the source (42 USC § 13101 et seq.). Facilities that meet the reporting requirements under EPCRA, Section 313, are also required to file a toxic chemical source reduction and recycling report. See Section 2.8.1 for additional information on EPCRA reporting requirements.

Operations at Sandia National Laboratories comply with DOE requirements for managing radioactive waste in a manner that protects worker and public health and safety and the environment.

2.11 Radiation Protection and the Atomic Energy Act

The purpose of the Atomic Energy Act of 1946 is to assure the proper management of source, special nuclear, and byproduct materials (42 USC § 2011 et seq.). DOE sets radiation protection standards and retains authority for radionuclides through Department directives and CFRs. Operations at SNL/NM are subject to the DOE requirements established in DOE O 435.1 Change 1, *Radioactive Waste Management*, DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment*, and 10 CFR 835, *Occupational Radiation Protection*.

The radiation protection standards are set for DOE operations so that exposures to members of the public and the environment are as low as reasonably achievable and are maintained within established limits. DOE O 458.1 limits the total annual effective dose equivalent of all potential exposure pathways to the public (including air, water, and the food chain) to 100 mrem/yr. Pathway guidelines are as follows:

- **Water pathways.** DOE drinking water guidelines are based on an annual effective dose equivalent not to exceed 4 mrem/yr. DOE O 458.1 references the derived concentration technical standards for radionuclides in drinking water that could be consumed continuously (365 days a year). This is a conservative approach, which assumes that a member of the public resides at the location continuously. At SNL/NM, potable water is provided by the KAFB Public Water System, and KAFB is responsible for drinking water requirements (see Chapter 6). The DOE-derived concentration technical standards for a drinking water pathway are, therefore, not applicable.

- **Air pathways.** DOE facilities are required to comply with EPA standards for radiation protection as given in NESHAP Subpart H, specific to radionuclides emitted from DOE facilities (with the exception of radon). This rule mandates that air emissions from DOE facilities shall not cause any individual of the public to receive an effective dose equivalent of greater than 10 mrem/yr from air pathways. At SNL/NM, the only current pathway for potential exposure is through air (see Chapter 5 for details).

For sanitary sewer discharges, DOE O 458.1 provides the criteria to limit concentration of each radionuclide discharged to publicly owned treatment works (see Chapter 6 for details).

In addition to requirements in DOE O 458.1, DOE O 435.1 also establishes requirements for managing radioactive waste in a manner that protects worker and public health and safety and the environment. Under this order, DOE contractor-operated facilities are required to plan, document, execute, and evaluate the management of radioactive waste (see Chapter 3 for details).

Derived concentration technical standards are concentrations of radionuclides in water and air that could be consumed continuously or inhaled for one year and not exceed the DOE primary radiation standard for the public (100 mrem/yr effective dose equivalent).

The control and clearance of real and personal property with residual radioactivity is specified in DOE O 458.1. Personal property can include vehicles, equipment, materials, and trackable property (equipment with an acquisition value of $10,000 or greater). Personal property with residual radioactivity above the limits specified in DOE O 458.1 is not cleared from radiological control. Pursuant to written procedures, personal property that is potentially contaminated or activated is surveyed prior to clearance, or a process knowledge evaluation is conducted to verify that the personal property has not been exposed to radioactive material or to energy capable of inducing radioactivity in the material. In some cases, both a radiological survey and a process knowledge evaluation are performed. In 2016, Radiation Protection Department personnel processed 511 personal property clearance surveys; no trackable property was cleared.

DOE issued a moratorium in January 2000 that prohibited the clearance of volume-contaminated metals, and subsequently in July 2000 suspended the clearance of metals from DOE radiological areas for recycling purposes.

Excess property with residual radioactivity above the limits in DOE O 458.1 is either retained for continued use within DOE facilities or transferred to the SNL/NM Radioactive and Mixed Waste Management Unit for disposal as radioactive waste.

A summary of 2016 property clearance activities includes the following:

- Radiation Protection Department personnel processed 511 personal property clearance surveys.
- No trackable property was cleared.
- No metals subject to the moratorium or the suspension were cleared.
- No real property was cleared.

Protection of biota, as specified in DOE O 458.1, ensures that radiological activities having the potential to impact the environment must be conducted in a manner that protects aquatic animal, terrestrial plant, and terrestrial animal populations in local ecosystems from adverse effect due to radiation and radioactive material released from DOE operations. Currently, terrestrial plants are monitored; no other biota sampling is conducted due to the low-impact operations at SNL/NM. However, if changing operations or conditions warrant, sampling will be initiated on a case-specific basis to ensure compliance with DOE O 458.1. See Chapter 4 for Terrestrial Surveillance Program activities.

2.12 Water Quality and Protection

SNL/NM operations are subject to the requirements of the Clean Water Act and cooresponding New Mexico statutes.

2.12.1 Clean Water Act

The Clean Water Act (CWA) of 1972 and amendments establishes a permitting structure and regulatory direction to protect the "waters of the United States" by restoring and maintaining the chemical, physical, and biological integrity of U.S. waters; protecting fish, wildlife and recreation; and reducing pollutant discharges. At SNL/NM, the CWA applies to sanitary and septic system wastewater effluents, stormwater runoff, and surface water discharges.

The CWA is implemented through local, state, and federal water quality requirements and standards as follows:

- EPA has authority over National Pollutant Discharge Elimination System (NPDES) permits.
- NMED establishes state surface water quality standards (20.6.4 NMAC).
- The Albuquerque Bernalillo County Water Utility Authority administers regulations for sanitary sewer discharges based on federal pretreatment standards.
- EPA and NMED administer regulations concerning oil storage and surface discharges (20.6.2 NMAC).
- The Energy Independence and Security Act (EISA) of 2007, Section 438, requires federal agencies to manage stormwater runoff from federal development projects for the protection of water resources.

National Pollutant Discharge Elimination System and New Mexico Surface Water Quality Standards

EPA Region 6 is the constituent agency responsible for regulating stormwater discharges under NPDES in New Mexico. NPDES permitting requirements apply to "waters of the United States" as defined in the CWA. Stormwater that is discharged from SNL/NM flows to federal and state waters. Processes are in place to evaluate stormwater discharges for coverage and compliance with their respective NPDES permits, which include the Municipal Separate Storm Sewer System Permit, the Multi-Sector General Permit, and the Construction General Permit. For additional information, refer to Chapter 6.

While the NMED Surface Water Quality Bureau lacks primacy for permitting and enforcement, it is responsible for proposing water quality standards, developing antidegradation rules, and conducting a triennial review. The New Mexico Water Quality Control Commission has adopted "Standards for Interstate and Intrastate Surface Waters" (20.6.4 NMAC) and CWA § 303(d)/ § 305(b) *Integrated List and Report* to protect the quality of the state's surface waters, including waters of the United States. NMED assists EPA Region 6 by performing inspections, tracking compliance, and serving as a local point of contact for permit holders.

SNL/NM projects planned through the NEPA process are reviewed for EISA § 438 eligibility. If applicable, EISA § 438 requires the use of site planning, design, construction, and maintenance strategies to maintain or restore predevelopment site hydrology (stormwater runoff), ensuring that receiving surface waters (such as the Rio Grande) are not negatively impacted. Stormwater can be managed through green infrastructure and low-impact development features, including, for example, vegetated swales and permeable surfaces.

Mourning Dove *(Zenaida macroura)*

Albuquerque Bernalillo County Water Utility Authority Sewer Discharge Regulations

Six wastewater monitoring stations, or outfalls, are operating under the Albuquerque Bernalillo County Water Utility Authority permits at SNL/NM. For additional information refer to Chapter 6.

Surface Discharge

All discharges made to the ground or to containment areas must be evaluated for compliance with regulations implemented through New Mexico Water Quality Control Commission standards for the protection of groundwater and surface water prior to discharge.

Two evaporation lagoons are maintained in Technical Area (TA) IV, which are permitted by NMED Discharge Permit 530. The TA-IV lagoons are used to contain and evaporate accumulated stormwater pumped from secondary containment areas around seven oil tanks that support pulsed power accelerators. See Chapter 6 for more information

Oil Pollution Act

As required under the Oil Pollution Act of 1990 (§ 311) (with implementing regulations in 40 CFR 112, *Oil Pollution Prevention*), SNL personnel are required to maintain and implement a Spill Prevention, Control, and Countermeasure Plan that describes oil handling operations, spill prevention practices, discharge or drainage controls, and the personnel, equipment, and resources that are used to prevent oil spills from reaching waters of the U.S. In addition, SNL personnel comply with NMED regulations for oil storage tanks, 20.5 NMAC, *Petroleum Storage Tanks*. For additional information refer to Chapter 6.

2.12.2 Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) of 1974 and amendments authorize EPA to set national standards for drinking water sources, treatment systems, and water distribution. EPA promulgates these standards as primary and secondary drinking water regulations. Specific drinking water quality criteria are established to protect human health, limiting the maximum contaminant level of specific organic and inorganic chemical substances and biological organisms in potable water. Under the authority of the SDWA, and with delegated authority from EPA, NMED administers the safe drinking water regulatory program in New Mexico. Safe drinking water protection activities at SNL/NM are conducted under NMED regulations (20.7.10 NMAC). These state drinking water rules have requirements not covered by the SDWA. For additional information, refer to Chapter 6.

Drinking Water Supply

Potable water for most facilities on KAFB (including SNL/NM facilities) is provided by the KAFB Public Water System. The system derives its water from deep groundwater wells. KAFB routinely samples its water and conducts analyses to establish that its water quality conforms to EPA's maximum contaminant level standards. In support of KAFB compliance with NMED drinking water standards, SNL personnel operate the water distribution system on DOE/NNSA/SFO property in conformance with SDWA regulations. SNL personnel provide DOE/NNSA/SFO with an annual certification for KAFB that all backflow preventers installed in the potable water distribution system have been properly tested and maintained. This same information is provided to DOE and to SNL personnel.

Information on the KAFB Public Water System is located on the EPA's SDWA website, which details the compliance status for all drinking water systems in the U.S.:

http://www.epa.gov/sdwa

KAFB publishes specific water quality data and system performance in the *Annual Consumer Confidence Report on Drinking Water Quality* at the following website:

http://www.kirtland.af.mil/Home/Environment

2.13 Department of Energy Directives

DOE directives in the Management and Operating Contract for SNL define the primary contractual obligations for management and operating of SNL/NM. Directives that pertain to environmental protection and management are discussed in Chapter 1. In 2016, the management and operating contractor for SNL adhered to requirements stated in these DOE directives.

2.14 Audits, Appraisals, and Inspections in 2016

Environmental programs are routinely subjected to audits, appraisals, and/or inspections by external agencies (Table 2-3). The summaries in Table 2-3 include the number of findings, notices of violation, and other environmental occurrences. The SNL internal audit group also conducts assessments, including reviews of implementation of applicable policies, processes, or procedures; evaluations of corrective action validation assessments; and surveillances and walkthroughs. Self-assessments evaluate performance and compliance and identify deficiencies and opportunities for improvement as well as noteworthy practices and lessons learned.

Table 2-3. Environmental-related external audits, appraisals, inspections, and violations, 2016

Appraising Agency	Title	Date	Summary
Albuquerque Bernalillo County Water Utility Authority	Inspection of Facilities within Flow Basins 2069A, 2069F, 2069G, 2069I, 2069K, and 2238A	Inspected facilities during February, June, August, October, and November 2016	Routine inspections, no issues identified
National Quality Assurance	International Organization for Standardization 14001 Surveillance Audit	April 2016	Observations: 3 Noteworthy practices: 11
New Mexico Environment Department, Hazardous Waste Bureau	Fiscal Year 2016 Annual No-Notice Hazardous Waste Compliance Evaluation Inspection	February 2016	Notice of Violation

2.15 Summary of Reporting Requirements

External reporting requirements (other than to DOE) are necessary for both routine and nonroutine releases of pollutants or hazardous substances. Release information may be used to evaluate facility operation compliance, waste handling activities, and emergency response programs. Table 2-4 summarizes the primary reporting requirements for applicable releases.

Table 2-4. Reporting requirements to outside agencies (other than DOE) for releases of pollutants or hazardous substances

Report Title	Description	Agency
Annual NESHAP Dose Assessment Report	A dose assessment of the calculated EDE to the MEI is based on the assumption that an exposed individual resides 24 hours per day at an area of highest incident radiation. Dose assessment is discussed in Chapter 5.	EPA 40 CFR 61, Subpart H
RQ Accidental Release Reporting	CERCLA and EPCRA require RQ release reporting to the NRC and to state and local emergency response commissions. CERCLA and EPCRA are discussed in Chapter 2.	EPA 40 CFR 355, Subpart C
TRI Report	Section 313 of EPCRA requires that facilities that release toxic chemicals listed in SARA Title III over a threshold value must submit a TRI report.	EPA 40 CFR 372, Subpart B
Notification of Environmental Release	NMED requires reporting of oil or other water contaminants, in such quantity as may with reasonable probability injure or be detrimental to human health, animal or plant life, or property, or unreasonably interfere with the public welfare or use of the property. The owner/operator shall report to NMED as follows: • Verbal notification as soon as possible after learning of such a discharge, but in no event more than 24 hours thereafter • Written notification within one week verifying the prior verbal notification • Written notification within 15 days describing any corrective actions taken and/or to be taken relative to the discharge Environmental release events reportable to NMED are discussed in Chapter 6.	NMED 20.6.2.1203 NMAC

See notes at end of table.

Table 2-4. Reporting requirements to outside agencies (other than DOE) for releases of pollutants or hazardous substances (continued)

Report Title	Description	Agency
Notification of Unauthorized Non-Stormwater Discharge	EPA requires reporting of unauthorized non-stormwater discharges that may endanger human health or the environment. The owner/operator shall report to EPA as follows: • Verbal notification as soon as possible after learning of such a discharge, but in no event more than 24 hours thereafter • Written notification within five days to EPA Region 6 Office for the NPDES Stormwater Program Discharge events reportable to EPA are summarized in Chapter 6.	EPA NPDES Multi-Sector General Permit Part 7.7
Accidental Slug Discharge Notification	ABCWUA requires immediate notification to its Wastewater Utility Division of any accidental or slug discharge that may cause potential problems for the POTW. The user shall report to the ABCWUA as follows: • A detailed written report to the industrial pretreatment engineer within five days following such occurrence describing the cause of the discharge and measures to be taken to prevent similar future occurrences	ABCWUA Sewer Use and Wastewater Control Ordinance

NOTES: ABCWUA = Albuquerque Bernalillo County Water Utility Authority
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
DOE = U.S. Department of Energy
EDE = effective dose equivalent
EPA = U.S. Environmental Protection Agency
EPCRA = Emergency Planning and Community Right-to-Know Act
MEI = maximally exposed individual
NESHAP = National Emission Standards for Hazardous Air Pollutants
NMAC = New Mexico Administrative Code
NMED = New Mexico Environment Department
NPDES = National Pollutant Discharge Elimination System
NRC = National Response Center
POTW = Publicly Owned Treatment Works
RQ = reportable quantity
SARA = Superfund Amendments and Reauthorization Act
SNL/NM = Sandia National Laboratories, New Mexico
TRI = Toxic Release Inventory

2.16 Occurrence and Release Reporting in 2016

Under DOE O 232.2 Admin. Change 1, *Occurrence Reporting and Processing of Operations Information*, the current order for occurrence reporting, an occurrence is defined as "one or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including NNSA) or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria thresholds identified in this order, or determined to be recurring through performance analysis, are occurrences." There are environmental releases that may not meet DOE O 232.2 reporting thresholds; however, they may still be reportable to outside agencies.

2.16.1 DOE O 232.2 Reportable Occurrences

All 2016 occurrences at SNL/NM that meet DOE O 232.2 criteria defined previously were entered into DOE's Occurrence Reporting and Processing System (ORPS) database. Corrective actions and closure of occurrence reports are also tracked in ORPS. For this ASER, the ORPS database was queried for SNL/NM occurrences in the following groups (as defined by DOE O 232.2):

- Group 5, Environmental
- Group 9, Noncompliance Notifications
- Group 10, Management Concerns and Issues
- Any occurrence that involved any of the environmental programs at SNL/NM

During 2016, there were 41 DOE O 232.2 reportable occurrences at SNL/NM. Six of these occurrences met the query criteria for reporting in the ASER, as described previously. Table 2-5 lists the six occurrences, and all six were categorized as Significance Category 4 (the lowest level occurrence). Table 2-5 also cross-references DOE O 232.2 reportable occurrences that were reportable to an outside agency as defined in Table 2-4.

Table 2-5. Occurrence reports per DOE O 232.2, 2016

Reporting Criteria	Month	Significance Category	Report Number and Title	Also Reported to Outside Agency
Group 5, Environmental 5A(2)—Any release (onsite or offsite) of a pollutant from a DOE facility that is above levels or limits specified by outside agencies in a permit, license, or equivalent authorization, when reporting is required in a format other than routine periodic reports.	December	SC4	**NA–SS-SNL-NMFAC-2016-0004** Building 864 Cooling Tower Sump Overflow to Storm Sewer See Chapter 6	EPA and NMED
	July	SC4	**NA–SS-SNL-NMFAC-2016-0002** Cooling Tower Basin Overflowed at Building 858J See Chapter 6	EPA and NMED
	August	SC4	**NA–SS-SNL-4000-2016-0005** Cooling Tower Overflowed at Building 827 See Chapter 6	EPA and NMED
Group 5, Environmental 5A(4)—Any discrete release of sulfur hexafluoride (SF_6) due to an event or DOE operation equal to or exceeding 115 pounds (1,247 metric tons of CO2e according to 40 CFR Part 98, Subpart A, Table A-1, *Global Warming Potentials*) or 115 pounds more than the normal release quantity if the SF_6 release is a common byproduct of the operation.	August	SC4	**NA--SS-SNL-1000-2016-0008** SF_6 Release from Z-Machine Gas Switch Exceeded DOE Limit See Chapter 5	
Group 9, Noncompliance Notifications 9(1)—Any written notification from an outside regulatory agency that a site/facility is considered to be in noncompliance with a schedule or requirement (e.g., Notice of Violation, Notice of Intent to Sue, Notice of Noncompliance, Warning Letter, Finding of Violation, Finding of Alleged Violation, Administrative Order, or equivalent notification or enforcement action).	March	SC4	**NA–SS-SNL-4000-2016-0002** New Mexico Environment Department, Hazardous Waste Compliance Inspection, Notice of Violation See Chapter 3	

See notes at end of table.

Table 2.5 Occurrence reports per DOE O 232.2, 2016 (continued)

Reporting Criteria	Month	Significance Category	Report Number and Title	Also Reported to Outside Agency
Group 10, Management Concerns and Issues 10(2)—An event, condition, or series of events that does not meet any of the other reporting criteria, but is determined by the Facility Manager or line management to be of safety significance or of concern for that facility or other facilities or activities in the DOE complex.	August	SC4	**NA–SS-SNL-4000-2016-0006** Water Pipeline Ruptured in TA-III See Chapter 6	EPA and NMED

NOTES: DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
NMED = New Mexico Environment Department
NMFAC = New Mexico facilities
SC = significance category
SNL = Sandia National Laboratories
TA = technical area

Per DOE, an *occurrence* is defined as "one or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including NNSA) or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria thresholds identified in this order, or determined to be recurring through performance analysis, are occurrences."

2.17 Summary of Environmental Permits

Table 9-1 lists all environmental permits and registrations that were in effect at SNL/NM in 2016.

Chapter 3. Environmental Programs Information

Prickly pear cactus (*Opuntia*)

OVERVIEW ■ Sandia National Laboratories management takes the responsibility of protecting the environment seriously. Numerous programs monitor the environment to help prevent pollution and conserve natural resources. A site sustainability plan and best management practices ensure a healthy environment.

Sandia National Laboratories (SNL) personnel collect environmental data to determine and report the impact of existing SNL operations on the environment. The Environmental Systems Department monitors and surveils air, water, soil, and biota. These environmental program activities meet or exceed federal, state, and local environmental requirements, as well as U.S. Department of Energy (DOE) directives in the SNL Prime Contract. Presidential Executive Orders and DOE guidance documents are also used to establish program criteria.

The Environmental Management System (EMS) is the primary management approach for addressing environmental aspects of operations and activities, including environmental programs, energy, and transportation functions. Environmental monitoring began at SNL, New Mexico (SNL/NM) in 1959 when the principal objective was to monitor radioactive effluents and determine any associated environmental impacts. Since then, environmental programs and waste management, along with other Environment, Safety, and Health (ES&H) activities, have greatly expanded at SNL/NM. The current environmental programs and focus areas include:

- EMS
- Chemical Information System (CIS) and Chemical Exchange Program (CEP)
- Environmental Education Outreach Program
- Environmental Life-Cycle Management (ELM) Program
- Environmental Restoration (ER) Operations
- Long-Term Stewardship (LTS) Program
- National Environmental Policy Act (NEPA) Program
- Site Sustainability Plan
- Waste Management and Material Sustainability and Pollution Prevention (MSP2) Program

The following additional environmental programs are presented in separate chapters:

- Terrestrial Surveillance Program (Chapter 4)
- Air Quality Compliance and Related Programs (Chapter 5)
- Water Quality Programs (Chapter 6)
- Ecology Program (Chapter 7)

3.1 Chemical Information System and Chemical Exchange Program

The CIS is a comprehensive chemical information management tool that tracks workplace chemical and biological containers by location. The primary drivers for the CIS are state and federal regulations, among them the implementing regulations for the Emergency Planning and Community Right-to-Know Act. The CIS compiles information concerning chemical hazards and appropriate protective measures for the workforce, Emergency Management, and other ES&H programs.

The inventory system provides the chemical or product name, its location and quantity, and information about who is responsible for the chemical. Chemical hazards are reported on Safety Data Sheets, and the CIS currently contains over 120,000 Safety Data Sheets in its library. This electronic inventory helps chemical users and their managers assess and manage workplace hazards. Easy access to this inventory facilitates availability searches. It also improves the ability to share chemicals and thus help reduce sources, which helps to minimize chemical purchases and waste disposal expenses.

In 2016 all chemical container tags were converted to Radio Frequency Identification tags to support the CIS inventory reconciliation effort. Beginning in FY 2017, the reconciliation will be completed using a combination of Radio Frequency Identification and optical scanning.

A pre-procurement module was added to the CIS to help users determine whether a requested chemical is allowed to be used and stored in a given location. When actually ordering a chemical, the purchasers must provide the chemical approval number.

The CEP was developed in 1989 as a Hazardous Waste Management Waste Minimization program. The CEP's goal is to reduce the amount of usable chemicals disposed of as waste and instead make them available for reuse, thereby lowering the cost for both new acquisitions and disposal. This program has been through multiple transformations since its inception, and in 2008 the CEP was introduced as a module within CIS. The CIS/CEP team continues to develop a more user-friendly, web-based interactive tool for using the CEP, and new enhancements should be rolled out in FY 2017.

The Chemical Exchange Program reduces the amount of usable chemicals disposed of as waste and instead makes them available for reuse, thereby lowering the cost for both new acquisitions and disposal.

The CEP tool allows personnel to submit chemicals, browse inventory, and request chemicals. When a chemical request has been submitted and accepted, the searchable inventory of available chemicals is updated. If an individual requests a chemical in the CEP, transportation to the new owner is coordinated.

3.2 Environmental Education Outreach Program

The Environmental Education Outreach Program reaches out to the community through organized events and provides environmental information to SNL personnel. In addition to complying with requirements, it is recognized that communicating with personnel and the local community about reducing environmental impacts at work and at home is important. An integrated approach is employed to communicate environmental awareness to SNL personnel via newsletters, annual campaigns, and outreach events.

Currently, the outreach team participates in or hosts several in-house and public outreach and awareness events annually. Events conducted in 2016 included Earth Day and the annual EMS Excellence Awards Program. When working with children, team members often demonstrate environmental education models on topics such as local air quality, landfills, groundwater, and watersheds. The outreach team also encourages SNL personnel and the community to provide feedback and to ask questions about SNL environmental programs.

The annual EMS Excellence Awards Program recognizes personnel who demonstrate environmental excellence in areas such as energy and water conservation, environmental protection, waste minimization, and recycling. Since its inception in 2006, the EMS team has received 247 nominations for individuals and teams who are contributing to the Laboratories' vision of environmental excellence.

3.3 Environmental Life-Cycle Management Program

The mission of the ELM Program is to ensure long-term protection of human health and the environment. This is achieved by implementing environmental life-cycle management practices that focus on sustainable use and protection of natural and cultural resources.

Using the NEPA process, ELM Program personnel review proposed SNL/NM projects and activities that have the potential to impact the environment. This review provides a process for minimizing adverse environmental impacts from ongoing and future activities. In 2016, ELM Program personnel reviewed 35 projects and then documented the environmental impacts.

3.4 Environmental Restoration Operations

SNL ER Operations was created under the DOE Office of Environmental Management to identify, assess, and remediate sites potentially contaminated by past spill, release, or disposal activities in accordance with the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984. HSWA requirements apply to ER Operations sites that include Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs). A SWMU is any unit "from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous waste" (EPA 1985).

Additional AOCs at SNL/NM that are not regulated as SWMUs (primarily closed-out septic systems) have been investigated as part of ER Operations. These AOCs were not identified when the HSWA Module (Module IV) of the RCRA Part B Operating Permit (Permit NM5890110518-1 [the Permit]) was issued; however, the New Mexico Environment Department (NMED) identified them as requiring investigation (Bleakly 1996).

A Compliance Order on Consent (the Order), which was effective in 2004 (NMED 2004), governs investigation and corrective action requirements at SNL/NM. The Order will terminate upon completion of its requirements, and the Permit will remain as the enforceable document.

Waste Cleanup and Site Closures

The initial identification of ER sites at SNL/NM was completed in 1987. At that time, 117 sites were identified under SNL jurisdiction in the initial *Comprehensive Environmental Assessment and Response Program (CEARP) Phase I: Installation Assessment* (DOE/AL 1987); those sites at SNL/NM were also identified in subsequent years and were incorporated into the list of sites that were subject to the RCRA corrective action requirements in Module IV of the Permit (SNL/NM 1993).

Since then, approximately 500 individual sites, potential sites, or individual historical activities have been identified for investigation. Many of these sites were confirmed to contain little or no contaminants of concern. In 1992, the ER Project (now ER Operations) was officially initiated to implement assessment and remediation activities for sites that had been contaminated or potentially contaminated because of past SNL/NM operations. In addition to the SNL/NM sites, other sites included in the original scope of ER Operations were SNL, California; the SNL Kauai Test Facility, Hawaii; and the SNL Tonopah Test Range, Nevada. There were also a number of miscellaneous sites located in other areas nationwide and internationally.

DOE and SNL personnel propose ER sites to NMED for Corrective Action Complete (CAC) status when they meet NMED criteria. The criteria require the site to be at acceptable levels of risk to human health and the environment. Remediation is performed where needed to meet NMED criteria for CAC status.

All CAC proposals and Class 3 Permit modifications are available for review at the University of New Mexico Zimmerman Library.

After NMED grants CAC status to an ER site, DOE and SNL personnel submit a request for a Class 3 modification to the Permit to have the site deleted from the list of SWMUs and AOCs needing corrective action and then added to the list of SWMUs and AOCs for which corrective action is complete. The Permit (NMED 2015a) includes two lists of SWMUs and AOCs for which corrective action is complete: one is a list of SWMUs and AOCs requiring controls, and the other is a list of SWMUs and AOCs that do not require controls. Risk to human health and the environment is calculated for sites with residual contamination according to U.S. Environmental Protection Agency (EPA) and NMED guidelines. The remaining level of contamination and the appropriate land-use category (i.e., industrial, residential, or recreational use) are combined with the available information and conceptual model for each site to determine the risk. The SWMUs and AOCs requiring controls are those that present a higher level of risk to human health and the environment.

All CAC proposals and Class 3 Permit modifications are available for review at the University of New Mexico Zimmerman Library.

In 2016, 302 SNL/NM SWMUs and AOCs no longer required corrective action, and 11 SWMUs and AOCs required corrective action (Davis 2012). The status of these is as follows:

- Three groundwater AOCs require final remedies through public input and NMED process: Technical Area (TA) V Groundwater (TAVG), Tijeras Arroyo Groundwater (TAG), and Burn Site Groundwater (BSG).
- Three SWMUs at active test facilities have potential soil contamination that will be evaluated at the end of their test operations: SWMUs 83, 84, and 240.
- Five SWMUs suitable for CAC have met NMED groundwater monitoring requirements and have been proposed for CAC: SWMUs 8, 58, 68, 149, and 154.

3.5 Long-Term Stewardship Program

The LTS Program's mission is to provide long-term protection of human health and the environment from hazards associated with residual contamination at legacy sites, and to minimize environmental liability by ensuring compliance with the environmental requirements in multiple NMED permits. Stewardship of legacy sites also protects natural and cultural resources from hazards associated with residual radioactivity and hazardous contamination. LTS activities are increasing as remedial activities are completed. The LTS Program conducts environmental monitoring, institutional control, information management, and stakeholder-involvement activities as part of its execution, evaluation, and reporting requirements.

3.5.1 Long-Term Stewardship Execution

LTS execution activities encompass various types of environmental monitoring, including groundwater monitoring at numerous groundwater wells across Kirtland Air Force Base, and at the Chemical Waste Landfill (CWL), the Mixed Waste Landfill (MWL), and the Corrective Action Management Unit (CAMU) to meet NMED regulatory requirements. The LTS Program maintains monitoring wells as needed. Institutional control activities are also conducted to restrict access and assure appropriate site usage. In addition, the LTS Program manages activities and reporting requirements associated with SWMU 502.

Groundwater Monitoring

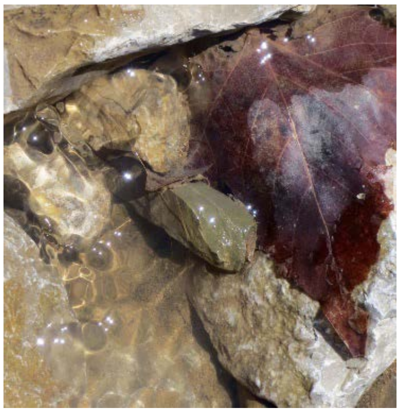
Groundwater monitoring at SNL/NM consists of monitoring a network of wells for the presence of contaminants of concern at various intervals during the year. In 2016, there were 66 wells in the network; 55 groundwater monitoring wells associated with legacy sites are monitored to meet NMED requirements. An additional 12 wells and a spring are sampled to assess SNL/NM operations impacts on groundwater. Water level measurements are obtained from 101 SNL wells and approximately 117 wells owned by other agencies. Monitored wells are maintained or replaced as necessary.

Groundwater is the water found beneath the earth's surface in pore spaces and in fractures of rock formations.

Groundwater samples are collected at the following project areas: CWL, MWL, TAVG, TAG, and BSG. The 2016 water quality results for these study areas were consistent with results from past years, and the groundwater analytical results are provided in the *Annual Groundwater Monitoring Report, Calendar Year 2016* (SNL/NM 2017a Appendix A of this report, "Summary of Groundwater Monitoring Activities," provides an overall summary for 2016.

All 2016 groundwater analytical results were below applicable maximum contaminant levels (MCLs) at the CWL and the MWL. At TAVG, several analytical results exceeded the MCLs for trichloroethene (TCE) and nitrite plus nitrate (NPN): TCE exceeded the MCL of 5 μg/L in five wells, with a maximum concentration of 19.2 μg/L; NPN exceeded the MCL of 10 mg/L in five wells, with a maximum concentration of 15.2 mg/L. At TAG, NPN exceeded the MCL in five wells, with a maximum concentration of 32.9 mg/L. At BSG, NPN exceeded the MCL in seven wells, with a maximum concentration of 38.8 mg/L. All other analytical results for groundwater samples from TAVG, TAG, and BSG AOCs were below established MCLs.

The LTS Program also performs a general surveillance of water quality from a network of wells not directly associated with legacy sites. In 2016, annual samples were collected from 12 wells and one spring. Analyses were conducted for Target Analyte List metals (plus mercury), inorganics (including NPN, major anions, and total cyanide), total phenols, total alkalinity, volatile organic compounds (VOCs), total halogenated organics, gross alpha, gross beta, and selected radionuclides (e.g., uranium-234, uranium-235, and uranium-238). Groundwater samples from four wells were analyzed for high explosives. No VOCs or high explosives were detected at concentrations above EPA MCLs or New Mexico Water Quality Commission Maximum Allowable Concentrations. Fluoride was detected above the maximum allowable concentration in one groundwater well. Beryllium concentrations in Coyote Springs exceeded the EPA MCL. The exceedance for each of these elements is attributable to the elevated natural concentrations associated with bedrock groundwater systems at the sampling locations. Refer to the *Annual Groundwater Monitoring Report, Calendar Year 2016* (SNL/NM 2017a) for detailed information and results of the collected groundwater samples analysis.



Summer rain runoff

Groundwater levels are measured in wells on a quarterly or monthly basis. Wells that have stable trends are measured quarterly; wells that have fluctuating water levels due to seasonal pumping at nearby extractive wells are measured monthly. Water-level data are used to generate a regional water table elevation contour map from which groundwater flow directions can be obtained. Groundwater elevation tables, hydrographs, and contour maps derived from the data are provided in the *Annual Groundwater Monitoring Report, Calendar Year 2016* (SNL/NM 2017a).

Chemical Waste Landfill

The CWL is a 1.9-acre former disposal site located in the southeastern corner of TA-III. From 1962 until 1981, the CWL was used for the disposal of hazardous waste, including chemical, radioactive, and solid waste generated by SNL/NM research activities. Liquid waste disposal ended in 1982. From 1982 through 1985, only solid waste was disposed of at the CWL. In addition, the CWL was used as a hazardous waste drum storage facility from 1981 to 1989. In June 2011, NMED approved closure of the CWL (Kieling 2011), and the CWL Post-Closure Care Permit (PCCP) (NMED 2009) took effect. The PCCP defines all post-closure requirements for the CWL, including groundwater monitoring.

The groundwater monitoring network at the CWL consists of four wells. In 2016, semiannual groundwater monitoring was performed at the CWL in January and July in accordance with CWL PCCP requirements. Groundwater samples were analyzed for TCE, nickel, and chromium. The January samples were also analyzed for additional VOCs. TCE was the only detected VOC, and no analytes were detected at concentrations exceeding the EPA MCLs. All monitoring activities and results are detailed in the *Annual Groundwater Monitoring Report, Calendar Year 2016* (SNL/NM 2017a) along with additional site background information.

In addition to semiannual groundwater monitoring, the CWL PCCP requires other monitoring, inspections, and maintenance and repair activities. All PCCP-required monitoring, inspection, and maintenance and repair requirements for 2016 will be documented in the *Chemical Waste Landfill Annual Post-Closure Care Report, Calendar Year 2016* (SNL/NM 2017b).

Mixed Waste Landfill

The MWL is a 2.6-acre solid waste management unit in the north-central portion of TA-III, and consists of two distinct disposal areas: the classified area (occupying 0.6 acres) and the unclassified area (occupying 2.0 acres). Approximately 100,000 cubic feet of low-level radioactive, hazardous, and mixed waste were disposed of in the MWL from March 1959 through December 1988.

The MWL has undergone corrective action in accordance with the Order (NMED 2004). In 2014, DOE and SNL personnel submitted a request to NMED for a Class 3 Permit Modification for CAC with Controls at the MWL (Beausoleil 2014). The associated regulatory process included two public comment periods, a public meeting held by DOE and SNL personnel in 2014, and a public hearing held by NMED in July 2015. In 2016, the NMED Final Order (Flynn 2016) became effective, granting the Class 3 Permit Modification to reflect that the MWL is CAC with Controls, and transitioning the MWL from ER Operations to LTS. All controls required for the MWL, including groundwater monitoring, are defined in the MWL Long-Term Monitoring and Maintenance Plan (LTMMP) (SNL/NM 2012), which NMED approved in January 2014 (Blaine 2014). The MWL LTMMP defines all long-term monitoring, inspection, maintenance and repair, and reporting requirements that are applicable to the MWL and is included in the SNL RCRA Facility Operating Permit (Kieling 2016a).

The groundwater monitoring network at the MWL consists of four compliance wells and three wells monitored for groundwater elevation only. In 2016, semiannual groundwater monitoring was performed at the MWL in April and October in accordance with the MWL LTMMP. All groundwater samples were analyzed for VOCs; Target Analyte List metals, including cadmium, chromium, nickel, and uranium; specific radionuclides by gamma spectroscopy; gross alpha and beta; tritium; and radon-222. No analytes were detected at concentrations exceeding EPA MCLs. Analytical results for MWL groundwater monitoring are summarized in the *Annual Groundwater Monitoring Report, Calendar Year 2016* (SNL/NM 2017a) along with additional site background information.

In addition to semiannual groundwater monitoring, the MWL LTMMP requires other monitoring, inspections, and maintenance and repair activities. Ongoing monitoring, inspection, and maintenance and repair activities are documented comprehensively in MWL Annual Long-Term Monitoring and Maintenance Reports submitted to NMED in June of each year.

Corrective Action Management Unit

The CAMU is a containment cell located in TA-III and is permitted under RCRA. It was engineered to hold treated soil wastes generated from the excavation of the CWL. The LTS Program conducts long-term monitoring of the CAMU as required by NMED per the new Hazardous Waste Facility Operating Permit that was issued on January 27, 2015 (NMED 2015a) with an effective date of February 26, 2015.

The CAMU containment cell consists of engineered barriers and a final cover system, and incorporates a bottom liner system with a leachate collection system and a vadose zone monitoring system (VZMS). The VZMS provides information on soil conditions under the cell for early detection of leaks. The VZMS consists of three monitoring subsystems, which include the primary subliner (PSL), a vertical sensor array (VSA), and the CWL sanitary sewer (CSS) line. The PSL, VSA, and CSS monitoring subsystems are monitored quarterly for soil moisture content. The VSA and CSS monitoring subsystems are monitored annually for the composition of soil vapors.

In 2016, 276 gal of leachate (a listed hazardous waste) were removed from the collection system compared to 243 gal of leachate removed in 2015. Leachate is pumped from the containment cell leachate collection system on a quarterly basis, containerized in 55 gal polyethylene drums, and temporarily stored in a RCRA 90-Day Storage Area. It is then transported to the SNL/NM Hazardous Waste Handling Unit and subsequently shipped to an off-site hazardous waste facility for analysis and treatment.

Leachate is water that collects contaminants as it percolates through wastes, pesticides, or fertilizers. Leaching may occur in farming areas, feedlots, or landfills, and may result in hazardous substances entering surface water, groundwater, or soil.

The 2016 soil-vapor monitoring results indicate an influence from the residual soil vapor plume emanating from the location of the former CWL. This is consistent with the conceptual model of the CWL residual soil vapor plume (SNL/NM 2004). VOC concentrations at the CSS and VSA monitoring subsystem locations continue to correlate with seasonal soil temperature variations, increasing when the soil temperature is warmer and decreasing when the soil temperature is cooler. The VOC concentrations are not attributed to the material in the CAMU containment cell. Baseline data for soil vapor and soil moisture were established between October 2003 and September 2004.

The 2016 soil-moisture monitoring results remained consistent with the baseline data for the PSL and VSA monitoring subsystems. Slight increases at two of the CSS monitoring subsystem locations (recorded September 2005 and March 2007) were attributed to a leak in the sanitary sewer system that parallels the CSS monitoring subsystem. A liner was inserted into the sanitary sewer system (September 2010) to seal any leaks. Soil moisture values have since stabilized at the two CSS monitoring locations.

Inspection and VZMS monitoring results are compiled and reported on an annual basis. Additional information on activities conducted, including sampling results, can be found in the *Corrective Action Management Unit Report of Post-Closure Care Activities Calendar Year 2016* (SNL/NM 2017c).

Institutional Controls

Administrative and physical institutional controls are in place at SNL/NM to appropriately limit access to and use of legacy sites that have been approved for CAC with controls. These sites are inspected annually and are maintained when necessary. A total of 18 site inspections were conducted in 2016. No large-scale maintenance requirements or other concerns with physical institutional controls were identified on legacy sites during the 2016 annual inspections. Based on the inspections performed and site conditions observed, the administrative and physical institutional controls in place at the SWMUs and AOCs are effectively providing continued protection of human health and the environment. SNL personnel submitted the *Solid Waste Management Unit and Areas of Concern Annual Long-Term Monitoring and Maintenance Report for Calendar Year 2016* (SNL/NM 2017e) to NMED. The report is required under Section M.4, Attachment M, of the Permit.

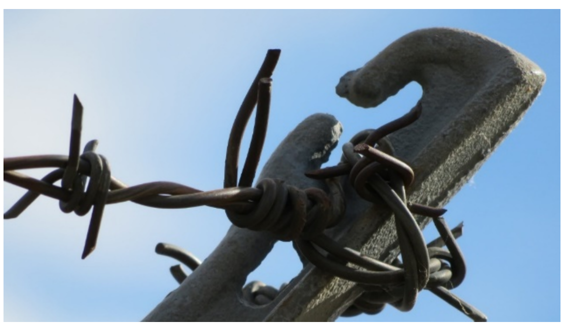
Solid Waste Management Unit 502 (Building 9938) Surface Discharge Site

As reported in the *Calendar Year 2013 Annual Site Environmental Report for Sandia National Laboratories, Albuquerque, New Mexico* (SNL/NM 2013a), DOE/National Nuclear Security

Administration (NNSA) and SNL personnel formally notified NMED in 2012 (Beausoleil 2012) that SWMU 502 (Building 9938) was newly identified or suspected of discharging wastewater. A January 2013 inspection of the discharge area, with assistance from personnel associated with the processes that generated the wastewater, identified several small zones of discolored soil within a total area approximately 10 ft wide by 25 ft long. No odors were present, and there was no evidence of staining on surfaces surrounding the discharge area.

DOE/NNSA and SNL personnel submitted a SWMU Assessment Report for SWMU 502 (Building 9938 Surface Discharge Site) to NMED in 2013 (Beausoleil 2013a). In April 2013, supplemental information was submitted to NMED including a summary of analytical results for surface soil samples collected and a proposal for a voluntary corrective action (VCA) (Beausoleil 2013b). NMED approved the SWMU Assessment Report in 2013 (Kieling 2013). Subsequently, DOE/NNSA/SFO and SNL personnel submitted a VCA Plan to NMED (Beausoleil 2013c). The VCA Plan described plans for taking additional soil samples to determine the extent of contamination, removing debris and contaminated soil, collecting confirmatory samples to determine whether excavation was complete, and grading the site to restore surface elevation as feasible. In mid-2013, all field activities were completed in accordance with the VCA Plan. Results of the VCA were reported to NMED (Todd 2013). DOE/NNSA and SNL personnel recommended a determination of CAC without controls for SWMU 502, based on the field investigation results, the soil sample analytical data, and the human health and ecological risk assessment analyses.

NMED approved the VCA report in 2016. DOE/NNSA/SFO and SNL personnel then requested a Class 3 modification to the RCRA Facility Operating Permit for SNL/NM to list SWMU 502 as CAC without Controls (Harrell 2016). NMED is reviewing the application.



Barbs in Technical Area 1

3.5.2 Long-Term Stewardship Evaluation

The NMED Final Orders (May 2005 and February 2016) and the LTMMP require five-year reviews of the MWL; the first review is due to NMED in January 2019. Initial planning for this task was performed in 2016, including awarding a contract to reevaluate and update a complete excavation remedial alternative with on-site and off-site disposal options.

3.5.3 Long-Term Stewardship Reporting

All environmental and analytical data generated by the LTS Program's ongoing environmental monitoring is maintained in an internal sample management database. The database provides legally defensible monitoring data for current and past activities to ensure protection of human health and the environment. These data are evaluated and disseminated in the various reports described in the Section 3.5.1. It is important that the public be made aware of the work SNL personnel conduct to protect human health, the environment, and natural and cultural resources for the long term from hazards associated with residual radioactive and hazardous contamination at legacy sites. Stakeholders participate in semiannual DOE/U.S. Department of Defense joint meetings on environmental activities. Regulatory decision documents for legacy sites are available to the public in the local federal repository (the University of New Mexico's Zimmerman Library) and in its electronic documents collection:

http://digitalrepository.unm.edu/snl/

3.6 National Environmental Policy Act Program

The NEPA Program provides the DOE/NNSA/Sandia Field Office (SFO) with technical assistance in support of SNL compliance with NEPA and the National Historic Preservation Act at all SNL locations: SNL/NM; SNL/California; SNL/Tonopah Test Range, Nevada; SNL/Kaua'i Test Facility, Hawai'i; and other remote locations as needed. The NEPA team reviews projects for conformance with existing DOE NEPA documents and determinations. NEPA team personnel use NEPA Docs software, which facilitates NEPA reviews and quality assurance activities by providing a consistent framework for reporting and by making NEPA documentation readily available for reference.

A DOE NEPA checklist and an Air Force Form 813, if required, is prepared for DOE review and determination if a proposed action meets any of the following concerns:

- Proposes a new action
- Is not covered by existing SNL NEPA documentation
- Occurs on Kirtland Air Force Base property (permitted or requested for permit for SNL operational use)

3.6.1 National Environmental Protection Act Activities in 2016

The NEPA team participated in or completed the following environmental activities in 2016:

- Completed redevelopment of the basic NEPA training, ENV120, *National Environmental Policy Act (NEPA) Awareness*
- Updated Corporate Procedure ESH100.1.EP.2, *Implement NEPA, Cultural Resources, and Historic Properties Requirements*, including an addition that requires level 1 managers and ES&H coordinators to take ENV120
- Redeveloped the entire Qualified NEPA Reviewer Program, which included the establishment of NEPA training ENV321, *Qualified NEPA Reviewer (QNR) Training*
- Continued the effort to develop new, and augment existing, map layers of archaeological surveys of SNL/NM
- Developed a consistent system for following up with expiring NEPA checklists to maintain Labs-wide compliance
- Assisted the Facilities Management and Operations Center with managing fiscal year 2017 $40M Deferred Maintenance Special Emphasis Projects

In addition to these activities, NEPA Program personnel reviewed a total of 1,561 proposed projects. Of this total, 210 reviews were NEPA checklists completed internally. To support mission activities, 67 NEPA checklists were transmitted to DOE/NNSA/SFO for review and determination and were ultimately completed in 2016 (Table 3-1).

The numbers in Table 3-1 account for reviews that were marked completed in calendar year 2016. Though the NEPA team supported 277 total checklists that were completed in 2016, many more NEPA checklists were processed in some way during 2016. For example, 310 checklists were created, and, of these checklists created in 2016, 33 were terminated for various reasons and 36 are still in progress and being actively managed by the NEPA team.

Table 3-1. SNL/NM NEPA reviews completed in 2016

NEPA Reviews	Review Breakouts		Quantity
NEPA software system	Reviews completed by SNL/NM NEPA team		210
	Reviews completed by DOE/NNSA/SFO		54
Other NEPA reviews	Reviews completed by SNL/NM NEPA team		1,284
DOE/USAF NEPA documents	*New land-use permit reviews*	*0*	
	Land-use permit renewal reviews	*4*	
	Land-use permit termination reviews	*0*	
	Project-specific reviews	*9*	
	Environmental assessments under USAF activities	*0*	
	Subtotal for reviews completed by DOE/USAF NEPA		***13***
Total NEPA Reviews			**1,561**
Percentage of Total NEPA Reviews Completed by DOE[a]			**4%**
Percentage of NEPA Software System Reviews Completed by DOE[b]			**24%**

NOTES: [a]Total DOE reviews (54 + 13 = 67) divided by total NEPA reviews (1,561) = 4%.
[b]Total DOE reviews (54 + 13 = 67) divided by total NEPA software system reviews (54 + 13 + 210 = 277) = 24%
DOE = U.S. Department of Energy
NEPA = National Environmental Policy Act
NNSA = National Nuclear Security Administration
SFO = Sandia Field Office
SNL/NM = Sandia National Laboratories, New Mexico
USAF = U.S. Air Force

3.6.2 Site-Wide Environmental Impact Statement

During 2016, SNL personnel assisted DOE in the continued development of a new Site-Wide Environmental Impact Statement. A project management plan was created, which outlines the support that will be provided to DOE to complete the statement. A new subcontract was developed to continue support for the project, and the subcontractor began preparing preliminary documentation for the upcoming public meetings.

3.7 Waste Management Program

The corporation follows the waste management hierarchy dictated in the Pollution Prevention Act of 1990 and reinforced in amendments to RCRA. The objective of the waste management and MSP2 focus areas is to make every attempt to reduce, reuse, or recycle waste (in that order), as appropriate at SNL/NM, before any treatment or disposal. Waste management activities are conducted in accordance with applicable permits and regulations as discussed in Chapter 2.

Wastes are generated during daily activities that include research and testing; production; maintenance and support operations; construction, renovation, decommissioning, and demolition; environmental protection; and waste management. The wastes include the following:

- Radioactive waste (including low-level radioactive waste [LLW] and transuranic [TRU] waste)
- Mixed waste (including low-level radioactive mixed waste [LLMW] and mixed transuranic [MTRU] waste)
- Hazardous waste
- Toxic Substance and Control Act-regulated waste
- Other regulated wastes, including special waste and industrial solid waste

- Construction and demolition waste
- Commercial solid waste

Processes at waste management units vary according to the specific waste type, but generally tasks are to collect, screen, sort, bale, repackage, treat, and/or store material in preparation for shipment to off-site facilities for recycling, storage, treatment, or disposal.

Types of waste handled and shipped in 2016 are summarized in Table 3-2. Wastes recycled in 2016 are summarized in Table 3-3.

Table 3-2. Waste shipped by SNL/NM waste management facilities, 2016

Waste Categories	2016 Waste Shipped (lb)
Radioactive Waste	
Low-level radioactive waste	73,574
Transuranic waste	0
Subtotal	**73,574**
Mixed Radioactive and Hazardous Waste	
Mixed low-level waste	95,648
Mixed transuranic waste	0
Subtotal	**95,648**
Resource Conservation and Recovery Act	
Hazardous waste	104,820
Subtotal	**104,820**
Toxic Substances Control Act	
PCBs	670
PCBs and hazardous waste mixture	0
Subtotal	**670**
Other Regulated Wastes	
Infectious waste	1,127
Asbestos	32,300
Chemical waste (includes special waste and industrial solid waste)	554,182
Used oil (not recycled)	0
Subtotal	**587,609**
Commercial Solid Waste	
Solid waste collection and recycling center dry waste	1,313,391
Off-site office waste (Sandia Science and Technology Park)	100,982
Cafeteria wet waste	41,359
Construction and demolition waste	5,516,568
Subtotal	**6,972,300**
2016 Total Waste Shipped	**7,834,621**

NOTES: All wastes were shipped off-site for treatment and/or disposal.
Wastes that were treated on-site and shipped off-site are included in the quantities of wastes shipped off-site. Waste treatment may increase waste quantity (e.g., adding inert material to treat the waste through macroencapsulation within an outer container).
Waste containers are included in the quantities of wastes shipped off-site, and some containers (e.g., containers with lead shielding for radiation protection) may increase the quantity significantly.
PCB = polychlorinated biphenyl SNL/NM = Sandia National Laboratories, New Mexico

Table 3-3. Waste recycled by SNL/NM, 2016

Recycle Categories	Waste Recycled (lb)
Regulated or Chemical Waste Recycled	
Batteries	83,663
Capacitors	4,991
Computer electronics	554,905
Fuel filters	1,460
Lead	133,643
Light ballasts (non-PCB)	5,809
Lightbulbs	15,889
Oil, grease, and fuel	52,409
Soil	3,790
Toner and ink cartridges	27,343
Subtotal	**883,902**
Commercial, Construction, and Demolition Solid Waste Recycled	
3-D printer cartridges	3,397
Batteries	2,576
Cardboard	447,491
Carpet	13,015
Ceiling tiles	16,000
Chairs	70,760
Compost (food, green, paper, plywood, and gypsum)	406,190
Food grease	44,800
Glass	450
Metals	1,860,569
Nitrile gloves	2,425
Paper (mixed and white)	218,831
Plastics	49,298
Tires	15,750
Wood	178,860
Subtotal	**3,330,412**
2016 Total Waste Recycled	**4,214,314**

NOTES: PCB = polychlorinated biphenyl SNL/NM = Sandia National Laboratories, New Mexico

3.7.1 2016 Waste Management Activities

Waste management takes place atthe following locations: Hazardous Waste Handling Unit, the Radioactive and Mixed Waste Management Unit, seven Manzano Storage Bunkers, the Auxiliary Hot Cell Unit, the Thermal Treatment Unit, and the Solid Waste Collection and Recycling Center.

At each unit, wastes are tracked, inspected, and managed at all times to protect human health and the environment. Wastes are not disposed of at SNL/NM. Waste management activities at individual units during 2016 are summarized as follows:

- At the Hazardous Waste Handling Unit, wastes were screened, sorted, repackaged, and stored.
- At the Radioactive and Mixed Waste Management Unit, wastes were screened, sorted, repackaged, stored, and treated. Wastes were treated by one or more of the following

methods: solidification and stabilization, chemical deactivation and neutralization, macroencapsulation, or physical treatment (volume reduction).

- At the Manzano Storage Bunkers, wastes were stored. Five of the seven bunkers are included in the RCRA permit.
- At the Auxiliary Hot Cell Unit, wastes were generated and stored.
- At the Thermal Treatment Unit, small quantities of unique explosives waste generated by research and test activities at an adjacent facility were treated on-site.
- At the Solid Waste Collection and Recycling Center, commercial waste was screened.

Compliance Inspection

Representatives of the NMED Hazardous Waste Bureau performed a no-notice inspection at SNL/NM in February 2016. The inspectors identified one violation regarding an out-of-date contingency plan; the plan was updated immediately. NMED issued a Notice of Violation and Resolution in March 2016.

3.7.2 Radioactive Waste and Mixed Waste

DOE and SNL personnel manage LLW and LLMW that is generated through a variety of processes, including production, research, and waste management activities. DOE and SNL personnel also manage TRU and MTRU wastes, which are generated through research and waste management activities. During 2016, legacy wastes (wastes originally generated between 1990 and 1998) were also managed at SNL/NM.

LLW at SNL/NM generally consists of laboratory waste, debris from maintenance, debris from decontamination and demolition (D&D) activities, and personal protective equipment. LLW is contaminated primarily with one or more isotopes of strontium, plutonium, cobalt, americium, thorium, cesium, tritium, and/or uranium (plutonium and americium in LLW are below the activity level designated for TRU waste).

TRU waste may derive from sealed instrument sources, D&D waste, personal protective equipment, and/or laboratory waste. The radioactive components in TRU are generally americium, plutonium, neptunium, and/or curium.

LLMW and MTRU generally consist of inorganic debris and radioactive metallic objects with hazardous waste constituents, and include wastes that have been treated to meet hazardous waste treatment standards. The radioactive components of LLMW and MTRU are similar to those in LLW or TRU waste.

No high-level radioactive waste is generated at SNL/NM. Although SNL personnel operate several nuclear research reactors, these are not used for power production; therefore, spent fuel that would be removed from the research reactors would not be classified as high-level radioactive waste.

All LLW, LLMW, TRU, and MTRU generator operators are instructed to contact the Radioactive Waste Program to obtain approval before generating waste; this promotes waste minimization and allows a pathway to be developed for waste treatment and disposal before the waste is generated. Radioactive wastes typically are shipped to off-site facilities within one year, but may remain on-site longer than one year if necessary to complete the process for acceptance at an off-site facility and/or to achieve full utilization of transport vehicles.

As discussed in Chapter 2, SNL personnel manage mixed waste that is subject to the Federal Facilities Compliance Order (NMED 1995). The compliance requirements include: (1) deadlines for processing and/or disposing of various types of waste as specified in the annual Site Treatment Plan (NMED 1995) and (2) instructions for providing an annual update of activities and a current inventory of stored waste still on-site. During 2016, DOE/NNSA/SFO and SNL personnel met all regulatory deadlines and provided an annual update of mixed waste activities (SNL/NM 2017d). During 2016, 1.24 cubic meters of MTRU waste subject to the Federal Facility Compliance Order was managed at SNL/NM. Table 9-3 lists the quantities of mixed waste subject to the Federal Facility Compliance Order at the end of fiscal year 2016.

The MTRU was subject to a Site Treatment Plan compliance deadline of December 31, 2016. DOE/NNSA/SFO and SNL personnel requested a revision to the Site Treatment Plan in June 2016 (Rast 2016) to update information and establish new compliance deadlines due to an inability to ship wastes to the DOE Waste Isolation Pilot Plant in Carlsbad, New Mexico, during 2016. NMED approved the revision in October 2016 (Kieling 2016b).

3.7.3 Hazardous Waste

Hazardous waste generated at SNL/NM includes a wide variety of wastes from research and testing, together with larger quantities of wastes from D&D, production, maintenance, and support operations, including waste management activities. Hazardous wastes that cannot be recycled or treated on-site are sent to off-site facilities for treatment, as needed, before disposal at permitted off-site facilities. Applicable regulations for hazardous waste handled at SNL/NM are listed in Chapter 9.

Certain types of explosives waste generated at SNL/NM are treated at the Radioactive and Mixed Waste Management Unit or the Thermal Treatment Unit. Explosives waste generally is managed at the point of generation until it is shipped to an off-site facility for treatment in accordance with regulatory requirements.

In accordance with Section 2.5 of the Permit (NMED 2015a), DOE and SNL personnel annually certify that there is a "program in place to reduce the volume and toxicity of hazardous waste generated by the facility's operation to the degree determined by the Permittee to be economically practicable" at SNL/NM. Many types of hazardous waste are recycled where feasible. Recycled hazardous waste includes various batteries, silver compounds, mercury compounds, lamps, capacitors, and toxic metals such as lead. Waste minimization efforts are investigated and implemented by line organizations with support and technical assistance from MSP2 Program personnel (see Section 3.8). Hazardous and mixed waste minimization activities are described in an annual report to NMED (SNL/NM 2016a), which is available in the Information Repository at the University of New Mexico's Zimmerman Library. The index of documents in the Information Repository is available at:

http://www.sandia.gov/RCRA/

3.7.4 Other Regulated Waste

Additional types of waste at SNL/NM have specific requirements. These regulations are as follows.

Industrial Solid and Special Wastes

Industrial solid waste and special waste at SNL/NM include a wide variety of wastes generated from research and testing, production, maintenance and support operations, D&D, and waste management activities. Wastes that cannot be recycled or treated on-site are sent to off-site facilities for treatment as needed before disposal at permitted off-site facilities.

An ongoing initiative to dispose of chemicals that were no longer needed and/or that expired resulted in an increase in chemical waste shipped in 2016 (Table 3-2).

Many categories of nonhazardous waste are recycled, including alkaline batteries, fluorescent lamps, oils, and ballasts not containing polychlorinated biphenyl (PCB). Waste minimization efforts are not limited to hazardous waste, but also include nonhazardous waste, as discussed in Section 3.8.

Aboveground storage tank

Polychlorinated Biphenyl and Asbestos Wastes

PCBs are a class of organic chemicals that were used widely in the past in industrial applications due to their practical, physical, and chemical properties. PCBs were used in dielectric fluids (e.g., fluids in transformers or capacitors), hydraulic fluids, and other applications requiring stable, fire-retardant materials. The domestic production and distribution of PCBs was banned in 1979, and their use continues to be phased out.

Most PCBs and PCB-containing equipment have been identified and replaced. There are currently no known PCB-containing items remaining in use at SNL/NM that require tracking per regulations. There are buildings that contain PCB spill contamination sites on concrete floors (from old electrical transformers that have since been removed from service), which are being actively managed in compliance with an EPA Toxic Substances and Control Act use authorization. Table 3-2 summarizes the PCB waste shipped in 2016.

Asbestos-containing materials are present in older buildings, and abatement is ongoing. Asbestos material is only removed if the material is an inhalation hazard or if the building is slated to be torn down or renovated. Typical asbestos-containing building materials are present in floors, ceilings, roofing tile, certain types of insulation, and other fire-retardant construction materials. Typical asbestos waste generated from equipment abatement consists of fume hoods, ovens, and cable insulation. In instances where laboratory equipment has asbestos-containing material in good condition and in a nonfriable form (which poses no inhalation risk), these items are allowed to remain in service or are redistributed through the Property Management and Reapplication Department. Table 3-2 summarizes the quantities of asbestos waste shipped in 2016.

3.8 Materials Sustainability and Pollution Prevention Program

The MSP2 Program is a central element in the SNL EMS and applies to all activities that use resources and generate waste. MSP2 Program personnel provide programmatic guidance and specify strategies, activities, and methods to reduce the quantity and toxicity of waste and pollutants, conserve energy and resources, and purchase environmentally preferable products. Program focus areas include waste minimization, sustainable acquisitions, electronics stewardship, recycling of solid waste, and awareness and outreach events. MSP2 Program personnel promote and integrate materials sustainability into all operations.

3.8.1 Waste Minimization

Waste minimization is accomplished by reducing or eliminating the generation of wastes and other pollutants at the source, including segregation, substitution, and reuse of materials that could otherwise create future environmental legacies. Since establishing the goal of Zero Waste by 2025, the generation of commercial solid waste has dropped 33 percent—from 1,048 metric tons in 2008 to 701 metric tons in 2016. The goal will be considered accomplished when SNL operations meet the internationally accepted definition of Zero Waste, which means reducing waste by 90 percent from the baseline year. At SNL/NM, this means generating less than 105 metric tons of commercial solid waste per year.

3.8.2 Sustainable Acquisition

Sustainable acquisition is one way to reduce environmental impacts. This includes integrating products with reduced environmental impact into purchase agreements and ongoing operations and maintenance. Products containing recycled and bio-based content, those designed with identified environmentally preferable attributes and those with third-party-certified green labels are preferred. In 2016, a document shredder maintenance and supply contract was established that provides bio-based lubricating oil for office shredders.

3.8.3 Electronic Stewardship

The corporation is committed to purchasing computer systems designed with the environment in mind. *Green* electronics are defined as equipment whose manufacture, operation, and end of life disposition have as little environmental impact as possible. Lifecycle management of electronic equipment is aimed at minimizing the economic and environmental impacts of ownership: procurement, operations, and end-of-life disposition. Regarding procurement and operations, in 2016 Members of the Workforce were encouraged to eliminate personal desktop printers in favor of high-capacity all-in-one network machines that copy, print, fax, and scan. This saves energy, maintenance, and the need for on-hand inventory of parts and consumables. Additionally, the procurement contracts for printers were restricted and standardized to just a few models to reduce the variety of parts and consumables maintained.

Screening solid waste is not a regulatory requirement, but it is a best management practice that SNL personnel implement to prevent prohibited materials from inadvertently being sent to a landfill.

3.8.4 Recycling of Solid Waste

Materials suitable for reuse and/or recycling are diverted from landfills, thereby minimizing the economic and environmental impacts of waste disposal. Instead of paying to throw material away in a landfill, those avoided fees and any realized value are leveraged to support diverse recycling and composting programs. This business model has created two permanent jobs and supported numerous positions at local and regional companies.

3.8.5 Awareness and Outreach

The MSP2 Program team promotes awareness about the Labs' environmental impact both internally to SNL personnel and externally to the public. In 2016, over 20 Zero Waste events were held in cooperation with catering contractors and Members of the Workforce. The events demonstrated that it is possible to eliminate waste by planning the use of recyclable and compostable materials. Other major outreach efforts include an Earth Day celebration each April and America Recycles Day in November. SNL/NM is a member of the U.S. Zero Waste Business Council. Additional information on MSP2 Program initiatives, events, and accomplishments can be found at the following website:

http://p2.sandia.gov

Chapter 4. Terrestrial Surveillance Program

Coyote (*Canis latrans*)

OVERVIEW ▪ Terrestrial Surveillance Program personnel collect soil, sediment, and vegetation samples, and these samples are analyzed for radiological constituents, metals, and other site-specific constituents. Samples are taken from on-site and perimeter locations and then compared with samples from off-site locations.

Terrestrial Surveillance (TS) Program personnel at Sandia National Laboratories, New Mexico (SNL/NM) collect environmental media (soil, sediment, and vegetation) samples, and these are analyzed for radiological constituents, as required. As a best management practice, samples are also collected in order to analyze metals and other site-specific constituents. In addition, ambient external gamma radiation levels are measured using thermoluminescent dosimeters (TLDs). These surveillance activities are conducted at designated locations that are on-site, off-site, and around the perimeter of U.S. Department of Energy (DOE) fee-owned areas, leased property, and Kirtland Air Force Base (KAFB).

Environmental radiological surveillance began at SNL/NM in 1959 (SNL/NM 1973). Nonradiological surveillance sampling began in 1993 with the implementation of the TS Program and the collection of samples for metal analyses. In 2000, a single analytical laboratory, which has lower metal detection capabilities than previous contract laboratories, to analyze many of the samples, was contracted. The same database has been used for statistical analysis from 2000 to the present.

4.1 Regulatory Criteria

The TS Program is designed and conducted to address DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment*, which establishes standards and requirements to protect the public and the environment from undue risk from radiation associated with radiological activities under the control of DOE.

The TS Program is also conducted to satisfy the SNL Environmental Management System, which is certified to the International Organization for Standardization 14001 standard. Reporting is done in accordance with DOE O 231.1B, Admin Change 1, *Environment, Safety and Health Reporting*.

4.2 Sample Locations and Media

The TS Program uses three sample location classifications: on-site, perimeter, and off-site (the latter was previously referred to as "community locations").

In 2016, the TS Program sampling locations were evaluated. As a result, the number of sampling locations was reduced. The removal of a specific sampling location was based on meeting one or more of the following criteria:

- The proximity to, or colocation with, a Solid Waste Management Unit (SWMU) that has been closed with Corrective Action Complete without Institutional Controls by the New Mexico Environment Department (NMED)
- Sampling locations with access or safety issues
- Sampling locations that are redundant with other sampling locations or with other sampling programs

See Appendix B, "2016 Terrestrial Surveillance Results," for a complete listing of sites that were removed and the criteria that were met. In addition to the reduction in number of sampling locations, the sampling schedule and analytical parameters list were simplified. All sampling locations will be sampled every year for all analytical parameters, and vegetation sampling will be completed in the fall when more plant material is available.

Red yucca (*Hesperaloe parviflora*) summer seed pods

The revised on-site sampling locations (Figure 4-1) are in areas of known contamination (such as SWMUs), areas of potential release (sites with current outdoor testing activities), and/or areas where contamination may be concentrated naturally (arroyos and river banks). The revised perimeter sample locations (Figure 4-1) are located around the boundaries of KAFB. The revised off-site sample locations (Figure 4-2) are located within a 25-mile radius of KAFB. Off-site sample results are used for comparison to the on-site and the perimeter sample results.

The various environmental sample media that are collected include surface soil (less than 2 inches deep), arroyo and river sediment samples, and vegetation. Vegetation samples, which are collected from native grasses and small leafy plants, monitor the potential uptake of radioactive and nonradiological materials from the soil. Table 4-1, Table 4-2, and Table 4-3 list the revised sampling locations, the type of media that is collected, and the analytical parameters at the on-site, perimeter, and off-site locations, respectively. See Section 4.3 for the revised analytical parameters. Environmental TLDs are used to measure the cumulative ambient external radiation dose, and to closely approximate the dose potentially received from natural and nonnatural sources.

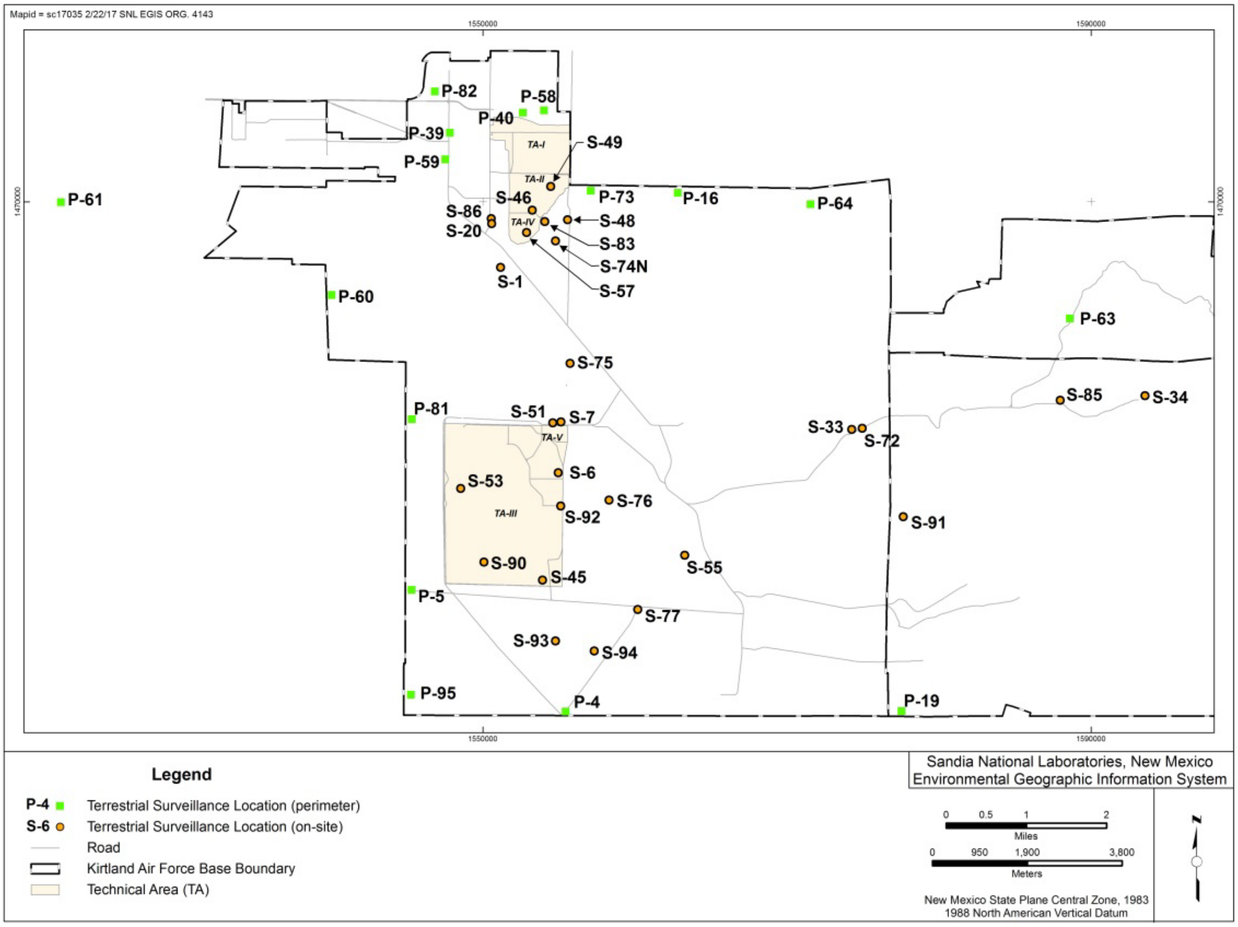


Figure 4-1. Terrestrial Surveillance Program on-site and perimeter sampling locations

Short-horned Lizard (*Phrynosoma hernandesi*)

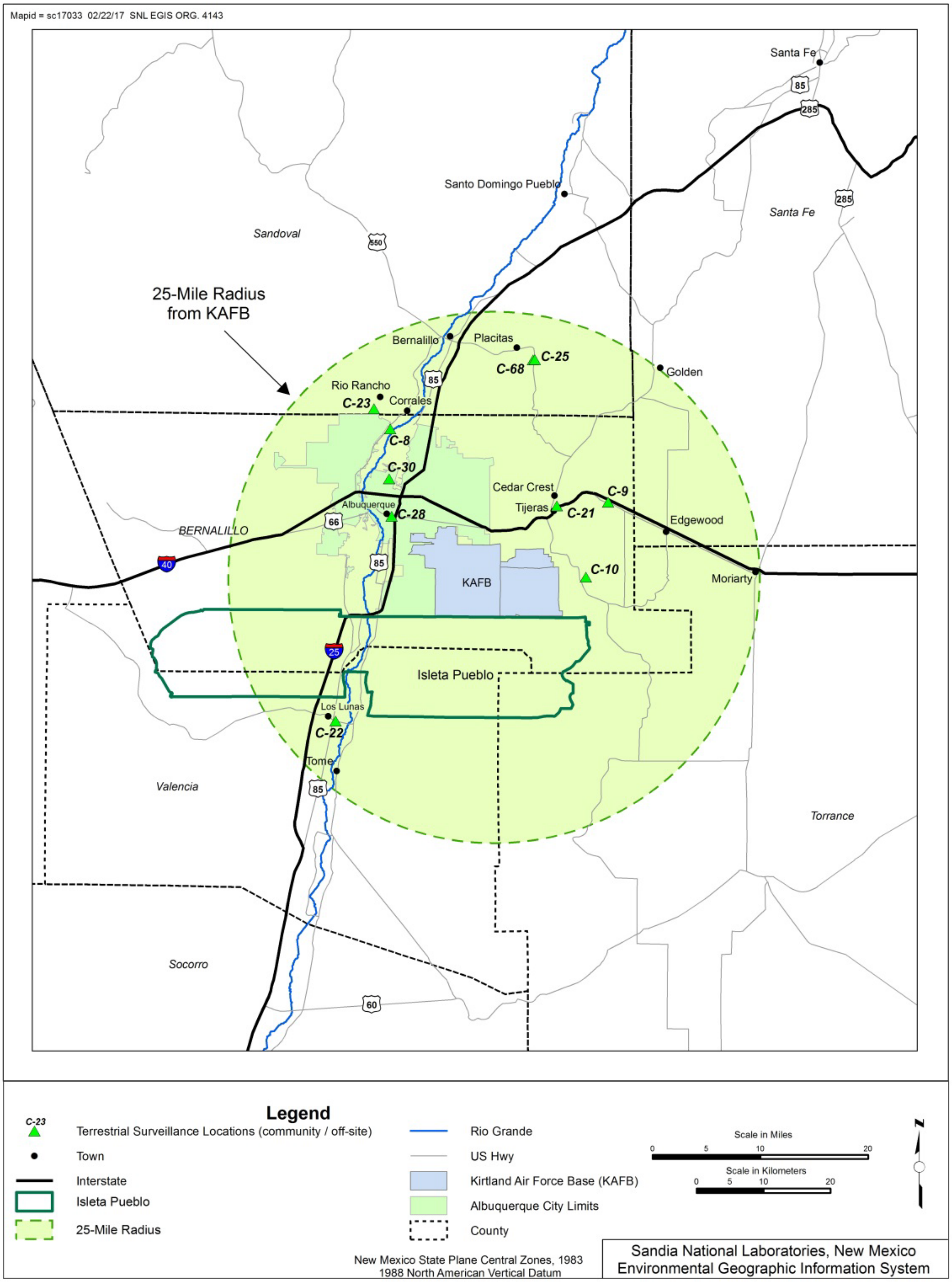


Figure 4-2. Terrestrial Surveillance Program off-site sampling locations

Table 4-1. Revised on-site terrestrial surveillance locations, sample media, and parameters

Location Number	Sampling Location	Soil[a]	Sediment[a]	Vegetation[b]	TLD[c]
S-1	Pennsylvania Avenue	X			X
S-6	TA-III (east of the water tower)	X		X	X
S-20	TA-IV (southwest)				X
S-33	Coyote Springs	X		X	
S-34	Lurance Canyon Burn Site	X		X	
S-45	RMWMU, TA-III (northwest corner)	X		X	X
S-46	TA-II (south corner)	X[d]		X	X
S-48	Tijeras Arroyo (east of TA-II)				X
S-49	Near the Explosives Components Facility	X[d]		X	
S-51	TA-V (north of culvert)	X		X	
S-53	TA-III, south of the Long Sled Track	X[e]			
S-55	Large Melt Facility, Building 9939	X		X	
S-57	TA-IV, Building 970 (northeast corner)	X			
S-72	Arroyo del Coyote (midstream)		X		
S-74N	TA-IV, Tijeras Arroyo (midstream)		X		
S-75	Arroyo del Coyote (downstream)		X		
S-76	Thunder Range (north)	X[d]			
S-77	Thunder Range (south)	X[d]			
S-83	Tijeras Arroyo Groundwater well		X		
S-85	Arroyo del Coyote cable site		X		
S-86	Corner of Wyoming and S streets	X[d]		X[d]	
S-90	TA-III Land mine test site	X[f]			
S-91	Background Arroyo near SWMU-87		X[d]		
S-92	TA-III Classified Waste Landfill	X			
S-93	Thunder Range explosives test area	X[f,g]			
S-94	Thunder Range, southeast of Range 5	X[f,g]			

NOTES: [a]Soil and sediment samples are collected annually (except as noted) and analyzed for Terrestrial Surveillance (TS) metals, radionuclides, and tritium.
[b]Vegetation samples are collected annually (except as noted) and analyzed for TS metals, radionuclides, and tritium.
[c]TLDs are analyzed for gamma radiation.
[d]TS metals are not included in the analysis.
[e]Perchlorate is included in the sample analysis.
[f]High explosives are included in the sample analysis.
[g]Radionuclides, tritium, and metals are not included in the analysis.
RMWMU = Radioactive and Mixed Waste Management Unit
S = on-site
SWMU = Solid Waste Management Unit
TA = technical area
TLD = thermoluminescent dosimeter

Honey-bee (*Apis mellifera*) on evening primrose (*Oenothera pallida*)

Table 4-2. Revised perimeter terrestrial surveillance locations, sample media, and parameters

Location Number	Sampling Location	Soil[a]	Sediment[a]	Vegetation[b]	TLD[c]
P-4	Isleta Reservation gate	X		X	X
P-5	McCormick gate	X		X	X
P-16	Four Hills	X		X	X
P-19	USGS seismic center gate	X			X
P-39	Northwest DOE complex				X
P-40	TA-I (northeast)				X
P-58	North KAFB housing	X		X	
P-59	Zia Park (southeast)	X			
P-60	Tijeras Arroyo (downstream)		X		
P-61	Albuquerque International Sunport	X			
P-63	No Sweat Boulevard	X			
P-64	North Manzano base	X			
P-73	Tijeras Arroyo (upstream)		X		
P-81	KAFB (west fence)	X			X
P-82	Commissary	X		X	
P-95	Southwest corner KAFB (new in 2016)	X			

NOTES: [a]Soil and sediment samples are collected annually and analyzed for Terrestrial Surveillance (TS) metals, radionuclides, and tritium.
[b]Vegetation samples are collected annually and analyzed for TS metals, radionuclides, and tritium.
[c]TLDs are analyzed for gamma radiation.
DOE = U.S. Department of Energy
KAFB = Kirtland Air Force Base
P = perimeter
TA = technical area
TLD = thermoluminescent dosimeter
USGS = U.S. Geological Survey

Table 4-3. Revised off-site terrestrial surveillance locations, sample media, and parameters

Location Number[a]	Sampling Location	Soil[b]	Sediment[b]	Vegetation[c]	TLD[d]
C-8	Rio Grande, Corrales Bridge (upstream)		X		
C-9	Sedillo Hill, Interstate 40	X		X	
C-10	Oak Flats	X		X	
C-21	Bernalillo Fire Station 10, Tijeras				X
C-22	Los Lunas Fire Station				X
C-23	Rio Rancho Fire Station, 19th Avenue				X
C-25	Placitas Fire Station	X		X	X
C-26	Albuquerque Fire Station 9, Menaul Boulevard NE				X
C-30	Albuquerque Fire Station 6, Griegos Road NW				X
C-68	Las Huertas Creek		X		

NOTES: [a]Off-site samples were previously called “community locations,” thus the C label in the location number (maintained for the database).
[b]Soil and sediment samples are collected annually and analyzed for Terrestrial Surveillance (TS) metals, radionuclides, and tritium.
[c]Vegetation samples are collected annually and analyzed for TS metals, radionuclides, and tritium.
[d]TLDs are analyzed for gamma radiation.
NE = northeast
NW = northwest
TLD = thermoluminescent dosimeter

4.3 Field Methods, Analytical Parameters, and Quality Control Procedures

All samples were collected in accordance with applicable field operating procedures for soil and vegetation sampling activities and with the *Quality Assurance Project Plan for Terrestrial Surveillance at Sandia National Laboratories, New Mexico* (SNL/NM 2016b).

Off-site laboratories analyzed all samples in accordance with applicable U.S. Environmental Protection Agency (EPA) analytical methods. All chemical data was reviewed and qualified in accordance with Administrative Operation Procedure 00-03, *Data Validation Procedure for Chemical and Radiochemical Data* (SNL/NM 2014). Samples were analyzed (by media type and locations, as specified in Table 4-1, Table 4-2, and Table 4-3) for the following parameters: specific metals, high explosives (HEs), perchlorate, tritium, and radionuclides. The specific metals list is referred to as the TS metals and includes the following: aluminum, antimony, arsenic, beryllium, cadmium, chromium, copper, iron, lead, magnesium, nickel, selenium, silver, thallium, zinc, and uranium (total). The metals list was revised in 2016 by removing common rock-forming elements, using a modified EPA Priority Pollutant List, and retaining three metals of concern (aluminum, iron, and magnesium).

The Radiation Protection Dosimetry Program (RPDP) owns, issues, and processes environmental TLDs. The technical basis for the environmental TLD monitoring program is provided in *Description and Procedures of the Environmental Radiation Dosimetry Program* (SNL/NM 1987). Dosimeters are issued and processed quarterly following established RPDP protocols.

Collected field quality control samples included triplicate environmental samples and equipment blank samples. These samples were prepared in accordance with applicable field operating procedures. Laboratory quality control samples are prepared and analyzed as specified in Chapter 8.

4.4 Sample Result Analysis and Methodology

Statistical analyses were performed to compare the results from on-site and perimeter samples to off-site results, and to establish trends that may indicate the possible release of contaminants.

Soil is all loose, unconsolidated mineral or organic materials on the immediate surface of the earth that support plant growth. *Sediment* is transported and deposited particles or aggregates derived from rocks, soil, or biological material. *Vegetation* is plant life or the total plant cover of an area.

4.4.1 Statistical Analysis and Methodology

Samples are collected from specified locations to enable effective statistical comparisons with results from previous years. Statistical analyses are performed to determine whether a specific on-site or perimeter sample result differs from off-site sample results and to identify trends at specific sampling locations. The statistical analysis results are used to prioritize sample results for possible follow-up actions, such as resampling, additional investigation, and/or notifications to applicable entities.

A decision-making tool (Table 4-4) is used to help determine the appropriate level of concern for each sample result. The statistical analysis prioritization methodology (Shyr, Herrera, and Haaker 1998) is based on a matrix of four priority levels.

Table 4-4. Priority decision matrix and actions

Priority[a]	Are Results Higher Than Off-Site?	Is There an Increasing Trend?	Action
1	Yes	Yes	Immediate attention is needed. Specific investigation is planned and/or notifications will be made to applicable entities.
2	Yes	No	Some concern is warranted. Further investigation and/or notifications may be necessary.
3	No	Yes	A minor concern. Further investigation and/or notifications may be necessary.
4	No	No	No concern. No investigation will be required.

NOTE: [a]Based on a statistical analysis prioritization methodology (Shyr, Herrera, and Haaker 1998).

As a final determination in the sampling location evaluation, locations that met one or more of the criteria in Section 4.2 and were proposed for removal were further evaluated by reviewing the past five years of analytical data. Any proposed location that had been a Priority-1 or -2 in the past five years were not removed. One perimeter location, P-12 soil, has been Priority-2 for the past several years (2013–2015) for cesium-137, but was removed as a sampling location due to a fire safety issue when accessing the site.

4.4.2 Other Standards for Comparison

In addition to the statistical analyses, sample results for metals in soil and sediment may be compared to values in the following references (presented in Table 4-5):

- Local and regional soil concentrations (Dragun and Chekiri 2005)
- NMED soil screening levels (SSLs) (NMED 2015b)
- U.S. surface soil surface concentrations (Kabata-Pendias 2000)

Table 4-5. Various reference values for metals in soil (all units in mg/kg)

Analyte	NM Soil Concentrations[a]		NMED Soil Screening Levels[b]		U.S. Soil Concentrations[c]	
	Lower Limit	Upper Limit	Residential	Industrial	Lower Limit	Upper Limit
Aluminum	5,000	100,000	78,000	1,290,000[d]	4,500	100,000
Antimony	0.2	1.3	31.3	519	0.25	0.6
Arsenic	2.5	19	4.25	21.5	0.1	30
Beryllium	1	2.3	156	2,580	0.04	2.54
Cadmium	ND	11	70.5	1,110	0.08	0.47
Chromium III	—	—	117,000[d]	1,950,000[d]	—	—
Chromium, total	7.6	42	96.6	505	7	1,500
Copper	2.1	30	3,130	51,900	1	70
Iron	1,000	100,000	54,800	908,000	5,000	45,000
Lead	7.8	21	400	800	10	70
Magnesium	300	100,000	—	—	—	—
Nickel	2.8	19	1,560	25,700	5	150
Selenium	0.2	0.8	391	6,490	0.1	4
Silver	0.5	5	391	6,490	0.2	3.2
Thallium	—	—	0.782	13	0.02	2.8
Zinc	18	84	23,500	389,000[d]	5	164

NOTES: [a]Dragun and Chekiri 2005.
[b]NMED 2015.
[c]Kabata-Pendias 2000.
[d]Soil screening level may exceed ceiling limit.
— = not available
ND = not detected
NM = New Mexico
NMED = New Mexico Environment Department
U.S. = United States

In some instances, a qualitative inspection of the data may be augmented by the graphical evaluation methodology described and documented in *Chemical Analyses of Soil Samples Collected from the Sandia National Laboratories, New Mexico Environs, 1993–2005* (SNL/NM 2006a). Results in 2016 did not warrant this type of evaluation.

Environmental TLD data is compared to the annual radiation dose from natural background sources estimated equivalent of 70 mrem (NCRP 2009). Background radiation levels in the Albuquerque area are elevated when compared to much of the U.S. due to the higher elevation and the presence of radionuclides in the soil and rock. The local annual radiation dose from natural background sources (indoor radon not included) estimated equivalent is 140 mrem (Brookins 1992).

No regulatory limits are available to directly compare concentrations of radiological constituents in surface soils, vegetation, or sediments.

4.5 Summary of Terrestrial Surveillance Program Activities and Results in 2016

The following TS Program activities occurred in 2016:

- The annual sampling of soil and sediment occurred in early May 2016 at designated locations.
- The annual sampling of vegetation occurred in September 2016 at designated locations.
- Environmental TLDs were exchanged and analyzed at designated locations quarterly.

The analytical results for radiological (including environmental TLDs) and nonradiological parameters for the 2016 sampling event are summarized here, and the data are provided in Appendix B, "2016 Terrestrial Surveillance Results."

4.5.1 Radiological Results

Radiological analyses were performed on soil, sediment, and vegetation samples. The results of the statistical analysis identified one location as Priority-3 (Table 4-6). There were no Priority-1 or Priority-2 soil or sediment samples for any radiological constituents, and all remaining soil, sediment, and vegetation samples were identified as Priority-4.

Table 4-6. Radiological summary statistics for Priority-3 sample locations, 2016

Priority	Analyte	Location	Sample Matrix	Mean (pCi/g)	SD (pCi/g)	Minimum (pCi/g)	Maximum (pCi/g)	2016 Result (pCi/g)
Priority-3	Cesium-137	S-85	Sediment	0.16	0.15	0.015	0.51	0.24

NOTES: Statistical data is for 2000–2016. S = on-site SD = standard deviation

Cesium-137

One on-site location (S-85 sediment) was identified as Priority-3 for cesium-137 with a result of 0.24 pCi/g. Location S-85 is located in the east-central portion of KAFB (Figure 4-1). This location is at a slightly higher elevation than other sampling locations, thus receiving greater precipitation and slightly higher cesium-137 levels from fallout than the lower areas. Cesium-137 is prevalent in surface soils worldwide as a result of historical nuclear weapons testing. The results for cesium-137 at this location have ranged from 0.015 to 0.51 pCi/g.

All remaining soil, sediment, and vegetation samples were identified as Priority-4 for radiological constituents.

Thermoluminescent Dosimeter

TLD exposure rates for fiscal year (FY) 2016 are provided in Appendix B. Data for FY 2001 through FY 2016 were analyzed to determine whether any statistical differences were observed for either location classification or year. In FY 2016, there was no statistical difference between on-site, perimeter, and off-site locations. Table 4-7 shows the overall exposure rate summary statistics for FY 2001 through FY 2016. Figure 4-3 shows the TLD exposure rates by year and location classification.

Table 4-7. TLD exposure rate summary statistics by location classification, FY 2001–2016

Location Classification	Number of Observations	Average (mR/yr)	Median (mR/yr)	Standard Deviation (mR/yr)	Minimum (mR/yr)	Maximum (mR/yr)	FY 2016 Average Results (mR/yr)
On-site	218	100.8	99.8	10.5	81.9	137.2	125.9
Perimeter	125	102.2	101.5	12.4	79.9	143.1	125
Off-site	177	101	99.6	15.3	71.5	147.3	131.2

NOTES: FY = fiscal year TLD = thermoluminescent dosimeter

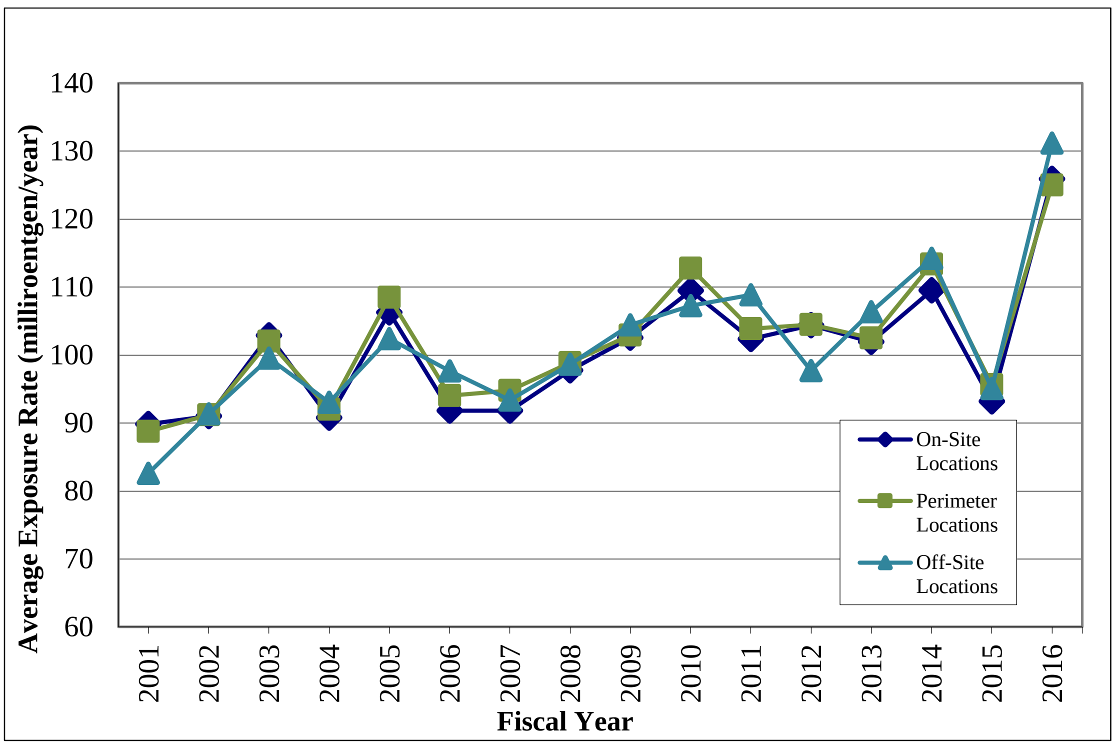


Figure 4-3. TLD exposure rates by fiscal year and location classification

There was an increase in average annual dose for all three location classifications between FY 2015 and FY 2016. This was due to an update that RPDP made in the dose calculation, which caused the dose results to increase by 15 percent. In addition, the background calculation was adjusted to account for how the controls were being stored. The results are still within local annual radiation dose from natural background sources.

Total Uranium

No soil, sediment, or vegetation locations were identified as Priority-1, Priority-2, or Priority-3 for total uranium.

Tritium

Tritium is not a significant indicator radionuclide for operations at SNL/NM, and the low soil moisture in the area will always make low-activity assay difficult. There were no unusual tritium concentrations noted for any of the soil, sediment, or vegetation samples collected.

4.5.2 Nonradiological Results

Nonradiological parameters include TS metals, HE compounds, and perchlorate. In addition to a statistical analysis, all results may also be compared to values from the references listed in Section 4.4.2 and provided in Table 4-5. The results of the statistical analysis for metals (Table 4-8) identified three locations as Priority-2 and one location as Priority-3. Details for each parameter and location are provided in Table 4-8. There were no results identified as Priority-1, and all remaining soil, sediment, and vegetation samples were identified as Priority-4.

Table 4-8. Metals summary statistics for Priority-2 and Priority-3 sample locations, 2016

Priority	Analyte	Location	Sample Matrix (mg/kg)	Mean (mg/kg)	SD (mg/kg)	Min. (mg/kg)	Max. (mg/kg)	NMED Soil Screening Level[a] Residential (mg/kg)	NMED Soil Screening Level[a] Industrial (mg/kg)	2016 Result (mg/kg)
Priority-2	Beryllium	S-33	Soil	1.05	0.32	0.60	1.59	156	2,580	0.60
	Copper	S-6	Soil	28.27	18.43	5.26	55.80	3,130	51,900	5.88
	Iron	P-64	Soil	22,500	3,280	17,600	29,800 J	54,800	908,000	29,800 J
	Magnesium	P-64	Soil	7,830	1,250	5,930	11,300	—	—	11,300
Priority-3	Aluminum	C-68	Sediment	6,422	1,735	3,940	9,180 J	78,000	1,290,000[b]	9,180 J
	Beryllium	S-85	Sediment	0.47	0.10	0.24	0.61	156	2,580	0.57
	Copper	S-85	Sediment	8.11	2.76	3.17	11.40 J+	3,130	51,900	11.40 J+
	Magnesium	S-85	Sediment	3,690	680	2,700	4,940	—	—	4,210
	Nickel	S-85	Sediment	10.90	2.05	8.15	14.00	1,560	25,700	14.00 J+

NOTES: Statistical data is for 2000–2016.
[a]NMED 2015
[b]Ceiling limit
— = not available
C = off-site location
J/J+ = The associated numerical value is an estimated quantity
Max. = maximum
Min. = minimum
NMED = New Mexico Environment Department
P = perimeter location
S = on-site location
SD = standard deviation

Aluminum

One off-site location (C-68 sediment) was identified as Priority-3 for aluminum with a result of 9,180 J mg/kg. The J qualified data indicates an estimated value. The result was below NMED SSLs for residential use. The results at all locations were within the range of values for aluminum in New Mexico surface soils.

Beryllium

One on-site location (S-33 soil) was identified as Priority-2 for beryllium with a result of 0.60 mg/kg. One on-site location (S-85 sediment) was identified as Priority-3 for beryllium with a result of 0.57 mg/kg. Both results were below NMED SSLs for residential use. The results at all locations were within the range of values for beryllium in New Mexico surface soils.

Copper
One on-site location (S-6 soil) was identified as Priority-2 for copper with a result of 5.88 mg/kg. One on-site location (S-85 sediment) was identified as Priority-3 for copper with a result of 11.40 J+ mg/kg. The J qualified data indicates an estimated value. Both results were below NMED SSLs for residential use. The results at all locations were within the range of values for copper in New Mexico surface soils.

Iron
One perimeter location (P-64 soil) was identified as Priority-2 for iron with a result of 29,800 J mg/kg and was below NMED SSLs for residential use. The J qualified data indicates an estimated value. The results at all locations were within the range of values for iron in New Mexico surface soils.

Magnesium
One perimeter location (P-64 soil) was identified as Priority-2 for magnesium with a result of 11,300 mg/kg. One on-site location (S-85 sediment) was identified as Priority-3 for magnesium with a result of 4,210 mg/kg. There is no NMED SSL for magnesium. The results at all locations were within the range of values for magnesium in New Mexico surface soils.

Nickel
One on-site location (S-85 sediment) was identified as Priority-3 for nickel with a result of 14.00 J+ mg/kg and was below NMED SSLs for residential use. The J+ qualified data indicates an estimated value. The results at all locations were within the range of background values for nickel in New Mexico surface soils.

High Explosives
Three on-site locations (S-90 soil, S-93 soil, and S-94 soil) were analyzed for HE compounds. There were no detections above the method detection limit for any HE compounds.

Perchlorate
One on-site location (S-53 soil) was analyzed for perchlorate with a result of 0.17 mg/kg. This value was below NMED SSLs for residential use (54.8 mg/kg).

4.5.3 Additional Activities and Variances
The sampling in 2016 followed the revised program plan, as described in this chapter. There were no additional activities or variances.

Chapter 5. Air Quality Compliance and Related Programs

Sandia sunset

OVERVIEW ■ Sandia National Laboratories' air quality, ambient air, meteorological, and radiological emissions programs collectively monitor the air and atmosphere associated with SNL/NM facilities.

Air quality and meteorological monitoring and surveillance activities are conducted at Sandia National Laboratories, New Mexico (SNL/NM) through the following programs:

- Air Quality Compliance Program
- Ambient Air Surveillance Program
- Meteorology Program
- Radiological National Emission Standards for Hazardous Air Pollutants Program

5.1 Air Quality Compliance Program

The Air Quality Compliance (AQC) Program is responsible for maintaining compliance with air quality regulations associated with SNL/NM facilities and supporting SNL organizations with applicable procedures. In Bernalillo County, the City of Albuquerque (COA) implements air quality regulations and standards established by the U.S. Environmental Protection Agency (EPA) and the Albuquerque-Bernalillo County Air Quality Control Board.

5.1.1 Stationary Sources

Stationary source registrations are required for sources that emit more than 2,000 lb of any air contaminant per year or any amount of a hazardous air pollutant (HAP). Stationary source permits are required for sources that have the potential to emit 10 lb per hour or more or 25 tpy or more of any single regulated air contaminant, 2 tpy of a single HAP, or 5 tpy of any combination of HAPs. Permits are also required for any equipment or process that is subject to federal New Source Performance Standards or National Emission Standards for Hazardous Air

Pollutants. Permits include requirements that sources maintain records and monitor their emissions and operations to ensure compliance with regulations, emission limits, and other conditions of the permit. Regulated air contaminants include criterial pollutants and HAPs. Criteria pollutants include sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, particulate matter, and lead. The U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA)/Sandia Field Office (SFO) air quality permits and registrations for sources at SNL/NM are provided in Table 9-1.

Most of the permitted sources at SNL/NM are boilers and emergency generators. Criteria pollutant emissions from combustion are monitored based on operation and/or fuel use. In 2016, SNL/NM sources were in compliance with permit conditions. Emissions data for permitted boilers and generators are provided in Table 9-5.

Site-Wide Volatile Organic Compound and Hazardous Air Pollutant Emissions

Site-wide Chemical Permit 1901-M1 includes all HAP and volatile organic compound (VOC) emissions from general laboratory research and development uses. During 2016, potential emissions were 9.5 tons of HAPs and 16 tons of VOCs. These emissions are below the major source HAP threshold of 25 tpy and regulated air contaminant threshold of 100 tpy.

Title V

DOE/NNSA/SFO submitted Operating Permit application 515 (DOE 2002) to the COA on March 1, 1996, since potential emissions for SNL/NM were greater than 100 tpy of criteria pollutants annually. The COA has yet to issue the final permit. An updated application is currently being negotiated with the COA.

Greenhouse Gas Emissions

On May 13, 2010, EPA issued a final rule that addresses greenhouse gas emissions (GHGs) from stationary sources under the Clean Air Act (CAA) permitting programs. This final rule sets thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. A GHG, as defined in 40 Code of Federal Regulations (CFR) 86.1818–12(a), is an air pollutant comprised of an aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

EPA defines a *greenhouse gas emission* as being an air pollutant comprised of an aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Major stationary sources that emit at least 100,000 tpy carbon dioxide equivalent will need to include GHGs in their Title V permit applications. The fugitive emissions are only included in the major source determination when the source belongs to a listed source category in Section 302(j) of the CAA. SNL/NM is not a listed source category, and stack GHG emissions at SNL/NM are much less than 100,000 tpy carbon dioxide equivalent annually.

During fiscal year (FY) 2016, SNL/NM operations emitted a total of 169,431 tpy carbon dioxide equivalent (including fugitive GHG emissions). This total includes 6,211 tons carbon dioxide equivalent from a single sulfur hexafluoride release in August that was reportable under DOE Order 232.2. This release was the result of a leak from a damaged gas switch.

5.1.2 Stratospheric Ozone Protection

Title VI of the CAA Amendments of 1990 required EPA to establish regulations to phase out the production and consumption of ozone-depleting substances (ODSs). ODSs are defined as chlorofluorocarbons, hydrochlorofluorocarbons, and other halogenated chemicals that have been found to contribute to the depletion of the stratospheric ozone layer. EPA has established regulations in 40 CFR 82 that require the following: recycling ODSs when servicing equipment, establishing requirements for recycling and recovering equipment, repairing substantial leaks in refrigeration equipment containing greater than 50 lb of refrigerant, and establishing safe disposal standards.

At SNL/NM, ODSs are mainly used for comfort cooling for buildings, air conditioning units in vehicles, and water cooling units in drinking fountains. Halon is contained in some fire-suppression systems and some fire extinguishers.

5.1.3 Vehicles

The General Services Administration owns and manages the majority of the government vehicles at SNL/NM. All General Services Administration vehicles must comply with emission standards. As required by 20.11.100 New Mexico Administrative Code (NMAC), *Motor Vehicle Inspection Decentralized*, SNL personnel submit an annual vehicle inventory update and inspection plan to the COA for applicable vehicles.

5.1.4 Open Burn Permits

Open burn permits are required for:

- Treating explosives waste by open burning (hazardous waste treatment)
- Open burning or detonating explosives related to research and development activities (no limit)
- Detonating explosives aboveground (over 20 lb)
- Disposing of explosives by burning to avoid transport or handling hazards (no limit)
- Igniting rocket motors (greater than 4,000 lb of fuel)

A list of 2016 permits can be found in Table 9-1.

5.1.5 Fugitive Dust

As required by 20.11.20 NMAC, *Fugitive Dust Control*, DOE obtains fugitive dust permits for each of the SNL/NM applicable projects that will disturb more than three-quarters of an acre of soil. For a list of 2016 permits, refer to Table 9-1.

5.2 Ambient Air Surveillance Program

Ambient air is surveilled through a network of six air-monitoring stations located on or near SNL/NM property (Figure 5-1). Currently, the six stations include monitors for VOCs, particulate matter that has a diameter equal to or less than 10 microns (PM_{10}), and particulate matter that has a diameter equal to or less than 2.5 microns ($PM_{2.5}$).

Ambient air is any unconfined portion of the atmosphere: open air, surrounding air.

It is an EPA requirement that the COA monitor the ambient air in Bernalillo County to determine compliance with the National Ambient Air Quality Standards and New Mexico

Ambient Air Quality Standards. The ambient air-monitoring data is essential to the COA Environmental Health Department in regulating stationary source emissions, issuing air permits, and complying with the National Ambient Air Quality Standards.

Ambient air data collected by the COA is available at:

http://www.cabq.gov/airquality/download-air-data

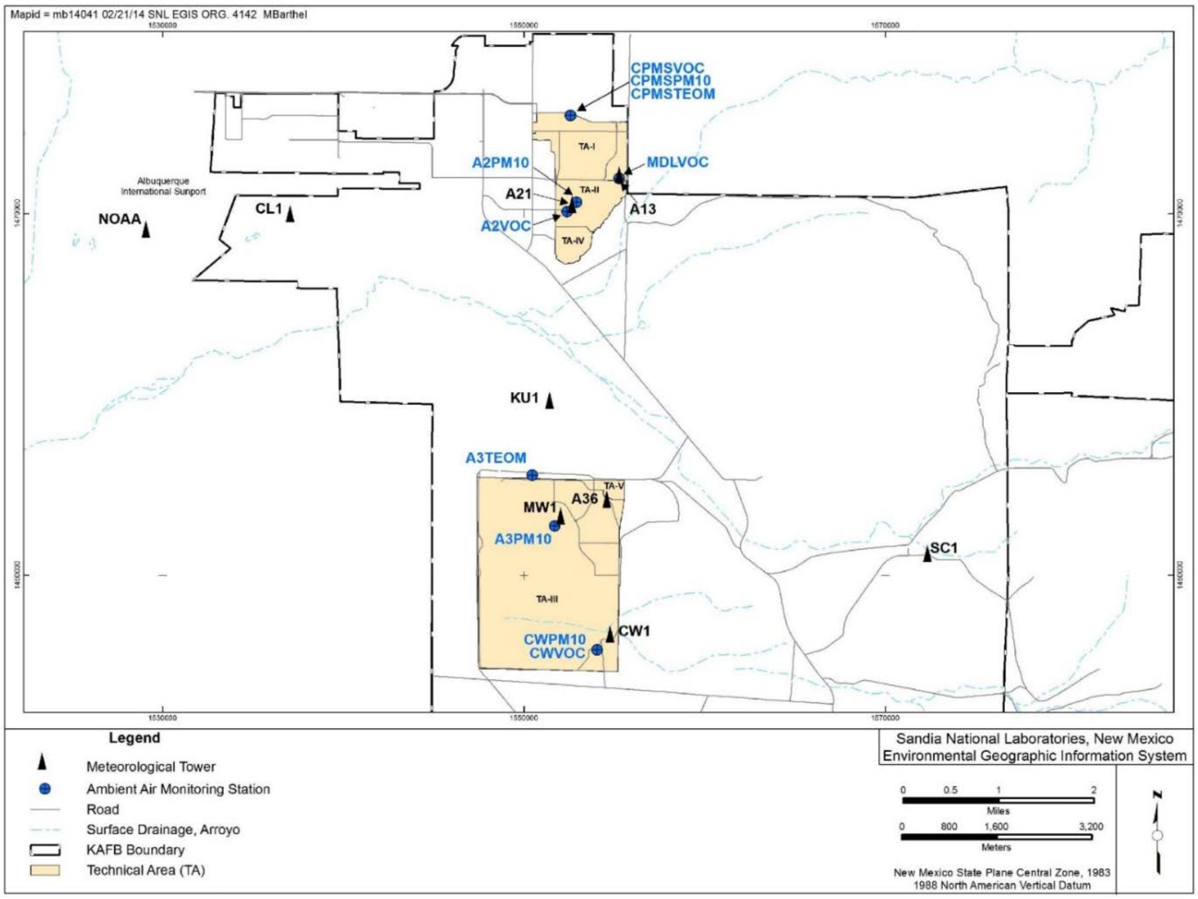


Figure 5-1. Clean air network of meteorological towers and ambient air-monitoring stations

5.2.1 Monitoring Stations

The types of ambient air-monitoring stations at SNL/NM are as follows.

$PM_{2.5}$ stations. $PM_{2.5}$ is measured at two locations (CPMSTEOM and A3TEOM). $PM_{2.5}$ is measured continuously and recorded in hourly concentrations 24 hours a day, 365 days per year. Filters are not weighed manually with this system or sent to a laboratory for chemical analysis. The monitoring stations contain a built-in microprocessor that measures the mass. $PM_{2.5}$ and PM_{10} measurements are made with different instruments and should not be compared quantitatively.

PM_{10} stations. PM_{10} is measured at four monitoring locations (CPMSPM10, A2PM10, A3PM10, and CWPM10). The air is sampled for a 24-hour period, starting and ending at midnight, every six days. Filters are collected every sixth day and are consolidated into monthly composites for analysis. In 2016, monthly composites varied from five to six filters per month, depending on the sampling schedule and sampler power interruptions. Filters are weighed manually and then analyzed at a laboratory for metals and screened for radiological constituents.

VOC stations. There are four VOC monitoring stations (CPMSVOC, MDLVOC, CWVOC, and A2VOC). VOC samples are collected once a month over a 24-hour period.

5.2.2 Ambient Air-Monitoring Results for Fiscal Year 2016

A summary of ambient air monitor results is presented in this section. Ambient air-monitoring data is presented for the fiscal year (Appendix C, "FY 2016 Ambient Air Surveillance Results").

$PM_{2.5}$

The monthly and annual averages for FY 2016 for $PM_{2.5}$ are listed in Table 5-1.

Table 5-1. Monthly and annual averages for $PM_{2.5}$, FY 2016 (all units in µg/m³)

Sample Location	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Average FY 2016
CPMSTEOM	6.91	5.90	6.56	5.85	4.07	3.71	3.79	3.70	3.77	3.62	3.71	3.58	4.60
TA3TEOM	5.25	4.20	[a]	[a]	3.11	3.39	3.50	3.65	3.73	3.45	3.35	3.30	3.69

NOTES: [a]TA3TEOM equipment malfunctioned November 2, 2015–February 16, 2016.
FY = fiscal year $PM_{2.5}$ = particulate matter (diameter equal to or less than 2.5 microns)

PM_{10}

The highest monthly average PM_{10} concentration in FY 2016, 19.2 µg/m³, occurred at the CPMS site in April of 2016. The monthly and annual averages for PM_{10} are provided in Table 5-2.

The PM_{10} samples are analyzed for metals and radiological constituents, and the FY 2016 averages are listed in Table 5-3. Most of the radionuclides are either naturally occurring or are short-lived decay daughter products detected during analysis, and are not emitted from SNL/NM sources.

Table 5-2. Monthly and annual averages for PM_{10}, FY 2016 (all units in µg/m³)

Sample Location	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Average FY 2016
A2PM	2.6	5.4	4.2	2.5	11.5	6.0	7.4	4.6	7.2	7.0	12.0	9.4	**6.65**
A3PM	1.8	4.5	3.8	1.3	8.8	4.2	8.3	7.2	5.2	3.4	7.8	7.8	**5.33**
CPMS	5.2	5.0	2.2	7.8	11.0	5.6	19.2	4.0	7.4	8.2	7.4	7.6	**7.55**
CWPM	1.2	2.3	4.2	3.5	7.8	7.2	5.2	6.2	5.8	5.4	9.0	6.8	**5.38**

NOTES: FY = fiscal year PM_{10} = particulate matter (diameter equal to or less than 10 microns)

Table 5-3. Average results of PM_{10} analysis at each station, FY 2016

Analyte	Units	Station A2PM	Station A3PM	Station CPMS	Station CWPM	Threshold Limit Value[a]
Aluminum	µg/m³	6.20E-01	7.93E-01	7.78E-01	1.00E+00	2,000
Antimony	µg/m³	6.33E-04	1.04E-03	2.19E-03	3.46E+00	500
Arsenic	µg/m³	ND	ND	ND	8.48E-05	10
Beryllium	µg/m³	ND	ND	ND	ND	0.05
Barium	µg/m³	2.18E-02	3.03E+00	1.82E-02	3.64E+01	50

See notes at end of table.

Table 5-2. Average results of PM^{10} analysis at each station, FY 2016 (continued)

Analyte	Units	Station A2PM	Station A3PM	Station CPMS	Station CWPM	Threshold Limit Value[a]
Cadmium	µg/m³	ND	1.16E-03	ND	ND	10
Calcium	µg/m³	3.58E+00	3.45E+00	3.30E+00	3.26E+00	2,000
Chromium	µg/m³	3.61E-03	1.19E-02	2.38E-01	3.87E-01	10
Cobalt	µg/m³	5.28E-04	5.09E-01	2.52E+00	2.52E+00	20
Copper	µg/m³	5.23E-02	6.71E-01	1.08E+00	8.75E-02	1,000
Iron	µg/m³	7.85E-01	2.77E+00	1.41E+00	9.74E-01	5,000
Lead	µg/m³	2.69E-03	2.86E-03	3.56E-03	4.24E+00	150
Magnesium	µg/m³	4.43E-01	2.54E+00	9.20E+00	2.12E+01	10,000
Manganese	µg/m³	1.18E-02	5.62E+00	6.65E-02	1.57E-02	200
Nickel	µg/m³	2.05E-03	3.35E+00	2.94E+01	2.60E+00	50
Potassium	µg/m³	3.28E-01	3.90E-01	6.72E+00	7.66E-01	2,000
Selenium	µg/m³	ND	ND	ND	6.57E-01	200
Silver	µg/m³	ND	ND	1.04E-05	ND	10
Sodium	µg/m³	2.72E+00	4.62E+00	2.27E+01	1.54E+01	5,000
Thallium	µg/m³	ND	ND	ND	ND	100
Uranium	µg/m³	2.45E-05	1.02E-05	1.21E+01	3.54E+01	200
Vanadium	µg/m³	1.51E-03	1.19E-03	4.44E-04	2.99E+00	50
Zinc	µg/m³	4.97E-02	5.73E-02	6.12E-02	4.15E-02	10
Actinium-228	pCi/m³	ND	ND	ND	ND	100
Alpha, gross	pCi/m³	4.25E-02	3.10E-02	8.33E-02	4.51E-02	0
Americium-241	pCi/m³	ND	ND	ND	ND	—
Beryllium-7	pCi/m³	ND	ND	ND	ND	40,000
Beta, gross	pCi/m³	5.39E-02	6.28E-02	7.29E-02	6.12E-02	0
Bismuth-212	pCi/m³	ND	ND	ND	ND	700
Bismuth-214	pCi/m³	ND	ND	ND	ND	2,000
Cesium-137	pCi/m³	ND	ND	ND	ND	400
Cobalt-60	pCi/m³	ND	ND	ND	ND	80
Lead-212	pCi/m³	ND	ND	ND	ND	80
Lead-214	pCi/m³	ND	ND	ND	ND	2,000
Neptunium-237	pCi/m³	ND	ND	ND	ND	0
Potassium-40	pCi/m³	ND	ND	ND	ND	900
Radium-223	pCi/m³	ND	ND	ND	ND	—
Radium-224	pCi/m³	ND	ND	ND	ND	4
Radium-226	pCi/m³	ND	ND	ND	ND	1
Radium-228	pCi/m³	ND	ND	ND	ND	3
Sodium-22	pCi/m³	ND	ND	ND	ND	—
Thorium-227	pCi/m³	ND	ND	ND	ND	0.7
Thorium-231	pCi/m³	ND	ND	ND	ND	—
Thorium-234	pCi/m³	ND	ND	ND	ND	400
Uranium-235	pCi/m³	ND	ND	ND	ND	0.1
Uranium-238	pCi/m³	ND	ND	ND	ND	0.1

NOTES: [a]Threshold limit values are guidelines and not legal standards; these guidelines help to control occupational health hazards (American Conference of Governmental Hygienists 2011).

— = not available

PM_{10} = particulate matter (diameter equal to or less than 10 microns)

ND = not detected

Volatile Organic Compounds

Monthly samples were analyzed for VOCs. The FY 2016 averages from four stations are listed in Table 5-4.

Table 5-4. VOC average concentrations compiled from monthly results at four monitoring stations, FY 2016 (all units in ppb bv)

Compound	Station CPMSVOC	Station CWVOC	Station MDLVOC	Station TA-II VOC	Threshold Limit Value[a]
Acetone	3.62	3.70	3.15	2.92	500,000
Benzene	0.27	0.13	0.15	0.16	500
Butane, N-	0.86	0.55	0.43	0.53	800,000
Butanone, 2-	0.43	0.61	0.40	0.45	200,000
Carbon disulfide	ND	0.33	ND	0.22	—
Carbon tetrachloride	0.07	ND	0.07	0.07	5,000
Chloromethane	0.72	0.77	0.68	0.70	50,000
Dichlorodifluoromethane	0.49	0.48	0.45	0.48	1,000,000
Dichloroethene, trans-1,2-	0.16	ND	ND	ND	—
Dioxane, 1,4-	ND	ND	ND	0.50	—
Ethyl benzene	0.14	0.10	0.08	0.08	—
Hexane, N-	0.42	0.16	0.16	0.21	50,000
Hexanone, 2-	0.12	0.14	0.14	0.16	—
Methylene chloride	0.38	0.22	0.16	0.17	50,000
Pentane, N-	4.19	ND	0.32	0.87	600,000
Pentanone, 4-methyl-, 2-	ND	0.14	ND		—
Styrene	ND	0.15	ND	0.16	—
Tetrachloroethene	0.10	0.07	ND	0.33	25,000
Toluene	0.44	0.19	0.20	0.25	50,000
Trichloroethene	0.21	ND	ND	ND	50,000
Trichlorofluoromethane	0.25	0.24	0.24	0.24	1,000,000
Trimethylbenzene, 1,2,4-	0.34	ND	ND	ND	—
Vinyl chloride	0.29	ND	ND	ND	—
Xylene, m-, p-	0.40	0.31	0.18	0.19	—
Xylene, o-	0.19	0.09	0.09	0.09	100,000

NOTES: [a]Threshold limit values are guidelines and not legal standards; these guidelines help to control occupational health hazards (American Conference of Governmental Hygienists 2011).
— = not available
ND = not detected
TA = technical area
VOC = volatile organic compound; VOCs may be shown as separate species as well as in combination with another analyte

5.3 Meteorology Program

The Meteorology Program provides decision support services, data, and analyses to all SNL programs and operations that require atmospheric information. Monitoring activities within the program provide data that are used to assist with health and safety operations, emergency management and response, regulatory permitting and reporting processes, and general research and development activities. The DOE directives and regulations applicable to the Meteorology Program are listed in the References section.

5.3.1 Meteorological Monitoring Network

Meteorological personnel conduct meteorological monitoring through a network of eight meteorological towers located throughout Kirtland Air Force Base (KAFB) in New Mexico, on or near SNL/NM property. The network includes six 10-meter towers, one 30-meter tower, and one 60-meter tower. Meteorological tower locations are shown in Figure 5-1. All towers are instrumented to measure temperature and wind velocity at 3- and 10-meter levels above the surface. Temperature and wind velocity are also measured at the top of the two tallest towers (30 meters and 60 meters). Relative humidity is measured at all locations, while rainfall is measured at the A36, A21, and SC1 locations. Barometric pressure is measured at towers A36 and A21. Routine instrument calibrations and a strong preventative maintenance field program are used to ensure data quality. Current weather information from the SNL/NM meteorological network can be found at the following website:

http://clean-air.sandia.gov

5.3.2 Meteorological Monitoring Results

The A36 60-meter tower is used to describe general meteorology at SNL/NM due to its central geographic position and the availability of all network measurements at that location. The 2016 annual summary for tower A36 is shown in Table 5-5.

Table 5-5. Annual climatic summary from Tower A36, 2016

Measurement	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
Temperature (°C)													
Average daily high	8.4	14.9	18.9	20.3	24.9	34.0	35.4	29.9	28.7	25.0	15.1	10.1	22.1
Average daily low	−4.4	−2.2	1.0	4.1	8.5	17.0	18.2	15.8	13.1	8.7	2.1	−2.9	6.6
Monthly mean	1.9	7.0	10.6	12.5	17.1	25.2	26.7	21.9	20.6	17.2	8.7	3.7	14.4
Extremes (°C)													
High	19.1	23.9	24.8	26.9	29.8	39.0	38.1	33.4	33.5	29.7	22.4	16.4	39.0
Low	−8.6	−13.4	−5.4	−2.9	1.9	10.4	14.5	11.4	3.3	4.2	−8.6	−9.4	−13.4
Relative													
Humidity (%)	56.7	37.2	25.7	38.3	29.3	27.0	29.2	48.0	41.8	35.6	51.4	55.9	39.7
Precipitation (cm)													
Monthly	1.14	0.15	0.03	1.22	0.28	2.41	2.41	4.72	1.75	3.12	2.49	1.65	21.39
24-hour maximum	0.66	0.10	0.03	0.79	0.15	1.47	1.85	2.69	0.48	2.31	0.84	0.97	2.69
Wind (m/sec)													
Monthly mean	2.9	3.3	4.3	4.3	4.7	4.1	3.8	3.6	3.8	3.3	3.6	3.1	3.7
Highest 24-hour average	5.3	6.3	8.7	6.7	11.0	6.8	5.6	5.7	7.4	6.9	8.5	7.4	11.0
Maximum gust	21.8	22.9	23.4	23.5	26.4	31.5	23.3	20.7	24.9	17.2	24.6	20.4	31.5
Barometric													
Pressure (mb)	835	837	832	832	833	836	836	837	837	837	837	835	835

Note: December precipitation may be underestimated due to the amount of precipitation that fell as snow.

Local weather in 2016 belied previously observed impacts of El Niño and La Niña conditions in the eastern equatorial Pacific Ocean. As a historically strong El Niño quickly faded during the winter into spring of 2016, local precipitation totals were below normal and drought conditions returned. After the El Niño was replaced with a weak La Niña by late summer, precipitation and humidity values were above average for the remainder of the year, quickly removing the drought. These diversions from means are contrary to typical El Niño and La Niña impacts. Monsoon rainfall totals were below average in 2016 after a dry start in July, although annual totals were only slightly below average. Wind speeds were more intense than usual in the autumn as increased storminess brought additional wind and rain to the local area.

In general, the annual statistics for each of the towers are similar. However, daily meteorology varies considerably across the meteorological network. This real-time variability of meteorological conditions has implications on the transport and dispersion of pollutants, which are important in atmospheric emergency release scenarios and air-dispersion modeling. Table 5-6 shows some of the variations and extremes found in meteorological measurements across SNL/NM.

Table 5-6. Variations and extremes in meteorological measurements across the tower network, 2016

Measurement	Minimum, Tower	Maximum, Tower	Spread
Wind Speed	**m/sec**	**(m/sec)**	**(m/sec)**
Average annual wind speed	3.59, A21	3.91, CW1	0.32
Greatest difference in wind speed over 24 hours	9.11, SC1	12.77, A13	3.66
Greatest difference in daily maximum wind speed	16.27, A13	31.47, A36	15.20
Average difference in daily wind speed	0.93		
Temperature	**(°C)**	**(°C)**	**(°C)**
Average annual temperature	14.37, SC1	14.97, A13	0.6
Network annual temperature extremes	−13.9, MW1	39.0, A36	52.9
Greatest difference in daily minimum temperature	−1.4, CW1	4.3, CL1	5.7
Greatest difference in average daily temperature	14.1, SC1	15.9, CL1	1.8
Greatest difference in daily maximum temperature	8.3, SC1	11.5, CL1	3.2
Precipitation	**(cm)**	**(cm)**	**(cm)**
Annual precipitation (extremes)	20.37, A21	21.39, A36	1.02
Daily rainfall variation	0.66, SC1	2.97, A21	2.31
Greatest monthly precipitation difference	0.69, A21	2.41, A36	1.73
Greatest in monthly rainfall			5.38 August A21

5.3.3 Wind Analysis

The most important implication of meteorological variations across SNL/NM is the wind impact on transport and dispersion of potential pollutants. Wind transport across the Laboratories is a complex result of large-scale, synoptic-based weather systems and local or regional topographic influences. The local topography produces nocturnal drainage flows, and can also channel the large-scale driven winds. Wind roses are used to present the distributions of wind speed and wind direction. It should be noted that wind direction is defined as the direction from which the wind originates. The wind roses for towers A36, CL1, and SC1 are shown in Figure 5-2.. The diurnal variations and wind shifts that are typical across SNL/NM cannot be seen in Figure 5-2. Figure 5-3 shows a much different pattern and nature to the wind with the data divided into daytime and nighttime intervals. A similar diurnal pattern is seen at other locations within KAFB. The predominant wind direction at most locations is a product of local topographic features.

Wind direction is the direction from which the wind originates.

The relative location of a monitoring tower to local slopes and canyons dictates the exact direction of local topographic influences, leading to the predominant wind for nighttime hours and the year as a whole.

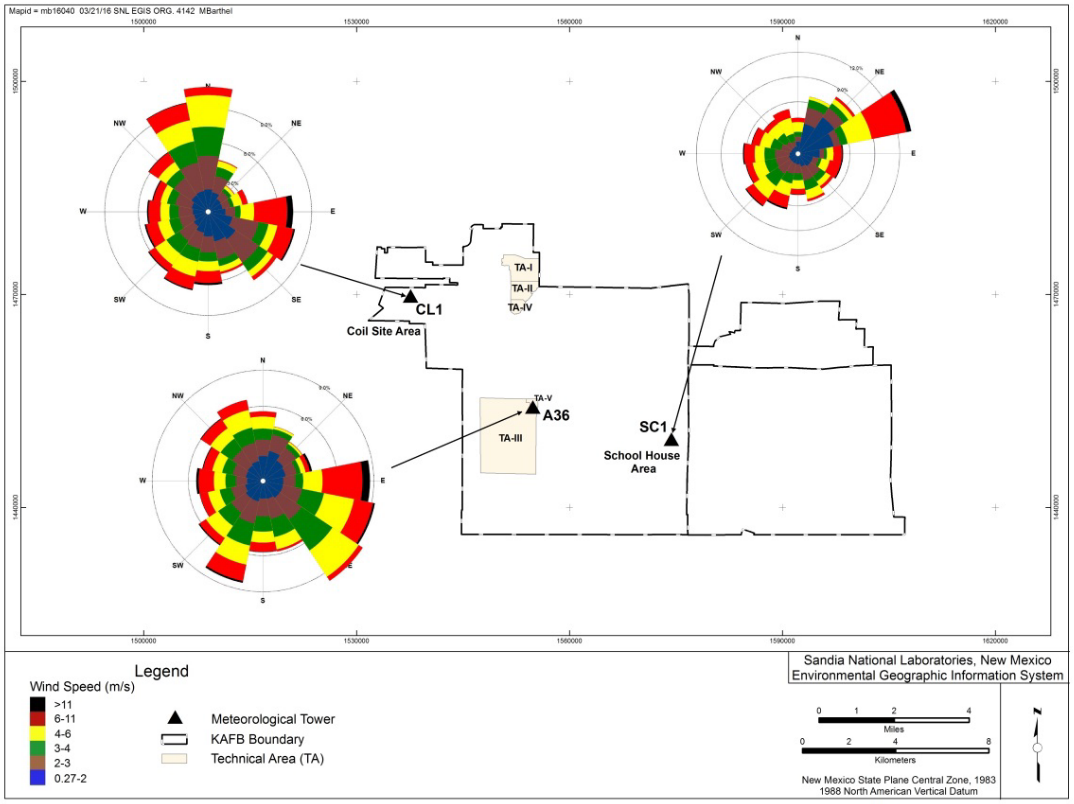


Figure 5-2. Annual wind roses at towers A36, CL1, and SC1

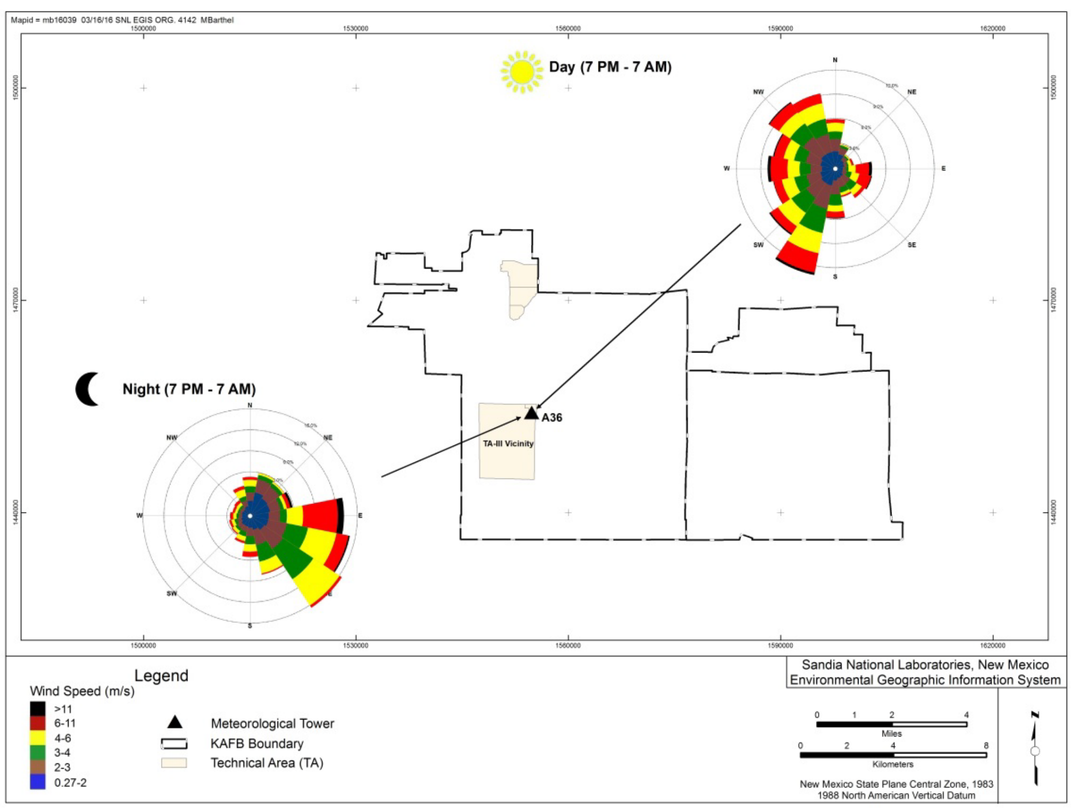


Figure 5-3. Annual wind roses for daytime and nighttime frequency at Tower A36

Table 5-7 lists the predominant wind directions for daytime and nighttime periods for all towers in the network. Across the network, nighttime-predominant winds were from the north through southeasterly directions. During the day, winds were typically south-southwesterly through northwesterly. The CL1 site showed a strong northerly component to the wind in 2016. The daytime verses nighttime signal is typical for the area.

Table 5-7. Predominant wind directions by tower, 2016

Tower	Day	Night
A13	South-southwest	East
A21	South-southwest	East-northeast
A36	South-southwest	Southeast
CL1	North-northwest	North
CW1	South-southwest	East
KU1	South-southwest	Southeast
MW1	South-southwest	East-southeast
SC1	Southwest	East-northeast

5.4 Radiological National Emission Standards for Hazardous Air Pollutants Program

Radiological National Emissions Standards for Hazardous Air Pollution (NESHAP) Program personnel ensure compliance with NESHAP requirements. EPA regulates radionuclide air emissions in accordance with 40 CFR 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities." EPA has set a maximally exposed individual (MEI) radiological dose limit of 10 mrem/yr resulting from all radiological air emissions produced from a DOE facility. A summary of radiological releases and public doses resulting from SNL/NM operations is provided in Table 5-8.

Table 5-8. Radiological dose and release reporting, 2016

Dose to Off-Site MEI (mrem)	Dose to On-Site MEI (mrem)	Estimated Population Dose in an 80 km Radius (person-rem)	Estimated Background Radiation Population Dose (person-rem)	EPA and DOE Dose Limit for Air Pathway (mrem)
1.10E-03	2.53E-03	1.45E-03	2.83E+05	10

Radiological Atmospheric Releases for 2016 (in Curies)							
Tritium	Noble Gases (half-life <40 days)	Fission and Activation Products (half-life <3 hours)	Fission and Activation Products (half-life >3 hours)	Total Radio-strontium	Total Uranium	Other Actinides	Other
1.59E+01	1.75E+01	5.97E-04	9.51E-05	9.00E-05	2.60E-11	3.26E-09	0.00E+00

NOTES: DOE = U.S. Department of Energy
EPA = U.S. Environmental Protection Agency
MEI = maximally exposed individual
SNL/NM = Sandia National Laboratories, New Mexico

5.4.1 Compliance Reporting

The annual NESHAP report summarizes radionuclide air emission releases from SNL/NM facilities and presents the results of the annual dose assessment. DOE/NNSA/SFO submits the annual report to EPA and the COA Environmental Health Department. Details can be found in the *Radiological NESHAP Annual Report for Calendar Year (CY) 2016, SNL/NM* (SNL/NM 2016e).

5.4.2 Facilities

Point releases are emission sources that could potentially discharge material to the atmosphere through a facility's exhaust stack or rooftop vent (Figure 5-4). Table 5-9 lists the radionuclides and the total reported emissions from each of the SNL/NM radiological NESHAP sources in 2016.

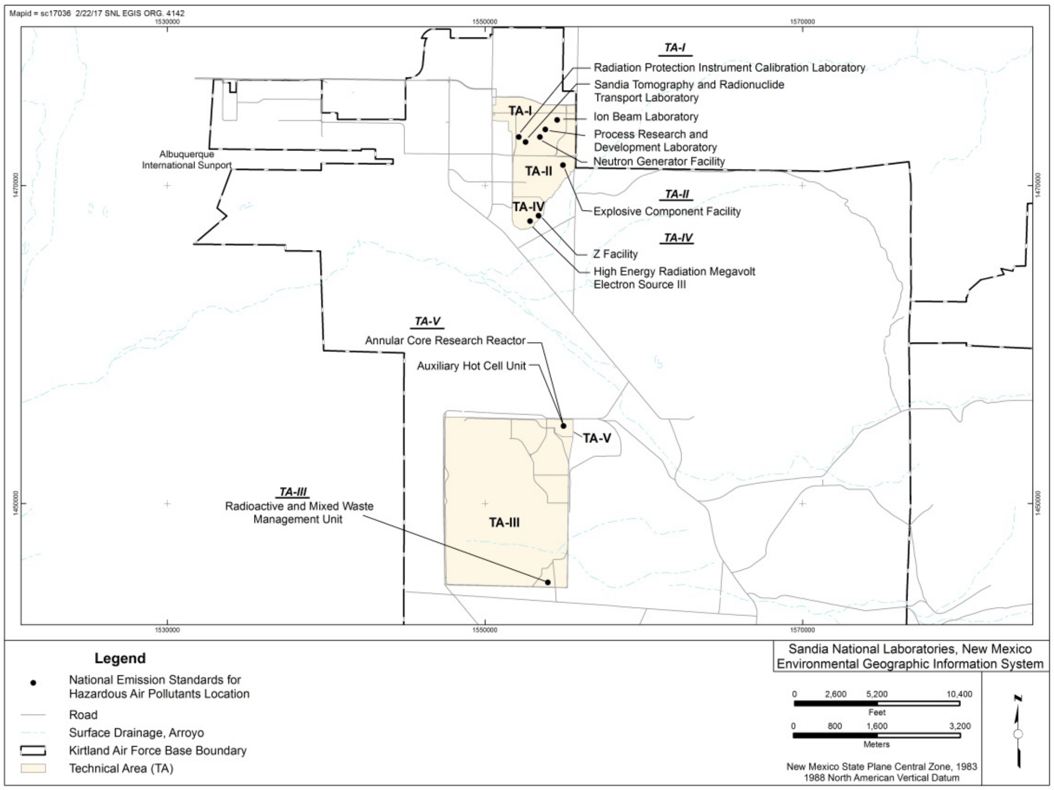


Figure 5-4. Locations of facilities at SNL/NM that provided radionuclide inventories

Table 5-9. Summary of radionuclide releases from NESHAP sources, 2016

Source Name, Location	Description	Source Type	Monitoring Method	Radionuclide Emitted	Reported Release (Ci/yr)
ACRR, TA-V	Reactor used to perform in-pile experiments for severe reactor accident research projects	Point	Periodic	Argon-41	17.48
AHCU, TA-V	Facility used to identify, sort, characterize, and repackage legacy nuclear materials for permanent removal from the SNL/NM site; legacy material may include accountable nuclear material, spent nuclear fuel, and radiological material	Point	Periodic	Krypton-85 Strontium-90 Cesium-137	2.8E-08 1.5E-08 1.0E-08
ECF, TA-II	Facility used to test neutron generator design and manufacturing	Point	Calculation	Tritium	8.8E-04

See notes at end of table.

Table 5-9. Summary of radionuclide releases from NESHAP sources, 2016 (continued)

Source Name, Location	Description	Source Type	Monitoring Method	Radionuclide Emitted	Reported Release (Ci/yr)
HERMES-III, TA-IV	Gamma simulator used primarily to simulate the effects of prompt radiation from a nuclear burst on electronics	Point	Periodic	Nitrogen-13 Oxygen-15	5.4E-04 5.4E-05
IBL, TA-I	Ion solid interaction and defect physics accelerator facility	Point	Calculation	Tritium	1.8
NGF, TA-I	Principal production facility for neutron generators	Point	Continuous	Tritium	14.0
RMWMU, TA-III	Facility used to handle radioactive and mixed waste	Point	Continuous and calculation	Tritium (oxide) Tritium (elemental) Strontium-90 Cesium-137	1.28E-02 1.54E-01 5.02E-06 5.02E-06
RPICL, TA-I	Laboratory used to calibrate radiation detection equipment	Point	Calculation	Tritium	2.4E-05
PRD, TA-I	Small-scale laboratory operation involved in handling and researching sealed and unsealed tritiated materials	Point	Calculation	Tritium	8.5E-05
Z Accelerator, TA-IV	Experimental facility used to research light-ion inertial confinement fusion	Point	Calculation	Tritium	2.8E-03

NOTES: Monitoring methods: periodic is based on periodic measurements; calculation is calculated from known parameters; continuous is based on continuous air-monitoring results.

ACRR = Annular Core Research Reactor
AHCU = Auxiliary Hot Cell Unit
ECF = Explosives Components Facility
HERMES = High Energy Radiation Megavolt Electron Source
IBL = Ion Beam Laboratory
NESHAP = National Emission Standards for Hazardous Air Pollutants
NGF = Neutron Generator Facility
PRD = Process Research and Development Laboratory
RMWMU = Radioactive and Mixed Waste Management Unit
RPICL = Radiation Protection Instrument Calibration Laboratory
SNL/NM = Sandia National Laboratories, New Mexico
TA = technical area

TA-I Sources

Ion Beam Laboratory (IBL). The IBL ion and electron accelerators are used to study and modify materials systems. Activities at the IBL could result in the release of trace amounts of tritium.

Neutron Generator Facility (NGF). The NGF is the nation's principal production facility for neutron generators. This facility currently emits only tritium. The facility has two stacks, but only uses the main stack in the Tritium Envelope North Wing. Although anticipated tritium releases do not exceed the regulatory threshold requiring continuous monitoring, it is performed voluntarily at NGF as a best management practice.

Process Research and Development (PRD) Laboratory. The PDR Laboratory is used to perform small-scale operations. Activities at the PRD Laboratory include handling and researching sealed and unsealed tritiated materials.

Radiation Protection Instrument Calibration Laboratory (RPICL). The RPICL is used to calibrate radiation-detection equipment. Activities at RPICL could result in small releases of tritium.

Sandia Tomography and Radionuclide Transport (START) Laboratory. The START Laboratory is used to perform small-scale experiments. Activities at the START laboratory could result in the occasional release of trace amounts of radionuclides.

TA-II Sources

Explosives Components Facility (ECF). The ECF is used to perform destructive testing on neutron generators. Activities at the ECF could result in the release of trace amounts of tritium.

TA-III Sources

Radioactive and Mixed Waste Management Unit (RMWMU). The RMWMU is used for handling radioactive and mixed waste products. Activities at the RMWMU could result in the release of trace amounts of radionuclides. Although anticipated releases do not exceed the regulatory threshold requiring continuous monitoring, it is performed voluntarily at the RMWMU as a best management practice.

TA-IV Sources

High Energy Radiation Megavolt Electron Source (HERMES) III. The HERMES III accelerator is used to test the effects of prompt radiation on electronics and complete military systems. Activities at HERMES III produce air activation products, primarily nitrogen-13 and oxygen-15.

Z Machine. The Z Machine is used for research on light-ion inertial confinement fusion. Large amounts of electrical energy are stored over several minutes and then released as an intense concentrated burst (shot) at a target. Some experiments could result in the release of trace amounts of radionuclides.

TA-V Sources

Annular Core Research Reactor (ACRR). The ACRR is used primarily to support defense program projects. Activities at the ACRR could result in the occasional release of trace amounts of radionuclides.

Auxiliary Hot Cell Unit (AHCU). The AHCU is used to identify, sort, characterize, and repackage legacy nuclear materials for permanent removal from the SNL/NM site. Legacy material may include accountable nuclear material, spent nuclear fuel, and radiological material. Activities at the AHCU could result in the occasional release of trace amounts of radionuclides.

Desert cottontail *(Sylvilagus audubonii)*

5.4.3 Assessment of Potential Dose to the Public

In general, the radiation dose a person receives is dependent on the person's distance from the source, the available pathways in the environment (food chain, air, and water), radionuclide quantities and properties, and meteorological conditions. Historically, radioactive releases from SNL/NM have resulted in doses to the public that are several orders of magnitude below the EPA and DOE standard of 10 mrem/yr. See Chapter 2 for DOE dose limits.

To assess compliance, all facilities with point releases must submit annual facility emission data. The emissions are modeled using EPA's CAA Assessment Package-1988 (EPA 2013) to estimate the annual dose to each of the identified public receptors.

Emission Sources

NESHAP's radiological regulations require DOE to continuously monitor any radionuclide air emission source that has the potential to produce a dose of 0.1 mrem/yr to the MEI; no facilities at SNL/NM exceed this criterion. However, as a best management practice, stacks are monitored continuously at some SNL/NM facilities. At other facilities, emission estimates are based on periodic confirmatory measurements or engineering calculations. In 2016, the highest emissions were from argon-41 and tritium. Historically, tritium and argon-41 have been the most significant contributors to the effective dose equivalent of the MEI at SNL/NM. Figure 5-5 shows the annual reported release of tritium and argon-41 for 2012 through 2016. The atmosphere contains 78.09 percent nitrogen, 20.95 percent oxygen, 0.93 percent argon, 0.03 percent carbon dioxide, and minor concentrations of neon, methane, hydrogen, helium, and krypton. Some of these constituents are susceptible to isotope transformations during high-energy processes, which result in air activation products such as argon-41. Emissions vary from year to year based on the operations conducted at the various facilities.

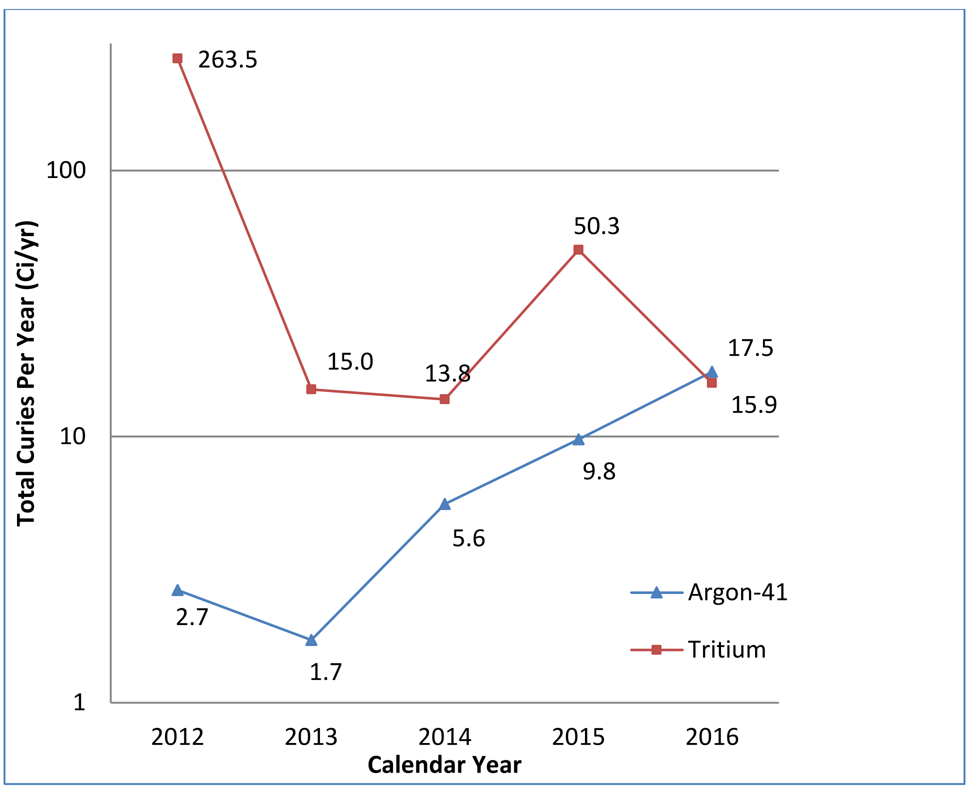


Figure 5-5. Atmospheric releases of argon-41 and tritium from SNL/NM facilities, 2012–2016

Demographic data include the resident population, the number of beef and dairy cattle, and the utilized food crop area fraction for a 50-mile radius study area. The densities for resident population, cattle, and food crops are calculated as the quotient of the most recent county data and the county land area (e.g., cows per acre). The NESHAP calculation for resident population was based on estimated urban and county population data and U.S. Census Bureau data (Census 2014). The beef and dairy cattle numbers and the food crop area fraction were calculated using 2007 agricultural statistics. The statistics were supplied by the New Mexico Department of Agriculture (NMDOA 2013).

Off-Site and On-Site Public Receptors

Receptor locations in the vicinity of SNL/NM, listed in Table 5-10 and Table 5-11, have been identified as potential locations of maximum exposure to a member of the public. Off-site receptor locations extend to the Isleta Resort Casino, the Four Hills subdivision north of KAFB, and areas near the Albuquerque International Sunport west of KAFB. On-site receptors include U.S. Air Force facilities, offices, and housing areas as well as other non-DOE and non-DOD facilities on KAFB.

Meteorology

Data from three meteorological towers (A21, A36, and CW1) in the proximity of emission sources were used in 2016. Data from each tower consisted of approximately 35,000 hourly observations of wind direction, wind speed, and stability class (inferred from wind and solar insulation data). The data were compiled into a normalized distribution from which all wind and stability frequency-of-occurrence data were derived.

5.4.4 Dose Assessment Results

CAA Assessment Package-1988 uses a Gaussian plume equation that estimates air dispersion in both horizontal and vertical directions (EPA 2013). Individual effective dose equivalents to off-site and on-site receptors are presented in Table 5-10 and Table 5-11, respectively. Dose assessment results are summarized in Table 5-12.

Table 5-10. Annual source-specific EDE for off-site receptors, 2016

Facility	ACRR Emission (mrem/yr)	NGF Emission (mrem/yr)	RMWMU Emission (mrem/yr)	Z Accelerator Emission (mrem/yr)	TOTAL (mrem/yr)
COA EHD Bio-Disease	4.00E-04	6.10E-04	7.40E-06	8.80E-08	1.02E-03
Eubank Gate area (Building 8895)	2.60E-04	8.40E-04	3.80E-06	9.90E-08	1.10E-03
Four Hills resident	2.90E-04	6.00E-04	4.70E-06	9.00E-08	8.95E-04
Isleta Casino	6.40E-05	5.80E-04	5.30E-06	8.20E-08	6.49E-04
La Luz Childcare	2.20E-04	5.80E-04	3.60E-06	9.30E-08	8.04E-04
Mesa del Sol Housing Development	2.50E-04	5.90E-04	9.60E-06	8.36E+03	8.50E-04
NM School for the Blind and Visually Impaired	1.90E-04	6.40E-04	4.50E-06	9.10E-08	8.35E-04
USGS	9.10E-05	5.80E-04	3.70E-06	8.20E-08	6.75E-04
VA hospital	2.30E-04	6.20E-04	4.50E-06	9.20E-08	8.55E-04
Willow Wood	2.10E-04	6.40E-04	3.50E-06	9.10E-08	8.54E-04
TOTAL	2.21E-03	6.28E-03	5.06E-05	8.36E+03	8.54E-03

NOTES: ACRR = Annular Core Research Reactor
COA = City of Albuquerque
EDE = effective dose equivalent
EHD = Environmental Health Department
NGF = Neutron Generator Facility
NM = New Mexico
RMWMU = Radioactive and Mixed Waste Management Unit
USGS = U.S. Geological Survey
VA = Veterans Administration

Table 5-11. Annual source-specific EDE for on-site receptors, 2016

Facility	ACRR Emission (mrem/yr)	NGF Emission (mrem/yr)	RMWMU Emission (mrem/yr)	Z Accelerator Emission (mrem/yr)	TOTAL (mrem/yr)
AFRL Cryocooler Characterization Laboratory (Building 30136)	6.20E-04	1.10E-05	3.60E-06	4.30E-09	6.35E-04
Armed Forces Reserve Center	5.80E-04	5.80E-05	3.00E-06	1.00E-07	6.41E-04
Chestnut Site	6.30E-04	7.10E-06	4.40E-05	2.80E-09	6.81E-04
Child Development Center at Maxwell Housing Center	2.50E-04	2.50E-05	2.30E-06	5.40E-09	2.77E-04
Golf Course Club House	1.50E-03	2.50E-05	6.20E-06	1.10E-08	1.53E-03
Homeland Security Building (1008)	3.40E-04	2.20E-04	2.50E-06	3.40E-08	5.63E-04
Honeywell Systems\Support Site	3.80E-04	2.80E-04	2.40E-06	2.80E-08	6.62E-04
Lovelace Respiratory Research Institute	1.70E-04	5.90E-06	3.90E-06	1.30E-09	1.80E-04
KAFB Fire Station	3.00E-04	1.30E-04	2.10E-06	1.50E-08	4.32E-04
KAFB Landfill	4.90E-04	7.10E-05	3.10E-06	3.00E-08	5.64E-04
Kirtland Elementary	1.40E-04	2.60E-05	2.30E-06	5.00E-09	1.68E-04
Kirtland Family Housing	1.90E-04	1.00E-04	1.90E-06	9.10E-09	2.92E-04
Kirtland Storage Facility	2.50E-03	2.00E-05	6.20E-06	1.30E-08	2.53E-03
Manzano Offices (fire station)	7.10E-04	1.40E-05	4.80E-06	3.90E-09	7.29E-04
Maxwell Housing (southeast corner)	2.70E-04	2.60E-05	2.40E-06	5.90E-09	2.98E-04
Richard W. Davis Advanced Laser Facility (formally Airport Building)	5.60E-04	7.00E-05	3.70E-06	1.60E-08	6.34E-04
Sandia Elementary School	1.80E-04	8.60E-05	1.80E-06	1.00E-08	2.68E-04
TA-IV Cafeteria	4.80E-04	6.30E-05	3.10E-06	1.50E-07	5.46E-04
Wherry Elementary	2.50E-04	6.80E-05	2.80E-06	1.40E-08	3.21E-04
TOTAL	1.05E-02	1.31E-03	1.02E-04	4.59E-07	1.19E-02

NOTES: ACRR = Annular Core Research Reactor
AFRL = Air Force Research Laboratory
EDE = effective dose equivalent
KAFB = Kirtland Air Force Base
NGF = Neutron Generator Facility
RMWMU = Radioactive and Mixed Waste Management Unit
TA = technical area

Table 5-12. Calculated dose assessment results for on-site and off-site receptors and for collective populations, 2016

Dose to Receptor	Location	2016 Calculated Dose	NESHAP Standard
Individual Dose			
On-site receptor EDE to the MEI	Kirtland storage facility	2.53E-03 mrem/yr	10 mrem/yr
Off-site receptor EDE to the MEI	Eubank Gate area	1.10E-03 mrem/yr	10 mrem/yr
Collective Dose			
Collective regional population	Residents within a 50-mile radius	9.66E-02 person-rem/yr	No standard available
Collective KAFB population	KAFB housing	1.45E-03 person-rem/yr	No standard available

NOTES: EDE = effective dose equivalent
KAFB = Kirtland Air Force Base
MEI = maximally exposed individual
NESHAP = National Emissions Standards for Hazardous Air Pollutants

The total dose at each receptor location is determined by summing the individual doses resulting from each source. The dose to the MEI member of the public is then compared to the EPA limit of 10 mrem/yr.

NESHAP compliance (40 CFR 61, Subpart H) regulates radionuclide air emissions from DOE/NNSA facilities, with the exception of naturally occurring radon. In 2016, the primary radionuclides released from SNL/NM facilities were tritium and argon-41. In 2016, the on-site MEI was located on KAFB at the Kirtland Storage Facility. The on-site MEI dose of 2.53E-03 mrem/yr resulted primarily from tritium releases at the NGF and argon-41 releases from the ACRR. The off-site MEI dose of 1.10E-03 mrem/yr was located at the KAFB Eubank Gate area and primarily resulted from tritium releases at the NGF. Both doses are well below the 10 mrem/yr EPA standard. By comparison, the average person in the U.S. receives 311 mrem/yr from natural background radiation (NCRP 2009).

Collective Dose

The collective population dose resulting from all SNL/NM radiological emissions was calculated for both KAFB and the regional area (Table 5-12). Collective dose calculations are not required by NESHAP regulations; however, a collective calculation provides a useful numerical comparison of the public dose from year to year. Collective dose is calculated by multiplying a representative individual dose within a population by the total population. The collective population dose was calculated for both the KAFB housing areas and the general Albuquerque area population within a 50-mile radius.

Regional

The Albuquerque regional collective population dose in 2016 was 9.66E-02 person-rem/yr. This is comparable with the average over the past five years for regional collective population dose data. For the purpose of calculating the collective dose, all releases are assumed to occur from a location centered in TA-V.

Kirtland Air Force Base

A collective population dose for KAFB residents was calculated based on three main housing areas (Maxwell, Pershing Park, and Kirtland Family). The total population dose for KAFB housing was calculated by summing the total residential population. The 2016 calculation resulted in an estimated population dose of 1.45E-03 person-rem/yr.

Chapter 6. Water Quality Programs

"Dragon's teeth," stormwater energy dissipator

OVERVIEW ■ Water Quality Programs—which include the Oil Storage Program, Safe Drinking Water Protection Program, Spill Response and Reporting Program, Stormwater Program, Surface Discharge Program, and Wastewater Discharge Program—combine to ensure compliance with requirements established by local, state, and federal agencies.

Sandia National Laboratories (SNL) personnel ensure water quality through numerous programs. SNL operations comply with water quality requirements established by local, state, and federal agencies. Groundwater programs have been summarized in Chapter 3. Additional water quality programs discussed in this chapter include the following:

- Oil Storage Program
- Safe Drinking Water Protection Program
- Spill Response and Reporting Program
- Stormwater Program
- Surface Discharge Program
- Wastewater Discharge Program

The New Mexico Environment Department (NMED) and the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) implement U.S. Environmental Protection Agency (EPA) standards at the state and local level. Currently, EPA Region 6 implements stormwater regulations under the National Pollutant Discharge Elimination System (NPDES). SNL personnel also adhere to the water quality guidelines in U.S. Department of Energy (DOE) DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment.*

6.1 Oil Storage Program

The oil storage capacity at SNL, New Mexico (SNL/NM) is approximately 2.2 million gal in 49 stationary aboveground storage tanks (ASTs) and three underground storage tanks (USTs). Additional oil storage capacity in 55 gal drums, mobile and portable containers, mobile refuelers, and oil-filled operational equipment (transformers, hydraulic elevators, etc.) occurs throughout the site on an as-needed basis. All oil storage sites with regulated containers must be equipped with secondary containment. Secondary containment structures include concrete-lined basins, retaining walls, containment reservoirs, double-wall tanks, sloped pads, trenches, and containment pallets. Two 20,000 gal USTs and one 10,000 gal UST are currently in operation and registered with NMED. Forty-nine stationary ASTs are currently in operation, seven of which are registered with NMED. Registration numbers for those tanks registered with NMED are provided in Table 9-1. The SNL State of New Mexico owner identification number is 14109.

A Spill Prevention, Control, and Countermeasure (SPCC) Plan is required under the Clean Water Act (CWA). The SPCC Plan was revised in 2016 to update general information, the oil storage container inventory, and other aspects of oil storage management. The SPCC Plan must be updated at least every five years, per 40 CFR 112, *Oil Pollution Prevention*. The 2016 revision of the SPCC Plan complies with that requirement.

The SPCC Plan describes oil storage facilities and the mitigation controls in place to prevent inadvertent discharges of oil. Facilities at SNL/NM subject to the requirements include those having the following types of oil storage containers: ASTs, USTs, generator base tanks, drum storage areas, mobile or portable containers, mobile refuelers, and oil-filled operational equipment (transformers, hydraulic elevators, etc.).

6.2 Safe Drinking Water Protection Program

The Safe Drinking Water Protection (SDWP) Program ensures the availability of safe drinking water to personnel at SNL-operated facilities. The SDWP works in conjunction with the Facilities Management and Operations Center (FMOC) to maintain compliance with applicable federal, state, local, and DOE requirements. SDWP personnel coordinate with FMOC regarding operations that maintain, test, and inspect appropriate backflow-prevention activities.

Kirtland Air Force Base (KAFB) supplies water to the DOE-owned SNL/NM drinking water distribution system. The KAFB water system is registered with NMED's Drinking Water Bureau as a nontransient Community Public Water System. Because KAFB is identified as the sole registered party, the DOE-owned and SNL/NM-operated and maintained distribution system on KAFB is regulated by the NMED Drinking Water Bureau as a component of the KAFB Public Water System. SDWP personnel coordinate with KAFB to support compliance activities.

KAFB publishes an annual summary of drinking water quality, and it can be found at the following website:

http://www.kirtland.af.mil/Home/Environment

6.3 Spill Response and Reporting Program

The Spill Response and Reporting Program must be contacted in the event of an accidental release or spill to the ground surface. In 2016, eight releases met the reporting requirements established by NMED. These releases are summarized as follows:

1. On Saturday January 2, 2016, Emergency Operations Center personnel responded to a call of water flowing from the Building 810 East Cooling Tower, which is located in Technical

Area (TA) I. The source of the discharge was the cooling tower, and the cooling tower water overflow was caused by an extra chiller pump that had been activated to compensate for a frozen valve in the system line. An estimated 1,000 gal of water overflowed from the cooling tower and discharged to the ground surface, and approximately 100 gal of water entered the storm drain. However, due to freezing temperatures, most of the water had frozen before entering the storm drain, and only a trickle of water was observed entering the drain. The cooling water contained a scale inhibitor at a concentration of approximately 0.13 ppm and bromine (used to control algae growth) at a concentration of 5.0–10.0 ppm. Additionally, sodium hypochlorite was present at a concentration of 0.1–0.3 ppm. Facilities personnel were able to identify the frozen valve and return the system back to normal operations.

2. On Friday, February 26, 2016, maintenance personnel and the Incident Commander responded to a report of water flowing to the surface east of MO 317, which is outside of TA-I. Facilities personnel identified the water leak as being caused by a sewage overflow from a cleanout pipe connected to an underground septic tank. Water flow to the septic tank from MO 317 was shut off immediately. The overflow ran for approximately 30 minutes. It is estimated that up to 10 gal of sewage overflowed from the cleanout and was discharged to the surface area immediately surrounding the septic tank. Localized ponding and minimal runoff was observed. Additionally, no storm drains were encountered and no visible signs of erosion were observed. Facilities personnel snaked the cleanout pipe, cleared the line, and determined that the pipe was broken. The pipe was repaired and the septic tank was brought back online. Additionally, a solution of household bleach was applied to disinfect the overflow area.
3. On Thursday, May 5, 2016, a Facilities contract worker was cutting a cast iron pipe to remove the boiler condensate drain P-trap line located in the basement of Building 802, which is located in TA-I. While performing this activity, relatively small light-colored silvery bubbles were visually noticeable in the material pulled from the clogged line. The worker suspected that the small quantities of light-colored silvery bubbles were mercury and, therefore, placed the clogged material in a bag for further analysis. Sampling and analysis of the surrounding soils confirmed the presence of mercury. During the removal of the condensate drain P-trap, a hole in the bottom of the P-trap measuring approximately one inch in diameter was identified visually; the surrounding soils may have been exposed to mercury via leakage from this hole. SNL personnel began a corrective action plan to sample and test the surrounding area for contamination. Soil sample results indicated a small area of low-level mercury contamination. Remediation efforts included the removal of contaminated soils and remaining cast iron pipe as well as the backfill of clean soils and repair of the broken P-trap.
4. On July 13, 2016, the FMOC Facilities Control System detected a "low-level lock out" alarm, a response to an overflow of cooling tower water at Building 858J, which is located in TA-I. The Facilities Control System is an engineering control that, when activated, automatically shuts down towers, chillers, and all pumps to prevent water discharge. An FMOC representative determined that the leak ran for approximately 8 to 15 minutes. The source of the discharge was the cooling tower, and the cooling tower water overflow was caused by a broken valve actuator. It is estimated that 2,020 gal of water overflowed from the cooling tower and was discharged to the storm sewer system. The cooling water contained a scale inhibitor at a concentration of approximately 127 ppb and bromine (used to control algae growth) at a concentration of 2.43 ppm. Maintenance personnel repaired the valve and brought the system back online. This release was categorized as a DOE O 232.2 occurrence with additional reporting to EPA.
5. On August 2, 2016, the FMOC Facilities Control System detected a "water on floor" alarm at Building 827, which is located in TA-I. Facilities mechanical maintenance personnel responded to the alarm and shut down the system at 10:20 a.m. The water on the floor was

caused by water being added to a cooling tower at Building 827. The duration of the discharge from the building is estimated to have been approximately 8 to 12 minutes. A second and subsequent incident that caused the release of cooling tower water occurred around 12:29 p.m. and lasted for approximately 5 minutes. The source of the discharge was the cooling tower, and the cooling tower water overflow was caused by an electropneumatic relay failure that occurred during the exchange of water between two cooling towers located on the mezzanine within Building 827. The second release of cooling tower water was due to a miscommunication during cleanup efforts that resulted in residual water being pumped from within the building into the storm drain system. It is estimated that approximately 300 gal of cooling tower water overflowed into Building 827. Of that cooling water, it was estimated that less than 10 gal flowed out of the bay doors and into the storm drain system. The second and subsequent discharge of cooling tower water to the storm drain was due to a miscommunication by the Emergency Operations Center directing Custodial Services to pump water to the storm drain. Custodial Services personnel collected, logged, and pumped approximately 60 gal of cooling tower water to the storm drain before stopping the pumping and cleanup operations. The cooling tower water contained a scale inhibitor and bromine (used to control algae growth) with concentrations unknown at this time. Maintenance personnel were able to shut down the system and stop the overflow after the alarm notification, with the chiller water system being restored at approximately 12:41 p.m. FMOC requested an engineered evaluation of the electropneumatic relay and possible improvements. This release was categorized as a DOE O 232.2 occurrence with additional reporting to EPA.

6. On Sunday, August 28, 2016, a major leak from a potable water line occurred in TA-III. The release lasted for approximately two hours. Facilities personnel shut down the system's water supply, preventing additional discharge. The release occurred along the east perimeter road of TA-III. The volume of water was estimated to be between 504,000 and 553,350 gal of water. The release of water was from a broken 14-inch polyvinyl chloride potable water pipeline. The water line break was caused by poor bedding medium underneath the area of the broken pipe. Facilities personnel repaired the broken line. This release was categorized as a DOE O 232.2 occurrence with additional reporting to EPA.
7. On Saturday, September 3, 2016, a leak from a potable water line occurred in TA-I. The release began at approximately 2:30 p.m. and ran for approximately two hours. Facilities personnel located the water valves and isolated the leak from the system. The release was from a 10-inch potable water line break. The volume of water was estimated to be between 10,000 and 12,000 gal of water. The flow from the water line break was stopped using valves to isolate the leak. Facilities personnel repaired the pipe and brought the water line back into service.
8. On Sunday, December 4, 2016, the Emergency Operations Center received an alarm that indicated an abnormally high sump water level at the cooling tower sump at Building 864, which is in TA-1. An FMOC building mechanic was called on-site to respond to determine what caused the alarm. Upon arrival at the Building 864 cooling tower sump, the mechanic found water overflowing from the sump and was able to shut down the system at 5:15 a.m. to prevent further overflow. The source of the discharge was the cooling tower, and the cooling tower water overflow was caused by a failed solenoid valve. It is estimated that 600 gal of water overflowed from the cooling tower and discharged to the ground surface, with some of the water entering the storm drain system. The cooling water is treated with a mild biocide, Safetybrom 6300, at a concentration of 4.03 ppm and a scale inhibitor, CW-8800-RTC, at a concentration of 0.120 ppm. The sump operates at a potential of hydrogen (pH) between 6.5 and 8.0. Facilities personnel were able to identify the failed solenoid valve. The valve was then disassembled, cleaned, and tested before placing the system back into operation. This release was categorized as a DOE O 232.2 occurrence with additional reporting to EPA.

6.4 Stormwater Program

The Stormwater Program is responsible for protecting surface water quality by minimizing the discharge of stormwater pollutants. Stormwater Program personnel maintain regulatory compliance with federal, state, and local stormwater requirements by: (1) helping line and support organizations obtain NPDES permit coverage, (2) conducting routine assessments and stormwater monitoring, and (3) training personnel on stormwater pollution prevention practices. SNL compliance with NPDES permits reduces the impact of construction, industrial, and municipal activities on the environment.

SNL stormwater drainage channel to Tijeras Arroyo

Stormwater flowing over the ground's surface has the potential to pick up and transport contaminants, including sediment. Stormwater contaminants—such as oil, solvents, vehicle residues, chemicals, metals, sediments, building materials, hazardous materials, fertilizers, pesticides, herbicides, and sanitary waste—may derive from construction, industrial, and municipal activities. Stormwater Program personnel collaborate with other SNL programs and organizations to implement stormwater control measures and install best management practices to prevent or reduce contaminants from being discharged from permitted sites or activities. Potential stormwater contaminants are controlled by minimizing stormwater exposure to chemicals and materials, performing good housekeeping practices, installing and maintaining erosion and sediment controls, implementing long-term stabilization practices following construction, maintaining post-construction stormwater runoff management controls, training personnel on how their jobs may impact stormwater quality, controlling non-stormwater discharges, implementing solid waste management and recycling programs, and stabilizing construction sites. In addition, some facilities, such as the Hazardous Waste Handling Unit and the Radioactive and Mixed Waste Management Unit, have lined catchment basins that collect stormwater for evaluation of contaminants prior to release.

6.4.1 Surface Waters and Stormwater Drainage

Stormwater is regulated because of its ability to discharge to "waters of the United States" as defined under the Clean Water Act. Furthermore, the State of New Mexico has defined "surface water(s) of the state" to mean: "all surface waters situated wholly or partly within or bordering upon the state, including lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, reservoirs, or natural ponds. Surface waters of the state also means all tributaries of such waters, including adjacent wetlands, any man-made bodies of water that were originally created in surface waters of the state or resulted in the impoundment of surface waters of the state, and any "waters of the United States" that are not included in the preceding description."

The Rio Grande provides critical habitat for threatened and endangered species of birds and fish, and serves as a municipal, agricultural, and recreational water resource to Albuquerque and surrounding communities.

The major drainage features within KAFB are Tijeras Arroyo and its named tributary, Arroyo de Coyote. Both are designated as "waters of the United States," are ephemeral, and flow for short durations in response to precipitation. As shown in Figure 6-1, Tijeras Arroyo enters KAFB from the northeast, flows just south of TA-I, TA-II, and TA-IV, exits at KAFB's west boundary, and continues approximately 8 miles to its outfall at the Rio Grande. Tijeras Arroyo is a significant topographic feature across KAFB, where erosion of unconsolidated basin sediments has resulted in a channel width of over one-half mile in some areas.

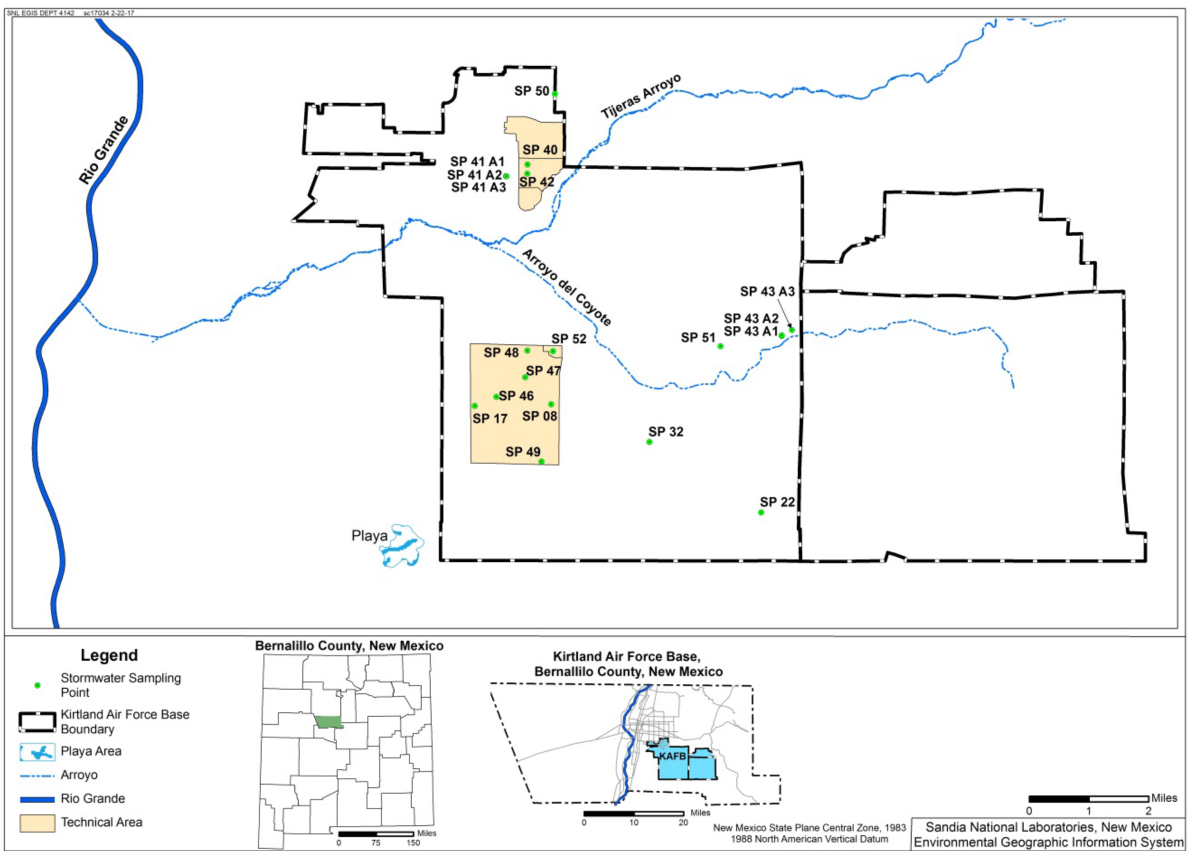


Figure 6-1. Multi-Sector General Permit stormwater sampling point locations

Stormwater from facilities in TA-I, TA-II, and TA-IV flows to a centralized stormwater drainage system (the Middle Rio Grande Watershed-Based Municipal Separate Storm Sewer System [MS4]), which is comprised of numerous gutters, ditches, inlets, and storm drains. Approximately 90 percent of this area drains to a concrete-lined channel that discharges stormwater directly to the Tijeras Arroyo (the main outfall of the MS4) south of TA-I. Stormwater from the remaining area (in the northwest quadrant of TA-I) flows to the KAFB MS4 through three separate discharge points. Stormwater entering the KAFB MS4 at these points is ultimately conveyed to the Rio Grande via the Albuquerque Metro Area Flood Control Authority North Diversion Channel.

The Arroyo del Coyote drains much of the eastern mountainous portion of KAFB, including the drainages of Madera Canyon, Lurance Canyon, and Sol se Mete Canyon. The channel flows from east to west and joins the Tijeras Arroyo northwest of the Tijeras Arroyo Golf Course. TA-V and the immediate surrounding area— which includes impervious buildings, roads, and parking lots—is comprised of highly permeable soils, and stormwater is diverted by curbs and small ditches away from facilities; however, there is no centralized stormwater drainage system for this area and no discernible discharge directly to a water of the U.S.

The majority of TA-III, TA-V, and Coyote Test Field discharge stormwater within a USGS 12-digit closed basin; surface flow is internal and noncontributing to a stream or river. Activity areas located in the southern portion of TA-III and KAFB discharge stormwater via overland flow to unnamed playa lakes located southwest of the KAFB boundary (Figure 6-1). Playa lakes are not designated "waters of the United States," but they are considered "surface waters of the state."

6.4.2 National Pollutant Discharge Elimination System Permitting

EPA retains authority for NPDES permits in New Mexico. SNL/NM operations are covered under three NPDES permits, as listed here.

Multi-Sector General Permit (MSGP). The MSGP is intended to regulate stormwater quality associated with industrial operations or activities. EPA renewed the permit on June 4, 2015; SNL personnel and DOE subsequently jointly filed Notices of Intent (NOIs), which EPA approved on September 30, 2015. Sites and activities covered under the MSGP are listed in Table 6-1. Compliance with the MSGP is maintained by developing and updating a site-specific Stormwater Pollution Prevention Plan (SWPPP), implementing control measures, conducting site inspections, submitting annual reports, sampling stormwater runoff for comparison to benchmark values, and submitting discharge monitoring reports. The SNL/NM SWPPP, NOIs, and other associated documents are available to the public in the local repository at the University of New Mexico (UNM) Zimmerman Library online database at:

http://digitalrepository.unm.edu/snl_msgp/

Construction General Permit (CGP). The CGP is intended to regulate stormwater quality during construction activities. NOIs are submitted to the EPA for coverage under the 2012 CGP for every construction project anticipated to disturb one or more acres of land, following development of a site-specific SWPPP. During 2016, SNL/NM consisted of 11 actively permitted sites (listed in Table 9-1); DOE and its management and operating contractor for SNL held joint CGP coverage for two of these sites. The management and operating contractor and other permittees maintain compliance with the CGP by developing and updating a site-specific SWPPP, installing best management practices, implementing pollution prevention measures, conducting site inspections on a routine basis and after storm events, and stabilizing all disturbed areas of a site upon completion of a project.

Middle Rio Grande Watershed-Based Municipal Separate Storm Sewer System. The MS4 permit establishes requirements to reduce pollution carried by stormwater runoff for the purpose of restoring the Middle Rio Grande. The MS4 permit was effective upon publication in the Federal Register on December 22, 2014, and DOE and its management and operating contractor for SNL submitted NOIs and a Stormwater Management Program Plan in June 2015. The EPA approved the NOIs for DOE and its management and operating contractor in November and December 2015, respectively. SNL personnel maintain compliance with the MS4 permit by developing and updating the SNL/NM Stormwater Management Program Plan, implementing control measures, conducting inspections, submitting annual reports, sampling stormwater from the MS4, and submitting discharge monitoring reports. The Stormwater Management Program Plan, NOIs, and other associated documents are maintained on the UNM Zimmerman Library online database at:

http://digitalrepository.unm.edu/snl_ms4/

Table 6-1. SNL/NM sites with coverage under the Multi-Sector General Permit and associated stormwater sampling points

<table>
<tr><th>Sector Title</th><th>Sector</th><th>Permitted SNL/NM Sites</th><th>SWSP</th></tr>
<tr><td>Scrap and Waste Recycling, except Source-separated Recycling</td><td>N1</td><td>TA-III Borrow Pit</td><td>No outfall</td></tr>
<tr><td rowspan="2">Source-separated Recycling</td><td rowspan="2">N2</td><td>Reapplication Yard</td><td>41
(no analytical requirement)</td></tr>
<tr><td>SWCRC</td><td>42
(no analytical requirement)</td></tr>
<tr><td rowspan="12">Hazardous Waste Treatment, Storage, or Disposal Facilities</td><td rowspan="12">K1</td><td>AHCU</td><td>52</td></tr>
<tr><td>Coyote Canyon Blast Area (SWMUs 8/58)</td><td>43</td></tr>
<tr><td>Gun Facility (SWMU 84)</td><td>46</td></tr>
<tr><td>HWHU</td><td>40</td></tr>
<tr><td>Long Sled Track (SWMU 83)</td><td>17</td></tr>
<tr><td>Manzano Storage Bunkers</td><td>51</td></tr>
<tr><td>Old Burn Site (SWMU 68)</td><td>22</td></tr>
<tr><td>RMWMU</td><td>49</td></tr>
<tr><td>Short Sled Track (SWMU 240)</td><td>47</td></tr>
<tr><td>Surface Discharge Site (SWMU 502)</td><td>32</td></tr>
<tr><td>TA-V Sandlot</td><td>52</td></tr>
<tr><td>TTU</td><td>48</td></tr>
<tr><td rowspan="4">Electronic and Electrical Equipment and Components, Photographic and Optical Goods</td><td rowspan="4">AC1</td><td>AMPL</td><td rowspan="3">05
(no analytical requirement)</td></tr>
<tr><td>Building 858 Complex</td></tr>
<tr><td>NGF</td></tr>
<tr><td>CINT</td><td>50
(no analytical requirement)</td></tr>
<tr><td>Non-metallic Mineral and Mining Dressing; Construction Sand and Gravel</td><td>J1</td><td>TA-III Borrow Pit</td><td>No outfall</td></tr>
<tr><td>Landfills</td><td>L1 & L2</td><td>CWL</td><td>08</td></tr>
<tr><td>Local and Highway Passenger Transportation</td><td>P1</td><td>Fleet Services</td><td>05
(no analytical requirement)</td></tr>
</table>

NOTES: AHCU = Auxiliary Hot Cell Unit
AMPL = Advanced Manufacturing Process Laboratory
CINT = Center for Integrated Nanotechnologies
CWL = Chemical Waste Landfill
HWHU = Hazardous Waste Handling Unit
NGF = Neutron Generation Facility
RMWMU = Radioactive and Mixed Waste Management Unit
SNL/NM = Sandia National Laboratories, New Mexico
SWCRC = Solid Waste Collection and Recycling Center
SWMU = Solid Waste Management Unit
SWSP = stormwater sampling point
TA = technical area
TTU = Thermal Treatment Unit

6.4.3 Stormwater Sampling and Parameters

Stormwater sampling is required for compliance with the MSGP and the MS4 Permit. Given that SNL/NM is located in an arid/semiarid region of the Southwest and historical meteorological data shows that approximately 60 percent of the annual rainfall occurs in four months of the year (July, August, September, and October), there is a defined wet season for stormwater sampling of July 1 through October 31. MSGP sampling has been conducted exclusively during the wet season, as authorized by the MSGP; however, the MS4 Permit requires sampling to be conducted year-round starting in 2016 for reporting in 2017. In addition to collecting stormwater samples for laboratory analysis, visual assessments are performed to observe color, odor, clarity, solids, oils, and foam that may indicate the presence of a pollutant.

Figure 6-1 illustrates the stormwater sampling points (SWSPs) located at the outfalls of MSGP sites (listed in Table 6-1) used to collect stormwater runoff and any possible pollutants associated with permitted activities (05, 08, 17, 22, 32, 40, 41, 42, 43, 46, 47, 48, 49, 50, 51, and 52). Table 6-2 reflects the analytical parameters sampled for in each industry sector as required by the MSGP (with the exception of sectors N2, P, and AC, for which laboratory analysis is not required). Table 6-2 applies to MSGP samples collected for the remainder of the permit term (through 2020).

Figure 6-2 illustrates the SWSPs installed in 2015 for compliance with the MS4 Permit. They were located at the inflow (SWSP 2) and outflow (SWSPs 5, 24, 35, and 36) of the stormwater drainage system (MS4).

Table 6-2. Multi-Sector General Permit stormwater sampling requirements and benchmark values

Pollutant	MSGP Sector/ Subsector	EPA Benchmark (total; mg/L)	New Mexico Benchmark (total; mg/L)	New Mexico Benchmark (dissolved; mg/L)
Arsenic	K1	N/A	0.01	N/A
Cadmium[a]	K1	N/A	N/A	0.00298[a]
Cyanide	K1	N/A	0.0052	N/A
Lead[a]	K1, N1	N/A	N/A	0.14[a]
Mercury	K1	N/A	0.00077	N/A
Magnesium	K1	0.064	N/A	N/A
Selenium	K1	0.005	N/A	N/A
Silver[a]	K1	N/A	N/A	0.011[a]
Aluminum[a]	N1	N/A	N/A	8.838[a] (total recoverable[b])
Copper[a]	N1	N/A	N/A	0.026[a]
Iron	N1, L2	1.0	N/A	N/A
Zinc[a]	N1	N/A	N/A	0.301[a]
Ammonia	K1	2.14	N/A	N/A
Chemical oxygen demand	K1, N1	120	N/A	N/A
Total nitrogen (nitrate + nitrite)	J1	N/A	132	N/A
Total suspended solids	J1, L1, N1	100	N/A	N/A

NOTES: [a] Hardness-dependent benchmark. Value determined using a hardness value of 136 mg/L, determined for the Middle Rio Grande from USGS Sampling Data.

[b] The modified benchmark concentration value for aluminum specified in the New Mexico water quality hardness-based values table in MSGP Part 9.6.2.1 is 8.838 mg/L as *total recoverable*.

N/A = not applicable to SNL/NM
EPA = U.S. Environmental Protection Agency
MSGP = Multi-Sector General Permit
SNL/NM = Sandia National Laboratories, New Mexico
USGS = U.S. Geological Survey

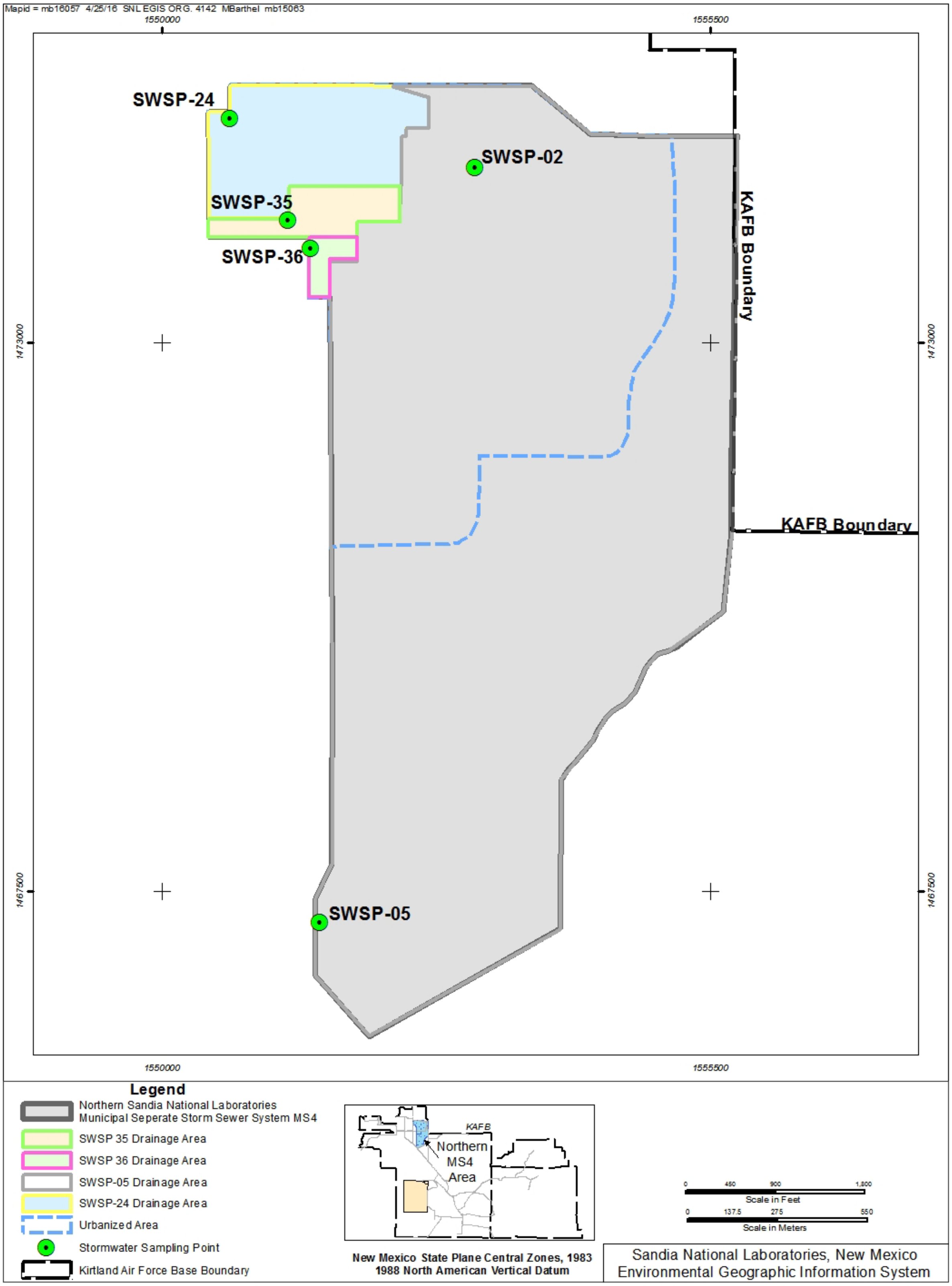


Figure 6-2. Northern MS4 drainage areas and monitoring locations

6.4.4 Summary of Stormwater Program Activities in 2016

Stormwater samples were collected in compliance with the MSGP from July 1 through October 31, 2016, when there was adequate runoff. Precipitation events from July 1 through October 31 of 2016 did not produce adequate runoff from permitted sites to collect stormwater samples at SWSP-22, SWSP-46, SWSP-44, SWSP-51, SWSP-53, and SWSP-54.

While there were individual analytical values that exceeded benchmark levels, in no instances did the average of four monitoring values exceed its MSGP benchmark (an MSGP threshold for corrective action), nor was an exceedance of the four-quarter average mathematically certain. Individual analytical values exceeded benchmark levels very slightly for chemical oxygen demand and arsenic at the Surface Discharge Site (SWMU 502) and for total suspended solids at the Classified Waste Landfill. Stormwater exceedances for magnesium and iron were not attributed to permitted activities because the values are consistent with background soil concentrations at SNL/NM. The analytical results, as submitted to EPA, are provided in Appendix D, "2016 Stormwater Sampling Results."

Stormwater was assessed visually when there was adequate runoff to collect a sample. Settled or suspended sediment is common in samples throughout SNL/NM and is likely a result of sediment displaced from heavy summer precipitation events. Observations from site inspections did not indicate that erosion is occurring as a result of permitted activities.

Stormwater samples were collected in compliance with the MS4 Permit during the reporting period starting July 1, 2016, and ending June 30, 2017. Data from these sampling events is not required to be reported to EPA until December 2017, and will be reported subsequently in the 2017 ASER.

6.5 Surface Discharge Program

All water and water-based compounds that discharge to the ground surface are evaluated for compliance with New Mexico Water Quality Control Commission (NMWQCC) regulations as implemented by the NMED Groundwater Bureau. These regulations are designed to protect the state's groundwater and surface water.

6.5.1 Surface Discharge Approvals

Surface discharges are releases of water and water-based compounds made to roads, open areas, or impoundments. Surface discharges are only made with the approval of the Surface Discharge Program. Proposed discharges are evaluated for potential contaminants to determine whether the discharge complies with applicable requirements for surface releases. If any discharges do not meet surface water quality standards, alternative methods of disposal are found.

Surface discharges are releases of water and water-based compounds to roads, open areas, or confined areas such as reservoirs.

Surface discharge requests are made when access to a sanitary sewer line is not available, such as in remote locations on KAFB where no sewer lines exist. Typical surface discharges are requested as a result of fire-training activities, dust control, and the cleaning of building exteriors. In 2016, 13 individual surface discharge requests were approved. Approved releases were in compliance with NMED applicable requirements.

6.5.2 Activities at Evaporation Lagoons

Surface Discharge Program personnel report on water quality results from routine sampling events at two surface discharge lagoons in TA-IV. Both lagoons are permitted through NMED in Discharge Permit (DP) 530. The two surface discharge lagoons (Lagoon 1 and Lagoon 2) are used to contain and evaporate water that collects in the secondary containments around seven outdoor oil storage tanks used to store dielectric oil. The secondary containments are designed to hold the entire content of the tanks in the event of an accidental release. Significant volumes of precipitation can collect in the containments during storm events. The water is visually inspected for oil contamination, and any oil present is removed prior to discharge to the TA-IV lagoons.

The original DP-530 was issued on March 8, 1988, for discharges from the pulsed power facilities located in TA-IV to lagoons 1 and 2. DP-530 was submitted pursuant to 20.6.2.3106 New Mexico Administrative Code (NMAC) of NMWQCC regulations, and was approved pursuant to 20.6.2.3109 NMAC. On September 5, 2014, a new DP-530 was issued, which expires on September 5, 2019. The monitoring and reporting requirements are listed in Table 6-3.

Samples were collected from Lagoon 1 and Lagoon 2 on September 13, 2016. Sample fractions were collected for the parameters specified in DP-530. All samples were transported with sample custody documentation to the analytical laboratory. Although there were no discharges to Lagoon 2 in 2016, it was sampled to ensure that no residual or outside contamination had occurred. Laboratory analysis results indicated that all detected constituents met the standards in 20.6.2 NMAC. Additionally, monthly inspections are performed on both lagoons to verify water levels and ensure that no damage to the lagoons exists.

Table 6-3. NMWQCC monitoring and reporting requirements

Action	Frequency	Reporting
Volume of wastewater discharged	Monthly	Annual
Inspection of lagoons	Monthly	Documented in checklists
Lagoon water samples	Annual	Annual
Inspection of sump pump stations	Quarterly	Annual

NOTE: NMWQCC = New Mexico Water Quality Control Commission

6.6 Wastewater Discharge Program

Wastewater that is discharged to the public sewer system from SNL/NM facilities is divided into two categories: sanitary discharges and industrial discharges. Sanitary discharges include wastewater from restrooms and showers, food service establishments, and other domestic-type activities. Industrial discharges are produced from general laboratory research operations, including electroplating, metal finishing, microelectronic development, and photographic processes.

City and federal regulations establish the standards for sanitary sewer releases. Discharged wastewater effluent must meet the ABCWUA Sewer Use and Wastewater Control Ordinance (SUWCO) requirements. Information on the ABCWUA SUWCO can be found at:

www.abcwua.org/Legislation___Ordinances.aspx

Sanitary sewer releases must also meet requirements in DOE O 435.1 Change 1, *Radioactive Waste Management*, and DOE O 458.1 Admin Change 3, *Radiation Protection of the Public and the Environment*.

Liquid effluent discharges are monitored to meet regulatory compliance. Toxic discharges are further reduced by implementing Toxic Organic Management Plans, general good housekeeping, and engineering practices.

Sanitary discharges include wastewater from restrooms and showers, food service establishments, and other domestic-type activities. *Industrial* discharges are produced from general laboratory research operations.

6.6.1 Albuquerque Bernalillo County Water Utility Water Authority Permitting and Reporting

The ABCWUA operates a Publicly Owned Treatment Works that discharges to the Rio Grande. The SNL/NM sewer system connects to the ABCWUA sanitary sewer system and eventually to the Publicly Owned Treatment Works through six permitted outfalls (Figure 6-3). Wastewater effluent discharged from any of the six outfalls must meet the ABCWUA SUWCO requirements. Wastewater permits are listed in Table 6-4. Information on the ABCWUA SUWCO can be found at:

www.abcwua.org/Legislation___Ordinances.aspx

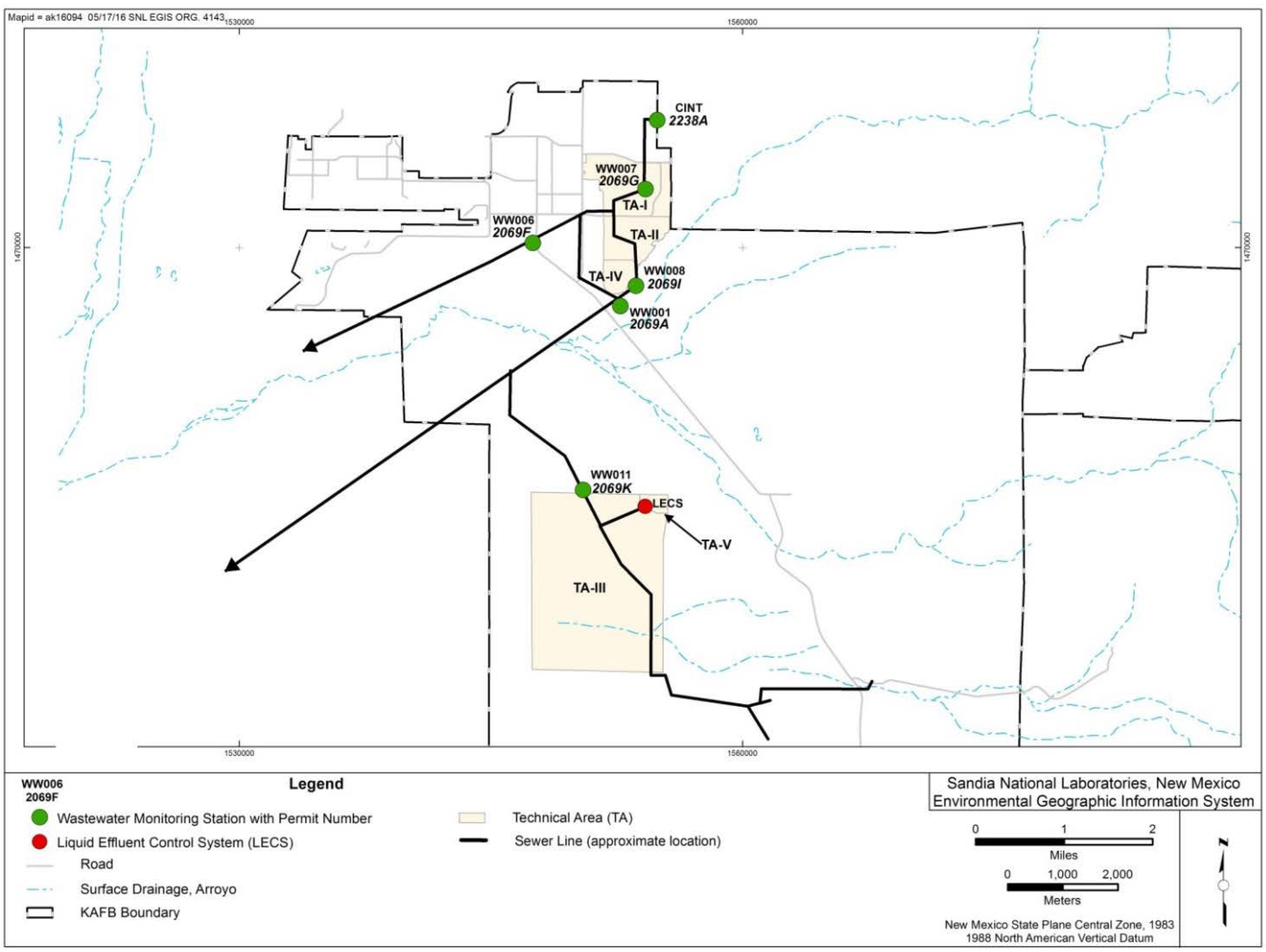


Figure 6-3. Wastewater monitoring station locations at SNL/NM

DOE/National Nuclear Security Administration (NNSA)/Sandia Field Office (SFO) and SNL personnel are required to report exceedances to the ABCWUA within 24 hours. In addition, SNL personnel submit semiannual wastewater reports to the ABCWUA.

Wastewater discharges resulting from ongoing chemical, manufacturing, and industrial processes conducted at SNL/NM facilities are tracked through the Wastewater Discharge Approval System. Facility processes are reviewed for contaminants, concentrations, and discharge frequencies to determine whether the effluent will meet regulatory criteria. Once approved, a facility is issued an internal permit, which is reviewed annually. Generally, processes are well characterized, and any constituents that are detected over the limits at a wastewater monitoring station usually can be tracked back to the source facility. Corrective actions to mitigate further releases are implemented as necessary. One-time releases are approved on a case-by-case basis. Wastewater discharge approvals are not required for buildings that only produce domestic sewage from lavatories, restrooms, showers, sinks, and fountains.

Table 6-4. Wastewater discharge permits and station characteristics

Permit	Station	Waste Stream Process
General Outfall		
2069A	WW001	All waste streams
2069F	WW006	All waste streams
2069I	WW008	All waste streams
2069K	WW011	All waste streams and radiological screening of TA-V process water at the LECS
Categorical		
2069G	WW007	Laboratory industrial process acid wastewater from MESA activities
2238A	CINT	Laboratory industrial process acid wastewater from CINT activities

NOTES: "All waste streams" include both domestic and industrial discharges.
CINT = Center for Integrated Nanotechnologies
LECS = Liquid Effluent Control System
MESA = Microsystems and Engineering Sciences Applications
SNL/NM = Sandia National Laboratories, New Mexico
TA-V = Technical Area V
WW = wastewater

6.6.2 Wastewater Monitoring Stations and Sampling Parameters

There are six on-site monitoring stations permitted by the ABCWUA (Figure 6-3) at SNL/NM. All of the wastewater from permitted monitoring stations—WW001, WW006, WW008, and WW011—contain a mixture of sanitary and industrial wastewater, which discharges into the ABCWUA sanitary sewer system through the Tijeras Arroyo Intercept. Station WW007 (Permit 2069G) at the Microsystems and Engineering Sciences Applications Complex is upstream of the final discharge location, Station WW001 (Permit 2069A). Wastewater monitoring station characteristics are listed in Table 6-4.

EPA has established categorical pretreatment standards for specified classes of industrial discharges. Station WW007 (Permit 2069G) monitors the wastewater discharged from the acid waste neutralization system within the Microelectronics Development Laboratory in TA-I. Laboratory discharges from the Microsystems and Engineering Sciences Applications Complex may also be configured to discharge to this acid waste neutralization system. In addition, the CINT facility utilizes an acid waste neutralization system for pretreating its process wastewater.

All outfall monitoring stations are equipped with flow meters and pH sensors that continuously monitor the wastewater. The flow meters and pH sensors are connected to a central computer system that has alarm processing, remote real-time display of data, and report-generating capabilities. If the pH of the wastewater approaches discharge limits, an auto dialer notifies

SNL personnel before a pH regulatory limit is reached. SNL personnel notify DOE/NNSA/SFO personnel when a pH limit is exceeded. DOE/NNSA/SFO personnel are required to report the exceedance limit to the ABCWUA within 24 hours.

Wastewater is the spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

ABCWUA personnel sample wastewater from SNL/NM permitted outfalls on a regular basis (usually twice a year) to determine compliance with permit requirements. The NMED DOE Oversight Bureau is notified when sampling is scheduled to occur and is offered the opportunity to obtain split samples for analysis. All samples are obtained as 24-hour flow proportional or time-weighted composites. In addition, SNL personnel collect samples (sample splits) during the ABCWUA sampling event and send these samples to an EPA-approved laboratory for analysis. The ABCWUA determines which parameters it plans to analyze. Wastewater monitoring parameters are as follows:

- Metals—aluminum, arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, silver, and zinc
- Radiological constituents—gamma spectroscopy, gross alpha, gross beta, and tritium
- General chemistry—fluoride ammonia, cyanide, semivolatile organic compounds, and volatile organic compounds

Discharge monitoring stations WW001 (Permit 2069A), WW006 (Permit 2069F), WW008 (Permit 2069I), and WW011 (Permit 2069K) are manhole-type installations with permanently installed continuous-flow measuring and pH-recording instrumentation. Wastewater monitoring station WW007 (Permit 2069G) and the CINT (Permit 2238A) are located within buildings, and are also equipped with installed continuous-flow measuring and pH-recording instrumentation.

Three active septic tank systems and one holding tank are maintained in remote areas on KAFB, which are used only for domestic sanitary sewage collection. Since these tanks receive only domestic sewage and no industrial discharges, they do not require sampling prior to pumping and discharge to the public sewer. Septic holding tank pumping records are sent to NMED every six months.

6.6.3 Technical Area V Wastewater Radiological Screening

Research and engineering reactors are maintined in TA-V. These reactors and support facilities have the potential to produce radioactive process wastewater that includes liquids from floor drains, laboratory sinks, and other drains located in buildings that use, process, or store radioactive materials. To ensure that all wastewater from these facilities meets regulatory standards, liquid effluent is separated into two process streams: reactor and nonreactor wastewater. Nonreactor wastewater is water from restrooms and nonradioactive laboratory activities. Reactor wastewater is water from areas that use, process, or store radioactive materials and is channeled to holding tanks where it can be screened for radiological constituents within the Liquid Effluent Control System (LECS) (Figure 6-3). LECS was developed as a control system to maintain the integrity of the ABCWUA sanitary sewer system by collecting, analyzing, and handling reactor process wastewater from TA-V reactor activities. LECS consists of three 5,000 gal holding tanks with liquid level and radioactive alarm systems, a control room, and an ion exchange/filtration unit (a treatment processor). LECS is an engineered facility operating within an established safety envelope.

Water samples are analyzed for tritium, gross alpha, gross beta, and gamma spectroscopy to ensure that radiological levels meet regulatory standards before the water is released to the public sewer system. If radioactivity levels are detected above regulatory limits and contamination is due to short-lived medical radioisotopes, the water will not be released to the sanitary sewer system; an alternative disposal path will be found or the radionuclides will be allowed to decay in place over a matter of days or weeks. Once the activity is at or below regulatory levels, the water can be discharged safely to the public sewer system. Discharges to the sanitary sewer from LECS and other SNL/NM activities did not exceed standards for radionuclides at any of the wastewater monitoring stations in 2016.

Standing water after a heavy rain

6.6.4 Summary of Wastewater Monitoring Results in 2016

During 2016, SNL personnel collected wastewater samples (sample splits) during the ABCWUA and NMED DOE Oversight Bureau sampling events. Laboratory analytical results for these split wastewater samples, based on the parameters shown in Section 6.6.2, confirmed that SNL was in compliance with ABCWUA requirements for permits 2069A, 2069F, 2069G, 2069I, 2069K, and 2238A. In addition, the ABCWUA industrial waste engineer conducted inspections of individual laboratory operations within the permitted flow basins during the months of February, June, August, October, and November of 2016 with no issues noted. All water discharged from LECS in 2016 met requirements for radiological levels in wastewater. All analytical results from sampling conducted in 2016 met ABCWUA discharge requirements. Analytical results are provided in Appendix E, "2016 Wastewater Monitoring Results."

6.6.5 Sanitary Sewer System Releases in 2016

During 2016, there were no reportable sanitary sewer system releases.

Chapter 7. Ecology Program

Flame Skimmer (*Libellula saturata*)

OVERVIEW ■ Ecology Program personnel monitor biota as an element of the overall environmental monitoring process. Ecological data is collected on plants and wildlife to support documentation, land use decisions, and ecological and wildlife awareness campaigns to ensure safe work environments and sustainable decision-making strategies. The Ecology Program helps operations comply with wildlife regulations and laws by providing biological evaluations and surveys in support of site activities.

Ecology Program personnel at Sandia National Laboratories, New Mexico (SNL/NM) monitor and surveil flora and fauna to support operations. Activities are conducted on U.S. Department of Energy (DOE) permitted or fee-owned land at SNL/NM as follows:

- Collect biological inventory data to support site activities and maintain regulatory compliance while preserving ecological resources. Data are collected on plant, mammal, reptile, amphibian, bird, and insect species that currently inhabit DOE-controlled land. Data collected include information on species diversity, abundance, and land-use patterns. These data are used to support National Environmental Policy Act documentation, land-use decisions, and ecological and wildlife awareness campaigns, and to ensure safe work environments and sustainable decision-making strategies. Table 1-1 lists some of the more common plant and animal species identified at SNL/NM and Kirtland Air Force Base (KAFB).
- Collect data on plant and animal species to advance the understanding of on-site ecological processes.
- Collect biota contaminant data on an as-needed basis in support of site projects and regulatory compliance. No data on wildlife has been collected with respect to contaminant radionuclides and metals since 2001, as no significantly elevated levels of radionuclides or metals have been observed in soil or vegetation samples collected by Terrestrial Surveillance Program personnel (see Chapter 4 for details).

- Educate the SNL/NM community regarding ecological conservation.
- Provide support when biological issues arise, i.e., injured wildlife, nesting birds, snake relocation, and/or other wildlife encounter concerns.

Biota monitoring was added to environmental monitoring in 1996, and includes annual monitoring and surveillance of vegetation, birds, insects, mammals, and herptofauna (reptiles and amphibians). Ecological monitoring and surveillance occurs throughout the year for routine and nonroutine activities. Surveys of flora and fauna are conducted in six primary habitat types. Sampling locations and vegetation habitats are described in Table 7-1.

Table 7-1. Sampling locations with vegetation habitat

Sampling Location Site Name	Vegetation Habitat
Madera Canyon[a]	Closed canopy woodland
Madera Canyon Guzzler	Shrub, open woodland, and grassland
Optics Range east of Starfire[a]	Shrub, open woodland, and grassland
Range Wildlife Guzzler[a]	Shrub, open woodland, and grassland
Robotics Vehicle Range[a]	Grassland with sparse dwarf shrub
SC Dome	Shrub, open woodland, and grassland
Solar Tower at the National Solar Tower Test Facility[a]	Dwarf shrub grassland
Technical Area III[a]	Large shrub grassland
Tijeras Arroyo[a]	Disturbed arroyo shrub-large shrub
West and southwest of Technical Area III[a]	Large shrub grassland
Winch Site[a]	Shrub, open woodland, and grassland

NOTE: [a]Denotes a bird survey location.

7.1 Vegetation Surveillance

Vegetation is a key ecosystem component. It is involved in essential processes, including: cycling and regulating water, carbon, and nitrogen; converting solar energy into biomass and forming the base of all food chains; and releasing oxygen while sequestering carbon. Vegetation also serves the critical roles of providing habitat and food for wildlife, and mitigating local climate extremes by influencing the earth's surface energy balance and the lower atmosphere. Humans derive indirect socioeconomic services, such as soil and watershed protection, and direct socioeconomic products, such as timber and food, from vegetation. Vegetation affects soil development over time, generally contributing to a more productive soil (CNVC 2013).

Vegetation monitoring enables better ecosystem understanding, and allows for correlations to be examined between transformations in the vegetation habitat and other ecosystem changes. Long-term vegetation monitoring can be used to observe changes in cover, composition, and structure due to natural or human-influenced events. Vegetation data collection across many years also enables improved planning and management of natural areas and facilitates goals for conservation, habitat management, and reclamation (Hockings 1998).

The vegetation monitoring protocol has yielded a 13-year dataset in six different habitats across the facility property. This data has been used to establish a quantified baseline for habitat coverage of plant species, rocks, soil, and litter across varied meteorological conditions, ranging from drought to nearly double the annual mean precipitation. The six primary undisturbed, natural vegetation types were identified and classified according to the National Vegetation Classification Standard in 2003 (FGDC 1998). Each of the six vegetation types had ongoing biannual monitoring at set sampling locations from 2003 to 2015.

This biannual monitoring has enabled a detailed record of the data collection areas, which aids in understanding localized response to external variability and allows for very good habitat comparison under future conditions.

In 2016, Ecology Program personnel evaluated resource gaps and identified that the vegetation monitoring method needed to be updated in order to provide a broader-scale, data-driven understanding of the landscape. As such, no vegetation monitoring was conducted in 2016. The goal of implementing a new monitoring strategy in the future is to better support management decisions, resources, and reporting.

7.2 Herpetofauna Surveillance

Snakes and lizards play principal roles in maintaining well-functioning natural ecosystems. Lizards, which are important prey species across all habitats at SNL/NM, are easily seen by predators due to diurnal activity patterns, are defenseless when captured, and are available in abundant numbers. Snakes are also important prey species, supporting medium- to larger-sized mammal and bird populations. Lizards prey on insects, thus moderating ant, grasshopper, termite, beetle, and spider populations. Snakes regulate small mammal populations, which help to control Hantavirus, a potentially lethal virus that is transmitted to humans through mouse excrement. Hantavirus control by snakes is a valuable ecosystem service for humans. *Ecosystem services* are the natural resources and processes that occur in a well-functioning environment that benefit humans at no cost.

Herpetology is the study of reptiles and amphibians.
Herpetofauna are the reptiles and amphibians of a particular region, habitat, or geological period.

Amphibians largely eat invertebrates and play an important role in controlling insect populations. Tadpoles are often prey and are a significant part of nutrient cycling. Amphibians are very sensitive to changes in their environment and are widely regarded as ecological indicators.

7.2.1 Drift Fence Trapping

Many different techniques are available to detect the presence of reptiles and amphibians in the environment. In 2012, a relatively new method of funnel traps (Figure 7-1) and pitfall traps along drift fence arrays was implemented to detect both reptiles and amphibians at SNL/NM. A funnel trap consists of wire mesh boxes placed on either side of a 100-ft drift fence. The boxes have one-way entrances, whereby animals can easily enter the trap but not exit. This detection technique has proven successful in two of the grassland habitats at SNL/NM and continues to be used.

Figure 7-1. Temporarily closed funnel traps along a drift fence in a desert grassland habitat

Four drift fence trapping arrays were set up in 2016 at two different grassland sites: the Robotics Vehicle Range (RVR) and the SC Dome (SCD). The SCD site was first incorporated in 2016. The traps are checked twice daily during the field season, and all animals are released.

7.2.2 Herpetofauna Survey Results

In 2016, 11 different herptofauna species were captured: five snake species, four lizard species, and two amphibian species. A total of 101 individual animals were trapped (Table 7-2), with 79 animals at the RVR and 22 animals at the SCD. Species richness was greater at the RVR site (7 species) than at the SCD site (6 species). In 2016, two new species, the Mountain Patchnose Snake (*Salvadora grahamiae*) and the Western Diamondback Rattlesnake (*Crotalus atrox*) were captured (Figure 7-2).

Note: These snakes had not been captured at either grassland monitoring location prior to 2016.

Figure 7-2. Mountain Patchnose Snake (*Salvadora grahamiae*) (left) and Western Diamondback Rattlesnake (*Crotalus atrox*) (right) in funnel traps at the SCD site

Table 7-2. Herpetofauna species detected in 2016

Common Name	Scientific Name	Number of Encounters
Lizards		
Chihuahuan Spotted Whiptail	*Aspidoscelis exsanguis*	16
Great Plains Skink	*Plestiodon obsoletus*	0
Greater Short-horned Lizard	*Phrynosoma hernandesi*	4
Lesser Earless Lizard	*Holbrookia maculata*	0
Little Striped Whiptail	*Aspidoscelis inornata*	0
New Mexico Whiptail	*Aspidoscelis neomexicana*	65
Roundtail Horned Lizard	*Phrynosoma modestum*	0
Side-blotched Lizard	*Uta stansburiana*	0
Southwestern Fence Lizard	*Sceloporus cowlesi*	1

Table 7-2. Herpetofauna species detected in 2016 (continued)

Common Name	Scientific Name	Number of Encounters
Snakes		
Bullsnake	*Pituophis catenifer*	2
Coachwhip Snake	*Masticophus flagellum*	4
Desert Massasauga	*Sistrurus catenatus*	0
Glossy Snake	*Arizona elegans*	0
Hognose Snake	*Heterodon nasicus*	0
Hooknose Snake	*Gyalopion canum*	0
Longnose Snake	*Rhinocheilus lecontei*	0
Mountain Patchnose Snake	*Salvadora grahamiae*	1
Prairie Rattlesnake	*Crotalus viridis*	1
Ringneck Snake	*Diadophis punctatus*	0
Western Diamondback Rattlesnake	*Crotalus atrox*	2
Amphibians		
Couch's Spadefood Toad	*Scaphiopus couchii*	2
Mexican Spadefoot Toad	*Spea multiplicata*	3
Total		**101**

7.3 Remote Camera Surveillance

Ecology Program personnel have conducted passive surveillance for a diversity of wildlife in various habitats since 2005.

7.3.1 Remote Camera Stations

Wildlife water guzzlers, commonly used throughout the arid western United States, capture and store precipitation (rainfall and snowfall) for use by wildlife. Wildlife may rely on these artificial water sources to help meet their biologic and metabolic needs during times of water stress (Krausman et al. 2006; Rosenstock et al. 2004). Two guzzlers are maintained on DOE-permitted or fee-owned land: the Madera Canyon Guzzler (MCG) in a closed canopy woodland and the Range Wildlife Guzzler (Range) in a shrub, open woodland, and grassland. The guzzlers consist of a catchment system, a storage tank, and a ground-level open-water trough.

Automated cameras have been maintained at the two wildlife guzzlers since July 2005. The motion-activated cameras provide safe, passive, and cost-effective sampling of animal populations with little to no effect on the individual animals. The cameras record wildlife that are using the water sources day and night year-round, documenting the presence, abundance, diversity, and activity of medium and large mammals. The cameras also record birds, reptiles, and amphibians, thus enhancing understanding of these species as well.

7.3.2 Madera Canyon Guzzler Results

In 2016, 36 species were recorded in images obtained with remote-sensor cameras at the MCG (Table 7-3). This is an increase over the 18 species that were recorded in 2015. Camera sensitivity settings were set to focus on inventorying guzzler use by medium- and large-sized wildlife, including mammals, raptors, and other larger birds. However, sometimes smaller species could trigger the camera when accompanied by a larger species.

Table 7-3. Madera Canyon Guzzler species occurrences, 2016

Species Common Name	Latin Name	2016 Occurrence Total	Months Occurred Total
American Robin	*Turdus migratorius*	95	5
Audubon's Warbler	*Dendroica audoboni*	2	1
black bear	*Ursus americanus*	54	4
Black-headed Grosbeak	*Pheucticus melanocephalus*	38	3
black-tailed jackrabbit	*Lepus Californicus*	9	3
bobcat	*Felis rufus*	1	1
Canyon Towhee	*Pipilo fuscus*	5	2
Cassin's Kingbird	*Tyranus vociferans*	3	1
Cedar Waxwing	*Bombycilla cedrorum*	30	3
Common Raven	*Corvus corax*	263	7
cougar	*Felis concolor*	125	8
coyote	*Canus latrans*	151	5
Dark-eyed Junco	*Junco hyemalis*	4	2
Golden Eagle	*Aquila chrysaetos*	3	1
gray fox	*Urocyon cineroargentus*	2,669	12
Great-horned Owl	*Bubo virginianus*	3	1
House Finch	*Carpodacus mexicanus*	15	3
Lark Sparrow	*Chondestes grammacus*	3	1
Mountain Bluebird	*Sialia currucoides*	3	1
Mourning Dove	*Zenaida macroura*	180	6
mule deer	*Odocoileus heminonus*	2,584	12
Northern Mockingbird	*Mimus polyglottis*	4	1
Pinyon Jay	*Gymnorhinus cyanocephalus*	25	4
raccoon	*Procyon lotor*	3	1
Red-shafted Flicker	*Colaptes auratus*	57	6
Red-tailed Hawk	*Buteo jamaicensis*	13	3
rock squirrel	*Spermophilus variegatus*	3	1
Sage Thrasher	*Oreoscoptes montanus*	11	1
Say's Phoebe	*Sayornis saya*	3	1
Spotted Towhee	*Pipilo maculatus*	1	1
striped skunk	*Mephitis mephitis*	183	9
Townsend's Solitaire	*Myadestes townsendi*	2	1
Turkey Vulture	*Cathartes aura*	27	4
Western Bluebird	*Sialia mexicana*	12	4
Western Scrub-Jay	*Aphelocoma californica*	44	7
White-winged Dove	*Zenaida asiatica*	121	6

In 2016, two new species, Audubon's Warbler (*Dendroica audoboni*) and Lark Sparrow (*Chondestes grammacus*) (Figure 7-3 and Figure 7-4, respectively), were recorded for the first time at the MCG. The Audubon's Warbler was seen with a Western Scrub-Jay, and the Lark Sparrows were among Dove species. Both species have been sighted during routine monitoring and surveying during the summer months, but this is the first time they were captured on camera.

Figure 7-3. Audubon's Warbler (*Dendroica audoboni)* recorded at the MCG in 2016

Figure 7-4. Lark Sparrows (*Chondestes grammacus*) recorded at the MCG in 2016

Since June 2005, 62 species have been recorded at the MCG. Of these, 7 species have been recorded in each calendar year since monitoring with remote-sensor cameras began. There are 7 species that have been recorded in only one calendar year out of the eleven years. Five species have been recorded at the MCG but not at the Range, including Brown-headed Cowbird (*Molothorus ater*), Curve-billed Thrasher (*Toxostoma curvirostre*), Turkey Vulture (*Cathartes aura*), Wild Turkey (*Meleagris gallopavo*), and white-tailed deer (*Odocoileus virginianus*).

Black bears (*Ursus americanus*) and mountains lions (*Felis concolor*) were recorded at the MCG in 2016, as seen in Figure 7-5 and Figure 7-6, respectively.

Figure 7-5. An adult black bear (*Ursus americanus*) recorded at the MCG in 2016

Figure 7-6. Four mountain lions (*Felis concolor*) recorded at the MCG in 2016

Mule deer (*Odocoileus hemionus*) came in second for the most-often recorded species at the MCG in 2016 (Figure 7-7).

Figure 7-7. A fawn and doe mule deer (*Odocoileus hemionus*) recorded at the MCG in 2016

7.3.3 Range Canyon Guzzler Results

In 2016, 10 species were recorded at the Range (Table 7-4). This ties with 2015 for the lowest total recorded since monitoring began. Lower numbers of species recorded is likely the result of employing less-sensitive camera settings, which target medium- and large-sized mammals and wildlife to the exclusion of smaller species. Only 4 species occurred at the Range in more than four months or more of 2016, and 4 of the species recorded at the Range occurred in only one month.

Since monitoring began at the Range, 66 species have been recorded. Additionally, toads, bats, *Neotoma* woodrats, and other small mammals have been captured in images, but they were not identified to species. This brings the total number of types of animals documented to 72. Two species, gray fox and mule deer, have been observed every year.

Also, 19 species have been recorded at the Range that have not been recorded at the MCG. These include the American badger (*Taxidea taxus*), American hog-nosed skunk (*Conepatus* *leuconotus*), ringtail cat (*Bassariscus astutus*), western spotted skunk (*Spilogale gracilis*), Texas antelope squirrel (*Ammospermophilus interpres*), and Scaled Quail (*Callipepla squamata*).

Table 7-4. Range Canyon Guzzler species occurrences, 2016

Species Common Name	Latin Name	2016 Occurrences Total	Months Occurred Total
black-tailed jackrabbit	*Lepus californicus*	1	1
bobcat	*Felis rufus*	22	3
Common Raven	*Corvus corvax*	25	4
cougar	*Puma concolor*	3	1
coyote	*Canis latrans*	1,598	12
gray Fox	*Urocyon cineroargentus*	109	5
Mourning Dove	*Zenaida macroura*	9	3
mule deer	*Odocoileus heminonus*	4,812	12
Woodhouse's Scrub-Jay	*Aphelocoma woodhouseii*	4	1
White-winged Dove	*Zenaida asiatica*	1	1

A trio of coyotes (*Canis latrans*) (Figure 7-8) and a bobcat (*Felis rufus*) (Figure 7-9) were recorded at the Range in 2016.

Figure 7-8. Coyotes (*Canis latrans*) recorded at the Range in 2016

Figure 7-9. Bobcat (*Felis rufus*) recorded at the Range in 2016

7.4 Avian Surveillance

Long-term monitoring of breeding and wintering birds can reveal population trends and dynamics. Data collected aids land-use decisions and provides documentation regarding bird population trends regionally and continentally.

7.4.1 Bird Surveys Using Transects

In 2016, bird transect surveys were conducted during the breeding season (April through the end of June) and in the winter months (December 2015 through March 2016). Bird diversity and abundance were measured, monitoring trends and changes over time associated with particular species and various habitats.

Each survey transect consists of 12 points, and each point is surveyed for five-minute periods. Each transect is surveyed three times during both the winter bird surveys (WBSs) and the breeding bird surveys (BBSs). Surveys are conducted at Madera Canyon, the Optics Range, the RVR, the Solar Tower, Technical Area (TA) III, Tijeras Arroyo, west of TA-III, and the Winch Site (Table 7-1). Table 7-5 shows the total number of birds encountered at all locations during the WBS and the BBS.

Winter Bird Transect Survey Results

A total of 46 bird species were encountered during the 2015–2016 WBS season. The number of species encountered at each site varied from 6 to 22.

Table 7-5. Bird species encountered during avian surveillance, 2016

Common Name	Scientific Name	BBS—Birds Encountered at All Transects	WBS—Birds Encountered at All Transects
American Kestrel	*Falco sparverius*	3	1
American Robin	*Turdus migratorius*		169
Ash-throated Flycatcher	*Myiarchus cinerascens*	35	
Barn Swallow	*Hirunda rustica*	17	
Bewick’s Wren	*Thryomanes bewickii*	39	14
Black-chinned Hummingbird	*Archilochus alexandri*	13	
Black-chinned Sparrow	*Spizella atrogularis*	15	
Black-headed Grosbeak	*Pheucticus melanocephalus*	42	
Black-throated Gray Warbler	*Setophaga nigrescens*	16	
Black-throated Sparrow	*Amphispiza bilineata*	50	
Blue-gray Gnatcatcher	*Polioptila caerula*	2	
Blue Grosbeak	*Passerina caerula*	8	
Brewer’s Sparrow	*Spizella breweri*	31	1
Broad-tailed Hummingbird	*Selasphorous platycercus*	4	
Brown-headed Cowbird	*Molothrus ater*	11	
Bullock’s Oriole	*Icterus bullockii*	9	
Burrowing Owl	*Athene cunicularia*	4	
Bushtit	*Psaltriparus minimus*	13	18
Cactus Wren	*Campylorynchus brunneicapillus*	8	5
Canyon Towhee	*Melozone fusca*	9	8
Canyon Wren	*Catherpes mexicanus*		1

See notes at end of table.

Table 7-5. Bird species encountered during avian surveillance, 2016 (continued)

Common Name	Scientific Name	BBS—Birds Encountered at All Transects	WBS—Birds Encountered at All Transects
Cassin's Finch	*Haemorhous cassinii*		3
Cassin's Sparrow	*Aimophila cassinii*	11	
Cassin's Kingbird	*Tyrannus vociferans*	13	
Chestnut-collared Longspur	*Calcarius ornatus*		1
Chihuahuan Raven	*Corvus crytoleucus*		2
Chipping Sparrow	*Spizella passerina*	6	
Cliff Swallow	*Petrochelidon pyrrhonota*	12	
Common Raven	*Corvus corax*	7	46
Cooper's Hawk	*Accipiter cooperii*	2	1
Crissal Thrasher	*Toxostoma crissale*	2	1
Curve-billed Thrasher	*Toxostoma curvirostre*	6	5
Dark-eyed Junco	*Junco hyemalis*	1	78
Eastern Meadowlark	*Sturnella magna*	33	5
Eurasian Collared Dove	*Streptopelia decaocto*	3	
Gambel's White-crowned Sparrow	*Zonotrichia leucophrys gambelii*		14
Gray Flycatcher	*Empidonax wrightii*	15	
Gray Vireo	*Vireo vicinior*	17	
Greater Roadrunner	*Geococcyx californianus*	1	2
Hairy Woodpecker	*Picoides villosus*	2	3
Horned Lark	*Eremophila alpestris*	107	105
House Finch	*Carpodacus mexicanus*	108	127
Juniper Titmouse	*Baelophus ridgwavi*	34	39
Killdeer	*Charadrius vociferous*		1
Ladder-backed Woodpecker	*Picoides scalaris*	6	4
Lark Bunting	*Calamospiza melanocorys*	4	
Lark Sparrow	*Chondestes grammacus*	8	
Loggerhead Shrike	*Lanius ludovicianus*	10	7
Meadowlark spp.			2
Merlin	*Falco columbaris*	1	
Mountain Bluebird	*Sialia currucoides*	1	546
Mountain Chickadee	*Poecile gambeli*		1
Mourning Dove	*Zenaida macroura*	80	2
Northern Harrier	*Circus cyaneus*		1
Northern Mockingbird	*Mimus polyglottis*	79	
N. Rough-winged Swallow	*Stelgidopteryx serripennis*	2	
Red-shafted Flicker	*Colaptes auratus*	3	12
Pine Siskin	*Spinus pinus*		8
Pink-sided Junco	*Junco hyemalis mearnsi*		3
Pinyon Jay	*Gymnorhinus cyanocephalus*	11	41
Plumbeous Vireo	*Vireo plumbeus*	15	
Raven spp.		2	
Red Crossbill	*Loxia curvirostra*	1	

See notes at end of table.

Table 7-5. Bird species encountered during avian surveillance, 2016 (continued)

Common Name	Scientific Name	BBS—Birds Encountered at All Transects	WBS—Birds Encountered at All Transects
Red-tailed Hawk	*Buteo jamaicensis*	2	4
Rock Wren	*Salpinctus obsoletus*	25	
Ruby-crowned Kinglet	*Regulas calendula*	1	
Rufous-crowned Sparrow	*Aimophila ruficeps*	1	
Sage Thrasher	*Oreoscoptes montanus*		17
Say's Phoebe	*Sayornis saya*	30	4
Scaled Quail	*Callipepla squamata*	5	
Scott's Oriole	*Icterus parisorum*	20	
Sharp-shinned Hawk	*Accipiter striatus*		1
Snow Goose	*Chen caerulescens*		800
Song Sparrow	*Melospiza melodia*		1
Sparrow spp.		8	
Spotted Towhee	*Pipilo maculatus*	35	9
Swainson's Hawk	*Buteo swainsoni*	2	
Townsend's Solitaire	*Myadestes townsendii*		29
Turkey Vulture	*Cathartes aura*	2	
Vesper Sparrow	*Pooecetes gramineus*	1	
Violet-green Swallow	*Tachycineta thalassina*	9	
Virginia's Warbler	*Oreothylpis virginae*	2	
Western Bluebird	*Sialia Mexicana*	5	81
Western Kingbird	*Tyrannus verticalis*	38	
Western Meadowlark	*Sturnella neglecta*	31	3
Western Scrub-Jay	*Aphelocoma californica*	28	29
Western Tanager	*Piranga ludoviciana*	4	
Western Wood Pewee	*Contopus sordidulus*	12	
White-winged Dove	*Zenaida asiatica*	2	

NOTES: BBS = breeding bird survey WBS = winter bird survey

Breeding Bird Transect Survey Results

In 2016, 70 bird species were seen or heard while conducting the BBS. The number of species encountered at each site ranged from 10 to 31.

7.4.2 Bird Species Population Trends Transect Survey Results

Transect survey results for population trends of selected bird species for habitat type are provided in the following sections. These species are presented within each of six primary habitat types found at SNL/NM: closed canopy woodland; disturbed arroyo shrub; grassland with sparse dwarf shrub; large shrub grassland; and shrub, open woodland, and grassland.

Closed Canopy Woodland Habitat

Closed canopy woodland habitat has the highest bird species diversity of all the habitats surveyed. Common breeding species associated with this habitat type include Woodhouse's Scrub-Jay (*Aphelocoma woodhouseii*), formally known as Western Scrub-Jay (*Aphelocoma californica*); Juniper Titmouse (*Baeolophus ridgwayi*); Spotted Towhee (*Pipilo maculatus*); Black-throated Gray Warbler (*Setophaga nigrescens*); and Black-headed Grosbeak (*Pheucticus melanocephalus*). These species have a neutral to positive trend for the BBS data from 2003–2015. Trend line graphs for the Spotted Towhee and Black-headed Grosbeak are in Figure 7-10 and Figure 7-11, respectively.

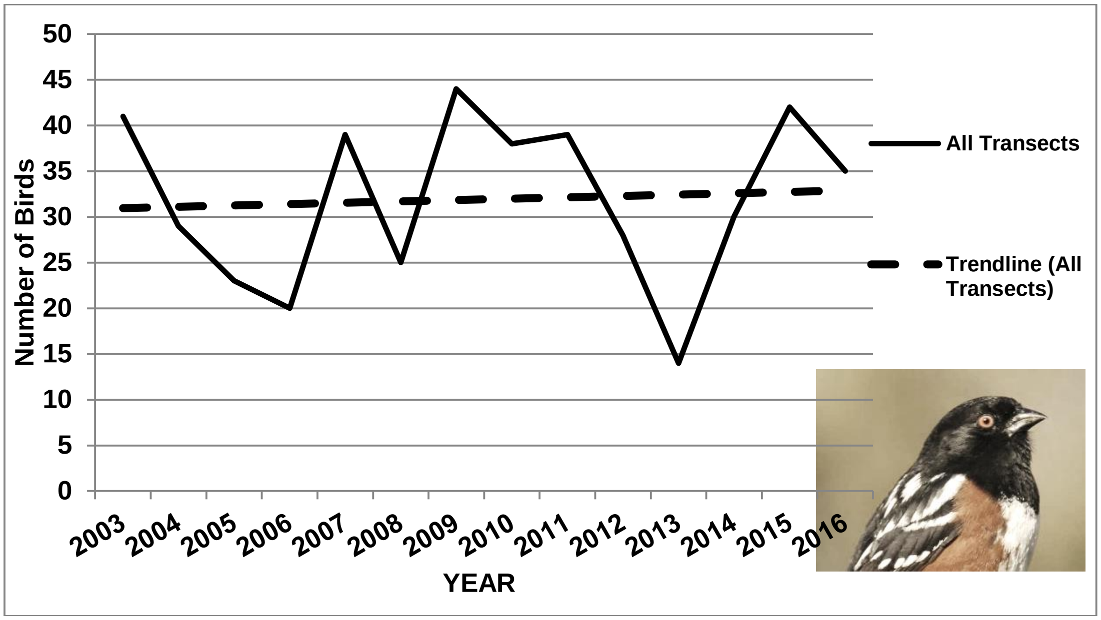


Figure 7-10. Spotted Towhee (*Pipilo maculatus*) linear trend line, BBS 2003–2016

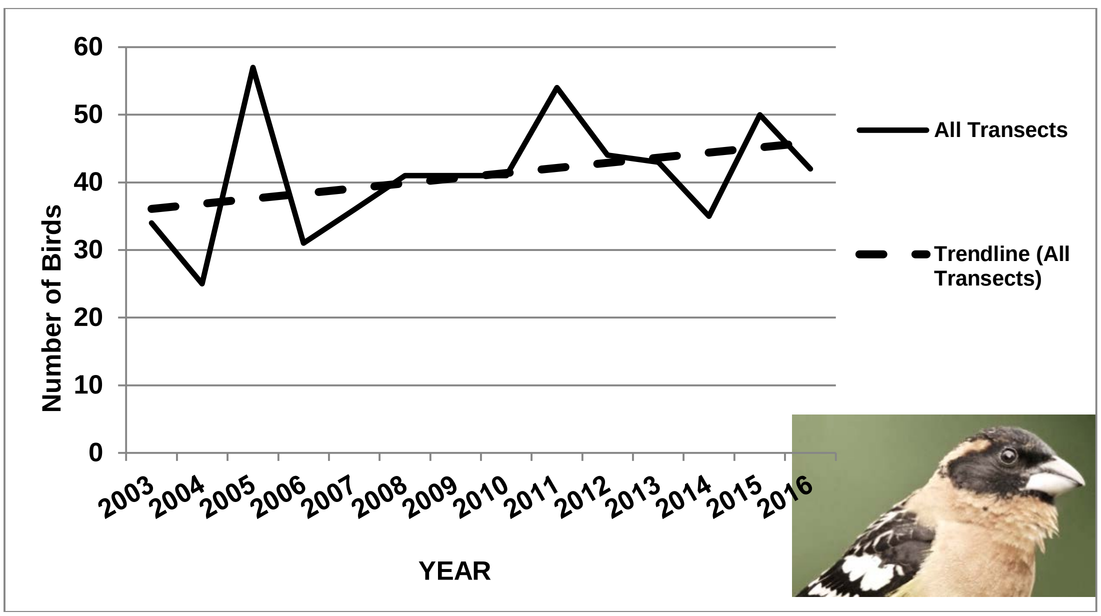


Figure 7-11. Black-headed Grosbeak (*Pheucticus melanocephalus*) linear trend line, BBS 2003–2016

Disturbed Arroyo Shrub and Large Shrub Habitat and Large Shrub Grassland Habitat

Western Kingbird (*Tyrannus verticalis*), Black-throated Sparrow (*Amphispiza bilineata*), and Northern Mockingbird (*Mimus polyglottos*) are three species that can be found as breeding birds in the disturbed arroyo shrub and large shrub habitat and in the large shrub grassland habitat. Western Kingbirds (Figure 7-12) and Black-throated Sparrows (Figure 7-13) are showing a positive trend overall. The Northern Mockingbird (Figure 7-14) is showing moderate decline overall.

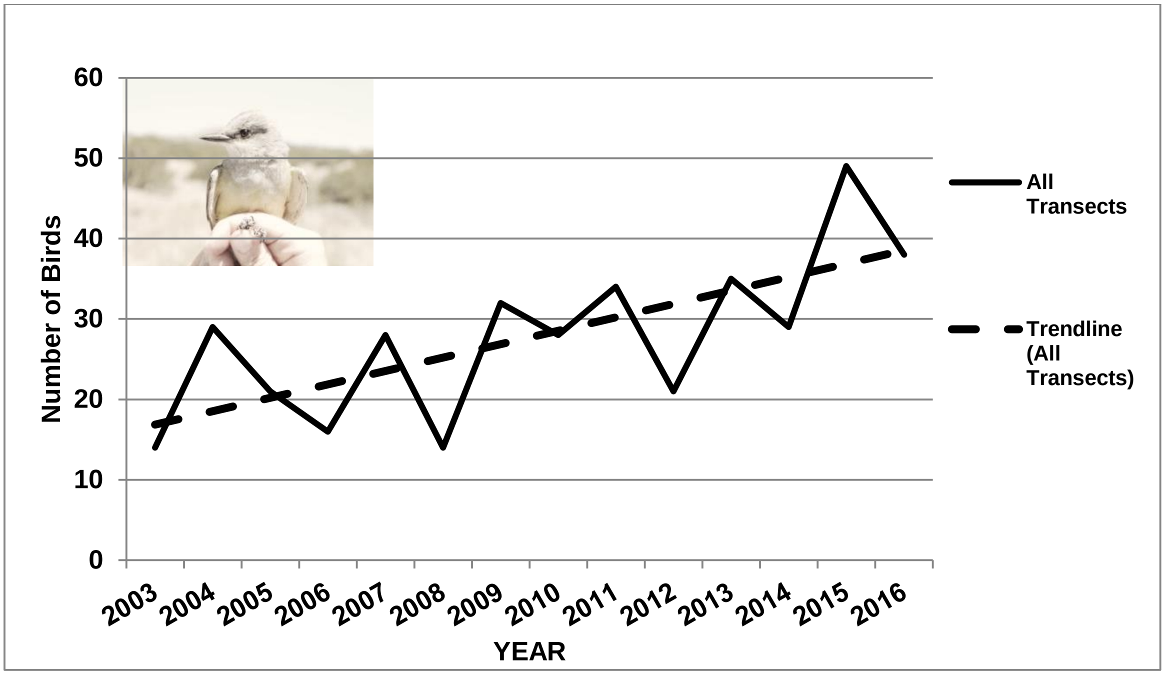


Figure 7-12. Western Kingbird (*Tyrannus verticalis*) linear trend line, BBS 2003–2016

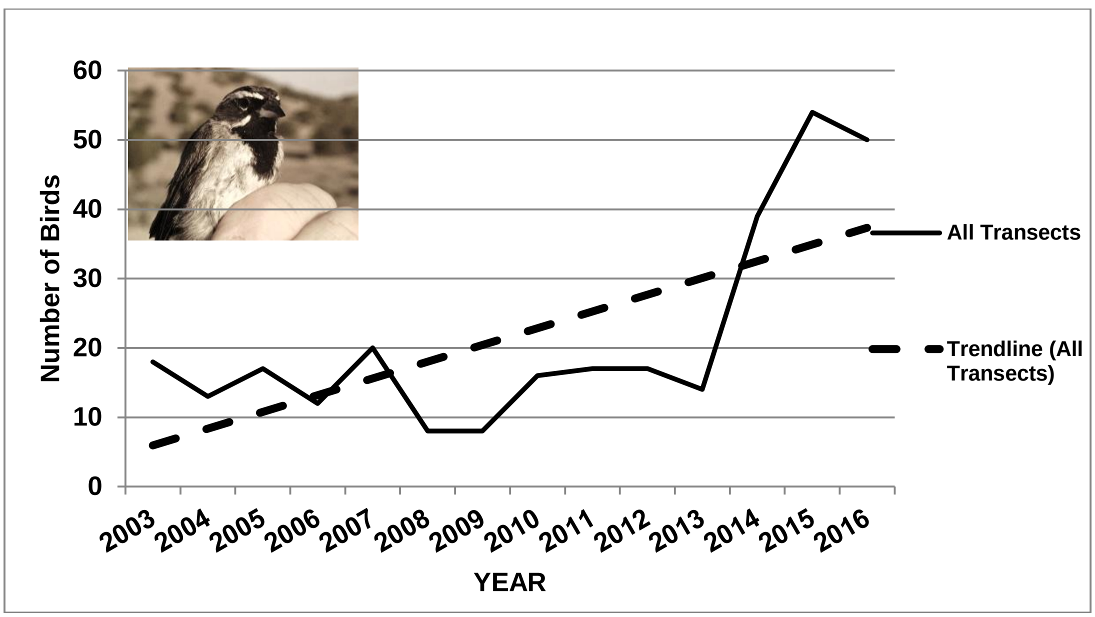


Figure 7-13. Black-throated Sparrow (*Amphispiza bilineata*) linear trend line, BBS 2003–2016

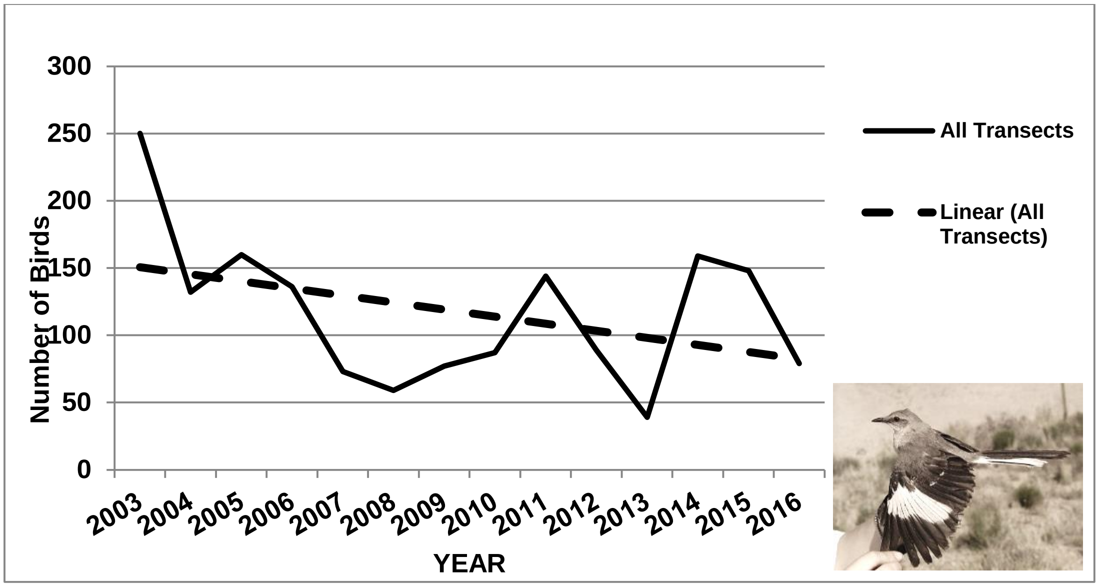


Figure 7-14. Northern Mockingbird (*Mimus polyglottos*) linear Trend line, BBS 2003–2016

Grassland with Sparse Dwarf Shrubs Habitat

Western Meadowlark (*Sturnella neglecta*), Eastern Meadowlark (*Sturnella magna*), Scaled Quail (*Callipepla squamata*), and Horned Lark (*Eremophila alpestris*) are primarily found in the grassland with sparse dwarf shrubs habitat.

The BBS data from 2003–2016 continue to indicate an overall downward trend for both Western Meadowlarks (Figure 7-15) and Eastern Meadowlarks (Figure 7-16).

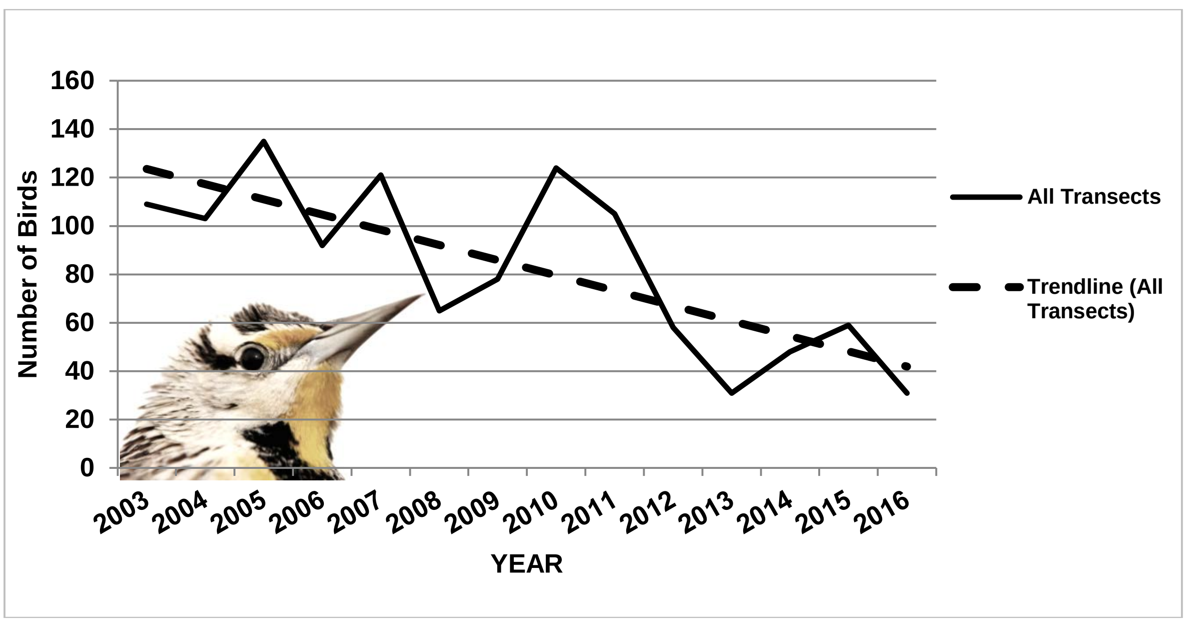


Figure 7-15. Western Meadowlark (*Sturnella neglecta*) linear trend line, BBS 2003–2016

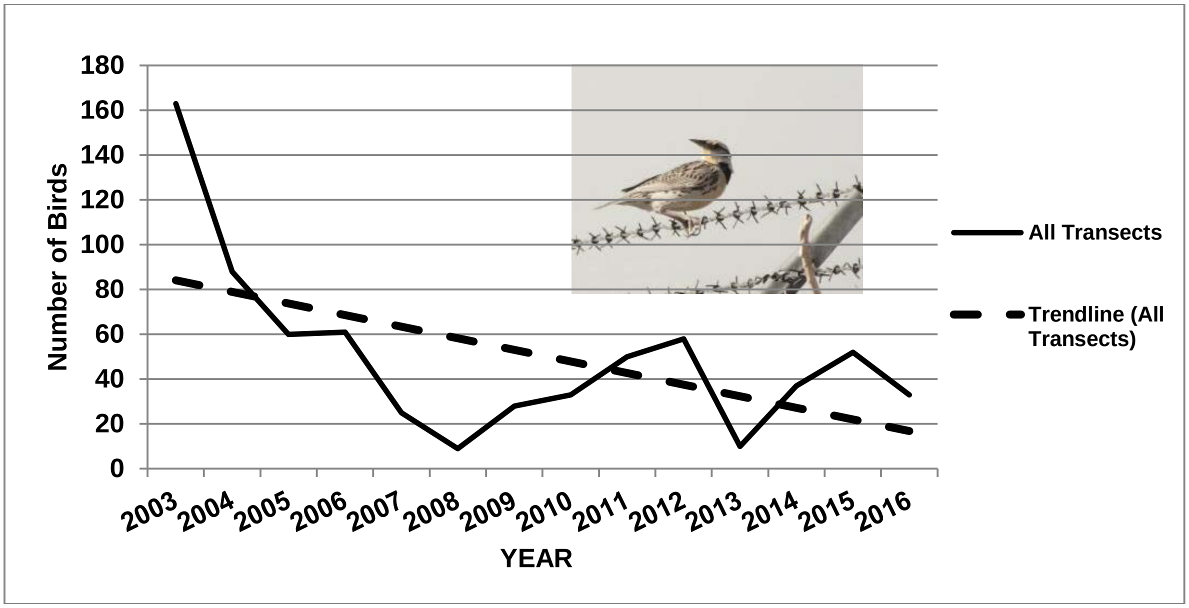


Figure 7-16. Eastern Meadowlark (*Sturnella magna*) linear trend line, BBS 2003–2016

Scaled Quail numbers indicate a severe negative trend (Figure 7-17), although five Scaled Quail were encountered in 2016, an increase from 2015 where none were seen or heard. Though Scaled Quail make use of other habitat types, they are primarily associated with this desert grassland habitat. An overall reduction of both on-site and off-site grassland with sparse dwarf shrubs habitat plus the persistent drought conditions (discussed in sections 7.1 and 5.3.2) are likely reasons for the decline of this species.

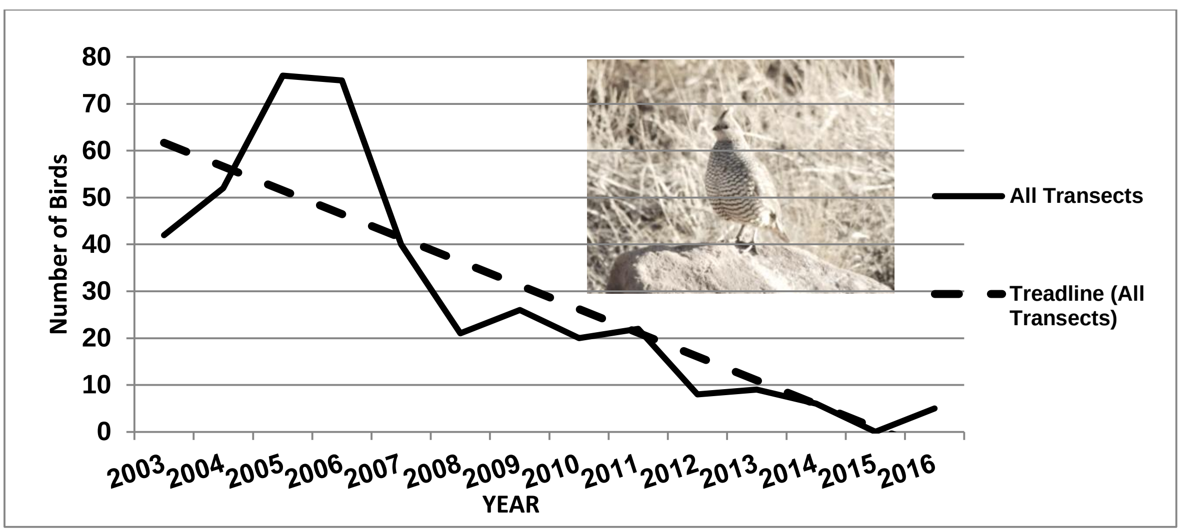


Figure 7-17. Scaled Quail (*Callipepla squamata*) linear trend line, BBS 2003–2016

The trend for Horned Larks remained stable during the breeding winter seasons (Figure 7-18), with a noted decrease over the winter (Figure 7-19).

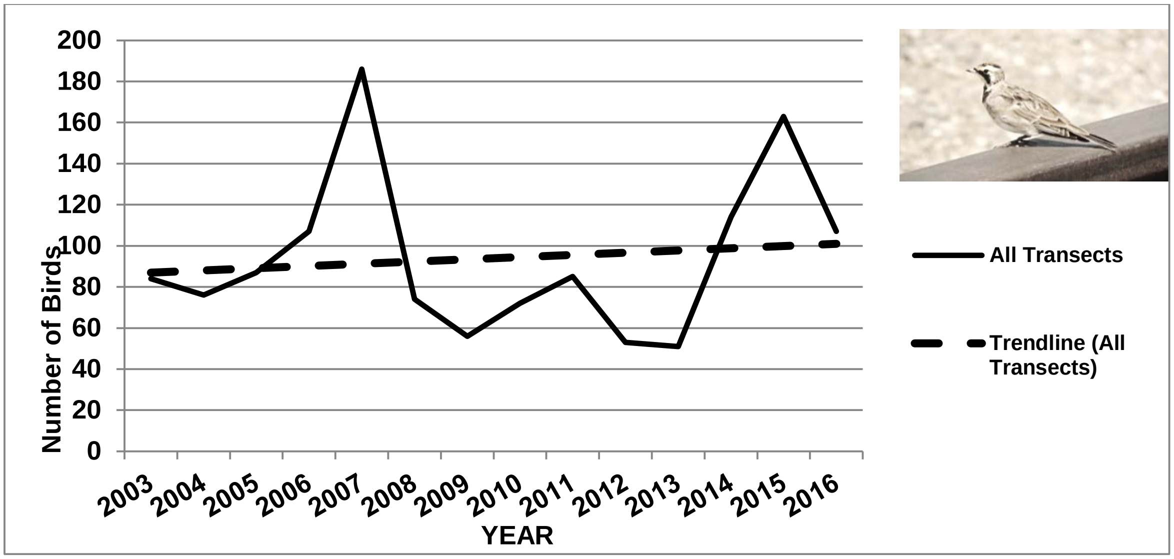


Figure 7-18. Horned Lark (*Eremophila alpestris*) linear trend line, BBS 2003–2016

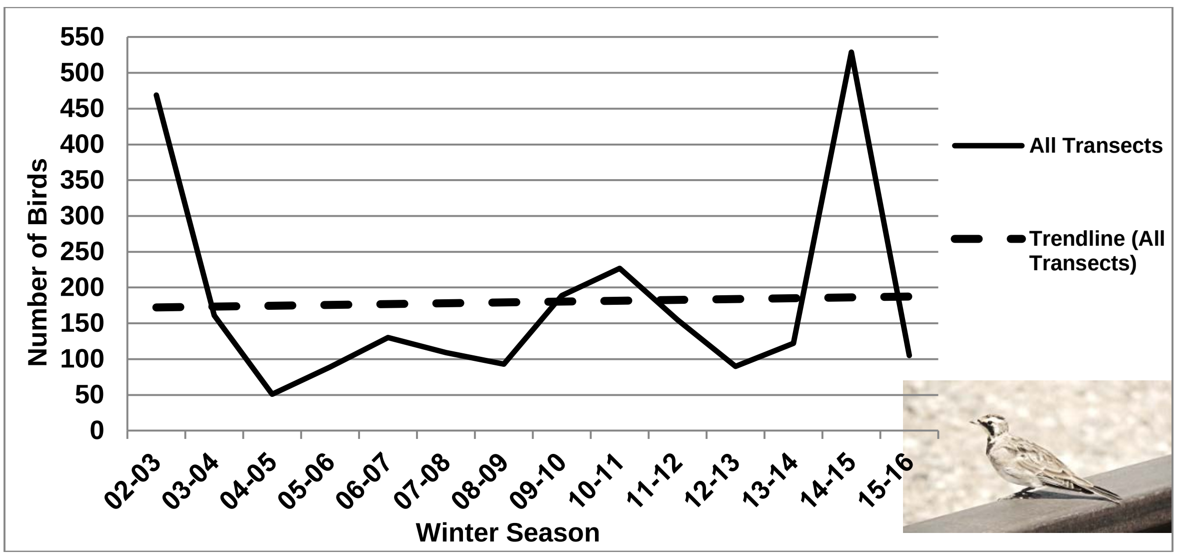


Figure 7-19. Horned Lark (*Eremophila alpestris*) linear trend line, WBS 2003–2016

Shrub, Open Woodland and Grassland Habitat

Cassin's Kingbird (*Tyrannus vociferans*) and Gray Vireo (*Vireo vicinior*) are strongly associated with shrub, open woodland, and grassland habitat during the breeding season. The BBS data from 2003–2016 shows an overall positive trend for Cassin's Kingbird (Figure 7-20). For Gray Vireos, the number of encounters for the past several years has been above average; thus, the data is indicating a moderately positive overall trend (Figure 7-21).

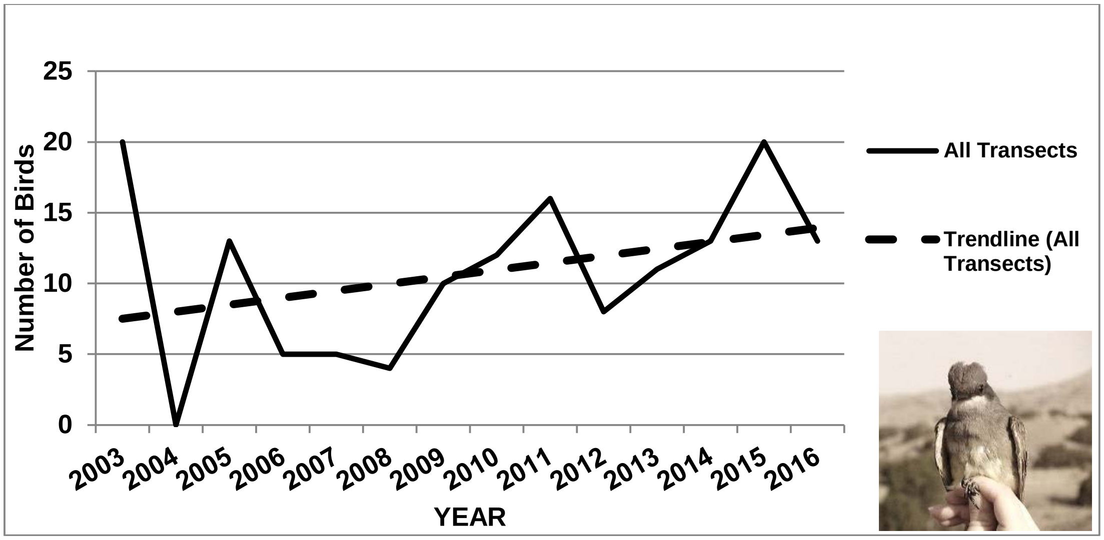


Figure 7-20. Cassin's Kingbird (*Tyrannus vociferans*) linear trend line, BBS 2003–2016

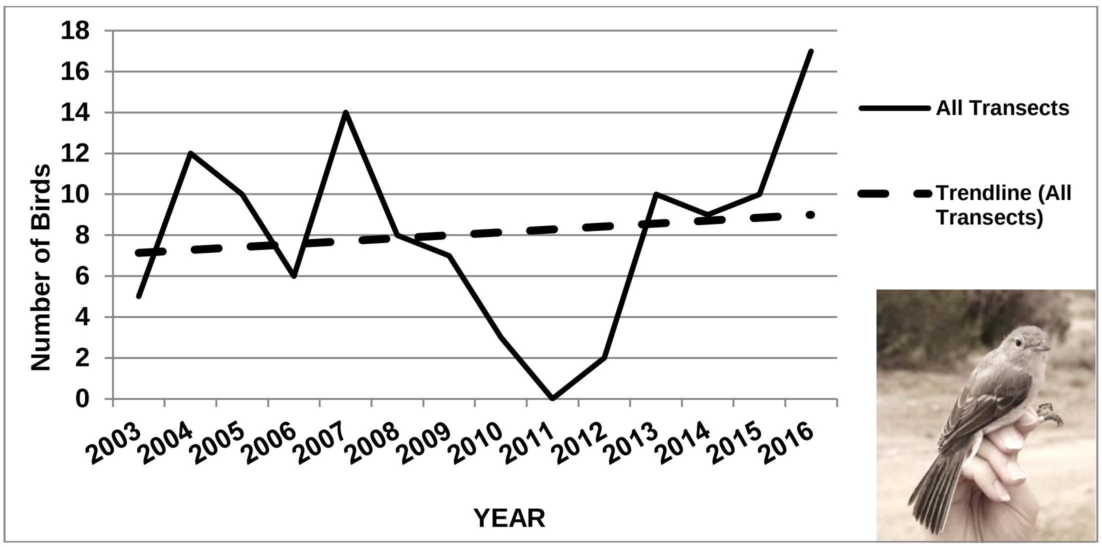


Figure 7-21. Gray Vireo (*Vireo vicinior*) linear trend line, BBS 2003–2016

7.4.3 Bird Banding Monitoring

In 2003, Ecology Program personnel implemented two projects that use bird banding to monitor bird diversity and abundance: (1) the Monitoring Avian Productivity and Survivorship (MAPS) protocol (DeSante et al. 2010), as developed by the Institute for Bird Populations, for banding birds, and (2) fall bird migration. Bird banding is a useful tool for investigating population dynamics, survival, productivity, dispersal timing, migration timing, and other ecological and biological aspects of bird populations. To compare between seasons, days, and net sites, researchers calculate birds captured per net hour using marked or banded birds. This calculation is derived by dividing the number of birds captured in a day or season by the number of total net hours in that period.

MAPS Monitoring Results

The MAPS Program seeks to derive population and productivity trends for nesting birds throughout North America through constant-effort mist netting during the breeding season, May through mid-August. The overall Institute for Bird Population MAPS data, collected since 1989, has helped ornithologists better understand population trends, dynamics, sex ratios, and productivity for over 200 species of breeding birds. This information provides natural resource managers with conservation and ecological aspects for local species. MAPS banding sessions have been conducted annually since 2003 at SNL/NM.

A total of 58 individuals of 19 bird species were captured and released in 2016. One species, Barn Swallow (*Hirundo rustica*), was new for the MAPS project (Figure 7-22). Of the 58 birds, 51 were newly banded and 7 were banded previously (repeats). The number of birds captured per net hour for the MAPS season was 0.12 (463.1 total net hours). For 2016, the three most abundant captured species were: Black-throated Sparrow (16), Northern Mockingbird (7), and Juniper Titmouse (5).

Figure 7-22. Newly encountered species banded in 2016 (left to right): Barn Swallow (*Hirundo rustica*), Nashville Warbler (*Oreothlypis ruficapilla*), Least Flycatcher (*Empidonax minimus*), and American Kestrel (*Falco sparverius*)

The MAPS season analysis of total birds per net hour over the past 13 years continues to show an overall downward trend (Figure 7-23). The 2016 capture rate (13.0 birds per 100 net hours) is below the average rate in previous years of 20.8 birds per 100 net hours.

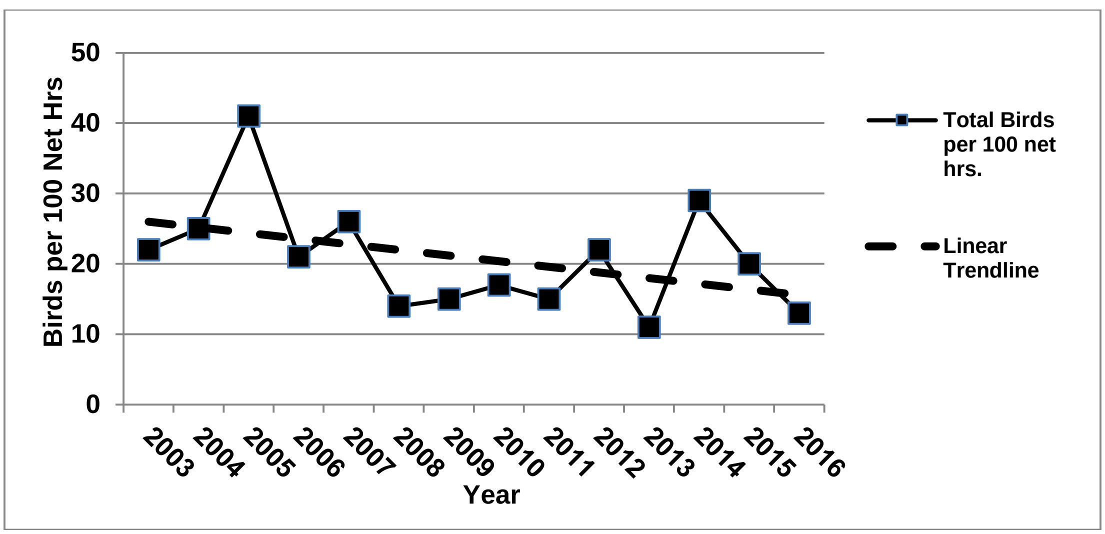


Figure 7-23. Linear trend of all birds captured during the MAPS monitoring project, 2003–2016

Fall Migration Monitoring

Fall migration monitoring has been conducted annually since 2003. Ecology Program personnel monitor birds weekly from early August through late October. These annual monitoring activities are an effort to document breeding bird productivity and investigate fall migration patterns of songbirds in a shrub, open woodland, and grassland habitat. Methods are detailed in the SNL *Birds Field Operating Procedure.*

During the 2016 fall migration monitoring, a total of 251 birds were captured, representing 41 species. Three of these species were new to this project: American Kestrel (*Falco sparverius*), Nashville Warbler (*Oreothlypis ruficapilla*), and Least Flycatcher (*Empidonax minimus*) (Figure 7-23). Of the 251 birds, 238 were newly banded and 13 were banded previously (repeats). There were 6 species with 1 or more individuals captured. The average number of birds banded per net hour was 0.36 (614 total net hours), and the average number of birds banded over the 12-year period was 0.27 birds per net hour.

The fall migration monitoring shows a downward trend for total birds per net hour for 2003 through 2016 (Figure 7-24), even though the past two seasons' capture rates were above average.

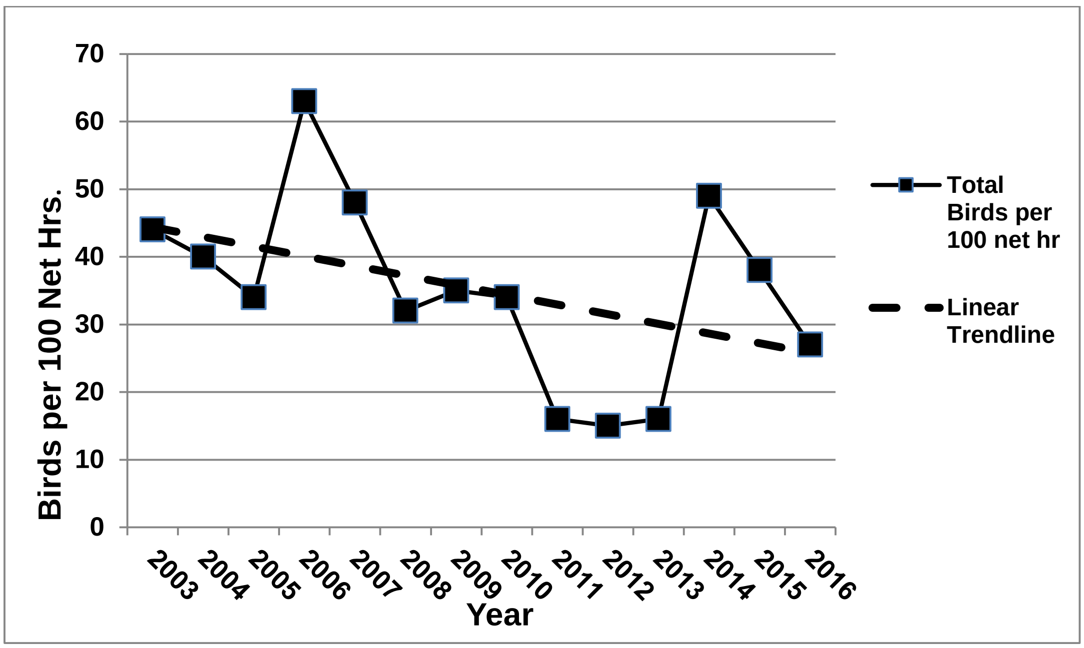


Figure 7-24. Linear trend of all birds captured during the fall migration monitoring project, 2003–2016

7.5 Eco Ticket System for Monitoring Wildlife

In 2013, Ecology Program personnel launched the Eco Ticket system, a web-based software program that helps to provide prompt notification and timely communication with SNL/NM personnel who have issues or concerns with wildlife they encounter, and with project personnel who require biological surveys before starting outdoor work activities. This system also provides a mechanism for tracking and recording the presence of wildlife, a purpose that coincides with the Ecology Program mission.

Use of this system by SNL/NM personnel has been increasing steadily. The system is used most frequently by Facilities Management personnel for work orders requiring biological surveys. Individuals most commonly submit Eco Ticket requests for assistance with wildlife issues, which may include the following: snakes, bird's nests, injured or trapped wildlife, and dead wildlife. Sorting and analyzing the ticket types adds to understanding the dynamics of wildlife issues at SNL/NM.

In 2016, Ecology Program personnel observed an increase in reported mammal sightings. Mammals often reported through the Eco Ticket system include: desert cottontails (*Sylvilagus audubonii*), striped skunks (*Mephitis mephitis*), and raccoons (*Procyon lotor*). Other mammals reported were badgers (*Taxidea taxus*), coyotes (*Canis latrans*), and black-tailed jack rabbits (*Lepus californicus*); several bat species have been reported.

Many of the mammals reported are very resourceful and highly adaptable, so, when paired with available food, shelter, and water resources, there is no reason for these animals to move away from urban life (Dell'Amore 2016). Manipulating their habitat is the best means of controlling their presence in an urban setting (Cecil 2016).

Other wildlife reported include reptiles, amphibians, a plethora of bird species, and some insects. All of this wildlife is also monitored through the Eco Ticket system.

7.5.1 Eco Ticket Responses

Work Orders and Projects

Before any outdoor work is initiated, Ecology Program personnel survey the work site. The primary reason for these surveys is associated with identifying birds protected under the Migratory Bird Treaty Act. The surveys also search for signs of other federal and state protected wildlife.

Wildlife Response

For Eco Tickets pertaining to a wildlife issue, Ecology Program personnel will call the individual who placed the ticket to gather information. This may include the type of animal, location, time last seen, and any pertinent safety information. For nonvenomous wildlife outside of buildings, Ecology Program personnel typically leave the animal alone unless it is trapped, sick, or injured. Venomous snakes are always relocated whether inside or outside due to the risk they impose to personnel. If an animal is injured, it is taken to wildlife rescue. Wildlife trapped inside a building are captured and then released in an appropriate habitat.

Each Eco Ticket is archived into a database that can be analyzed to gain insight into the locations where various animals occur most frequently and ways to properly manage for their safety and the safety of the workforce.

7.5.2 Results

In 2016, Ecology Program personnel responded to 430 Eco Tickets (Table 7-6).

Table 7-6. Number of Eco Tickets placed within each ticket type annually

Calendar Year	Birds Nest	Dead Wildlife	Facilities Work Order	Injured Wildlife	NEPA ID	Other	Snake	Trapped Wildlife	Total
2013	—	—	12	—	5	—	—	—	17
2014	37	29	150	6	88	36	38	17	401
2015	21	42	256	16	83	42	75	25	560
2016	14	40	139	12	86	35	85	19	430
Total	**72**	**111**	**557**	**34**	**262**	**113**	**198**	**61**	**1,408**

Notes: — = data not collected ID = identification NEPA = National Environmental Policy Act

Birds

Bird species make up the majority of wildlife reported at SNL/NM. Much of the biodiversity is associated with biological survey assessments; however, a variety of bird species are reported trapped within buildings, and 67 percent of all reported trapped wildlife were birds. From 2014 to 2016, the lowest number of birds were reported in 2016, with 80 total recorded birds versus 222 in 2014 and 225 in 2015. This could be due to a change in how biologists recorded surveys. Many of the "Dead Wildlife" tickets were birds, at approximately 57 percent. When picking up deceased animals, Ecology Program personnel try to determine the cause of death, which in avian samples is often from window strikes. Approximately 37 percent of all bird deaths were associated with window strikes.

Mammals

In 2016, there were seven reported skunk sightings from August to November (Figure 7-25), the majority of which occurred in the early morning. There were only two sightings in 2014 and 2015 combined (Table 7-6). However, because of their defensive behaviors and distinct odor (Kiiskila 2014), reports of skunks in urban areas have been known to be out of proportion to their urban densities (Bateman and Fleming 2012).

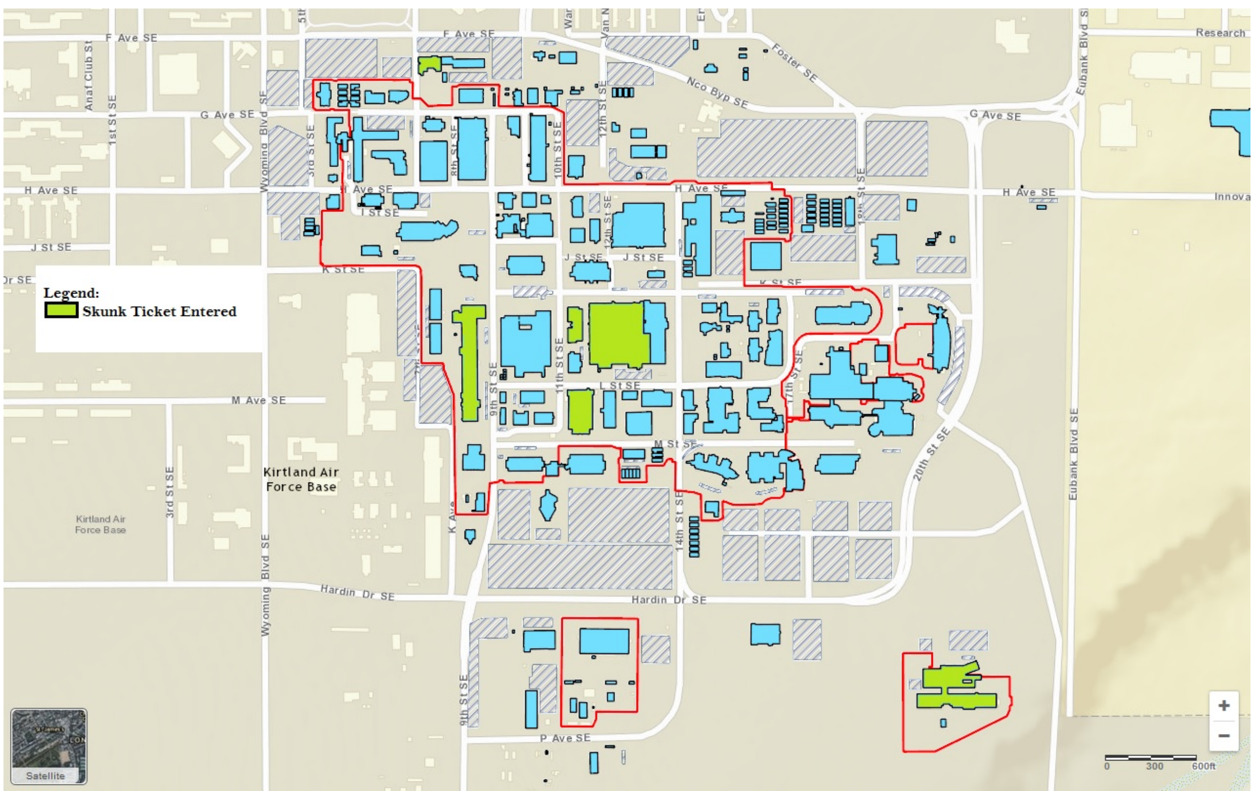


Figure 7-25. Locations of striped skunk (*Mephitis mephitis*) encounters in 2014, 2015, and 2016

Sightings also increased for raccoons (*Procyon lotor*) in 2016, with eight individuals reported from May to September. Only two were reported in 2015 (Figure 7-26, Figure 7-27, and Table 7-7). Food and water availability within the urban-type habitat of SNL/NM technical areas is quite favorable for this species. Research has found that the availability of food and water can cause these animals to seek shelter close to humans (Bateman and Fleming 2012; Fox 2001).

Desert cottontails (*Sylvilagus audobonii*) are common along edge habitat at SNL/NM. Unfortunately, most of the rabbits reported were dead, likely due to their presence along roadways. Fifteen rabbits were reported in 2016, 10 of which were deceased or passed from injuries shortly after a biologist arrived.

Some species appear infrequently. An American badger (*Taxidea taxus*) was reported in 2015 and in 2016. It was most likely the same individual. It was associated with dug holes, a common technique when searching for prey (Shefferly 1999). One black bear (*Ursus americanus*) was reported in 2014, but none have been reported since. Several bat species have showed up inside buildings on-site. From 2014 to 2016, 2015 had the highest number of bat requests (four total). Rodents, including deer mice and kangaroo rats, were also encountered. Coyotes (*Canis latrans*) were rarely encountered, with only one in 2015 and one in 2016.

Figure 7-26. A raccoon (*Procyon lotor*) made its way into an office building in Technical Area I

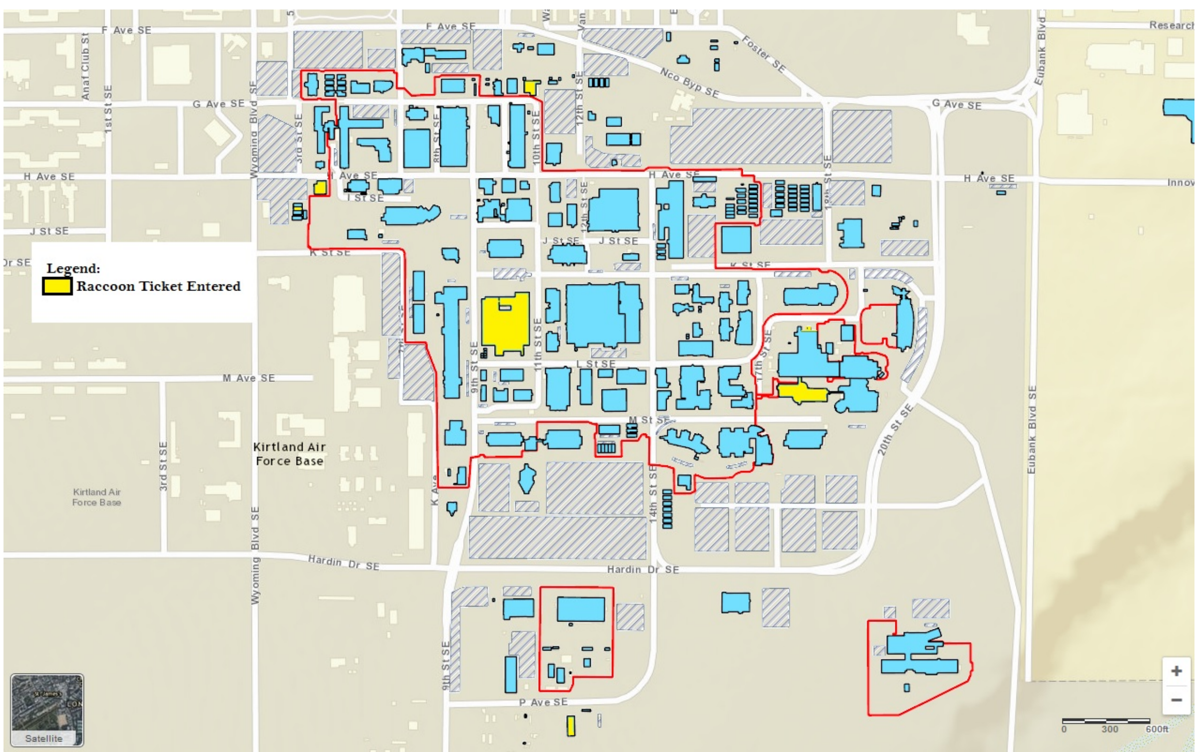


Figure 7-27. Location of raccoons (*Procyon lotor*) encounters in 2015 and 2016

Table 7-7. Mammals associated with Eco Tickets

Common Name	Species	2014	2015	2016	Total
American badger	*Taxidea taxus*		1	1	2
big brown bat	*Eptesicus fuscus*		1		1
black bear	*Ursus americanus*		1		1
black-tailed jackrabbit	*Lepus californicus*	3	1		4
Brazilian free-tailed bat	*Tadarida brasiliensis*	2			2
cottontail rabbit	*Sylvilagus spp.*	2	1	6	9
coyote	*Canis latrans*		1	1	2
deer mouse	*Peromyscus maniculatus*		2		2
desert cottontail	*Sylvilagus audobonii*	2	7	9	18
fringed myotis bat	*Myotis thysanodes*			1	1
little brown myotis	*Myotis lucifugus*			1	1
Merriam's kangaroo rat	*Dipodomys merriamii*	1			1
Ord's kangaroo rat	*Dipodomys ordii*	1			1
raccoon	*Procyon lotor*		2	8	10
rock squirrel	*Spermophilus variegatus*	2	7	2	11
silver-haired bat	*Lasionycteris noctivigans*		3		3
spotted ground squirrel	*Spermophilus spilosoma*			1	1
striped skunk	*Mephitis mephitis*	1	1	7	9

Reptiles and Amphibians

Reptiles, specifically snakes, are frequently encountered, especially when the weather begins to warm. Both venomous and nonvenomous snakes are seen at SNL/NM (Table 7-8). Prairie Rattlesnakes (*Crotalus viridis*) and Gopher Snakes (*Pituophis catenifer*) are the two species encountered most often, with 89 and 56, respectively, in 2016.

Table 7-8. Snake species associated with Eco Tickets

Common Name	Species	2014	2015	2016	Total
Coachwhip	*Masticophis flagellum*	1	1	1	3
Desert Massasauga	*Sistrurus catenatus*	—	1	1	2
Glossy Snake	*Arizons elegans*	—	4 (4 dead)	—	4
Gopher Snake	*Pituophis catenifer*	5	28	23	56
Plains Black-headed Snake	*Tantilla nigerceps*	1	—	—	1
Prairie Rattlesnake	*Crotalus viridis*	14	34	41 (1 dead)	89
Western Diamondback	*Crotalus atrox*	2	2	1	5
Western Garter Snake	*Thamnophis elegans*	—	1	—	1

Notes: — = wildlife not encountered

Threatened, Endangered, and Sensitive Species

As stated in Chapter 2, the purpose of the Endangered Species Act is to protect all animal, plant, and insect species that are federally listed as threatened or endangered. Currently, no known federally listed threatened or endangered species breed/reside within KAFB boundaries. Several federally listed species are found within the county of Bernalillo, as shown in Table 7-9.

A few animal species protected by the State of New Mexico have been encountered within KAFB boundaries; see Table 7-9. One species in particular, the Gray Vireo (*Vireo vicinior*), listed as threatened by the New Mexico Department of Game and Fish, is well known as a breeding bird on both KAFB property and on DOE-permitted and fee-owned areas. The Gray Vireo's primary breeding habitat is open piñon-juniper woodlands within the foothills of the Manzano Mountains.

Table 7-9. Federal and state status of species potentially occurring in Bernalillo County, New Mexico

Common Name	Scientific Name	Federal ESA Status	New Mexico Status	Observed at KAFB
Mammals				
big free-tailed bat	*Nyctinomops macrotis*	—	Sensitive	
common hog-nosed skunk	*Conepatus leuconotus*	—	Sensitive	✓
fringed myotis	*Myotis thysanodes*	—	Sensitive	
Gunnison's prairie dog	*Cynomys gunnisoni zuniensis*	—	Sensitive	✓
Long-legged myotis	*Myotis volans*	—	Sensitive	
meadow jumping mouse	*Zapus hudsonius luteus*	Endangered and critical habitat	Endangered	
pale Townsend's big-eared bat	*Corynorhinus townsendii*	SOC	Sensitive	✓
red fox	*Vulpes vulpes*	—	Sensitive	
ringtail	*Bassariscus astutus*	—	Sensitive	✓
southwestern little brown myotis	*Myotis occultus*	—	Sensitive	✓
spotted bat	*Euderma maculatum*	—	Threatened	
western small-footed myotis	*Myotis ciliolabrum*	—	Sensitive	
western spotted skunk	*Spilogale gracilis*	—	Sensitive	
Yuma myotis	*Myotis yumanensis*	—	Sensitive	
Birds				
Aplomado Falcon	*Falco femoralis*	Endangered	Endangered	
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	SOC	Threatened	
Baird's Sparrow	*Ammodramus bairdii*	SOC	Threatened	
Bald Eagle	*Haliaeetus leucocephalus*	—	Threatened	✓
Bell's Vireo	*Vireo bellii*	SOC	Threatened	✓
Black Swift	*Cypseloides niger*	—	Sensitive	
Broad-billed Hummingbird	*Cynanthus latirostris*	—	Threatened	
Brown Pelican	*Pelecanus occidentalis*	—	Endangered	
Burrowing Owl	*Athene cunicularia*	SOC	—	✓
Common Black Hawk	*Buteogallus anthracinus*	SOC	Sensitive	
Gray Vireo	*Vireo vicinior*	—	Threatened	✓
Least Tern	*Sternula antillarum*	Endangered	Threatened	
Loggerhead Shrike	*Lanius ludovicianus*	—	Sensitive	✓
Mexican Spotted Owl	*Strix occidentalis lucida*	Threatened and critical habitat	Threatened	
Mountain Plover	*Charadrius montanus*	—	Sensitive	
Neotropic Cormorant	*Phalacrocorax brasilianus*	—	Threatened	
Northern Goshawk	*Accipiter gentilis*	SOC	Sensitive	
Southwestern Willow Flycatcher	*Empidonax traillii extimus*	Endangered and critical habitat	Threatened	✓
Sprague's Pipit	*Anthus spragueii*	Candidate	—	✓

See notes at end of table.

Table 7-9. Federal and state status of species potentially occurring in Bernalillo County, New Mexico (continued)

Common Name	Scientific Name	Federal ESA Status	New Mexico Status	Observed at KAFB
Birds (continued)				
Peregrine Falcon	*Falco peregrinus*	SOC	Threatened	✓
White-eared Hummingbird	*Hylocharis leucotis*	—	Threatened	
Yellow-billed Cuckoo (western)	*Coccyzus americanus occidentalis*	Threatened	Sensitive	
Reptiles				
Desert Massasauga	*Sistrurus catenatus dewardsii*	Under review	—	✓
Southwestern Fence Lizard	*Sceloporus cowlesi*	—	Sensitive	✓
Fish				
Rio Grande Chub	*Gila pandora*	—	Sensitive	
Rio Grande Silvery Minnow	*Hybognathus amarus*	Endangered and critical habitat	Threatened	
Invertebrates				
Socorro Mountainsnail	*Oreohelix neomexicana*	—	Sensitive	

Source: New Mexico Department of Game and Fish. 2017. "Biota Information System of New Mexico." Accessed March 15, 2017. http://www.bison-m.org.

Notes: — = no designation
ESA = Endangered Species Act
KAFB = Kirtland Air Force Base
SOC = species of concern

Chapter 8. Quality Assurance

Great-horned Owl (*Bubo virginianus*)

OVERVIEW ■ Sandia National Laboratories quality assurance teams monitor environmental impacts of the work done at SNL/NM. Personnel in various programs collect environmental samples and analyze them for radiological and nonradiological constituents. Quality control samples are sent to contract laboratories to ensure the samples meet statistically established control criteria or prescribed acceptance control limits. In 2016, DOE Consolidated Audit Program audits at the primary Sample Management Office) contract laboratories had no findings for SNL/NM.

Sandia National Laboratories (SNL) personnel take responsibility and assume accountability for implementing quality assurance (QA) for its operations as specified in International Organization for Standard 9001 (ISO 2008), the Contractor Requirements Document of the U.S. Department of Energy (DOE) Order 414.1D (DOE O 414.1D), *Quality Assurance*, and 10 Code of Federal Regulations (CFR) 830 (10 CFR 830), Subpart A, "Quality Assurance," via policy statements, processes, and procedures, and by executing the actions specified in those processes and procedures. SNL management is responsible for ensuring the quality of the company's products; for assessing its operations, programs, projects, and business systems; and for identifying deficiencies and effecting continuous improvements.

8.1 Environmental Monitoring for Quality Assurance

Environmental monitoring (which includes sampling) is conducted in accordance with program-specific sampling and analysis plans (SAPs), work plans, or Quality Assurance Plans, which contain applicable QA elements. These documents meet appropriate federal, state, and local requirements for conducting sampling and analysis activities. Personnel in various programs collect environmental samples and analyze the samples for radiological and nonradiological constituents.

Project SAPs (or equivalent) include critical elements, such as procedures for sample collection, sample preservation and handling, sample control, laboratory quality control (QC), required limits of detection, field QC, health and safety, schedules and frequency of sampling, data review, data acceptability, and reporting, along with references to analytical methods and analyte lists and known potential matrix interference.

8.1.1 Sample Management Office

The Sample Management Office (SMO) packages, ships, and tracks environmental samples to off-site (contracted) laboratories. Radiation Protection Sample Diagnostics (RPSD) laboratory processes and analyzes some samples for radiological constituents in accordance with RPSD procedures. SMO personnel are responsible for QA and QC once field team members relinquish the samples to the SMO.

SMO personnel provide guidance and sample management support for field activities. However, program leads are responsible for each distinct program's overall adherence to and compliance with any sampling and analysis activity performed.

8.1.2 Contract Laboratory Selection

All off-site contract laboratories are selected based on performance objectives, licenses and accreditations, and appraisals (pre-award assessments) as described in the *Quality Assurance Project Plan (QAPP) for the Sample Management Office* (SNL, New Mexico [SNL/NM] SNL/NM 2016c). All laboratories must employ U.S. Environmental Protection Agency (EPA) test procedures whenever possible; when these are not available, other suitable and validated test procedures are applied. Laboratory instruments must be calibrated in accordance with established procedures, methods, and the SMO Statement of Work (SOW) for Analytical Laboratories (SNL/NM 2013b). All calibrations and detection limits must be verified before sample analysis and data reporting. Once a laboratory has passed an initial appraisal and has been awarded a contract, the SMO is responsible for continuously monitoring laboratory performance to ensure that the laboratory meets its contractual requirements during annual audits.

SMO contract laboratories perform work in compliance with the SMO SOW for Analytical Laboratories (SNL/NM 2013b). Contract laboratories are required to participate in applicable DOE and EPA programs for blind audit check sampling to monitor the overall accuracy of analyses routinely performed on SNL/NM samples. SMO contract laboratories are required to participate in the DOE Mixed Analyte Performance Evaluation Program. Contract laboratories also participate in commercial vendor programs designed to meet the evaluation requirements given in the proficiency testing section (Chapter II) of the National Environmental Laboratory Accreditation Conference (NELAC) Standard.

8.1.3 Quality Control for Samples

Project-specified QC samples are submitted to contract laboratories in order to meet project data quality objectives and SAP requirements. Various field QC samples are collected to assess the data's quality and final usability. Errors, some of which are unavoidable, can be introduced into the sampling process, including potential contamination of samples in the field or during transportation. Additionally, sample results can be affected by the variability present at each sample location.

With each sample batch, laboratory QC samples are prepared concurrently at defined frequencies and analyzed in accordance with established methods. The contract laboratory determines the analytical accuracy, precision, contamination, and matrix effects associated with each analytical measurement.

QC sample results are compared either to statistically established control criteria or to prescribed acceptance control limits. Analytical results generated concurrently with QC sample results within established limits are considered acceptable. If QC analytical results exceed control limits, the results are qualified and corrective action is initiated if warranted. Reanalysis is then performed for samples in the analytical batch as specified in the SOW and laboratory procedures. QC sample summaries are included in analytical reports prepared by contract laboratories.

The Radiation Protection Dosimetry Program at SNL/NM owns, issues, and processes thermoluminescent dosimeters used to measure gamma radiation.

Radiation Protection Dosimetry Program (RPDP) owns, issues, and processes thermoluminescent dosimeters used to measure gamma radiation. The technical basis for the environmental dosimeter monitoring program is provided in *Description and Procedures of the Environment Radiation Dosimetry Program* (SNL/NM 1987). Dosimeters are issued and processed quarterly following established protocols and QA/QC requirements specified in the RPDP operating procedures and the RPDP Quality Plan (SNL/NM 2016d). Automated dosimeter equipment is used to manage environmental dosimeters. RPDP external dosimetry technical personnel perform data reduction and dose calculations.

8.1.4 Data Validation and Records Management

Sample collection, analysis request and chain of custody (ARCOC) documentation, and measurement data are reviewed and validated for each sample collected. Analytical data reported by contract laboratories are reviewed to assess laboratory and field precision, accuracy, completeness, representativeness, and comparability with respect to the particular program's method of compliance and data quality objectives.

The following sources are reviewed and the data validated at a minimum of three levels:

- The analytical laboratory validates data according to the laboratory's QA plan, standard operating procedures, and client-specific requirements.
- SMO personnel review the analytical reports and corresponding sample collection and ARCOC documentation for completeness and laboratory contract compliance.
- A program lead reviews program objectives, regulatory compliance, and project-specific data quality requirements, and makes the final decision regarding the data's usability and reporting.

Additionally, all groundwater monitoring data, site-wide confirmatory data, radioactive mixed waste characterization data, and a specified percentage of other program data are validated to detailed method-specified requirements.

8.2 Sample Management Office Activities in 2016

SMO activities in 2016 included sample packaging, shipping, and tracking to off-site (contracted) laboratories, and reviewing all data deliverables for compliance with contract and data quality requirements.

8.2.1 Sample Handling and Analyses

In 2016, the SMO processed a total of 3,600 samples in support of programs and projects at SNL/NM. Of these, 3,483 samples (including QC) were for the first five programs and projects listed here. Of the 3,600 samples, 878 were submitted as field and analytical QC samples to assist with data validation and decision making. The following programs provided samples:

- Air Quality Compliance
- Water Quality
- Terrestrial Surveillance
- Long-Term Stewardship
- Environmental Restoration Operation
- Waste Management
- Decontamination and Demolition

During 2016, the following contract laboratories were employed to analyze samples:

- General Engineering Laboratories in Charleston, South Carolina
- TestAmerica Laboratories in St. Louis, Missouri; Richland, Washington; and West Sacramento, California
- Hall Environmental Analysis Laboratory in Albuquerque, New Mexico
- State of New Mexico Department of Health in Albuquerque, New Mexico
- Cape Fear Analytical in Wilmington, North Carolina
- Landauer in Glenwood, Illinois

In 2016, the Sample Management Office processed 3,600 samples in support of programs and projects at SNL/NM.

8.2.2 Laboratory Quality Assurance Assessments and Validation

In 2016, SMO personnel continued independent, on-site assessments and validation at the NELAC-approved laboratories used by SNL personnel. Specific checks were made for documentation completeness, proper equipment calibration, proper laboratory practices, and batch QC data. These assessments focused on data defensibility and regulatory compliance requirements specific to SNL/NM work.

8.2.3 Quality Assurance Audits

The DOE Consolidated Audit Program (DOECAP) conducted audits in 2016 at the primary SMO contract laboratories using DOE/Department of Defense *Consolidated Quality Systems Manual* requirements. The audit reports, laboratory responses, and closure letters are all posted on and tracked through the DOECAP website. The SMO worked closely with the contract laboratories to resolve audit findings expeditiously. Decisions regarding sample distribution to contract laboratories were based on audit information, including outstanding corrective actions.

No findings for SNL/NM samples were issued in 2016 in either the DOECAP audit or the Mixed Analyte Performance Evaluation Program audit.

Chapter 9. Permits, Regulations, and Standards for Environmental Programs

Sandia foothills

OVERVIEW ■ Sandia National Laboratories maintain compliance with all required permits, regulations, and standards for environmental programs.

Table 9-1 through Table 9-5 summarize various permits, regulations, and standards that define environmental programs at Sandia National Laboratories, New Mexico, and compliance with those requirements.

Table 9-1. Summary of environmental permits and registrations in effect, 2016

Permit Type and/or Facility Name	Location	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Sewer Wastewater					
General	WW001 Station Manhole, south of TA-IV at Tijeras Arroyo	2069 A	2/28/2013	2/28/2018	ABCWUA
General	WW006 Station Manhole, at Pennsylvania Avenue	2069 F	4/1/2014	3/31/2019	ABCWUA
MESA	WW007 Station Manhole, TA-I	2069 G	3/1/2015	1/31/2020	ABCWUA
General	WW008 Station Manhole, south of TA-II at Tijeras Arroyo	2069 I	9/1/2014	7/31/2019	ABCWUA
General	WW011 Station Manhole, north of TA-III (includes TA-III and TA-V, and Coyote Test Field sewer lines)	2069 K	11/1/2014	9/30/2019	ABCWUA
CINT	CINT	2238 A	5/1/2016	4/30/2021	ABCWUA

See notes at end of table.

Table 9-1. Summary of environmental permits and registrations in effect, 2016 (continued)

Permit Type and/or Facility Name	Location	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Surface Discharge					
Pulsed Power Development Facilities (Discharge Plan)	TA-IV, Lagoon I and Lagoon II	DP-530	9/5/2014	9/5/2019	NMED
Underground Storage Tanks					
UST (10,000 gal)	TA-I	1894	7/1/2015	6/30/2017	NMED
UST (20,000 gal)	TA-I	1892	7/1/2015	6/30/2017	NMED
UST (20,000 gal)	TA-I	1893	7/1/2015	6/30/2017	NMED
Aboveground Storage Tanks					
AST (2,000 gal)	TA-I	1791	7/1/2015	6/30/2017	NMED
AST (4,500 gal)	TA-IV	1794	7/1/2015	6/30/2017	NMED
AST (5,000 gal)	TA-III	1792	7/1/2015	6/30/2017	NMED
AST (5,500 gal)	Coyote Test Field	1793	7/1/2015	6/30/2017	NMED
AST (3,020 gal)	TA-I	TBD (new registration)	N/A	6/30/2017	NMED
AST (2,119 gal)	TA-I	1790	7/1/2015	6/30/2017	NMED
AST (1,500 gal)	TA-I	TBD (new registration)	N/A	6/30/2017	NMED
Stormwater					
NPDES Rio Grande Watershed-Based Municipal Separate Storm Sewer System (MS4) Permit					
NPDES MS4	TA-I, TA-II, TA-IV, TA-V, and TA-III (northeast corner only)	Sandia NMR053122 DOE/SFO NMR053114	12/22/2015 (Sandia) 11/18/2015 (DOE/SFO)	12/19/2019	EPA
NPDES Multi-Sector General Permit					
NPDES MSGP	SNL/NM industrial discharge locations	Sandia NMR04A012 DOE/SFO NMR04A011	9/30/2015	6/4/2020	EPA
NPDES Construction General Permit					
DETS Thunder Range	Thunder Range	Sandia NMR12B970 DOE/SFO NMR12B971	3/22/2016 (Sandia) 3/30/2016	CGP expires 2/16/2017	EPA
DETS North	Thunder Range	Sandia NMR12BE68 DOE/SFO NMR12BE69	6/15/2016 (Sandia) 6/16/2016	CGP expires 2/16/2017	EPA
Telecommunications Cable Installation to Building 9972	Coyote Test Field	Sandia NM12AH77	4/30/2013	CGP expires 2/16/2017	EPA
6000 Igloos	6000 Igloos	Sandia NMR12AV98	7/3/2014	CGP expires 2/16/2017	EPA
TA-III Road Replacement	TA-III	Sandia NMR12AU80	6/3/2014	CGP expires 2/16/2017	EPA
Building 756 and Parking Lot	TA-I	Sandia NMR12B599	5/27/2015	NOI terminated 11/23/2016	EPA
Building 905 Addition	TA-II	Sandia NMR12B600	8/24/2015	CGP expires 2/16/2017	EPA
Long Sled Track Clearing	TA-III	Sandia NMR12BC75	12/8/2015	CGP expires 2/16/2017	EPA
Eubank Contractor Gate	TA-I	Sandia NMR	6/27/2016	NOI terminated 11/23/2016	EPA
Brayton Cycle Gas Line	TA-III	Sandia NMR12BK96	11/1/2016	CGP expires 2/16/2017	EPA
9920 to 9956 Fiber Line	Coyote Test Field	Sandia NMR12BB05	4/26/2016	CGP expires 2/16/2017	EPA

See notes at end of table.

Table 9-1. Summary of environmental permits and registrations in effect, 2016 (continued)

Permit Type and/or Facility Name	Location	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Ecological					
New Mexico Department of Game and Fish for Scientific/Educational Purposes Authorization for Taking of Protected Wildlife	Site-wide ecological monitoring activity	2931	3/12/2014	12/31/2016	New Mexico Department of Game and Fish
New Mexico Department of Game and Fish Nuisance Permit	Site-wide ecological monitoring activity	119	3/25/2014	3/31/2018	New Mexico Department of Game and Fish
RCRA					
Hazardous Waste Permit (Post-Closure Care)	Chemical Waste Landfill	NM5890110518	Issued 10/15/2009; effective 6/2/2011	6/2/2021	NMED
RCRA Facility Operating Permit	• Hazardous Waste Handling Unit • Thermal Treatment Unit • Radioactive and Mixed Waste Management Unit • Auxiliary Hot Cell Unit • Manzano Storage Bunkers (5) • Corrective Action Management Unit	NM5890110518	Issued 1/27/2015; effective 2/26/2015	2/26/2025	NMED
Open Burning/Detonation[a]					
Propellant Applications–Terminal Ballistics Facility	Building 6750	17-0008	1/1/2017	12/31/2017	COA
Explosive Applications–Terminal Ballistics Facility	Building 6750	17-0007	1/1/2017	12/31/2017	COA
Thermite Applications–Terminal Ballistics Facility	Building 6750	17-0009	1/1/2017	12/31/2017	COA
Explosives Testing	Thunder Range	17-0011	1/1/2017	12/31/2017	COA
Thermal Treatment Unit	Thermal Treatment Unit[a]	17-0010	1/1/2017	12/31/2017	COA
Explosives Testing	9939 test site	17-0012	1/1/2017	12/31/2017	COA
Explosives Testing	9920 test site	17-0004	1/1/2017	12/31/2017	COA
Explosives Training and Testing	DETS	17-0006	1/1/2017	12/31/2017	COA
IED and HME Explosives Testing and Training	9930 Test Site	17-0005	1/1/2017	12/31/2017	COA
Crude Oil Combustion Experiments	Burn Site	17-0013	1/1/2017	12/31/2017	COA
Fuel Fire Experiments	Burn Site	16-0035	7/10/2016	7/10/2017	COA
Stationary Source (Air)					
Document Disintegrator	TA-III	Permit 144-M1	9/28/2006	N/A	COA
Neutron Generator Facility	TA-I	Permit 374-M2	12/6/2010	N/A	COA
Standby Diesel Generators at Building 862	TA-I	Permit 402	5/07/1996	N/A	COA
RMWMU	TA-III	Permit 415-M2-RV1	9/23/2011	N/A	COA
Title V Operating Permit	Site-wide	Permit 515 (pending)	Submitted 3/1/1996	N/A	COA
Explosives Components Facility	TA-II	Registration 547-RV1	9/27/2011	N/A	COA

See notes at end of table.

Table 9-1. Summary of environmental permits and registrations in effect, 2016 (continued)

Permit Type and/or Facility Name	Location	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Stationary Source (Air) (continued)					
Emergency Generator at Building 702	TA-I	Permit 924-RV1	2/8/2012	N/A	COA
PETL Emergency Generator	TA-I	Permit 925-M2	4/11/2012	N/A	COA
Advanced Manufacturing Prototype Facility	TA-I	Registration 1406-M1-RV1	10/4/2011	N/A	COA
Thermal Test Complex	TA-III	Permit 1712-RV2	5/20/2016	N/A	COA
CINT	Sandia Science and Technology Park	Permit 1725-M1	4/12/2012	N/A	COA
MESA Facility Boilers and Generators	TA-I	Permit 1820-M1-RV1	9/16/2015	N/A	COA
Building 899A Boiler	TA-I	Registration 1823-RV1	9/30/2011	N/A	COA
Southeast TA-I Generator	TA-I	Permit 1828	9/28/2006	N/A	COA
Building 878 Boiler	TA-I	Registration 1888-RV1	5/11/2011	N/A	COA
Strategic Defense Facility, Building 963	TA-IV	Permit 1900	1/11/2008	N/A	COA
Site-wide Chemical Use	Site-wide	Permit 1901-M1	10/10/2016	N/A	COA
Building 865 Boiler	TA-I	Registration 1902-RV1	11/30/2010	N/A	COA
Building 962 Generator	TA-IV	Permit 1930-RV1	2/3/2012	N/A	COA
Building 833 Generator	TA-I	Permit 2097-M2	1/20/2014	N/A	COA
Lurance Canyon Burn Site Igloo/FLAME	Remote	Permit 3216-M1	7/1/2016	N/A	COA
Building 802 Boiler	TA-I	Registration 2109	10/28/2010	N/A	COA
Building 804 Boiler	TA-I	Registration 2110	11/8/2010	N/A	COA
Building 810 Boiler	TA-I	Registration 2111	11/8/2010	N/A	COA
Building 823 Boiler	TA-I	Registration 2112	11/8/2010	N/A	COA
Building 840 Boiler	TA-I	Registration 2113	11/8/2010	N/A	COA
Building 857 Boiler	TA-I	Registration 2114	11/8/2010	N/A	COA
Building 860 Boiler	TA-I	Registration 2115	11/8/2010	N/A	COA
Building 880 Boiler and Generator	TA-I	Permit 2116-M1	9/10/2015	N/A	COA
Building 890 Boiler	TA-I	Registration 2117	11/29/2010	N/A	COA
Building 887 Boiler	TA-I	Registration 2118	11/29/2010	N/A	COA
Building 891 Boiler	TA-I	Registration 2119	11/29/2010	N/A	COA
Building 892 Boiler	TA-I	Registration 2120	11/30/2010	N/A	COA
Building 894 Boiler	TA-I	Registration 2121	11/30/2010	N/A	COA
Building 897 Boiler	TA-I	Registration 2122	11/30/2010	N/A	COA
Building 960 Boiler	TA-IV	Registration 2169	9/27/2011	N/A	COA
Building 895 Boiler	TA-I	Registration 2170	9/27/2011	N/A	COA
Building 800 Boiler	TA-I	Registration 2171	9/27/2011	N/A	COA
Building 6585 Boiler	TA-V	Registration 2172-RV1	1/26/2012	N/A	COA
Building 6587 Boiler	TA-V	Registration 2173	2/10/2012	N/A	COA
Building 6580 Boiler	TA-V	Registration 2174-RV1	2/26/2012	N/A	COA
Building 981 Boiler	TA-IV	Registration 2175	9/22/2011	N/A	COA
Building 983 Boiler	TA-IV	Registration 3111	9/13/2013	N/A	COA
Building 963 Boiler	TA-IV	Registration 3211	2/15/2015	N/A	COA

See notes at end of table.

Table 9-1. Summary of environmental permits and registrations in effect, 2016 (continued)

Permit Type and/or Facility Name	Location	Permit Number	Issue Date	Expiration Date	Regulatory Agency
Fugitive Dust Control Construction/ Demolition					
Borrow Site–Cell 1 Programmatic	TA-III	P08-0005	6/19/2013	6/19/2018	COA
Moving Vehicle Test Track Programmatic	TA-III	P08-0004	6/19/2013	6/19/2018	COA
Thunder Range–Range 6 Programmatic	Remote	P08-0061	6/19/2013	6/19/2018	COA
Thunder Range–Range 1 Programmatic	Remote	P08-0062	6/18/2013	6/18/2018	COA
Thunder Range–Range 5 Programmatic	Remote	P08-0063	6/19/2013	6/19/2018	COA
Thunder Range–Range 7 Programmatic	Remote	P09-0021	12/16/2014	12/16/2019	COA
Thunder Range–Range 4 Programmatic	Remote	P09-0022	12/16/2014	12/16/2019	COA
DETS Complex/ Building 9940	Remote	P09-0014	6/23/2014	6/23/2019	COA
DETS–East Programmatic	Remote	P09-0016	6/23/2014	6/23/2019	COA
DETS–South Programmatic	Remote	P10-0018	6/3/2015	6/3/2020	COA
Parking Lot–Steam Plant Site	TA-I	7325-P	5/26/2015	5/26/2020	COA
Assembly Building at Thunder Range	Remote	6303-C	10/9/2013	10/9/2018	COA
TA-III Natural Gas Line	TA-III	8380-C	11/21/2016	11/21/2017	COA
TA-IV South Escarpment Stabilization	TA-IV	6895-C	10/10/2014	10/10/2019	COA
26003 and 26023 Igloos Erosion Protection Installation	Remote	8052-C	6/22/2016	8/22/2017	COA
Building 6596 D&D	TA-III	7460-C	8/6/2015	8/6/2018	COA
905 Addition/Renovation	TA-II	7492-C	8/21/2015	8/21/2018	COA
Install Communication Fiber 9920-9950/9956	TA-III	7975-C	5/13/2016	5/13/2017	COA

NOTES: [a]COA issues Open Burn Permits for no more than a year at any one time.

ABCWUA = Albuquerque Bernalillo County Water Utility Authority
AST = aboveground storage tank
CGP = Construction General Permit
CINT = Center for Integrated Nanotechnologies
COA = City of Albuquerque
D&D = decontamination and demolition
DETS = Dynamic Explosives Test Site
DOE = U.S. Department of Energy
DP = discharge permit
EPA = U.S. Environmental Protection Agency
FLAME = Fire Laboratory for Accreditation of Modeling by Experiment
HME = homemade explosive
IED = improvised explosive device
MESA = Microsystems and Engineering Sciences Applications
MS4 = Municipal Separate Storm Sewer System
MSGP = Multi-Sector General Permit
N/A = not applicable
NMED = New Mexico Environment Department
NOI = Notice of Intent
NPDES = National Pollution Discharge Elimination System
PETL = Processing and Environmental Technology Laboratory
RCRA = Resource Conservation and Recovery Act
RWMMU = Radioactive and Mixed Waste Management Unit
SFO = Sandia Field Office
SNL/NM = Sandia National Laboratories, New Mexico
TA = technical area
TBD = to be determined
U.S. = United States
UST = underground storage tank
WW = wastewater

Table 9-2. Summary of compliance history with regard to mixed waste

Date	Milestone	Comment
Nov 1984	1984 HSWA to RCRA	Extended storage became an issue after HSWA established land disposal restrictions and a prohibition on storage of wastes for more than one year.
Aug 1990	RCRA Part A interim status permit application	Submitted the RCRA Part A interim status permit application to NMED for mixed waste storage. Later revisions to the interim status application were added to include proposed mixed waste treatment processes.
Oct 1992	FFCA passed	The FFCA allows storage of mixed waste that does not meet the applicable treatment standard beyond the one-year RCRA time limit. This requires DOE to submit a site treatment plan for mixed waste.
Dec 1992	NON issued	The U.S. Environmental Protection Agency issued a NON for storage of RCRA-regulated mixed waste over the one-year maximum period.
Oct 1993	Conceptual STP submitted	DOE submitted a conceptual STP for mixed waste to NMED; other drafts followed.
Mar 1995	Final STP submitted	DOE submitted a final STP for mixed waste to NMED.
Jun 1995	HDRV Project initiated	The HDRV Project was initiated to characterize and sort legacy mixed waste. The project continued into 1997, when it was replaced with new sorting procedures.
Oct 1995	FFCO signed	The FFCO, an agreement between NMED, DOE, and SNL, details specific actions required with regard to mixed waste management, including the requirement to develop an STP, to be updated annually.
Mar 1996	STP milestones met	Updated the STP to reflect fiscal year 1995 activities.
Sep 1996	First mixed waste shipment FFCO Amendment No. 1	The first mixed waste shipment was made; mixed waste was sent to Perma-Fix/Diversified Scientific Services, Inc., for treatment. The FFCO was amended.
Dec 1996	Revisions to proposed treatment methods	DOE and SNL resubmitted the Part A and Part B permit application to reflect revisions to proposed on-site treatment methods.
May 1997	FFCO Amendment No. 2	The FFCO was amended.
Dec 1997	On-site MW treatment	On-site treatment of mixed waste began at the Radioactive and Mixed Waste Management Unit in compliance with regulatory requirements.
1997–2001	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Updated the STP annually to reflect activities and changes to proposed treatment technologies. NMED approved revisions 1 through 5 to the STP, revising waste volumes and treatment/disposal technologies and establishing new deadlines.
May 2001	FFCO Amendment No. 3	The FFCO was amended.
Feb 2002	N/A	DOE and SNL submitted the updated Part A and Part B permit application to NMED to reflect revisions to on-site waste management operations. Permit application for mixed waste management units is combined with permit renewal requests for hazardous waste management units at SNL/NM.
2002–2003	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Updated the STP annually to reflect activities and changes to proposed treatment technologies. NMED approved revisions 6 and 7 to the STP, revising waste volumes and treatment/disposal technologies and establishing new deadlines.

See notes at end of table.

Table 9-2. Summary of compliance history with regard to mixed waste (continued)

Date	Milestone	Comment
Apr 2003, Nov 2003	N/A	DOE and SNL personnel revised the Part A and Part B permit application in response to NMED comments.
Apr 2004	FFCO Amendment No. 4	The FFCO was amended.
Nov 2004	N/A	DOE and SNL personnel revised the Part A and Part B permit application in response to NMED comments.
2004–2007	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Updated the STP annually to reflect activities and changes to proposed treatment technologies. NMED approved revisions 8–11 to the STP, revising waste volumes and treatment/disposal technologies and establishing new deadlines.
Jun 2005, Oct 2005, May 2006, Mar 2007	N/A	DOE and SNL personnel revised the Part A and Part B permit application to reflect changes in waste management operations.
Aug 2007	N/A	NMED issued a draft permit to DOE and SNL, and made it available for public comment.
Jan 2008	N/A	DOE and SNL personnel submitted extensive comments on the draft permit to NMED and requested resolution of comments.
2008–2010	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Updated the STP annually to reflect activities and changes to proposed treatment technologies. NMED approved Revision 12 to the STP, revising waste volumes and treatment/disposal technologies and establishing new deadlines.
Oct 2009, Nov 2010	N/A	DOE and SNL personnel revised the Part B permit application to reflect changes in waste management operations.
Dec 2010	FFCO Amendment No. 5	The FFCO was amended to extend certain compliance deadlines.
2011	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Completed disposition of all mixed wastes subject to the STP, in compliance with applicable deadlines. Updated the STP to reflect fiscal year 2010 activities.
Oct 2011, May 2012	N/A	DOE and SNL personnel revised the Part A and Part B permit application to reflect changes in waste management operations.
Sep 2012	N/A	NMED issued a draft permit to DOE and SNL, and made it available for public comment.
Nov 2012	N/A	DOE and SNL personnel submitted comments on the draft permit to NMED and requested resolution of comments.
2012–2014	No STP milestones	Treated wastes on-site and shipped mixed wastes to off-site treatment/ disposal facilities in compliance with regulatory requirements. Updated the STP annually to reflect waste management activities and waste volumes. Requested Revision 14 to STP to establish new deadlines and provide continuity.
Dec 2014	No STP milestones	NMED approved Revision 14 to the STP, revising waste volumes and establishing new deadlines.

See notes at end of table.

Table 9-2. Summary of compliance history with regard to mixed (continued)

Date	Milestone	Comment
Jan 2015	N/A	NMED issued the Resource Conservation and Recovery Act Facility Operating Permit for SNL/NM. The permit includes mixed waste storage and treatment units.
2015-2016	STP milestones met	Treated wastes on-site and shipped mixed wastes to off-site treatment and disposal facilities in compliance with regulatory requirements, meeting all treatment and disposal milestones. Updated the STP annually to reflect waste management activities and waste volumes. Requested Revision 15 to STP to establish new deadlines, update waste management technologies, and provide continuity.
Oct 2016		NMED approved Revision 15 to the STP, revising waste volumes and technologies, and establishing new deadlines.

NOTES: DOE = U.S. Department of Energy
FFCA = Federal Facility Compliance Act
FFCO = Federal Facility Compliance Order
HDRV = Historical Disposal Requests Validation
HSWA = Hazardous and Solid Waste Amendment
MW = mixed waste
N/A = not applicable
NMED = New Mexico Environment Department
NON = Notice of Noncompliance
RCRA = Resource Conservation and Recovery Act
SNL/NM = Sandia National Laboratories, New Mexico
STP = Site Treatment Plan

Table 9-3. Quantity of mixed waste subject to the Federal Facility Compliance Order, end of FY 2016

Waste Category	Volume (m^3)	Description	Status and Plans
TG 1	0	Inorganic debris with explosives component	No waste currently in inventory
TG 2	0	Inorganic debris with a water-reactive component	No waste currently in inventory
TG 3	0	Reactive metals	No waste currently in inventory
TG 4	0	Elemental lead	No waste currently in inventory
TG 5	0	Aqueous liquids (corrosive)	No waste currently in inventory
TG 6	0	Elemental mercury	No waste currently in inventory
TG 7	0	Organic liquids I	No waste currently in inventory
TG 8	0	Organic debris with organic contaminants	No waste currently in inventory
TG 9	0	Inorganic debris with TCLP metals	No waste currently in inventory
TG 10	0	Heterogeneous debris	No waste currently in inventory
TG 11	0	Organic liquids II	No waste currently in inventory
TG 12	0	Organic debris with TCLP metals	No waste currently in inventory
TG 13	0	Oxidizers	No waste currently in inventory
TG 14	0	Aqueous liquids with organic contaminants	No waste currently in inventory
TG 15	0	Soils < 50 percent debris and particulates with TCLP metals	No waste currently in inventory
TG 16	0	Cyanide waste	No waste currently in inventory
TG 17	0	Liquid/solid with organic and/or metal contaminants	No waste currently in inventory
TG 18	0	Particulates with organic contaminants	No waste currently in inventory
TG 19	0	Liquids with metals	No waste currently in inventory
TG 20	0	Propellant with TCLP metals	No waste currently in inventory
TG 21	0	Sealed sources with TCLP metals	No waste currently in inventory
TG 22	0	Reserved	N/A
TG 23	0	Thermal batteries	No waste currently in inventory
TG 24	0	Spark gap tubes with TCLP metals	No waste currently in inventory
TG 25	0	Classified items with TCLP metals	No waste currently in inventory
TG 26	0	Debris items with reactive compounds and TCLP metals	No waste currently in inventory
TG 27	0	High mercury solids and liquids	No waste currently in inventory
MTRU	1.24	MTRU	Stored at SNL/NM; awaiting shipment to WIPP

NOTES: FY = fiscal year
MTRU = mixed transuranic
N/A = not applicable
SNL/NM = Sandia National Laboratories, New Mexico
TCLP = toxicity characteristic leaching procedure
TG = Treatability Group
WIPP = Waste Isolation Pilot Plant

Table 9-4. Boiler fuel usage and emission data, 2016

Permit or Registration Number	Fuel Usage (scf)	Emissions (tpy)				
		NO_x	CO	PM_{10}	SO_2	VOC
#374-M2	7,092,703	0.1773	0.2979	0.0270	0.0064	0.0195
R#547-RV1	5,544,590	0.2772	0.2329	0.0211	0.0017	0.0152
#925-M2	10,134,000	0.5067	0.4256	0.0385	0.0091	0.0279
R#1406-M1	2,801,509	0.0700	0.1177	0.0106	0.0008	0.0077
#1725-M1	7,105,328	0.3553	0.2984	0.0270	0.0021	0.0195
#1820-M1	54,010,700	1.3503	2.2684	0.2052	0.0486	0.1485
R#1823	5,991,010	0.2996	0.2516	0.0228	0.0018	0.0165
R#1888-RV1	20,381,000	1.0191	0.8560	0.0774	0.0061	0.0560
R#1902-RV1	2,348,742	0.1174	0.0986	0.0089	0.0007	0.0065
R#2109	3,974,660	0.0994	0.1669	0.0151	0.0036	0.0109
R#2110	4,043,963	0.1011	0.1698	0.0154	0.0036	0.0111
R#2111	2,802,396	0.0701	0.1177	0.0106	0.0025	0.0077
R#2112	4,058,309	0.1015	0.1704	0.0154	0.0037	0.0112
R#2113	3,922,804	0.0981	0.1648	0.0149	0.0035	0.0108
R#2114	2,356,795	0.0589	0.0990	0.0090	0.0021	0.0065
R#2115	1,762,865	0.0441	0.0740	0.0067	0.0016	0.0048
R#2117	3,522,071	0.0881	0.1479	0.0134	0.0032	0.0097
R#2118	2,223,402	0.0556	0.0934	0.0084	0.0020	0.0061
R#2119	2,082,049	0.0521	0.0874	0.0079	0.0019	0.0057
R#2120	10,071,929	0.2518	0.4230	0.0383	0.0091	0.0277
R#2121	15,156,297	0.3789	0.6366	0.0576	0.0136	0.0417
R#2122	4,368,688	0.1092	0.1835	0.0166	0.0039	0.0120
R#2169	841,125	0.0421	0.0353	0.0032	0.0003	0.0023
R#2170	1,743,583	0.0872	0.0732	0.0066	0.0005	0.0048
R#2171	1,631,371	0.0816	0.0685	0.0062	0.0005	0.0045
R#2172-RV1	2,945,800	0.1473	0.1237	0.0112	0.0009	0.0081
R#2173	ND[1]	1.0606	0.8909	0.0806	0.0064	0.0583
R#2174-RV1	5,001,774	0.2501	0.2101	0.0190	0.0015	0.0138
R#2175	2,777,049	0.1389	0.1166	0.0106	0.0008	0.0076
R#3111	12,277,394	0.3069	0.5157	0.0467	0.0037	0.0338

NOTES: [1]There is currently not an individual fuel meter on this building; it is a total for several buildings. The emissions associated are the allowable emissions within the registration.

CO = carbon monoxide
ND = not detected
NO_x = nitrogen oxide
PM_{10} = particulate matter (diameter equal to or less than 10 microns)
SO_2 = sulfur dioxide
VOC = volatile organic compound

Table 9-5. Generator hours and emission data, 2016

Permit Number	Hours	Emissions (tpy)				
		NO_x	CO	PM_{10}	SO_2	VOC
#374-M2	6	0.0533	0.0115	0.0037	0.0035	0.0042
#402[a]	14.9	0.1343	0.0357	0.0024	0.0170	0.0038
	16.4					
	15.2					
	16.7					
#415-M2	2.9	0.0086	0.0019	0.0006	0.0006	0.0007
#924	8	0.0860	0.0197	0.0025	0.0290	0.0025
#925-M1	7	0.0753	0.0172	0.0022	0.0254	0.0022
#1725	9	0.0734	0.0168	0.0021	0.0248	0.0022
#1820-M1-RV1	11	0.1823	0.0484	0.0177	0.0165	0.0205
	10	0.2102	0.0558	0.0204	0.0191	0.0237
#1828	28.7	0.2583	0.0592	0.0075	0.0871	0.0076
#1900	13.2	0.0166	0.0143	0.0008	0.0053	N/A
#1930	2.1	0.0012	0.0008	0.0001	0.0001	N/A
#2097	1	0.0010	0.0001	0.0000	0.0000	N/A
#2116-M1	10.4	0.0021	0.0875	0.0050	0.0000	0.0021

NOTES: [a]The emission limits stated in the permit are combined emissions; therefore, they are calculated annually as a summed emission for all four units.

CO = carbon monoxide
N/A = not applicable
NO_x = nitrogen oxide
PM_{10} = particulate matter (diameter equal to or less than 10 microns)
SO_2 = sulfur dioxide
VOC = volatile organic compound

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Glossary

Apache Wasp (*Polistes apachus*) on Apache plume (*Fallugia paradoxa*)

A

abatement The act of reducing the degree or intensity of, or eliminating, pollution.

aboveground storage tank (AST) A fixed, stationary, or otherwise permanently installed storage tank that is wholly or partially above the ground surface and used to contain oil of any kind (petroleum, non-petroleum, synthetic, animal, or vegetable). ASTs at SNL are metal construction, field erected or shop-built, and include integral generator base tanks.

alluvial Relating to and/or sand deposited by flowing water.

ambient air Any unconfined portion of the atmosphere: open air, surrounding air.

analyte A substance or chemical constituent undergoing analysis.

anthropogenic Of, relating to, or resulting from the influence of human beings on nature.

antimony A metallic element having four allotropic forms, the most common of which is a hard, extremely brittle, lustrous, silver-white, crystalline material. It is used in a wide variety of alloys, especially with lead in battery plates, and in the manufacture of flameproofing compounds, paint, semiconductor devices, and ceramic products.

appraisal A documented activity performed according to written procedures and specified criteria to evaluate an organization's compliance and conformance with programs, standards, and other requirements contained in orders, laws, and regulations or in other requirements invoked by SNL.

aquifer An underground geological formation, or a group of formations, containing water. A source of groundwater for wells and springs.

arroyo A deep gully cut by an intermittent stream; a dry gulch.

asbestos A mineral fiber that can pollute air or water and cause cancer or asbestosis when inhaled. Uses for asbestos-containing material include, but are not limited to, electrical and heat insulation, paint filler, reinforcing agents in rubber and plastics (e.g., tile mastic), and cement reinforcement.

audit (1) An examination of records or financial accounts to check their accuracy. (2) An adjustment or correction of accounts. (3) An examined and verified account.

B

background radiation Relatively constant low-level radiation from environmental sources such as building materials, cosmic rays, and ingested radionuclides in the body.

basin (1) A low-lying area, wholly or largely surrounded by higher land, which ranges from a small, nearly enclosed valley to an extensive, mountain-rimmed depression. (2) An entire area drained by a given stream and its tributaries. (3) An area in which the rock strata are inclined downward from all sides toward the center. (4) An area in which sediments accumulate.

best management practice The preferred method or practice for managing operations.

biological niche A role played by a species in the environment.

biota The animal and plant life of a given region.

C

catchment basin The geographical area draining into a river or reservoir.

cesium-137 A radioactive isotope of cesium used in radiation therapy and found in atmospheric fallout.

containment An enclosed space or facility designed to contain and prevent the escape of hazardous material.

containment cell An engineered structure designed to contain and prevent the migration of hazardous waste.

contamination Introduction into water, air, or soil of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the medium unfit for its next intended use. Also applies to the surfaces of objects, buildings, and various household and agricultural use products.

corrective action (1) EPA requirements for treatment, storage, and disposal facilities handling hazardous waste to undertake corrective actions to clean up spills resulting from failure to follow hazardous waste management procedures or from other mistakes. The process includes cleanup procedures designed to guide treatment, storage, and disposal facilities in avoiding spills. (2) An action identified to correct a finding that, when completed, fixes a problem or prevents its recurrence.

D

data quality objective A strategic, systematic process for planning scientific data collection efforts.

decontamination The removal of harmful substances such as noxious chemicals, harmful bacteria or other organisms, or radioactive material from exposed individuals, rooms and furnishings in buildings, or the exterior environment.

demolition The act or process of wrecking or destroying, especially destruction by explosives.

derived concentration technical standard Concentrations of radionuclides in water and air that could be consumed continuously or inhaled for one year and not exceed the DOE primary radiation standard for the public (100 mrem/y effective dose equivalent).

discharge Any liquid or solid that flows or is placed on or onto any land or into any water. This includes precipitation discharges to storm drains, accidental or intentional spilling, and leaking, pumping, pouring, emitting, emptying, or dumping any material or substance on or into any land or water.

discharge limit The maximum concentration of a specified pollutant allowed to be discharged in a volume of water or wastewater.

discharge point The site or location of the release, flow, or runoff of any waste governed by regulation.

diurnal (1) Relating to or occurring in a 24-hour period; daily. (2) Occurring or active during the daytime rather than at night: diurnal animals.

dosimeter A device used to measure the dose of ionizing radiation.

E

ecology The relationship of living things to one another and their environment, or the study of such relationships.

ecosystem A network of living organisms and nonliving components (e.g., air, water, mineral soil, buildings, and roads) that interact to comprise an overall environment.

effective dose equivalent (EDE) The weighted average of dose equivalents in certain human organs or tissues; can be used to estimate the health-effects risk of an exposed individual.

effluent Wastewater (treated or untreated) that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Electronic Product Environmental Assessment Tool (EPEAT) A set of criteria in eight different electronics to determine the environmental attributes of a particular electronic office product. At this point, EPEAT is only targeting computer desktops/towers, notebook computers (laptops), and monitors.

electroplating The act of coating or covering with a thin layer of metal by electrodeposition.

environment The sum of all external conditions affecting an organism's life, development, and survival.

Environment, Safety and Health (ES&H) A program designed to protect and preserve the environment and to ensure the safety and health of the organization's employees, contractors, and visitors and the public.

environmental assessment An environmental analysis prepared pursuant to NEPA to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

environmental impact statement A document required of federal agencies by NEPA for major projects or legislative proposals that significantly affect the environment. A tool for decision making, it describes an undertaking's positive and negative effects and cites alternative actions.

environmental management A program designed to maintain compliance state, local, and federal requirements.

Environmental Management System (EMS) A continuing cycle of planning, evaluating, implementing, and improving processes and actions undertaken to achieve environmental goals.

environmental monitoring The collection and analysis of samples or direct measurements of environmental media such as air, water, and soil.

Environmental Restoration (ER) A project chartered with assessing and, if necessary, remediating inactive waste sites.

Environmental Restoration (ER) site Any location listed on the ER site list that has been identified as an area that is (or may be) contaminated—either on or beneath the land surface—as a result of SNL operations. Contaminants may be chemicals, radioactive material, or both.

environmental surveillance A program that includes soil and vegetation surveys, water sampling, and analysis in an attempt to identify and quantify long-term effects of pollutants resulting from SNL operations.

ephemeral spring A spring that flows only briefly in the immediate locality.

exceedance Violation of the pollutant levels permitted by environmental protection standards.

explosives waste Any explosive substance, article, or explosive-contaminated item that cannot be used for its intended purpose and does not have a legitimate investigative or research use.

F

fault A fracture in the continuity of a rock formation caused by the earth's crust shifting or dislodging, after which adjacent surfaces are displaced relative to one another and parallel to the plane of fracture.

fauna (1) Animals, especially the animals of a particular region or period, considered as a group. (2) A catalog of the animals of a specific region or period.

flora (1) Plants. (2) The plant life characterizing a specific geographic region or environment.

fungicide An agent that destroys fungi or inhibits their growth.

G

gamma radiation Very high-energy and high-frequency electromagnetic radiation that is emitted by the nuclei of radioactive substances during decay, or by the interactions of high-energy electrons with matter. They are similar to but have a shorter wavelength than X-rays.

geology The scientific study of the earth's origin, history, and structure.

greenhouse gas emission An air pollutant comprised of an aggregate group of six greenhouse gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

groundwater The water found beneath the earth's surface in pore spaces and in fractures of rock formations.

H

habitat The place or environment where a plant or animal naturally or normally lives and grows.

hazardous substance (1) Any material that poses a threat to human health and/or the environment. Typical hazardous substances are toxic, corrosive, ignitable, explosive, or chemically reactive. (2) Any substance EPA requires to be reported if a designated quantity of the substance is spilled in the waters of the United States or is otherwise released into the environment.

hazardous waste site Any facility or location at which hazardous waste operations take place.

herbicide A chemical pesticide designed to control or destroy plants, weeds, or grasses.

herpetofauna The reptiles and amphibians of a particular region, habitat, or geological period.

high-level radioactive waste Waste generated in the core fuel of a nuclear reactor, found at nuclear reactors or by nuclear fuel reprocessing.

I

industrial discharge Wastewater discharge from industrial and commercial sources that may contain pollutants at levels that could affect the quality of receiving waters or interfere with publicly owned treatments works.

inertial-confinement fusion A method of controlled fusion in which the rapid implosion of a fuel pellet—produced by laser, electron, or ion beams—raises the pellet core's temperature and density to levels at which nuclear fusion can take place before the pellet flies apart.

inhalation hazard Risk from materials or chemicals that present a hazard if respired (inhaled) into the lungs.

insecticide A pesticide compound specifically used to kill or prevent the growth of insects.

Integrated Safety Management System (ISMS) A set of guidelines that systematically integrate safety into management and work practices at all levels so missions are accomplished while protecting the worker, the public, and the environment.

L

lagoon (1) A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater; also used for storing wastewater. (2) A shallow body of water, often separated from the sea by coral reefs or sandbars.

leachate Water that collects contaminants as it percolates through wastes, pesticides, or fertilizers. Leaching may occur in farming areas, feedlots, or landfills, and may result in hazardous substances entering surface water, groundwater, or soil.

legacy site A former Environmental Restoration site.

legacy waste Waste originally generated between 1990 and 1998.

low-level radioactive waste (LLW) Wastes less hazardous than most of those associated with a nuclear reactor; generated by hospitals, research laboratories, and certain industries. DOE, the Nuclear Regulatory Commission, and EPA share responsibilities for managing LLW.

M

Materials Sustainability and Pollution Prevention (MSP2) Program Facilitates the use and reuse of materials in the most productive and sustainable manner across their entire life cycle. MSP2 emphasizes purchasing sustainable products, using less, reducing waste and toxicity, recovering more of the materials that are used, slowing climate change, and assuring sufficient resources to meet society's needs today and in the future.

maximally exposed individual (MEI) A member of the public who is located in an area that receives or has the potential to receive the maximum radiological dose from air emissions of a NESHAP radionuclide source. The dose estimates are based on realistic, yet conservative input parameters.

migratory birds All birds listed within the Migratory Bird Treaty Act, 50 CFR 10.13, or which are a mutation or hybrid of any such species, including any part, nest, or egg.

Mixed Analyte Performance Evaluation Program A DOE quality assurance tool for environmental analytical services. It includes radiological, stable inorganic, and organic constituents (i.e., mixed analytes) in the same single-blind sample for analytical performance evaluation. The samples use various matrices, including soils, water, vegetation, and air filters. Program samples are not a mixed waste.

mixed waste Radioactive waste that contains both source material, special nuclear material, or by-product material subject to the Atomic Energy Act of 1954, as amended; also a hazardous component subject to the Resource Conservation and Recovery Act, as amended.

N

National Emissions Standards for Hazardous Air Pollutants (NESHAP) Emissions standards set by EPA for an air pollutant not covered by National Ambient Air Quality Standards that may cause an increase in fatalities or in serious, irreversible, or incapacitating illness. Primary standards are designed to protect human health; secondary standards are designed to protect public welfare (e.g., building facades, visibility, crops, and domestic animals).

National Environmental Policy Act (NEPA) The basic national charter for protecting the environment. It establishes policy, sets goals, and provides means for carrying out the Act.

National Pollutant Discharge Elimination System (NPDES) A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

natural resource Resource (actual and potential) supplied by nature.

nitrate A compound containing nitrogen that can exist in the atmosphere or as a dissolved gas in water and which can have harmful effects on humans and animals. Nitrates in water can cause severe illness in infants and domestic animals. A plant nutrient and inorganic fertilizer, nitrate is found in septic systems, animal feedlots, agricultural fertilizers, manure, industrial wastewaters, sanitary landfills, and garbage dumps.

nitrite (1) An intermediate in the process of nitrification. (2) Nitrous oxide salts used in food preservation.

nonradiological contaminant A source of contamination that has no radiological components.

nuclear particle acceleration A method for imparting large kinetic energy to electrically charged subatomic nuclear particles (e.g., protons, deuterons, or electrons) by applying electrical potential differences for the purpose of physics experiments.

O

occurrence One or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including NNSA) or contractor personnel, the public, property, the environment, or the DOE mission. Events or conditions meeting the criteria thresholds identified in this order, or determined to be recurring through performance analysis, are occurrences.

outfall The place where effluent is discharged into receiving waters.

ozone (O_3) A colorless gas soluble in alkalis and cold water; a strong oxidizing agent; can be produced by electric discharge in oxygen or by the action of ultraviolet radiation on oxygen in the stratosphere (where it acts as a screen for ultraviolet radiation).

P

perched groundwater Groundwater that is unconfined and separated from an underlying main body of groundwater by an unsaturated zone (also known as perched water).

perennial spring A spring that flows continuously, as opposed to an intermittent spring or a periodic spring.

$PM_{2.5}$ Respirable particulate matter (with a diameter equal to or less than 2.5 microns).

PM_{10} Particulate matter (with a diameter equal to or less than 10 microns).

pollutant Generally, any substance introduced into the environment that adversely affects the usefulness of a resource or the health of humans, animals, or ecosystems.

polychlorinated biphenyl (PCB) A chemical term limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances that contain such material. Because of their persistence, toxicity, and ecological damage via water pollution, the manufacture of PCBs was discontinued in the United States in 1976.

potable water Water free from impurities present in quantities sufficient to cause disease or harmful physiological effects.

pulsed power Technology used to generate and apply energetic beams and high-power energy pulses.

Q

quadrant A usually rectangular plot used for ecological or population studies.

quality assurance (QA) A system of procedures, checks, audits, and corrective actions to ensure that research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

quality control (QC) A system used to determine analytical accuracy, precision, and contamination when samples are collected and to assess the data's quality and usability.

R

radioactive waste Any waste that emits energy as rays, waves, streams, or energetic particles. Radioactive materials are often mixed with hazardous waste from nuclear reactors, research institutions, or hospitals.

radiological contaminant A radioactive material deposited in any place where it is not desired, particularly where its presence may be harmful.

radionuclide A radioactive particle, man-made (anthropogenic) or natural, with a distinct atomic weight number.

radon A colorless, naturally occurring, radioactive, inert gas formed by the radioactive decay of radium atoms in soil or rocks.

reportable quantity (RQ) A quantity of material or product compound or contaminant that is reportable to a regulatory agency when released to the environment.

rodenticide A chemical or agent used to destroy rats or other rodent pests, or to prevent them from damaging food or crops.

S

sample management office (SMO) An SNL office that manages environmental analytical laboratory contracts and assists with processing and tracking samples undergoing chemical and radiochemical analyses performed at these laboratories.

sampling and analysis plan (SAP) A plan that contains criteria required for conducting sampling activities.

sanitary discharge The portion of liquid effluent exclusive of industrial wastewater and stormwater. It includes the liquid discharges from restrooms and food preparation activities.

secondary containment Any structure or device that has been installed to prevent leaks, spills, or other discharges of stored chemicals, waste, oil, or fuel from storage, transfer, or end-use equipment from being released to the environment. Examples of secondary containment include pans, basins, sumps, dikes, berms, or curbs.

sediment Transported and deposited particles or aggregates derived from rocks, soil, or biological material.

semivolatile organic compound An organic chemical compound that volatilizes slowly at a standard temperature (20°C and 1 atmosphere pressure).

Site-Wide Environmental Impact Statement A detailed public document, for which a federal agency is responsible, that analyzes the expected impacts of a proposed action on the human environment and alternatives to the proposed action.

soil All loose, unconsolidated mineral or organic materials on the immediate surface of the earth that support plant growth.

solid waste (1) Any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility. (2) Any discarded material—including solid, liquid, semisolid, or contained gaseous material—resulting from industrial, commercial, mining, or agricultural operations or from community activities.

statement of work (SOW) A comprehensive description of the goods, services, or combination of goods and services for which SNL contracts.

stormwater Water runoff from rainfall or snowmelt, including that discharged to the sanitary sewer system.

sulfur dioxide (SO_2) A colorless, extremely irritating gas or liquid used in many industrial processes, especially the manufacture of sulfuric acid.

surface discharge A release of water and water-based compounds to roads, open areas, or confined areas such as reservoirs.

T

thermoluminescent dosimeter (TLD) A device that monitors both the whole body radiation dose and the skin radiation dose to which a person has been exposed during the course of work. Can also measure environmental exposure rates.

threatened and endangered species A species present in such small numbers that it is at risk of extinction.

time-weighted composite A sample consisting of several portions of the user's discharge collected during a 24-hour period in which each portion of the sample is collected with a specific time frame that is irrespective of flow.

topography The physical features of a surface area, including relative elevations and the position of natural and man-made (anthropogenic) features.

toxic chemical Any chemical listed in EPA rules under "Emergency Planning and Community Right-to-Know Act of 1986–Section 313: Guidance for Reporting Toxic Chemicals."

transect A sample area (as of vegetation) usually in the form of a long continuous strip.

transuranic waste (TRU) Radioactive waste containing alpha-emitting radionuclides having an atomic number greater than 92 and a half-life greater than 20 years in concentrations greater than 100 nanocuries per gram.

tritium A radioactive hydrogen isotope with an atomic mass of 3 and a half-life of 12.5 years, prepared artificially for use as a tracer and as a constituent of hydrogen bombs.

U

unconsolidated basin sediment (1) A sediment that is loosely arranged or unstratified, or whose particles are not cemented together, occurring either at the surface or at depth. (2) Soil material that is in a loosely aggregated form.

underground storage tank (UST) A storage tank installed completely below grade, covered with earth, and used to contain oil of any kind (petroleum, non-petroleum, synthetic, animal, or vegetable). USTs at SNL are double-wall, fiberglass-reinforced plastic construction.

upstream (1) In the direction opposite to the flow of a stream. (2) In or to a position within the production stream closer to manufacturing processes.

uranium A heavy silvery-white metallic element, radioactive and toxic, easily oxidized, and having 14 known isotopes of which U 238 is the most abundant in nature. The element occurs in several minerals, including uraninite and carnotite, from which it is extracted and processed for use in research, nuclear fuels, and nuclear weapons.

U.S. Environmental Protection Agency (EPA) A government agency tasked with protecting human health and the environment.

U.S. Forest Service (USFS) withdrawal area A portion of Kirtland Air Force Base consisting of land within the Cibola National Forest that has been withdrawn from public access for use by the U.S. Air Force and DOE.

V

vadose zone The zone between land surface and the water table within which the moisture content is less than saturation (except in the capillary fringe) and pressure is less than atmospheric. Soil pore space also typically contains air or other gases. The capillary fringe is included in the vadose zone.

vegetation Plant life or the total plant cover of an area.

volatile organic compound (VOC) An organic chemical compound with a high vapor pressure at standard temperature (20°C and 1 atmosphere pressure) causing it to evaporate.

W

waste characterization The identification of a waste material's chemical and microbiological constituents.

waste management A method for dealing with the waste from humans and organisms, including minimizing, handling, processing, storing, recycling, transporting, and final disposal.

wastewater The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

water pollution The presence in water of enough harmful or objectionable material to damage the water's quality.

watershed The land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine at a common point.

water table The level of groundwater.

wetland An area that is saturated by surface water or groundwater, having vegetation adapted for life under those soil conditions, such as swamps, bogs, fens, marshes, and estuaries.

wind rose A graphical presentation of wind speed and direction frequency distribution.

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40 CFR 63. *National Emission Standards for Hazardous Air Pollutants for Source Categories*.

40 CFR 82. *Protection of Stratospheric Ozone*.

40 CFR 86. *Control of Emissions from New and In-Use Highway Vehicles and Engines*.

40 CFR 112. *Oil Pollution Prevention*.

40 CFR 122. *EPA Administered Permit Programs: The National Pollutant Discharge Elimination System (NPDES)*.

40 CFR 143. *National Secondary Drinking Water Regulations*.

40 CFR 265. *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*.

40 CFR 268. *Land Disposal Restrictions*.

40 CFR 280. *Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*.

40 CFR 302. *Designation, Reportable Quantities, and Notification (CERCLA Implementing Regulation)*.

40 CFR 355. *Emergency Planning and Notification*.

40 CFR 370. *Hazardous Chemical Reporting: Community Right-to-Know*.

40 CFR 372. *Toxic Chemical Release Reporting: Community Right-to-Know (EPCRA Implementing Regulation)*.

Federal Acts and Statutes

- American Indian Religious Freedom Act (AIRFA) of 1978 (42 USC § 1996).
- Archaeological Resources Protection Act (ARPA) of 1979 (16 USC § 470aa).
- Atomic Energy Act (AEA) of 1954 (42 USC §2011 et seq.). (Amended by the Price-Anderson Act).
- Clean Air Act (CAA) of 1990 (42 USC § 7401).
- Clean Water Act (CWA) of 1977 (the Federal Water Pollution Control Act) (33 USC § 1251).
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. (42 USC § 9601). Amended by the Superfund Amendments and Reauthorization Act (SARA).
- Emergency Planning and Community Right to Know Act (EPCRA) of 1986 (42 USC § 11001 et seq.). (Also known as SARA Title III.)
- Endangered Species Act (ESA) (16 USC § 1531 et seq.).
- Federal Facility Compliance Act (FFCA) of 1992 (42 USC § 6961).
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) (7 USC § 136).
- Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC § 703 et seq.).
- National Environmental Policy Act (NEPA) of 1969 (42 USC § 4321).
- National Historic Preservation Act of 1966, as amended (16 USC § 470 et seq.).
- Pollution Prevention Act of 1990 (42 USC § 13101 et seq.).
- Price-Anderson Amendments Act (PAAA) (42 USC §2282 et seq.) (see Atomic Energy Act).
- Resource Conservation and Recovery Act (RCRA) of 1976 (42 USC § 6901 et seq.).
- Safe Drinking Water Act (SDWA) (42 USC § 300f).
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (see CERCLA).
- Toxic Substances Control Act (TSCA) of 1976 (15 USC § 2601 et seq.).

Note: USC = United States Code.

Applicable Local and State Laws and Regulations for Environmental Programs

Air Quality

- 20.11.2 NMAC, *Fees*.
- 20.11.8 NMAC, *New Mexico Ambient Air Quality Standards*.
- 20.11.20 NMAC, *Fugitive Dust Control*.
- 20.11.21 NMAC, *Open Burning*.
- 20.11.100 NMAC, *Motor Vehicle Inspection*.

Miscellaneous

- 21.17.50 NMAC, *Pesticides*.
- *New Mexico Pesticide Control Act* (NMSA 1978, 76-4-1 et seq.).

Oil Storage and Spill Containment

- 20.5 NMAC, *Petroleum Storage Tanks*.

Solid Waste Program

- 20.9 NMAC, *Solid Waste Management*.
- *New Mexico Solid Waste Act* (NMSA 1978, §74-9-1 et seq.).

Waste Management

- 20.4.1 NMAC, *Hazardous Waste Management*.
- *New Mexico Hazardous Waste Act* (NMSA 1978, §74-4-1 et seq.).

Water Quality

- 20.6.2 NMAC, *Ground and Surface Water Protection*.
- 20.6.4 NMAC, *Standards for Interstate and Intrastate Surface Waters*.
- 20.7.10 NMAC, *Drinking Water*.
- Albuquerque/Bernalillo County Water Utility Authority, *Sewer Use and Wastewater Control Ordinance*.

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Appendix A. 2016 Summary of Groundwater Monitoring

Mule deer family (*Odocoileus heminonus*)

Contents

Appendix A summarizes groundwater monitoring in calendar year 2016.

Table A-1. Sample collection dates for groundwater quality monitoring at SNL/NM, 2016

Sampling Event	Groundwater Monitoring Program [12 wells + 1 spring]	Chemical Waste Landfill [4 wells]	Mixed Waste Landfill [4 wells]	TA-V Groundwater (area of concern) [16 wells]	Tijeras Area Groundwater (area of concern) [20 wells]	Burn Site Groundwater [10 wells]
January	√	√				
February	√			√		
March					√	
April			√			√
May				√		
June					√	
July		√		√		
August					√	
September					√	
October			√	√		√
November						
December					√	

NOTES:
SNL/NM = Sandia National Laboratories, New Mexico
TA = technical area

Table A-2. Summary of SNL/NM groundwater monitoring analytical results, 2016

Analyte	Number of Detects	Number of Non-Detects	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Standard Deviation for Detected Values	MCL
Summary of Field Water Quality Parameters (units as indicated)							
pH in SU	151	0	6.12	8.82	7.58	0.3483	NE
Specific conductivity in µmhos/cm	151	0	359.9	6640.3	725.2	613.2	NE
Temperature in °C	151	0	11.28	27.63	19.58	2.355	NE
Turbidity in NTU	151	0	0.11	25.2	1.50	3.200	NE
Detected Organic Compounds (µg/L)							
Chloroform	8	157	0.300	0.890	0.5563	0.2670	NE
Dichloroethane, 1,1-	8	152	0.310	0.520	0.395	0.0859	NE
Dichloroethene, 1,1-	2	163	0.650	0.970	0.810	0.226	7.0
Dichloroethene, cis-1,2-	35	125	0.320	4.22	1.279	1.153	70
Diesel range organics	1	25	68.1	68.1	68.1	N/A	NE
Methylene chloride	1	159	1.93	1.93	1.93	N/A	5.0
Tetrachloroethene	10	155	0.310	1.62	0.844	0.418	5.0
Trichloroethene	69	101	0.330	19.2	5.094	4.812	5.0
Detected Metals (mg/L)							
Aluminum	28	40	0.0154	1.20	0.1691	0.2776	NE
Arsenic	40	28	0.0017	0.00499	0.002228	0.000725	0.010
Barium	68	0	0.0089	0.231	0.06917	0.03738	2.0
Beryllium	3	65	0.00021	0.0069	0.00258	0.00375	0.004
Cadmium	4	74	0.000138	0.000761	0.000334	0.000292	0.005
Calcium	127	0	36.9	308	84.07	51.69	NE
Chromium	17	71	0.00205	0.0397	0.00983	0.01209	0.100
Cobalt	14	54	0.000102	0.00915	0.001211	0.002476	NE
Copper	17	50	0.0004	0.0139	0.00196	0.00314	NE
Iron	49	87	0.0342	0.711	0.1519	0.1662	NE
Lead	3	65	0.000605	0.00126	0.000978	0.000337	NE
Magnesium	127	0	3.08	63.3	20.094	10.268	NE
Detected Metals (mg/L)							
Manganese	37	99	0.001	1.42	0.0482	0.2328	NE
Mercury	1	83	0.000088	0.000088	0.000088	N/A	0.002
Nickel	26	62	0.0005	0.0559	0.00645	0.0148	NE
Potassium	127	0	1.79	29.6	3.639	2.538	NE
Selenium	51	17	0.00164	0.0315	0.0064	0.00736	0.050
Silver	1	67	0.00045	0.00045	0.00045	N/A	NE
Sodium	127	0	19.1	1140	60.21	103.45	NE
Uranium, total	68	0	0.000248	0.0179	0.004176	0.003159	0.030
Vanadium	43	25	0.00404	0.00984	0.00615	0.001256	NE
Zinc	18	50	0.00373	0.0448	0.01356	0.01025	NE

See notes at end of table.

Table A-2. Summary of SNL/NM groundwater monitoring analytical results, 2016 (continued)

Analyte	Number of Detects	Number of Non-Detects	Minimum Detected Value	Maximum Detected Value	Mean Detected Value	Standard Deviation for Detected Values	MCL
Detected Inorganic Parameters (mg/L)							
Nitrate plus nitrite	166	0	0.133	38.8	9.495	8.251	10
Bromide	67	1	0.135	3.14	0.655	0.7164	NE
Chloride	117	0	9.40	474	51.93	59.04	NE
Fluoride	68	0	0.125	2.64	0.7703	0.5016	4.0
Sulfate	117	0	15.6	1850	92.7	187	NE
Acid soluble sulfides	13	55	1.04	5.98	2.452	1.642	NE
Total organic halogens	4	12	0.00458	0.0168	0.00861	0.00573	NE
Total organic carbon #1	50	18	0.330	2.04	0.5189	0.2402	NE
Total organic carbon #2	54	14	0.340	2.13	0.5328	0.2412	NE
Total organic carbon #3	55	13	0.332	2.18	0.5349	0.2464	NE
Total organic carbon #4	54	14	0.331	2.18	0.5514	0.2720	NE
Total organic carbon, average	52	16	0.333	2.14	0.5305	0.2467	NE
Alkalinity as $CaCO_3$	117	0	64.9	1100	197.89	105.52	NE
Perchlorate	4	1	0.00398	0.00418	0.004065	0.00009	NE
Ammonia	9	1	0.0212	0.138	0.0687	0.0418	NE
Total Kjeldahl nitrogen	4	6	0.0496	0.263	0.1841	0.0937	NE
Detected Radiochemistry Activities (pCi/L unless noted otherwise)							
Alpha, gross (corrected)	75	0	-8.00	12.59	2.416	3.009	15.0[a]
Beta, gross	66	9	1.39	32.7	5.942	5.338	4 mrem/yr
Potassium-40	2	62	66.1	74.4	70.25	5.87	NE
Radium-226	9	7	0.414	1.53	0.635	0.347	5.0[b]
Radium-228	3	13	0.700	0.768	0.7317	0.0342	5.0[b]
Radon-222	10	0	105	462	283.7	147.2	NE
Uranium-233/234	15	0	0.48	33.1	12.52	8.86	NE
Uranium-235/236	14	1	0.171	0.893	0.3977	0.2223	NE
Uranium-238	15	0	0.094	5.87	2.735	1.647	NE

NOTES: The number of active wells monitored was 66, the number of analyses performed was 12,753 and the percent of non-detected results was 80 percent.

[a]The 15.0 pCi/L MCL is for corrected gross alpha activity.

[b]The 5.0 pCi/L MCL is for combined radium-226 and radium-228.

4 mrem/yr = any combination of beta- and/or gamma-emitting radionuclides (as dose rate)

$CaCO_3$ = calcium carbonate

°C = degrees Celsius

corrected = gross alpha results reported as corrected values (uranium activities subtracted out)

MCL = maximum contaminant level (established by 40 CFR 141.11(b), Environmental Protection Agency, *National Primary Drinking Water Regulations*)

µg/L = micrograms per liter

µmhos/cm = micromhos per centimeter

mg/L = milligrams per liter

mrem/yr = millirem per year

N/A = not applicable

NE = not established

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

pH = potential of hydrogen (negative logarithm of the hydrogen ion concentration)

rem = roentgen equivalent man

SNL/NM = Sandia National Laboratories, New Mexico

SU = standard unit

Table A-3. Summary of exceedances[a] for SNL/NM groundwater monitoring wells and springs sampled, 2016

Analyte	Well/Spring	Exceedance	Date
Beryllium MCL = 0.004 mg/L	Coyote Springs	0.0069 mg/L[b]	January 2016
Nitrate plus Nitrite (as Nitrogen) MCL = 10.0 mg/L	AVN-1	11.2 mg/L	May 2016
	CYN-MW9	38.4 mg/L	April 2016
		31.6 mg/L	October 2016
	CYN-MW9 (duplicate)	31.3 mg/L	October 2016
	CYN-MW10	21.5 mg/L	April 2016
		21.0 mg/L	October 2016
	CYN-MW10 (duplicate)	21.4 mg/L	April 2016
	CYN-MW11	14.4 mg/L	April 2016
		11.7 mg/L	October 2016
	CYN-MW12	15.5 mg/L	April 2016
		15.8 mg/L	October 2016
	CYN-MW12 (duplicate)	16.9 mg/L	April 2016
	CYN-MW13	38.8 mg/L	April 2016
		35.5 mg/L	October 2016
	CYN-MW14A	13.2 mg/L	April 2016
		11.6 mg/L	October 2016
	CYN-MW15	29.8 mg/L	April 2016
		21.3 mg/L	October 2016
	CYN-MW15 (duplicate)	22.1 mg/L	October 2016
	LWDS-MW1	10.9 mg/L	February 2016
		11.0 mg/L	May 2016
		12.1 mg/L	August 2016
		11.6 mg/L	November 2016
	LWDS-MW1 (duplicate)	11.8 mg/L	August 2016
	TA2-W-19	12.5 mg/L	March 2016
		12.4 mg/L	June 2016
		11.0 mg/L	September 2016
		12.0 mg/L	December 2016
	TA2-W-19 (duplicate)	12.7 mg/L	June 2016
	TA2-W-28	25.9 mg/L	March 2016
		23.1 mg/L	June 2016
		19.8 mg/L	September 2016
		20.3 mg/L	December 2016
	TA2-W-28 (duplicate)	21.6 mg/L	December 2016
	TJA-2	12.6 mg/L	March 2016
		13.0 mg/L	June 2016
		11.1 mg/L	September 2016
		11.7 mg/L	December 2016
	TJA-4	26.6 mg/L	March 2016
		29.8 mg/L	June 2016
		29.3 mg/L	September 2016
		32.9 mg/L	December 2016

See notes at end of table.

Table A-3. Summary of exceedances[a] for SNL/NM groundwater monitoring wells and springs sampled, 2016 (continued)

Analyte	Well/Spring	Exceedance	Date
Nitrate plus Nitrite (as Nitrogen) MCL = 10.0 mg/L	TJA-7	24.2 mg/L	March 2016
		25.8 mg/L	June 2016
		22.5 mg/L	September 2016
		22.1 mg/L	December 2016
	TJA-7 (duplicate)	22.0 mg/L	June 2016
	TAV-MW6	10.8 mg/L	February 2016
Nitrate plus Nitrite (as Nitrogen) MCL = 10.0 mg/L	TAV-MW10	12.3 mg/L	March 2016
		15.2 mg/L	May 2016
		11.6 mg/L	August 2016
		10.9 mg/L	November 2016
	TAV-MW14	11.8 mg/L	February 2016
		10.7 mg/L	May 2016
	TAV-MW14 (duplicate)	10.7 mg/L	May 2016
Trichloroethene MCL = 5.0 µg/L	LWDS-MW1	19.2 µg/L	February 2016
		15.6 µg/L	May 2016
		14.5 µg/L	August 2016
		18.1 µg/L	November 2016
	LWDS-MW1 (duplicate)	14.9 µg/L	August 2016
	TAV-MW6	14.0 µg/L	February 2016
		12.1 µg/L	May 2016
		12.3 µg/L	August 2016
		13.4 µg/L	November 2016
	TAV-MW6 (duplicate)	12.3 µg/L	August 2016
	TAV-MW10	12.7 µg/L	March 2016
		11.5 µg/L	May 2016
		10.4 µg/L	August 2016
		10.6 µg/L	November 2016
	TAV-MW12	8.81 µg/L	February 2016
		7.14 µg/L	May 2016
		7.40 µg/L	August 2016
		6.30 µg/L	November 2016
	TAV-MW12 (duplicate)	6.07 µg/L	November 2016
	TAV-MW14	6.05 µg/L	February 2016

NOTES:

[a]U.S. Environmental Protection Agency (EPA). 2009. *National Primary Drinking Water Regulations*, EPA 816-F-09-0004. Washington, D.C.: EPA.

[b]Analytical result for filtered water sample. All other analytical results are for unfiltered water samples.

µg/L = micrograms per liter
mg/L = milligrams per liter
AVN = Area V (north)
CYN = canyon
LWDS = liquid waste disposal system
MCL = maximum contaminant level
MW = monitoring well
SNL/NM = Sandia National Laboratories, New Mexico
TA = technical area
TAV = Technical Area V (monitoring well designation only)
TJA = Tijeras Arroyo (monitoring well designation only)

Appendix B. 2016 Terrestrial Surveillance Analytical Results

Tarantula hawk wasp (*Pepsis formosa*), the official state insect of New Mexico

Contents

Appendix C presents the terrestrial surveillance analytical results for calendar year 2016.

Table B-1. Summary of radiological results in soil, 2016

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Community	Americium-241	pCi/g	C-9	.055 ± .0541	0.0805	U	BD	HASL 300
		pCi/g	C-10	.0305 ± .0229	0.0306	U	BD	HASL 300
		pCi/g	C-25	-.00802 ± .026	0.0428	U	BD	HASL 300
	Cesium-137	pCi/g	C-9	.196 ± .0244	0.0181		None	HASL 300
		pCi/g	C-10	.184 ± .0252	0.0221		None	HASL 300
		pCi/g	C-25	.0105 ± .0143	0.0247	U	BD	HASL 300
	Tritium	pCi/L	C-9	-7.44 ± 121	209	U	BD	GL-RAD-A-002
		pCi/L	C-10	159 ± 126	206	U	BD	GL-RAD-A-002
		pCi/L	C-25	208 ± 126	201		J	GL-RAD-A-002
	Uranium	mg/kg	C-9	.538 ±	0.0373		None	SW846 3050B/6020
On-Site	Americium-241	pCi/g	S-1	.0407 ± .101	0.158	U	BD	HASL 300
		pCi/g	S-6	.0688 ± .0807	0.131	U	BD	HASL 300
		pCi/g	S-33	.0122 ± .0554	0.0826	U	BD	HASL 300
		pCi/g	S-34	-.0325 ± .0865	0.132	U	BD	HASL 300
		pCi/g	S-45	.0511 ± .0578	0.0925	U	BD	HASL 300
		pCi/g	S-46	.073 ± .0834	0.136	U	BD	HASL 300
		pCi/g	S-49	.0389 ± .134	0.216	U	BD	HASL 300
		pCi/g	S-51	.029 ± .0816	0.132	U	BD	HASL 300
		pCi/g	S-53	-.0352 ± .0843	0.143	U	BD	HASL 300
		pCi/g	S-55	.039 ± .0555	0.0905	U	BD	HASL 300
		pCi/g	S-57	.0772 ± .0619	0.0877	U	BD	HASL 300
		pCi/g	S-76	.00665 ± .0274	0.0457	U	BD	HASL 300
		pCi/g	S-77	.0433 ± .0453	0.0692	U	BD	HASL 300
		pCi/g	S-86	.0204 ± .0695	0.131	U	BD	HASL 300
		pCi/g	S-90	.00588 ± .0255	0.0444	U	BD	HASL 300
		pCi/g	S-92	-.00749 ± .0837	0.144	U	BD	HASL 300

See notes at end of appendix.

Table B-1. Summary of radiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Cesium-137	pCi/g	S-1	.144 ± .0339	0.0344		None	HASL 300
		pCi/g	S-6	.16 ± .0343	0.0275		None	HASL 300
		pCi/g	S-33	.297 ± .0373	0.025		None	HASL 300
		pCi/g	S-34	.041 ± .0268	0.0311		J	HASL 300
		pCi/g	S-45	.0404 ± .0218	0.0233		J	HASL 300
		pCi/g	S-46	.0611 ± .0275	0.0265		J	HASL 300
		pCi/g	S-49	.478 ± .0604	0.0326		None	HASL 300
		pCi/g	S-53	.0493 ± .0209	0.0211		J	HASL 300
		pCi/g	S-55	.457 ± .0534	0.0306		None	HASL 300
		pCi/g	S-57	.0285 ± .0167	0.0173		J	HASL 300
		pCi/g	S-76	.115 ± .0256	0.0228		None	HASL 300
		pCi/g	S-77	.269 ± .0358	0.0278		None	HASL 300
		pCi/g	S-86	-.000357 ± .0165	0.0301	U	BD	HASL 300
		pCi/g	S-90	.323 ± .0299	0.0257		None	HASL 300
		pCi/g	S-92	.0929 ± .0317	0.0269		None	HASL 300
	Tritium	pCi/L	S-1	94.7 ± 123	207	U	BD	GL-RAD-A-002
		pCi/L	S-6	161 ± 99.3	146		J	GL-RAD-A-002
		pCi/L	S-33	93.6 ± 95.5	157	U	BD	GL-RAD-A-002
		pCi/L	S-34	126 ± 98.9	155	U	BD	GL-RAD-A-002
		pCi/L	S-45	108 ± 96.3	154	U	BD	GL-RAD-A-002
		pCi/L	S-46	279 ± 117	162		J	GL-RAD-A-002
		pCi/L	S-49	312 ± 136	195		J	GL-RAD-A-002
		pCi/L	S-51	145 ± 103	163	U	BD	GL-RAD-A-002
		pCi/L	S-53	306 ± 125	158		J	GL-RAD-A-002
		pCi/L	S-55	301 ± 122	153		J	GL-RAD-A-002
		pCi/L	S-57	63.8 ± 110	188	U	BD	GL-RAD-A-002
		pCi/L	S-76	202 ± 109	154		J	GL-RAD-A-002
		pCi/L	S-77	59.3 ± 89.5	154	U	BD	GL-RAD-A-002

See notes at end of appendix.

Table B-1. Summary of radiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Tritium	pCi/L	S-86	198 ± 109	163		J	GL-RAD-A-002
		pCi/L	S-92	157 ± 104	163	U	BD	GL-RAD-A-002
	Uranium	mg/kg	S-1	.741 ±	0.0387		J	SW846 3050B/6020
		mg/kg	S-6	.31 ±	0.0368		None	SW846 3050B/6020
		mg/kg	S-33	.747 ±	0.0391		None	SW846 3050B/6020
		mg/kg	S-34	.77 ±	0.0385		None	SW846 3050B/6020
		mg/kg	S-45	.283 ±	0.0383		None	SW846 3050B/6020
		mg/kg	S-51	.46 ±	0.0353		J+	SW846 3050B/6020
		mg/kg	S-53	.246 ±	0.0389		None	SW846 3050B/6020
		mg/kg	S-55	.374 ±	0.0386		None	SW846 3050B/6020
		mg/kg	S-57	1.12 ±	0.038		J+	SW846 3050B/6020
		mg/kg	S-90	.389 ±	0.0364		J+	SW846 3050B/6020
		mg/kg	S-92	.52 ±	0.0385		J+	SW846 3050B/6020
Perimeter	Americium-241	pCi/g	P-4	-.00723 ± .0494	0.0832	U	BD	HASL 300
		pCi/g	P-5	-.0276 ± .0602	0.0955	U	BD	HASL 300
		pCi/g	P-16	.0616 ± .096	0.165	U	BD	HASL 300
		pCi/g	P-19	.0669 ± .0627	0.0957	U	BD	HASL 300
		pCi/g	P-58	.0472 ± .144	0.226	U	BD	HASL 300
		pCi/g	P-59	.119 ± .0918	0.131	U	BD	HASL 300
		pCi/g	P-61	-.00857 ± .0363	0.0593	U	BD	HASL 300
		pCi/g	P-63	.0241 ± .067	0.108	U	BD	HASL 300
		pCi/g	P-64	.0309 ± .0835	0.141	U	BD	HASL 300
		pCi/g	P-81	.0225 ± .085	0.145	U	BD	HASL 300
		pCi/g	P-82	-.0103 ± .0592	0.0913	U	BD	HASL 300
		pCi/g	P-95	.0343 ± .0258	0.0344	U	BD	HASL 300
	Cesium-137	pCi/g	P-4	.232 ± .0448	0.0327		None	HASL 300
		pCi/g	P-5	.11 ± .0212	0.0187		None	HASL 300
		pCi/g	P-16	.0454 ± .041	0.0386		J	HASL 300
		pCi/g	P-19	.405 ± .0559	0.0321		None	HASL 300

See notes at end of appendix.

Table B-1. Summary of radiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Cesium-137	pCi/g	P-58	.0544 ± .03	0.0319		J	HASL 300
		pCi/g	P-59	.166 ± .0328	0.0286		None	HASL 300
		pCi/g	P-61	.0209 ± .0142	0.0171		J	HASL 300
		pCi/g	P-63	.2 ± .0359	0.0352		None	HASL 300
		pCi/g	P-64	.76 ± .0766	0.0366		None	HASL 300
		pCi/g	P-81	.344 ± .0498	0.029		None	HASL 300
		pCi/g	P-82	.0363 ± .024	0.029		J	HASL 300
		pCi/g	P-95	.0566 ± .0206	0.0239		J	HASL 300
	Tritium	pCi/L	P-4	181 ± 120	190	U	BD	GL-RAD-A-002
		pCi/L	P-5	66.4 ± 87.5	148	U	BD	GL-RAD-A-002
		pCi/L	P-16	184 ± 128	207	U	BD	GL-RAD-A-002
		pCi/L	P-19	113 ± 99.1	161	U	BD	GL-RAD-A-002
		pCi/L	P-58	365 ± 131	171		J	GL-RAD-A-002
		pCi/L	P-59	274 ± 115	159		J	GL-RAD-A-002
		pCi/L	P-61	50.4 ± 121	207	U	BD	GL-RAD-A-002
		pCi/L	P-63	91.1 ± 98	163	U	BD	GL-RAD-A-002
		pCi/L	P-81	209 ± 109	153		J	GL-RAD-A-002
		pCi/L	P-82	170 ± 104	159		J	GL-RAD-A-002
		pCi/L	P-95	83.9 ± 112	189	U	BD	GL-RAD-A-002
	Uranium	mg/kg	P-4	.264 ±	0.0387		None	SW846 3050B/6020
		mg/kg	P-16	.726 ±	0.038		J	SW846 3050B/6020
		mg/kg	P-19	.539 ±	0.0371		J+	SW846 3050B/6020
		mg/kg	P-58	.854 ±	0.0396		J	SW846 3050B/6020
		mg/kg	P-61	.543 ±	0.0393		None	SW846 3050B/6020
		mg/kg	P-64	.923 ±	0.0382		J+	SW846 3050B/6020
		mg/kg	P-81	.316 ±	0.0385		None	SW846 3050B/6020
		mg/kg	P-82	.815 ±	0.0398		J	SW846 3050B/6020
		mg/kg	P-95	.32 ±	0.0394		J	SW846 3050B/6020

See notes at end of appendix.

Table B-2. Summary of radiological results in sediment, calendar year 2016

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Community	Americium-241	pCi/g	C-8	.00646 ± .0133	0.0225	U	BD	HASL 300
		pCi/g	C-68	.0313 ± .052	0.0839	U	BD	HASL 300
	Cesium-137	pCi/g	C-8	.104 ± .016	0.0152		None	HASL 300
		pCi/g	C-68	.0587 ± .0165	0.0172		None	HASL 300
	Tritium	pCi/L	C-8	68.9 ± 120	203	U	BD	GL-RAD-A-002
		pCi/L	C-68	216 ± 129	205		J	GL-RAD-A-002
	Uranium	mg/kg	C-68	.967 ±	0.0397		None	SW846 3050B/6020
On-Site	Americium-241	pCi/g	S-72	.00679 ± .0509	0.0844	U	BD	HASL 300
		pCi/g	S-74N	.014 ± .0497	0.086	U	BD	HASL 300
		pCi/g	S-75	-.00676 ± .0685	0.119	U	BD	HASL 300
		pCi/g	S-83	.0529 ± .0549	0.0913	U	BD	HASL 300
		pCi/g	S-85	.0502 ± .0737	0.114	U	BD	HASL 300
		pCi/g	S-91	.057 ± .0781	0.132	U	BD	HASL 300
	Cesium-137	pCi/g	S-72	.051 ± .0266	0.0299		J	HASL 300
		pCi/g	S-74N	-.00477 ± .0192	0.0296	U	BD	HASL 300
		pCi/g	S-75	.0401 ± .0288	0.0282		J	HASL 300
		pCi/g	S-83	.0543 ± .0277	0.0303		J	HASL 300
		pCi/g	S-85	.244 ± .0334	0.0263		None	HASL 300
		pCi/g	S-91	.0921 ± .0396	0.0321		J	HASL 300
	Tritium	pCi/L	S-72	149 ± 101	152	U	BD	GL-RAD-A-002
		pCi/L	S-74N	600 ± 162	211		J	GL-RAD-A-002
		pCi/L	S-75	352 ± 139	207		J	GL-RAD-A-002
		pCi/L	S-83	186 ± 120	188	U	BD	GL-RAD-A-002
		pCi/L	S-85	196 ± 109	155		J	GL-RAD-A-002
		pCi/L	S-91	265 ± 134	209		J	GL-RAD-A-002
	Uranium	mg/kg	S-72	.736 ±	0.0394		None	SW846 3050B/6020
		mg/kg	S-74N	1.59 ±	0.0395		J	SW846 3050B/6020
		mg/kg	S-75	.685 ±	0.038		J	SW846 3050B/6020
		mg/kg	S-83	.602 ±	0.037		J	SW846 3050B/6020

See notes at end of appendix.

Table B-2. Summary of radiological results in sediment, calendar year 2016 (continued)

Location Classification	Analyte	Units	Location	Activity	MDA	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Uranium	mg/kg	S-85	.889 ±	0.0385		None	SW846 3050B/6020
		mg/kg	S-91	.617 ±	0.0384		J	SW846 3050B/6020
Perimeter	Americium-241	pCi/g	P-60	-.0428 ± .0754	0.117	U	BD	HASL 300
		pCi/g	P-73	.0492 ± .113	0.191	U	BD	HASL 300
	Cesium-137	pCi/g	P-60	.00446 ± .0133	0.0181	U	BD	HASL 300
		pCi/g	P-73	.0216 ± .022	0.0299	U	BD	HASL 300
	Tritium	pCi/L	P-73	503 ± 152	209		J	GL-RAD-A-002
	Uranium	mg/kg	P-60	.71 ±	0.0385		None	SW846 3050B/6020
		mg/kg	P-73	1.17 ±	0.0363		J	SW846 3050B/6020

See notes at end of appendix.

Table B-3. Summary of thermoluminescent dosimeter measurements, fiscal year 2016

Location Classification	Location Number	1st Quarter (95 Days)		2nd Quarter (89 Days)		3rd Quarter (68 Days)		4th Quarter (95 Days)	
		Exposure (mR)	Error	Exposure (mR)	Error	Exposure (mR)	Error	Exposure (mR)	Error
Community	C-10	27.7	0.9	39.5	1	40.4	1.2	39.7	0.9
	C-11	25.3	1						
	C-21	28.6	1.2	39.6	5.2	36.6	0.9	38.4	8.1
	C-22	26.9	1.2	36.5	2	33.5	2.7	36.8	1.2
	C-23	24.8	1.4	32	1	28.2	2.3	33.2	2.1
	C-24	23.2	1.1	33.7	1.2	25.8	1.7	31.2	0.9
	C-25	25.1	1.7	34	1.2	30.8	1	33.6	0.9
	C-26	31.2	1.4	38.8	1.1	32.9	1.2	41	2.9
	S-27	26.1	1.7	35.6	1.1	29.4	1.1	35.9	0.9
	C-30	26.1	1	36.2	1.1	31.8	1.9	35.7	0.9
On-Site	S-1	26	1.7	38.6	2	26.7	0.8	36.1	1.7
	S-2NW	23.2	1.4	35.1	1.4	27.8	1.3	32.6	0.5
	S-3	25.7	1.2	38.7	1.2	31.2	1.8	33	0.6
	S-6	23.1	1.1	33.9	1.4	24.3	1.8	31.2	1
	S-7	25.5	1	35.6	1.4			35.4	1.3
	S-20	25.3	1.1	35.9	1.5	33.5	1	32.6	0.5
	S-31	30.7	2.6	39.1	4.8	30.5	2.8	36.5	1.6
	S-41	24.9	1.2	36.6	1.9	25.9	1.3	33.1	0.5
	S-42	25.1	1.1	37	1.2	38.5	1.7	36.6	2.2
	S-43	24	1	35.9	1.5	26.1	0.9	31.9	0.8
	S-45	26.7	1.3	38	1.9	28.1	0.9	34.3	0.9
	S-45E	26.4	1	38.3	1.3	27.9	0.6	34.2	0.7
	S-46	31.5	2.2	36.1	1.3	30.1	1.6	35.6	0.8
	S-47	27.1	1.1	36.1	1.5	27.7	0.6	32.2	0.7
	S-48	27.3	1.2	38.3	1.4	31.2	0.6	34.7	1
	S-66	25.8	1.3	36.7	1.2	27.3	0.7	32.4	7.6
	E1004	33.5	1.3			24	0.6	32.9	0.8
	E1003	39	2.4			25.6	0.6	36.3	0.5

See notes at end of appendix.

Table B-3. Summary of thermoluminescent dosimeter measurements, fiscal year 2016 (continued)

Location Classification	Location Number	1st Quarter (95 Days)		2nd Quarter (89 Days)		3rd Quarter (68 Days)		4th Quarter (95 Days)	
Perimeter	P-4	23.6	1.1	38	1.5	27.9	0.8	33.9	0.8
	P-5	22.7	1.5	33.6	1.2	23.1	0.7	31.6	1.2
	P-16	30.9	1	42.4	2.3	32.7	0.6	37.1	1.3
	P-18	25.2	1.4	36.6	1.7	25.9	0.7	35.7	1.4
	P-19	26.9	3	41.4	1.3	29.5	1.2	34.4	0.5
	P-39	25.3	1.5	36.2	1.4	27.5	1.7	33.1	1.6
	P-40	25.7	1.1	35.1	1.9	23.8	0.8	32.6	0.5
	P-81	24.7	1.2	39.5	1.6	29	1.3	34.6	1.4

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Community	Aluminum	C-9	17300	28	93.3		J	SW846 3050B/6020
	Antimony	C-9	0.328	0.328	0.994	U	None	SW846 3050B/6010B
	Arsenic	C-9	4.49	0.187	0.933	*	None	SW846 3050B/6020
	Beryllium	C-9	0.63	0.0187	0.0933		None	SW846 3050B/6020
	Cadmium	C-9	0.263	0.0187	0.187	*	J+	SW846 3050B/6020
	Chromium	C-9	15.4	0.187	0.56	B	None	SW846 3050B/6020
	Copper	C-9	12.7	0.0616	0.187		J+	SW846 3050B/6020
	Iron	C-9	16200	61.6	187		None	SW846 3050B/6020
	Lead	C-9	17.4	0.0933	0.373		None	SW846 3050B/6020
	Magnesium	C-9	4510	1.87	5.6		None	SW846 3050B/6020
	Nickel	C-9	12.5	0.0933	0.373	N	J-	SW846 3050B/6020
	Selenium	C-9	1.41	0.308	0.933		None	SW846 3050B/6020
	Silver	C-9	0.497	0.497	2.49	U	None	SW846 3050B/6010B
	Thallium	C-9	0.16	0.056	0.373	JB	0.71UJ	SW846 3050B/6020
	Zinc	C-9	45.8	0.373	1.87		J	SW846 3050B/6020
On-Site	Aluminum	S-1	14600	29	96.7	B	J	SW846 3050B/6020
	Antimony	S-1	0.322	0.322	0.977	U	None	SW846 3050B/6010B
	Arsenic	S-1	2.95	0.193	0.967		None	SW846 3050B/6020
	Beryllium	S-1	0.47	0.0193	0.0967		None	SW846 3050B/6020
	Cadmium	S-1	0.219	0.0193	0.193		J+	SW846 3050B/6020
	Chromium	S-1	11	0.193	0.58		None	SW846 3050B/6020
	Copper	S-1	11	0.0638	0.193		J	SW846 3050B/6020
	Iron	S-1	16200	63.8	193		J	SW846 3050B/6020
	Lead	S-1	11.9	0.0967	0.387		None	SW846 3050B/6020
	Magnesium	S-1	4920	1.93	5.8		None	SW846 3050B/6020
	Nickel	S-1	10.7	0.0967	0.387		None	SW846 3050B/6020
	Selenium	S-1	1.6	0.319	0.967		None	SW846 3050B/6020
	Silver	S-1	0.601	0.0977	0.488		J+	SW846 3050B/6010B
	Thallium	S-1	0.219	0.058	0.387	J	0.68UJ	SW846 3050B/6020
	Zinc	S-1	47.2	0.387	1.93		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-6	6040	2.76	9.21		J	SW846 3050B/6020
	Antimony	S-6	0.309	0.309	0.936	U	UJ	SW846 3050B/6010B
	Arsenic	S-6	1.38	0.184	0.921	N	J-	SW846 3050B/6020
	Beryllium	S-6	0.311	0.0184	0.0921		None	SW846 3050B/6020
	Cadmium	S-6	0.23	0.0184	0.184		None	SW846 3050B/6020
	Chromium	S-6	5.71	0.184	0.552		None	SW846 3050B/6020
	Copper	S-6	5.88	0.0608	0.184		None	SW846 3050B/6020
	Iron	S-6	5730	6.08	18.4		J	SW846 3050B/6020
	Lead	S-6	7.09	0.0921	0.368		None	SW846 3050B/6020
	Magnesium	S-6	1720	1.84	5.52		None	SW846 3050B/6020
	Nickel	S-6	5.16	0.0921	0.368		None	SW846 3050B/6020
	Selenium	S-6	0.304	0.304	0.921	*NU	UJ	SW846 3050B/6020
	Silver	S-6	0.0936	0.0936	0.468	U	None	SW846 3050B/6010B
	Thallium	S-6	0.0799	0.0552	0.368	JB	0.66U	SW846 3050B/6020
	Zinc	S-6	20	0.368	1.84	B	None	SW846 3050B/6020
	Aluminum	S-33	12100	29.4	97.8		J	SW846 3050B/6020
	Antimony	S-33	0.326	0.326	0.988	U	UJ	SW846 3050B/6010B
	Arsenic	S-33	3.91	0.196	0.978	N	J-	SW846 3050B/6020
	Beryllium	S-33	0.595	0.0196	0.0978		None	SW846 3050B/6020
	Cadmium	S-33	0.378	0.0196	0.196		J-	SW846 3050B/6020
	Chromium	S-33	12.5	0.196	0.587		None	SW846 3050B/6020
	Copper	S-33	11.1	0.0646	0.196		J+	SW846 3050B/6020
	Iron	S-33	11900	64.6	196		J	SW846 3050B/6020
	Lead	S-33	13.6	0.0978	0.391		None	SW846 3050B/6020
	Magnesium	S-33	4120	1.96	5.87		None	SW846 3050B/6020
	Nickel	S-33	14	0.0978	0.391		J+	SW846 3050B/6020
	Selenium	S-33	4	0.323	0.978	*BN	J-	SW846 3050B/6020
	Silver	S-33	0.494	0.494	2.47	U	None	SW846 3050B/6010B
	Thallium	S-33	0.118	0.0587	0.391	JB	0.66UJ	SW846 3050B/6020
	Zinc	S-33	41.4	0.391	1.96	B	J+	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-34	14300	28.8	96.2		J	SW846 3050B/6020
	Antimony	S-34	0.306	0.306	0.926	U	UJ	SW846 3050B/6010B
	Arsenic	S-34	3.77	0.192	0.962	N	J-	SW846 3050B/6020
	Beryllium	S-34	0.658	0.0192	0.0962		None	SW846 3050B/6020
	Cadmium	S-34	0.285	0.0192	0.192		12U	SW846 3050B/6020
	Chromium	S-34	12.6	0.192	0.577		None	SW846 3050B/6020
	Copper	S-34	9.17	0.0635	0.192		None	SW846 3050B/6020
	Iron	S-34	13500	63.5	192		J	SW846 3050B/6020
	Lead	S-34	10.5	0.0962	0.385		None	SW846 3050B/6020
	Magnesium	S-34	3420	1.92	5.77		None	SW846 3050B/6020
	Nickel	S-34	13.3	0.0962	0.385		None	SW846 3050B/6020
	Selenium	S-34	1.98	0.317	0.962	*BN	J-	SW846 3050B/6020
	Silver	S-34	0.0926	0.0926	0.463	U	None	SW846 3050B/6010B
	Thallium	S-34	0.124	0.0577	0.385	JB	0.66U	SW846 3050B/6020
	Zinc	S-34	45.8	0.385	1.92	B	None	SW846 3050B/6020
	Aluminum	S-45	8660	2.87	9.58		J	SW846 3050B/6020
	Antimony	S-45	0.33	0.33	1	U	UJ	SW846 3050B/6010B
	Arsenic	S-45	2.19	0.192	0.958	N	J-	SW846 3050B/6020
	Beryllium	S-45	0.447	0.0192	0.0958		None	SW846 3050B/6020
	Cadmium	S-45	0.147	0.0192	0.192	J	None	SW846 3050B/6020
	Chromium	S-45	7.08	0.192	0.575		None	SW846 3050B/6020
	Copper	S-45	7.05	0.0632	0.192		None	SW846 3050B/6020
	Iron	S-45	7060	6.32	19.2		J	SW846 3050B/6020
	Lead	S-45	7.46	0.0958	0.383		None	SW846 3050B/6020
	Magnesium	S-45	2530	1.92	5.75		None	SW846 3050B/6020
	Nickel	S-45	6.53	0.0958	0.383		None	SW846 3050B/6020
	Selenium	S-45	0.999	0.316	0.958	*BN	1.6UJ	SW846 3050B/6020
	Silver	S-45	0.1	0.1	0.5	U	None	SW846 3050B/6010B
	Thallium	S-45	0.101	0.0575	0.383	JB	0.66U	SW846 3050B/6020
	Zinc	S-45	35	0.383	1.92	B	None	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-51	13000	26.5	88.2	B	J	SW846 3050B/6020
	Antimony	S-51	0.32	0.32	0.971	U	None	SW846 3050B/6010B
	Arsenic	S-51	2.54	0.176	0.882		None	SW846 3050B/6020
	Beryllium	S-51	0.494	0.0176	0.0882		J+	SW846 3050B/6020
	Cadmium	S-51	0.144	0.0176	0.176	J	14UJ	SW846 3050B/6020
	Chromium	S-51	18.7	0.176	0.529	N	J+	SW846 3050B/6020
	Copper	S-51	8.25	0.0582	0.176		J+	SW846 3050B/6020
	Iron	S-51	12600	58.2	176		J	SW846 3050B/6020
	Lead	S-51	9.77	0.0882	0.353		None	SW846 3050B/6020
	Magnesium	S-51	3450	1.76	5.29		None	SW846 3050B/6020
	Nickel	S-51	9.37	0.0882	0.353		J+	SW846 3050B/6020
	Selenium	S-51	1.09	0.291	0.882		None	SW846 3050B/6020
	Silver	S-51	0.0971	0.0971	0.485	U	None	SW846 3050B/6010B
	Thallium	S-51	0.179	0.0529	0.353	JB	0.94UJ	SW846 3050B/6020
	Zinc	S-51	45.7	0.353	1.76		J	SW846 3050B/6020
	Aluminum	S-53	6470	2.92	9.73		J	SW846 3050B/6020
	Antimony	S-53	0.322	0.322	0.975	U	UJ	SW846 3050B/6010B
	Arsenic	S-53	2.26	0.195	0.973	N	J-	SW846 3050B/6020
	Beryllium	S-53	0.322	0.0195	0.0973		None	SW846 3050B/6020
	Cadmium	S-53	0.142	0.0195	0.195	J	None	SW846 3050B/6020
	Chromium	S-53	5.16	0.195	0.584		None	SW846 3050B/6020
	Copper	S-53	4.93	0.0642	0.195		None	SW846 3050B/6020
	Iron	S-53	5440	6.42	19.5		J	SW846 3050B/6020
	Lead	S-53	7.06	0.0973	0.389		None	SW846 3050B/6020
	Magnesium	S-53	1650	1.95	5.84		None	SW846 3050B/6020
	Nickel	S-53	4.66	0.0973	0.389		None	SW846 3050B/6020
	Selenium	S-53	3.44	0.321	0.973	*BN	J-	SW846 3050B/6020
	Silver	S-53	0.118	0.0975	0.487	J	None	SW846 3050B/6010B
	Thallium	S-53	0.119	0.0584	0.389	JB	0.66U	SW846 3050B/6020
	Zinc	S-53	18	0.389	1.95	B	None	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-55	8900	2.9	9.65		J	SW846 3050B/6020
	Antimony	S-55	0.327	0.327	0.99	U	UJ	SW846 3050B/6010B
	Arsenic	S-55	2.41	0.193	0.965	N	J-	SW846 3050B/6020
	Beryllium	S-55	0.467	0.0193	0.0965		None	SW846 3050B/6020
	Cadmium	S-55	0.275	0.0193	0.193		None	SW846 3050B/6020
	Chromium	S-55	7.59	0.193	0.579		None	SW846 3050B/6020
	Copper	S-55	6.73	0.0637	0.193		None	SW846 3050B/6020
	Iron	S-55	7800	6.37	19.3		J	SW846 3050B/6020
	Lead	S-55	9.63	0.0965	0.386		None	SW846 3050B/6020
	Magnesium	S-55	3070	1.93	5.79		None	SW846 3050B/6020
	Nickel	S-55	7.21	0.0965	0.386		None	SW846 3050B/6020
	Selenium	S-55	1.51	0.319	0.965	*BN	1.6UJ	SW846 3050B/6020
	Silver	S-55	0.099	0.099	0.495	U	None	SW846 3050B/6010B
	Thallium	S-55	0.107	0.0579	0.386	JB	0.66U	SW846 3050B/6020
	Zinc	S-55	29.9	0.386	1.93	B	None	SW846 3050B/6020
	Aluminum	S-57	9200	2.85	9.51	B	J	SW846 3050B/6020
	Antimony	S-57	0.324	0.324	0.98	U	None	SW846 3050B/6010B
	Arsenic	S-57	3.43	0.19	0.951		None	SW846 3050B/6020
	Beryllium	S-57	0.4	0.019	0.0951		J+	SW846 3050B/6020
	Cadmium	S-57	0.164	0.019	0.19	J	J+	SW846 3050B/6020
	Chromium	S-57	8.56	0.19	0.57	N	J+	SW846 3050B/6020
	Copper	S-57	8.8	0.0627	0.19		J+	SW846 3050B/6020
	Iron	S-57	12200	62.7	190		J	SW846 3050B/6020
	Lead	S-57	8.77	0.0951	0.38		None	SW846 3050B/6020
	Magnesium	S-57	4370	1.9	5.7		None	SW846 3050B/6020
	Nickel	S-57	8.27	0.0951	0.38		J+	SW846 3050B/6020
	Selenium	S-57	1.29	0.314	0.951		None	SW846 3050B/6020
	Silver	S-57	0.098	0.098	0.49	U	None	SW846 3050B/6010B
	Thallium	S-57	0.0654	0.057	0.38	JB	0.94UJ	SW846 3050B/6020
	Zinc	S-57	64.9	0.38	1.9		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-90	7800	2.73	9.11	B	J	SW846 3050B/6020
	Antimony	S-90	0.329	0.329	0.998	U	None	SW846 3050B/6010B
	Arsenic	S-90	2.07	0.182	0.911		None	SW846 3050B/6020
	Beryllium	S-90	0.365	0.0182	0.0911		None	SW846 3050B/6020
	Cadmium	S-90	0.14	0.0182	0.182	J	None	SW846 3050B/6020
	Chromium	S-90	7.42	0.182	0.546	N	J+	SW846 3050B/6020
	Copper	S-90	5.55	0.0601	0.182		None	SW846 3050B/6020
	Iron	S-90	7900	6.01	18.2		J	SW846 3050B/6020
	Lead	S-90	7.64	0.0911	0.364		None	SW846 3050B/6020
	Magnesium	S-90	1790	1.82	5.46		None	SW846 3050B/6020
	Nickel	S-90	5.43	0.0911	0.364		J	SW846 3050B/6020
	Selenium	S-90	1.1	0.301	0.911		None	SW846 3050B/6020
	Silver	S-90	0.0998	0.0998	0.499	U	None	SW846 3050B/6010B
	Thallium	S-90	0.0546	0.0546	0.364	U	None	SW846 3050B/6020
	Zinc	S-90	22.5	0.364	1.82		J	SW846 3050B/6020
	Aluminum	S-92	11100	28.8	96.2	B	J	SW846 3050B/6020
	Antimony	S-92	0.323	0.323	0.978	U	None	SW846 3050B/6010B
	Arsenic	S-92	2.1	0.192	0.962		None	SW846 3050B/6020
	Beryllium	S-92	0.44	0.0192	0.0962		None	SW846 3050B/6020
	Cadmium	S-92	0.11	0.0192	0.192	J	None	SW846 3050B/6020
	Chromium	S-92	8.95	0.192	0.577	N	J+	SW846 3050B/6020
	Copper	S-92	6.83	0.0635	0.192		None	SW846 3050B/6020
	Iron	S-92	9140	6.35	19.2		J	SW846 3050B/6020
	Lead	S-92	8.17	0.0962	0.385		None	SW846 3050B/6020
	Magnesium	S-92	2060	1.92	5.77		None	SW846 3050B/6020
	Nickel	S-92	6.53	0.0962	0.385		J	SW846 3050B/6020
	Selenium	S-92	1.04	0.317	0.962		None	SW846 3050B/6020
	Silver	S-92	0.0978	0.0978	0.489	U	None	SW846 3050B/6010B
	Thallium	S-92	0.404	0.0577	0.385	B	0.94U	SW846 3050B/6020
	Zinc	S-92	25.5	0.385	1.92		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-4	6760	2.9	9.67		J	SW846 3050B/6020
	Antimony	P-4	0.312	0.312	0.945	U	UJ	SW846 3050B/6010B
	Arsenic	P-4	1.51	0.193	0.967	N	J-	SW846 3050B/6020
	Beryllium	P-4	0.301	0.0193	0.0967		None	SW846 3050B/6020
	Cadmium	P-4	0.189	0.0193	0.193	J	None	SW846 3050B/6020
	Chromium	P-4	6.24	0.193	0.58		None	SW846 3050B/6020
	Copper	P-4	5.2	0.0638	0.193		None	SW846 3050B/6020
	Iron	P-4	6550	6.38	19.3		J	SW846 3050B/6020
	Lead	P-4	7.91	0.0967	0.387		None	SW846 3050B/6020
	Magnesium	P-4	2360	1.93	5.8		None	SW846 3050B/6020
	Nickel	P-4	5.93	0.0967	0.387		None	SW846 3050B/6020
	Selenium	P-4	0.429	0.319	0.967	*BJN	1.6UJ	SW846 3050B/6020
	Silver	P-4	0.0945	0.0945	0.473	U	None	SW846 3050B/6010B
	Thallium	P-4	0.0741	0.058	0.387	JB	0.66U	SW846 3050B/6020
	Zinc	P-4	24.5	0.387	1.93	B	None	SW846 3050B/6020
	Aluminum	P-16	14000	28.5	94.9	B	J	SW846 3050B/6020
	Antimony	P-16	1.62	1.62	4.9	U	None	SW846 3050B/6010B
	Arsenic	P-16	2.72	0.19	0.949		None	SW846 3050B/6020
	Beryllium	P-16	0.512	0.019	0.0949		None	SW846 3050B/6020
	Cadmium	P-16	0.116	0.019	0.19	J	None	SW846 3050B/6020
	Chromium	P-16	8.63	0.19	0.569		None	SW846 3050B/6020
	Copper	P-16	10.6	0.0626	0.19		J	SW846 3050B/6020
	Iron	P-16	16800	62.6	190		J	SW846 3050B/6020
	Lead	P-16	8.76	0.0949	0.38		None	SW846 3050B/6020
	Magnesium	P-16	4860	1.9	5.69		None	SW846 3050B/6020
	Nickel	P-16	8.73	0.0949	0.38		None	SW846 3050B/6020
	Selenium	P-16	1.69	0.313	0.949		None	SW846 3050B/6020
	Silver	P-16	0.917	0.098	0.49		J+	SW846 3050B/6010B
	Thallium	P-16	0.187	0.0569	0.38	J	0.68U	SW846 3050B/6020
	Zinc	P-16	46.3	0.38	1.9		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-19	14100	27.8	92.8	B	J	SW846 3050B/6020
	Antimony	P-19	0.326	0.326	0.988	U	None	SW846 3050B/6010B
	Arsenic	P-19	2.85	0.186	0.928		None	SW846 3050B/6020
	Beryllium	P-19	0.483	0.0186	0.0928		None	SW846 3050B/6020
	Cadmium	P-19	0.178	0.0186	0.186	J	None	SW846 3050B/6020
	Chromium	P-19	17.9	0.186	0.557	N	J+	SW846 3050B/6020
	Copper	P-19	13.4	0.0612	0.186		None	SW846 3050B/6020
	Iron	P-19	14800	61.2	186		J	SW846 3050B/6020
	Lead	P-19	17	0.0928	0.371		None	SW846 3050B/6020
	Magnesium	P-19	4540	1.86	5.57		None	SW846 3050B/6020
	Nickel	P-19	13.6	0.0928	0.371		J	SW846 3050B/6020
	Selenium	P-19	1.35	0.306	0.928		None	SW846 3050B/6020
	Silver	P-19	0.124	0.0988	0.494	J	None	SW846 3050B/6010B
	Thallium	P-19	0.15	0.0557	0.371	JB	0.94U	SW846 3050B/6020
	Zinc	P-19	48.6	0.371	1.86		J	SW846 3050B/6020
	Aluminum	P-58	11100	29.7	99	B	J	SW846 3050B/6020
	Antimony	P-58	0.315	0.315	0.954	U	None	SW846 3050B/6010B
	Arsenic	P-58	3.09	0.198	0.99		None	SW846 3050B/6020
	Beryllium	P-58	0.38	0.0198	0.099		None	SW846 3050B/6020
	Cadmium	P-58	0.451	0.0198	0.198		J+	SW846 3050B/6020
	Chromium	P-58	8.88	0.198	0.594		None	SW846 3050B/6020
	Copper	P-58	8.94	0.0653	0.198		J+	SW846 3050B/6020
	Iron	P-58	12300	65.3	198		J	SW846 3050B/6020
	Lead	P-58	12.2	0.099	0.396		None	SW846 3050B/6020
	Magnesium	P-58	4510	1.98	5.94		None	SW846 3050B/6020
	Nickel	P-58	7.68	0.099	0.396		None	SW846 3050B/6020
	Selenium	P-58	1.3	0.327	0.99		None	SW846 3050B/6020
	Silver	P-58	0.0954	0.0954	0.477	U	None	SW846 3050B/6010B
	Thallium	P-58	0.131	0.0594	0.396	J	0.68UJ	SW846 3050B/6020
	Zinc	P-58	43.2	0.396	1.98		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-61	8240	2.95	9.82		J	SW846 3050B/6020
	Antimony	P-61	0.315	0.315	0.956	U	None	SW846 3050B/6010B
	Arsenic	P-61	3.2	0.196	0.982	*	None	SW846 3050B/6020
	Beryllium	P-61	0.35	0.0196	0.0982		None	SW846 3050B/6020
	Cadmium	P-61	0.219	0.0196	0.196	*	J+	SW846 3050B/6020
	Chromium	P-61	6.65	0.196	0.589	B	J+	SW846 3050B/6020
	Copper	P-61	8.44	0.0648	0.196		J+	SW846 3050B/6020
	Iron	P-61	7620	6.48	19.6		None	SW846 3050B/6020
	Lead	P-61	8.33	0.0982	0.393		None	SW846 3050B/6020
	Magnesium	P-61	3530	1.96	5.89		None	SW846 3050B/6020
	Nickel	P-61	6.28	0.0982	0.393	N	J	SW846 3050B/6020
	Selenium	P-61	0.974	0.324	0.982	J	None	SW846 3050B/6020
	Silver	P-61	0.478	0.478	2.39	U	None	SW846 3050B/6010B
	Thallium	P-61	0.0959	0.0589	0.393	JB	0.71UJ	SW846 3050B/6020
	Zinc	P-61	30.3	0.393	1.96		J	SW846 3050B/6020
	Aluminum	P-64	19000	28.7	95.6	B	J	SW846 3050B/6020
	Antimony	P-64	0.322	0.322	0.977	U	None	SW846 3050B/6010B
	Arsenic	P-64	3.89	0.191	0.956		None	SW846 3050B/6020
	Beryllium	P-64	0.655	0.0191	0.0956		J+	SW846 3050B/6020
	Cadmium	P-64	0.205	0.0191	0.191		J+	SW846 3050B/6020
	Chromium	P-64	10.4	0.191	0.574	N	J+	SW846 3050B/6020
	Copper	P-64	17.7	0.0631	0.191		J+	SW846 3050B/6020
	Iron	P-64	29800	63.1	191		J	SW846 3050B/6020
	Lead	P-64	15.6	0.0956	0.382		None	SW846 3050B/6020
	Magnesium	P-64	11300	19.1	57.4		None	SW846 3050B/6020
	Nickel	P-64	12.1	0.0956	0.382		J+	SW846 3050B/6020
	Selenium	P-64	3.27	0.315	0.956		None	SW846 3050B/6020
	Silver	P-64	0.0977	0.0977	0.488	U	None	SW846 3050B/6010B
	Thallium	P-64	0.141	0.0574	0.382	JB	0.94UJ	SW846 3050B/6020
	Zinc	P-64	95.4	0.382	1.91		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-81	6890	2.88	9.62		J	SW846 3050B/6020
	Antimony	P-81	0.308	0.308	0.935	U	UJ	SW846 3050B/6010B
	Arsenic	P-81	1.32	0.192	0.962	N	J-	SW846 3050B/6020
	Beryllium	P-81	0.41	0.0192	0.0962		None	SW846 3050B/6020
	Cadmium	P-81	0.213	0.0192	0.192		None	SW846 3050B/6020
	Chromium	P-81	6.59	0.192	0.577		None	SW846 3050B/6020
	Copper	P-81	6.56	0.0635	0.192		None	SW846 3050B/6020
	Iron	P-81	6910	6.35	19.2		J	SW846 3050B/6020
	Lead	P-81	10.1	0.0962	0.385		None	SW846 3050B/6020
	Magnesium	P-81	1950	1.92	5.77		None	SW846 3050B/6020
	Nickel	P-81	6.38	0.0962	0.385		None	SW846 3050B/6020
	Selenium	P-81	0.638	0.317	0.962	*BJN	1.6UJ	SW846 3050B/6020
	Silver	P-81	0.0935	0.0935	0.467	U	None	SW846 3050B/6010B
	Thallium	P-81	0.13	0.0577	0.385	JB	0.66U	SW846 3050B/6020
	Zinc	P-81	25.8	0.385	1.92	B	None	SW846 3050B/6020
	Aluminum	P-82	14700	29.9	99.6	B	J	SW846 3050B/6020
	Antimony	P-82	0.324	0.324	0.982	U	None	SW846 3050B/6010B
	Arsenic	P-82	4.58	0.199	0.996		None	SW846 3050B/6020
	Beryllium	P-82	0.422	0.0199	0.0996		None	SW846 3050B/6020
	Cadmium	P-82	0.156	0.0199	0.199	J	J+	SW846 3050B/6020
	Chromium	P-82	9.8	0.199	0.598		None	SW846 3050B/6020
	Copper	P-82	8.5	0.0657	0.199		J+	SW846 3050B/6020
	Iron	P-82	12500	65.7	199		J	SW846 3050B/6020
	Lead	P-82	14.7	0.0996	0.398		None	SW846 3050B/6020
	Magnesium	P-82	4640	1.99	5.98		None	SW846 3050B/6020
	Nickel	P-82	8.33	0.0996	0.398		None	SW846 3050B/6020
	Selenium	P-82	1.33	0.329	0.996		None	SW846 3050B/6020
	Silver	P-82	0.491	0.491	2.46	U	None	SW846 3050B/6010B
	Thallium	P-82	0.132	0.0598	0.398	J	0.68UJ	SW846 3050B/6020
	Zinc	P-82	31.4	0.398	1.99		J	SW846 3050B/6020

See notes at end of appendix.

Table B-4. Summary of nonradiological results in soil, calendar year 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-95	11500	29.6	98.6	B	J	SW846 3050B/6020
	Antimony	P-95	0.329	0.329	0.996	U	None	SW846 3050B/6010B
	Arsenic	P-95	2.49	0.197	0.986		None	SW846 3050B/6020
	Beryllium	P-95	0.407	0.0197	0.0986		None	SW846 3050B/6020
	Cadmium	P-95	0.119	0.0197	0.197	J	None	SW846 3050B/6020
	Chromium	P-95	8.63	0.197	0.592		None	SW846 3050B/6020
	Copper	P-95	6.91	0.0651	0.197		J	SW846 3050B/6020
	Iron	P-95	9070	6.51	19.7		J	SW846 3050B/6020
	Lead	P-95	7.73	0.0986	0.394		None	SW846 3050B/6020
	Magnesium	P-95	3110	1.97	5.92		None	SW846 3050B/6020
	Nickel	P-95	7.12	0.0986	0.394		None	SW846 3050B/6020
	Selenium	P-95	1	0.325	0.986		None	SW846 3050B/6020
	Silver	P-95	0.193	0.0996	0.498	J	J+	SW846 3050B/6010B
	Thallium	P-95	0.102	0.0592	0.394	J	0.68U	SW846 3050B/6020
	Zinc	P-95	25.2	0.394	1.97		J	SW846 3050B/6020

See notes at end of appendix.

Table B-5. Summary of nonradiological results in sediment, 2016

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Community	Aluminum	C-68	9180	2.98	9.92		J	SW846 3050B/6020
	Antimony	C-68	0.712	0.327	0.99	J	J+	SW846 3050B/6010B
	Arsenic	C-68	6.61	0.198	0.992	*	None	SW846 3050B/6020
	Beryllium	C-68	0.471	0.0198	0.0992		None	SW846 3050B/6020
	Cadmium	C-68	0.433	0.0198	0.198	*	J+	SW846 3050B/6020
	Chromium	C-68	10.1	0.198	0.595	B	J+	SW846 3050B/6020
	Copper	C-68	8.31	0.0655	0.198		J+	SW846 3050B/6020
	Iron	C-68	11100	65.5	198		None	SW846 3050B/6020
	Lead	C-68	11.2	0.0992	0.397		None	SW846 3050B/6020
	Magnesium	C-68	3520	1.98	5.95		None	SW846 3050B/6020
	Nickel	C-68	11.5	0.0992	0.397	N	J-	SW846 3050B/6020
	Selenium	C-68	1.37	0.327	0.992		None	SW846 3050B/6020
	Silver	C-68	0.495	0.495	2.48	U	None	SW846 3050B/6010B
	Thallium	C-68	0.191	0.0595	0.397	JB	0.71UJ	SW846 3050B/6020
	Zinc	C-68	32.5	0.397	1.98		J	SW846 3050B/6020
On-Site	Aluminum	S-72	7710	2.95	9.84		J	SW846 3050B/6020
	Antimony	S-72	0.325	0.325	0.984	U	UJ	SW846 3050B/6010B
	Arsenic	S-72	2.59	0.197	0.984	N	J-	SW846 3050B/6020
	Beryllium	S-72	0.426	0.0197	0.0984		None	SW846 3050B/6020
	Cadmium	S-72	0.317	0.0197	0.197		J-	SW846 3050B/6020
	Chromium	S-72	10.7	0.197	0.591		None	SW846 3050B/6020
	Copper	S-72	9.05	0.065	0.197		J+	SW846 3050B/6020
	Iron	S-72	10300	65	197		J	SW846 3050B/6020
	Lead	S-72	15.7	0.0984	0.394		None	SW846 3050B/6020
	Magnesium	S-72	3750	1.97	5.91		None	SW846 3050B/6020
	Nickel	S-72	12.1	0.0984	0.394		J+	SW846 3050B/6020
	Selenium	S-72	0.783	0.325	0.984	*BJN	1.6UJ	SW846 3050B/6020
	Silver	S-72	0.492	0.492	2.46	U	None	SW846 3050B/6010B
	Thallium	S-72	0.112	0.0591	0.394	JB	0.66UJ	SW846 3050B/6020
	Zinc	S-72	34.2	0.394	1.97	B	J+	SW846 3050B/6020

See notes at end of appendix.

Table B-5. Summary of nonradiological results in sediment, 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-74N	4530	2.96	9.88	B	J	SW846 3050B/6020
	Antimony	S-74N	0.293	0.293	0.887	U	None	SW846 3050B/6010B
	Arsenic	S-74N	2.13	0.198	0.988		None	SW846 3050B/6020
	Beryllium	S-74N	0.221	0.0198	0.0988		None	SW846 3050B/6020
	Cadmium	S-74N	0.144	0.0198	0.198	J	J+	SW846 3050B/6020
	Chromium	S-74N	4.61	0.198	0.593		None	SW846 3050B/6020
	Copper	S-74N	5.11	0.0652	0.198		J+	SW846 3050B/6020
	Iron	S-74N	8220	6.52	19.8		J	SW846 3050B/6020
	Lead	S-74N	4	0.0988	0.395		None	SW846 3050B/6020
	Magnesium	S-74N	2450	1.98	5.93		None	SW846 3050B/6020
	Nickel	S-74N	5.01	0.0988	0.395		None	SW846 3050B/6020
	Selenium	S-74N	1.95	0.326	0.988		None	SW846 3050B/6020
	Silver	S-74N	0.339	0.0887	0.443	J	J+	SW846 3050B/6010B
	Thallium	S-74N	0.064	0.0593	0.395	J	0.68UJ	SW846 3050B/6020
	Zinc	S-74N	30.7	0.395	1.98		J	SW846 3050B/6020
	Aluminum	S-75	3610	2.85	9.49	B	J	SW846 3050B/6020
	Antimony	S-75	0.318	0.318	0.963	U	None	SW846 3050B/6010B
	Arsenic	S-75	2.69	0.19	0.949		None	SW846 3050B/6020
	Beryllium	S-75	0.233	0.019	0.0949		None	SW846 3050B/6020
	Cadmium	S-75	0.208	0.019	0.19		J+	SW846 3050B/6020
	Chromium	S-75	4.44	0.19	0.569		None	SW846 3050B/6020
	Copper	S-75	5.11	0.0626	0.19		J+	SW846 3050B/6020
	Iron	S-75	7000	6.26	19		J	SW846 3050B/6020
	Lead	S-75	2.81	0.0949	0.38		None	SW846 3050B/6020
	Magnesium	S-75	2140	1.9	5.69		None	SW846 3050B/6020
	Nickel	S-75	5.05	0.0949	0.38		None	SW846 3050B/6020
	Selenium	S-75	0.821	0.313	0.949	J	None	SW846 3050B/6020
	Silver	S-75	0.0963	0.0963	0.482	U	None	SW846 3050B/6010B
	Thallium	S-75	0.114	0.0569	0.38	J	0.68UJ	SW846 3050B/6020
	Zinc	S-75	27.6	0.38	1.9		J	SW846 3050B/6020

See notes at end of appendix.

Table B-5. Summary of nonradiological results in sediment, 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-83	8010	2.77	9.24	B	J	SW846 3050B/6020
	Antimony	S-83	0.329	0.329	0.998	U	None	SW846 3050B/6010B
	Arsenic	S-83	2.6	0.185	0.924		None	SW846 3050B/6020
	Beryllium	S-83	0.29	0.0185	0.0924		None	SW846 3050B/6020
	Cadmium	S-83	0.167	0.0185	0.185	J	J+	SW846 3050B/6020
	Chromium	S-83	6.55	0.185	0.555		None	SW846 3050B/6020
	Copper	S-83	7.33	0.061	0.185		J+	SW846 3050B/6020
	Iron	S-83	10800	61	185		J	SW846 3050B/6020
	Lead	S-83	7.06	0.0924	0.37		None	SW846 3050B/6020
	Magnesium	S-83	3760	1.85	5.55		None	SW846 3050B/6020
	Nickel	S-83	6.63	0.0924	0.37		None	SW846 3050B/6020
	Selenium	S-83	1.04	0.305	0.924		None	SW846 3050B/6020
	Silver	S-83	0.0998	0.0998	0.499	U	None	SW846 3050B/6010B
	Thallium	S-83	0.132	0.0555	0.37	J	0.68UJ	SW846 3050B/6020
	Zinc	S-83	33.7	0.37	1.85		J	SW846 3050B/6020
	Aluminum	S-85	13000	28.8	96.2		J	SW846 3050B/6020
	Antimony	S-85	0.33	0.33	1	U	UJ	SW846 3050B/6010B
	Arsenic	S-85	3.98	0.192	0.962	N	J-	SW846 3050B/6020
	Beryllium	S-85	0.566	0.0192	0.0962		None	SW846 3050B/6020
	Cadmium	S-85	0.359	0.0192	0.192		J-	SW846 3050B/6020
	Chromium	S-85	13.3	0.192	0.577		None	SW846 3050B/6020
	Copper	S-85	11.4	0.0635	0.192		J+	SW846 3050B/6020
	Iron	S-85	12500	63.5	192		J	SW846 3050B/6020
	Lead	S-85	12.1	0.0962	0.385		None	SW846 3050B/6020
	Magnesium	S-85	4210	1.92	5.77		None	SW846 3050B/6020
	Nickel	S-85	14	0.0962	0.385		J+	SW846 3050B/6020
	Selenium	S-85	5.45	0.317	0.962	*BN	J-	SW846 3050B/6020
	Silver	S-85	0.5	0.5	2.5	U	None	SW846 3050B/6010B
	Thallium	S-85	0.127	0.0577	0.385	JB	0.66UJ	SW846 3050B/6020
	Zinc	S-85	38.4	0.385	1.92	B	J+	SW846 3050B/6020

See notes at end of appendix.

Table B-5. Summary of nonradiological results in sediment, 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Aluminum	S-91	6250	2.88	9.6	B	J	SW846 3050B/6020
	Antimony	S-91	0.323	0.323	0.978	U	None	SW846 3050B/6010B
	Arsenic	S-91	3.51	0.192	0.96		None	SW846 3050B/6020
	Beryllium	S-91	0.331	0.0192	0.096		None	SW846 3050B/6020
	Cadmium	S-91	0.202	0.0192	0.192		J+	SW846 3050B/6020
	Chromium	S-91	6.44	0.192	0.576		None	SW846 3050B/6020
	Copper	S-91	5.21	0.0633	0.192		J+	SW846 3050B/6020
	Iron	S-91	9600	63.3	192		J	SW846 3050B/6020
	Lead	S-91	6.02	0.096	0.384		None	SW846 3050B/6020
	Magnesium	S-91	2260	1.92	5.76		None	SW846 3050B/6020
	Nickel	S-91	8.36	0.096	0.384		None	SW846 3050B/6020
	Selenium	S-91	1.18	0.317	0.96		None	SW846 3050B/6020
	Silver	S-91	0.0978	0.0978	0.489	U	None	SW846 3050B/6010B
	Thallium	S-91	0.175	0.0576	0.384	J	0.68UJ	SW846 3050B/6020
	Zinc	S-91	29	0.384	1.92		J	SW846 3050B/6020
Perimeter	Aluminum	P-60	6780	2.88	9.62		J	SW846 3050B/6020
	Antimony	P-60	0.32	0.32	0.969	U	None	SW846 3050B/6010B
	Arsenic	P-60	1.9	0.192	0.962	*	None	SW846 3050B/6020
	Beryllium	P-60	0.321	0.0192	0.0962		None	SW846 3050B/6020
	Cadmium	P-60	0.141	0.0192	0.192	*J	J+	SW846 3050B/6020
	Chromium	P-60	7.02	0.192	0.577	B	J+	SW846 3050B/6020
	Copper	P-60	6.48	0.0635	0.192		J+	SW846 3050B/6020
	Iron	P-60	10700	63.5	192		None	SW846 3050B/6020
	Lead	P-60	5.01	0.0962	0.385		None	SW846 3050B/6020
	Magnesium	P-60	2920	1.92	5.77		None	SW846 3050B/6020
	Nickel	P-60	6.47	0.0962	0.385	N	J	SW846 3050B/6020
	Selenium	P-60	1.03	0.317	0.962		None	SW846 3050B/6020
	Silver	P-60	0.484	0.484	2.42	U	None	SW846 3050B/6010B
	Thallium	P-60	0.0879	0.0577	0.385	JB	0.71UJ	SW846 3050B/6020
	Zinc	P-60	24.7	0.385	1.92		J	SW846 3050B/6020

See notes at end of appendix.

Table B-5. Summary of nonradiological results in sediment, 2016 (continued)

Location Classification	Analyte	Location	Result (mg/kg)	MDL (mg/kg)	PQL (mg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
Perimeter	Aluminum	P-73	4450	2.72	9.07	B	J	SW846 3050B/6020
	Antimony	P-73	0.302	0.302	0.914	U	None	SW846 3050B/6010B
	Arsenic	P-73	1.58	0.181	0.907		None	SW846 3050B/6020
	Beryllium	P-73	0.202	0.0181	0.0907		None	SW846 3050B/6020
	Cadmium	P-73	0.261	0.0181	0.181		J+	SW846 3050B/6020
	Chromium	P-73	4.31	0.181	0.544		None	SW846 3050B/6020
	Copper	P-73	6.15	0.0599	0.181		J+	SW846 3050B/6020
	Iron	P-73	7990	5.99	18.1		J	SW846 3050B/6020
	Lead	P-73	3.75	0.0907	0.363		None	SW846 3050B/6020
	Magnesium	P-73	2500	1.81	5.44		None	SW846 3050B/6020
	Nickel	P-73	4.44	0.0907	0.363		None	SW846 3050B/6020
	Selenium	P-73	1.39	0.299	0.907		None	SW846 3050B/6020
	Silver	P-73	0.158	0.0914	0.457	J	J+	SW846 3050B/6010B
	Thallium	P-73	0.0548	0.0544	0.363	J	0.68UJ	SW846 3050B/6020
	Zinc	P-73	19.8	0.363	1.81		J	SW846 3050B/6020

See notes at end of appendix.

Table B-6. Summary of perchlorate results in soil, 2016

Location Classification	Analyte	Location	Result (µg/kg)	MDL (µg/kg)	PQL (µg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Perchlorate	S-53	0.168	0.0133	0.0392		None	EPA 314.0

See notes at end of appendix.

Table B-7. Summary of high explosives results in soil, 2016

Location Classification	Analyte	Location	Result (µg/kg)	MDL (µg/kg)	PQL (µg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Amino-2,6-dinitrotoluene, 4-	S-90	49.8	49.8	149	U	None	SW846 8330A
	Amino-4,6-dinitrotoluene, 2-		49.8	49.8	149	U	None	SW846 8330A
	Dinitrobenzene, 1,3-		49.8	49.8	149	U	None	SW846 8330A
	Dinitrotoluene, 2,4-		49.8	49.8	149	U	None	SW846 8330A
	Dinitrotoluene, 2,6-		49.8	49.8	149	U	None	SW846 8330A
	HMX		49.8	49.8	149	U	None	SW846 8330A
	Nitro-benzene		49.8	49.8	149	U	None	SW846 8330A
	Nitrotoluene, 2-		49.8	49.8	149	U	None	SW846 8330A
	Nitrotoluene, 3-		49.8	49.8	149	U	None	SW846 8330A
	Nitrotoluene, 4-		49.8	49.8	149	U	None	SW846 8330A
	Pentaerythritol tetranitrate		82.1	82.1	498	U	None	SW846 8330A
	RDX		49.8	49.8	149	U	None	SW846 8330A
	Tetryl		49.8	49.8	149	U	None	SW846 8330A
	Trinitrobenzene, 1,3,5-		49.8	49.8	149	U	None	SW846 8330A
	Trinitrotoluene, 2,4,6-		49.8	49.8	149	U	None	SW846 8330A
	Amino-2,6-dinitrotoluene, 4-	S-93	49.5	49.5	149	U	None	SW846 8330A
	Amino-4,6-dinitrotoluene, 2-		49.5	49.5	149	U	None	SW846 8330A
	Dinitrobenzene, 1,3-		49.5	49.5	149	U	None	SW846 8330A
	Dinitrotoluene, 2,4-		49.5	49.5	149	U	None	SW846 8330A
	Dinitrotoluene, 2,6-		49.5	49.5	149	U	None	SW846 8330A
	HMX		49.5	49.5	149	U	None	SW846 8330A
	Nitro-benzene		49.5	49.5	149	U	None	SW846 8330A
	Nitrotoluene, 2-		49.5	49.5	149	U	None	SW846 8330A
	Nitrotoluene, 3-		49.5	49.5	149	U	None	SW846 8330A
	Nitrotoluene, 4-		49.5	49.5	149	U	None	SW846 8330A
	Pentaerythritol tetranitrate		81.7	81.7	495	U	None	SW846 8330A
	RDX		49.5	49.5	149	U	None	SW846 8330A
	Tetryl		49.5	49.5	149	U	None	SW846 8330A

See notes at end of appendix.

Table B-7. Summary of high explosives results in soil, 2016 (continued)

Location Classification	Analyte	Location	Result (µg/kg)	MDL (µg/kg)	PQL (µg/kg)	Laboratory Data Qualifiers	Data Validation Qualifiers	Analytical Method
On-Site	Trinitrobenzene, 1,3,5-		49.5	49.5	149	U	None	SW846 8330A
	Trinitrotoluene, 2,4,6-		49.5	49.5	149	U	None	SW846 8330A
	Amino-2,6-dinitrotoluene, 4-	S-94	50	50	150	U	None	SW846 8330A
	Amino-4,6-dinitrotoluene, 2-		50	50	150	U	None	SW846 8330A
	Dinitrobenzene, 1,3-		50	50	150	U	None	SW846 8330A
	Dinitrotoluene, 2,4-		50	50	150	U	None	SW846 8330A
	Dinitrotoluene, 2,6-		50	50	150	U	None	SW846 8330A
	HMX		50	50	150	U	None	SW846 8330A
	Nitro-benzene		50	50	150	U	None	SW846 8330A
	Nitrotoluene, 2-		50	50	150	U	None	SW846 8330A
	Nitrotoluene, 3-		50	50	150	U	None	SW846 8330A
	Nitrotoluene, 4-		50	50	150	U	None	SW846 8330A
	Pentaerythritol tetranitrate		82.5	82.5	500	U	None	SW846 8330A
	RDX		50	50	150	U	None	SW846 8330A
	Tetryl		50	50	150	U	None	SW846 8330A
	Trinitrobenzene, 1,3,5-		50	50	150	U	None	SW846 8330A
	Trinitrotoluene, 2,4,6-		50	50	150	U	None	SW846 8330A

See notes at end of appendix.

Table B-8. SNL/NM sample location deletions and justification, 2016

Sampling Location	Location Number	Soil	Sed	Veg	TLD	Located w/SWMU	Justification
MWL (northeast)	S-2NE	1		1			Redundant with MWL LTMMP
MWL (northwest)	S-2NW	1		1	1		Redundant with MWL LTMMP
MWL (southeast)	S-2SE	1					Redundant with MWL LTMMP
MWL (southwest)	S-2SW	1					Redundant with MWL LTMMP
Coyote Canyon Control	S-3	1			1	147, 114	Closed without IC
Unnamed arroyo (north of TA-V)	S-7	1					Redundant with S-51, keep TLD, delete soil
TA-II West	S-31				1		Redundant with S-46
CWL	S-35	1		1		107	Closed with IC; redundant with CWL PCCP, S-45
TA-V (northeast fence)	S-41	1			1	102	Closed without IC
TA-V (east fence)	S-42	1		1	1	102	Closed without IC
TA-V (southeast fence)	S-43	1		1	1	102	Closed without IC
RMWMU	S-45E				1		Redundant with S-45
Tijeras Arroyo (east of TA-IV)	S-47				1		Redundant with S-48
TA-III, northeast of buildings 6716 and 6717	S-52	1		1			Redundant with S-51
TA-III, Building 6630	S-54	1				138	Closed with IC; redundant with S-92
TA-V, Building 6588 (west corner)	S-56	1				Multiple	SWMUs nearby
KAFB facility	S-66	1			1		Access issue
School House Mesa	S-78	1				61C, 20	Closed without IC; no activities
Arroyo del Coyote (upstream)	S-79		1				Redundant with S-85
Stormwater sampling point (SP-10)	S-84		1			16	Closed without IC; redundant with S-75
Corner of Wyoming Blvd. and S Street	S-86				1		Remove TLD from plan, covered by S-20
Northeast perimeter	P-12	1		1			Access issue; redundant with P-63 and P-64
North Perimeter Road	P-18				1		Removed due to fence line construction
Tijeras Arroyo (upstream)	P-65		1				Redundant with P-73
Madera Canyon	P-80	1					No activities; redundant with S-63
Mesa del Sol, south KAFB gate	P-87	1					Redundant with P-5 and P-81
Rio Grande, Isleta Pueblo (downstream)	C-11	1			1		Access issue
Corrales Fire Station	C-24				1		Redundant with P-23
Albuquerque Fire Station #11, Southern Ave. SE	C-27				1		Redundant with P-26
East resident	C-62	1		1			Redundant with C-10
Total number of samples deleted		20	3	8	14		

Table B-8 NOTES:

C = off-site location (formerly "community" location)
CWL = Chemical Waste Landfill
IC = institutional control
KAFB = Kirtland Air Force Base
LTMMP = Long-Term Monitoring and Maintenance Plan
MWL = Mixed Waste Landfill
P = perimeter location
PCCP = Post-Closure Care Permit
RMWMU = Radioactive and Mixed Waste Management Unit
S = on-site location
sed = sediment
SP = sampling point
SWMU = Solid Waste Management nit
TA = technical area
TLD = thermoluminescent dosimeter
veg = vegetation

Appendix Notes

Units

µg/kg – micrograms per kilogram
mg/kg = milligrams per kilogram
mR = milliroentgen
pCi/g = picocuries per gram
pCi/L = picocuries per liter

MDL or MDA

MDA = minimal detectable activity or minimum measured activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level

MDL = method detection limit; the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix specific

PQL

PQL = practical quantitation limit; the lowest concentration of analytes in a sample that can be determined reliably within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions

Laboratory Data Qualifier

B = analyte detected in the blank
J = estimated value, the analyte concentration fell above the effective MDL and below the effective PQL
N = a spike was outside limits
U = analyte is absent or below the method detection limit
* = a replicate was outside limits

Data Validation Qualifier

BD = below detection limit as used in radiochemistry to identify results that are not statistically different from zero
J = associated value is an estimated quantity
J+ = The associated numerical value is an estimated quantity with a suspected positive base
J- = The associated numerical value is an estimated quantity with a suspected negative base
None = no data validation for corrected gross alpha activity
U = The analyte was analyzed for but was not detected. The associated numerical value is the sample quantitation limit
UJ = The analyte was analyzed for but was not detected. The associated value is an estimate and may be inaccurate or imprecise

Analytical Method

DOE (U.S. Department of Energy) Environmental Measurements Laboratory. 1997. *The Procedures Manual of the Environmental Measurements Laboratory*, HASL-300, 28th ed., vol. 1. New York, NY: DOE.

EPA (U.S. Environmental Protection Agency). 1986 (and updates). *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, 3rd ed. Washington, D.C.: EPA.

———. 1999. *Determination of Perchlorate in Drinking Water Using Ion Chromatography,* EPA Method 314.0. Cincinnati, OH: EPA National Exposure Research Laboratory Office of Research and Development.

GEL (GEL Laboratories, LLC). 2010. *Standard Operating Procedure GL-RAD-A-002.* Charleston, SC: GEL.

Appendix C. FY 2016 Ambient Air Surveillance Results

Painted lady butterflies (*Vanessa cardui*) on a chamisa (*Ericameria Nauseosa*)

Contents

Appendix C presents the ambient air surveillance results for fiscal year 2016.

Table C-1. Summary of ambient air metals analysis, FY 2016

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	10/29/2015	Aluminum	0.42	0.08	0.0272	
		Antimony	0.00344	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0191	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.17	0.1	0.032	B
		Chromium	0.0583	0.002	0.0006	
		Cobalt	0.00179	0.002	0.0006	J
		Copper	0.123	0.004	0.0012	
		Iron	0.572	0.1	0.032	
		Lead	0.00272	0.004	0.00132	J
		Magnesium	0.422	0.12	0.034	
		Manganese	0.0126	0.004	0.0008	
		Nickel	0.0035	0.002	0.0006	
		Potassium	0.229	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000731	0.002	0.0004	J
		Sodium	6.66	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000268	0.00008	0.0000264	J
		Vanadium	0.000874	0.002	0.0004	J
		Zinc	0.0487	0.004	0.0016	
	11/26/2015	Aluminum	0.612	0.08	0.0272	
		Antimony	0.00474	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0355	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.17	0.1	0.032	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	11/26/2015	Chromium	0.0658	0.002	0.0006	
		Cobalt	0.000756	0.002	0.0006	J
		Copper	0.0895	0.004	0.0012	
		Iron	0.903	0.1	0.032	
		Lead	0.00858	0.004	0.00132	B
		Magnesium	0.524	0.12	0.034	
		Manganese	0.0193	0.004	0.0008	
		Nickel	0.00434	0.002	0.0006	
		Potassium	0.474	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.00052	0.002	0.0004	J
		Sodium	7.49	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000034	0.00001	0.0000033	J
		Vanadium	0.00131	0.002	0.0004	J
		Zinc	0.092	0.004	0.0016	
	12/30/2015	Aluminum	0.873	0.08	0.0272	
		Antimony	0.00255	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0227	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.9	0.1	0.032	B
		Chromium	0.0261	0.002	0.0006	
		Cobalt	0.000816	0.002	0.0006	J
		Copper	0.156	0.004	0.0012	
		Iron	1.06	0.1	0.032	
		Lead	0.00906	0.004	0.00132	
		Magnesium	0.711	0.12	0.034	
		Manganese	0.0242	0.004	0.0008	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	12/30/2015	Nickel	0.00466	0.002	0.0006	
		Potassium	0.401	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000923	0.002	0.0004	J
		Sodium	4.45	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000924	0.00008	0.0000264	
		Vanadium	0.00203	0.002	0.0004	
		Zinc	0.0681	0.004	0.0016	
	1/28/2016	Aluminum	0.535	0.08	0.0272	
		Antimony	0.00405	0.004	0.00132	B
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0113	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.55	0.1	0.032	
		Chromium	0.0158	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0742	0.004	0.0012	
		Iron	0.625	0.1	0.032	
		Lead	0.00475	0.004	0.00132	
		Magnesium	0.517	0.12	0.034	
		Manganese	0.0139	0.004	0.0008	
		Nickel	0.00532	0.002	0.0006	
		Potassium	0.228	0.1	0.0256	
		Selenium	0.00203	0.012	0.002	J
		Silver	0.00075	0.002	0.0004	J
		Sodium	3.8	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000404	0.00008	0.0000264	J

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	1/28/2016	Vanadium	0.000971	0.002	0.0004	J
		Zinc	0.0558	0.004	0.0016	
	2/25/2016	Aluminum	0.629	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0219	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.000868	0.002	0.0004	J
		Calcium	3.72	0.1	0.032	
		Chromium	0.014	0.002	0.0006	
		Cobalt	0.0025	0.002	0.0006	
		Copper	0.0741	0.004	0.0012	
		Iron	0.72	0.1	0.032	
		Lead	0.00469	0.004	0.00132	
		Magnesium	0.498	0.12	0.034	
		Manganese	0.0178	0.004	0.0008	
		Nickel	0.0086	0.002	0.0006	
		Potassium	0.247	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.18	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000524	0.00008	0.0000264	J
		Vanadium	0.00113	0.002	0.0004	J
		Zinc	0.0719	0.004	0.0016	
	3/31/2016	Aluminum	1.02	0.08	0.0272	
		Antimony	0.00201	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0734	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	3/31/2016	Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.98	0.1	0.032	
		Chromium	0.00971	0.002	0.0006	
		Cobalt	0.00073	0.002	0.0006	J
		Copper	0.0379	0.004	0.0012	
		Iron	1.2	0.1	0.032	
		Lead	0.00783	0.004	0.00132	
		Magnesium	0.603	0.12	0.034	
		Manganese	0.0321	0.004	0.0008	
		Nickel	0.00687	0.002	0.0006	
		Potassium	0.462	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000402	0.002	0.0004	J
		Sodium	3.51	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000094	0.00008	0.0000264	
		Vanadium	0.00347	0.002	0.0004	
		Zinc	0.0443	0.004	0.0016	
	4/28/2016	Aluminum	1.48	0.08	0.0272	
		Antimony	0.0045	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0428	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	6.18	0.1	0.032	
		Chromium	0.0185	0.002	0.0006	
		Cobalt	0.00242	0.002	0.0006	
		Copper	0.239	0.004	0.0012	
		Iron	1.73	0.1	0.032	
		Lead	0.0123	0.004	0.00132	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	4/28/2016	Magnesium	0.946	0.12	0.034	
		Manganese	0.0456	0.004	0.0008	
		Nickel	0.00524	0.002	0.0006	
		Potassium	0.598	0.1	0.0256	B
		Selenium	0.002	0.012	0.002	U
		Silver	0.00131	0.002	0.0004	J
		Sodium	2.96	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000114	0.00008	0.0000264	
		Vanadium	0.00369	0.002	0.0004	B
		Zinc	0.0653	0.004	0.0016	
	5/26/2016	Aluminum	0.846	0.08	0.0272	
		Antimony	0.00198	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0262	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.12	0.1	0.032	
		Chromium	0.0993	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0496	0.004	0.0012	
		Iron	0.953	0.1	0.032	
		Lead	0.00368	0.004	0.00132	J
		Magnesium	0.667	0.12	0.034	
		Manganese	0.0242	0.004	0.0008	
		Nickel	0.00323	0.002	0.0006	
		Potassium	0.39	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	5.99	0.1	0.028	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	5/26/2016	Thallium	0.002	0.008	0.002	U
		Uranium	0.000149	0.00008	0.0000264	N
		Vanadium	0.00242	0.002	0.0004	
		Zinc	0.046	0.004	0.0016	
	6/29/2016	Aluminum	0.0895	0.01	0.0034	
		Antimony	0.000407	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.00272	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.441	0.0125	0.004	
		Chromium	0.00227	0.00025	0.000075	
		Cobalt	0.000776	0.00025	0.000075	
		Copper	0.00463	0.0005	0.00015	
		Iron	0.0989	0.0125	0.004	
		Lead	0.000473	0.0005	0.000165	J
		Magnesium	0.0617	0.015	0.00425	
		Manganese	0.00227	0.0005	0.0001	
		Nickel	0.000609	0.00025	0.000075	
		Potassium	0.0448	0.0125	0.0032	B
		Selenium	0.00025	0.0015	0.00025	U
		Silver	0.0000797	0.00025	0.00005	J
		Sodium	0.58	0.0125	0.0035	B
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000924	0.00008	0.0000264	
		Vanadium	0.000295	0.00025	0.00005	
		Zinc	0.00734	0.0005	0.0002	
	7/28/2016	Aluminum	0.207	0.08	0.0272	
		Antimony	0.00172	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	7/28/2016	Barium	0.0141	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.53	0.1	0.032	B
		Chromium	0.00722	0.002	0.0006	
		Cobalt	0.000932	0.002	0.0006	J
		Copper	0.0263	0.004	0.0012	
		Iron	0.308	0.1	0.032	
		Lead	0.00527	0.004	0.00132	
		Magnesium	0.168	0.12	0.034	
		Manganese	0.00837	0.004	0.0008	
		Nickel	0.00304	0.002	0.0006	B
		Potassium	0.19	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.66	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000584	0.00008	0.0000264	JB
		Vanadium	0.000916	0.002	0.0004	J
		Zinc	0.0718	0.004	0.0016	B
	8/26/2016	Aluminum	0.873	0.08	0.0272	
		Antimony	0.00269	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0382	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.76	0.1	0.032	
		Chromium	0.0165	0.002	0.0006	
		Cobalt	0.00414	0.002	0.0006	
		Copper	0.0556	0.004	0.0012	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	8/26/2016	Iron	1.26	0.1	0.032	
		Lead	0.01	0.004	0.00132	
		Magnesium	0.536	0.12	0.034	
		Manganese	0.0299	0.004	0.0008	
		Nickel	0.00625	0.002	0.0006	
		Potassium	0.571	0.1	0.0256	
		Selenium	0.0027	0.012	0.002	J
		Silver	0.00109	0.002	0.0004	J
		Sodium	3.96	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.00016	0.00008	0.0000264	
		Vanadium	0.00258	0.002	0.0004	
		Zinc	0.11	0.004	0.0016	
	9/29/2016	Aluminum	0.0273	0.01	0.0034	
		Antimony	0.000234	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.00356	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.229	0.0125	0.004	
		Chromium	0.00135	0.00025	0.000075	
		Cobalt	0.0000759	0.00025	0.000075	J
		Copper	0.00337	0.0005	0.00015	
		Iron	0.0476	0.0125	0.004	
		Lead	0.000536	0.0005	0.000165	
		Magnesium	0.0257	0.015	0.00425	
		Manganese	0.00108	0.0005	0.0001	
		Nickel	0.000367	0.00025	0.000075	
		Potassium	0.0274	0.0125	0.0032	
		Selenium	0.00025	0.0015	0.00025	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A2PM	9/29/2016	Silver	0.000182	0.00025	0.00005	J
		Sodium	0.363	0.0125	0.0035	
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000088	0.00001	0.0000033	J
		Vanadium	0.0000912	0.00025	0.00005	J
		Zinc	0.00821	0.0005	0.0002	
A3PM	10/29/2015	Aluminum	0.248	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00916	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.00822	0.002	0.0004	
		Calcium	2.06	0.1	0.032	B
		Chromium	0.0557	0.002	0.0006	
		Cobalt	0.00083	0.002	0.0006	J
		Copper	0.117	0.004	0.0012	
		Iron	0.322	0.1	0.032	
		Lead	0.00408	0.004	0.00132	
		Magnesium	0.329	0.12	0.034	
		Manganese	0.0066	0.004	0.0008	
		Nickel	0.00374	0.002	0.0006	
		Potassium	0.177	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.00185	0.002	0.0004	J
		Sodium	6.14	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.000937	0.002	0.0004	J
		Zinc	0.0809	0.004	0.0016	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	11/26/2015	Aluminum	0.261	0.08	0.0272	
		Antimony	0.00238	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0154	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	2.1	0.1	0.032	
		Chromium	0.0507	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.139	0.004	0.0012	
		Iron	0.399	0.1	0.032	
		Lead	0.00656	0.004	0.00132	B
		Magnesium	0.307	0.12	0.034	
		Manganese	0.00813	0.004	0.0008	
		Nickel	0.00268	0.002	0.0006	
		Potassium	0.237	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	5.73	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000033	0.00001	0.0000033	U
		Vanadium	0.000584	0.002	0.0004	J
		Zinc	0.0474	0.004	0.0016	
	12/30/2015	Aluminum	1.02	0.08	0.0272	
		Antimony	0.00278	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0197	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.47	0.1	0.032	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	12/30/2015	Chromium	0.0287	0.002	0.0006	
		Cobalt	0.00102	0.002	0.0006	J
		Copper	0.208	0.004	0.0012	
		Iron	1.21	0.1	0.032	
		Lead	0.0042	0.004	0.00132	
		Magnesium	0.813	0.12	0.034	
		Manganese	0.03	0.004	0.0008	
		Nickel	0.00515	0.002	0.0006	
		Potassium	0.448	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000741	0.002	0.0004	J
		Sodium	4.56	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000046	0.00008	0.0000264	J
		Vanadium	0.0021	0.002	0.0004	
		Zinc	0.0652	0.004	0.0016	
	1/28/2016	Aluminum	0.734	0.08	0.0272	
		Antimony	0.00399	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0158	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.22	0.1	0.032	
		Chromium	0.0129	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0443	0.004	0.0012	
		Iron	0.846	0.1	0.032	
		Lead	0.00438	0.004	0.00132	
		Magnesium	0.549	0.12	0.034	
		Manganese	0.0206	0.004	0.0008	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	1/28/2016	Nickel	0.00422	0.002	0.0006	
		Potassium	0.279	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.16	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.00143	0.002	0.0004	J
		Zinc	0.048	0.004	0.0016	
	2/25/2016	Aluminum	0.354	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00718	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.78	0.1	0.032	
		Chromium	0.0129	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0833	0.004	0.0012	
		Iron	0.369	0.1	0.032	
		Lead	0.00344	0.004	0.00132	J
		Magnesium	0.353	0.12	0.034	
		Manganese	0.00826	0.004	0.0008	
		Nickel	0.00303	0.002	0.0006	
		Potassium	0.156	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.95	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	2/25/2016	Vanadium	0.000517	0.002	0.0004	J
		Zinc	0.0618	0.004	0.0016	
	3/31/2016	Aluminum	0.509	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0425	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	2.03	0.1	0.032	
		Chromium	0.00596	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.029	0.004	0.0012	
		Iron	0.618	0.1	0.032	
		Lead	0.00542	0.004	0.00132	
		Magnesium	0.325	0.12	0.034	
		Manganese	0.0183	0.004	0.0008	
		Nickel	0.00387	0.002	0.0006	
		Potassium	0.285	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.2	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.00009	0.00008	0.0000264	
		Vanadium	0.00211	0.002	0.0004	
		Zinc	0.0349	0.004	0.0016	
	4/28/2016	Aluminum	1.41	0.08	0.0272	
		Antimony	0.00493	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.033	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	4/28/2016	Cadmium	0.000541	0.002	0.0004	J
		Calcium	5.21	0.1	0.032	
		Chromium	0.0148	0.002	0.0006	
		Cobalt	0.00267	0.002	0.0006	
		Copper	0.109	0.004	0.0012	
		Iron	1.59	0.1	0.032	
		Lead	0.0116	0.004	0.00132	
		Magnesium	0.822	0.12	0.034	
		Manganese	0.0438	0.004	0.0008	
		Nickel	0.00432	0.002	0.0006	
		Potassium	0.676	0.1	0.0256	B
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.59	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000151	0.00008	0.0000264	
		Vanadium	0.00331	0.002	0.0004	B
		Zinc	0.0653	0.004	0.0016	
	5/26/2016	Aluminum	1.5	0.08	0.0272	
		Antimony	0.00231	0.004	0.00132	JB
		Arsenic	0.00207	0.012	0.002	J
		Barium	0.0364	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5	0.1	0.032	
		Chromium	0.172	0.002	0.0006	
		Cobalt	0.000907	0.002	0.0006	J
		Copper	0.0695	0.004	0.0012	
		Iron	1.59	0.1	0.032	
		Lead	0.00663	0.004	0.00132	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	5/26/2016	Magnesium	1.05	0.12	0.034	
		Manganese	0.038	0.004	0.0008	
		Nickel	0.00684	0.002	0.0006	
		Potassium	0.592	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	8.75	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.00009	0.00008	0.0000264	N
		Vanadium	0.0044	0.002	0.0004	
		Zinc	0.0524	0.004	0.0016	
	6/29/2016	Aluminum	0.155	0.01	0.0034	
		Antimony	0.000225	0.0005	0.000165	JB
		Arsenic	0.000339	0.0015	0.00025	J
		Barium	0.00412	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.554	0.0125	0.004	
		Chromium	0.00207	0.00025	0.000075	
		Cobalt	0.000501	0.00025	0.000075	
		Copper	0.0153	0.0005	0.00015	
		Iron	0.175	0.0125	0.004	
		Lead	0.000596	0.0005	0.000165	
		Magnesium	0.0848	0.015	0.00425	
		Manganese	0.00398	0.0005	0.0001	
		Nickel	0.000673	0.00025	0.000075	
		Potassium	0.0709	0.0125	0.0032	B
		Selenium	0.00025	0.0015	0.00025	U
		Silver	0.0000657	0.00025	0.00005	J
		Sodium	0.578	0.0125	0.0035	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	6/29/2016	Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000884	0.00008	0.0000264	
		Vanadium	0.000342	0.00025	0.00005	
		Zinc	0.00713	0.0005	0.0002	
	7/28/2016	Aluminum	0.289	0.08	0.0272	
		Antimony	0.00165	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0248	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.01	0.1	0.032	B
		Chromium	0.00798	0.002	0.0006	
		Cobalt	0.00105	0.002	0.0006	J
		Copper	0.0608	0.004	0.0012	
		Iron	0.528	0.1	0.032	
		Lead	0.00624	0.004	0.00132	
		Magnesium	0.248	0.12	0.034	
		Manganese	0.0135	0.004	0.0008	
		Nickel	0.00357	0.002	0.0006	B
		Potassium	0.246	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.67	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000884	0.00008	0.0000264	B
		Vanadium	0.00122	0.002	0.0004	J
		Zinc	0.0605	0.004	0.0016	B
	8/26/2016	Aluminum	0.534	0.08	0.0272	
		Antimony	0.00226	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	8/26/2016	Barium	0.0215	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.14	0.1	0.032	
		Chromium	0.0143	0.002	0.0006	
		Cobalt	0.00231	0.002	0.0006	
		Copper	0.0613	0.004	0.0012	
		Iron	0.726	0.1	0.032	
		Lead	0.00765	0.004	0.00132	
		Magnesium	0.33	0.12	0.034	
		Manganese	0.0167	0.004	0.0008	
		Nickel	0.00467	0.002	0.0006	
		Potassium	0.437	0.1	0.0256	
		Selenium	0.0025	0.012	0.002	J
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.73	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000848	0.00008	0.0000264	
		Vanadium	0.00179	0.002	0.0004	J
		Zinc	0.0712	0.004	0.0016	
	9/29/2016	Aluminum	0.0578	0.01	0.0034	
		Antimony	0.000277	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.00415	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.275	0.0125	0.004	
		Chromium	0.00193	0.00025	0.000075	
		Cobalt	0.000118	0.00025	0.000075	J
		Copper	0.0156	0.0005	0.00015	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
A3PM	9/29/2016	Iron	0.0705	0.0125	0.004	
		Lead	0.000796	0.0005	0.000165	
		Magnesium	0.0414	0.015	0.00425	
		Manganese	0.00161	0.0005	0.0001	
		Nickel	0.000482	0.00025	0.000075	
		Potassium	0.0321	0.0125	0.0032	
		Selenium	0.00025	0.0015	0.00025	U
		Silver	0.0000828	0.00025	0.00005	J
		Sodium	0.443	0.0125	0.0035	
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000074	0.00001	0.0000033	J
		Vanadium	0.000125	0.00025	0.00005	J
		Zinc	0.0108	0.0005	0.0002	
BKPM	10/29/2015	Aluminum	0.0754	0.08	0.0272	J
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00256	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.45	0.1	0.032	B
		Chromium	0.0648	0.002	0.0006	
		Cobalt	0.000638	0.002	0.0006	J
		Copper	0.0146	0.004	0.0012	
		Iron	0.081	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.291	0.12	0.034	
		Manganese	0.00127	0.004	0.0008	J
		Nickel	0.00311	0.002	0.0006	
		Potassium	0.091	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	10/29/2015	Silver	0.0004	0.002	0.0004	U
		Sodium	6.89	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0187	0.004	0.0016	
	11/26/2015	Aluminum	0.0548	0.08	0.0272	J
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00231	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.23	0.1	0.032	
		Chromium	0.0516	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0131	0.004	0.0012	
		Iron	0.0675	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.222	0.12	0.034	
		Manganese	0.000882	0.004	0.0008	J
		Nickel	0.00268	0.002	0.0006	
		Potassium	0.0508	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	5.01	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000033	0.00001	0.0000033	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0211	0.004	0.0016	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	12/30/2015	Aluminum	0.0607	0.08	0.0272	J
		Antimony	0.00169	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00261	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.13	0.1	0.032	B
		Chromium	0.0285	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.00954	0.004	0.0012	
		Iron	0.0583	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.259	0.12	0.034	
		Manganese	0.00117	0.004	0.0008	J
		Nickel	0.0019	0.002	0.0006	J
		Potassium	0.0769	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.17	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0176	0.004	0.0016	
	1/28/2016	Aluminum	0.066	0.08	0.0272	J
		Antimony	0.00187	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00332	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.06	0.1	0.032	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	1/28/2016	Chromium	0.0108	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0108	0.004	0.0012	
		Iron	0.0739	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.245	0.12	0.034	
		Manganese	0.0014	0.004	0.0008	J
		Nickel	0.00179	0.002	0.0006	J
		Potassium	0.0935	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.44	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0221	0.004	0.0016	
	2/25/2016	Aluminum	0.103	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00352	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.48	0.1	0.032	
		Chromium	0.0119	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0186	0.004	0.0012	
		Iron	0.102	0.1	0.032	
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.283	0.12	0.034	
		Manganese	0.00242	0.004	0.0008	J

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	2/25/2016	Nickel	0.00194	0.002	0.0006	J
		Potassium	0.0887	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.12	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0361	0.004	0.0016	
	3/31/2016	Aluminum	0.0863	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0552	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.17	0.1	0.032	
		Chromium	0.00756	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.00533	0.004	0.0012	
		Iron	0.138	0.1	0.032	
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.166	0.12	0.034	
		Manganese	0.00183	0.004	0.0008	J
		Nickel	0.00443	0.002	0.0006	
		Potassium	0.0978	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.07	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000356	0.00008	0.0000264	J

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	3/31/2016	Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0229	0.004	0.0016	
	4/28/2016	Aluminum	0.0692	0.08	0.0272	J
		Antimony	0.00187	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0066	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.63	0.1	0.032	
		Chromium	0.0165	0.002	0.0006	
		Cobalt	0.00264	0.002	0.0006	
		Copper	0.0181	0.004	0.0012	
		Iron	0.178	0.1	0.032	
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.201	0.12	0.034	
		Manganese	0.00213	0.004	0.0008	J
		Nickel	0.00311	0.002	0.0006	
		Potassium	0.0365	0.1	0.0256	JB
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.71	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0349	0.004	0.0016	
	5/26/2016	Aluminum	0.0878	0.08	0.0272	
		Antimony	0.0018	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0136	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	5/26/2016	Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.95	0.1	0.032	
		Chromium	0.142	0.002	0.0006	
		Cobalt	0.000973	0.002	0.0006	J
		Copper	0.02	0.004	0.0012	
		Iron	0.202	0.1	0.032	
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.363	0.12	0.034	
		Manganese	0.00215	0.004	0.0008	J
		Nickel	0.00344	0.002	0.0006	
		Potassium	0.102	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	7.57	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000388	0.00008	0.0000264	JN
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0428	0.004	0.0016	
	6/29/2016	Aluminum	0.0103	0.01	0.0034	
		Antimony	0.000315	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.000542	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.192	0.0125	0.004	
		Chromium	0.00171	0.00025	0.000075	
		Cobalt	0.000792	0.00025	0.000075	
		Copper	0.00159	0.0005	0.00015	
		Iron	0.0263	0.0125	0.004	
		Lead	0.000165	0.0005	0.000165	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	6/29/2016	Magnesium	0.0244	0.015	0.00425	
		Manganese	0.000233	0.0005	0.0001	J
		Nickel	0.000449	0.00025	0.000075	
		Potassium	0.0119	0.0125	0.0032	JB
		Selenium	0.00025	0.0015	0.00025	U
		Silver	0.00005	0.00025	0.00005	U
		Sodium	0.488	0.0125	0.0035	B
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000468	0.00008	0.0000264	J
		Vanadium	0.00005	0.00025	0.00005	U
		Zinc	0.00613	0.0005	0.0002	
	7/28/2016	Aluminum	0.0421	0.08	0.0272	J
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00569	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	0.501	0.1	0.032	B
		Chromium	0.00767	0.002	0.0006	
		Cobalt	0.0014	0.002	0.0006	J
		Copper	0.0106	0.004	0.0012	
		Iron	0.0799	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.0809	0.12	0.034	J
		Manganese	0.000872	0.004	0.0008	J
		Nickel	0.00293	0.002	0.0006	B
		Potassium	0.0256	0.1	0.0256	U
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.57	0.1	0.028	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	7/28/2016	Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0327	0.004	0.0016	B
	8/26/2016	Aluminum	0.0826	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00769	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.62	0.1	0.032	
		Chromium	0.0149	0.002	0.0006	
		Cobalt	0.00349	0.002	0.0006	
		Copper	0.0106	0.004	0.0012	
		Iron	0.18	0.1	0.032	
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.159	0.12	0.034	
		Manganese	0.00195	0.004	0.0008	J
		Nickel	0.00388	0.002	0.0006	
		Potassium	0.0811	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.33	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0572	0.004	0.0016	
	9/29/2016	Aluminum	0.00458	0.01	0.0034	J
		Antimony	0.000165	0.0005	0.000165	U
		Arsenic	0.00025	0.0015	0.00025	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM	9/29/2016	Barium	0.00226	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.106	0.0125	0.004	
		Chromium	0.00134	0.00025	0.000075	
		Cobalt	0.000214	0.00025	0.000075	J
		Copper	0.00122	0.0005	0.00015	
		Iron	0.0132	0.0125	0.004	
		Lead	0.000165	0.0005	0.000165	U
		Magnesium	0.0128	0.015	0.00425	J
		Manganese	0.000137	0.0005	0.0001	J
		Nickel	0.000311	0.00025	0.000075	
		Potassium	0.00892	0.0125	0.0032	J
		Selenium	0.000299	0.0015	0.00025	J
		Silver	0.00005	0.00025	0.00005	U
		Sodium	0.322	0.0125	0.0035	
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000033	0.00001	0.0000033	U
		Vanadium	0.00005	0.00025	0.00005	U
		Zinc	0.00674	0.0005	0.0002	
BKPM2	11/26/2015	Aluminum	0.0667	0.08	0.0272	J
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00333	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.08	0.1	0.032	
		Chromium	0.0114	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0061	0.004	0.0012	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM2	11/26/2015	Iron	0.0505	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.258	0.12	0.034	
		Manganese	0.00171	0.004	0.0008	J
		Nickel	0.00167	0.002	0.0006	J
		Potassium	0.0696	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.09	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000033	0.00001	0.0000033	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0111	0.004	0.0016	
	1/28/2016	Aluminum	0.0677	0.08	0.0272	J
		Antimony	0.00226	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00284	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.18	0.1	0.032	
		Chromium	0.0125	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.011	0.004	0.0012	
		Iron	0.0701	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.273	0.12	0.034	
		Manganese	0.0012	0.004	0.0008	J
		Nickel	0.0018	0.002	0.0006	J
		Potassium	0.0883	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
BKPM2	1/28/2016	Silver	0.0004	0.002	0.0004	U
		Sodium	3.9	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0155	0.004	0.0016	
BKPM3	1/28/2016	Aluminum	0.0578	0.08	0.0272	J
		Antimony	0.00236	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0025	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.03	0.1	0.032	
		Chromium	0.0108	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0054	0.004	0.0012	
		Iron	0.0587	0.1	0.032	J
		Lead	0.00132	0.004	0.00132	U
		Magnesium	0.23	0.12	0.034	
		Manganese	0.00101	0.004	0.0008	J
		Nickel	0.00183	0.002	0.0006	J
		Potassium	0.0667	0.1	0.0256	J
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.21	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0175	0.004	0.0016	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	10/29/2015	Aluminum	0.826	0.08	0.0272	
		Antimony	0.00304	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0245	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.000525	0.002	0.0004	J
		Calcium	4.96	0.1	0.032	B
		Chromium	0.068	0.002	0.0006	
		Cobalt	0.00306	0.002	0.0006	
		Copper	0.0818	0.004	0.0012	
		Iron	1.08	0.1	0.032	
		Lead	0.00494	0.004	0.00132	
		Magnesium	0.661	0.12	0.034	
		Manganese	0.0313	0.004	0.0008	
		Nickel	0.00598	0.002	0.0006	
		Potassium	0.457	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000851	0.002	0.0004	J
		Sodium	7.35	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000744	0.00008	0.0000264	J
		Vanadium	0.00184	0.002	0.0004	J
		Zinc	0.103	0.004	0.0016	
	11/26/2015	Aluminum	0.723	0.08	0.0272	
		Antimony	0.00631	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0586	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.17	0.1	0.032	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	11/26/2015	Chromium	0.0709	0.002	0.0006	
		Cobalt	0.000923	0.002	0.0006	J
		Copper	0.244	0.004	0.0012	
		Iron	1.12	0.1	0.032	
		Lead	0.011	0.004	0.00132	B
		Magnesium	0.556	0.12	0.034	
		Manganese	0.0217	0.004	0.0008	
		Nickel	0.00526	0.002	0.0006	
		Potassium	0.517	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000668	0.002	0.0004	J
		Sodium	7.66	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000046	0.00001	0.0000033	J
		Vanadium	0.0014	0.002	0.0004	J
		Zinc	0.104	0.004	0.0016	
	12/30/2015	Aluminum	0.98	0.08	0.0272	
		Antimony	0.00267	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0191	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.97	0.1	0.032	B
		Chromium	0.0253	0.002	0.0006	
		Cobalt	0.000916	0.002	0.0006	J
		Copper	0.165	0.004	0.0012	
		Iron	1.21	0.1	0.032	
		Lead	0.00441	0.004	0.00132	
		Magnesium	0.731	0.12	0.034	
		Manganese	0.0265	0.004	0.0008	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	12/30/2015	Nickel	0.00424	0.002	0.0006	
		Potassium	0.37	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000674	0.002	0.0004	J
		Sodium	4.32	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000086	0.00008	0.0000264	
		Vanadium	0.00216	0.002	0.0004	
		Zinc	0.0537	0.004	0.0016	
	1/28/2016	Aluminum	0.773	0.08	0.0272	
		Antimony	0.00878	0.004	0.00132	B
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0168	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.77	0.1	0.032	
		Chromium	0.0189	0.002	0.0006	
		Cobalt	0.000986	0.002	0.0006	J
		Copper	0.125	0.004	0.0012	
		Iron	0.956	0.1	0.032	
		Lead	0.0174	0.004	0.00132	
		Magnesium	0.598	0.12	0.034	
		Manganese	0.0185	0.004	0.0008	
		Nickel	0.00772	0.002	0.0006	
		Potassium	0.311	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.00142	0.002	0.0004	J
		Sodium	4.36	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000632	0.00008	0.0000264	J

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	1/28/2016	Vanadium	0.00164	0.002	0.0004	J
		Zinc	0.101	0.004	0.0016	
	2/25/2016	Aluminum	0.63	0.08	0.0272	
		Antimony	0.00195	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0156	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	2.52	0.1	0.032	
		Chromium	0.0123	0.002	0.0006	
		Cobalt	0.000621	0.002	0.0006	J
		Copper	0.113	0.004	0.0012	
		Iron	0.68	0.1	0.032	
		Lead	0.00683	0.004	0.00132	
		Magnesium	0.463	0.12	0.034	
		Manganese	0.0196	0.004	0.0008	
		Nickel	0.00369	0.002	0.0006	
		Potassium	0.249	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.1	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000076	0.00008	0.0000264	J
		Vanadium	0.00114	0.002	0.0004	J
		Zinc	0.0664	0.004	0.0016	
	3/31/2016	Aluminum	0.844	0.08	0.0272	
		Antimony	0.00365	0.004	0.00132	J
		Arsenic	0.00254	0.012	0.002	J
		Barium	0.0954	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	3/31/2016	Cadmium	0.000488	0.002	0.0004	J
		Calcium	4.96	0.1	0.032	
		Chromium	0.0116	0.002	0.0006	
		Cobalt	0.00146	0.002	0.0006	J
		Copper	0.136	0.004	0.0012	
		Iron	1.16	0.1	0.032	
		Lead	0.0101	0.004	0.00132	
		Magnesium	0.597	0.12	0.034	
		Manganese	0.0305	0.004	0.0008	
		Nickel	0.00746	0.002	0.0006	
		Potassium	0.424	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.00165	0.002	0.0004	J
		Sodium	3.87	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000956	0.00008	0.0000264	
		Vanadium	0.00332	0.002	0.0004	
		Zinc	0.0794	0.004	0.0016	
	4/28/2016	Aluminum	1.61	0.08	0.0272	
		Antimony	0.00365	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.058	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.73	0.1	0.032	
		Chromium	0.0174	0.002	0.0006	
		Cobalt	0.00171	0.002	0.0006	J
		Copper	0.104	0.004	0.0012	
		Iron	2.06	0.1	0.032	
		Lead	0.0117	0.004	0.00132	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	4/28/2016	Magnesium	0.992	0.12	0.034	
		Manganese	0.053	0.004	0.0008	
		Nickel	0.00487	0.002	0.0006	
		Potassium	0.699	0.1	0.0256	B
		Selenium	0.002	0.012	0.002	U
		Silver	0.00127	0.002	0.0004	J
		Sodium	2.9	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000126	0.00008	0.0000264	
		Vanadium	0.00418	0.002	0.0004	B
		Zinc	0.078	0.004	0.0016	
	5/26/2016	Aluminum	1.19	0.08	0.0272	
		Antimony	0.00276	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0411	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.23	0.1	0.032	
		Chromium	0.138	0.002	0.0006	
		Cobalt	0.00179	0.002	0.0006	J
		Copper	0.0857	0.004	0.0012	
		Iron	1.35	0.1	0.032	
		Lead	0.00681	0.004	0.00132	
		Magnesium	0.942	0.12	0.034	
		Manganese	0.0342	0.004	0.0008	
		Nickel	0.00513	0.002	0.0006	
		Potassium	0.546	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000563	0.002	0.0004	J
		Sodium	7.71	0.1	0.028	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	5/26/2016	Thallium	0.002	0.008	0.002	U
		Uranium	0.000164	0.00008	0.0000264	N
		Vanadium	0.00357	0.002	0.0004	
		Zinc	0.0779	0.004	0.0016	
	6/29/2016	Aluminum	0.125	0.01	0.0034	
		Antimony	0.000268	0.0005	0.000165	JB
		Arsenic	0.000338	0.0015	0.00025	J
		Barium	0.00463	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.0000705	0.00025	0.00005	J
		Calcium	0.554	0.0125	0.004	
		Chromium	0.00344	0.00025	0.000075	
		Cobalt	0.00084	0.00025	0.000075	
		Copper	0.00988	0.0005	0.00015	
		Iron	0.154	0.0125	0.004	
		Lead	0.000733	0.0005	0.000165	
		Magnesium	0.0788	0.015	0.00425	
		Manganese	0.00325	0.0005	0.0001	
		Nickel	0.000809	0.00025	0.000075	
		Potassium	0.0673	0.0125	0.0032	B
		Selenium	0.000365	0.0015	0.00025	J
		Silver	0.0000983	0.00025	0.00005	J
		Sodium	0.659	0.0125	0.0035	B
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.000101	0.00008	0.0000264	
		Vanadium	0.000395	0.00025	0.00005	
		Zinc	0.00985	0.0005	0.0002	
	7/28/2016	Aluminum	0.187	0.08	0.0272	
		Antimony	0.00239	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	7/28/2016	Barium	0.0198	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.71	0.1	0.032	B
		Chromium	0.00552	0.002	0.0006	
		Cobalt	0.00166	0.002	0.0006	J
		Copper	0.0382	0.004	0.0012	
		Iron	0.37	0.1	0.032	
		Lead	0.00589	0.004	0.00132	
		Magnesium	0.168	0.12	0.034	
		Manganese	0.00903	0.004	0.0008	
		Nickel	0.00305	0.002	0.0006	B
		Potassium	0.195	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.35	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000115	0.00008	0.0000264	B
		Vanadium	0.000841	0.002	0.0004	J
		Zinc	0.0585	0.004	0.0016	B
	8/26/2016	Aluminum	0.938	0.08	0.0272	
		Antimony	0.00428	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0536	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.000458	0.002	0.0004	J
		Calcium	5.93	0.1	0.032	
		Chromium	0.0209	0.002	0.0006	
		Cobalt	0.0039	0.002	0.0006	
		Copper	0.684	0.004	0.0012	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	8/26/2016	Iron	1.45	0.1	0.032	
		Lead	0.0122	0.004	0.00132	
		Magnesium	0.576	0.12	0.034	
		Manganese	0.0335	0.004	0.0008	
		Nickel	0.00632	0.002	0.0006	
		Potassium	0.599	0.1	0.0256	
		Selenium	0.00375	0.012	0.002	J
		Silver	0.00153	0.002	0.0004	J
		Sodium	4.19	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000102	0.00008	0.0000264	
		Vanadium	0.00299	0.002	0.0004	
		Zinc	0.105	0.004	0.0016	
	9/29/2016	Aluminum	0.0398	0.01	0.0034	
		Antimony	0.000304	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.00454	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.242	0.0125	0.004	
		Chromium	0.0012	0.00025	0.000075	
		Cobalt	0.000139	0.00025	0.000075	J
		Copper	0.00719	0.0005	0.00015	
		Iron	0.0742	0.0125	0.004	
		Lead	0.000757	0.0005	0.000165	
		Magnesium	0.0319	0.015	0.00425	
		Manganese	0.00165	0.0005	0.0001	
		Nickel	0.000358	0.00025	0.000075	
		Potassium	0.0388	0.0125	0.0032	
		Selenium	0.00025	0.0015	0.00025	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CPMS	9/29/2016	Silver	0.000207	0.00025	0.00005	J
		Sodium	0.395	0.0125	0.0035	
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000092	0.00001	0.0000033	J
		Vanadium	0.000121	0.00025	0.00005	J
		Zinc	0.0175	0.0005	0.0002	
CWPM	10/29/2015	Aluminum	0.159	0.08	0.0272	
		Antimony	0.00211	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0051	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.59	0.1	0.032	B
		Chromium	0.0406	0.002	0.0006	
		Cobalt	0.00085	0.002	0.0006	J
		Copper	0.0466	0.004	0.0012	
		Iron	0.176	0.1	0.032	
		Lead	0.00198	0.004	0.00132	J
		Magnesium	0.227	0.12	0.034	
		Manganese	0.00336	0.004	0.0008	J
		Nickel	0.00322	0.002	0.0006	
		Potassium	0.13	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000754	0.002	0.0004	J
		Sodium	5.37	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U
		Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0493	0.004	0.0016	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	11/26/2015	Aluminum	0.284	0.08	0.0272	
		Antimony	0.00191	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0118	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	2.05	0.1	0.032	
		Chromium	0.0519	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0625	0.004	0.0012	
		Iron	0.369	0.1	0.032	
		Lead	0.00966	0.004	0.00132	B
		Magnesium	0.307	0.12	0.034	
		Manganese	0.00752	0.004	0.0008	
		Nickel	0.00254	0.002	0.0006	
		Potassium	0.22	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	5.76	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000033	0.00001	0.0000033	U
		Vanadium	0.000593	0.002	0.0004	J
		Zinc	0.0412	0.004	0.0016	
	12/30/2015	Aluminum	1.09	0.08	0.0272	
		Antimony	0.00294	0.004	0.00132	JB
		Arsenic	0.002	0.012	0.002	U
		Barium	0.021	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.63	0.1	0.032	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	12/30/2015	Chromium	0.0278	0.002	0.0006	
		Cobalt	0.00117	0.002	0.0006	J
		Copper	0.608	0.004	0.0012	
		Iron	1.21	0.1	0.032	
		Lead	0.0112	0.004	0.00132	
		Magnesium	0.787	0.12	0.034	
		Manganese	0.0291	0.004	0.0008	
		Nickel	0.00504	0.002	0.0006	
		Potassium	0.455	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000826	0.002	0.0004	J
		Sodium	4.36	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000364	0.00008	0.0000264	J
		Vanadium	0.00221	0.002	0.0004	
		Zinc	0.0839	0.004	0.0016	
	1/28/2016	Aluminum	0.353	0.08	0.0272	
		Antimony	0.0065	0.004	0.00132	B
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00907	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.88	0.1	0.032	
		Chromium	0.00867	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0186	0.004	0.0012	
		Iron	0.492	0.1	0.032	
		Lead	0.00865	0.004	0.00132	
		Magnesium	0.324	0.12	0.034	
		Manganese	0.00962	0.004	0.0008	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	1/28/2016	Nickel	0.00214	0.002	0.0006	
		Potassium	0.146	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.000416	0.002	0.0004	J
		Sodium	2.43	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000428	0.00008	0.0000264	J
		Vanadium	0.000853	0.002	0.0004	J
		Zinc	0.0546	0.004	0.0016	
	2/25/2016	Aluminum	0.333	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.002	0.012	0.002	U
		Barium	0.00725	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	2.08	0.1	0.032	
		Chromium	0.0124	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.064	0.004	0.0012	
		Iron	0.312	0.1	0.032	
		Lead	0.00204	0.004	0.00132	J
		Magnesium	0.358	0.12	0.034	
		Manganese	0.0074	0.004	0.0008	
		Nickel	0.00245	0.002	0.0006	
		Potassium	0.162	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	4.22	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000264	0.00008	0.0000264	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	2/25/2016	Vanadium	0.0004	0.002	0.0004	U
		Zinc	0.0477	0.004	0.0016	
	3/31/2016	Aluminum	1.14	0.08	0.0272	
		Antimony	0.00173	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0636	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	3.38	0.1	0.032	
		Chromium	0.00841	0.002	0.0006	
		Cobalt	0.0006	0.002	0.0006	U
		Copper	0.0357	0.004	0.0012	
		Iron	1.26	0.1	0.032	
		Lead	0.00746	0.004	0.00132	
		Magnesium	0.613	0.12	0.034	
		Manganese	0.0355	0.004	0.0008	
		Nickel	0.00526	0.002	0.0006	
		Potassium	0.511	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	3.12	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000064	0.00008	0.0000264	J
		Vanadium	0.00343	0.002	0.0004	
		Zinc	0.0354	0.004	0.0016	
	4/28/2016	Aluminum	1.54	0.08	0.0272	
		Antimony	0.0053	0.004	0.00132	
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0353	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	4/28/2016	Cadmium	0.0004	0.002	0.0004	U
		Calcium	4.96	0.1	0.032	
		Chromium	0.0172	0.002	0.0006	
		Cobalt	0.00237	0.002	0.0006	
		Copper	0.0897	0.004	0.0012	
		Iron	1.73	0.1	0.032	
		Lead	0.0116	0.004	0.00132	
		Magnesium	0.909	0.12	0.034	
		Manganese	0.0473	0.004	0.0008	
		Nickel	0.00482	0.002	0.0006	
		Potassium	0.635	0.1	0.0256	B
		Selenium	0.00206	0.012	0.002	J
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.81	0.1	0.028	
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000792	0.00008	0.0000264	J
		Vanadium	0.00389	0.002	0.0004	B
		Zinc	0.0532	0.004	0.0016	
	5/26/2016	Aluminum	1.42	0.08	0.0272	
		Antimony	0.00153	0.004	0.00132	JB
		Arsenic	0.00258	0.012	0.002	J
		Barium	0.0333	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	5.91	0.1	0.032	
		Chromium	0.119	0.002	0.0006	
		Cobalt	0.000823	0.002	0.0006	J
		Copper	0.0342	0.004	0.0012	
		Iron	1.44	0.1	0.032	
		Lead	0.00531	0.004	0.00132	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	5/26/2016	Magnesium	0.968	0.12	0.034	
		Manganese	0.0371	0.004	0.0008	
		Nickel	0.004	0.002	0.0006	
		Potassium	0.561	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	6.6	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000192	0.00008	0.0000264	N
		Vanadium	0.00355	0.002	0.0004	
		Zinc	0.0517	0.004	0.0016	
	6/29/2016	Aluminum	0.0924	0.01	0.0034	
		Antimony	0.000165	0.0005	0.000165	U
		Arsenic	0.000262	0.0015	0.00025	J
		Barium	0.00218	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.436	0.0125	0.004	
		Chromium	0.0021	0.00025	0.000075	
		Cobalt	0.00468	0.00025	0.000075	
		Copper	0.0556	0.0005	0.00015	
		Iron	0.0955	0.0125	0.004	
		Lead	0.000355	0.0005	0.000165	J
		Magnesium	0.0598	0.015	0.00425	
		Manganese	0.00232	0.0005	0.0001	
		Nickel	0.000689	0.00025	0.000075	
		Potassium	0.0467	0.0125	0.0032	B
		Selenium	0.00025	0.0015	0.00025	U
		Silver	0.0000947	0.00025	0.00005	J
		Sodium	0.564	0.0125	0.0035	B

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	6/29/2016	Thallium	0.00025	0.001	0.00025	U
		Uranium	0.000106	0.00008	0.0000264	
		Vanadium	0.000259	0.00025	0.00005	
		Zinc	0.008	0.0005	0.0002	
	7/28/2016	Aluminum	0.276	0.08	0.0272	
		Antimony	0.00223	0.004	0.00132	J
		Arsenic	0.002	0.012	0.002	U
		Barium	0.0144	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	1.76	0.1	0.032	B
		Chromium	0.00767	0.002	0.0006	
		Cobalt	0.000706	0.002	0.0006	J
		Copper	0.087	0.004	0.0012	
		Iron	0.408	0.1	0.032	
		Lead	0.0076	0.004	0.00132	
		Magnesium	0.211	0.12	0.034	
		Manganese	0.0104	0.004	0.0008	
		Nickel	0.0032	0.002	0.0006	B
		Potassium	0.234	0.1	0.0256	
		Selenium	0.002	0.012	0.002	U
		Silver	0.0004	0.002	0.0004	U
		Sodium	2.74	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.0000636	0.00008	0.0000264	JB
		Vanadium	0.00108	0.002	0.0004	J
		Zinc	0.0325	0.004	0.0016	B
	8/26/2016	Aluminum	1.26	0.08	0.0272	
		Antimony	0.00132	0.004	0.00132	U
		Arsenic	0.00226	0.012	0.002	J

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	8/26/2016	Barium	0.0346	0.002	0.0004	
		Beryllium	0.0004	0.002	0.0004	U
		Cadmium	0.0004	0.002	0.0004	U
		Calcium	6.59	0.1	0.032	
		Chromium	0.0152	0.002	0.0006	
		Cobalt	0.0157	0.002	0.0006	
		Copper	0.0534	0.004	0.0012	
		Iron	1.63	0.1	0.032	
		Lead	0.00989	0.004	0.00132	
		Magnesium	0.697	0.12	0.034	
		Manganese	0.041	0.004	0.0008	
		Nickel	0.00536	0.002	0.0006	
		Potassium	0.748	0.1	0.0256	
		Selenium	0.00357	0.012	0.002	J
		Silver	0.000442	0.002	0.0004	J
		Sodium	3.85	0.1	0.028	B
		Thallium	0.002	0.008	0.002	U
		Uranium	0.000094	0.00008	0.0000264	
		Vanadium	0.00317	0.002	0.0004	
		Zinc	0.104	0.004	0.0016	
	9/29/2016	Aluminum	0.0591	0.01	0.0034	
		Antimony	0.000173	0.0005	0.000165	JB
		Arsenic	0.00025	0.0015	0.00025	U
		Barium	0.00364	0.00025	0.00005	
		Beryllium	0.00005	0.00025	0.00005	U
		Cadmium	0.00005	0.00025	0.00005	U
		Calcium	0.308	0.0125	0.004	
		Chromium	0.00147	0.00025	0.000075	
		Cobalt	0.000145	0.00025	0.000075	J
		Copper	0.00964	0.0005	0.00015	

See notes at end of appendix.

Table C-1. Summary of ambient air metals analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (mg/sa)	MDL (mg/sa)	PQL (mg/sa)	Laboratory Data Qualifiers
CWPM	9/29/2016	Iron	0.0711	0.0125	0.004	
		Lead	0.000605	0.0005	0.000165	
		Magnesium	0.0411	0.015	0.00425	
		Manganese	0.00186	0.0005	0.0001	
		Nickel	0.000378	0.00025	0.000075	
		Potassium	0.0399	0.0125	0.0032	
		Selenium	0.000323	0.0015	0.00025	J
		Silver	0.0000663	0.00025	0.00005	J
		Sodium	0.389	0.0125	0.0035	
		Thallium	0.00025	0.001	0.00025	U
		Uranium	0.0000086	0.00001	0.0000033	J
		Vanadium	0.000135	0.00025	0.00005	J
		Zinc	0.0103	0.0005	0.0002	

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	10/29/2015	Actinium-228	31.3	22.6	31.3	14.6	U
		Alpha, gross	25.8	7.42	6.39	2.93	
		Americium-241	0.354	5.06	8.13	3.96	U
		Beryllium-7	661	122	96.4	46.5	
		Beta, gross	86.5	13.4	4.34	2.09	
		Bismuth-212	44.9	60.6	105	50.1	U
		Bismuth-214	17.2	14.9	17.6	8.53	U
		Cesium-137	-6.39	7.42	7.3	3.5	U
		Cobalt-60	11.3	6.98	8.22	3.88	
		Lead-212	4.07	14	13.7	6.7	U
		Lead-214	-5.64	15.7	16	7.78	U
		Neptunium-237	-5.41	7.46	12	5.82	U
		Potassium-40	4.79	116	70.7	33	U
		Radium-223	49.6	73.9	126	61.2	U
		Radium-224	84.3	86.2	126	61.4	U
		Radium-226	23.1	154	111	54.2	U
		Radium-228	31.3	22.6	31.3	14.6	U
		Sodium-22	-0.104	4.76	7.34	3.44	U
		Thorium-227	5.89	26.6	47.2	23	U
		Thorium-231	56.2	42.8	48.5	23.7	X
		Thorium-234	71.4	113	118	57.8	U
		Uranium-235	-31.2	40.9	34.9	17	U
		Uranium-238	71.4	113	118	57.8	U
	11/26/2015	Actinium-228	17.5	47.6	33.8	16.1	U
		Alpha, gross	31.7	8.14	5.97	2.8	
		Americium-241	15.5	33.3	50.3	24.6	U
		Beryllium-7	1320	172	113	54.5	
		Beta, gross	158	23.4	4.92	2.38	
		Bismuth-212	31	77.2	133	64.2	U
		Bismuth-214	-14	23.1	21.3	10.4	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	11/26/2015	Cesium-137	3.08	10.3	8.99	4.33	U
		Cobalt-60	1.23	5.62	9.95	4.71	U
		Lead-212	1.25	15.8	16.9	8.29	U
		Lead-214	-9.46	19.2	21	10.3	U
		Neptunium-237	3.14	10.2	17.4	8.5	U
		Potassium-40	-59.7	130	146	70.6	U
		Radium-223	-3.17	103	174	84.9	U
		Radium-224	-87.8	104	162	79.1	U
		Radium-226	200	260	160	78.5	X
		Radium-228	17.5	47.6	33.8	16.1	U
		Sodium-22	1.39	5.26	8.99	4.24	U
		Thorium-227	22.7	48.4	68.8	33.6	U
		Thorium-231	112	134	120	58.7	U
		Thorium-234	85.1	505	523	258	U
		Uranium-235	-41.1	52.1	56	27.5	U
		Uranium-238	85.1	505	523	258	U
	12/30/2015	Actinium-228	1.79	27.7	33.4	16	U
		Alpha, gross	13.7	5.13	5.92	2.73	
		Americium-241	-2.96	21.9	34.4	16.7	U
		Beryllium-7	315	106	97.5	47	
		Beta, gross	38.6	7.05	4.32	2.06	
		Bismuth-212	95.2	71.7	109	52	U
		Bismuth-214	5.03	20.7	18	8.75	U
		Cesium-137	-0.021	5.01	7.7	3.69	U
		Cobalt-60	7.96	6.13	9.64	4.58	U
		Lead-212	0.999	14.9	14.9	7.27	U
		Lead-214	13.1	13.3	17.6	8.55	U
		Neptunium-237	-1.61	8.36	14.4	7	U
		Potassium-40	-20.9	88.5	108	51.6	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	12/30/2015	Radium-223	-47.8	100	145	70.7	U
		Radium-224	27.5	88.2	137	67.1	U
		Radium-226	83.5	183	131	63.9	U
		Radium-228	1.79	27.7	33.4	16	U
		Sodium-22	-10.4	10.1	7.87	3.7	U
		Thorium-227	-13.1	32.6	55.6	27.1	U
		Thorium-231	-75.3	90.9	89.2	43.6	U
		Thorium-234	75	305	270	132	U
		Uranium-235	8.54	46.7	41.3	20.2	U
		Uranium-238	75	305	270	132	U
	1/28/2016	Actinium-228	-23.7	38.4	40.5	19.2	U
		Alpha, gross	12.2	4.89	5.5	2.44	
		Americium-241	-0.307	4.54	7.4	3.59	U
		Beryllium-7	-60.5	67.8	105	50.1	U
		Beta, gross	72.1	12.3	7.41	3.57	
		Bismuth-212	28.2	80.4	140	66.6	U
		Bismuth-214	-4.57	22.2	23.8	11.5	U
		Cesium-137	-1.17	6.01	10.3	4.9	U
		Cobalt-60	54.6	16.8	12.6	5.89	
		Lead-212	11.5	9.27	12.6	6.14	U
		Lead-214	-9.69	19.7	19.9	9.66	U
		Neptunium-237	-0.725	8.14	14	6.78	U
		Potassium-40	119	127	106	49.2	X
		Radium-223	-8.64	81.7	140	67.8	U
		Radium-224	109	79.2	129	62.7	U
		Radium-226	-45.7	122	127	61.7	U
		Radium-228	-23.7	38.4	40.5	19.2	U
		Sodium-22	-4.65	7.86	10.8	5.02	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	1/28/2016	Thorium-227	-23.4	30.6	48.6	23.5	U
		Thorium-231	1.62	21.7	38.7	18.7	U
		Thorium-234	8.07	62.7	72.4	35.1	U
		Uranium-235	15	18.2	31.7	15.4	U
		Uranium-238	8.07	62.7	72.4	35.1	U
	2/25/2016	Actinium-228	9.56	43.1	31.6	15	U
		Alpha, gross	20.3	8.82	11	5.14	
		Americium-241	-22.7	31.7	49	23.9	U
		Beryllium-7	562	117	121	58.3	
		Beta, gross	22.2	9.02	13.5	6.63	
		Bismuth-212	30.9	75.1	133	63.8	U
		Bismuth-214	19.9	22.7	17.1	8.23	X
		Cesium-137	-1.21	4.79	8.38	4	U
		Cobalt-60	4.42	5.76	10.4	4.88	U
		Lead-212	2.1	16.8	17.9	8.77	U
		Lead-214	23.4	24.2	23.5	10.6	U
		Neptunium-237	-9.41	10.4	15.8	7.64	U
		Potassium-40	19.8	120	91.6	42.8	U
		Radium-223	-19.1	97.1	165	80.1	U
		Radium-224	107	114	163	79.6	U
		Radium-226	91.3	220	159	77.8	U
		Radium-228	9.56	43.1	31.6	15	U
		Sodium-22	1.48	5.11	9.46	4.44	U
		Thorium-227	4	43.7	66.4	32.4	U
		Thorium-231	58	89.2	112	55	U
		Thorium-234	-132	435	473	232	U
		Uranium-235	22.8	59.8	48.3	23.6	U
		Uranium-238	-132	435	473	232	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	3/31/2016	Actinium-228	2	43.8	40.2	19.3	U
		Alpha, gross	89.5	19.9	6	2.68	
		Americium-241	2.52	28.9	48.5	23.7	U
		Beryllium-7	56.6	71.3	117	56.6	U
		Beta, gross	95.1	15.6	8.19	3.99	
		Bismuth-212	54.7	74.7	129	62	U
		Bismuth-214	-20.1	21.2	20.3	9.8	U
		Cesium-137	-3.46	5.33	8.73	4.18	U
		Cobalt-60	2.03	5.25	9.69	4.54	U
		Lead-212	-7.5	20.2	17.6	8.64	U
		Lead-214	3.6	26	21.2	10.3	U
		Neptunium-237	-10.1	10.9	16.3	7.92	U
		Potassium-40	-77.3	117	117	55.5	U
		Radium-223	-81	103	160	77.4	U
		Radium-224	-94.1	108	167	81.6	U
		Radium-226	10.9	238	158	77.1	U
		Radium-228	2	43.8	40.2	19.3	U
		Sodium-22	-0.423	5.19	9.41	4.41	U
		Thorium-227	-4.68	36.6	62.9	30.6	U
		Thorium-231	59.6	111	107	52.1	U
		Thorium-234	-176	442	460	226	U
		Uranium-235	28.6	57	47.6	23.3	U
		Uranium-238	-176	442	460	226	U
	4/28/2016	Actinium-228	4.39	32.7	30.9	14.8	U
		Alpha, gross	121	26.2	7.25	3.34	
		Americium-241	-7.87	18	28.8	14	U
		Beryllium-7	-15.4	50.1	83.6	40.2	U
		Beta, gross	110	17.6	5.8	2.83	
		Bismuth-212	24.9	58	103	49.2	U
		Bismuth-214	-10.9	19.7	16.5	8	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	4/28/2016	Cesium-137	1.89	4.5	7.34	3.52	U
		Cobalt-60	1.19	4.47	7.19	3.35	U
		Lead-212	2.96	15	11.9	5.81	U
		Lead-214	-4.26	13.1	15.6	7.57	U
		Neptunium-237	-6.86	7.98	12.3	5.96	U
		Potassium-40	-47.7	81.2	95.5	45.3	U
		Radium-223	33.2	75.3	130	63.2	U
		Radium-224	212	130	213	70.9	U
		Radium-226	-69.4	129	162	79.5	U
		Radium-228	4.39	32.7	30.9	14.8	U
		Sodium-22	-0.149	4.12	7.47	3.49	U
		Thorium-227	-9.54	29.1	50	24.3	U
		Thorium-231	68.4	53.1	72	35.1	U
		Thorium-234	89.8	222	232	113	U
		Uranium-235	9.35	35.9	38.4	18.7	U
		Uranium-238	89.8	222	232	113	U
	5/26/2016	Actinium-228	9.67	17.7	30.7	14.7	U
		Alpha, gross	226	46.2	10.1	4.69	
		Americium-241	4.06	5.99	7.64	3.72	U
		Beryllium-7	27.6	59.9	102	49.4	U
		Beta, gross	176	26.5	4.43	2.14	
		Bismuth-212	11.5	60.1	107	51.1	U
		Bismuth-214	1.88	20.6	17.1	8.27	U
		Cesium-137	0.266	4.02	7.17	3.43	U
		Cobalt-60	-0.109	4.61	8.21	3.87	U
		Lead-212	9.64	12.2	12.8	6.28	U
		Lead-214	-9.66	13.5	14.4	6.96	U
		Neptunium-237	-2.23	6.98	12	5.81	U
		Potassium-40	-80.9	80.7	95.8	45.5	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	5/26/2016	Radium-223	38.9	70	121	58.7	U
		Radium-224	115	86.8	115	56.2	U
		Radium-226	-123	142	142	69.4	U
		Radium-228	9.67	17.7	30.7	14.7	U
		Sodium-22	3.1	4.48	8.03	3.78	U
		Thorium-227	-1.25	25.1	44.4	21.6	U
		Thorium-231	9.21	53.8	48.1	23.5	U
		Thorium-234	49.9	102	78.2	38.1	U
		Uranium-235	-28.6	34.8	33.8	16.5	U
		Uranium-238	49.9	102	78.2	38.1	U
	6/29/2016	Actinium-228	25.1	29.9	26.3	12.5	U
		Alpha, gross	38.3	15.3	11.7	4.36	
		Americium-241	7.56	6.7	8.6	4.2	U
		Beryllium-7	53.6	58.7	85.9	41.3	U
		Beta, gross	102	16	4.13	2.02	
		Bismuth-212	29.2	61.2	108	51.7	U
		Bismuth-214	18.8	12.4	15	7.23	
		Cesium-137	-1.35	4.09	7.07	3.38	U
		Cobalt-60	1.62	4.61	8.33	3.92	U
		Lead-212	-4.27	12.3	12.6	6.16	U
		Lead-214	0.941	13.9	14.6	7.09	U
		Neptunium-237	3.92	9.72	12.4	6.03	U
		Potassium-40	16.2	93.5	72.9	34	U
		Radium-223	49.2	80	122	59.2	U
		Radium-224	-129	91.2	116	56.4	U
		Radium-226	-28.6	137	144	70.6	U
		Radium-228	25.1	29.9	26.3	12.5	U
		Sodium-22	-5.38	5.83	7.24	3.38	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	6/29/2016	Thorium-227	10.1	26	45.9	22.3	U
		Thorium-231	-25.2	46.7	50.7	24.8	U
		Thorium-234	45.5	98	114	56.2	U
		Uranium-235	4.77	36.7	34.8	17	U
		Uranium-238	45.5	98	114	56.2	U
	7/28/2016	Actinium-228	48.1	52.3	26.7	12.6	X
		Alpha, gross	129	26.8	4.2	1.93	
		Americium-241	12.3	24	40.3	19.7	U
		Beryllium-7	-0.376	67.1	115	55.3	U
		Beta, gross	150	22.8	4	1.95	
		Bismuth-212	76.7	77	114	54.5	U
		Bismuth-214	3.07	28.5	16.6	7.97	U
		Cesium-137	4.26	5.36	9.34	4.49	U
		Cobalt-60	-0.693	4.27	7.42	3.44	U
		Lead-212	6.21	15.9	15.1	7.38	U
		Lead-214	-2	19.4	18.7	9.09	U
		Neptunium-237	-1.07	8.24	14.3	6.93	U
		Potassium-40	-75.5	130	137	66	U
		Radium-223	86.4	92.9	152	73.7	U
		Radium-224	-98.9	140	135	65.5	U
		Radium-226	-308	254	233	115	U
		Radium-228	48.1	52.3	26.7	12.6	X
		Sodium-22	-3.91	5.05	7.74	3.61	U
		Thorium-227	-6.36	31.4	54.7	26.6	U
		Thorium-231	-84.3	119	117	57.3	U
		Thorium-234	-244	499	455	224	U
		Uranium-235	38.4	63.5	50.5	24.8	U
		Uranium-238	-244	499	455	224	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	8/26/2016	Actinium-228	-34.5	28.1	28	13.2	U
		Alpha, gross	259	63.2	19.6	7.66	
		Americium-241	6.76	24.2	42.7	20.7	U
		Beryllium-7	-31.4	67.5	101	48.1	U
		Beta, gross	170	25.9	3.87	1.89	
		Bismuth-212	25	58.6	103	48.6	U
		Bismuth-214	4.86	15.6	17.2	8.28	U
		Cesium-137	-2.53	4.68	6.69	3.16	U
		Cobalt-60	0.818	4.21	7.72	3.58	U
		Lead-212	6.66	19.3	13.6	6.62	U
		Lead-214	7.52	14	15.5	7.48	U
		Neptunium-237	-7.41	7.46	11.5	5.51	U
		Potassium-40	-116	101	99.2	46.8	U
		Radium-223	9.45	68.7	124	59.7	U
		Radium-224	17.5	77.4	118	57.1	U
		Radium-226	-44	148	147	72	U
		Radium-228	-34.5	28.1	28	13.2	U
		Sodium-22	-0.197	3.86	7.01	3.23	U
		Thorium-227	7.89	29	47.8	23.1	U
		Thorium-231	80.2	67.6	101	49.4	U
		Thorium-234	-179	405	367	179	U
		Uranium-235	22.6	44	38.4	18.7	U
		Uranium-238	-179	405	367	179	U
	9/29/2016	Actinium-228	46.1	26.3	21.1	9.87	X
		Alpha, gross	116	24.4	6.31	2.96	
		Americium-241	-0.564	3.72	6.26	3.03	U
		Beryllium-7	-22.3	41	69.1	33	U
		Beta, gross	94.4	14.4	3.41	1.66	
		Bismuth-212	30.6	51.6	89.7	42.7	U
		Bismuth-214	-11.5	18.8	16.3	7.88	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A2PM	9/29/2016	Cesium-137	-0.0644	3.48	6.09	2.89	U
		Cobalt-60	0.271	3.57	6.52	3.02	U
		Lead-212	2.99	13.3	8.37	4.05	U
		Lead-214	-11.8	13.9	13.6	6.6	U
		Neptunium-237	1.79	5.96	9.94	4.79	U
		Potassium-40	28.2	97.7	63.8	29.5	U
		Radium-223	16.4	61.1	102	48.9	U
		Radium-224	22.1	59	91.9	44.5	U
		Radium-226	20.7	149	129	63.1	U
		Radium-228	46.1	26.3	21.1	9.87	X
		Sodium-22	1.55	3.73	6.89	3.21	U
		Thorium-227	-12	24.8	36.3	17.5	U
		Thorium-231	-16.9	39.5	40.6	19.8	U
		Thorium-234	2.25	98.6	100	49.1	U
		Uranium-235	29.8	40.9	24.6	11.9	X
		Uranium-238	2.25	98.6	100	49.1	U
A3PM	10/29/2015	Actinium-228	0.565	36.1	40.1	19.4	U
		Alpha, gross	28.8	7.56	5.05	2.26	
		Americium-241	9.91	22.6	35.1	17.2	U
		Beryllium-7	738	147	137	66.6	
		Beta, gross	105	16.3	4.6	2.22	
		Bismuth-212	-125	135	145	70.1	U
		Bismuth-214	4.81	21.9	19.5	9.48	U
		Cesium-137	-0.692	9.07	9.93	4.8	U
		Cobalt-60	6.2	5.98	9.94	4.72	U
		Lead-212	-4.32	15.5	18	8.83	U
		Lead-214	8.12	14.9	22.3	10.9	U
		Neptunium-237	-0.998	11.6	19.2	9.4	U
		Potassium-40	23.4	94.7	59	27	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	10/29/2015	Radium-223	71.4	99.6	179	87.6	U
		Radium-224	6.77	108	182	89.2	U
		Radium-226	77.8	233	169	82.7	U
		Radium-228	0.565	36.1	40.1	19.4	U
		Sodium-22	-0.753	4.88	8.48	4	U
		Thorium-227	8.51	42.4	71.4	34.9	U
		Thorium-231	-77.1	96.1	98	48.1	U
		Thorium-234	80.1	332	330	162	U
		Uranium-235	-15.1	47.3	53.4	26.2	U
		Uranium-238	80.1	332	330	162	U
	11/26/2015	Actinium-228	13.6	42.6	28.4	13.4	U
		Alpha, gross	23.8	6.66	6.01	2.84	
		Americium-241	-6.66	34.4	53.3	26	U
		Beryllium-7	1040	139	103	49.7	
		Beta, gross	121	18.5	6.01	2.93	
		Bismuth-212	35.4	71.1	123	58.7	U
		Bismuth-214	5.17	18.5	20.5	9.95	U
		Cesium-137	2.13	5.14	8.91	4.27	U
		Cobalt-60	0.714	5.11	9.12	4.28	U
		Lead-212	-3.65	16.1	18	8.82	U
		Lead-214	-1.27	16.8	20.1	9.77	U
		Neptunium-237	-0.633	9.77	16.4	7.95	U
		Potassium-40	-5.88	96.1	116	55.4	U
		Radium-223	-56.5	93.5	156	75.7	U
		Radium-224	114	164	152	74.3	U
		Radium-226	66	227	154	75	U
		Radium-228	13.6	42.6	28.4	13.4	U
		Sodium-22	-0.654	5	8.76	4.11	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	11/26/2015	Thorium-227	-15.3	36.8	60.1	29.2	U
		Thorium-231	41	112	111	54.3	U
		Thorium-234	104	544	530	260	U
		Uranium-235	-19.1	48.7	52.8	25.9	U
		Uranium-238	104	544	530	260	U
	12/30/2015	Actinium-228	25.3	24.5	40.9	19.4	U
		Alpha, gross	11.3	4.93	6.36	2.95	
		Americium-241	-1.23	4.7	6.92	3.34	U
		Beryllium-7	-20.5	62.5	108	51.9	U
		Beta, gross	11.9	3.72	4.85	2.35	
		Bismuth-212	-32.3	76.9	127	60	U
		Bismuth-214	5.79	23.1	18.1	8.68	U
		Cesium-137	-4.78	5.98	9.15	4.35	U
		Cobalt-60	1.45	6.75	12.3	5.74	U
		Lead-212	-10.2	13.1	11.8	5.74	U
		Lead-214	6.43	18.7	19.7	9.59	U
		Neptunium-237	-1.14	7.93	13.7	6.59	U
		Potassium-40	-55.1	123	142	66.9	U
		Radium-223	1.96	78.6	136	65.7	U
		Radium-224	20.6	91.5	135	65.7	U
		Radium-226	51.1	138	106	51.6	U
		Radium-228	25.3	24.5	40.9	19.4	U
		Sodium-22	-5.84	7.1	11	5.14	U
		Thorium-227	22.6	30.1	51	24.7	U
		Thorium-231	7.78	22.6	40.1	19.5	U
		Thorium-234	35.7	83.3	69.1	33.5	U
		Uranium-235	12.1	18.8	31.4	15.2	U
		Uranium-238	35.7	83.3	69.1	33.5	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	1/28/2016	Actinium-228	-31.6	33.7	33.1	15.9	U
		Alpha, gross	4.08	4.34	7.1	3.24	U
		Americium-241	-5.15	19.4	32.5	15.8	U
		Beryllium-7	57	63.3	104	50.2	U
		Beta, gross	9.64	4.91	7.37	3.56	
		Bismuth-212	36.1	61.4	106	50.9	U
		Bismuth-214	2.96	17.3	17.7	8.59	U
		Cesium-137	-8.95	10.7	9.81	4.75	U
		Cobalt-60	7.55	7.55	8.68	4.11	U
		Lead-212	0.885	11.7	15.1	7.4	U
		Lead-214	-5.84	17	16.8	8.19	U
		Neptunium-237	5.48	8.85	14.8	7.21	U
		Potassium-40	1.26	101	74.4	34.9	U
		Radium-223	-61.9	88	138	67.2	U
		Radium-224	57.7	87.5	147	71.6	U
		Radium-226	-104	165	188	92.6	U
		Radium-228	-31.6	33.7	33.1	15.9	U
		Sodium-22	-3.35	10.7	7.85	3.7	U
		Thorium-227	3.94	33.6	58.1	28.3	U
		Thorium-231	32.7	87	92.1	45.1	U
		Thorium-234	-367	346	322	158	U
		Uranium-235	14.8	48.5	43.9	21.5	U
		Uranium-238	-367	346	322	158	U
	2/25/2016	Actinium-228	25.4	37.2	37.2	17.9	U
		Alpha, gross	18.7	8.04	9.57	4.4	
		Americium-241	-95.4	57	57.8	28.2	U
		Beryllium-7	483	156	117	56.3	
		Beta, gross	65.6	12.7	11.6	5.65	
		Bismuth-212	-35.2	117	126	60.5	U
		Bismuth-214	27.9	22.2	17.5	8.45	X

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	2/25/2016	Cesium-137	-2.4	5.16	8.48	4.06	U
		Cobalt-60	2.74	4.95	8.92	4.19	U
		Lead-212	-14.6	17.7	16.8	8.22	U
		Lead-214	9.11	21.9	19.8	9.64	U
		Neptunium-237	-3.69	9.66	16.4	7.97	U
		Potassium-40	-44.9	94.4	114	54.5	U
		Radium-223	-35.7	92.4	157	76.1	U
		Radium-224	-36.9	95.7	163	79.8	U
		Radium-226	38.3	222	152	74.2	U
		Radium-228	25.4	37.2	37.2	17.9	U
		Sodium-22	-2.42	5.18	8.72	4.1	U
		Thorium-227	-12.5	36	61.6	30	U
		Thorium-231	108	102	118	58	U
		Thorium-234	93	469	534	262	U
		Uranium-235	8.05	52.8	47	23	U
		Uranium-238	93	469	534	262	U
	3/31/2016	Actinium-228	0.169	37.7	33.7	16	U
		Alpha, gross	60.3	14.1	4.51	1.93	
		Americium-241	-15	30	49	23.9	U
		Beryllium-7	5.81	73.1	112	54.1	U
		Beta, gross	81.4	14.2	8.48	4.14	
		Bismuth-212	-48.8	113	140	67.4	U
		Bismuth-214	-5.76	22.6	21.6	10.5	U
		Cesium-137	-1.19	5.32	9.07	4.34	U
		Cobalt-60	-1.4	5.24	8.97	4.18	U
		Lead-212	19.1	23.1	20.1	9.87	U
		Lead-214	6.18	22.2	20.8	10.1	U
		Neptunium-237	-0.263	10.1	17.2	8.33	U
		Potassium-40	26.3	115	90	41.9	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	3/31/2016	Radium-223	-38.5	100	165	79.8	U
		Radium-224	215	150	215	89.3	U
		Radium-226	70.6	246	160	78.1	U
		Radium-228	0.169	37.7	33.7	16	U
		Sodium-22	1.3	5.75	10.2	4.81	U
		Thorium-227	-58.2	69.6	67.4	32.8	U
		Thorium-231	-26.3	112	119	58.1	U
		Thorium-234	-53.2	385	480	236	U
		Uranium-235	-31.1	49.2	52.9	25.9	U
		Uranium-238	-53.2	385	480	236	U
	4/28/2016	Actinium-228	1.88	34	32.5	15.6	U
		Alpha, gross	56.5	12.7	5.35	2.42	
		Americium-241	-7.05	20.5	35.4	17.2	U
		Beryllium-7	30	74.6	91.7	44.2	U
		Beta, gross	131	20.3	6.11	2.98	
		Bismuth-212	33.1	58.1	102	48.7	U
		Bismuth-214	4.4	18.8	18.6	9.03	U
		Cesium-137	-0.418	4.34	7.63	3.66	U
		Cobalt-60	0.552	4.12	7.46	3.49	U
		Lead-212	10.9	15	15.6	7.65	U
		Lead-214	-10.6	17.3	17.3	8.42	U
		Neptunium-237	-0.952	8.23	14.3	6.93	U
		Potassium-40	-32	106	106	50.4	U
		Radium-223	-53.8	85.6	139	67.6	U
		Radium-224	128	106	143	70	U
		Radium-226	10.6	183	135	66.1	U
		Radium-228	1.88	34	32.5	15.6	U
		Sodium-22	0.089	4.51	8.07	3.8	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	4/28/2016	Thorium-227	-17.3	32.9	55.1	26.9	U
		Thorium-231	98.8	75	80.2	39.1	X
		Thorium-234	-334	357	328	161	U
		Uranium-235	-56	49.9	42.8	21	U
		Uranium-238	-334	357	328	161	U
	5/26/2016	Actinium-228	-52.4	60.8	61.9	29.8	U
		Alpha, gross	151	31.1	8.24	3.88	
		Americium-241	14	18.5	26.4	13.1	U
		Beryllium-7	15.8	108	184	88.7	U
		Beta, gross	139	21.7	3.44	1.65	
		Bismuth-212	4.27	110	193	92.5	U
		Bismuth-214	-22.9	27.8	31.2	15.1	U
		Cesium-137	0.159	8.02	14.1	6.8	U
		Cobalt-60	-12.3	14.4	14.7	6.91	U
		Lead-212	15.3	26.2	24.4	12	U
		Lead-214	4.49	29.5	29.4	14.3	U
		Neptunium-237	6.92	13.4	23	11.2	U
		Potassium-40	83.1	151	144	67.9	U
		Radium-223	78.6	136	232	113	U
		Radium-224	291	190	291	111	U
		Radium-226	-62.2	222	268	132	U
		Radium-228	-52.4	60.8	61.9	29.8	U
		Sodium-22	1.28	8.71	14.1	6.62	U
		Thorium-227	16.6	49.8	87.5	42.6	U
		Thorium-231	-55.9	103	97.3	47.7	U
		Thorium-234	76.3	342	231	114	U
		Uranium-235	-22.5	64	61.7	30.2	U
		Uranium-238	76.3	342	231	114	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	6/29/2016	Actinium-228	-14.3	31.3	36	17.3	U
		Alpha, gross	45.9	18.7	14.7	5.81	
		Americium-241	-27.7	26.9	39.7	19.3	U
		Beryllium-7	16.3	61.9	107	51.4	U
		Beta, gross	125	18.9	2.14	1.02	
		Bismuth-212	22.8	111	115	54.9	U
		Bismuth-214	0.357	24.3	17.6	8.49	U
		Cesium-137	3.25	5	8.78	4.22	U
		Cobalt-60	-0.419	4.66	7.55	3.52	U
		Lead-212	1.82	15.9	12.7	6.2	U
		Lead-214	-26	24.1	17.6	8.57	U
		Neptunium-237	-8.05	13.7	14	6.76	U
		Potassium-40	53.8	101	73.5	34.2	U
		Radium-223	-2.62	140	152	74	U
		Radium-224	78.8	96.5	144	70.2	U
		Radium-226	6.74	213	132	64.1	U
		Radium-228	-14.3	31.3	36	17.3	U
		Sodium-22	-1.37	4.94	7.81	3.66	U
		Thorium-227	-11.7	32.5	55.7	27.1	U
		Thorium-231	34.1	111	99.4	48.6	U
		Thorium-234	-446	426	436	214	U
		Uranium-235	21.3	59.8	40.1	19.5	U
		Uranium-238	-446	426	436	214	U
	7/28/2016	Actinium-228	23.9	35.5	21.6	10.1	X
		Alpha, gross	110	22.3	5.13	2.39	
		Americium-241	8.64	12.2	19.7	9.56	U
		Beryllium-7	3.7	51.3	91.6	44	U
		Beta, gross	155	24	2.77	1.34	
		Bismuth-212	31.6	55.8	96.9	46.2	U
		Bismuth-214	1.13	13.3	15.2	7.32	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	7/28/2016	Cesium-137	-4	8.64	8.97	4.33	U
		Cobalt-60	-0.738	3.87	6.9	3.21	U
		Lead-212	1.09	12.6	9.68	4.69	U
		Lead-214	-6.37	13.8	13.3	6.42	U
		Neptunium-237	-2.35	6.93	11.1	5.33	U
		Potassium-40	46.5	102	62.2	28.7	U
		Radium-223	5.43	58	106	51	U
		Radium-224	2.14	69.4	107	51.6	U
		Radium-226	119	182	103	49.9	X
		Radium-228	23.9	35.5	21.6	10.1	X
		Sodium-22	4.96	3.94	6.72	3.12	U
		Thorium-227	-20.6	27.9	41.7	20.2	U
		Thorium-231	30.4	76.1	59.6	28.9	U
		Thorium-234	152	239	230	113	U
		Uranium-235	39.3	43.1	29.6	14.3	X
		Uranium-238	152	239	230	113	U
	8/26/2016	Actinium-228	15.1	31.9	22.3	10.5	U
		Alpha, gross	226	53.4	11.2	3.93	
		Americium-241	6.26	18.4	29.9	14.5	U
		Beryllium-7	3.32	55.6	97.7	46.8	U
		Beta, gross	183	27	3.21	1.56	
		Bismuth-212	21.1	52.3	90.6	43	U
		Bismuth-214	-9.46	16.8	14.8	7.11	U
		Cesium-137	-5.77	6.95	6.11	2.9	U
		Cobalt-60	-0.714	3.63	6.39	2.95	U
		Lead-212	1.7	16.9	13.9	6.79	U
		Lead-214	6.05	18.1	15.9	7.69	U
		Neptunium-237	-2.85	6.85	11.8	5.71	U
		Potassium-40	-22.7	87.2	103	49	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	8/26/2016	Radium-223	51.5	68.7	119	57.3	U
		Radium-224	47.5	68.1	119	57.8	U
		Radium-226	34.1	206	168	82.5	U
		Radium-228	15.1	31.9	22.3	10.5	U
		Sodium-22	0.278	3.64	6.61	3.07	U
		Thorium-227	3.51	26.6	48	23.3	U
		Thorium-231	-27.9	84.3	76.7	37.4	U
		Thorium-234	17	347	233	113	U
		Uranium-235	16	47.3	33.4	16.2	U
		Uranium-238	17	347	233	113	U
	9/29/2016	Actinium-228	7.83	35.1	28	13.6	U
		Alpha, gross	94.7	22.4	6.36	2.49	
		Americium-241	5.05	18.1	29.9	14.6	U
		Beryllium-7	-11.7	43.1	70.5	34.1	U
		Beta, gross	96.6	14.5	2.92	1.41	
		Bismuth-212	25.6	50	85.9	41.5	U
		Bismuth-214	12.4	18.7	16.3	7.95	U
		Cesium-137	3.48	4.41	5.39	2.59	U
		Cobalt-60	1.37	3.48	5.64	2.66	U
		Lead-212	11.1	14.7	9.03	4.4	X
		Lead-214	1.12	17.6	11.1	5.37	U
		Neptunium-237	-1.85	10.5	10.4	5.07	U
		Potassium-40	-33.7	60.9	70.2	33.5	U
		Radium-223	-41.7	62.8	101	48.9	U
		Radium-224	72.3	70.4	103	50.2	U
		Radium-226	-121	156	141	69.3	U
		Radium-228	7.83	35.1	28	13.6	U
		Sodium-22	0.734	3.46	6.11	2.9	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
A3PM	9/29/2016	Thorium-227	1.58	22.4	39.4	19.2	U
		Thorium-231	38	88.1	65.3	31.8	U
		Thorium-234	159	387	278	136	U
		Uranium-235	-4.25	34.7	33.3	16.3	U
		Uranium-238	159	387	278	136	U
BKPM	10/29/2015	Actinium-228	16.5	32.3	25.6	12.4	U
		Alpha, gross	26.5	7.2	5.03	2.24	
		Americium-241	-4.97	20.9	36.6	17.9	U
		Beryllium-7	9.16	55.3	94.6	46	U
		Beta, gross	37.5	6.87	5.32	2.58	
		Bismuth-212	53.1	63.2	103	50.2	U
		Bismuth-214	-13.4	17.9	18	8.83	U
		Cesium-137	6.01	5.38	7.6	3.7	U
		Cobalt-60	17.8	7.59	6.57	3.13	
		Lead-212	11	16.4	14.9	7.32	U
		Lead-214	-5.76	15.2	17.1	8.37	U
		Neptunium-237	0.0853	7.87	13.2	6.43	U
		Potassium-40	-23.7	83.6	79.8	38.4	U
		Radium-223	-9.95	74.4	130	63.7	U
		Radium-224	30.1	120	132	64.7	U
		Radium-226	11.6	142	123	60.3	U
		Radium-228	16.5	32.3	25.6	12.4	U
		Sodium-22	-0.177	3.92	6.9	3.3	U
		Thorium-227	1.95	29.3	49.9	24.4	U
		Thorium-231	11.6	73.7	87.2	42.8	U
		Thorium-234	-263	327	337	166	U
		Uranium-235	10.8	23.6	38.7	19	U
		Uranium-238	-263	327	337	166	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	11/26/2015	Actinium-228	6.5	43.4	32.3	15.3	U
		Alpha, gross	14.5	4.71	5.04	2.35	
		Americium-241	13.6	29.9	50.5	24.6	U
		Beryllium-7	-12.8	60	104	50.1	U
		Beta, gross	7.11	3.69	5.73	2.79	
		Bismuth-212	100	94.9	138	66.4	U
		Bismuth-214	-14.3	18.9	21.3	10.3	U
		Cesium-137	-0.0232	5.62	9.7	4.66	U
		Cobalt-60	2.41	5.29	9.75	4.58	U
		Lead-212	4.84	17.6	20.1	9.86	U
		Lead-214	0.678	19.5	20.4	9.91	U
		Neptunium-237	-5.42	11.8	16.7	8.09	U
		Potassium-40	43.7	120	130	61.9	U
		Radium-223	-27.5	100	167	80.9	U
		Radium-224	54.1	110	185	90.5	U
		Radium-226	-225	249	231	114	U
		Radium-228	6.5	43.4	32.3	15.3	U
		Sodium-22	3	5.49	9.77	4.59	U
		Thorium-227	0.482	39	66.8	32.5	U
		Thorium-231	-32.5	120	119	58.2	U
		Thorium-234	-195	453	479	235	U
		Uranium-235	32.4	54.9	53.9	26.4	U
		Uranium-238	-195	453	479	235	U
	12/30/2015	Actinium-228	17.1	40.8	33.4	16.1	U
		Alpha, gross	9.86	5.05	7.05	3.25	
		Americium-241	-14.7	13.7	19.7	9.64	U
		Beryllium-7	23.3	58.3	102	49.4	U
		Beta, gross	13.8	4.26	5.68	2.76	
		Bismuth-212	26.2	61.3	106	50.9	U
		Bismuth-214	4.44	20.3	15.5	7.52	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	12/30/2015	Cesium-137	-2.11	4.45	7.36	3.54	U
		Cobalt-60	4.85	5.37	8.7	4.14	U
		Lead-212	3.94	15.8	13.8	6.78	U
		Lead-214	5.52	16.4	17.4	8.5	U
		Neptunium-237	6.9	9.07	14.6	7.14	U
		Potassium-40	36.9	101	66.8	31.3	U
		Radium-223	11.2	82.2	138	67.3	U
		Radium-224	219	134	219	70.4	U
		Radium-226	14.6	172	131	64.2	U
		Radium-228	17.1	40.8	33.4	16.1	U
		Sodium-22	4.33	4.58	7.86	3.72	U
		Thorium-227	9.19	34.5	53.9	26.3	U
		Thorium-231	13.9	79.8	69.7	34.1	U
		Thorium-234	-165	206	209	103	U
		Uranium-235	13.4	37.6	41.3	20.2	U
		Uranium-238	-165	206	209	103	U
	1/28/2016	Actinium-228	42.7	49.8	45.3	21.9	U
		Alpha, gross	7.09	5.7	8.79	4	U
		Americium-241	-71.6	50.9	63.1	30.9	U
		Beryllium-7	17.4	72.5	126	60.9	U
		Beta, gross	354	52.8	9.55	4.64	
		Bismuth-212	-109	129	145	70.2	U
		Bismuth-214	2.32	21.1	19.7	9.53	U
		Cesium-137	0.667	6.02	10.3	4.99	U
		Cobalt-60	331	33.2	9.96	4.72	
		Lead-212	-4.54	15.3	17.6	8.64	U
		Lead-214	18.8	20.7	22.1	10.8	U
		Manganese-54	47.2	12.9	11.4	5.5	
		Neptunium-237	-1.24	10.2	17.7	8.64	U
		Potassium-40	-90.4	102	104	49.6	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	1/28/2016	Radium-223	3.98	104	177	86.2	U
		Radium-224	34.9	101	175	85.8	U
		Radium-226	85.9	206	167	82	U
		Radium-228	42.7	49.8	45.3	21.9	U
		Sodium-22	-0.481	5.11	9.04	4.26	U
		Thorium-227	10.7	45.2	69.7	34.1	U
		Thorium-231	27.4	119	135	66	U
		Thorium-234	-446	534	556	273	U
		Uranium-235	-21.4	47.1	53.6	26.3	U
		Uranium-238	-446	534	556	273	U
	2/25/2016	Actinium-228	-28.6	37.1	44.8	21.6	U
		Alpha, gross	18.1	9.03	12.7	5.9	
		Americium-241	-19.5	33.6	48.3	23.6	U
		Beryllium-7	74.4	82.5	137	66.4	U
		Beta, gross	12.1	5.1	7.37	3.54	
		Bismuth-212	-130	165	134	64.6	U
		Bismuth-214	6.9	20	23	11.2	U
		Cesium-137	4.94	6.02	10	4.85	U
		Cobalt-60	-7.79	6.74	9.08	4.27	U
		Lead-212	-7.37	18.2	17.5	8.57	U
		Lead-214	7.02	21.3	21.5	10.5	U
		Neptunium-237	6.07	10.5	17.6	8.59	U
		Potassium-40	-166	153	147	70.8	U
		Radium-223	69.7	108	178	86.9	U
		Radium-224	27.4	99.6	171	83.9	U
		Radium-226	80.9	259	164	80.5	U
		Radium-228	-28.6	37.1	44.8	21.6	U
		Sodium-22	-0.655	5.49	9.58	4.53	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	2/25/2016	Thorium-227	-9.33	38.7	65.6	32.1	U
		Thorium-231	-62.3	139	135	66.2	U
		Thorium-234	223	511	388	190	U
		Uranium-235	-44.1	51.8	55.2	27.1	U
		Uranium-238	223	511	388	190	U
	3/31/2016	Actinium-228	-6.71	26.2	31.2	14.9	U
		Alpha, gross	23.7	6.93	5.92	2.67	
		Americium-241	1.35	4.8	7.74	3.77	U
		Beryllium-7	-20.8	51.7	85.3	41.1	U
		Beta, gross	17.3	4.43	4.56	2.18	
		Bismuth-212	-115	116	108	51.6	U
		Bismuth-214	0.0399	13.9	17.3	8.4	U
		Cesium-137	2.3	4.17	7.37	3.53	U
		Cobalt-60	-3.53	4.66	7.33	3.43	U
		Lead-212	-3.91	11.8	12.5	6.09	U
		Lead-214	-11.8	15.8	15.5	7.51	U
		Neptunium-237	1.67	6.95	12.2	5.93	U
		Potassium-40	-15.9	84.2	101	48	U
		Radium-223	-38.8	71	118	57.2	U
		Radium-224	-23.2	68.5	119	58	U
		Radium-226	37.3	155	108	52.7	U
		Radium-228	-6.71	26.2	31.2	14.9	U
		Sodium-22	-0.0443	5.04	7.77	3.65	U
		Thorium-227	-15.6	26	43.3	21	U
		Thorium-231	4.25	48.8	45.4	22.2	U
		Thorium-234	59.3	111	80.1	39.1	U
		Uranium-235	13.3	31.6	33.2	16.2	U
		Uranium-238	59.3	111	80.1	39.1	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	4/28/2016	Actinium-228	-5.75	31.3	29.7	14.2	U
		Alpha, gross	13.9	6.96	9.89	4.65	
		Americium-241	5.76	13	19.4	9.44	U
		Beryllium-7	6.41	49.4	88.2	42.6	U
		Beta, gross	6.24	2.57	3.67	1.77	
		Bismuth-212	-23.5	58	97.8	46.8	U
		Bismuth-214	15.2	19.2	16.8	8.13	U
		Cesium-137	1.27	4.16	7.36	3.53	U
		Cobalt-60	-0.7	4.46	7.9	3.72	U
		Lead-212	11.5	14.3	13.5	6.61	U
		Lead-214	0.898	12.5	15.1	7.35	U
		Neptunium-237	-3.06	7.66	12.7	6.15	U
		Potassium-40	28	81.6	104	49.5	U
		Radium-223	-54.6	78.5	124	59.9	U
		Radium-224	87.1	87.5	123	60.2	U
		Radium-226	-62.8	143	175	86.1	U
		Radium-228	-5.75	31.3	29.7	14.2	U
		Sodium-22	4.72	4.64	7.98	3.76	U
		Thorium-227	-4.29	28.8	49.1	23.9	U
		Thorium-231	-121	89.7	71.4	34.9	U
		Thorium-234	147	217	239	118	U
		Uranium-235	-46.8	44	39.5	19.3	U
		Uranium-238	147	217	239	118	U
	5/26/2016	Actinium-228	-8.65	30	31.7	15.4	U
		Alpha, gross	33.2	8.08	3.76	1.63	
		Americium-241	-24.7	25.5	35.2	17.2	U
		Beryllium-7	-21.5	56.9	94.3	45.9	U
		Beta, gross	26	4.77	2.78	1.32	
		Bismuth-212	-65.5	89.3	99.1	48	U
		Bismuth-214	2.52	19.3	15.7	7.66	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	5/26/2016	Cesium-137	2.11	7.04	7.66	3.73	U
		Cobalt-60	-1.69	4.34	7.36	3.52	U
		Lead-212	-4.59	13.3	13.9	6.84	U
		Lead-214	6.3	18.2	16.4	8.05	U
		Neptunium-237	-3.35	7.73	12.5	6.1	U
		Potassium-40	30.3	78.1	70.3	33.6	U
		Radium-223	-49.5	76.1	126	61.3	U
		Radium-224	103	74.7	133	65	U
		Radium-226	61	176	121	59.4	U
		Radium-228	-8.65	30	31.7	15.4	U
		Sodium-22	0.107	4.09	7.23	3.46	U
		Thorium-227	-1.22	28.9	49.1	24	U
		Thorium-231	-8.37	57.8	84.4	41.4	U
		Thorium-234	323	249	296	145	X
		Uranium-235	23.9	36.2	35.9	17.6	U
		Uranium-238	323	249	296	145	X
	6/29/2016	Actinium-228	41.3	47.2	41.3	18	U
		Alpha, gross	21.7	5.66	3.36	1.47	
		Americium-241	5.8	14.8	23.6	11.5	U
		Beryllium-7	46.5	67.8	91	43.8	U
		Beta, gross	10.9	2.45	1.87	0.883	
		Bismuth-212	-0.0365	60	106	51	U
		Bismuth-214	-9.74	15.7	17.7	8.6	U
		Cesium-137	-4.46	9.74	9.64	4.67	U
		Cobalt-60	-2.63	4.4	7.29	3.41	U
		Lead-212	-8.13	13.7	14.4	7.04	U
		Lead-214	0.357	18.7	16.6	8.08	U
		Neptunium-237	-1.23	7.72	13.5	6.54	U
		Potassium-40	-39.4	79.4	97.8	46.5	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	6/29/2016	Radium-223	-96.4	88.4	128	62.1	U
		Radium-224	-259	147	130	63.2	U
		Radium-226	-138	171	174	85.4	U
		Radium-228	41.3	47.2	41.3	18	U
		Sodium-22	-3.21	4.45	7.18	3.36	U
		Thorium-227	-8.93	30.6	53.2	25.9	U
		Thorium-231	-63	79.3	74.2	36.3	U
		Thorium-234	54.4	278	195	95	U
		Uranium-235	-9.38	40.5	41.7	20.4	U
		Uranium-238	54.4	278	195	95	U
	7/28/2016	Actinium-228	17.5	34	32.5	15.5	U
		Alpha, gross	16.2	4.99	5.04	2.34	
		Americium-241	-1.24	27.8	44	21.4	U
		Beryllium-7	-13.9	61.5	103	49.2	U
		Beta, gross	13.4	3.38	4.05	1.98	
		Bismuth-212	-18.6	118	107	51	U
		Bismuth-214	20.5	20.7	15.5	7.46	X
		Cesium-137	-1.48	4.16	7.31	3.48	U
		Cobalt-60	-0.859	4.29	7.58	3.52	U
		Lead-212	-13.6	17.3	14	6.81	U
		Lead-214	2.06	14.8	15.8	7.66	U
		Neptunium-237	1.07	7.39	12.7	6.14	U
		Potassium-40	7.88	122	74.4	34.6	U
		Radium-223	17.8	75.8	130	62.9	U
		Radium-224	100	115	117	56.9	U
		Radium-226	104	203	118	57.3	U
		Radium-228	17.5	34	32.5	15.5	U
		Sodium-22	-1.14	4.44	7.78	3.63	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	7/28/2016	Thorium-227	-8.32	28.9	48.5	23.5	U
		Thorium-231	35.5	104	94.9	46.2	U
		Thorium-234	385	510	438	214	U
		Uranium-235	-32.2	44.8	39	19	U
		Uranium-238	385	510	438	214	U
	8/26/2016	Actinium-228	-15.4	27.2	27.3	13	U
		Alpha, gross	17.9	10.4	10.2	3.31	
		Americium-241	-0.262	9.38	15.8	7.68	U
		Beryllium-7	-4.15	51.6	90	43.1	U
		Beta, gross	13	2.76	2.64	1.27	
		Bismuth-212	19.5	48.7	85	40.4	U
		Bismuth-214	-3.27	14	15.3	7.38	U
		Cesium-137	-0.181	3.54	6.12	2.91	U
		Cobalt-60	4.13	4.02	7.07	3.3	U
		Lead-212	5.19	13.1	11.9	5.78	U
		Lead-214	1.2	14.5	14.1	6.81	U
		Neptunium-237	-0.366	6.06	10.7	5.18	U
		Potassium-40	-108	99.7	79.5	37.5	U
		Radium-223	-22.4	60.8	105	50.5	U
		Radium-224	42	63.3	100	48.6	U
		Radium-226	3.03	177	152	74.5	U
		Radium-228	-15.4	27.2	27.3	13	U
		Sodium-22	-1.6	3.42	5.88	2.71	U
		Thorium-227	-2.99	22.1	39.3	19	U
		Thorium-231	11.1	70.6	55.9	27.2	U
		Thorium-234	-156	189	211	104	U
		Uranium-235	3.13	36.4	29.1	14.1	U
		Uranium-238	-156	189	211	104	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM	9/29/2016	Actinium-228	19.4	32	28	13.3	U
		Alpha, gross	18.5	5.58	5.43	2.53	
		Americium-241	-39.2	39	30.5	14.7	U
		Beryllium-7	-11.7	85.5	78.6	37.5	U
		Beta, gross	4.91	1.91	2.72	1.31	
		Bismuth-212	-12.9	47.1	81.6	38.3	U
		Bismuth-214	-15.3	19.9	15.6	7.51	U
		Cesium-137	-1.77	3.45	5.8	2.73	U
		Cobalt-60	0.306	3.34	6.27	2.88	U
		Lead-212	3	16.7	12	5.82	U
		Lead-214	6.25	17.7	14.8	7.13	U
		Neptunium-237	-2.18	6.59	10.7	5.15	U
		Potassium-40	31.2	115	65.3	30.1	U
		Radium-223	46	102	118	56.9	U
		Radium-224	5.74	63.4	99.8	48.1	U
		Radium-226	-164	170	162	79.3	U
		Radium-228	19.4	32	28	13.3	U
		Sodium-22	1.09	3.32	6.31	2.91	U
		Thorium-227	-16.2	25.7	40.2	19.4	U
		Thorium-231	-22	86.6	78.5	38.1	U
		Thorium-234	-218	307	355	173	U
		Uranium-235	-13	36.2	33.8	16.4	U
		Uranium-238	-218	307	355	173	U
BKPM2	11/26/2015	Actinium-228	5.59	23.5	25.9	12.3	U
		Alpha, gross	4.63	3.82	5.93	2.78	U
		Americium-241	-3.26	25.8	39	18.9	U
		Beryllium-7	37.9	52.1	89	42.8	U
		Beta, gross	10.1	4.09	6.06	2.96	
		Bismuth-212	37.7	59.1	93.8	44.6	U
		Bismuth-214	7.58	12.5	15.5	7.45	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM2	11/26/2015	Cesium-137	-0.503	3.94	6.71	3.19	U
		Cobalt-60	1.09	3.98	7.4	3.45	U
		Lead-212	-2.88	12.2	13.4	6.55	U
		Lead-214	0.446	15.6	15.5	7.48	U
		Neptunium-237	8.86	10.1	13.2	6.37	U
		Potassium-40	1.53	111	76.4	35.7	U
		Radium-223	56.3	82	128	61.8	U
		Radium-224	-183	115	121	58.8	U
		Radium-226	48.2	83.3	118	57.2	U
		Radium-228	5.59	23.5	25.9	12.3	U
		Sodium-22	3.22	4.45	8.1	3.8	U
		Thorium-227	-70	59	48.5	23.5	U
		Thorium-231	-21.8	89.5	91.7	44.7	U
		Thorium-234	13.6	438	414	203	U
		Uranium-235	8.5	44.1	40.8	19.9	U
		Uranium-238	13.6	438	414	203	U
	1/28/2016	Actinium-228	4.68	35.2	32.8	15.8	U
		Alpha, gross	7.38	6.52	10.5	4.88	U
		Americium-241	-4.1	18.8	29	14.2	U
		Beryllium-7	-1.35	54.9	94.9	45.9	U
		Beta, gross	19.9	6.12	8.18	3.96	
		Bismuth-212	42.5	66.3	111	53.4	U
		Bismuth-214	-23.5	22	17.9	8.71	U
		Cesium-137	10.6	12.1	7.62	3.67	X
		Cobalt-60	13.9	9.72	7.78	3.67	
		Lead-212	13.3	16	15	7.36	U
		Lead-214	-24.8	20.9	17.4	8.47	U
		Neptunium-237	-11.7	9.69	13.5	6.58	U
		Potassium-40	-59.7	90.1	108	51.7	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM2	1/28/2016	Radium-223	24.2	80.4	141	68.7	U
		Radium-224	7.4	85.8	135	65.9	U
		Radium-226	104	210	135	65.8	U
		Radium-228	4.68	35.2	32.8	15.8	U
		Sodium-22	-4.77	5.01	7.33	3.45	U
		Thorium-227	10.2	32	56.5	27.6	U
		Thorium-231	17.3	108	83.6	41	U
		Thorium-234	7.91	295	298	146	U
		Uranium-235	15.7	49.4	40.2	19.7	U
		Uranium-238	7.91	295	298	146	U
BKPM3	1/28/2016	Actinium-228	-9.77	50.9	65.2	31.4	U
		Alpha, gross	4.56	5.38	8.93	4.1	U
		Americium-241	-0.172	16.8	28.6	14.1	U
		Beryllium-7	47	97.3	172	83.1	U
		Beta, gross	7.41	4.29	6.68	3.22	
		Bismuth-212	-7.14	112	194	93.3	U
		Bismuth-214	1.62	36	25.5	12.3	U
		Cesium-137	2.38	8.07	14.2	6.82	U
		Cobalt-60	7.86	9.06	15.7	7.41	U
		Lead-212	12.7	24.7	25.7	12.6	U
		Lead-214	-10.2	29.8	30.1	14.7	U
		Neptunium-237	0.837	15.2	23	11.2	U
		Potassium-40	-58.6	143	177	84.3	U
		Radium-223	-22	138	235	114	U
		Radium-224	21.4	211	226	111	U
		Radium-226	-73.1	247	277	136	U
		Radium-228	-9.77	50.9	65.2	31.4	U
		Sodium-22	-4.79	8.41	13.8	6.49	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
BKPM3	1/28/2016	Thorium-227	29	52.5	89.5	43.6	U
		Thorium-231	-69.3	105	99.6	48.9	U
		Thorium-234	-399	368	302	149	U
		Uranium-235	-9.77	61.9	64.8	31.7	U
		Uranium-238	-399	368	302	149	U
CPMS	10/29/2015	Actinium-228	29.3	40.6	40.8	19.6	U
		Alpha, gross	29	7.51	5.28	2.41	
		Americium-241	197	73.8	74.8	36.6	X
		Beryllium-7	531	133	132	63.8	
		Beta, gross	101	15.7	4.61	2.22	
		Bismuth-212	74.5	95.9	133	63.5	U
		Bismuth-214	-9.65	23.2	25.2	12.3	U
		Cesium-137	3.15	5.57	9.81	4.72	U
		Cobalt-60	5.56	7.03	11	5.19	U
		Lead-212	-10.8	18.6	19.4	9.53	U
		Lead-214	-7.9	21.9	24.9	12.2	U
		Neptunium-237	4.06	10.7	18.5	8.98	U
		Potassium-40	-83.2	121	109	51.3	U
		Radium-223	-41.7	108	181	88.2	U
		Radium-224	45.6	163	205	101	U
		Radium-226	-16.3	222	239	118	U
		Radium-228	29.3	40.6	40.8	19.6	U
		Sodium-22	-2.01	5.42	9.43	4.42	U
		Thorium-227	5.61	40.8	71.5	34.9	U
		Thorium-231	47.4	131	116	56.6	U
		Thorium-234	-118	463	558	273	U
		Uranium-235	1.33	54.2	54.1	26.5	U
		Uranium-238	-118	463	558	273	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	11/26/2015	Actinium-228	3.85	37	31.3	14.8	U
		Alpha, gross	20.8	6.15	5.2	2.38	
		Americium-241	1.37	32.7	48.9	23.9	U
		Beryllium-7	1220	155	102	49.1	
		Beta, gross	172	25.7	5.4	2.62	
		Bismuth-212	-70.2	112	119	57	U
		Bismuth-214	4.52	17.2	19.8	9.59	U
		Cesium-137	-2.79	5	8.35	3.99	U
		Cobalt-60	-1.34	4.94	8.79	4.1	U
		Lead-212	8.16	18.6	18	8.81	U
		Lead-214	17.8	22	21	10.2	U
		Neptunium-237	6.51	10.4	17.4	8.47	U
		Potassium-40	-37.1	113	129	61.3	U
		Radium-223	-8.48	97.8	167	81.2	U
		Radium-224	208	139	208	81.8	U
		Radium-226	10.4	229	160	78.1	U
		Radium-228	3.85	37	31.3	14.8	U
		Sodium-22	2.3	5.18	9.57	4.5	U
		Thorium-227	27.4	39.5	65.9	32.1	U
		Thorium-231	26.2	101	108	52.6	U
		Thorium-234	136	472	396	194	U
		Uranium-235	67.6	51.8	47.1	23	X
		Uranium-238	136	472	396	194	U
	12/30/2015	Actinium-228	-26.1	36	32.8	15.8	U
		Alpha, gross	5.5	4.94	7.93	3.71	U
		Americium-241	7.27	12	18.1	8.86	U
		Beryllium-7	-29.9	59.2	94.7	45.8	U
		Beta, gross	12.5	3.63	4.69	2.26	
		Bismuth-212	85.9	97.7	104	50	U
		Bismuth-214	-19.4	22.1	17.7	8.62	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	12/30/2015	Cesium-137	2.35	4.54	7.88	3.8	U
		Cobalt-60	1.05	4.49	8.01	3.8	U
		Lead-212	0.575	13.8	14.3	7.02	U
		Lead-214	-19.7	17.7	16.5	8.06	U
		Neptunium-237	1.7	8.45	14.5	7.09	U
		Potassium-40	-111	104	101	48.6	U
		Radium-223	1.64	80.3	138	67.1	U
		Radium-224	119	102	139	68	U
		Radium-226	-84.5	160	176	86.5	U
		Radium-228	-26.1	36	32.8	15.8	U
		Sodium-22	1.37	4.54	8.1	3.85	U
		Thorium-227	9.5	30.3	52.4	25.6	U
		Thorium-231	-30.5	68.1	76.7	37.7	U
		Thorium-234	10.5	217	219	108	U
		Uranium-235	35.6	45.6	43	21.1	U
		Uranium-238	10.5	217	219	108	U
	1/28/2016	Actinium-228	12.3	43.5	45.1	21.8	U
		Alpha, gross	-2.24	4.9	9.05	4.23	U
		Americium-241	1.03	5.98	9.16	4.48	U
		Beryllium-7	27.9	70.1	121	58.8	U
		Beta, gross	363	54.1	7.42	3.55	
		Bismuth-212	27.2	88.9	137	65.9	U
		Bismuth-214	-1.18	22.8	21.4	10.4	U
		Cesium-137	3.88	6.1	10.2	4.92	U
		Cobalt-58	56.4	12.5	13	6.26	
		Cobalt-60	302	30.8	8.31	3.9	
		Lead-212	6.58	14.9	13.4	6.55	U
		Lead-214	5.79	18.3	19	9.27	U
		Manganese-54	37.4	12.2	11.2	5.39	
		Neptunium-237	-2.3	9.5	15.7	7.68	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	1/28/2016	Potassium-40	-55.4	85.4	109	51.7	U
		Radium-223	14.6	95.1	160	78	U
		Radium-224	32.7	98.3	147	71.9	U
		Radium-226	11.4	172	132	64.7	U
		Radium-228	12.3	43.5	45.1	21.8	U
		Sodium-22	-0.239	5.67	8.66	4.08	U
		Thorium-227	18.9	37	61.8	30.2	U
		Thorium-231	28.9	56.8	55.6	27.2	U
		Thorium-234	91.3	126	90.2	44.1	X
		Uranium-235	-45.7	41.1	40.2	19.7	U
		Uranium-238	91.3	126	90.2	44.1	X
	2/25/2016	Actinium-228	7.33	26.9	30.5	14.6	U
		Alpha, gross	20.1	8.59	10.9	5.04	
		Americium-241	3.26	5.08	7.98	3.89	U
		Beryllium-7	530	104	90.5	43.6	
		Beta, gross	84.3	14.6	9.67	4.7	
		Bismuth-212	8.1	61.1	108	51.9	U
		Bismuth-214	9.26	18.9	17.6	8.55	U
		Cesium-137	1.52	4.22	7.52	3.61	U
		Cobalt-60	1.5	5.17	8.09	3.81	U
		Lead-212	-1.34	13.1	13.2	6.47	U
		Lead-214	-4.97	15.7	16	7.77	U
		Neptunium-237	4.96	7.3	12.5	6.06	U
		Potassium-40	-35.9	89.7	97.3	46.3	U
		Radium-223	26.6	73.2	128	62.1	U
		Radium-224	35.1	77.3	139	68.2	U
		Radium-226	9.07	150	117	57	U
		Radium-228	7.33	26.9	30.5	14.6	U
		Sodium-22	-1.3	4.26	7.39	3.47	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	2/25/2016	Thorium-227	-15.9	27.9	46.7	22.7	U
		Thorium-231	-31.1	47.2	48.3	23.6	U
		Thorium-234	147	124	147	58.2	U
		Uranium-235	-5.6	34.8	35.1	17.1	U
		Uranium-238	147	124	147	58.2	U
	3/31/2016	Actinium-228	27.6	37.4	36.8	17.7	U
		Alpha, gross	77.5	17.8	6.89	3.1	
		Americium-241	-1.7	16.6	25.3	12.3	U
		Beryllium-7	-71.6	60.8	85.7	41.2	U
		Beta, gross	75.3	13.1	8.03	3.91	
		Bismuth-212	32.5	66.6	116	55.6	U
		Bismuth-214	1.59	19.8	15.8	7.63	U
		Cesium-137	-1.77	4.91	8.33	4	U
		Cobalt-60	5.64	5.34	9.04	4.26	U
		Lead-212	-10.7	15.6	15	7.34	U
		Lead-214	-15.2	18.9	17.5	8.49	U
		Neptunium-237	-6.98	9.21	14.4	6.98	U
		Potassium-40	41.2	146	69.8	32.3	U
		Radium-223	-73.1	91.1	140	68.1	U
		Radium-224	62	87.9	147	71.8	U
		Radium-226	48.2	177	131	64	U
		Radium-228	27.6	37.4	36.8	17.7	U
		Sodium-22	3.22	5.21	9.15	4.32	U
		Thorium-227	6.23	31.8	55.2	26.9	U
		Thorium-231	-43	68.6	78.4	38.3	U
		Thorium-234	8.63	295	263	129	U
		Uranium-235	5.15	37.2	42.1	20.6	U
		Uranium-238	8.63	295	263	129	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	4/28/2016	Actinium-228	5.79	27	35	16.9	U
		Alpha, gross	108	22.5	7.11	3.34	
		Americium-241	-17.1	15.5	22.9	11.2	U
		Beryllium-7	-4.84	52.1	89.2	43	U
		Beta, gross	121	19.1	6.22	3.03	
		Bismuth-212	52.6	132	112	54	U
		Bismuth-214	-25.8	21.3	16.4	7.93	U
		Cesium-137	-1.11	8.55	9.83	4.76	U
		Cobalt-60	4.63	7.74	7.69	3.6	U
		Lead-212	3.15	14.4	14.4	7.06	U
		Lead-214	-14.8	17.5	16.7	8.13	U
		Neptunium-237	3.62	7.6	13.3	6.44	U
		Potassium-40	-31.6	87.4	105	50.1	U
		Radium-223	-23.5	77.2	133	64.4	U
		Radium-224	112	83.6	123	59.7	U
		Radium-226	45.9	182	130	63.3	U
		Radium-228	5.79	27	35	16.9	U
		Sodium-22	-2.99	5.31	7.46	3.5	U
		Thorium-227	10.4	30.7	54.3	26.5	U
		Thorium-231	26.9	82.5	74	36.1	U
		Thorium-234	-300	248	255	125	U
		Uranium-235	-8.91	41.4	40.3	19.7	U
		Uranium-238	-300	248	255	125	U
	5/26/2016	Actinium-228	10.5	30.9	32.2	15.7	U
		Alpha, gross	164	33.9	6.62	3.08	
		Americium-241	-1.3	20.9	36.8	18	U
		Beryllium-7	4.65	55.3	94.6	46	U
		Beta, gross	151	23.3	4.36	2.11	
		Bismuth-212	7.2	84	103	50.2	U
		Bismuth-214	-4.39	18.2	17.5	8.58	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	5/26/2016	Cesium-137	-0.98	6.52	7.41	3.6	U
		Cobalt-60	-0.567	4.23	7.37	3.53	U
		Lead-212	-1.84	12.6	14	6.88	U
		Lead-214	11.2	17.5	16.8	8.24	U
		Neptunium-237	1.41	7.39	12.4	6.05	U
		Potassium-40	83.1	79.7	77	36.9	X
		Radium-223	52.2	75.6	128	62.8	U
		Radium-224	132	97.5	118	57.8	X
		Radium-226	-4.79	151	161	79.5	U
		Radium-228	10.5	30.9	32.2	15.7	U
		Sodium-22	-2.33	4.32	7.18	3.43	U
		Thorium-227	-38.8	34.8	48.2	23.6	U
		Thorium-231	-16.7	59.2	86.1	42.2	U
		Thorium-234	-576	523	326	160	U
		Uranium-235	8.08	37	40.1	19.7	U
		Uranium-238	-576	523	326	160	U
	6/29/2016	Actinium-228	32.3	45.2	31.6	15	X
		Alpha, gross	29.5	12.7	10.3	3.69	
		Americium-241	-66.3	40.6	44.7	21.8	U
		Beryllium-7	31.4	71.9	122	58.7	U
		Beta, gross	91.4	14.1	3.02	1.46	
		Bismuth-212	4.3	71.1	127	60.5	U
		Bismuth-214	0.707	20.7	19.7	9.48	U
		Cesium-137	-0.713	5.02	8.87	4.24	U
		Cobalt-60	-9.65	9.68	8.93	4.17	U
		Lead-212	15.2	17.2	17.3	8.5	U
		Lead-214	30.4	21.7	30.4	9.77	U
		Neptunium-237	12.7	12.6	17.1	8.33	U
		Potassium-40	-40.2	134	129	61.4	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	6/29/2016	Radium-223	4.22	99.3	170	82.4	U
		Radium-224	188	125	188	81	U
		Radium-226	76.8	206	152	74.3	U
		Radium-228	32.3	45.2	31.6	15	X
		Sodium-22	-1.19	5.32	9.14	4.28	U
		Thorium-227	-6.49	37.1	63	30.7	U
		Thorium-231	72.8	82.1	119	58.4	U
		Thorium-234	-473	518	459	225	U
		Uranium-235	-41.6	53.8	52.9	25.9	U
		Uranium-238	-473	518	459	225	U
	7/28/2016	Actinium-228	-5.95	27.1	28.3	13.5	U
		Alpha, gross	151	30.8	3.64	1.65	
		Americium-241	2.63	3.75	6.61	3.21	U
		Beryllium-7	-34.4	48.8	79.4	37.9	U
		Beta, gross	157	24.1	2.3	1.1	
		Bismuth-212	26.1	83.5	88.6	42.1	U
		Bismuth-214	9.38	21.8	14.3	6.87	U
		Cesium-137	-4.65	3.97	5.32	2.51	U
		Cobalt-60	-1.26	4.2	6.37	2.94	U
		Lead-212	5.11	12.4	8.03	3.88	U
		Lead-214	-12.2	13.8	12.9	6.21	U
		Neptunium-237	2.31	5.94	9.89	4.76	U
		Potassium-40	77.3	94.2	54.9	25.1	X
		Radium-223	-38.5	62.4	95.4	45.9	U
		Radium-224	64.4	64	93.2	45.1	U
		Radium-226	-128	133	128	62.5	U
		Radium-228	-5.95	27.1	28.3	13.5	U
		Sodium-22	0.769	3.98	6.51	3.02	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	7/28/2016	Thorium-227	-7.33	22.8	37.2	18	U
		Thorium-231	-47	47.7	40.6	19.7	U
		Thorium-234	6.17	95.8	62.6	30.3	U
		Uranium-235	0.934	35.7	29	14.1	U
		Uranium-238	6.17	95.8	62.6	30.3	U
	8/26/2016	Actinium-228	-17.5	30.8	30.8	14.7	U
		Alpha, gross	283	66.8	15.4	5.73	
		Americium-241	-0.417	11.8	20.4	9.9	U
		Beryllium-7	-23.3	55.5	93.5	44.5	U
		Beta, gross	170	25.7	2.89	1.4	
		Bismuth-212	-52.7	108	104	49.4	U
		Bismuth-214	22.5	24.8	22.5	8.34	U
		Cesium-137	6.1	4.99	7.23	3.44	U
		Cobalt-60	4.37	5.72	7.62	3.55	U
		Lead-212	-2.59	12.7	13.2	6.43	U
		Lead-214	-6.56	15.3	15.4	7.47	U
		Neptunium-237	2.17	6.35	11.4	5.48	U
		Potassium-40	0.941	90	106	50.6	U
		Radium-223	-16.9	62.8	110	52.9	U
		Radium-224	-139	92.4	113	54.9	U
		Radium-226	89	187	104	50.6	U
		Radium-228	-17.5	30.8	30.8	14.7	U
		Sodium-22	-2.19	7.42	6.68	3.09	U
		Thorium-227	-0.123	24.4	44	21.3	U
		Thorium-231	21.5	86.9	64.3	31.2	U
		Thorium-234	-54.9	214	232	113	U
		Uranium-235	-15.9	38	34.1	16.6	U
		Uranium-238	-54.9	214	232	113	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CPMS	9/29/2016	Actinium-228	30	47.4	37	17.7	U
		Alpha, gross	134	27.9	4.8	2.19	
		Americium-241	-9.67	22.8	36.4	17.7	U
		Beryllium-7	38.7	57.3	99.4	47.6	U
		Beta, gross	90.1	15	3.55	1.73	
		Bismuth-212	0.105	63	110	52	U
		Bismuth-214	1.42	19.8	18.9	9.1	U
		Cesium-137	-2.11	4.54	7.52	3.56	U
		Cobalt-60	1.96	4.4	8.31	3.86	U
		Lead-212	1.07	18.4	12.2	5.92	U
		Lead-214	-6.99	20.5	18	8.73	U
		Neptunium-237	-1.95	7.89	13.7	6.63	U
		Potassium-40	-161	148	107	50.5	U
		Radium-223	-49	79.6	132	63.4	U
		Radium-224	81.8	88.4	134	65	U
		Radium-226	-92.2	198	201	98.7	U
		Radium-228	30	47.4	37	17.7	U
		Sodium-22	3.07	4.32	8.1	3.76	U
		Thorium-227	-13.7	30.1	51.4	24.9	U
		Thorium-231	95.8	87.3	93.6	45.6	X
		Thorium-234	-430	419	396	194	U
		Uranium-235	23.2	53.8	45.5	22.2	U
		Uranium-238	-430	419	396	194	U
CWPM	10/29/2015	Actinium-228	35	57.2	53.3	25.5	U
		Alpha, gross	16.2	6.64	8.36	3.89	
		Americium-241	-10.4	19.5	28.6	14.1	U
		Beryllium-7	207	165	185	89.3	
		Beta, gross	39.4	7.13	5.43	2.64	
		Bismuth-212	42.4	118	206	98.9	U
		Bismuth-214	4.6	28.2	31.7	15.4	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	10/29/2015	Cesium-137	-1.7	8.32	14.3	6.9	U
		Cobalt-60	-1.49	9.29	15.4	7.26	U
		Lead-212	-0.893	23.9	24.8	12.1	U
		Lead-214	17.5	34.4	30.7	15	U
		Neptunium-237	-1.83	13.8	23.5	11.4	U
		Potassium-40	17.1	163	156	73.7	U
		Radium-223	45.7	136	234	114	U
		Radium-224	-270	185	226	111	U
		Radium-226	-72.1	247	276	136	U
		Radium-228	35	57.2	53.3	25.5	U
		Sodium-22	3.04	9.07	16.2	7.67	U
		Thorium-227	-33.7	54.3	88.3	43.1	U
		Thorium-231	-93.5	103	99.4	48.8	U
		Thorium-234	117	356	312	154	U
		Uranium-235	-30.3	71.9	64.7	31.7	U
		Uranium-238	117	356	312	154	U
	11/26/2015	Actinium-228	-40.9	38.8	33.3	15.8	U
		Alpha, gross	17.3	5.17	4.63	2.14	
		Americium-241	5.69	37.7	59.3	28.8	U
		Beryllium-7	948	152	105	50.4	
		Beta, gross	127	19.9	5.96	2.91	
		Bismuth-212	62.8	69.7	119	56.9	U
		Bismuth-214	-3.15	16.9	20.1	9.71	U
		Cesium-137	-1.81	4.23	7.29	3.45	U
		Cobalt-60	4.84	5.2	9.29	4.34	U
		Lead-212	-9.55	14.1	16.3	7.96	U
		Lead-214	2.04	21.4	16.9	8.16	U
		Neptunium-237	3.32	9.15	16	7.75	U
		Potassium-40	42.9	106	75.2	34.6	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	11/26/2015	Radium-223	16.1	88.8	156	75.4	U
		Radium-224	-261	176	146	70.9	U
		Radium-226	26.9	154	169	82.6	U
		Radium-228	-40.9	38.8	33.3	15.8	U
		Sodium-22	-2.72	4.94	8.35	3.88	U
		Thorium-227	-13.9	33.5	57.1	27.7	U
		Thorium-231	-108	115	106	51.6	U
		Thorium-234	2.92	504	472	230	U
		Uranium-235	7.18	25.5	43	20.9	U
		Uranium-238	2.92	504	472	230	U
	12/30/2015	Actinium-228	6.99	27.1	30.9	14.7	U
		Alpha, gross	8.74	6.34	9.74	4.46	U
		Americium-241	-8.91	6.94	9.15	4.47	U
		Beryllium-7	5.63	59	103	49.8	U
		Beta, gross	4.76	3.44	5.35	2.59	U
		Bismuth-212	29.1	68.9	122	58.8	U
		Bismuth-214	30.8	23.8	16.7	8.04	
		Cesium-137	3.03	5.19	8.78	4.23	U
		Cobalt-60	-3.08	5.91	8.61	4.05	U
		Lead-212	-5.94	12.7	13.8	6.75	U
		Lead-214	16.1	14.6	18.3	8.92	U
		Neptunium-237	-0.155	8.44	14.2	6.92	U
		Potassium-40	1.99	112	74	34.4	U
		Radium-223	10.4	86.4	146	70.9	U
		Radium-224	28.1	81.3	138	67.7	U
		Radium-226	30	181	128	62.6	U
		Radium-228	6.99	27.1	30.9	14.7	U
		Sodium-22	-0.0815	7.95	9.28	4.39	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	12/30/2015	Thorium-227	6.31	32.8	56	27.3	U
		Thorium-231	22.5	53.9	50.7	24.8	U
		Thorium-234	-212	149	130	64	U
		Uranium-235	-29.4	39.7	39.6	19.4	U
		Uranium-238	-212	149	130	64	U
	1/28/2016	Actinium-228	-41.1	35.7	35.2	16.8	U
		Alpha, gross	11	5.4	7.12	3.23	
		Americium-241	19	34.5	53.2	26	U
		Beryllium-7	-22.2	62.5	103	49.4	U
		Beta, gross	6.73	6.13	10.1	4.91	U
		Bismuth-212	-3.05	63.5	111	53.1	U
		Bismuth-214	12.3	19.4	16.7	8.04	U
		Cesium-137	1.19	4.97	8.79	4.22	U
		Cobalt-60	7.11	7.06	8.71	4.08	U
		Lead-212	3.69	14	15.1	7.37	U
		Lead-214	12.5	11.7	18.4	8.91	U
		Neptunium-237	1.93	8.73	15.2	7.35	U
		Potassium-40	-34.7	108	116	55.3	U
		Radium-223	35.4	85.7	148	71.7	U
		Radium-224	-94.5	94.8	142	69.3	U
		Radium-226	32.9	176	147	71.8	U
		Radium-228	-41.1	35.7	35.2	16.8	U
		Sodium-22	7.62	6.23	10.1	4.78	U
		Thorium-227	2.57	36.8	56.7	27.6	U
		Thorium-231	-95.2	99.7	103	50.2	U
		Thorium-234	122	511	462	226	U
		Uranium-235	1.26	43.8	45.1	22	U
		Uranium-238	122	511	462	226	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	2/25/2016	Actinium-228	25.3	27.6	31.1	14.9	U
		Alpha, gross	23.9	9.73	12.5	5.85	
		Americium-241	6.74	5.77	8.18	3.99	U
		Beryllium-7	464	117	91.2	44	
		Beta, gross	58.2	10.4	6.99	3.36	
		Bismuth-212	36.4	70.5	109	52.1	U
		Bismuth-214	15.6	16.9	15.3	7.38	X
		Cesium-137	-2.35	4.07	6.77	3.24	U
		Cobalt-60	-1.56	4.21	7.22	3.38	U
		Lead-212	-3.77	12.8	12.9	6.33	U
		Lead-214	-13.3	16.9	16.1	7.85	U
		Neptunium-237	5.59	7.47	12.7	6.14	U
		Potassium-40	-33.4	88.1	102	48.8	U
		Radium-223	9.57	70.7	124	60.2	U
		Radium-224	-65.3	75.6	120	58.5	U
		Radium-226	80.6	169	110	53.4	U
		Radium-228	25.3	27.6	31.1	14.9	U
		Sodium-22	-6.08	4.89	6.36	2.95	U
		Thorium-227	7.64	27.5	48.7	23.7	U
		Thorium-231	-5.56	45.3	50.6	24.8	U
		Thorium-234	156	124	156	57.4	U
		Uranium-235	16.6	39.3	32.9	16	U
		Uranium-238	156	124	156	57.4	U
	3/31/2016	Actinium-228	7.1	33.6	26.7	12.7	U
		Alpha, gross	55.3	13.1	7.21	3.29	
		Americium-241	6.49	15.5	24.6	12	U
		Beryllium-7	38.7	55.3	93.2	45	U
		Beta, gross	87.3	14.4	4.43	2.1	
		Bismuth-212	16.5	56.8	102	48.6	U
		Bismuth-214	-4.03	16.8	18.2	8.82	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	3/31/2016	Cesium-137	0.502	9.92	7.03	3.36	U
		Cobalt-60	-2	5.57	8.17	3.85	U
		Lead-212	2.72	15.9	15	7.34	U
		Lead-214	-6.64	15.4	16.7	8.11	U
		Neptunium-237	-3.67	7.88	13.3	6.47	U
		Potassium-40	-28.4	89.3	107	51.1	U
		Radium-223	-38	80.5	136	65.8	U
		Radium-224	102	99	135	65.7	U
		Radium-226	-182	194	173	85.1	U
		Radium-228	7.1	33.6	26.7	12.7	U
		Sodium-22	-0.00395	4.27	7.73	3.63	U
		Thorium-227	-0.614	29.5	52.3	25.5	U
		Thorium-231	-38.5	73.2	73.5	35.9	U
		Thorium-234	151	242	205	100	U
		Uranium-235	-9.12	38.6	40.4	19.8	U
		Uranium-238	151	242	205	100	U
	4/28/2016	Actinium-228	1.73	41.8	39.2	18.9	U
		Alpha, gross	67.8	15	5.02	2.24	
		Americium-241	-46.4	29.2	33.2	16.2	U
		Beryllium-7	11.7	66.8	116	56.5	U
		Beta, gross	105	16.2	5.89	2.87	
		Bismuth-212	-67.2	96.9	129	61.9	U
		Bismuth-214	-20.3	21.2	21.9	10.6	U
		Cesium-137	3.62	6.01	10.1	4.91	U
		Cobalt-60	1.73	5.57	9.84	4.66	U
		Lead-212	-10.1	16.3	17.6	8.62	U
		Lead-214	24.4	20.2	24.4	11	U
		Neptunium-237	7.44	11.4	18.5	9.04	U
		Potassium-40	-43	88.9	116	55.4	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	4/28/2016	Radium-223	41.3	103	181	88.3	U
		Radium-224	-27.6	106	176	86	U
		Radium-226	-147	194	203	99.9	U
		Radium-228	1.73	41.8	39.2	18.9	U
		Sodium-22	-0.151	5.16	9.06	4.28	U
		Thorium-227	-13.4	42	69.2	33.8	U
		Thorium-231	3.68	55.8	97.6	47.8	U
		Thorium-234	-144	287	320	157	U
		Uranium-235	7.69	46.6	51	25	U
		Uranium-238	-144	287	320	157	U
	5/26/2016	Actinium-228	15.1	25.3	31.2	14.9	U
		Alpha, gross	134	28.4	7.17	3.36	
		Americium-241	5.35	5.12	7.41	3.6	U
		Beryllium-7	17.8	54.4	93.8	45.1	U
		Beta, gross	160	24.3	5.2	2.53	
		Bismuth-212	33.2	59	104	49.7	U
		Bismuth-214	11.5	19.7	17.6	8.55	U
		Cesium-137	0.925	4.13	7.38	3.54	U
		Cobalt-60	0.192	4.42	7.93	3.72	U
		Lead-212	9.02	14.7	13	6.36	U
		Lead-214	-11.7	14.1	14.8	7.2	U
		Neptunium-237	8.9	10.3	11.6	5.62	U
		Potassium-40	-90.7	81.7	91.7	43.5	U
		Radium-223	-76.5	74	109	52.7	U
		Radium-224	76	80	118	57.4	U
		Radium-226	-45.7	132	145	70.9	U
		Radium-228	15.1	25.3	31.2	14.9	U
		Sodium-22	-2.15	4.38	7.39	3.46	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	5/26/2016	Thorium-227	-1.25	25.7	45.6	22.2	U
		Thorium-231	-18.3	46.5	51.7	25.3	U
		Thorium-234	-48.2	92.6	110	54.1	U
		Uranium-235	-22.7	33.9	34.3	16.7	U
		Uranium-238	-48.2	92.6	110	54.1	U
	6/29/2016	Actinium-228	24.7	38.9	34	16.4	U
		Alpha, gross	37.5	8.84	5.17	2.39	
		Americium-241	-6.73	17.6	29.5	14.4	U
		Beryllium-7	-6.47	58.3	100	48.5	U
		Beta, gross	105	16	2.19	1.05	
		Bismuth-212	-175	149	109	52.3	U
		Bismuth-214	-8.43	17.1	18.2	8.82	U
		Cesium-137	0.0359	4.55	7.76	3.73	U
		Cobalt-60	2.25	8.53	7.9	3.73	U
		Lead-212	-10.2	13.5	14.8	7.23	U
		Lead-214	-15.1	18.4	17.8	8.66	U
		Neptunium-237	-0.706	8.46	14.8	7.2	U
		Potassium-40	-41.4	92.9	113	54.4	U
		Radium-223	-69.6	128	147	71.5	U
		Radium-224	-132	101	137	66.9	U
		Radium-226	-55	141	186	91.5	U
		Radium-228	24.7	38.9	34	16.4	U
		Sodium-22	-2.54	4.39	7.15	3.36	U
		Thorium-227	0.425	31.4	55.5	27.1	U
		Thorium-231	-70.1	111	95.5	46.8	U
		Thorium-234	-200	304	305	150	U
		Uranium-235	20.9	50.3	45.4	22.3	U
		Uranium-238	-200	304	305	150	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	7/28/2016	Actinium-228	-13	27	29.6	14.4	U
		Alpha, gross	169	33.8	4.97	2.32	
		Americium-241	-1.08	17.9	29.5	14.4	U
		Beryllium-7	2.21	49.6	82.8	40.1	U
		Beta, gross	163	24.3	2.98	1.44	
		Bismuth-212	37.1	49.9	84	40.5	U
		Bismuth-214	8.74	15.8	12.5	6.08	U
		Cesium-137	5.24	4.11	6.2	3	U
		Cobalt-60	0.232	3.57	6.25	2.97	U
		Lead-212	0.913	13.3	9.22	4.49	U
		Lead-214	-16.4	16.2	14	6.84	U
		Neptunium-237	-1.01	5.88	10.1	4.9	U
		Potassium-40	-70.1	89.1	73.3	35.1	U
		Radium-223	-59.2	71.8	98.1	47.6	U
		Radium-224	48.2	66.6	103	50	U
		Radium-226	-133	151	147	72.4	U
		Radium-228	-13	27	29.6	14.4	U
		Sodium-22	0.308	3.36	5.93	2.81	U
		Thorium-227	-21.4	27.9	39.5	19.2	U
		Thorium-231	-60.7	81.6	68	33.2	U
		Thorium-234	274	296	238	116	X
		Uranium-235	6.6	32.4	31.5	15.4	U
		Uranium-238	274	296	238	116	X
	8/26/2016	Actinium-228	-16.9	35	41.5	19.9	U
		Alpha, gross	238	56	14.7	5.7	
		Americium-241	-60.3	39	46.1	22.5	U
		Beryllium-7	-12.9	85.3	143	69	U
		Beta, gross	185	27.2	3.03	1.47	
		Bismuth-212	-35	106	134	64.2	U
		Bismuth-214	-4.49	18.5	21.4	10.4	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	8/26/2016	Cesium-137	-3.26	6.08	9.21	4.41	U
		Cobalt-60	-0.318	5.39	9.42	4.41	U
		Lead-212	-9.9	18.2	17.4	8.53	U
		Lead-214	12.6	22	21.1	10.2	U
		Neptunium-237	6.53	10.3	17.3	8.39	U
		Potassium-40	63.7	121	91.7	42.9	U
		Radium-223	-2.57	97.4	166	80.7	U
		Radium-224	-265	196	165	80.7	U
		Radium-226	-35.5	181	222	109	U
		Radium-228	-16.9	35	41.5	19.9	U
		Sodium-22	-6.8	9.25	9.64	4.53	U
		Thorium-227	35.3	41	66.2	32.3	U
		Thorium-231	46.1	127	114	55.7	U
		Thorium-234	-172	414	456	224	U
		Uranium-235	-10.5	49.6	54.5	26.7	U
		Uranium-238	-172	414	456	224	U
	9/29/2016	Actinium-228	11.9	49	27.5	12.9	U
		Alpha, gross	105	21.5	3.97	1.8	
		Americium-241	-6.76	44.1	40.6	19.7	U
		Beryllium-7	37.3	57	97.6	46.8	U
		Beta, gross	85.5	13.2	3.71	1.81	
		Bismuth-212	15	139	119	56.9	U
		Bismuth-214	6.86	26.5	14.4	6.87	U
		Cesium-137	-1.04	4.81	8	3.81	U
		Cobalt-60	2.34	4.54	8.28	3.83	U
		Lead-212	17.1	24.4	12.3	5.94	X
		Lead-214	-8.18	16.4	16.8	8.11	U
		Neptunium-237	-2.43	8.37	14.4	6.96	U
		Potassium-40	-41.1	110	113	53.5	U

See notes at end of appendix.

Table C-2. Summary of ambient air radiological analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (pCi/sa)	Error (pCi/sa)	Lc (pCi/sa)	MDA (pCi/sa)	Laboratory Data Qualifiers
CWPM	9/29/2016	Radium-223	-22.5	78.3	135	65	U
		Radium-224	82.6	90.2	137	66.4	U
		Radium-226	-119	201	206	101	U
		Radium-228	11.9	49	27.5	12.9	U
		Sodium-22	-1.51	4.24	7.24	3.32	U
		Thorium-227	8.02	32.4	57.5	27.9	U
		Thorium-231	11.9	122	90.6	44.1	U
		Thorium-234	198	526	423	207	U
		Uranium-235	35.6	63.1	47.3	23.1	U
		Uranium-238	198	526	423	207	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Oct-15	Acetone	7.6	0.187	5.25	
		Benzene	0.138	0.083	0.42	J
		Benzyl chloride	0.171	0.171	0.84	U
		Bromodichloromethane	0.0693	0.0693	0.315	U
		Bromoform	0.0735	0.0735	0.42	U
		Bromomethane	0.352	0.352	0.84	U
		Butane, N-	0.796	0.162	0.42	
		Butanone, 2-	0.94	0.209	0.84	
		Carbon disulfide	0.0819	0.0819	0.84	U
		Carbon tetrachloride	0.0672	0.0672	0.84	U
		Chlorobenzene	0.0672	0.0672	0.315	U
		Chloroethane	0.323	0.323	0.84	U
		Chloroform	0.0998	0.0998	0.315	U
		Chloromethane	0.813	0.207	0.84	J
		Dibromochloromethane	0.083	0.083	0.42	U
		Dibromoethane, 1,2-	0.0788	0.0788	0.84	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.163	0.163	0.42	U
		Dichlorobenzene, 1,2-	0.137	0.137	0.42	U
		Dichlorobenzene, 1,3-	0.116	0.116	0.42	U
		Dichlorobenzene, 1,4-	0.156	0.156	0.42	U
		Dichlorodifluoromethane	0.515	0.152	0.42	
		Dichloroethane, 1,1-	0.0756	0.0756	0.315	U
		Dichloroethane, 1,2-	0.0924	0.0924	0.84	U
		Dichloroethene, 1,1-	0.135	0.135	0.84	U
		Dichloroethene, cis-1,2-	0.0935	0.0935	0.42	U
		Dichloroethene, trans-1,2-	0.105	0.105	0.42	U
		Dichloropropane, 1,2-	0.252	0.252	0.42	U
		Dichloropropene, cis-1,3-	0.109	0.109	0.42	U
		Dichloropropene, trans-1,3-	0.0924	0.0924	0.42	U
		Dioxane, 1,4-	0.106	0.106	0.84	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Oct-15	Ethyl benzene	0.0879	0.0662	0.42	J
		Ethyltoluene, 4-	0.196	0.196	0.42	U
		Hexachlorobutadiene	0.454	0.454	2.1	U
		Hexane, N-	0.0788	0.0788	0.84	U
		Hexanone, 2-	0.0914	0.0914	0.42	U
		Methylene chloride	0.166	0.0756	0.42	J
		Pentane, N-	0.274	0.274	0.84	U
		Pentanone, 4-methyl-, 2-	0.142	0.142	0.42	U
		Styrene	0.062	0.062	0.42	U
		Tert-butyl methyl ether	0.0525	0.0525	0.84	U
		Tetrachloroethane, 1,1,2,2-	0.0725	0.0725	0.42	U
		Tetrachloroethene	0.0536	0.0536	0.42	U
		Toluene	0.294	0.0536	0.42	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.171	0.171	0.42	U
		Trichlorobenzene, 1,2,4-	0.455	0.455	2.1	U
		Trichloroethane, 1,1,1-	0.0683	0.0683	0.315	U
		Trichloroethane, 1,1,2-	0.0704	0.0704	0.42	U
		Trichloroethene	0.11	0.11	0.42	U
		Trichlorofluoromethane	0.214	0.206	0.42	J
		Trimethylbenzene, 1,2,4-	0.17	0.17	0.84	U
		Trimethylbenzene, 1,3,5-	0.131	0.131	0.42	U
		Vinyl acetate	0.152	0.152	0.84	U
		Vinyl chloride	0.126	0.126	0.42	U
		Xylene, m-, p-	0.188	0.105	0.84	J
		Xylene, o-	0.0726	0.0567	0.42	J
	19-Nov-15	Acetone	4.51	0.228	6.4	J
		Benzene	0.229	0.101	0.512	J
		Benzyl chloride	0.209	0.209	1.02	U
		Bromodichloromethane	0.0845	0.0845	0.384	U
		Bromoform	0.0896	0.0896	0.512	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	19-Nov-15	Bromomethane	0.429	0.429	1.02	U
		Butane, N-	1.13	0.197	0.512	
		Butanone, 2-	0.255	0.255	1.02	U
		Carbon disulfide	0.0998	0.0998	1.02	U
		Carbon tetrachloride	0.0819	0.0819	1.02	U
		Chlorobenzene	0.0819	0.0819	0.384	U
		Chloroethane	0.394	0.394	1.02	U
		Chloroform	0.122	0.122	0.384	U
		Chloromethane	0.602	0.252	1.02	J
		Dibromochloromethane	0.101	0.101	0.512	U
		Dibromoethane, 1,2-	0.096	0.096	1.02	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.198	0.198	0.512	U
		Dichlorobenzene, 1,2-	0.166	0.166	0.512	U
		Dichlorobenzene, 1,3-	0.141	0.141	0.512	U
		Dichlorobenzene, 1,4-	0.191	0.191	0.512	U
		Dichlorodifluoromethane	0.513	0.186	0.512	
		Dichloroethane, 1,1-	0.0922	0.0922	0.384	U
		Dichloroethane, 1,2-	0.113	0.113	1.02	U
		Dichloroethene, 1,1-	0.165	0.165	1.02	U
		Dichloroethene, cis-1,2-	0.114	0.114	0.512	U
		Dichloroethene, trans-1,2-	0.128	0.128	0.512	U
		Dichloropropane, 1,2-	0.307	0.307	0.512	U
		Dichloropropene, cis-1,3-	0.133	0.133	0.512	U
		Dichloropropene, trans-1,3-	0.113	0.113	0.512	U
		Dioxane, 1,4-	0.129	0.129	1.02	U
		Ethyl benzene	0.105	0.0806	0.512	J
		Ethyltoluene, 4-	0.239	0.239	0.512	U
		Hexachlorobutadiene	0.553	0.553	2.56	U
		Hexane, N-	0.096	0.096	1.02	U
		Hexanone, 2-	0.111	0.111	0.512	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	19-Nov-15	Methylene chloride	0.127	0.0922	0.512	J
		Pentane, N-	0.334	0.334	1.02	U
		Pentanone, 4-methyl-, 2-	0.173	0.173	0.512	U
		Styrene	0.0755	0.0755	0.512	U
		Tert-butyl methyl ether	0.064	0.064	1.02	U
		Tetrachloroethane, 1,1,2,2-	0.0883	0.0883	0.512	U
		Tetrachloroethene	0.0653	0.0653	0.512	U
		Toluene	0.523	0.0653	0.512	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.209	0.209	0.512	U
		Trichlorobenzene, 1,2,4-	0.554	0.554	2.56	U
		Trichloroethane, 1,1,1-	0.0832	0.0832	0.384	U
		Trichloroethane, 1,1,2-	0.0858	0.0858	0.512	U
		Trichloroethene	0.134	0.134	0.512	U
		Trichlorofluoromethane	0.251	0.251	0.512	U
		Trimethylbenzene, 1,2,4-	0.207	0.207	1.02	U
		Trimethylbenzene, 1,3,5-	0.16	0.16	0.512	U
		Vinyl acetate	0.186	0.186	1.02	U
		Vinyl chloride	0.154	0.154	0.512	U
		Xylene, m-, p-	0.232	0.128	1.02	J
		Xylene, o-	0.0839	0.0691	0.512	J
	18-Dec-15	Acetone	3.44	0.219	6.15	JH
		Benzene	0.444	0.0972	0.492	JH
		Benzyl chloride	0.2	0.2	0.984	UH
		Bromodichloromethane	0.0812	0.0812	0.369	UH
		Bromoform	0.0861	0.0861	0.492	UH
		Bromomethane	0.412	0.412	0.984	UH
		Butane, N-	2.38	0.189	0.492	H
		Butanone, 2-	0.245	0.245	0.984	UH
		Carbon disulfide	0.0959	0.0959	0.984	UH
		Carbon tetrachloride	0.0787	0.0787	0.984	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	18-Dec-15	Chlorobenzene	0.0787	0.0787	0.369	UH
		Chloroethane	0.379	0.379	0.984	UH
		Chloroform	0.117	0.117	0.369	UH
		Chloromethane	0.753	0.242	0.984	JH
		Dibromochloromethane	0.0972	0.0972	0.492	UH
		Dibromoethane, 1,2-	0.0923	0.0923	0.984	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.191	0.191	0.492	UH
		Dichlorobenzene, 1,2-	0.16	0.16	0.492	UH
		Dichlorobenzene, 1,3-	0.135	0.135	0.492	UH
		Dichlorobenzene, 1,4-	0.183	0.183	0.492	UH
		Dichlorodifluoromethane	0.544	0.178	0.492	H
		Dichloroethane, 1,1-	0.0886	0.0886	0.369	UH
		Dichloroethane, 1,2-	0.108	0.108	0.984	UH
		Dichloroethene, 1,1-	0.159	0.159	0.984	UH
		Dichloroethene, cis-1,2-	0.109	0.109	0.492	UH
		Dichloroethene, trans-1,2-	0.123	0.123	0.492	UH
		Dichloropropane, 1,2-	0.295	0.295	0.492	UH
		Dichloropropene, cis-1,3-	0.128	0.128	0.492	UH
		Dichloropropene, trans-1,3-	0.108	0.108	0.492	UH
		Dioxane, 1,4-	0.124	0.124	0.984	UH
		Ethyl benzene	0.181	0.0775	0.492	JH
		Ethyltoluene, 4-	0.23	0.23	0.492	UH
		Hexachlorobutadiene	0.531	0.531	2.46	UH
		Hexane, N-	0.315	0.0923	0.984	JH
		Hexanone, 2-	0.107	0.107	0.492	UH
		Methylene chloride	0.204	0.0886	0.492	JH
		Pentane, N-	22.3	0.321	0.984	H
		Pentanone, 4-methyl-, 2-	0.166	0.166	0.492	UH
		Styrene	0.0726	0.0726	0.492	UH
		Tert-butyl methyl ether	0.0615	0.0615	0.984	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	18-Dec-15	Tetrachloroethane, 1,1,2,2-	0.0849	0.0849	0.492	UH
		Tetrachloroethene	0.0627	0.0627	0.492	UH
		Toluene	1.11	0.0627	0.492	H
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.2	0.2	0.492	UH
		Trichlorobenzene, 1,2,4-	0.533	0.533	2.46	UH
		Trichloroethane, 1,1,1-	0.08	0.08	0.369	UH
		Trichloroethane, 1,1,2-	0.0824	0.0824	0.492	UH
		Trichloroethene	0.129	0.129	0.492	UH
		Trichlorofluoromethane	0.256	0.241	0.492	JH
		Trimethylbenzene, 1,2,4-	0.199	0.199	0.984	UH
		Trimethylbenzene, 1,3,5-	0.154	0.154	0.492	UH
		Vinyl acetate	0.178	0.178	0.984	UH
		Vinyl chloride	0.148	0.148	0.492	UH
		Xylene, m-, p-	0.518	0.123	0.984	JH
		Xylene, o-	0.217	0.0664	0.492	JH
	28-Jan-16	Acetone	4.3	0.262	7.35	J
		Acetone	3.91	0.233	6.55	J
		Benzene	0.376	0.103	0.524	J
		Benzene	0.39	0.116	0.588	J
		Benzyl chloride	0.24	0.24	1.18	U
		Benzyl chloride	0.214	0.214	1.05	U
		Bromodichloromethane	0.0865	0.0865	0.393	U
		Bromodichloromethane	0.097	0.097	0.441	U
		Bromoform	0.103	0.103	0.588	U
		Bromoform	0.0917	0.0917	0.524	U
		Bromomethane	0.492	0.492	1.18	U
		Bromomethane	0.439	0.439	1.05	U
		Butane, N-	2.18	0.226	0.588	
		Butane, N-	2.07	0.202	0.524	

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jan-16	Butanone, 2-	0.293	0.293	1.18	U
		Butanone, 2-	0.392	0.261	1.05	J
		Carbon disulfide	0.115	0.115	1.18	U
		Carbon disulfide	0.102	0.102	1.05	U
		Carbon tetrachloride	0.0941	0.0941	1.18	U
		Carbon tetrachloride	0.0838	0.0838	1.05	U
		Chlorobenzene	0.0838	0.0838	0.393	U
		Chlorobenzene	0.0941	0.0941	0.441	U
		Chloroethane	0.403	0.403	1.05	U
		Chloroethane	0.453	0.453	1.18	U
		Chloroform	0.124	0.124	0.393	U
		Chloroform	0.14	0.14	0.441	U
		Chloromethane	0.78	0.258	1.05	J
		Chloromethane	0.794	0.29	1.18	J
		Dibromochloromethane	0.116	0.116	0.588	U
		Dibromochloromethane	0.103	0.103	0.524	U
		Dibromoethane, 1,2-	0.11	0.11	1.18	U
		Dibromoethane, 1,2-	0.0983	0.0983	1.05	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.228	0.228	0.588	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.203	0.203	0.524	U
		Dichlorobenzene, 1,2-	0.191	0.191	0.588	U
		Dichlorobenzene, 1,2-	0.17	0.17	0.524	U
		Dichlorobenzene, 1,3-	0.162	0.162	0.588	U
		Dichlorobenzene, 1,3-	0.144	0.144	0.524	U
		Dichlorobenzene, 1,4-	0.195	0.195	0.524	U
		Dichlorobenzene, 1,4-	0.219	0.219	0.588	U
		Dichlorodifluoromethane	0.525	0.213	0.588	J
		Dichlorodifluoromethane	0.524	0.19	0.524	
		Dichloroethane, 1,1-	0.0943	0.0943	0.393	U
		Dichloroethane, 1,1-	0.106	0.106	0.441	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jan-16	Dichloroethane, 1,2-	0.115	0.115	1.05	U
		Dichloroethane, 1,2-	0.129	0.129	1.18	U
		Dichloroethene, 1,1-	0.19	0.19	1.18	U
		Dichloroethene, 1,1-	0.169	0.169	1.05	U
		Dichloroethene, cis-1,2-	0.131	0.131	0.588	U
		Dichloroethene, cis-1,2-	0.117	0.117	0.524	U
		Dichloroethene, trans-1,2-	0.131	0.131	0.524	U
		Dichloroethene, trans-1,2-	0.147	0.147	0.588	U
		Dichloropropane, 1,2-	0.314	0.314	0.524	U
		Dichloropropane, 1,2-	0.353	0.353	0.588	U
		Dichloropropene, cis-1,3-	0.153	0.153	0.588	U
		Dichloropropene, cis-1,3-	0.136	0.136	0.524	U
		Dichloropropene, trans-1,3-	0.115	0.115	0.524	U
		Dichloropropene, trans-1,3-	0.129	0.129	0.588	U
		Dioxane, 1,4-	0.132	0.132	1.05	U
		Dioxane, 1,4-	0.148	0.148	1.18	U
		Ethyl benzene	0.133	0.0926	0.588	J
		Ethyl benzene	0.209	0.0825	0.524	J
		Ethyltoluene, 4-	0.245	0.245	0.524	U
		Ethyltoluene, 4-	0.275	0.275	0.588	U
		Hexachlorobutadiene	0.566	0.566	2.62	U
		Hexachlorobutadiene	0.635	0.635	2.94	U
		Hexane, N-	0.551	0.0983	1.05	J
		Hexane, N-	0.11	0.11	1.18	U
		Hexanone, 2-	0.128	0.128	0.588	U
		Hexanone, 2-	0.114	0.114	0.524	U
		Methylene chloride	0.338	0.0943	0.524	J
		Methylene chloride	0.267	0.106	0.588	J
		Pentane, N-	0.558	0.384	1.18	J
		Pentane, N-	0.637	0.342	1.05	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jan-16	Pentanone, 4-methyl-, 2-	0.177	0.177	0.524	U
		Pentanone, 4-methyl-, 2-	0.198	0.198	0.588	U
		Styrene	0.0867	0.0867	0.588	U
		Styrene	0.0773	0.0773	0.524	U
		Tert-butyl methyl ether	0.0655	0.0655	1.05	U
		Tert-butyl methyl ether	0.0735	0.0735	1.18	U
		Tetrachloroethane, 1,1,2,2-	0.0904	0.0904	0.524	U
		Tetrachloroethane, 1,1,2,2-	0.101	0.101	0.588	U
		Tetrachloroethene	0.075	0.075	0.588	U
		Tetrachloroethene	0.103	0.0668	0.524	J
		Toluene	0.717	0.075	0.588	
		Toluene	0.971	0.0668	0.524	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.24	0.24	0.588	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.214	0.214	0.524	U
		Trichlorobenzene, 1,2,4-	0.637	0.637	2.94	U
		Trichlorobenzene, 1,2,4-	0.567	0.567	2.62	U
		Trichloroethane, 1,1,1-	0.0852	0.0852	0.393	U
		Trichloroethane, 1,1,1-	0.0956	0.0956	0.441	U
		Trichloroethane, 1,1,2-	0.0985	0.0985	0.588	U
		Trichloroethane, 1,1,2-	0.0878	0.0878	0.524	U
		Trichloroethene	0.154	0.154	0.588	U
		Trichloroethene	0.138	0.138	0.524	U
		Trichlorofluoromethane	0.288	0.288	0.588	U
		Trichlorofluoromethane	0.257	0.257	0.524	U
		Trimethylbenzene, 1,2,4-	0.212	0.212	1.05	U
		Trimethylbenzene, 1,2,4-	0.238	0.238	1.18	U
		Trimethylbenzene, 1,3,5-	0.164	0.164	0.524	U
		Trimethylbenzene, 1,3,5-	0.184	0.184	0.588	U
		Vinyl acetate	0.213	0.213	1.18	U
		Vinyl acetate	0.19	0.19	1.05	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jan-16	Vinyl chloride	0.176	0.176	0.588	U
		Vinyl chloride	0.157	0.157	0.524	U
		Xylene, m-, p-	0.485	0.131	1.05	J
		Xylene, m-, p-	0.31	0.147	1.18	J
		Xylene, o-	0.178	0.0707	0.524	J
		Xylene, o-	0.126	0.0794	0.588	J
	26-Feb-16	Acetone	1.43	0.223	6.25	JH
		Benzene	0.16	0.0988	0.5	JH
		Benzyl chloride	0.204	0.204	1	U*H
		Bromodichloromethane	0.0825	0.0825	0.375	UH
		Bromoform	0.0875	0.0875	0.5	UH
		Bromomethane	0.419	0.419	1	UH
		Butane, N-	0.874	0.193	0.5	H
		Butanone, 2-	0.249	0.249	1	UH
		Carbon disulfide	0.0975	0.0975	1	UH
		Carbon tetrachloride	0.08	0.08	1	UH
		Chlorobenzene	0.08	0.08	0.375	UH
		Chloroethane	0.385	0.385	1	UH
		Chloroform	0.119	0.119	0.375	UH
		Chloromethane	0.797	0.246	1	JH
		Dibromochloromethane	0.0988	0.0988	0.5	UH
		Dibromoethane, 1,2-	0.0938	0.0938	1	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.194	0.194	0.5	UH
		Dichlorobenzene, 1,2-	0.163	0.163	0.5	UH
		Dichlorobenzene, 1,3-	0.138	0.138	0.5	UH
		Dichlorobenzene, 1,4-	0.186	0.186	0.5	UH
		Dichlorodifluoromethane	0.578	0.181	0.5	H
		Dichloroethane, 1,1-	0.09	0.09	0.375	UH
		Dichloroethane, 1,2-	0.11	0.11	1	UH
		Dichloroethene, 1,1-	0.161	0.161	1	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	26-Feb-16	Dichloroethene, cis-1,2-	0.111	0.111	0.5	UH
		Dichloroethene, trans-1,2-	0.125	0.125	0.5	UH
		Dichloropropane, 1,2-	0.3	0.3	0.5	UH
		Dichloropropene, cis-1,3-	0.13	0.13	0.5	UH
		Dichloropropene, trans-1,3-	0.11	0.11	0.5	UH
		Dioxane, 1,4-	0.126	0.126	1	UH
		Ethyl benzene	0.0788	0.0788	0.5	UH
		Ethyltoluene, 4-	0.234	0.234	0.5	UH
		Hexachlorobutadiene	0.54	0.54	2.5	UH
		Hexane, N-	0.0938	0.0938	1	UH
		Hexanone, 2-	0.109	0.109	0.5	UH
		Methylene chloride	0.186	0.09	0.5	JH
		Pentane, N-	0.326	0.326	1	UH
		Pentanone, 4-methyl-, 2-	0.169	0.169	0.5	UH
		Styrene	0.0738	0.0738	0.5	UH
		Tert-butyl methyl ether	0.0625	0.0625	1	UH
		Tetrachloroethane, 1,1,2,2-	0.0863	0.0863	0.5	UH
		Tetrachloroethene	0.0638	0.0638	0.5	UH
		Toluene	0.184	0.0638	0.5	JH
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.204	0.204	0.5	UH
		Trichlorobenzene, 1,2,4-	0.541	0.541	2.5	UH
		Trichloroethane, 1,1,1-	0.0813	0.0813	0.375	UH
		Trichloroethane, 1,1,2-	0.0838	0.0838	0.5	UH
		Trichloroethene	0.131	0.131	0.5	UH
		Trichlorofluoromethane	0.285	0.245	0.5	JH
		Trimethylbenzene, 1,2,4-	0.203	0.203	1	UH
		Trimethylbenzene, 1,3,5-	0.156	0.156	0.5	UH
		Vinyl acetate	0.181	0.181	1	UH
		Vinyl chloride	0.15	0.15	0.5	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	26-Feb-16	Xylene, m-, p-	0.125	0.125	1	UH
		Xylene, o-	0.0675	0.0675	0.5	UH
	28-Mar-16	Acetone	8.23	0.178	5	
		Benzene	0.321	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U*
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	3.78	0.154	0.4	
		Butanone, 2-	0.948	0.199	0.8	
		Carbon disulfide	0.849	0.078	0.8	
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.744	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.544	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Mar-16	Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.595	0.063	0.4	
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	1.96	0.075	0.8	
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	2.49	0.072	0.4	B
		Pentane, N-	7.02	0.261	0.8	
		Pentanone, 4-methyl-, 2-	0.408	0.135	0.4	
		Styrene	0.871	0.059	0.4	
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	9.33	0.051	0.4	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.253	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.219	0.162	0.8	J
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	1.98	0.1	0.8	
		Xylene, o-	0.707	0.054	0.4	

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	27-Apr-16	Acetone	2.86	0.235	6.6	J
		Benzene	0.407	0.104	0.528	J
		Benzyl chloride	0.215	0.215	1.06	U
		Bromodichloromethane	0.0871	0.0871	0.396	U
		Bromoform	0.0924	0.0924	0.528	U
		Bromomethane	0.442	0.442	1.06	U
		Butane, N-	1.09	0.203	0.528	
		Butanone, 2-	0.263	0.263	1.06	U
		Carbon disulfide	0.103	0.103	1.06	U
		Carbon tetrachloride	0.0845	0.0845	1.06	U
		Chlorobenzene	0.0845	0.0845	0.396	U
		Chloroethane	0.407	0.407	1.06	U
		Chloroform	0.125	0.125	0.396	U
		Chloromethane	0.757	0.26	1.06	J*
		Dibromochloromethane	0.104	0.104	0.528	U
		Dibromoethane, 1,2-	0.099	0.099	1.06	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.205	0.205	0.528	U
		Dichlorobenzene, 1,2-	0.172	0.172	0.528	U
		Dichlorobenzene, 1,3-	0.145	0.145	0.528	U
		Dichlorobenzene, 1,4-	0.197	0.197	0.528	U
		Dichlorodifluoromethane	0.539	0.191	0.528	
		Dichloroethane, 1,1-	0.095	0.095	0.396	U
		Dichloroethane, 1,2-	0.116	0.116	1.06	U
		Dichloroethene, 1,1-	0.17	0.17	1.06	U
		Dichloroethene, cis-1,2-	0.117	0.117	0.528	U
		Dichloroethene, trans-1,2-	0.132	0.132	0.528	U
		Dichloropropane, 1,2-	0.317	0.317	0.528	U
		Dichloropropene, cis-1,3-	0.137	0.137	0.528	U
		Dichloropropene, trans-1,3-	0.116	0.116	0.528	U
		Dioxane, 1,4-	0.133	0.133	1.06	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	27-Apr-16	Ethyl benzene	0.284	0.0832	0.528	JB
		Ethyltoluene, 4-	0.247	0.247	0.528	U
		Hexachlorobutadiene	0.57	0.57	2.64	U
		Hexane, N-	0.391	0.099	1.06	J
		Hexanone, 2-	0.115	0.115	0.528	U
		Methylene chloride	0.37	0.095	0.528	JB
		Pentane, N-	1.03	0.345	1.06	J
		Pentanone, 4-methyl-, 2-	0.178	0.178	0.528	U
		Styrene	0.0779	0.0779	0.528	U
		Tert-butyl methyl ether	0.066	0.066	1.06	U
		Tetrachloroethane, 1,1,2,2-	0.0911	0.0911	0.528	U
		Tetrachloroethene	0.0673	0.0673	0.528	U
		Toluene	1.29	0.0673	0.528	B
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.215	0.215	0.528	U
		Trichlorobenzene, 1,2,4-	0.572	0.572	2.64	U
		Trichloroethane, 1,1,1-	0.0858	0.0858	0.396	U
		Trichloroethane, 1,1,2-	0.0884	0.0884	0.528	U
		Trichloroethene	0.205	0.139	0.528	J
		Trichlorofluoromethane	0.259	0.259	0.528	U
		Trimethylbenzene, 1,2,4-	0.579	0.214	1.06	J
		Trimethylbenzene, 1,3,5-	0.245	0.165	0.528	J
		Vinyl acetate	0.191	0.191	1.06	U
		Vinyl chloride	0.287	0.158	0.528	J*
		Xylene, m-, p-	1.18	0.132	1.06	B
		Xylene, o-	0.512	0.0713	0.528	JB
	25-May-16	Acetone	4.01	0.212	5.95	J
		Benzene	0.094	0.094	0.476	U
		Benzyl chloride	0.194	0.194	0.952	U
		Bromodichloromethane	0.0785	0.0785	0.357	U
		Bromoform	0.0833	0.0833	0.476	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	25-May-16	Bromomethane	0.399	0.399	0.952	U
		Butane, N-	0.218	0.183	0.476	J
		Butanone, 2-	0.237	0.237	0.952	U
		Carbon disulfide	0.0928	0.0928	0.952	U
		Carbon tetrachloride	0.0762	0.0762	0.952	U
		Chlorobenzene	0.0762	0.0762	0.357	U
		Chloroethane	0.367	0.367	0.952	U
		Chloroform	0.113	0.113	0.357	U
		Chloromethane	0.79	0.234	0.952	J
		Dibromochloromethane	0.094	0.094	0.476	U
		Dibromoethane, 1,2-	0.0893	0.0893	0.952	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.184	0.184	0.476	U
		Dichlorobenzene, 1,2-	0.155	0.155	0.476	U
		Dichlorobenzene, 1,3-	0.131	0.131	0.476	U
		Dichlorobenzene, 1,4-	0.177	0.177	0.476	U
		Dichlorodifluoromethane	0.338	0.173	0.476	J
		Dichloroethane, 1,1-	0.0857	0.0857	0.357	U
		Dichloroethane, 1,2-	0.105	0.105	0.952	U
		Dichloroethene, 1,1-	0.154	0.154	0.952	U
		Dichloroethene, cis-1,2-	0.106	0.106	0.476	U
		Dichloroethene, trans-1,2-	0.164	0.119	0.476	J
		Dichloropropane, 1,2-	0.286	0.286	0.476	U
		Dichloropropene, cis-1,3-	0.124	0.124	0.476	U
		Dichloropropene, trans-1,3-	0.105	0.105	0.476	U
		Dioxane, 1,4-	0.12	0.12	0.952	U
		Ethyl benzene	0.0831	0.075	0.476	J
		Ethyltoluene, 4-	0.223	0.223	0.476	U
		Hexachlorobutadiene	0.514	0.514	2.38	U
		Hexane, N-	0.0893	0.0893	0.952	U
		Hexanone, 2-	0.104	0.104	0.476	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	25-May-16	Methylene chloride	0.115	0.0857	0.476	J
		Pentane, N-	0.311	0.311	0.952	U
		Pentanone, 4-methyl-, 2-	0.161	0.161	0.476	U
		Styrene	0.0702	0.0702	0.476	U
		Tert-butyl methyl ether	0.0595	0.0595	0.952	U
		Tetrachloroethane, 1,1,2,2-	0.0821	0.0821	0.476	U
		Tetrachloroethene	0.102	0.0607	0.476	J
		Toluene	0.113	0.0607	0.476	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.194	0.194	0.476	U
		Trichlorobenzene, 1,2,4-	0.515	0.515	2.38	U
		Trichloroethane, 1,1,1-	0.0774	0.0774	0.357	U
		Trichloroethane, 1,1,2-	0.0797	0.0797	0.476	U
		Trichloroethene	0.125	0.125	0.476	U
		Trichlorofluoromethane	0.297	0.233	0.476	J
		Trimethylbenzene, 1,2,4-	0.193	0.193	0.952	U
		Trimethylbenzene, 1,3,5-	0.149	0.149	0.476	U
		Vinyl acetate	0.173	0.173	0.952	U
		Vinyl chloride	0.143	0.143	0.476	U
		Xylene, m-, p-	0.272	0.119	0.952	J
		Xylene, o-	0.0957	0.0643	0.476	J
	29-Jun-16	Acetone	6.89	0.226	6.35	
		Benzene	0.1	0.1	0.508	U
		Benzyl chloride	0.207	0.207	1.02	U
		Bromodichloromethane	0.0838	0.0838	0.381	U
		Bromoform	0.0889	0.0889	0.508	U
		Bromomethane	0.425	0.425	1.02	U
		Butane, N-	0.422	0.196	0.508	JB
		Butanone, 2-	0.517	0.253	1.02	J
		Carbon disulfide	0.0991	0.0991	1.02	U
		Carbon tetrachloride	0.0813	0.0813	1.02	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Jun-16	Chlorobenzene	0.0813	0.0813	0.381	U
		Chloroethane	0.391	0.391	1.02	U
		Chloroform	0.121	0.121	0.381	U
		Chloromethane	0.576	0.25	1.02	J
		Dibromochloromethane	0.1	0.1	0.508	U
		Dibromoethane, 1,2-	0.0953	0.0953	1.02	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.197	0.197	0.508	U
		Dichlorobenzene, 1,2-	0.165	0.165	0.508	U
		Dichlorobenzene, 1,3-	0.14	0.14	0.508	U
		Dichlorobenzene, 1,4-	0.189	0.189	0.508	U
		Dichlorodifluoromethane	0.467	0.184	0.508	JB
		Dichloroethane, 1,1-	0.0914	0.0914	0.381	U
		Dichloroethane, 1,2-	0.112	0.112	1.02	U
		Dichloroethene, 1,1-	0.164	0.164	1.02	U
		Dichloroethene, cis-1,2-	0.113	0.113	0.508	U
		Dichloroethene, trans-1,2-	0.127	0.127	0.508	U
		Dichloropropane, 1,2-	0.305	0.305	0.508	U
		Dichloropropene, cis-1,3-	0.132	0.132	0.508	U
		Dichloropropene, trans-1,3-	0.112	0.112	0.508	U
		Dioxane, 1,4-	0.128	0.128	1.02	U
		Ethyl benzene	0.0997	0.08	0.508	JB
		Ethyltoluene, 4-	0.237	0.237	0.508	U
		Hexachlorobutadiene	0.549	0.549	2.54	U
		Hexane, N-	0.0953	0.0953	1.02	U
		Hexanone, 2-	0.11	0.11	0.508	U
		Methylene chloride	0.0914	0.0914	0.508	U
		Pentane, N-	0.331	0.331	1.02	U
		Pentanone, 4-methyl-, 2-	0.171	0.171	0.508	U
		Styrene	0.0749	0.0749	0.508	U
		Tert-butyl methyl ether	0.0635	0.0635	1.02	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Jun-16	Tetrachloroethane, 1,1,2,2-	0.0876	0.0876	0.508	U
		Tetrachloroethene	0.0648	0.0648	0.508	U
		Toluene	0.219	0.0648	0.508	JB
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.207	0.207	0.508	U
		Trichlorobenzene, 1,2,4-	0.55	0.55	2.54	U
		Trichloroethane, 1,1,1-	0.0826	0.0826	0.381	U
		Trichloroethane, 1,1,2-	0.0851	0.0851	0.508	U
		Trichloroethene	0.133	0.133	0.508	U
		Trichlorofluoromethane	0.249	0.249	0.508	U
		Trimethylbenzene, 1,2,4-	0.276	0.206	1.02	JB
		Trimethylbenzene, 1,3,5-	0.159	0.159	0.508	U
		Vinyl acetate	0.184	0.184	1.02	U
		Vinyl chloride	0.152	0.152	0.508	U
		Xylene, m-, p-	0.603	0.127	1.02	JB
		Xylene, o-	0.226	0.0686	0.508	JB
	28-Jul-16	Acetone	10.1	0.178	5	
		Benzene	0.305	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.923	0.154	0.4	
		Butanone, 2-	1.26	0.199	0.8	
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.633	0.197	0.8	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jul-16	Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.451	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.117	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.123	0.087	0.4	J
		Methylene chloride	0.103	0.072	0.4	J
		Pentane, N-	0.331	0.261	0.8	J
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.418	0.051	0.4	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	28-Jul-16	Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.204	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.391	0.162	0.8	J
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.416	0.1	0.8	J
		Xylene, o-	0.156	0.054	0.4	J
	30-Aug-16	Acetone	3.67	0.178	5	J
		Benzene	0.111	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.392	0.154	0.4	J
		Butanone, 2-	0.266	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0695	0.064	0.8	J
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.735	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	30-Aug-16	Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.461	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0762	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.144	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.241	0.196	0.4	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	30-Aug-16	Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.101	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U
	29-Sep-16	Acetone	4.48	0.178	5	J
		Benzene	0.112	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.924	0.154	0.4	
		Butanone, 2-	0.55	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.621	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.491	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Sep-16	Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0863	0.072	0.4	J
		Pentane, N-	0.298	0.261	0.8	J
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.161	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.254	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CPMS	29-Sep-16	Xylene, m-, p-	0.103	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U
CW	29-Oct-15	Acetone	9.78	0.19	5.35	
		Benzene	0.0845	0.0845	0.428	U
		Benzyl chloride	0.174	0.174	0.856	U
		Bromodichloromethane	0.0706	0.0706	0.321	U
		Bromoform	0.0749	0.0749	0.428	U
		Bromomethane	0.358	0.358	0.856	U
		Butane, N-	0.588	0.165	0.428	
		Butanone, 2-	0.768	0.213	0.856	J
		Carbon disulfide	0.471	0.0835	0.856	J
		Carbon tetrachloride	0.0685	0.0685	0.856	U
		Chlorobenzene	0.0685	0.0685	0.321	U
		Chloroethane	0.33	0.33	0.856	U
		Chloroform	0.102	0.102	0.321	U
		Chloromethane	0.756	0.211	0.856	J
		Dibromochloromethane	0.0845	0.0845	0.428	U
		Dibromoethane, 1,2-	0.0803	0.0803	0.856	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.166	0.166	0.428	U
		Dichlorobenzene, 1,2-	0.139	0.139	0.428	U
		Dichlorobenzene, 1,3-	0.118	0.118	0.428	U
		Dichlorobenzene, 1,4-	0.159	0.159	0.428	U
		Dichlorodifluoromethane	0.5	0.155	0.428	
		Dichloroethane, 1,1-	0.077	0.077	0.321	U
		Dichloroethane, 1,2-	0.0942	0.0942	0.856	U
		Dichloroethene, 1,1-	0.138	0.138	0.856	U
		Dichloroethene, cis-1,2-	0.0952	0.0952	0.428	U
		Dichloroethene, trans-1,2-	0.107	0.107	0.428	U
		Dichloropropane, 1,2-	0.257	0.257	0.428	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	29-Oct-15	Dichloropropene, cis-1,3-	0.111	0.111	0.428	U
		Dichloropropene, trans-1,3-	0.0942	0.0942	0.428	U
		Dioxane, 1,4-	0.108	0.108	0.856	U
		Ethyl benzene	0.0674	0.0674	0.428	U
		Ethyltoluene, 4-	0.2	0.2	0.428	U
		Hexachlorobutadiene	0.462	0.462	2.14	U
		Hexane, N-	0.0803	0.0803	0.856	U
		Hexanone, 2-	0.126	0.0931	0.428	J
		Methylene chloride	0.13	0.077	0.428	J
		Pentane, N-	0.279	0.279	0.856	U
		Pentanone, 4-methyl-, 2-	0.144	0.144	0.428	U
		Styrene	0.0631	0.0631	0.428	U
		Tert-butyl methyl ether	0.0535	0.0535	0.856	U
		Tetrachloroethane, 1,1,2,2-	0.0738	0.0738	0.428	U
		Tetrachloroethene	0.0546	0.0546	0.428	U
		Toluene	0.147	0.0546	0.428	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.174	0.174	0.428	U
		Trichlorobenzene, 1,2,4-	0.463	0.463	2.14	U
		Trichloroethane, 1,1,1-	0.0696	0.0696	0.321	U
		Trichloroethane, 1,1,2-	0.0717	0.0717	0.428	U
		Trichloroethene	0.112	0.112	0.428	U
		Trichlorofluoromethane	0.21	0.21	0.428	U
		Trimethylbenzene, 1,2,4-	0.173	0.173	0.856	U
		Trimethylbenzene, 1,3,5-	0.134	0.134	0.428	U
		Vinyl acetate	0.155	0.155	0.856	U
		Vinyl chloride	0.128	0.128	0.428	U
		Xylene, m-, p-	0.107	0.107	0.856	U
		Xylene, o-	0.0578	0.0578	0.428	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	19-Nov-15	Acetone	2.29	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.378	0.154	0.4	J
		Butanone, 2-	0.201	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.65	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.5	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	19-Nov-15	Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.072	0.072	0.4	U
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.178	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.231	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	18-Dec-15	Acetone	1.52	0.178	5	JH
		Benzene	0.15	0.079	0.4	JH
		Benzyl chloride	0.163	0.163	0.8	UH
		Bromodichloromethane	0.066	0.066	0.3	UH
		Bromoform	0.07	0.07	0.4	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	18-Dec-15	Bromomethane	0.335	0.335	0.8	UH
		Butane, N-	0.711	0.154	0.4	H
		Butanone, 2-	0.199	0.199	0.8	UH
		Carbon disulfide	0.078	0.078	0.8	UH
		Carbon tetrachloride	0.064	0.064	0.8	UH
		Chlorobenzene	0.064	0.064	0.3	UH
		Chloroethane	0.308	0.308	0.8	UH
		Chloroform	0.095	0.095	0.3	UH
		Chloromethane	0.696	0.197	0.8	JH
		Dibromochloromethane	0.079	0.079	0.4	UH
		Dibromoethane, 1,2-	0.075	0.075	0.8	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	UH
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	UH
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	UH
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	UH
		Dichlorodifluoromethane	0.536	0.145	0.4	H
		Dichloroethane, 1,1-	0.072	0.072	0.3	UH
		Dichloroethane, 1,2-	0.088	0.088	0.8	UH
		Dichloroethene, 1,1-	0.129	0.129	0.8	UH
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	UH
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	UH
		Dichloropropane, 1,2-	0.24	0.24	0.4	UH
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	UH
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	UH
		Dioxane, 1,4-	0.101	0.101	0.8	UH
		Ethyl benzene	0.063	0.063	0.4	UH
		Ethyltoluene, 4-	0.187	0.187	0.4	UH
		Hexachlorobutadiene	0.432	0.432	2	UH
		Hexane, N-	0.075	0.075	0.8	UH
		Hexanone, 2-	0.087	0.087	0.4	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	18-Dec-15	Methylene chloride	0.148	0.072	0.4	JH
		Pentane, N-	0.261	0.261	0.8	UH
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	UH
		Styrene	0.059	0.059	0.4	UH
		Tert-butyl methyl ether	0.05	0.05	0.8	UH
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	UH
		Tetrachloroethene	0.051	0.051	0.4	UH
		Toluene	0.206	0.051	0.4	JH
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	UH
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	UH
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	UH
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	UH
		Trichloroethene	0.105	0.105	0.4	UH
		Trichlorofluoromethane	0.252	0.196	0.4	JH
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	UH
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	UH
		Vinyl acetate	0.145	0.145	0.8	UH
		Vinyl chloride	0.12	0.12	0.4	UH
		Xylene, m-, p-	0.1	0.1	0.8	UH
		Xylene, o-	0.054	0.054	0.4	UH
	28-Jan-16	Acetone	3.7	0.178	5	J
		Benzene	0.122	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.717	0.154	0.4	
		Butanone, 2-	0.785	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Jan-16	Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.721	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.533	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.128	0.087	0.4	J
		Methylene chloride	0.182	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Jan-16	Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.11	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.26	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	26-Feb-16	Acetone	5.63	0.639	18	JH
		Benzene	0.284	0.284	1.44	UH
		Benzyl chloride	0.585	0.585	2.87	U*H
		Bromodichloromethane	0.237	0.237	1.08	UH
		Bromoform	0.251	0.251	1.44	UH
		Bromomethane	1.2	1.2	2.87	UH
		Butane, N-	0.979	0.553	1.44	JH
		Butanone, 2-	0.714	0.714	2.87	UH
		Carbon disulfide	0.28	0.28	2.87	UH
		Carbon tetrachloride	0.23	0.23	2.87	UH
		Chlorobenzene	0.23	0.23	1.08	UH
		Chloroethane	1.11	1.11	2.87	UH
		Chloroform	0.341	0.341	1.08	UH
		Chloromethane	1.31	0.707	2.87	JH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	26-Feb-16	Dibromochloromethane	0.284	0.284	1.44	UH
		Dibromoethane, 1,2-	0.269	0.269	2.87	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.556	0.556	1.44	UH
		Dichlorobenzene, 1,2-	0.467	0.467	1.44	UH
		Dichlorobenzene, 1,3-	0.395	0.395	1.44	UH
		Dichlorobenzene, 1,4-	0.535	0.535	1.44	UH
		Dichlorodifluoromethane	0.661	0.521	1.44	JH
		Dichloroethane, 1,1-	0.258	0.258	1.08	UH
		Dichloroethane, 1,2-	0.316	0.316	2.87	UH
		Dichloroethene, 1,1-	0.463	0.463	2.87	UH
		Dichloroethene, cis-1,2-	0.32	0.32	1.44	UH
		Dichloroethene, trans-1,2-	0.359	0.359	1.44	UH
		Dichloropropane, 1,2-	0.862	0.862	1.44	UH
		Dichloropropene, cis-1,3-	0.373	0.373	1.44	UH
		Dichloropropene, trans-1,3-	0.316	0.316	1.44	UH
		Dioxane, 1,4-	0.363	0.363	2.87	UH
		Ethyl benzene	0.226	0.226	1.44	UH
		Ethyltoluene, 4-	0.671	0.671	1.44	UH
		Hexachlorobutadiene	1.55	1.55	7.18	UH
		Hexane, N-	0.269	0.269	2.87	UH
		Hexanone, 2-	0.312	0.312	1.44	UH
		Methylene chloride	0.34	0.258	1.44	JH
		Pentane, N-	0.937	0.937	2.87	UH
		Pentanone, 4-methyl-, 2-	0.485	0.485	1.44	UH
		Styrene	0.212	0.212	1.44	UH
		Tert-butyl methyl ether	0.18	0.18	2.87	UH
		Tetrachloroethane, 1,1,2,2-	0.248	0.248	1.44	UH
		Tetrachloroethene	0.183	0.183	1.44	UH
		Toluene	0.183	0.183	1.44	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	26-Feb-16	Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.585	0.585	1.44	UH
		Trichlorobenzene, 1,2,4-	1.55	1.55	7.18	UH
		Trichloroethane, 1,1,1-	0.233	0.233	1.08	UH
		Trichloroethane, 1,1,2-	0.241	0.241	1.44	UH
		Trichloroethene	0.377	0.377	1.44	UH
		Trichlorofluoromethane	0.704	0.704	1.44	UH
		Trimethylbenzene, 1,2,4-	0.582	0.582	2.87	UH
		Trimethylbenzene, 1,3,5-	0.449	0.449	1.44	UH
		Vinyl acetate	0.521	0.521	2.87	UH
		Vinyl chloride	0.431	0.431	1.44	UH
		Xylene, m-, p-	0.359	0.359	2.87	UH
		Xylene, o-	0.194	0.194	1.44	UH
	28-Mar-16	Acetone	4.08	0.178	5	J
		Benzene	0.172	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U*
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	2.55	0.154	0.4	
		Butanone, 2-	0.522	0.199	0.8	J
		Carbon disulfide	0.414	0.078	0.8	J
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.793	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Mar-16	Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.528	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.1	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	1.24	0.075	0.8	
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.528	0.072	0.4	B
		Pentane, N-	2.76	0.261	0.8	
		Pentanone, 4-methyl-, 2-	0.138	0.135	0.4	J
		Styrene	0.204	0.059	0.4	J
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	2.26	0.051	0.4	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Mar-16	Trichlorofluoromethane	0.248	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.313	0.1	0.8	J
		Xylene, o-	0.109	0.054	0.4	J
	27-Apr-16	Acetone	4.77	0.226	6.35	J
		Benzene	0.1	0.1	0.508	U
		Benzyl chloride	0.207	0.207	1.02	U
		Bromodichloromethane	0.0838	0.0838	0.381	U
		Bromoform	0.0889	0.0889	0.508	U
		Bromomethane	0.425	0.425	1.02	U
		Butane, N-	0.196	0.196	0.508	U
		Butanone, 2-	0.494	0.253	1.02	J
		Carbon disulfide	0.299	0.0991	1.02	J
		Carbon tetrachloride	0.0813	0.0813	1.02	U
		Chlorobenzene	0.0813	0.0813	0.381	U
		Chloroethane	0.391	0.391	1.02	U
		Chloroform	0.121	0.121	0.381	U
		Chloromethane	0.795	0.25	1.02	J*
		Dibromochloromethane	0.1	0.1	0.508	U
		Dibromoethane, 1,2-	0.0953	0.0953	1.02	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.197	0.197	0.508	U
		Dichlorobenzene, 1,2-	0.165	0.165	0.508	U
		Dichlorobenzene, 1,3-	0.14	0.14	0.508	U
		Dichlorobenzene, 1,4-	0.189	0.189	0.508	U
		Dichlorodifluoromethane	0.547	0.184	0.508	
		Dichloroethane, 1,1-	0.0914	0.0914	0.381	U
		Dichloroethane, 1,2-	0.112	0.112	1.02	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	27-Apr-16	Dichloroethene, 1,1-	0.164	0.164	1.02	U
		Dichloroethene, cis-1,2-	0.113	0.113	0.508	U
		Dichloroethene, trans-1,2-	0.127	0.127	0.508	U
		Dichloropropane, 1,2-	0.305	0.305	0.508	U
		Dichloropropene, cis-1,3-	0.132	0.132	0.508	U
		Dichloropropene, trans-1,3-	0.112	0.112	0.508	U
		Dioxane, 1,4-	0.128	0.128	1.02	U
		Ethyl benzene	0.08	0.08	0.508	U
		Ethyltoluene, 4-	0.237	0.237	0.508	U
		Hexachlorobutadiene	0.549	0.549	2.54	U
		Hexane, N-	0.0953	0.0953	1.02	U
		Hexanone, 2-	0.11	0.11	0.508	U
		Methylene chloride	0.372	0.0914	0.508	JB
		Pentane, N-	0.331	0.331	1.02	U
		Pentanone, 4-methyl-, 2-	0.171	0.171	0.508	U
		Styrene	0.0749	0.0749	0.508	U
		Tert-butyl methyl ether	0.0635	0.0635	1.02	U
		Tetrachloroethane, 1,1,2,2-	0.0876	0.0876	0.508	U
		Tetrachloroethene	0.0648	0.0648	0.508	U
		Toluene	0.0648	0.0648	0.508	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.207	0.207	0.508	U
		Trichlorobenzene, 1,2,4-	0.55	0.55	2.54	U
		Trichloroethane, 1,1,1-	0.0826	0.0826	0.381	U
		Trichloroethane, 1,1,2-	0.0851	0.0851	0.508	U
		Trichloroethene	0.133	0.133	0.508	U
		Trichlorofluoromethane	0.249	0.249	0.508	U
		Trimethylbenzene, 1,2,4-	0.206	0.206	1.02	U
		Trimethylbenzene, 1,3,5-	0.159	0.159	0.508	U
		Vinyl acetate	0.184	0.184	1.02	U
		Vinyl chloride	0.152	0.152	0.508	U*

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	27-Apr-16	Xylene, m-, p-	0.127	0.127	1.02	U
		Xylene, o-	0.0686	0.0686	0.508	U
	25-May-16	Acetone	2.85	0.194	5.45	J
		Benzene	0.0861	0.0861	0.436	U
		Benzyl chloride	0.178	0.178	0.872	U
		Bromodichloromethane	0.0719	0.0719	0.327	U
		Bromoform	0.0763	0.0763	0.436	U
		Bromomethane	0.365	0.365	0.872	U
		Butane, N-	0.168	0.168	0.436	U
		Butanone, 2-	0.217	0.217	0.872	U
		Carbon disulfide	0.085	0.085	0.872	U
		Carbon tetrachloride	0.0698	0.0698	0.872	U
		Chlorobenzene	0.0698	0.0698	0.327	U
		Chloroethane	0.336	0.336	0.872	U
		Chloroform	0.104	0.104	0.327	U
		Chloromethane	0.74	0.215	0.872	J
		Dibromochloromethane	0.0861	0.0861	0.436	U
		Dibromoethane, 1,2-	0.0818	0.0818	0.872	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.169	0.169	0.436	U
		Dichlorobenzene, 1,2-	0.142	0.142	0.436	U
		Dichlorobenzene, 1,3-	0.12	0.12	0.436	U
		Dichlorobenzene, 1,4-	0.162	0.162	0.436	U
		Dichlorodifluoromethane	0.261	0.158	0.436	J
		Dichloroethane, 1,1-	0.0785	0.0785	0.327	U
		Dichloroethane, 1,2-	0.0959	0.0959	0.872	U
		Dichloroethene, 1,1-	0.141	0.141	0.872	U
		Dichloroethene, cis-1,2-	0.097	0.097	0.436	U
		Dichloroethene, trans-1,2-	0.109	0.109	0.436	U
		Dichloropropane, 1,2-	0.262	0.262	0.436	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	25-May-16	Dichloropropene, cis-1,3-	0.113	0.113	0.436	U
		Dichloropropene, trans-1,3-	0.0959	0.0959	0.436	U
		Dioxane, 1,4-	0.11	0.11	0.872	U
		Ethyl benzene	0.0687	0.0687	0.436	U
		Ethyltoluene, 4-	0.204	0.204	0.436	U
		Hexachlorobutadiene	0.471	0.471	2.18	U
		Hexane, N-	0.0818	0.0818	0.872	U
		Hexanone, 2-	0.0948	0.0948	0.436	U
		Methylene chloride	0.0785	0.0785	0.436	U
		Pentane, N-	0.284	0.284	0.872	U
		Pentanone, 4-methyl-, 2-	0.147	0.147	0.436	U
		Styrene	0.0643	0.0643	0.436	U
		Tert-butyl methyl ether	0.0545	0.0545	0.872	U
		Tetrachloroethane, 1,1,2,2-	0.0752	0.0752	0.436	U
		Tetrachloroethene	0.0556	0.0556	0.436	U
		Toluene	0.0556	0.0556	0.436	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.178	0.178	0.436	U
		Trichlorobenzene, 1,2,4-	0.472	0.472	2.18	U
		Trichloroethane, 1,1,1-	0.0709	0.0709	0.327	U
		Trichloroethane, 1,1,2-	0.073	0.073	0.436	U
		Trichloroethene	0.114	0.114	0.436	U
		Trichlorofluoromethane	0.214	0.214	0.436	U
		Trimethylbenzene, 1,2,4-	0.177	0.177	0.872	U
		Trimethylbenzene, 1,3,5-	0.136	0.136	0.436	U
		Vinyl acetate	0.158	0.158	0.872	U
		Vinyl chloride	0.131	0.131	0.436	U
		Xylene, m-, p-	0.109	0.109	0.872	U
		Xylene, o-	0.0589	0.0589	0.436	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	29-Jun-16	Acetone	4.74	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.346	0.154	0.4	JB
		Butanone, 2-	0.54	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.604	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.47	0.145	0.4	B
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	29-Jun-16	Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.072	0.072	0.4	U
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.575	0.051	0.4	B
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.212	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	28-Jul-16	Acetone	5.72	0.178	5	
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Jul-16	Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.733	0.154	0.4	
		Butanone, 2-	0.739	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.611	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.459	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	28-Jul-16	Methylene chloride	0.0816	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.0538	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.211	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	30-Aug-16	Acetone	9.57	0.199	5.6	
		Benzene	0.0885	0.0885	0.448	U
		Benzyl chloride	0.183	0.183	0.896	U
		Bromodichloromethane	0.0739	0.0739	0.336	U
		Bromoform	0.0784	0.0784	0.448	U
		Bromomethane	0.375	0.375	0.896	U
		Butane, N-	0.36	0.172	0.448	J
		Butanone, 2-	0.851	0.223	0.896	J
		Carbon disulfide	0.148	0.0874	0.896	J
		Carbon tetrachloride	0.0717	0.0717	0.896	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	30-Aug-16	Chlorobenzene	0.0717	0.0717	0.336	U
		Chloroethane	0.345	0.345	0.896	U
		Chloroform	0.106	0.106	0.336	U
		Chloromethane	0.784	0.221	0.896	J
		Dibromochloromethane	0.0885	0.0885	0.448	U
		Dibromoethane, 1,2-	0.084	0.084	0.896	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.174	0.174	0.448	U
		Dichlorobenzene, 1,2-	0.146	0.146	0.448	U
		Dichlorobenzene, 1,3-	0.123	0.123	0.448	U
		Dichlorobenzene, 1,4-	0.798	0.167	0.448	
		Dichlorodifluoromethane	0.463	0.162	0.448	
		Dichloroethane, 1,1-	0.0806	0.0806	0.336	U
		Dichloroethane, 1,2-	0.0986	0.0986	0.896	U
		Dichloroethene, 1,1-	0.144	0.144	0.896	U
		Dichloroethene, cis-1,2-	0.0997	0.0997	0.448	U
		Dichloroethene, trans-1,2-	0.112	0.112	0.448	U
		Dichloropropane, 1,2-	0.269	0.269	0.448	U
		Dichloropropene, cis-1,3-	0.116	0.116	0.448	U
		Dichloropropene, trans-1,3-	0.0986	0.0986	0.448	U
		Dioxane, 1,4-	0.113	0.113	0.896	U
		Ethyl benzene	0.0706	0.0706	0.448	U
		Ethyltoluene, 4-	0.209	0.209	0.448	U
		Hexachlorobutadiene	0.484	0.484	2.24	U
		Hexane, N-	0.156	0.084	0.896	J
		Hexanone, 2-	0.0974	0.0974	0.448	U
		Methylene chloride	0.0992	0.0806	0.448	J
		Pentane, N-	0.292	0.292	0.896	U
		Pentanone, 4-methyl-, 2-	0.151	0.151	0.448	U
		Styrene	0.0992	0.0661	0.448	J
		Tert-butyl methyl ether	0.056	0.056	0.896	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	30-Aug-16	Tetrachloroethane, 1,1,2,2-	0.0773	0.0773	0.448	U
		Tetrachloroethene	0.0571	0.0571	0.448	U
		Toluene	0.2	0.0571	0.448	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.183	0.183	0.448	U
		Trichlorobenzene, 1,2,4-	0.485	0.485	2.24	U
		Trichloroethane, 1,1,1-	0.0728	0.0728	0.336	U
		Trichloroethane, 1,1,2-	0.075	0.075	0.448	U
		Trichloroethene	0.118	0.118	0.448	U
		Trichlorofluoromethane	0.244	0.22	0.448	J
		Trimethylbenzene, 1,2,4-	0.181	0.181	0.896	U
		Trimethylbenzene, 1,3,5-	0.14	0.14	0.448	U
		Vinyl acetate	0.162	0.162	0.896	U
		Vinyl chloride	0.134	0.134	0.448	U
		Xylene, m-, p-	0.112	0.112	0.896	U
		Xylene, o-	0.0747	0.0605	0.448	J
	29-Sep-16	Acetone	6.56	0.178	5	
		Benzene	0.0807	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.73	0.154	0.4	
		Butanone, 2-	1.07	0.199	0.8	
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.757	0.197	0.8	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	29-Sep-16	Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.476	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.175	0.087	0.4	J
		Methylene chloride	0.0756	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.0714	0.051	0.4	J
		Toluene	0.0728	0.051	0.4	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
CW	29-Sep-16	Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.256	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
MDL	29-Oct-15	Acetone	12.2	0.178	5	
		Benzene	0.147	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.721	0.154	0.4	
		Butanone, 2-	1.11	0.199	0.8	
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.945	0.197	0.8	
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Oct-15	Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.562	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.115	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.259	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Oct-15	Trichlorofluoromethane	0.231	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	19-Nov-15	Acetone	2.08	0.178	5	J
		Benzene	0.182	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.937	0.154	0.4	
		Butanone, 2-	0.199	0.199	0.8	U
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.65	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.46	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	19-Nov-15	Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.0807	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.13	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.389	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.215	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	19-Nov-15	Xylene, m-, p-	0.228	0.1	0.8	J
		Xylene, o-	0.0898	0.054	0.4	J
	28-Jan-16	Acetone	4.26	0.178	5	J
		Benzene	0.266	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	1.49	0.154	0.4	
		Butanone, 2-	0.427	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0789	0.064	0.8	J
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.737	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.549	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	28-Jan-16	Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.0978	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.158	0.075	0.8	J
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.249	0.072	0.4	J
		Pentane, N-	0.364	0.261	0.8	J
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.428	0.051	0.4	
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.264	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.224	0.1	0.8	J
		Xylene, o-	0.0913	0.054	0.4	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	26-Feb-16	Acetone	3.34	0.178	5	JH
		Benzene	0.135	0.079	0.4	JH
		Benzyl chloride	0.163	0.163	0.8	U*H
		Bromodichloromethane	0.066	0.066	0.3	UH
		Bromoform	0.07	0.07	0.4	UH
		Bromomethane	0.335	0.335	0.8	UH
		Butane, N-	0.696	0.154	0.4	H
		Butanone, 2-	0.316	0.199	0.8	JH
		Carbon disulfide	0.078	0.078	0.8	UH
		Carbon tetrachloride	0.064	0.064	0.8	UH
		Chlorobenzene	0.064	0.064	0.3	UH
		Chloroethane	0.308	0.308	0.8	UH
		Chloroform	0.095	0.095	0.3	UH
		Chloromethane	0.8	0.197	0.8	H
		Dibromochloromethane	0.079	0.079	0.4	UH
		Dibromoethane, 1,2-	0.075	0.075	0.8	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	UH
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	UH
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	UH
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	UH
		Dichlorodifluoromethane	0.581	0.145	0.4	H
		Dichloroethane, 1,1-	0.072	0.072	0.3	UH
		Dichloroethane, 1,2-	0.088	0.088	0.8	UH
		Dichloroethene, 1,1-	0.129	0.129	0.8	UH
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	UH
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	UH
		Dichloropropane, 1,2-	0.24	0.24	0.4	UH
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	UH
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	UH
		Dioxane, 1,4-	0.101	0.101	0.8	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	26-Feb-16	Ethyl benzene	0.063	0.063	0.4	UH
		Ethyltoluene, 4-	0.187	0.187	0.4	UH
		Hexachlorobutadiene	0.432	0.432	2	UH
		Hexane, N-	0.075	0.075	0.8	UH
		Hexanone, 2-	0.087	0.087	0.4	UH
		Methylene chloride	0.153	0.072	0.4	JH
		Pentane, N-	0.261	0.261	0.8	UH
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	UH
		Styrene	0.059	0.059	0.4	UH
		Tert-butyl methyl ether	0.05	0.05	0.8	UH
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	UH
		Tetrachloroethene	0.051	0.051	0.4	UH
		Toluene	0.15	0.051	0.4	JH
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	UH
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	UH
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	UH
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	UH
		Trichloroethene	0.105	0.105	0.4	UH
		Trichlorofluoromethane	0.278	0.196	0.4	JH
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	UH
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	UH
		Vinyl acetate	0.145	0.145	0.8	UH
		Vinyl chloride	0.12	0.12	0.4	UH
		Xylene, m-, p-	0.108	0.1	0.8	JH
		Xylene, o-	0.054	0.054	0.4	UH
	28-Mar-16	Acetone	1.91	0.196	5.5	J
		Benzene	0.0869	0.0869	0.44	U
		Benzyl chloride	0.179	0.179	0.88	U*
		Bromodichloromethane	0.0726	0.0726	0.33	U
		Bromoform	0.077	0.077	0.44	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	28-Mar-16	Bromomethane	0.369	0.369	0.88	U
		Butane, N-	0.169	0.169	0.44	U
		Butanone, 2-	0.219	0.219	0.88	U
		Carbon disulfide	0.0858	0.0858	0.88	U
		Carbon tetrachloride	0.0704	0.0704	0.88	U
		Chlorobenzene	0.0704	0.0704	0.33	U
		Chloroethane	0.339	0.339	0.88	U
		Chloroform	0.105	0.105	0.33	U
		Chloromethane	0.737	0.217	0.88	J
		Dibromochloromethane	0.0869	0.0869	0.44	U
		Dibromoethane, 1,2-	0.0825	0.0825	0.88	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.171	0.171	0.44	U
		Dichlorobenzene, 1,2-	0.143	0.143	0.44	U
		Dichlorobenzene, 1,3-	0.121	0.121	0.44	U
		Dichlorobenzene, 1,4-	0.164	0.164	0.44	U
		Dichlorodifluoromethane	0.515	0.16	0.44	
		Dichloroethane, 1,1-	0.0792	0.0792	0.33	U
		Dichloroethane, 1,2-	0.0968	0.0968	0.88	U
		Dichloroethene, 1,1-	0.142	0.142	0.88	U
		Dichloroethene, cis-1,2-	0.0979	0.0979	0.44	U
		Dichloroethene, trans-1,2-	0.11	0.11	0.44	U
		Dichloropropane, 1,2-	0.264	0.264	0.44	U
		Dichloropropene, cis-1,3-	0.114	0.114	0.44	U
		Dichloropropene, trans-1,3-	0.0968	0.0968	0.44	U
		Dioxane, 1,4-	0.111	0.111	0.88	U
		Ethyl benzene	0.0693	0.0693	0.44	U
		Ethyltoluene, 4-	0.206	0.206	0.44	U
		Hexachlorobutadiene	0.475	0.475	2.2	U
		Hexane, N-	0.0825	0.0825	0.88	U
		Hexanone, 2-	0.0957	0.0957	0.44	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	28-Mar-16	Methylene chloride	0.277	0.0792	0.44	JB
		Pentane, N-	0.287	0.287	0.88	U
		Pentanone, 4-methyl-, 2-	0.149	0.149	0.44	U
		Styrene	0.0649	0.0649	0.44	U
		Tert-butyl methyl ether	0.055	0.055	0.88	U
		Tetrachloroethane, 1,1,2,2-	0.0759	0.0759	0.44	U
		Tetrachloroethene	0.0561	0.0561	0.44	U
		Toluene	0.059	0.0561	0.44	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.179	0.179	0.44	U
		Trichlorobenzene, 1,2,4-	0.476	0.476	2.2	U
		Trichloroethane, 1,1,1-	0.0715	0.0715	0.33	U
		Trichloroethane, 1,1,2-	0.0737	0.0737	0.44	U
		Trichloroethene	0.116	0.116	0.44	U
		Trichlorofluoromethane	0.256	0.216	0.44	J
		Trimethylbenzene, 1,2,4-	0.178	0.178	0.88	U
		Trimethylbenzene, 1,3,5-	0.138	0.138	0.44	U
		Vinyl acetate	0.16	0.16	0.88	U
		Vinyl chloride	0.132	0.132	0.44	U
		Xylene, m-, p-	0.11	0.11	0.88	U
		Xylene, o-	0.0594	0.0594	0.44	U
	27-Apr-16	Acetone	3.72	0.178	5	J
		Benzene	0.0882	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.34	0.154	0.4	J
		Butanone, 2-	0.199	0.199	0.8	U
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	27-Apr-16	Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.821	0.197	0.8	*
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.568	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.0671	0.063	0.4	JB
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.337	0.072	0.4	JB
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	27-Apr-16	Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.241	0.051	0.4	JB
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.26	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U*
		Xylene, m-, p-	0.194	0.1	0.8	JB
		Xylene, o-	0.0826	0.054	0.4	JB
	25-May-16	Acetone	3.8	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.154	0.154	0.4	U
		Butanone, 2-	0.424	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.714	0.197	0.8	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	25-May-16	Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.307	0.145	0.4	J
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.122	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.051	0.051	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	25-May-16	Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.223	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	29-Jun-16	Acetone	6.78	0.178	5	
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.388	0.154	0.4	JB
		Butanone, 2-	0.985	0.199	0.8	
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0682	0.064	0.8	JB
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.585	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Jun-16	Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.463	0.145	0.4	B
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.136	0.087	0.4	J
		Methylene chloride	0.072	0.072	0.4	U
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.127	0.051	0.4	JB
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Jun-16	Trichlorofluoromethane	0.198	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.112	0.1	0.8	JB
		Xylene, o-	0.054	0.054	0.4	U
	28-Jul-16	Acetone	6.16	0.178	5	
		Benzene	0.172	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.938	0.154	0.4	
		Butanone, 2-	0.677	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0711	0.064	0.8	J
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.609	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.504	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	28-Jul-16	Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.0683	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0917	0.072	0.4	J
		Pentane, N-	0.278	0.261	0.8	J
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.327	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.221	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	28-Jul-16	Xylene, m-, p-	0.238	0.1	0.8	J
		Xylene, o-	0.0866	0.054	0.4	J
	30-Aug-16	Acetone	3.18	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.294	0.154	0.4	J
		Butanone, 2-	0.265	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.588	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.44	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	30-Aug-16	Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0865	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.129	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.209	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.138	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Sep-16	Acetone	2.94	0.178	5	J
		Benzene	0.0866	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.868	0.154	0.4	
		Butanone, 2-	0.311	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0804	0.064	0.8	J
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.601	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.504	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
MDL	29-Sep-16	Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0796	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.132	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.249	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
TA2	29-Oct-15	Acetone	6.92	0.178	5	
		Benzene	0.0943	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	29-Oct-15	Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.666	0.154	0.4	
		Butanone, 2-	0.668	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.77	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.516	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.498	0.101	0.8	J
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	29-Oct-15	Methylene chloride	0.116	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.278	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.219	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.124	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U
	19-Nov-15	Acetone	2.66	0.178	5	J
		Benzene	0.156	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.77	0.154	0.4	
		Butanone, 2-	0.327	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	19-Nov-15	Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.644	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.485	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.0934	0.087	0.4	J
		Methylene chloride	0.103	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	19-Nov-15	Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.301	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.224	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.117	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U
	18-Dec-15	Acetone	2.07	0.178	5	JH
		Benzene	0.297	0.079	0.4	JH
		Benzyl chloride	0.163	0.163	0.8	UH
		Bromodichloromethane	0.066	0.066	0.3	UH
		Bromoform	0.07	0.07	0.4	UH
		Bromomethane	0.335	0.335	0.8	UH
		Butane, N-	1.42	0.154	0.4	H
		Butanone, 2-	0.199	0.199	0.8	UH
		Carbon disulfide	0.078	0.078	0.8	UH
		Carbon tetrachloride	0.064	0.064	0.8	UH
		Chlorobenzene	0.064	0.064	0.3	UH
		Chloroethane	0.308	0.308	0.8	UH
		Chloroform	0.095	0.095	0.3	UH
		Chloromethane	0.713	0.197	0.8	JH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	18-Dec-15	Dibromochloromethane	0.079	0.079	0.4	UH
		Dibromoethane, 1,2-	0.075	0.075	0.8	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	UH
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	UH
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	UH
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	UH
		Dichlorodifluoromethane	0.55	0.145	0.4	H
		Dichloroethane, 1,1-	0.072	0.072	0.3	UH
		Dichloroethane, 1,2-	0.088	0.088	0.8	UH
		Dichloroethene, 1,1-	0.129	0.129	0.8	UH
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	UH
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	UH
		Dichloropropane, 1,2-	0.24	0.24	0.4	UH
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	UH
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	UH
		Dioxane, 1,4-	0.101	0.101	0.8	UH
		Ethyl benzene	0.078	0.063	0.4	JH
		Ethyltoluene, 4-	0.187	0.187	0.4	UH
		Hexachlorobutadiene	0.432	0.432	2	UH
		Hexane, N-	0.16	0.075	0.8	JH
		Hexanone, 2-	0.087	0.087	0.4	UH
		Methylene chloride	0.158	0.072	0.4	JH
		Pentane, N-	2.32	0.261	0.8	H
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	UH
		Styrene	0.059	0.059	0.4	UH
		Tert-butyl methyl ether	0.05	0.05	0.8	UH
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	UH
		Tetrachloroethene	0.051	0.051	0.4	UH
		Toluene	0.488	0.051	0.4	H
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	18-Dec-15	Trichlorobenzene, 1,2,4-	0.433	0.433	2	UH
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	UH
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	UH
		Trichloroethene	0.105	0.105	0.4	UH
		Trichlorofluoromethane	0.252	0.196	0.4	JH
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	UH
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	UH
		Vinyl acetate	0.145	0.145	0.8	UH
		Vinyl chloride	0.12	0.12	0.4	UH
		Xylene, m-, p-	0.188	0.1	0.8	JH
		Xylene, o-	0.0726	0.054	0.4	JH
	28-Jan-16	Acetone	2.47	0.178	5	J
		Benzene	0.209	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	1.26	0.154	0.4	
		Butanone, 2-	0.334	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.717	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jan-16	Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.556	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.073	0.063	0.4	J
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.203	0.075	0.8	J
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.186	0.072	0.4	J
		Pentane, N-	0.323	0.261	0.8	J
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.323	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.258	0.196	0.4	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jan-16	Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.165	0.1	0.8	J
		Xylene, o-	0.0648	0.054	0.4	J
	26-Feb-16	Acetone	3.41	0.178	5	JH
		Benzene	0.131	0.079	0.4	JH
		Benzyl chloride	0.163	0.163	0.8	U*H
		Bromodichloromethane	0.066	0.066	0.3	UH
		Bromoform	0.07	0.07	0.4	UH
		Bromomethane	0.335	0.335	0.8	UH
		Butane, N-	0.649	0.154	0.4	H
		Butanone, 2-	0.277	0.199	0.8	JH
		Carbon disulfide	0.078	0.078	0.8	UH
		Carbon tetrachloride	0.064	0.064	0.8	UH
		Chlorobenzene	0.064	0.064	0.3	UH
		Chloroethane	0.308	0.308	0.8	UH
		Chloroform	0.095	0.095	0.3	UH
		Chloromethane	0.768	0.197	0.8	JH
		Dibromochloromethane	0.079	0.079	0.4	UH
		Dibromoethane, 1,2-	0.075	0.075	0.8	UH
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	UH
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	UH
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	UH
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	UH
		Dichlorodifluoromethane	0.595	0.145	0.4	H
		Dichloroethane, 1,1-	0.072	0.072	0.3	UH
		Dichloroethane, 1,2-	0.088	0.088	0.8	UH
		Dichloroethene, 1,1-	0.129	0.129	0.8	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	26-Feb-16	Dichloroethene, cis-1,2-	0.089	0.089	0.4	UH
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	UH
		Dichloropropane, 1,2-	0.24	0.24	0.4	UH
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	UH
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	UH
		Dioxane, 1,4-	0.101	0.101	0.8	UH
		Ethyl benzene	0.063	0.063	0.4	UH
		Ethyltoluene, 4-	0.187	0.187	0.4	UH
		Hexachlorobutadiene	0.432	0.432	2	UH
		Hexane, N-	0.075	0.075	0.8	UH
		Hexanone, 2-	0.087	0.087	0.4	UH
		Methylene chloride	0.147	0.072	0.4	JH
		Pentane, N-	0.261	0.261	0.8	UH
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	UH
		Styrene	0.059	0.059	0.4	UH
		Tert-butyl methyl ether	0.05	0.05	0.8	UH
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	UH
		Tetrachloroethene	0.051	0.051	0.4	UH
		Toluene	0.11	0.051	0.4	JH
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	UH
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	UH
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	UH
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	UH
		Trichloroethene	0.105	0.105	0.4	UH
		Trichlorofluoromethane	0.265	0.196	0.4	JH
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	UH
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	UH
		Vinyl acetate	0.145	0.145	0.8	UH
		Vinyl chloride	0.12	0.12	0.4	UH

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	26-Feb-16	Xylene, m-, p-	0.1	0.1	0.8	UH
		Xylene, o-	0.054	0.054	0.4	UH
	28-Mar-16	Acetone	3.04	0.19	5.35	J
		Benzene	0.0845	0.0845	0.428	U
		Benzyl chloride	0.174	0.174	0.856	U*
		Bromodichloromethane	0.0706	0.0706	0.321	U
		Bromoform	0.0749	0.0749	0.428	U
		Bromomethane	0.358	0.358	0.856	U
		Butane, N-	0.282	0.165	0.428	J
		Butanone, 2-	0.309	0.213	0.856	J
		Carbon disulfide	0.0835	0.0835	0.856	U
		Carbon tetrachloride	0.0685	0.0685	0.856	U
		Chlorobenzene	0.0685	0.0685	0.321	U
		Chloroethane	0.33	0.33	0.856	U
		Chloroform	0.102	0.102	0.321	U
		Chloromethane	0.758	0.211	0.856	J
		Dibromochloromethane	0.0845	0.0845	0.428	U
		Dibromoethane, 1,2-	0.0803	0.0803	0.856	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.166	0.166	0.428	U
		Dichlorobenzene, 1,2-	0.139	0.139	0.428	U
		Dichlorobenzene, 1,3-	0.118	0.118	0.428	U
		Dichlorobenzene, 1,4-	0.159	0.159	0.428	U
		Dichlorodifluoromethane	0.505	0.155	0.428	
		Dichloroethane, 1,1-	0.077	0.077	0.321	U
		Dichloroethane, 1,2-	0.0942	0.0942	0.856	U
		Dichloroethene, 1,1-	0.138	0.138	0.856	U
		Dichloroethene, cis-1,2-	0.0952	0.0952	0.428	U
		Dichloroethene, trans-1,2-	0.107	0.107	0.428	U
		Dichloropropane, 1,2-	0.257	0.257	0.428	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Mar-16	Dichloropropene, cis-1,3-	0.111	0.111	0.428	U
		Dichloropropene, trans-1,3-	0.0942	0.0942	0.428	U
		Dioxane, 1,4-	0.108	0.108	0.856	U
		Ethyl benzene	0.0674	0.0674	0.428	U
		Ethyltoluene, 4-	0.2	0.2	0.428	U
		Hexachlorobutadiene	0.462	0.462	2.14	U
		Hexane, N-	0.108	0.0803	0.856	J
		Hexanone, 2-	0.0931	0.0931	0.428	U
		Methylene chloride	0.279	0.077	0.428	JB
		Pentane, N-	0.279	0.279	0.856	U
		Pentanone, 4-methyl-, 2-	0.144	0.144	0.428	U
		Styrene	0.0631	0.0631	0.428	U
		Tert-butyl methyl ether	0.0535	0.0535	0.856	U
		Tetrachloroethane, 1,1,2,2-	0.0738	0.0738	0.428	U
		Tetrachloroethene	0.0546	0.0546	0.428	U
		Toluene	0.148	0.0546	0.428	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.174	0.174	0.428	U
		Trichlorobenzene, 1,2,4-	0.463	0.463	2.14	U
		Trichloroethane, 1,1,1-	0.0696	0.0696	0.321	U
		Trichloroethane, 1,1,2-	0.0717	0.0717	0.428	U
		Trichloroethene	0.112	0.112	0.428	U
		Trichlorofluoromethane	0.248	0.21	0.428	J
		Trimethylbenzene, 1,2,4-	0.173	0.173	0.856	U
		Trimethylbenzene, 1,3,5-	0.134	0.134	0.428	U
		Vinyl acetate	0.155	0.155	0.856	U
		Vinyl chloride	0.128	0.128	0.428	U
		Xylene, m-, p-	0.107	0.107	0.856	U
		Xylene, o-	0.0578	0.0578	0.428	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	27-Apr-16	Acetone	6.77	0.178	5	
		Benzene	0.0922	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.235	0.154	0.4	J
		Butanone, 2-	0.783	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.805	0.197	0.8	*
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.556	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	27-Apr-16	Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.312	0.072	0.4	JB
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.357	0.051	0.4	JB
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.254	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U*
		Xylene, m-, p-	0.296	0.1	0.8	JB
		Xylene, o-	0.104	0.054	0.4	JB
	25-May-16	Acetone	2.1	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	25-May-16	Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.154	0.154	0.4	U
		Butanone, 2-	0.199	0.199	0.8	U
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.834	0.197	0.8	
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.295	0.145	0.4	J
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	25-May-16	Methylene chloride	0.0851	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.051	0.051	0.4	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.252	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	29-Jun-16	Acetone	9.12	0.178	5	
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.343	0.154	0.4	JB
		Butanone, 2-	1.98	0.199	0.8	
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.0658	0.064	0.8	JB

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	29-Jun-16	Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.582	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.469	0.145	0.4	B
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.282	0.087	0.4	J
		Methylene chloride	0.072	0.072	0.4	U
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	29-Jun-16	Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.0898	0.051	0.4	JB
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.206	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	28-Jul-16	Acetone	7.69	0.178	5	
		Acetone	11.3	0.178	5	
		Benzene	0.192	0.079	0.4	J
		Benzene	0.109	0.079	0.4	J
		Benzyl chloride	0.163	0.163	0.8	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	1.1	0.154	0.4	
		Butane, N-	0.893	0.154	0.4	

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jul-16	Butanone, 2-	1.13	0.199	0.8	
		Butanone, 2-	1.62	0.199	0.8	
		Carbon disulfide	0.166	0.078	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.815	0.197	0.8	
		Chloromethane	0.745	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.484	0.145	0.4	
		Dichlorodifluoromethane	0.499	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,1-	0.072	0.072	0.3	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jul-16	Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.0806	0.063	0.4	J
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexane, N-	0.379	0.075	0.8	J
		Hexanone, 2-	0.092	0.087	0.4	J
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.107	0.072	0.4	J
		Methylene chloride	0.278	0.072	0.4	J
		Pentane, N-	0.387	0.261	0.8	J
		Pentane, N-	0.454	0.261	0.8	J

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jul-16	Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.155	0.059	0.4	J
		Styrene	0.6	0.059	0.4	
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Tetrachloroethene	0.329	0.051	0.4	J
		Toluene	0.489	0.051	0.4	
		Toluene	0.28	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.215	0.196	0.4	J
		Trichlorofluoromethane	0.242	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl acetate	0.145	0.145	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	28-Jul-16	Vinyl chloride	0.12	0.12	0.4	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.126	0.1	0.8	J
		Xylene, m-, p-	0.288	0.1	0.8	J
		Xylene, o-	0.054	0.054	0.4	U
		Xylene, o-	0.12	0.054	0.4	J
	30-Aug-16	Acetone	9.7	0.178	5	
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.263	0.154	0.4	J
		Butanone, 2-	0.388	0.199	0.8	J
		Carbon disulfide	0.274	0.078	0.8	J
		Carbon tetrachloride	0.0651	0.064	0.8	J
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.665	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.442	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	30-Aug-16	Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U
		Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.072	0.072	0.4	U
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.051	0.051	0.4	U
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.208	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	30-Aug-16	Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U
	29-Sep-16	Acetone	4.68	0.178	5	J
		Benzene	0.079	0.079	0.4	U
		Benzyl chloride	0.163	0.163	0.8	U
		Bromodichloromethane	0.066	0.066	0.3	U
		Bromoform	0.07	0.07	0.4	U
		Bromomethane	0.335	0.335	0.8	U
		Butane, N-	0.838	0.154	0.4	
		Butanone, 2-	0.488	0.199	0.8	J
		Carbon disulfide	0.078	0.078	0.8	U
		Carbon tetrachloride	0.064	0.064	0.8	U
		Chlorobenzene	0.064	0.064	0.3	U
		Chloroethane	0.308	0.308	0.8	U
		Chloroform	0.095	0.095	0.3	U
		Chloromethane	0.568	0.197	0.8	J
		Dibromochloromethane	0.079	0.079	0.4	U
		Dibromoethane, 1,2-	0.075	0.075	0.8	U
		Dichloro-1,1,2,2-tetrafluoroethane, 1,2-	0.155	0.155	0.4	U
		Dichlorobenzene, 1,2-	0.13	0.13	0.4	U
		Dichlorobenzene, 1,3-	0.11	0.11	0.4	U
		Dichlorobenzene, 1,4-	0.149	0.149	0.4	U
		Dichlorodifluoromethane	0.49	0.145	0.4	
		Dichloroethane, 1,1-	0.072	0.072	0.3	U
		Dichloroethane, 1,2-	0.088	0.088	0.8	U
		Dichloroethene, 1,1-	0.129	0.129	0.8	U
		Dichloroethene, cis-1,2-	0.089	0.089	0.4	U
		Dichloroethene, trans-1,2-	0.1	0.1	0.4	U
		Dichloropropane, 1,2-	0.24	0.24	0.4	U

See notes at end of appendix.

Table C-3. Summary of ambient air volatile organic compound analysis, FY 2016 (continued)

Sample Location	Sample Date	Analyte	Result (ppb v/v)	MDL (ppb v/v)	PQL (ppb v/v)	Laboratory Data Qualifiers
TA2	29-Sep-16	Dichloropropene, cis-1,3-	0.104	0.104	0.4	U
		Dichloropropene, trans-1,3-	0.088	0.088	0.4	U
		Dioxane, 1,4-	0.101	0.101	0.8	U
		Ethyl benzene	0.063	0.063	0.4	U
		Ethyltoluene, 4-	0.187	0.187	0.4	U
		Hexachlorobutadiene	0.432	0.432	2	U
		Hexane, N-	0.075	0.075	0.8	U
		Hexanone, 2-	0.087	0.087	0.4	U
		Methylene chloride	0.0742	0.072	0.4	J
		Pentane, N-	0.261	0.261	0.8	U
		Pentanone, 4-methyl-, 2-	0.135	0.135	0.4	U
		Styrene	0.059	0.059	0.4	U
		Tert-butyl methyl ether	0.05	0.05	0.8	U
		Tetrachloroethane, 1,1,2,2-	0.069	0.069	0.4	U
		Tetrachloroethene	0.051	0.051	0.4	U
		Toluene	0.0763	0.051	0.4	J
		Trichloro-1,2,2-trifluoroethane, 1,1,2-	0.163	0.163	0.4	U
		Trichlorobenzene, 1,2,4-	0.433	0.433	2	U
		Trichloroethane, 1,1,1-	0.065	0.065	0.3	U
		Trichloroethane, 1,1,2-	0.067	0.067	0.4	U
		Trichloroethene	0.105	0.105	0.4	U
		Trichlorofluoromethane	0.257	0.196	0.4	J
		Trimethylbenzene, 1,2,4-	0.162	0.162	0.8	U
		Trimethylbenzene, 1,3,5-	0.125	0.125	0.4	U
		Vinyl acetate	0.145	0.145	0.8	U
		Vinyl chloride	0.12	0.12	0.4	U
		Xylene, m-, p-	0.1	0.1	0.8	U
		Xylene, o-	0.054	0.054	0.4	U

See notes at end of appendix.

Appendix Notes

Units

mg/sa = milligrams per sample
ppb v/v = parts per billion volume per volume
pCi/sa = picocuries per sample

MDL or MDA

Lc = critical level
MDA = minimal detectable activity or minimum measured activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level
MDL = method detection limit; the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix specific

PQL

PQL = practical quantitation limit; the lowest concentration of analytes in a sample that can be determined reliably within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions

Lab Data Qualifier

B = analyte detected in the blank
H = analytical holding time was exceeded
J = estimated value, the analyte concentration fell above the effective MDL and below the effective practical quantitation limit
U = analyte is absent or below the method detection limit
X = data rejected due to peak not meeting identification criteria
* = a replicate was outside limits

Appendix D. 2016 Stormwater Sampling Results

Road wash on No Sweat Boulevard, SNL/NM

Contents

Appendix D presents the stormwater sampling results for 2016. Stormwater samples were collected in compliance with the Multi-Sector General Permit from July 1 through October 31, 2016, when there was adequate runoff. Precipitation events from July 1 through October 31 of 2016 did not produce adequate runoff from permitted sites to collect stormwater samples at the following stormwater sampling sites (SWSPs): SWSP-22, SWSP-46, and SWSP-51.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-08	5-Aug-16	Iron	1.48	0.033	0.1	Unfiltered
	10-Oct-16	Iron	1.08	0.033	0.1	Unfiltered
		Solids, total suspended	322	11.4	50	Unfiltered
SWSP-17	10-Oct-16	Ammonia	0.423	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	68.5	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	0.000689	0.0005	0.002	Filtered
		Magnesium	3.87	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
SWSP-32	22-Aug-16	Ammonia	0.614	0.017	0.05	Unfiltered
		Arsenic	0.0113	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Filtered
		Chemical oxygen demand	127	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	20.3	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	0.00154	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Filtered
	10-Oct-16	Ammonia	0.497	0.017	0.05	Unfiltered
		Arsenic	0.0056	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	77.4	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	10	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-32	10-Oct-16	Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
SWSP-40	1-Aug-16	Ammonia	0.255	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Unfiltered
		Chemical oxygen demand	92.8	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Unfiltered
		Magnesium	0.719	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Unfiltered
	25-Aug-16	Ammonia	0.137	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Filtered
		Chemical oxygen demand	87.3	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	0.527	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Filtered
	14-Sep-16	Ammonia	0.0668	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	99.3	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	0.443	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-40	14-Sep-16	Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
	27-Oct-16	Ammonia	0.338	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Unfiltered
		Chemical oxygen demand	93.6	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Unfiltered
		Magnesium	1.19	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Unfiltered
SWSP-43	1-Aug-16	Arsenic	0.0048	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Unfiltered
		Lead	<0.0005	0.0005	0.002	Unfiltered
		Magnesium	12.3	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	0.00222	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Unfiltered
	10-Oct-16	Arsenic	0.00362	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	61.3	8.95	20	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	8.45	0.01	0.03	Unfiltered
		Mercury	0.000186	0.000067	0.0002	Unfiltered
		Selenium	0.00244	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
SWSP-47	5-Aug-16	Arsenic	0.00499	0.0017	0.005	Unfiltered
		Magnesium	7.93	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-47	10-Oct-16	Ammonia	0.389	0.017	0.05	Unfiltered
		Arsenic	0.00283	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	41.7	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	0.00204	0.0005	0.002	Filtered
		Magnesium	4.6	0.01	0.03	Unfiltered
		Mercury	0.000113	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
SWSP-48	5-Aug-16	Arsenic	0.00527	0.0017	0.005	Unfiltered
		Magnesium	8.94	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
	22-Aug-16	Cadmium	0.000137	0.00011	0.001	Filtered
		Lead	<0.0005	0.0005	0.002	Filtered
		Silver	0.00104	0.0002	0.001	Filtered
	23-Aug-16	Chemical oxygen demand	75.4	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
	6-Sep-16	Arsenic	0.00185	0.0017	0.005	Unfiltered
		Magnesium	2.56	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
	10-Oct-16	Ammonia	0.419	0.017	0.05	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	59.6	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Silver	0.000603	0.0004	0.001	Filtered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-49	2-Aug-16	Ammonia	0.289	0.017	0.05	Unfiltered
		Arsenic	0.002	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Unfiltered
		Chemical oxygen demand	85.8	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Unfiltered
		Magnesium	0.729	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Unfiltered
	17-Aug-16	Ammonia	0.159	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Filtered
		Chemical oxygen demand	53.7	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	0.472	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered
	31-Oct-16	Ammonia	0.0858	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	58.7	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	0.493	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-52	1-Aug-16	Ammonia	0.421	0.017	0.05	Unfiltered
		Arsenic	0.00181	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Unfiltered
		Chemical oxygen demand	20.4	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Unfiltered
		Magnesium	2.52	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Unfiltered
	5-Aug-16	Ammonia	0.34	0.017	0.05	Unfiltered
		Arsenic	0.00187	0.0017	0.005	Unfiltered
		Cadmium	<0.00011	0.00011	0.001	Unfiltered
		Chemical oxygen demand	46.7	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	0.000516	0.0005	0.002	Unfiltered
		Magnesium	2.5	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.0015	0.0015	0.005	Unfiltered
		Silver	<0.0002	0.0002	0.001	Unfiltered
	22-Sep-16	Ammonia	0.435	0.017	0.05	Unfiltered
		Arsenic	0.00403	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	72.3	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	0.000872	0.0005	0.002	Filtered
		Magnesium	7.23	0.01	0.03	Unfiltered
		Mercury	0.000091	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered

See notes at end of appendix.

Table D-1. Multi-Sector General Permit stormwater sampling results, 2016 (continued)

Sampling Point	Sample Date	Analyte	Result (mg/L)	MDL (mg/L)	PQL (mg/L)	Sample Preparation
SWSP-52	10-Oct-16	Ammonia	0.195	0.017	0.05	Unfiltered
		Arsenic	<0.0017	0.0017	0.005	Unfiltered
		Cadmium	<0.0003	0.0003	0.001	Filtered
		Chemical oxygen demand	106	8.95	20	Unfiltered
		Cyanide, total	<0.00167	0.00167	0.005	Unfiltered
		Lead	<0.0005	0.0005	0.002	Filtered
		Magnesium	1.73	0.01	0.03	Unfiltered
		Mercury	<0.000067	0.000067	0.0002	Unfiltered
		Selenium	<0.002	0.002	0.005	Unfiltered
		Silver	<0.0004	0.0004	0.001	Filtered

See notes at end of appendix.

Appendix Notes

Sampling Point

SWSP = stormwater sampling point

Units

mg/L = milligrams per liter

MDL

MDL = method detection limit; the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix specific

PQL

PQL = practical quantitation limit; the lowest concentration of analytes in a sample that can be determined reliably within specified limits of precision and accuracy by that indicated method under routine laboratory operating conditions

Appendix E. 2016 Wastewater Monitoring Results

Flame Skimmer (*Libellula saturata*)

Contents

Appendix E presents the wastewater monitoring results for 2016.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	22-Feb-16	098946-011	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			098946-012	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			098946-010	Cyanide, total	0.00652	0.00167		0.45	EPA 335.4
			098946-009	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
		23-Feb-16	098944-001	Aluminum	ND	0.015	U	900	EPA 200.8
			098944-001	Arsenic	0.00898	0.0017		0.051	EPA 200.8
			098944-001	Boron	0.0514	0.004			EPA 200.8
			098944-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			098944-001	Chromium	0.00295	0.002	J	4.1	EPA 200.8
			098944-001	Copper	0.00361	0.00035		5.3	EPA 200.8
			098944-002	Fluoride	0.871	0.033		36	EPA 300.0
			098944-001	Lead	ND	0.0005	U	1	EPA 200.8
			098944-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			098944-001	Molybdenum	0.0673	0.000165		2	EPA 200.8
			098944-001	Nickel	ND	0.0005	U	2	EPA 200.8
			098944-001	Selenium	0.00318	0.0015	J	0.46	EPA 200.8
			098944-001	Silver	ND	0.0002	U	5	EPA 200.8
			098944-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
		24-Feb-16	098945-001	Aluminum	ND	0.015	U	900	EPA 200.8
			098945-001	Arsenic	0.00668	0.0017		0.051	EPA 200.8
			098945-001	Boron	0.0528	0.004			EPA 200.8
			098945-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			098945-001	Chromium	0.00249	0.002	J	4.1	EPA 200.8
			098945-001	Copper	0.00222	0.00035		5.3	EPA 200.8
			098945-002	Fluoride	0.8	0.033		36	EPA 300.0
			098945-001	Lead	ND	0.0005	U	1	EPA 200.8
			098945-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			098945-001	Molybdenum	0.0481	0.000165		2	EPA 200.8
			098945-001	Nickel	ND	0.0005	U	2	EPA 200.8

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	24-Feb-16	098945-001	Selenium	0.00281	0.0015	J	0.46	EPA 200.8
			098945-001	Silver	ND	0.0002	U	5	EPA 200.8
			098945-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
		26-Apr-16	099461-004	Ammonia	0.879	0.017			EPA 350.1
		27-Apr-16	099202-002	Ammonia	0.205	0.017			EPA 350.1
WW001	2069A	26-Apr-16	099451-001	Aluminum	0.0584	0.015		900	EPA 200.8
			099451-007	Ammonia	22.5	0.85			EPA 350.1
			099451-001	Arsenic	0.00411	0.0017	J	0.051	EPA 200.8
			099451-001	Boron	0.0586	0.004			EPA 200.8
			099451-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099451-001	Chromium	0.00452	0.002	J	4.1	EPA 200.8
			099451-001	Copper	0.0509	0.00035		5.3	EPA 200.8
			099451-002	Fluoride	5.53	0.165		36	EPA 300.0
			099451-001	Lead	0.00448	0.0005		1	EPA 200.8
			099451-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099451-001	Molybdenum	0.016	0.000165		2	EPA 200.8
			099451-001	Nickel	0.00232	0.0005		2	EPA 200.8
			099451-001	Selenium	0.00357	0.0015	J	0.46	EPA 200.8
			099451-001	Silver	ND	0.0002	U	5	EPA 200.8
			099451-001	Zinc	0.0611	0.0035		2.2	EPA 200.8
		27-Apr-16	099199-001	Aluminum	0.0572	0.015		900	EPA 200.8
			099199-004	Ammonia	22	0.85			EPA 350.1
			099199-001	Arsenic	0.00317	0.0017	J	0.051	EPA 200.8
			099199-001	Boron	0.0751	0.004			EPA 200.8
			099199-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099199-001	Chromium	0.0043	0.002	J	4.1	EPA 200.8
			099199-001	Copper	0.0465	0.00035		5.3	EPA 200.8
			099199-002	Fluoride	6.39	0.165		36	EPA 300.0
			099199-001	Lead	0.0408	0.0005		1	EPA 200.8

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	27-Apr-16	099199-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099199-001	Molybdenum	0.0133	0.000165		2	EPA 200.8
			099199-001	Nickel	0.0021	0.0005		2	EPA 200.8
			099199-001	Selenium	0.00292	0.0015	J	0.46	EPA 200.8
			099199-001	Silver	ND	0.0002	U	5	EPA 200.8
			099199-001	Zinc	0.0584	0.0035		2.2	EPA 200.8
WW006	2069F	25-Apr-16	099335-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099336-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099337-001	Cyanide, total	0.0022	0.00167	J	0.45	EPA 335.4
			099338-001	Cyanide, total	0.00397	0.00167	J	0.45	EPA 335.4
		26-Apr-16	099457-001	Aluminum	0.0539	0.015		900	EPA 200.8
			099457-007	Ammonia	39.6	0.85			EPA 350.1
			099457-001	Arsenic	0.0021	0.0017	J	0.051	EPA 200.8
			099457-001	Boron	0.0844	0.004			EPA 200.8
			099457-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099457-001	Chromium	0.00202	0.002	J	4.1	EPA 200.8
			099457-001	Copper	0.0173	0.00035		5.3	EPA 200.8
			099351-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099350-001	Cyanide, total	0.00313	0.00167	J	0.45	EPA 335.4
			099349-001	Cyanide, total	0.0135	0.00167		0.45	EPA 335.4
			099348-001	Cyanide, total	0.00255	0.00167	J	0.45	EPA 335.4
			099457-002	Fluoride	1.1	0.033		36	EPA 300.0
			099457-001	Lead	0.00071	0.0005	J	1	EPA 200.8
			099457-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099457-001	Molybdenum	0.0199	0.000165		2	EPA 200.8
			099457-001	Nickel	0.00155	0.0005	J	2	EPA 200.8
			099457-001	Selenium	ND	0.0015	U	0.46	EPA 200.8
			099457-001	Silver	ND	0.0002	U	5	EPA 200.8
			099457-001	Zinc	0.107	0.0035		2.2	EPA 200.8

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	27-Apr-16	099200-001	Aluminum	0.0527	0.015		900	EPA 200.8
			099200-004	Ammonia	39.1	0.85			EPA 350.1
			099200-001	Arsenic	0.00218	0.0017	J	0.051	EPA 200.8
			099200-001	Boron	0.0779	0.004			EPA 200.8
			099200-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099200-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			099200-001	Copper	0.0318	0.00035		5.3	EPA 200.8
			099200-002	Fluoride	1.24	0.066		36	EPA 300.0
			099200-001	Lead	0.00135	0.0005	J	1	EPA 200.8
			099200-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099200-001	Molybdenum	0.0444	0.000165		2	EPA 200.8
			099200-001	Nickel	0.00153	0.0005	J	2	EPA 200.8
			099200-001	Selenium	0.00226	0.0015	J	0.46	EPA 200.8
			099200-001	Silver	ND	0.0002	U	5	EPA 200.8
			099200-001	Zinc	0.799	0.0035		2.2	EPA 200.8
WW007	2069G	25-Apr-16	099342-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099341-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099340-001	Cyanide, total	0.00177	0.00167	J	0.45	EPA 335.4
			099339-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
		26-Apr-16	099459-001	Aluminum	ND	0.015	U	900	EPA 200.8
			099459-004	Ammonia	4.93	0.085			EPA 350.1
			099459-001	Arsenic	ND	0.0017	U	0.051	EPA 200.8
			099459-001	Boron	0.012	0.004	J		EPA 200.8
			099459-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099459-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			099459-001	Copper	0.00233	0.00035		5.3	EPA 200.8
			099459-002	Fluoride	7.93	0.165		36	EPA 300.0
			099459-001	Lead	ND	0.0005	U	1	EPA 200.8
			099459-001	Mercury	ND	0.000067	U		EPA 245.1/245.2

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	26-Apr-16	099459-001	Molybdenum	0.0143	0.000165		2	EPA 200.8
			099459-001	Nickel	0.000885	0.0005	J	2	EPA 200.8
			099459-001	Selenium	ND	0.0015	U	0.46	EPA 200.8
			099459-001	Silver	ND	0.0002	U	5	EPA 200.8
			099459-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
		27-Apr-16	099201-001	Aluminum	ND	0.015	U	900	EPA 200.8
			099201-004	Ammonia	4.77	0.085			EPA 350.1
			099201-001	Arsenic	ND	0.0017	U	0.051	EPA 200.8
			099201-001	Boron	0.0145	0.004	J		EPA 200.8
			099201-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			099201-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			099201-001	Copper	0.00231	0.00035		5.3	EPA 200.8
			099201-002	Fluoride	9.7	0.165		36	EPA 300.0
			099201-001	Lead	ND	0.0005	U	1	EPA 200.8
			099201-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099201-001	Molybdenum	0.0146	0.000165		2	EPA 200.8
			099201-001	Nickel	0.00106	0.0005	J	2	EPA 200.8
			099201-001	Selenium	ND	0.0015	U	0.46	EPA 200.8
			099201-001	Silver	ND	0.0002	U	5	EPA 200.8
			099201-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
WW008	2069I	25-Apr-16	099346-001	Cyanide, total	0.00224	0.00167	J	0.45	EPA 335.4
			099344-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099347-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			099345-001	Cyanide, total	0.00402	0.00167	J	0.45	EPA 335.4
		26-Apr-16	099455-001	Aluminum	0.0368	0.015	J	900	EPA 200.8
			099455-007	Ammonia	51.5	0.85			EPA 350.1
			099455-001	Arsenic	0.0023	0.0017	J	0.051	EPA 200.8
			099455-001	Boron	0.0598	0.004			EPA 200.8
			099455-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	26-Apr-16	099455-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			099455-001	Copper	0.0263	0.00035		5.3	EPA 200.8
			099455-002	Fluoride	0.693	0.033		36	EPA 300.0
			099455-001	Lead	ND	0.0005	U	1	EPA 200.8
			099455-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099455-001	Molybdenum	0.00453	0.000165		2	EPA 200.8
			099455-001	Nickel	0.00555	0.0005		2	EPA 200.8
			099455-001	Selenium	0.00322	0.0015	J	0.46	EPA 200.8
			099455-001	Silver	ND	0.0002	U	5	EPA 200.8
			099455-001	Zinc	0.0378	0.0035		2.2	EPA 200.8
		27-Apr-16	099198-001	Aluminum	0.0473	0.015	J	900	EPA 200.8
			099198-004	Ammonia	48	0.85			EPA 350.1
			099198-001	Arsenic	0.00215	0.0017	J	0.051	EPA 200.8
			099198-001	Boron	0.0544	0.004			EPA 200.8
			099198-001	Cadmium	0.000228	0.00011	J	0.05	EPA 200.8
			099198-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			099198-001	Copper	0.0265	0.00035		5.3	EPA 200.8
			099198-002	Fluoride	0.658	0.033		36	EPA 300.0
			099198-001	Lead	ND	0.0005	U	1	EPA 200.8
			099198-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			099198-001	Molybdenum	0.00319	0.000165		2	EPA 200.8
			099198-001	Nickel	0.00506	0.0005		2	EPA 200.8
			099198-001	Selenium	0.00224	0.0015	J	0.46	EPA 200.8
			099198-001	Silver	ND	0.0002	U	5	EPA 200.8
			099198-001	Zinc	0.0488	0.0035		2.2	EPA 200.8
WW011	2069K	26-Apr-16	099449-001	Aluminum	0.0755	0.015		900	EPA 200.8
			099449-007	Ammonia	19.2	0.17			EPA 350.1
			099449-001	Arsenic	0.00377	0.0017	J	0.051	EPA 200.8
			099449-001	Boron	0.225	0.04			EPA 200.8

See notes at end of appendix.

Table E-1. Summary of inorganic results for permitted sanitary outfalls, February–April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	26-Apr-16	099449-001	Cadmium	0.000126	0.00011	J	0.05	EPA 200.8
			099449-001	Chromium	0.00342	0.002	J	4.1	EPA 200.8
			099449-001	Copper	0.0316	0.00035		5.3	EPA 200.8
			099449-002	Fluoride	0.939	0.033		36	EPA 300.0
			099449-001	Lead	0.0011	0.0005	J	1	EPA 200.8
			099449-001	Mercury	0.000233	0.000067			EPA 245.1/245.2
			099449-001	Molybdenum	0.238	0.00165		2	EPA 200.8
			099449-001	Nickel	0.00194	0.0005	J	2	EPA 200.8
			099449-001	Selenium	0.00337	0.0015	J	0.46	EPA 200.8
			099449-001	Silver	ND	0.0002	U	5	EPA 200.8
			099449-001	Zinc	0.0776	0.0035		2.2	EPA 200.8
		27-Apr-16	099197-001	Aluminum	0.085	0.015		900	EPA 200.8
			099197-004	Ammonia	16.9	0.17			EPA 350.1
			099197-001	Arsenic	0.00317	0.0017	J	0.051	EPA 200.8
			099197-001	Boron	0.229	0.02			EPA 200.8
			099197-001	Cadmium	0.000159	0.00011	J	0.05	EPA 200.8
			099197-001	Chromium	0.00366	0.002	J	4.1	EPA 200.8
			099197-001	Copper	0.0459	0.00035		5.3	EPA 200.8
			099197-002	Fluoride	0.825	0.033		36	EPA 300.0
			099197-001	Lead	0.0011	0.0005	J	1	EPA 200.8
			099197-001	Mercury	0.000247	0.000067			EPA 245.1/245.2
			099197-001	Molybdenum	0.165	0.000825		2	EPA 200.8
			099197-001	Nickel	0.00268	0.0005		2	EPA 200.8
			099197-001	Selenium	0.0024	0.0015	J	0.46	EPA 200.8
			099197-001	Silver	ND	0.0002	U	5	EPA 200.8
			099197-001	Zinc	0.0935	0.0035		2.2	EPA 200.8

See notes at end of appendix.

Table E-2. Summary of radiological results for permitted sanitary outfalls, April 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
CINT	2238A	26-Apr-2016	099461-002	Actinium-228	-16.6 ± 13.9	13.8	U	300,000	EPA 901.1
			099461-003	Alpha, gross	1.23 ± 2.17	3.72	U		EPA 900.0/SW-846 9310
			099461-002	Americium-241	-3.53 ± 7.96	12.3	U	200	EPA 901.1
			099461-002	Beryllium-7	-4 ± 15.6	26.4	U		EPA 901.1
			099461-003	Beta, gross	2.05 ± 2.13	3.51	U		EPA 900.0/SW-846 9310
			099461-002	Bismuth-212	10.1 ± 22.5	43.9	U		EPA 901.1
			099461-002	Bismuth-214	1.33 ± 7.05	7.62	U		EPA 901.1
			099461-002	Cesium-137	.776 ± 4.4	3.22	U	10,000	EPA 901.1
			099461-002	Cobalt-60	-.441 ± 1.86	3.28	U	30,000	EPA 901.1
			099461-002	Lead-212	-1.21 ± 5.06	6.56	U	20,000	EPA 901.1
			099461-002	Lead-214	2.04 ± 6.14	7.2	U	1,000,000	EPA 901.1
			099461-002	Neptunium-237	-1.36 ± 3.9	5.87	U		EPA 901.1
			099461-002	Potassium-40	-9.57 ± 31.9	44.1	U	40,000	EPA 901.1
			099461-002	Radium-223	-10.3 ± 33.4	57.6	U		EPA 901.1
			099461-002	Radium-224	-231 ± 121	58.6	U		EPA 901.1
			099461-002	Radium-226	-29.2 ± 71.9	76.7	U	600	EPA 901.1
			099461-002	Radium-228	-16.6 ± 13.9	13.8	U	600	EPA 901.1
			099461-002	Sodium-22	.502 ± 1.83	3.36	U		EPA 901.1
			099461-002	Thorium-227	-7.94 ± 15.3	22.8	U		EPA 901.1
			099461-002	Thorium-231	-5.07 ± 33.7	37.1	U	300	EPA 901.1
			099461-002	Thorium-234	36.2 ± 118	135	U	50,000	EPA 901.1
			099461-002	Uranium-235	5.58 ± 18.6	18.6	U	3,000	EPA 901.1
			099461-002	Uranium-238	36.2 ± 118	135	U	3,000	EPA 901.1
WW001	2069A	26-Apr-16	099451-004	Actinium-228	1.01 ± 16.6	18.3	U	300,000	EPA 901.1
			099451-003	Alpha, gross	.0365 ± 2.91	5.18	U		EPA 900.0/SW-846 9310
			099451-004	Americium-241	12.1 ± 15.5	22.9	U	200	EPA 901.1
			099451-004	Beryllium-7	2.36 ± 17.5	31.1	U		EPA 901.1
			099451-003	Beta, gross	13.9 ± 3.73	4.43			EPA 900.0/SW-846 9310

See notes at end of appendix.

Table E-2. Summary of radiological results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW001	2069A	26-Apr-16	099451-004	Bismuth-212	23.6 ± 39.4	51.8	U		EPA 901.1
			099451-004	Bismuth-214	-3.46 ± 8.11	8.62	U		EPA 901.1
			099451-004	Cesium-137	1.27 ± 2.33	4.05	U	10,000	EPA 901.1
			099451-004	Cobalt-60	-.849 ± 2.3	3.87	U	30,000	EPA 901.1
			099451-004	Lead-212	5.14 ± 7.8	8.15	U	20,000	EPA 901.1
			099451-004	Lead-214	4.16 ± 10	8.71	U	1,000,000	EPA 901.1
			099451-004	Neptunium-237	3.23 ± 4.52	7.48	U		EPA 901.1
			099451-004	Potassium-40	-8.6 ± 44.2	56.5	U	40,000	EPA 901.1
			099451-004	Radium-223	-4.98 ± 42.2	71.2	U		EPA 901.1
			099451-004	Radium-224	40.6 ± 41.1	63.5	U		EPA 901.1
			099451-004	Radium-226	-79.1 ± 90.4	96.7	U	600	EPA 901.1
			099451-004	Radium-228	1.01 ± 16.6	18.3	U	600	EPA 901.1
			099451-004	Sodium-22	-2.18 ± 2.97	3.82	U		EPA 901.1
			099451-004	Thorium-227	-1.01 ± 16	27.5	U		EPA 901.1
			099451-004	Thorium-231	54 ± 43.9	50.5	X	300	EPA 901.1
			099451-004	Thorium-234	177 ± 239	235	U	50,000	EPA 901.1
			099451-005	Tritium	49.4 ± 111	188	U	10,000,000	EPA 906.0 Modified
			099451-004	Uranium-235	.613 ± 23.6	23.8	U	3,000	EPA 901.1
			099451-004	Uranium-238	177 ± 239	235	U	3,000	EPA 901.1
WW006	2069F	26-Apr-16	099457-004	Actinium-228	2.95 ± 10.4	13.8	U	300,000	EPA 901.1
			099457-003	Alpha, gross	-.648 ± 2.31	4.22	U		EPA 900.0/SW-846 9310
			099457-004	Americium-241	3.48 ± 12.3	19	U	200	EPA 901.1
			099457-004	Beryllium-7	2.9 ± 13.8	24.4	U		EPA 901.1
			099457-003	Beta, gross	17.8 ± 3.66	2.92			EPA 900.0/SW-846 9310
			099457-004	Bismuth-212	-4.19 ± 23	41.1	U		EPA 901.1
			099457-004	Bismuth-214	9.92 ± 8.12	9.92	U		EPA 901.1
			099457-004	Cesium-137	-.198 ± 1.81	3.09	U	10,000	EPA 901.1
			099457-004	Cobalt-60	.83 ± 1.98	3.66	U	30,000	EPA 901.1

See notes at end of appendix.

Table E-2. Summary of radiological results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW006	2069F	26-Apr-16	099457-004	Lead-212	-.0348 ± 4.02	5.83	U	20,000	EPA 901.1
			099457-004	Lead-214	.91 ± 6.31	6.64	U	1,000,000	EPA 901.1
			099457-004	Neptunium-237	-.324 ± 3.42	5.68	U		EPA 901.1
			099457-004	Potassium-40	47 ± 44.3	31.4	X	40,000	EPA 901.1
			099457-004	Radium-223	-16.8 ± 32.7	55.9	U		EPA 901.1
			099457-004	Radium-224	-79.1 ± 60.8	53.3	U		EPA 901.1
			099457-004	Radium-226	-19.6 ± 60.9	78.5	U	600	EPA 901.1
			099457-004	Radium-228	2.95 ± 10.4	13.8	U	600	EPA 901.1
			099457-004	Sodium-22	1.7 ± 2.48	2.95	U		EPA 901.1
			099457-004	Thorium-227	7.17 ± 13.1	21.9	U		EPA 901.1
			099457-004	Thorium-231	-4.79 ± 37.8	41.7	U	300	EPA 901.1
			099457-004	Thorium-234	109 ± 191	206	U	50,000	EPA 901.1
			099457-005	Tritium	30.6 ± 111	189	U	10,000,000	EPA 906.0 Modified
			099457-004	Uranium-235	12.2 ± 19	18.9	U	3,000	EPA 901.1
			099457-004	Uranium-238	109 ± 191	206	U	3,000	EPA 901.1
WW008	2069I	26-Apr-16	099455-004	Actinium-228	3.69 ± 13.2	16.5	U	300,000	EPA 901.1
			099455-003	Alpha, gross	-.752 ± 1.53	2.78	U		EPA 900.0/SW-846 9310
			099455-004	Americium-241	6.73 ± 11.7	18.5	U	200	EPA 901.1
			099455-004	Beryllium-7	.289 ± 17.2	29.6	U		EPA 901.1
			099455-003	Beta, gross	20.2 ± 3.87	2.6			EPA 900.0/SW-846 9310
			099455-004	Bismuth-212	27.2 ± 27.4	46.6	U		EPA 901.1
			099455-004	Bismuth-214	-7.44 ± 8.67	8.15	U		EPA 901.1
			099455-004	Cesium-137	1.83 ± 2.07	3.58	U	10,000	EPA 901.1
			099455-004	Cobalt-60	-.834 ± 2.24	3.88	U	30,000	EPA 901.1
			099455-004	Lead-212	-6.06 ± 5.79	6.32	U	20,000	EPA 901.1
			099455-004	Lead-214	-3.36 ± 8.11	8.1	U	1,000,000	EPA 901.1
			099455-004	Neptunium-237	-1.92 ± 3.66	6.11	U		EPA 901.1
			099455-004	Potassium-40	5.89 ± 48.9	37.7	U	40,000	EPA 901.1

See notes at end of appendix.

Table E-2. Summary of radiological results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW008	2069I	26-Apr-16	099455-004	Radium-223	12.9 ± 38	66.6	U		EPA 901.1
			099455-004	Radium-224	-68.5 ± 63.1	60.6	U		EPA 901.1
			099455-004	Radium-226	-87.4 ± 77	76.9	U	600	EPA 901.1
			099455-004	Radium-228	3.69 ± 13.2	16.5	U	600	EPA 901.1
			099455-004	Sodium-22	2.58 ± 4.82	3.8	U		EPA 901.1
			099455-004	Thorium-227	-4.08 ± 14.6	25.5	U		EPA 901.1
			099455-004	Thorium-231	22.8 ± 41.9	40.4	U	300	EPA 901.1
			099455-004	Thorium-234	125 ± 174	142	U	50,000	EPA 901.1
			099455-005	Tritium	142 ± 105	168	U	10,000,000	EPA 906.0 Modified
			099455-004	Uranium-235	-4.27 ± 18.5	18.8	U	3,000	EPA 901.1
			099455-004	Uranium-238	125 ± 174	142	U	3,000	EPA 901.1
WW011	2069K	26-Apr-16	099449-004	Actinium-228	7.79 ± 15.7	16.4	U	300,000	EPA 901.1
			099449-003	Alpha, gross	-1.73 ± 1.94	3.64	U		EPA 900.0/SW-846 9310
			099449-004	Americium-241	-12.6 ± 17.1	27.3	U	200	EPA 901.1
			099449-004	Beryllium-7	3.38 ± 16	27.9	U		EPA 901.1
			099449-003	Beta, gross	32.5 ± 5.85	2.04			EPA 900.0/SW-846 9310
			099449-004	Bismuth-212	-52.4 ± 90.6	50	U		EPA 901.1
			099449-004	Bismuth-214	-2.78 ± 6.56	8.06	U		EPA 901.1
			099449-004	Cesium-137	2.94 ± 2.5	3.57	U	10,000	EPA 901.1
			099449-004	Cobalt-60	.928 ± 2.23	4.13	U	30,000	EPA 901.1
			099449-004	Lead-212	.786 ± 5.45	6.46	U	20,000	EPA 901.1
			099449-004	Lead-214	-.377 ± 7.14	8.13	U	1,000,000	EPA 901.1
			099449-004	Neptunium-237	.92 ± 3.61	6.37	U		EPA 901.1
			099449-004	Potassium-40	50 ± 45.8	35.8	X	40,000	EPA 901.1
			099449-004	Radium-223	11.5 ± 36.6	64.4	U		EPA 901.1
			099449-004	Radium-224	6.71 ± 35.8	63.5	U		EPA 901.1
			099449-004	Radium-226	-42.5 ± 67	72.5	U	600	EPA 901.1
			099449-004	Radium-228	7.79 ± 15.7	16.4	U	600	EPA 901.1

See notes at end of appendix.

Table E-2. Summary of radiological results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW011	2069K	26-Apr-16	099449-004	Sodium-22	4.9 ± 2.99	3.23	X		EPA 901.1
			099449-004	Thorium-227	6.74 ± 14.9	26.1	U		EPA 901.1
			099449-004	Thorium-231	2.65 ± 45.5	47.4	U	300	EPA 901.1
			099449-004	Thorium-234	-85.3 ± 204	226	U	50,000	EPA 901.1
			099449-005	Tritium	-66.1 ± 107	189	U	10,000,000	EPA 906.0 Modified
			099449-004	Uranium-235	13.5 ± 14	19.8	U	3,000	EPA 901.1
			099449-004	Uranium-238	-85.3 ± 204	226	U	3,000	EPA 901.1

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	27-Apr-2016	099202-001	Acenaphthene	ND	0.288	U	EPA 625
			099202-001	Acenaphthylene	ND	0.288	U	EPA 625
			099202-001	Anthracene	ND	0.288	U	EPA 625
			099202-001	Benzidine	ND	3.75	NU	EPA 625
			099202-001	Benzo(a)anthracene	ND	0.288	U	EPA 625
			099202-001	Benzo(a)pyrene	ND	0.288	U	EPA 625
			099202-001	Benzo(b)fluoranthene	ND	0.288	U	EPA 625
			099202-001	Benzo(ghi)perylene	ND	0.288	U	EPA 625
			099202-001	Benzo(k)fluoranthene	ND	0.288	U	EPA 625
			099202-001	Bromophenyl phenyl ether, 4-	ND	2.88	U	EPA 625
			099202-001	Butylbenzyl phthalate	ND	2.88	U	EPA 625
			099202-001	Chloro-3-methylphenol, 4-	ND	2.88	U	EPA 625
			099202-001	Chloroethoxy)methane, bis(2-	ND	2.88	U	EPA 625
			099202-001	Chloroethyl)ether, bis(2-	ND	2.88	U	EPA 625
			099202-001	Chloroisopropyl)ether,bis(1-	ND	2.88	U	EPA 625
			099202-001	Chloronaphthalene, 2-	ND	0.394	U	EPA 625
			099202-001	Chlorophenol, 2-	ND	2.88	U	EPA 625
			099202-001	Chlorophenyl phenyl ether, 4-	ND	2.88	U	EPA 625
			099202-001	Chrysene	ND	0.288	U	EPA 625
			099202-001	Di-n-butyl phthalate	ND	2.88	U	EPA 625
			099202-001	Di-n-octyl phthalate	ND	2.88	U	EPA 625
			099202-001	Dibenz[a,h]anthracene	ND	0.288	U	EPA 625
			099202-001	Dichlorobenzidine, 3,3'-	ND	2.88	U	EPA 625
			099202-001	Dichlorophenol, 2,4-	ND	2.88	U	EPA 625
			099202-001	Diethylphthalate	ND	2.88	U	EPA 625
			099202-001	Dimethylphenol, 2,4-	ND	2.88	U	EPA 625
			099202-001	Dimethylphthalate	ND	2.88	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	27-Apr-2016	099202-001	Dinitro-o-cresol	ND	2.88	*NU	EPA 625
			099202-001	Dinitrophenol, 2,4-	ND	4.81	NU	EPA 625
			099202-001	Dinitrotoluene, 2,4-	ND	2.88	U	EPA 625
			099202-001	Dinitrotoluene, 2,6-	ND	2.88	U	EPA 625
			099202-001	Diphenyl amine	ND	2.88	U	EPA 625
			099202-001	Diphenylhydrazine, 1,2-	ND	2.88	U	EPA 625
			099202-001	Ethylhexyl)phthalate, bis(2-	ND	2.88	U	EPA 625
			099202-001	Fluoranthene	ND	0.288	U	EPA 625
			099202-001	Fluorene	ND	0.288	U	EPA 625
			099202-001	Hexachlorobenzene	ND	2.88	U	EPA 625
			099202-001	Hexachlorobutadiene	ND	2.88	U	EPA 625
			099202-001	Hexachlorocyclopentadiene	ND	2.88	U	EPA 625
			099202-001	Hexachloroethane	ND	2.88	U	EPA 625
			099202-001	Indeno(1,2,3-c,d)pyrene	ND	0.288	U	EPA 625
			099202-001	Isophorone	ND	3.37	U	EPA 625
			099202-001	Naphthalene	ND	0.288	U	EPA 625
			099202-001	Nitro-benzene	ND	2.88	U	EPA 625
			099202-001	Nitrophenol, 2-	ND	2.88	U	EPA 625
			099202-001	Nitrophenol, 4-	ND	2.88	NU	EPA 625
			099202-001	Nitrosodimethylamine, n-	ND	2.88	U	EPA 625
			099202-001	Nitrosodipropylamine, n-	ND	2.88	U	EPA 625
			099202-001	Pentachlorophenol	ND	2.88	*U	EPA 625
			099202-001	Phenanthrene	ND	0.288	U	EPA 625
			099202-001	Phenol	ND	2.88	U	EPA 625
			099202-001	Pyrene	ND	0.288	U	EPA 625
			099202-001	Trichlorobenzene, 1,2,4-	ND	2.88	U	EPA 625
			099202-001	Trichlorophenol, 2,4,6-	ND	2.88	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	27-Apr-2016	099199-003	Acenaphthene	ND	0.294	U	EPA 625
			099199-003	Acenaphthylene	ND	0.294	U	EPA 625
			099199-003	Anthracene	ND	0.294	U	EPA 625
			099199-003	Benzidine	ND	3.82	NU	EPA 625
			099199-003	Benzo(a)anthracene	ND	0.294	U	EPA 625
			099199-003	Benzo(a)pyrene	ND	0.294	U	EPA 625
			099199-003	Benzo(b)fluoranthene	ND	0.294	U	EPA 625
			099199-003	Benzo(ghi)perylene	ND	0.294	U	EPA 625
			099199-003	Benzo(k)fluoranthene	ND	0.294	U	EPA 625
			099199-003	Bromophenyl phenyl ether, 4-	ND	2.94	U	EPA 625
			099199-003	Butylbenzyl phthalate	ND	2.94	U	EPA 625
			099199-003	Chloro-3-methylphenol, 4-	ND	2.94	U	EPA 625
			099199-003	Chloroethoxy)methane, bis(2-	ND	2.94	U	EPA 625
			099199-003	Chloroethyl)ether, bis(2-	ND	2.94	U	EPA 625
			099199-003	Chloroisopropyl)ether,bis(1-	ND	2.94	U	EPA 625
			099199-003	Chloronaphthalene, 2-	ND	0.402	U	EPA 625
			099199-003	Chlorophenol, 2-	ND	2.94	U	EPA 625
			099199-003	Chlorophenyl phenyl ether, 4-	ND	2.94	U	EPA 625
			099199-003	Chrysene	ND	0.294	U	EPA 625
			099199-003	Di-n-butyl phthalate	ND	2.94	U	EPA 625
			099199-003	Di-n-octyl phthalate	ND	2.94	U	EPA 625
			099199-003	Dibenz[a,h]anthracene	ND	0.294	U	EPA 625
			099199-003	Dichlorobenzidine, 3,3'-	ND	2.94	U	EPA 625
			099199-003	Dichlorophenol, 2,4-	ND	2.94	U	EPA 625
			099199-003	Diethylphthalate	ND	2.94	U	EPA 625
			099199-003	Dimethylphenol, 2,4-	ND	2.94	U	EPA 625
			099199-003	Dimethylphthalate	ND	2.94	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	27-Apr-2016	099199-003	Dinitro-o-cresol	ND	2.94	*NU	EPA 625
			099199-003	Dinitrophenol, 2,4-	ND	4.9	NU	EPA 625
			099199-003	Dinitrotoluene, 2,4-	ND	2.94	U	EPA 625
			099199-003	Dinitrotoluene, 2,6-	ND	2.94	U	EPA 625
			099199-003	Diphenyl amine	ND	2.94	U	EPA 625
			099199-003	Diphenylhydrazine, 1,2-	ND	2.94	U	EPA 625
			099199-003	Ethylhexyl)phthalate, bis(2-	ND	2.94	U	EPA 625
			099199-003	Fluoranthene	ND	0.294	U	EPA 625
			099199-003	Fluorene	ND	0.294	U	EPA 625
			099199-003	Hexachlorobenzene	ND	2.94	U	EPA 625
			099199-003	Hexachlorobutadiene	ND	2.94	U	EPA 625
			099199-003	Hexachlorocyclopentadiene	ND	2.94	U	EPA 625
			099199-003	Hexachloroethane	ND	2.94	U	EPA 625
			099199-003	Indeno(1,2,3-c,d)pyrene	ND	0.294	U	EPA 625
			099199-003	Isophorone	ND	3.43	U	EPA 625
			099199-003	Naphthalene	ND	0.294	U	EPA 625
			099199-003	Nitro-benzene	ND	2.94	U	EPA 625
			099199-003	Nitrophenol, 2-	ND	2.94	U	EPA 625
			099199-003	Nitrophenol, 4-	ND	2.94	NU	EPA 625
			099199-003	Nitrosodimethylamine, n-	ND	2.94	U	EPA 625
			099199-003	Nitrosodipropylamine, n-	ND	2.94	U	EPA 625
			099199-003	Pentachlorophenol	ND	2.94	*U	EPA 625
			099199-003	Phenanthrene	ND	0.294	U	EPA 625
			099199-003	Phenol	ND	2.94	U	EPA 625
			099199-003	Pyrene	ND	0.294	U	EPA 625
			099199-003	Trichlorobenzene, 1,2,4-	ND	2.94	U	EPA 625
			099199-003	Trichlorophenol, 2,4,6-	ND	2.94	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	27-Apr-2016	099200-003	Acenaphthene	ND	0.3	U	EPA 625
			099200-003	Acenaphthylene	ND	0.3	U	EPA 625
			099200-003	Anthracene	ND	0.3	U	EPA 625
			099200-003	Benzidine	ND	3.9	NU	EPA 625
			099200-003	Benzo(a)anthracene	ND	0.3	U	EPA 625
			099200-003	Benzo(a)pyrene	ND	0.3	U	EPA 625
			099200-003	Benzo(b)fluoranthene	ND	0.3	U	EPA 625
			099200-003	Benzo(ghi)perylene	ND	0.3	U	EPA 625
			099200-003	Benzo(k)fluoranthene	ND	0.3	U	EPA 625
			099200-003	Bromophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099200-003	Butylbenzyl phthalate	973	30		EPA 625
			099200-003	Chloro-3-methylphenol, 4-	ND	3	U	EPA 625
			099200-003	Chloroethoxy)methane, bis(2-	ND	3	U	EPA 625
			099200-003	Chloroethyl)ether, bis(2-	ND	3	U	EPA 625
			099200-003	Chloroisopropyl)ether,bis(1-	ND	3	U	EPA 625
			099200-003	Chloronaphthalene, 2-	ND	0.41	U	EPA 625
			099200-003	Chlorophenol, 2-	ND	3	U	EPA 625
			099200-003	Chlorophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099200-003	Chrysene	ND	0.3	U	EPA 625
			099200-003	Di-n-butyl phthalate	ND	3	U	EPA 625
			099200-003	Di-n-octyl phthalate	3.1	3	J	EPA 625
			099200-003	Dibenz[a,h]anthracene	ND	0.3	U	EPA 625
			099200-003	Dichlorobenzidine, 3,3'-	ND	3	U	EPA 625
			099200-003	Dichlorophenol, 2,4-	ND	3	U	EPA 625
			099200-003	Diethylphthalate	ND	3	U	EPA 625
			099200-003	Dimethylphenol, 2,4-	ND	3	U	EPA 625
			099200-003	Dimethylphthalate	ND	3	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	27-Apr-2016	099200-003	Dinitro-o-cresol	ND	3	*NU	EPA 625
			099200-003	Dinitrophenol, 2,4-	ND	5	NU	EPA 625
			099200-003	Dinitrotoluene, 2,4-	ND	3	U	EPA 625
			099200-003	Dinitrotoluene, 2,6-	ND	3	U	EPA 625
			099200-003	Diphenyl amine	ND	3	U	EPA 625
			099200-003	Diphenylhydrazine, 1,2-	ND	3	U	EPA 625
			099200-003	Ethylhexyl)phthalate, bis(2-	23.1	3		EPA 625
			099200-003	Fluoranthene	ND	0.3	U	EPA 625
			099200-003	Fluorene	ND	0.3	U	EPA 625
			099200-003	Hexachlorobenzene	ND	3	U	EPA 625
			099200-003	Hexachlorobutadiene	ND	3	U	EPA 625
			099200-003	Hexachlorocyclopentadiene	ND	3	U	EPA 625
			099200-003	Hexachloroethane	ND	3	U	EPA 625
			099200-003	Indeno(1,2,3-c,d)pyrene	ND	0.3	U	EPA 625
			099200-003	Isophorone	ND	3.5	U	EPA 625
			099200-003	Naphthalene	ND	0.3	U	EPA 625
			099200-003	Nitro-benzene	ND	3	U	EPA 625
			099200-003	Nitrophenol, 2-	ND	3	U	EPA 625
			099200-003	Nitrophenol, 4-	ND	3	NU	EPA 625
			099200-003	Nitrosodimethylamine, n-	ND	3	U	EPA 625
			099200-003	Nitrosodipropylamine, n-	ND	3	U	EPA 625
			099200-003	Pentachlorophenol	ND	3	*U	EPA 625
			099200-003	Phenanthrene	ND	0.3	U	EPA 625
			099200-003	Phenol	ND	3	U	EPA 625
			099200-003	Pyrene	ND	0.3	U	EPA 625
			099200-003	Trichlorobenzene, 1,2,4-	ND	3	U	EPA 625
			099200-003	Trichlorophenol, 2,4,6-	ND	3	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	27-Apr-2016	099201-003	Acenaphthene	ND	0.288	U	EPA 625
			099201-003	Acenaphthylene	ND	0.288	U	EPA 625
			099201-003	Anthracene	ND	0.288	U	EPA 625
			099201-003	Benzidine	ND	3.75	NU	EPA 625
			099201-003	Benzo(a)anthracene	ND	0.288	U	EPA 625
			099201-003	Benzo(a)pyrene	ND	0.288	U	EPA 625
			099201-003	Benzo(b)fluoranthene	ND	0.288	U	EPA 625
			099201-003	Benzo(ghi)perylene	ND	0.288	U	EPA 625
			099201-003	Benzo(k)fluoranthene	ND	0.288	U	EPA 625
			099201-003	Bromophenyl phenyl ether, 4-	ND	2.88	U	EPA 625
			099201-003	Butylbenzyl phthalate	ND	2.88	U	EPA 625
			099201-003	Chloro-3-methylphenol, 4-	ND	2.88	U	EPA 625
			099201-003	Chloroethoxy)methane, bis(2-	ND	2.88	U	EPA 625
			099201-003	Chloroethyl)ether, bis(2-	ND	2.88	U	EPA 625
			099201-003	Chloroisopropyl)ether,bis(1-	ND	2.88	U	EPA 625
			099201-003	Chloronaphthalene, 2-	ND	0.394	U	EPA 625
			099201-003	Chlorophenol, 2-	ND	2.88	U	EPA 625
			099201-003	Chlorophenyl phenyl ether, 4-	ND	2.88	U	EPA 625
			099201-003	Chrysene	ND	0.288	U	EPA 625
			099201-003	Di-n-butyl phthalate	ND	2.88	U	EPA 625
			099201-003	Di-n-octyl phthalate	ND	2.88	U	EPA 625
			099201-003	Dibenz[a,h]anthracene	ND	0.288	U	EPA 625
			099201-003	Dichlorobenzidine, 3,3'-	ND	2.88	U	EPA 625
			099201-003	Dichlorophenol, 2,4-	ND	2.88	U	EPA 625
			099201-003	Diethylphthalate	ND	2.88	U	EPA 625
			099201-003	Dimethylphenol, 2,4-	ND	2.88	U	EPA 625
			099201-003	Dimethylphthalate	ND	2.88	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	27-Apr-2016	099201-003	Dinitro-o-cresol	ND	2.88	*NU	EPA 625
			099201-003	Dinitrophenol, 2,4-	ND	4.81	NU	EPA 625
			099201-003	Dinitrotoluene, 2,4-	ND	2.88	U	EPA 625
			099201-003	Dinitrotoluene, 2,6-	ND	2.88	U	EPA 625
			099201-003	Diphenyl amine	ND	2.88	U	EPA 625
			099201-003	Diphenylhydrazine, 1,2-	ND	2.88	U	EPA 625
			099201-003	Ethylhexyl)phthalate, bis(2-	ND	2.88	U	EPA 625
			099201-003	Fluoranthene	ND	0.288	U	EPA 625
			099201-003	Fluorene	ND	0.288	U	EPA 625
			099201-003	Hexachlorobenzene	ND	2.88	U	EPA 625
			099201-003	Hexachlorobutadiene	ND	2.88	U	EPA 625
			099201-003	Hexachlorocyclopentadiene	ND	2.88	U	EPA 625
			099201-003	Hexachloroethane	ND	2.88	U	EPA 625
			099201-003	Indeno(1,2,3-c,d)pyrene	ND	0.288	U	EPA 625
			099201-003	Isophorone	ND	3.37	U	EPA 625
			099201-003	Naphthalene	ND	0.288	U	EPA 625
			099201-003	Nitro-benzene	ND	2.88	U	EPA 625
			099201-003	Nitrophenol, 2-	ND	2.88	U	EPA 625
			099201-003	Nitrophenol, 4-	ND	2.88	NU	EPA 625
			099201-003	Nitrosodimethylamine, n-	ND	2.88	U	EPA 625
			099201-003	Nitrosodipropylamine, n-	ND	2.88	U	EPA 625
			099201-003	Pentachlorophenol	ND	2.88	*U	EPA 625
			099201-003	Phenanthrene	ND	0.288	U	EPA 625
			099201-003	Phenol	ND	2.88	U	EPA 625
			099201-003	Pyrene	ND	0.288	U	EPA 625
			099201-003	Trichlorobenzene, 1,2,4-	ND	2.88	U	EPA 625
			099201-003	Trichlorophenol, 2,4,6-	ND	2.88	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	27-Apr-2016	099198-003	Acenaphthene	ND	0.3	U	EPA 625
			099198-003	Acenaphthylene	ND	0.3	U	EPA 625
			099198-003	Anthracene	ND	0.3	U	EPA 625
			099198-003	Benzidine	ND	3.9	NU	EPA 625
			099198-003	Benzo(a)anthracene	ND	0.3	U	EPA 625
			099198-003	Benzo(a)pyrene	ND	0.3	U	EPA 625
			099198-003	Benzo(b)fluoranthene	ND	0.3	U	EPA 625
			099198-003	Benzo(ghi)perylene	ND	0.3	U	EPA 625
			099198-003	Benzo(k)fluoranthene	ND	0.3	U	EPA 625
			099198-003	Bromophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099198-003	Butylbenzyl phthalate	ND	3	U	EPA 625
			099198-003	Chloro-3-methylphenol, 4-	ND	3	U	EPA 625
			099198-003	Chloroethoxy)methane, bis(2-	ND	3	U	EPA 625
			099198-003	Chloroethyl)ether, bis(2-	ND	3	U	EPA 625
			099198-003	Chloroisopropyl)ether,bis(1-	ND	3	U	EPA 625
			099198-003	Chloronaphthalene, 2-	ND	0.41	U	EPA 625
			099198-003	Chlorophenol, 2-	ND	3	U	EPA 625
			099198-003	Chlorophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099198-003	Chrysene	ND	0.3	U	EPA 625
			099198-003	Di-n-butyl phthalate	ND	3	U	EPA 625
			099198-003	Di-n-octyl phthalate	ND	3	U	EPA 625
			099198-003	Dibenz[a,h]anthracene	ND	0.3	U	EPA 625
			099198-003	Dichlorobenzidine, 3,3'-	ND	3	U	EPA 625
			099198-003	Dichlorophenol, 2,4-	ND	3	U	EPA 625
			099198-003	Diethylphthalate	ND	3	U	EPA 625
			099198-003	Dimethylphenol, 2,4-	ND	3	U	EPA 625
			099198-003	Dimethylphthalate	ND	3	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	27-Apr-2016	099198-003	Dinitro-o-cresol	ND	3	*NU	EPA 625
			099198-003	Dinitrophenol, 2,4-	ND	5	NU	EPA 625
			099198-003	Dinitrotoluene, 2,4-	ND	3	U	EPA 625
			099198-003	Dinitrotoluene, 2,6-	ND	3	U	EPA 625
			099198-003	Diphenyl amine	ND	3	U	EPA 625
			099198-003	Diphenylhydrazine, 1,2-	ND	3	U	EPA 625
			099198-003	Ethylhexyl)phthalate, bis(2-	ND	3	U	EPA 625
			099198-003	Fluoranthene	ND	0.3	U	EPA 625
			099198-003	Fluorene	ND	0.3	U	EPA 625
			099198-003	Hexachlorobenzene	ND	3	U	EPA 625
			099198-003	Hexachlorobutadiene	ND	3	U	EPA 625
			099198-003	Hexachlorocyclopentadiene	ND	3	U	EPA 625
			099198-003	Hexachloroethane	ND	3	U	EPA 625
			099198-003	Indeno(1,2,3-c,d)pyrene	ND	0.3	U	EPA 625
			099198-003	Isophorone	ND	3.5	U	EPA 625
			099198-003	Naphthalene	ND	0.3	U	EPA 625
			099198-003	Nitro-benzene	ND	3	U	EPA 625
			099198-003	Nitrophenol, 2-	ND	3	U	EPA 625
			099198-003	Nitrophenol, 4-	ND	3	NU	EPA 625
			099198-003	Nitrosodimethylamine, n-	ND	3	U	EPA 625
			099198-003	Nitrosodipropylamine, n-	ND	3	U	EPA 625
			099198-003	Pentachlorophenol	ND	3	*U	EPA 625
			099198-003	Phenanthrene	ND	0.3	U	EPA 625
			099198-003	Phenol	ND	3	U	EPA 625
			099198-003	Pyrene	ND	0.3	U	EPA 625
			099198-003	Trichlorobenzene, 1,2,4-	ND	3	U	EPA 625
			099198-003	Trichlorophenol, 2,4,6-	ND	3	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	27-Apr-2016	099197-003	Acenaphthene	ND	0.3	U	EPA 625
			099197-003	Acenaphthylene	ND	0.3	U	EPA 625
			099197-003	Anthracene	ND	0.3	U	EPA 625
			099197-003	Benzidine	ND	3.9	NU	EPA 625
			099197-003	Benzo(a)anthracene	ND	0.3	U	EPA 625
			099197-003	Benzo(a)pyrene	ND	0.3	U	EPA 625
			099197-003	Benzo(b)fluoranthene	ND	0.3	U	EPA 625
			099197-003	Benzo(ghi)perylene	ND	0.3	U	EPA 625
			099197-003	Benzo(k)fluoranthene	ND	0.3	U	EPA 625
			099197-003	Bromophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099197-003	Butylbenzyl phthalate	ND	3	U	EPA 625
			099197-003	Chloro-3-methylphenol, 4-	ND	3	U	EPA 625
			099197-003	Chloroethoxy)methane, bis(2-	ND	3	U	EPA 625
			099197-003	Chloroethyl)ether, bis(2-	ND	3	U	EPA 625
			099197-003	Chloroisopropyl)ether,bis(1-	ND	3	U	EPA 625
			099197-003	Chloronaphthalene, 2-	ND	0.41	U	EPA 625
			099197-003	Chlorophenol, 2-	ND	3	U	EPA 625
			099197-003	Chlorophenyl phenyl ether, 4-	ND	3	U	EPA 625
			099197-003	Chrysene	ND	0.3	U	EPA 625
			099197-003	Di-n-butyl phthalate	ND	3	U	EPA 625
			099197-003	Di-n-octyl phthalate	ND	3	U	EPA 625
			099197-003	Dibenz[a,h]anthracene	ND	0.3	U	EPA 625
			099197-003	Dichlorobenzidine, 3,3'-	ND	3	U	EPA 625
			099197-003	Dichlorophenol, 2,4-	ND	3	U	EPA 625
			099197-003	Diethylphthalate	ND	3	U	EPA 625
			099197-003	Dimethylphenol, 2,4-	ND	3	U	EPA 625
			099197-003	Dimethylphthalate	ND	3	U	EPA 625

See notes at end of appendix.

Table E-3. Summary of semivolatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	27-Apr-2016	099197-003	Dinitro-o-cresol	ND	3	*NU	EPA 625
			099197-003	Dinitrophenol, 2,4-	ND	5	NU	EPA 625
			099197-003	Dinitrotoluene, 2,4-	ND	3	U	EPA 625
			099197-003	Dinitrotoluene, 2,6-	ND	3	U	EPA 625
			099197-003	Diphenyl amine	ND	3	U	EPA 625
			099197-003	Diphenylhydrazine, 1,2-	ND	3	U	EPA 625
			099197-003	Ethylhexyl)phthalate, bis(2-	ND	3	U	EPA 625
			099197-003	Fluoranthene	ND	0.3	U	EPA 625
			099197-003	Fluorene	ND	0.3	U	EPA 625
			099197-003	Hexachlorobenzene	ND	3	U	EPA 625
			099197-003	Hexachlorobutadiene	ND	3	U	EPA 625
			099197-003	Hexachlorocyclopentadiene	ND	3	U	EPA 625
			099197-003	Hexachloroethane	ND	3	U	EPA 625
			099197-003	Indeno(1,2,3-c,d)pyrene	ND	0.3	U	EPA 625
			099197-003	Isophorone	ND	3.5	U	EPA 625
			099197-003	Naphthalene	ND	0.3	U	EPA 625
			099197-003	Nitro-benzene	ND	3	U	EPA 625
			099197-003	Nitrophenol, 2-	ND	3	U	EPA 625
			099197-003	Nitrophenol, 4-	ND	3	NU	EPA 625
			099197-003	Nitrosodimethylamine, n-	ND	3	U	EPA 625
			099197-003	Nitrosodipropylamine, n-	ND	3	U	EPA 625
			099197-003	Pentachlorophenol	ND	3	*U	EPA 625
			099197-003	Phenanthrene	ND	0.3	U	EPA 625
			099197-003	Phenol	ND	3	U	EPA 625
			099197-003	Pyrene	ND	0.3	U	EPA 625
			099197-003	Trichlorobenzene, 1,2,4-	ND	3	U	EPA 625
			099197-003	Trichlorophenol, 2,4,6-	ND	3	U	EPA 625

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	26-Apr-2016	099461-005	Acrolein	ND	1.5	UH	EPA 624
			099461-005	Acrylonitrile	ND	1.5	UH	EPA 624
			099461-005	Benzene	ND	0.3	U	EPA 624
			099461-005	Bromodichloromethane	1.81	0.3		EPA 624
			099461-005	Bromoform	0.39	0.3	J	EPA 624
			099461-005	Bromomethane	ND	0.3	U	EPA 624
			099461-005	Carbon tetrachloride	ND	0.3	U	EPA 624
			099461-005	Chlorobenzene	ND	0.3	U	EPA 624
			099461-005	Chloroethane	ND	0.3	U	EPA 624
			099461-005	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099461-005	Chloroform	1.6	0.3		EPA 624
			099461-005	Chloromethane	ND	0.3	U	EPA 624
			099461-005	Dibromochloromethane	1.19	0.3		EPA 624
			099461-005	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099461-005	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099461-005	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099461-005	Dichlorodifluoromethane	ND	0.3	U	EPA 624
			099461-005	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099461-005	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099461-005	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099461-005	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099461-005	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099461-005	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099461-005	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624
			099461-005	Ethyl benzene	ND	0.3	U	EPA 624
			099461-005	Methylene chloride	ND	1	U	EPA 624
			099461-005	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099461-005	Tetrachloroethene	ND	0.3	U	EPA 624
			099461-005	Toluene	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	26-Apr-2016	099461-005	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099461-005	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099461-005	Trichloroethene	ND	0.3	U	EPA 624
			099461-005	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099461-005	Vinyl chloride	ND	0.3	U	EPA 624
WW001	2069A	26-Apr-2016	099451-006	Acrolein	ND	1.5	UH	EPA 624
			099451-006	Acrylonitrile	ND	1.5	UH	EPA 624
			099451-006	Benzene	ND	0.3	U	EPA 624
			099451-006	Bromodichloromethane	ND	0.3	U	EPA 624
			099451-006	Bromoform	3.04	0.3		EPA 624
			099451-006	Bromomethane	ND	0.3	U	EPA 624
			099451-006	Carbon tetrachloride	ND	0.3	U	EPA 624
			099451-006	Chlorobenzene	ND	0.3	U	EPA 624
			099451-006	Chloroethane	ND	0.3	U	EPA 624
			099451-006	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099451-006	Chloroform	ND	0.3	U	EPA 624
			099451-006	Chloromethane	ND	0.3	U	EPA 624
			099451-006	Dibromochloromethane	0.67	0.3	J	EPA 624
			099451-006	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099451-006	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099451-006	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099451-006	Dichlorodifluoromethane	ND	0.3	U	EPA 624
			099451-006	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099451-006	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099451-006	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099451-006	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099451-006	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099451-006	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099451-006	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	26-Apr-2016	099451-006	Ethyl benzene	ND	0.3	U	EPA 624
			099451-006	Methylene chloride	ND	1	U	EPA 624
			099451-006	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099451-006	Tetrachloroethene	ND	0.3	U	EPA 624
			099451-006	Toluene	ND	0.3	U	EPA 624
			099451-006	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099451-006	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099451-006	Trichloroethene	ND	0.3	U	EPA 624
			099451-006	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099451-006	Vinyl chloride	ND	0.3	U	EPA 624
WW006	2069F	26-Apr-2016	099457-006	Acrolein	ND	1.5	UH	EPA 624
			099457-006	Acrylonitrile	ND	1.5	UH	EPA 624
			099457-006	Benzene	ND	0.3	U	EPA 624
			099457-006	Bromodichloromethane	ND	0.3	U	EPA 624
			099457-006	Bromoform	ND	0.3	U	EPA 624
			099457-006	Bromomethane	ND	0.3	U	EPA 624
			099457-006	Carbon tetrachloride	ND	0.3	U	EPA 624
			099457-006	Chlorobenzene	ND	0.3	U	EPA 624
			099457-006	Chloroethane	ND	0.3	U	EPA 624
			099457-006	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099457-006	Chloroform	ND	0.3	U	EPA 624
			099457-006	Chloromethane	ND	0.3	U	EPA 624
			099457-006	Dibromochloromethane	ND	0.3	U	EPA 624
			099457-006	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099457-006	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099457-006	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099457-006	Dichlorodifluoromethane	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	26-Apr-2016	099457-006	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099457-006	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099457-006	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099457-006	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099457-006	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099457-006	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099457-006	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624
			099457-006	Ethyl benzene	ND	0.3	U	EPA 624
			099457-006	Methylene chloride	ND	1	U	EPA 624
			099457-006	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099457-006	Tetrachloroethene	ND	0.3	U	EPA 624
			099457-006	Toluene	ND	0.3	U	EPA 624
			099457-006	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099457-006	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099457-006	Trichloroethene	ND	0.3	U	EPA 624
			099457-006	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099457-006	Vinyl chloride	ND	0.3	U	EPA 624
WW007	2069G	26-Apr-2016	099459-003	Acrolein	ND	1.5	UH	EPA 624
			099459-003	Acrylonitrile	ND	1.5	UH	EPA 624
			099459-003	Benzene	ND	0.3	U	EPA 624
			099459-003	Bromodichloromethane	ND	0.3	U	EPA 624
			099459-003	Bromoform	ND	0.3	U	EPA 624
			099459-003	Bromomethane	ND	0.3	U	EPA 624
			099459-003	Carbon tetrachloride	ND	0.3	U	EPA 624
			099459-003	Chlorobenzene	ND	0.3	U	EPA 624
			099459-003	Chloroethane	ND	0.3	U	EPA 624
			099459-003	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099459-003	Chloroform	ND	0.3	U	EPA 624
			099459-003	Chloromethane	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	26-Apr-2016	099459-003	Dibromochloromethane	0.32	0.3	J	EPA 624
			099459-003	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099459-003	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099459-003	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099459-003	Dichlorodifluoromethane	ND	0.3	U	EPA 624
			099459-003	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099459-003	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099459-003	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099459-003	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099459-003	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099459-003	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099459-003	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624
			099459-003	Ethyl benzene	ND	0.3	U	EPA 624
			099459-003	Methylene chloride	ND	1	U	EPA 624
			099459-003	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099459-003	Tetrachloroethene	ND	0.3	U	EPA 624
			099459-003	Toluene	ND	0.3	U	EPA 624
			099459-003	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099459-003	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099459-003	Trichloroethene	ND	0.3	U	EPA 624
			099459-003	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099459-003	Vinyl chloride	ND	0.3	U	EPA 624
WW008	2069I	26-Apr-2016	099455-006	Acrolein	ND	1.5	UH	EPA 624
			099455-006	Acrylonitrile	ND	1.5	UH	EPA 624
			099455-006	Benzene	ND	0.3	U	EPA 624
			099455-006	Bromodichloromethane	ND	0.3	U	EPA 624
			099455-006	Bromoform	ND	0.3	U	EPA 624
			099455-006	Bromomethane	ND	0.3	U	EPA 624
			099455-006	Carbon tetrachloride	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	26-Apr-2016	099455-006	Chlorobenzene	ND	0.3	U	EPA 624
			099455-006	Chloroethane	ND	0.3	U	EPA 624
			099455-006	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099455-006	Chloroform	ND	0.3	U	EPA 624
			099455-006	Chloromethane	ND	0.3	U	EPA 624
			099455-006	Dibromochloromethane	ND	0.3	U	EPA 624
			099455-006	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099455-006	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099455-006	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099455-006	Dichlorodifluoromethane	ND	0.3	U	EPA 624
			099455-006	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099455-006	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099455-006	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099455-006	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099455-006	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099455-006	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099455-006	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624
			099455-006	Ethyl benzene	ND	0.3	U	EPA 624
			099455-006	Methylene chloride	ND	1	U	EPA 624
			099455-006	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099455-006	Tetrachloroethene	ND	0.3	U	EPA 624
			099455-006	Toluene	ND	0.3	U	EPA 624
			099455-006	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099455-006	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099455-006	Trichloroethene	ND	0.3	U	EPA 624
			099455-006	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099455-006	Vinyl chloride	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	26-Apr-16	099449-006	Acrolein	ND	1.5	UH	EPA 624
			099449-006	Acrylonitrile	ND	1.5	UH	EPA 624
			099449-006	Benzene	ND	0.3	U	EPA 624
			099449-006	Bromodichloromethane	ND	0.3	U	EPA 624
			099449-006	Bromoform	6.45	0.3		EPA 624
			099449-006	Bromomethane	ND	0.3	U	EPA 624
			099449-006	Carbon tetrachloride	ND	0.3	U	EPA 624
			099449-006	Chlorobenzene	ND	0.3	U	EPA 624
			099449-006	Chloroethane	ND	0.3	U	EPA 624
			099449-006	Chloroethyl vinyl ether, 2-	ND	1.5	NU	EPA 624
			099449-006	Chloroform	ND	0.3	U	EPA 624
			099449-006	Chloromethane	ND	0.3	U	EPA 624
			099449-006	Dibromochloromethane	ND	0.3	U	EPA 624
			099449-006	Dichlorobenzene, 1,2-	ND	0.3	U	EPA 624
			099449-006	Dichlorobenzene, 1,3-	ND	0.3	U	EPA 624
			099449-006	Dichlorobenzene, 1,4-	ND	0.3	U	EPA 624
			099449-006	Dichlorodifluoromethane	ND	0.3	U	EPA 624
			099449-006	Dichloroethane, 1,1-	ND	0.3	U	EPA 624
			099449-006	Dichloroethane, 1,2-	ND	0.3	U	EPA 624
			099449-006	Dichloroethene, 1,1-	ND	0.3	U	EPA 624
			099449-006	Dichloroethene, trans-1,2-	ND	0.3	U	EPA 624
			099449-006	Dichloropropane, 1,2-	ND	0.3	U	EPA 624
			099449-006	Dichloropropene, cis-1,3-	ND	0.3	U	EPA 624
			099449-006	Dichloropropene, trans-1,3-	ND	0.3	U	EPA 624
			099449-006	Ethyl benzene	ND	0.3	U	EPA 624
			099449-006	Methylene chloride	ND	1	U	EPA 624
			099449-006	Tetrachloroethane, 1,1,2,2-	ND	0.3	U	EPA 624
			099449-006	Tetrachloroethene	ND	0.3	U	EPA 624
			099449-006	Toluene	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-4. Summary of volatile organic compound results for permitted sanitary outfalls, April 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	26-Apr-16	099449-006	Trichloroethane, 1,1,1-	ND	0.3	U	EPA 624
			099449-006	Trichloroethane, 1,1,2-	ND	0.3	U	EPA 624
			099449-006	Trichloroethene	ND	0.3	U	EPA 624
			099449-006	Trichlorofluoromethane	ND	0.3	U	EPA 624
			099449-006	Vinyl chloride	ND	0.3	U	EPA 624

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	22-Aug-2016	100020-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100021-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100019-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100018-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
		23-Aug-2016	100016-001	Aluminum	ND	0.015	U	900	EPA 200.8
			100016-001	Arsenic	0.00583	0.0017		0.051	EPA 200.8
			100016-001	Boron	0.0334	0.004			EPA 200.8
			100016-001	Cadmium	ND	0.00011	U	0.05	EPA 200.8
			100016-001	Chromium	ND	0.002	U	4.1	EPA 200.8
			100016-001	Copper	0.0103	0.00035		5.3	EPA 200.8
			100016-002	Fluoride	1.08	0.033		36	EPA 300.0
			100016-001	Lead	ND	0.0005	U	1	EPA 200.8
			100016-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100016-001	Molybdenum	0.076	0.000165		2	EPA 200.8
			100016-001	Nickel	ND	0.0005	U	2	EPA 200.8
			100016-001	Selenium	ND	0.0015	U	0.46	EPA 200.8
			100016-001	Silver	ND	0.0002	U	5	EPA 200.8
			100016-001	Zinc	0.00443	0.0035	J	2.2	EPA 200.8
		24-Aug-2016	100017-001	Aluminum	0.0152	0.015	J	900	EPA 200.8
			100017-001	Arsenic	0.00462	0.0017	J	0.051	EPA 200.8
			100017-001	Boron	0.0318	0.0075			EPA 200.8
			100017-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100017-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100017-001	Copper	0.00517	0.00035		5.3	EPA 200.8
			100017-002	Fluoride	0.629	0.033		36	EPA 300.0
			100017-001	Lead	ND	0.0005	U	1	EPA 200.8
			100017-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100017-001	Molybdenum	0.062	0.0003		2	EPA 200.8
			100017-001	Nickel	ND	0.0005	U	2	EPA 200.8

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	24-Aug-2016	100017-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100017-001	Silver	ND	0.0004	U	5	EPA 200.8
			100017-001	Zinc	0.00531	0.0035	J	2.2	EPA 200.8
		4-Oct-2016	100619-005	Ammonia	0.149	0.017	B		EPA 350.1
		5-Oct-2016	100628-002	Ammonia	0.164	0.017	*		EPA 350.1
WW001	2069A	4-Oct-2016	100613-001	Aluminum	0.0859	0.015		900	EPA 200.8
			100613-007	Ammonia	18.2	0.17	B		EPA 350.1
			100613-001	Arsenic	0.00627	0.0017		0.051	EPA 200.8
			100613-001	Boron	0.099	0.0075			EPA 200.8
			100613-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100613-001	Chromium	0.00402	0.003	J	4.1	EPA 200.8
			100613-001	Copper	0.0325	0.00035		5.3	EPA 200.8
			100613-002	Fluoride	6.18	0.066		36	EPA 300.0
			100613-001	Lead	0.0935	0.0005		1	EPA 200.8
			100613-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100613-001	Molybdenum	0.0141	0.0003		2	EPA 200.8
			100613-001	Nickel	0.00282	0.0005		2	EPA 200.8
			100613-001	Selenium	0.00336	0.002	J	0.46	EPA 200.8
			100613-001	Silver	ND	0.0004	U	5	EPA 200.8
			100613-001	Zinc	0.173	0.0035		2.2	EPA 200.8
		5-Oct-2016	100625-001	Aluminum	0.0426	0.015	J	900	EPA 200.8
			100625-004	Ammonia	20.1	0.85	*		EPA 350.1
			100625-001	Arsenic	0.00581	0.0017		0.051	EPA 200.8
			100625-001	Boron	0.0895	0.0075			EPA 200.8
			100625-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100625-001	Chromium	0.0032	0.003	J	4.1	EPA 200.8
			100625-001	Copper	0.0196	0.00035		5.3	EPA 200.8
			100625-002	Fluoride	7.18	0.165		36	EPA 300.0
			100625-001	Lead	0.0216	0.0005		1	EPA 200.8

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	5-Oct-2016	100625-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100625-001	Molybdenum	0.0131	0.0003		2	EPA 200.8
			100625-001	Nickel	0.00208	0.0005		2	EPA 200.8
			100625-001	Selenium	0.00289	0.002	J	0.46	EPA 200.8
			100625-001	Silver	ND	0.0004	U	5	EPA 200.8
			100625-001	Zinc	0.105	0.0035		2.2	EPA 200.8
WW006	2069F	4-Oct-2016	100615-001	Aluminum	0.0705	0.015		900	EPA 200.8
			100615-007	Ammonia	29.6	0.85	B		EPA 350.1
			100615-001	Arsenic	0.00375	0.0017	J	0.051	EPA 200.8
			100615-001	Boron	0.0911	0.0075			EPA 200.8
			100615-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100615-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100615-001	Copper	0.0159	0.00035		5.3	EPA 200.8
			100604-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100606-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100607-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100605-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100615-002	Fluoride	0.7	0.033		36	EPA 300.0
			100615-001	Lead	ND	0.0005	U	1	EPA 200.8
			100615-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100615-001	Molybdenum	0.0301	0.0003		2	EPA 200.8
			100615-001	Nickel	0.00124	0.0005	J	2	EPA 200.8
			100615-001	Selenium	0.00201	0.002	J	0.46	EPA 200.8
			100615-001	Silver	ND	0.0004	U	5	EPA 200.8
			100615-001	Zinc	0.0396	0.0035		2.2	EPA 200.8
		5-Oct-2016	100626-001	Aluminum	0.0391	0.015	J	900	EPA 200.8
			100626-004	Ammonia	28.6	0.85	*		EPA 350.1
			100626-001	Arsenic	0.00338	0.0017	J	0.051	EPA 200.8
			100626-001	Boron	0.113	0.0075			EPA 200.8

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	5-Oct-2016	100626-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100626-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100626-001	Copper	0.0111	0.00035		5.3	EPA 200.8
			100612-001	Cyanide, total	0.00235	0.00167	J	0.45	EPA 335.4
			100611-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100610-001	Cyanide, total	DN	0.00167	U	0.45	EPA 335.4
			100609-001	Cyanide, total	0.00215	0.00167	J	0.45	EPA 335.4
			100626-002	Fluoride	0.715	0.033		36	EPA 300.0
			100626-001	Lead	ND	0.0005	U	1	EPA 200.8
			100626-001	Mercury	DN	0.000067	U		EPA 245.1/245.2
			100626-001	Molybdenum	0.026	0.0003		2	EPA 200.8
			100626-001	Nickel	0.000991	0.0005	J	2	EPA 200.8
			100626-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100626-001	Silver	DN	0.0004	U	5	EPA 200.8
			100626-001	Zinc	0.0261	0.0035		2.2	EPA 200.8
WW007	2069G	3-Oct-2016	100601-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100603-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100602-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
			100600-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
		4-Oct-2016	100617-001	Aluminum	ND	0.015	U	900	EPA 200.8
			100617-004	Ammonia	3.61	0.085	B		EPA 350.1
			100617-001	Arsenic	0.00226	0.0017	J	0.051	EPA 200.8
			100617-001	Boron	0.0206	0.0075			EPA 200.8
			100617-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100617-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100617-001	Copper	0.00156	0.00035		5.3	EPA 200.8
			100617-002	Fluoride	8.58	0.066		36	EPA 300.0
			100617-001	Lead	ND	0.0005	U	1	EPA 200.8
			100617-001	Mercury	ND	0.000067	U		EPA 245.1/245.2

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	4-Oct-2016	100617-001	Molybdenum	0.0123	0.0003		2	EPA 200.8
			100617-001	Nickel	0.00128	0.0005	J	2	EPA 200.8
			100617-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100617-001	Silver	ND	0.0004	U	5	EPA 200.8
			100617-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
		5-Oct-2016	100627-001	Aluminum	ND	0.015	U	900	EPA 200.8
			100627-004	Ammonia	3.92	0.085	*		EPA 350.1
			100627-001	Arsenic	0.00314	0.0017	J	0.051	EPA 200.8
			100627-001	Boron	0.0251	0.0075			EPA 200.8
			100627-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100627-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100627-001	Copper	0.00226	0.00035		5.3	EPA 200.8
			100627-002	Fluoride	9.95	0.165		36	EPA 300.0
			100627-001	Lead	ND	0.0005	U	1	EPA 200.8
			100627-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100627-001	Molybdenum	0.0183	0.0003		2	EPA 200.8
			100627-001	Nickel	0.00187	0.0005	J	2	EPA 200.8
			100627-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100627-001	Silver	ND	0.0004	U	5	EPA 200.8
			100627-001	Zinc	ND	0.0035	U	2.2	EPA 200.8
WW008	2069I	3-Oct-2016	100598-001	Cyanide, total	0.00381	0.00167	J	0.45	EPA 335.4
			100599-001	Cyanide, total	0.00179	0.00167	J	0.45	EPA 335.4
			100597-001	Cyanide, total	0.00327	0.00167	J	0.45	EPA 335.4
			100596-001	Cyanide, total	ND	0.00167	U	0.45	EPA 335.4
		4-Oct-2016	100621-001	Aluminum	0.0487	0.015	J	900	EPA 200.8
			100621-007	Ammonia	44.1	0.85	B		EPA 350.1
			100621-001	Arsenic	0.0032	0.0017	J	0.051	EPA 200.8
			100621-001	Boron	0.0756	0.0075			EPA 200.8
			100621-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	4-Oct-2016	100621-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100621-001	Copper	0.034	0.00035		5.3	EPA 200.8
			100621-002	Fluoride	0.532	0.033		36	EPA 300.0
			100621-001	Lead	ND	0.0005	U	1	EPA 200.8
			100621-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100621-001	Molybdenum	0.00446	0.0003		2	EPA 200.8
			100621-001	Nickel	0.0045	0.0005		2	EPA 200.8
			100621-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100621-001	Silver	ND	0.0004	U	5	EPA 200.8
			100621-001	Zinc	0.0575	0.0035		2.2	EPA 200.8
		5-Oct-2016	100630-001	Aluminum	0.0822	0.015		900	EPA 200.8
			100630-004	Ammonia	34.6	0.85	*		EPA 350.1
			100630-001	Arsenic	0.00389	0.0017	J	0.051	EPA 200.8
			100630-001	Boron	0.0766	0.0075			EPA 200.8
			100630-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100630-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100630-001	Copper	0.0391	0.00035		5.3	EPA 200.8
			100630-002	Fluoride	0.742	0.033		36	EPA 300.0
			100630-001	Lead	0.00125	0.0005	J	1	EPA 200.8
			100630-001	Mercury	0.000085	0.000067	J		EPA 245.1/245.2
			100630-001	Molybdenum	0.00237	0.0003		2	EPA 200.8
			100630-001	Nickel	0.00427	0.0005		2	EPA 200.8
			100630-001	Selenium	0.00202	0.002	J	0.46	EPA 200.8
			100630-001	Silver	ND	0.0004	U	5	EPA 200.8
			100630-001	Zinc	0.0849	0.0035		2.2	EPA 200.8
WW011	2069K	4-Oct-2016	100623-001	Aluminum	0.0813	0.015		900	EPA 200.8
			100623-007	Ammonia	23	0.85	B		EPA 350.1
			100623-001	Arsenic	0.00331	0.0017	J	0.051	EPA 200.8
			100623-001	Boron	0.284	0.0375			EPA 200.8

See notes at end of appendix.

Table E-5. Summary of inorganic results for permitted sanitary outfalls, August and October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (mg/L)	MDL (mg/L)	Laboratory Data Qualifiers	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	4-Oct-2016	100623-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100623-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100623-001	Copper	0.0202	0.00035		5.3	EPA 200.8
			100623-002	Fluoride	0.791	0.033		36	EPA 300.0
			100623-001	Lead	0.000808	0.0005	J	1	EPA 200.8
			100623-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100623-001	Molybdenum	0.151	0.0003		2	EPA 200.8
			100623-001	Nickel	0.00209	0.0005		2	EPA 200.8
			100623-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100623-001	Silver	0.000708	0.0004	J	5	EPA 200.8
			100623-001	Zinc	0.0518	0.0035		2.2	EPA 200.8
		5-Oct-2016	100629-001	Aluminum	0.0869	0.015		900	EPA 200.8
			100629-004	Ammonia	22.7	0.85	*		EPA 350.1
			100629-001	Arsenic	0.0032	0.0017	J	0.051	EPA 200.8
			100629-001	Boron	0.266	0.0375			EPA 200.8
			100629-001	Cadmium	ND	0.0003	U	0.05	EPA 200.8
			100629-001	Chromium	ND	0.003	U	4.1	EPA 200.8
			100629-001	Copper	0.0211	0.00035		5.3	EPA 200.8
			100629-002	Fluoride	0.777	0.033		36	EPA 300.0
			100629-001	Lead	0.00133	0.0005	J	1	EPA 200.8
			100629-001	Mercury	ND	0.000067	U		EPA 245.1/245.2
			100629-001	Molybdenum	0.0752	0.0003		2	EPA 200.8
			100629-001	Nickel	0.00226	0.0005		2	EPA 200.8
			100629-001	Selenium	ND	0.002	U	0.46	EPA 200.8
			100629-001	Silver	ND	0.0004	U	5	EPA 200.8
			100629-001	Zinc	0.0776	0.0035		2.2	EPA 200.8

See notes at end of appendix.

Table E-6. Summary of radiological results for permitted sanitary outfalls, October 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
CINT	2238A	04-Oct-2016	100619-002	Actinium-228	.0307 ± 13.8	8.35	U	300,000	EPA 901.1
			100619-001	Alpha, gross	-10.7 ± 4.08	8.68	U		EPA 900.0/SW-846 9310
			100619-002	Americium-241	-.984 ± 5.57	8.94	U	200	EPA 901.1
			100619-002	Beryllium-7	3.8 ± 12.6	22.9	U		EPA 901.1
			100619-001	Beta, gross	2.6 ± 1.58	2.42			EPA 900.0/SW-846 9310
			100619-002	Bismuth-212	-6.16 ± 32.2	34.2	U		EPA 901.1
			100619-002	Bismuth-214	1.56 ± 5.72	4.93	U		EPA 901.1
			100619-002	Cesium-137	1.21 ± 1.45	2.54	U	10,000	EPA 901.1
			100619-002	Cobalt-60	1.02 ± 1.41	2.66	U	30,000	EPA 901.1
			100619-002	Lead-212	2.96 ± 5.66	3.76	U	20,000	EPA 901.1
			100619-002	Lead-214	2.32 ± 6.83	4.99	U	1,000,000	EPA 901.1
			100619-002	Neptunium-237	.158 ± 2.38	4.35	U		EPA 901.1
			100619-002	Potassium-40	5.51 ± 35.6	23.7	U	40,000	EPA 901.1
			100619-002	Radium-223	-24.8 ± 25.6	39.7	U		EPA 901.1
			100619-002	Radium-224	-.788 ± 26.7	40.7	U		EPA 901.1
			100619-002	Radium-226	-48.8 ± 51.6	53.3	U	600	EPA 901.1
			100619-002	Radium-228	.0307 ± 13.8	8.35	U	600	EPA 901.1
			100619-002	Sodium-22	.224 ± 1.31	2.49	U		EPA 901.1
			100619-002	Thorium-227	2.66 ± 9.89	16.5	U		EPA 901.1
			100619-002	Thorium-231	2.73 ± 24.5	27.1	U	300	EPA 901.1
			100619-002	Thorium-234	27.6 ± 111	98.7	U	50,000	EPA 901.1
			100619-003	Tritium	-40.1 ± 111	193	U	10,000,000	EPA 906.0 Modified
			100619-002	Uranium-235	-19.3 ± 16.1	13.1	U	3,000	EPA 901.1
			100619-002	Uranium-238	27.6 ± 111	98.7	U	3,000	EPA 901.1
WW001	2069A	04-Oct-2016	100613-004	Actinium-228	-14 ± 17.1	15.3	U	300,000	EPA 901.1
			100613-003	Alpha, gross	2.95 ± 2.67	4.32	U		EPA 900.0/SW-846 9310
			100613-004	Americium-241	1.73 ± 2.88	4.65	U	200	EPA 901.1
			100613-004	Beryllium-7	13.7 ± 19.9	33.8	U		EPA 901.1
			100613-003	Beta, gross	12.8 ± 2.93	2.92			EPA 900.0/SW-846 9310

See notes at end of appendix.

Table E-6. Summary of radiological results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW001	2069A	04-Oct-2016	100613-004	Bismuth-212	-30.5 ± 47.7	51.7	U		EPA 901.1
			100613-004	Bismuth-214	8.76 ± 7.37	8.76	U		EPA 901.1
			100613-004	Cesium-137	1.86 ± 2.37	4.2	U	10,000	EPA 901.1
			100613-004	Cobalt-60	-.217 ± 2.22	3.95	U	30,000	EPA 901.1
			100613-004	Lead-212	5.77 ± 7.75	6.75	U	20,000	EPA 901.1
			100613-004	Lead-214	12.9 ± 9.02	12.9	U	1,000,000	EPA 901.1
			100613-004	Neptunium-237	.358 ± 3.42	5.97	U		EPA 901.1
			100613-004	Potassium-40	1.16 ± 40	54.7	U	40,000	EPA 901.1
			100613-004	Radium-223	.0837 ± 34.3	59.6	U		EPA 901.1
			100613-004	Radium-224	34.6 ± 37.7	56.5	U		EPA 901.1
			100613-004	Radium-226	12.6 ± 85.8	94	U	600	EPA 901.1
			100613-004	Radium-228	-14 ± 17.1	15.3	U	600	EPA 901.1
			100613-004	Sodium-22	-.24 ± 2.05	3.66	U		EPA 901.1
			100613-004	Thorium-227	-14.8 ± 14.2	20.4	U		EPA 901.1
			100613-004	Thorium-231	21.6 ± 32	26	U	300	EPA 901.1
			100613-004	Thorium-234	3.73 ± 69.4	84.8	U	50,000	EPA 901.1
			100613-005	Tritium	-23 ± 115	201	U	10,000,000	EPA 906.0 Modified
			100613-004	Uranium-235	12 ± 22.3	15.9	U	3,000	EPA 901.1
			100613-004	Uranium-238	3.73 ± 69.4	84.8	U	3,000	EPA 901.1
WW006	2069F	04-Oct-2016	100615-004	Actinium-228	-12.9 ± 13.3	12.8	U	300,000	EPA 901.1
			100615-003	Alpha, gross	1.72 ± 1.97	3.26	U		EPA 900.0/SW-846 9310
			100615-004	Americium-241	-2.45 ± 6.04	10.1	U	200	EPA 901.1
			100615-004	Beryllium-7	4.63 ± 15.1	26.8	U		EPA 901.1
			100615-003	Beta, gross	13.8 ± 2.86	2.48			EPA 900.0/SW-846 9310
			100615-004	Bismuth-212	-3.01 ± 39.7	42	U		EPA 901.1
			100615-004	Bismuth-214	6.42 ± 8.19	5.72	X		EPA 901.1
			100615-004	Cesium-137	1.1 ± 2.18	2.8	U	10,000	EPA 901.1
			100615-004	Cobalt-60	3.23 ± 2.94	3.33	U	30,000	EPA 901.1

See notes at end of appendix.

Table E-6. Summary of radiological results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW006	2069F	04-Oct-2016	100615-004	Lead-212	5.42 ± 7.39	5.86	U	20,000	EPA 901.1
			100615-004	Lead-214	-1.68 ± 5.9	6.37	U	1,000,000	EPA 901.1
			100615-004	Neptunium-237	.554 ± 2.63	4.74	U		EPA 901.1
			100615-004	Potassium-40	48 ± 48.4	28.2	X	40,000	EPA 901.1
			100615-004	Radium-223	3.02 ± 27.8	49.9	U		EPA 901.1
			100615-004	Radium-224	6.51 ± 27.8	45.5	U		EPA 901.1
			100615-004	Radium-226	-40.3 ± 60	61.2	U	600	EPA 901.1
			100615-004	Radium-228	-12.9 ± 13.3	12.8	U	600	EPA 901.1
			100615-004	Sodium-22	-3.27 ± 3.34	2.73	U		EPA 901.1
			100615-004	Thorium-227	.897 ± 10.4	18.8	U		EPA 901.1
			100615-004	Thorium-231	-6.02 ± 31.1	33.1	U	300	EPA 901.1
			100615-004	Thorium-234	-80.2 ± 104	107	U	50,000	EPA 901.1
			100615-005	Tritium	-34.2 ± 118	206	U	10,000,000	EPA 906.0 Modified
			100615-004	Uranium-235	2.15 ± 17	15.5	U	3,000	EPA 901.1
			100615-004	Uranium-238	-80.2 ± 104	107	U	3,000	EPA 901.1
WW008	2069I	04-Oct-2016	100621-004	Actinium-228	14.4 ± 16.8	14.5	U	300,000	EPA 901.1
			100621-003	Alpha, gross	.756 ± 1.78	3.09	U		EPA 900.0/SW-846 9310
			100621-004	Americium-241	-2.95 ± 7.6	12.9	U	200	EPA 901.1
			100621-004	Beryllium-7	2.21 ± 15	26.6	U		EPA 901.1
			100621-003	Beta, gross	15.8 ± 3.1	1.82			EPA 900.0/SW-846 9310
			100621-004	Bismuth-212	-14.4 ± 24.8	39.4	U		EPA 901.1
			100621-004	Bismuth-214	5.73 ± 9.01	5.51	X		EPA 901.1
			100621-004	Cesium-137	-2.28 ± 2.91	2.84	U	10,000	EPA 901.1
			100621-004	Cobalt-60	.707 ± 1.66	3.05	U	30,000	EPA 901.1
			100621-004	Lead-212	1.22 ± 5.31	5.51	U	20,000	EPA 901.1
			100621-004	Lead-214	.514 ± 9.5	6.69	U	1,000,000	EPA 901.1
			100621-004	Neptunium-237	-.0173 ± 2.99	5.34	U		EPA 901.1
			100621-004	Potassium-40	-4.52 ± 35.3	45.3	U	40,000	EPA 901.1

See notes at end of appendix.

Table E-6. Summary of radiological results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW008	2069I	04-Oct-2016	100621-004	Radium-223	8.67 ± 29.9	53.4	U		EPA 901.1
			100621-004	Radium-224	10.8 ± 29	47.4	U		EPA 901.1
			100621-004	Radium-226	-7.92 ± 66.9	71.2	U	600	EPA 901.1
			100621-004	Radium-228	14.4 ± 16.8	14.5	U	600	EPA 901.1
			100621-004	Sodium-22	.177 ± 1.53	2.8	U		EPA 901.1
			100621-004	Thorium-227	7.86 ± 12.9	20.6	U		EPA 901.1
			100621-004	Thorium-231	10.8 ± 44.6	33.4	U	300	EPA 901.1
			100621-004	Thorium-234	-7.32 ± 120	141	U	50,000	EPA 901.1
			100621-005	Tritium	-106 ± 121	214	U	10,000,000	EPA 906.0 Modified
			100621-004	Uranium-235	.621 ± 18.7	16.5	U	3,000	EPA 901.1
			100621-004	Uranium-238	-7.32 ± 120	141	U	3,000	EPA 901.1
WW011	2069K	04-Oct-2016	100623-004	Actinium-228	-1.31 ± 10.6	12.9	U	300,000	EPA 901.1
			100623-003	Alpha, gross	1.36 ± 2.88	5	U		EPA 900.0/SW-846 9310
			100623-004	Americium-241	-2.4 ± 4.52	7.45	U	200	EPA 901.1
			100623-004	Beryllium-7	8.04 ± 15.1	26.1	U		EPA 901.1
			100623-003	Beta, gross	22 ± 4.41	3.1			EPA 900.0/SW-846 9310
			100623-004	Bismuth-212	12.7 ± 36.4	39.7	U		EPA 901.1
			100623-004	Bismuth-214	.156 ± 8.29	6.74	U		EPA 901.1
			100623-004	Cesium-137	.637 ± 1.6	2.76	U	10,000	EPA 901.1
			100623-004	Cobalt-60	-1.36 ± 3	2.86	U	30,000	EPA 901.1
			100623-004	Lead-212	3.72 ± 5.97	3.96	U	20,000	EPA 901.1
			100623-004	Lead-214	-2 ± 5.29	6.02	U	1,000,000	EPA 901.1
			100623-004	Neptunium-237	1.92 ± 2.81	4.88	U		EPA 901.1
			100623-004	Potassium-40	54.9 ± 42.1	22.7		40,000	EPA 901.1
			100623-004	Radium-223	11.4 ± 27.4	48.4	U		EPA 901.1
			100623-004	Radium-224	21 ± 28.2	44.4	U		EPA 901.1
			100623-004	Radium-226	9.07 ± 77.2	64.5	U	600	EPA 901.1
			100623-004	Radium-228	-1.31 ± 10.6	12.9	U	600	EPA 901.1

See notes at end of appendix.

Table E-6. Summary of radiological results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Activity (pCi/L)	MDA (pCi/L)	Laboratory Data Qualifiers	Monthly Average Regulatory Sewer Release Limit (NMAC)	Analytical Method
WW011	2069K	04-Oct-2016	100623-004	Sodium-22	.32 ± 1.49	2.7	U		EPA 901.1
			100623-004	Thorium-227	-5.42 ± 12.1	18.7	U		EPA 901.1
			100623-004	Thorium-231	-3.08 ± 28.7	30.1	U	300	EPA 901.1
			100623-004	Thorium-234	-23.6 ± 79.1	94.2	U	50,000	EPA 901.1
			100623-005	Tritium	-71.9 ± 114	200	U	10,000,000	EPA 906.0 Modified
			100623-004	Uranium-235	-5.05 ± 14	15	U	3,000	EPA 901.1
			100623-004	Uranium-238	-23.6 ± 79.1	94.2	U	3,000	EPA 901.1

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	4-Oct-2016	100619-004	Acrolein	ND	1.67	U	EPA 624
			100619-004	Acrylonitrile	ND	1.67	U	EPA 624
			100619-004	Benzene	ND	0.333	U	EPA 624
			100619-004	Bromodichloromethane	1.27	0.333		EPA 624
			100619-004	Bromoform	9.02	0.333		EPA 624
			100619-004	Bromomethane	ND	0.337	U	EPA 624
			100619-004	Carbon tetrachloride	ND	0.333	U	EPA 624
			100619-004	Chlorobenzene	ND	0.333	U	EPA 624
			100619-004	Chloroethane	ND	0.333	U	EPA 624
			100619-004	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100619-004	Chloroform	0.8	0.333	J	EPA 624
			100619-004	Chloromethane	ND	0.333	U	EPA 624
			100619-004	Dibromochloromethane	2.25	0.333		EPA 624
			100619-004	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100619-004	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100619-004	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100619-004	Dichlorodifluoromethane	ND	0.355	U	EPA 624
			100619-004	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100619-004	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100619-004	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100619-004	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100619-004	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100619-004	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100619-004	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624
			100619-004	Ethyl benzene	ND	0.333	U	EPA 624
			100619-004	Methylene chloride	ND	1.67	U	EPA 624
			100619-004	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100619-004	Tetrachloroethene	ND	0.333	U	EPA 624
			100619-004	Toluene	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	4-Oct-2016	100619-004	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100619-004	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100619-004	Trichloroethene	ND	0.333	U	EPA 624
			100619-004	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100619-004	Vinyl chloride	ND	0.333	U	EPA 624
WW001	2069A	4-Oct-2016	100613-006	Acrolein	ND	1.67	U	EPA 624
			100613-006	Acrylonitrile	ND	1.67	U	EPA 624
			100613-006	Benzene	ND	0.333	U	EPA 624
			100613-006	Bromodichloromethane	ND	0.333	U	EPA 624
			100613-006	Bromoform	1.32	0.333		EPA 624
			100613-006	Bromomethane	ND	0.337	U	EPA 624
			100613-006	Carbon tetrachloride	ND	0.333	U	EPA 624
			100613-006	Chlorobenzene	ND	0.333	U	EPA 624
			100613-006	Chloroethane	ND	0.333	U	EPA 624
			100613-006	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100613-006	Chloroform	0.85	0.333	J	EPA 624
			100613-006	Chloromethane	ND	0.333	U	EPA 624
			100613-006	Dibromochloromethane	0.46	0.333	J	EPA 624
			100613-006	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100613-006	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100613-006	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100613-006	Dichlorodifluoromethane	ND	0.355	U	EPA 624
			100613-006	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100613-006	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100613-006	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100613-006	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100613-006	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100613-006	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100613-006	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	4-Oct-2016	100613-006	Ethyl benzene	ND	0.333	U	EPA 624
			100613-006	Methylene chloride	4.32	1.67		EPA 624
			100613-006	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100613-006	Tetrachloroethene	ND	0.333	U	EPA 624
			100613-006	Toluene	ND	0.333	U	EPA 624
			100613-006	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100613-006	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100613-006	Trichloroethene	ND	0.333	U	EPA 624
			100613-006	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100613-006	Vinyl chloride	ND	0.333	U	EPA 624
WW006	2069F	4-Oct-2016	100615-006	Acrolein	ND	1.67	U	EPA 624
			100615-006	Acrylonitrile	ND	1.67	U	EPA 624
			100615-006	Benzene	ND	0.333	U	EPA 624
			100615-006	Bromodichloromethane	ND	0.333	U	EPA 624
			100615-006	Bromoform	ND	0.333	U	EPA 624
			100615-006	Bromomethane	ND	0.337	U	EPA 624
			100615-006	Carbon tetrachloride	ND	0.333	U	EPA 624
			100615-006	Chlorobenzene	ND	0.333	U	EPA 624
			100615-006	Chloroethane	ND	0.333	U	EPA 624
			100615-006	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100615-006	Chloroform	ND	0.333	U	EPA 624
			100615-006	Chloromethane	ND	0.333	U	EPA 624
			100615-006	Dibromochloromethane	ND	0.333	U	EPA 624
			100615-006	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100615-006	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100615-006	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100615-006	Dichlorodifluoromethane	ND	0.355	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	4-Oct-2016	100615-006	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100615-006	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100615-006	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100615-006	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100615-006	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100615-006	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100615-006	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624
			100615-006	Ethyl benzene	ND	0.333	U	EPA 624
			100615-006	Methylene chloride	ND	1.67	U	EPA 624
			100615-006	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100615-006	Tetrachloroethene	ND	0.333	U	EPA 624
			100615-006	Toluene	ND	0.333	U	EPA 624
			100615-006	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100615-006	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100615-006	Trichloroethene	ND	0.333	U	EPA 624
			100615-006	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100615-006	Vinyl chloride	ND	0.333	U	EPA 624
WW007	2069G	4-Oct-2016	100617-003	Acrolein	ND	1.67	U	EPA 624
			100617-003	Acrylonitrile	ND	1.67	U	EPA 624
			100617-003	Benzene	ND	0.333	U	EPA 624
			100617-003	Bromodichloromethane	ND	0.333	U	EPA 624
			100617-003	Bromoform	ND	0.333	U	EPA 624
			100617-003	Bromomethane	ND	0.337	U	EPA 624
			100617-003	Carbon tetrachloride	ND	0.333	U	EPA 624
			100617-003	Chlorobenzene	ND	0.333	U	EPA 624
			100617-003	Chloroethane	ND	0.333	U	EPA 624
			100617-003	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100617-003	Chloroform	ND	0.333	U	EPA 624
			100617-003	Chloromethane	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	4-Oct-2016	100617-003	Dibromochloromethane	ND	0.333	U	EPA 624
			100617-003	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100617-003	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100617-003	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100617-003	Dichlorodifluoromethane	ND	0.355	U	EPA 624
			100617-003	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100617-003	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100617-003	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100617-003	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100617-003	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100617-003	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100617-003	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624
			100617-003	Ethyl benzene	ND	0.333	U	EPA 624
			100617-003	Methylene chloride	ND	1.67	U	EPA 624
			100617-003	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100617-003	Tetrachloroethene	ND	0.333	U	EPA 624
			100617-003	Toluene	ND	0.333	U	EPA 624
			100617-003	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100617-003	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100617-003	Trichloroethene	ND	0.333	U	EPA 624
			100617-003	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100617-003	Vinyl chloride	ND	0.333	U	EPA 624
WW008	2069I	4-Oct-2016	100621-006	Acrolein	ND	1.67	U	EPA 624
			100621-006	Acrylonitrile	ND	1.67	U	EPA 624
			100621-006	Benzene	ND	0.333	U	EPA 624
			100621-006	Bromodichloromethane	ND	0.333	U	EPA 624
			100621-006	Bromoform	ND	0.333	U	EPA 624
			100621-006	Bromomethane	ND	0.337	U	EPA 624
			100621-006	Carbon tetrachloride	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	4-Oct-2016	100621-006	Chlorobenzene	ND	0.333	U	EPA 624
			100621-006	Chloroethane	ND	0.333	U	EPA 624
			100621-006	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100621-006	Chloroform	ND	0.333	U	EPA 624
			100621-006	Chloromethane	ND	0.333	U	EPA 624
			100621-006	Dibromochloromethane	ND	0.333	U	EPA 624
			100621-006	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100621-006	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100621-006	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100621-006	Dichlorodifluoromethane	ND	0.355	U	EPA 624
			100621-006	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100621-006	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100621-006	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100621-006	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100621-006	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100621-006	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100621-006	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624
			100621-006	Ethyl benzene	ND	0.333	U	EPA 624
			100621-006	Methylene chloride	ND	1.67	U	EPA 624
			100621-006	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100621-006	Tetrachloroethene	ND	0.333	U	EPA 624
			100621-006	Toluene	ND	0.333	U	EPA 624
			100621-006	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100621-006	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100621-006	Trichloroethene	ND	0.333	U	EPA 624
			100621-006	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100621-006	Vinyl chloride	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	4-Oct-2016	100623-006	Acrolein	ND	1.67	U	EPA 624
			100623-006	Acrylonitrile	ND	1.67	U	EPA 624
			100623-006	Benzene	ND	0.333	U	EPA 624
			100623-006	Bromodichloromethane	ND	0.333	U	EPA 624
			100623-006	Bromoform	ND	0.333	U	EPA 624
			100623-006	Bromomethane	ND	0.337	U	EPA 624
			100623-006	Carbon tetrachloride	ND	0.333	U	EPA 624
			100623-006	Chlorobenzene	ND	0.333	U	EPA 624
			100623-006	Chloroethane	ND	0.333	U	EPA 624
			100623-006	Chloroethyl vinyl ether, 2-	ND	1.67	NU	EPA 624
			100623-006	Chloroform	ND	0.333	U	EPA 624
			100623-006	Chloromethane	ND	0.333	U	EPA 624
			100623-006	Dibromochloromethane	ND	0.333	U	EPA 624
			100623-006	Dichlorobenzene, 1,2-	ND	0.333	U	EPA 624
			100623-006	Dichlorobenzene, 1,3-	ND	0.333	U	EPA 624
			100623-006	Dichlorobenzene, 1,4-	ND	0.333	U	EPA 624
			100623-006	Dichlorodifluoromethane	ND	0.355	U	EPA 624
			100623-006	Dichloroethane, 1,1-	ND	0.333	U	EPA 624
			100623-006	Dichloroethane, 1,2-	ND	0.333	U	EPA 624
			100623-006	Dichloroethene, 1,1-	ND	0.333	U	EPA 624
			100623-006	Dichloroethene, trans-1,2-	ND	0.333	U	EPA 624
			100623-006	Dichloropropane, 1,2-	ND	0.333	U	EPA 624
			100623-006	Dichloropropene, cis-1,3-	ND	0.333	U	EPA 624
			100623-006	Dichloropropene, trans-1,3-	ND	0.333	U	EPA 624
			100623-006	Ethyl benzene	ND	0.333	U	EPA 624
			100623-006	Methylene chloride	ND	1.67	U	EPA 624
			100623-006	Tetrachloroethane, 1,1,2,2-	ND	0.333	U	EPA 624
			100623-006	Tetrachloroethene	ND	0.333	U	EPA 624
			100623-006	Toluene	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-7. Summary of volatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	4-Oct-2016	100623-006	Trichloroethane, 1,1,1-	ND	0.333	U	EPA 624
			100623-006	Trichloroethane, 1,1,2-	ND	0.333	U	EPA 624
			100623-006	Trichloroethene	ND	0.333	U	EPA 624
			100623-006	Trichlorofluoromethane	ND	0.333	U	EPA 624
			100623-006	Vinyl chloride	ND	0.333	U	EPA 624

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	5-Oct-2016	100628-001	Acenaphthene	ND	0.316	U	EPA 625
			100628-001	Acenaphthylene	ND	0.316	U	EPA 625
			100628-001	Anthracene	ND	0.316	U	EPA 625
			100628-001	Benzidine	ND	4.11	NU	EPA 625
			100628-001	Benzo(a)anthracene	ND	0.316	U	EPA 625
			100628-001	Benzo(a)pyrene	ND	0.316	U	EPA 625
			100628-001	Benzo(b)fluoranthene	ND	0.316	U	EPA 625
			100628-001	Benzo(ghi)perylene	ND	0.316	U	EPA 625
			100628-001	Benzo(k)fluoranthene	ND	0.316	U	EPA 625
			100628-001	Bromophenyl phenyl ether, 4-	ND	3.16	U	EPA 625
			100628-001	Butylbenzyl phthalate	ND	3.16	U	EPA 625
			100628-001	Chloro-3-methylphenol, 4-	ND	3.16	U	EPA 625
			100628-001	Chloroethoxy)methane, bis(2-	ND	3.16	U	EPA 625
			100628-001	Chloroethyl)ether, bis(2-	ND	3.16	U	EPA 625
			100628-001	Chloroisopropyl)ether,bis(1-	ND	3.16	U	EPA 625
			100628-001	Chloronaphthalene, 2-	ND	0.432	U	EPA 625
			100628-001	Chlorophenol, 2-	ND	3.16	U	EPA 625
			100628-001	Chlorophenyl phenyl ether, 4-	ND	3.16	U	EPA 625
			100628-001	Chrysene	ND	0.316	U	EPA 625
			100628-001	Di-n-butyl phthalate	ND	3.16	U	EPA 625
			100628-001	Di-n-octyl phthalate	ND	3.16	U	EPA 625
			100628-001	Dibenz[a,h]anthracene	ND	0.316	U	EPA 625
			100628-001	Dichlorobenzidine, 3,3'-	ND	3.16	*NU	EPA 625
			100628-001	Dichlorophenol, 2,4-	ND	3.16	U	EPA 625
			100628-001	Diethylphthalate	ND	3.16	U	EPA 625
			100628-001	Dimethylphenol, 2,4-	ND	3.16	U	EPA 625
			100628-001	Dimethylphthalate	ND	3.16	U	EPA 625
			100628-001	Dinitro-o-cresol	ND	3.16	U	EPA 625
			100628-001	Dinitrophenol, 2,4-	ND	5.26	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
CINT	2238A	5-Oct-2016	100628-001	Dinitrotoluene, 2,4-	ND	3.16	U	EPA 625
			100628-001	Dinitrotoluene, 2,6-	ND	3.16	U	EPA 625
			100628-001	Diphenyl amine	ND	3.16	U	EPA 625
			100628-001	Diphenylhydrazine, 1,2-	ND	3.16	U	EPA 625
			100628-001	Ethylhexyl)phthalate, bis(2-	ND	3.16	U	EPA 625
			100628-001	Fluoranthene	ND	0.316	U	EPA 625
			100628-001	Fluorene	ND	0.316	U	EPA 625
			100628-001	Hexachlorobenzene	ND	3.16	U	EPA 625
			100628-001	Hexachlorobutadiene	ND	3.16	U	EPA 625
			100628-001	Hexachlorocyclopentadiene	ND	3.16	U	EPA 625
			100628-001	Hexachloroethane	ND	3.16	U	EPA 625
			100628-001	Indeno(1,2,3-c,d)pyrene	ND	0.316	U	EPA 625
			100628-001	Isophorone	ND	3.68	U	EPA 625
			100628-001	Naphthalene	ND	0.316	U	EPA 625
			100628-001	Nitro-benzene	ND	3.16	U	EPA 625
			100628-001	Nitrophenol, 2-	ND	3.16	U	EPA 625
			100628-001	Nitrophenol, 4-	ND	3.16	U	EPA 625
			100628-001	Nitrosodimethylamine, n-	ND	3.16	U	EPA 625
			100628-001	Nitrosodipropylamine, n-	ND	3.16	U	EPA 625
			100628-001	Pentachlorophenol	ND	3.16	U	EPA 625
			100628-001	Phenanthrene	ND	0.316	U	EPA 625
			100628-001	Phenol	ND	3.16	U	EPA 625
			100628-001	Pyrene	ND	0.316	U	EPA 625
			100628-001	Trichlorobenzene, 1,2,4-	ND	3.16	U	EPA 625
			100628-001	Trichlorophenol, 2,4,6-	ND	3.16	U	EPA 625
WW001	2069A	5-Oct-2016	100625-003	Acenaphthene	ND	0.3	U	EPA 625
			100625-003	Acenaphthylene	ND	0.3	U	EPA 625
			100625-003	Anthracene	ND	0.3	U	EPA 625
			100625-003	Benzidine	ND	3.9	NU	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	5-Oct-2016	100625-003	Benzo(a)anthracene	ND	0.3	U	EPA 625
			100625-003	Benzo(a)pyrene	ND	0.3	U	EPA 625
			100625-003	Benzo(b)fluoranthene	ND	0.3	U	EPA 625
			100625-003	Benzo(ghi)perylene	ND	0.3	U	EPA 625
			100625-003	Benzo(k)fluoranthene	ND	0.3	U	EPA 625
			100625-003	Bromophenyl phenyl ether, 4-	ND	3	U	EPA 625
			100625-003	Butylbenzyl phthalate	39.2	3		EPA 625
			100625-003	Chloro-3-methylphenol, 4-	ND	3	U	EPA 625
			100625-003	Chloroethoxy)methane, bis(2-	ND	3	U	EPA 625
			100625-003	Chloroethyl)ether, bis(2-	ND	3	U	EPA 625
			100625-003	Chloroisopropyl)ether,bis(1-	ND	3	U	EPA 625
			100625-003	Chloronaphthalene, 2-	ND	0.41	U	EPA 625
			100625-003	Chlorophenol, 2-	ND	3	U	EPA 625
			100625-003	Chlorophenyl phenyl ether, 4-	ND	3	U	EPA 625
			100625-003	Chrysene	ND	0.3	U	EPA 625
			100625-003	Di-n-butyl phthalate	ND	3	U	EPA 625
			100625-003	Di-n-octyl phthalate	ND	3	U	EPA 625
			100625-003	Dibenz[a,h]anthracene	ND	0.3	U	EPA 625
			100625-003	Dichlorobenzidine, 3,3'-	ND	3	*NU	EPA 625
			100625-003	Dichlorophenol, 2,4-	ND	3	U	EPA 625
			100625-003	Diethylphthalate	ND	3	U	EPA 625
			100625-003	Dimethylphenol, 2,4-	ND	3	U	EPA 625
			100625-003	Dimethylphthalate	ND	3	U	EPA 625
			100625-003	Dinitro-o-cresol	ND	3	U	EPA 625
			100625-003	Dinitrophenol, 2,4-	ND	5	U	EPA 625
			100625-003	Dinitrotoluene, 2,4-	ND	3	U	EPA 625
			100625-003	Dinitrotoluene, 2,6-	ND	3	U	EPA 625
			100625-003	Diphenyl amine	ND	3	U	EPA 625
			100625-003	Diphenylhydrazine, 1,2-	ND	3	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW001	2069A	5-Oct-2016	100625-003	Ethylhexyl)phthalate, bis(2-	ND	3	U	EPA 625
			100625-003	Fluoranthene	ND	0.3	U	EPA 625
			100625-003	Fluorene	ND	0.3	U	EPA 625
			100625-003	Hexachlorobenzene	ND	3	U	EPA 625
			100625-003	Hexachlorobutadiene	ND	3	U	EPA 625
			100625-003	Hexachlorocyclopentadiene	ND	3	U	EPA 625
			100625-003	Hexachloroethane	ND	3	U	EPA 625
			100625-003	Indeno(1,2,3-c,d)pyrene	ND	0.3	U	EPA 625
			100625-003	Isophorone	ND	3.5	U	EPA 625
			100625-003	Naphthalene	ND	0.3	U	EPA 625
			100625-003	Nitro-benzene	ND	3	U	EPA 625
			100625-003	Nitrophenol, 2-	ND	3	U	EPA 625
			100625-003	Nitrophenol, 4-	ND	3	U	EPA 625
			100625-003	Nitrosodimethylamine, n-	ND	3	U	EPA 625
			100625-003	Nitrosodipropylamine, n-	ND	3	U	EPA 625
			100625-003	Pentachlorophenol	ND	3	U	EPA 625
			100625-003	Phenanthrene	ND	0.3	U	EPA 625
			100625-003	Phenol	ND	3	U	EPA 625
			100625-003	Pyrene	ND	0.3	U	EPA 625
			100625-003	Trichlorobenzene, 1,2,4-	ND	3	U	EPA 625
			100625-003	Trichlorophenol, 2,4,6-	ND	3	U	EPA 625
WW006	2069F	5-Oct-2016	100626-003	Acenaphthene	ND	0.303	U	EPA 625
			100626-003	Acenaphthylene	ND	0.303	U	EPA 625
			100626-003	Anthracene	ND	0.303	U	EPA 625
			100626-003	Benzidine	ND	3.94	NU	EPA 625
			100626-003	Benzo(a)anthracene	ND	0.303	U	EPA 625
			100626-003	Benzo(a)pyrene	ND	0.303	U	EPA 625
			100626-003	Benzo(b)fluoranthene	ND	0.303	U	EPA 625
			100626-003	Benzo(ghi)perylene	ND	0.303	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	5-Oct-2016	100626-003	Benzo(k)fluoranthene	ND	0.303	U	EPA 625
			100626-003	Bromophenyl phenyl ether, 4-	ND	3.03	U	EPA 625
			100626-003	Butylbenzyl phthalate	ND	3.03	U	EPA 625
			100626-003	Chloro-3-methylphenol, 4-	ND	3.03	U	EPA 625
			100626-003	Chloroethoxy)methane, bis(2-	ND	3.03	U	EPA 625
			100626-003	Chloroethyl)ether, bis(2-	ND	3.03	U	EPA 625
			100626-003	Chloroisopropyl)ether,bis(1-	ND	3.03	U	EPA 625
			100626-003	Chloronaphthalene, 2-	ND	0.414	U	EPA 625
			100626-003	Chlorophenol, 2-	ND	3.03	U	EPA 625
			100626-003	Chlorophenyl phenyl ether, 4-	ND	3.03	U	EPA 625
			100626-003	Chrysene	ND	0.303	U	EPA 625
			100626-003	Di-n-butyl phthalate	ND	3.03	U	EPA 625
			100626-003	Di-n-octyl phthalate	ND	3.03	U	EPA 625
			100626-003	Dibenz[a,h]anthracene	ND	0.303	U	EPA 625
			100626-003	Dichlorobenzidine, 3,3'-	ND	3.03	*NU	EPA 625
			100626-003	Dichlorophenol, 2,4-	ND	3.03	U	EPA 625
			100626-003	Diethylphthalate	ND	3.03	U	EPA 625
			100626-003	Dimethylphenol, 2,4-	ND	3.03	U	EPA 625
			100626-003	Dimethylphthalate	ND	3.03	U	EPA 625
			100626-003	Dinitro-o-cresol	ND	3.03	U	EPA 625
			100626-003	Dinitrophenol, 2,4-	ND	5.05	U	EPA 625
			100626-003	Dinitrotoluene, 2,4-	ND	3.03	U	EPA 625
			100626-003	Dinitrotoluene, 2,6-	ND	3.03	U	EPA 625
			100626-003	Diphenyl amine	ND	3.03	U	EPA 625
			100626-003	Diphenylhydrazine, 1,2-	ND	3.03	U	EPA 625
			100626-003	Ethylhexyl)phthalate, bis(2-	10	3.03	J	EPA 625
			100626-003	Fluoranthene	ND	0.303	U	EPA 625
			100626-003	Fluorene	ND	0.303	U	EPA 625
			100626-003	Hexachlorobenzene	ND	3.03	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW006	2069F	5-Oct-2016	100626-003	Hexachlorobutadiene	ND	3.03	U	EPA 625
			100626-003	Hexachlorocyclopentadiene	ND	3.03	U	EPA 625
			100626-003	Hexachloroethane	ND	3.03	U	EPA 625
			100626-003	Indeno(1,2,3-c,d)pyrene	ND	0.303	U	EPA 625
			100626-003	Isophorone	ND	3.54	U	EPA 625
			100626-003	Naphthalene	ND	0.303	U	EPA 625
			100626-003	Nitro-benzene	ND	3.03	U	EPA 625
			100626-003	Nitrophenol, 2-	ND	3.03	U	EPA 625
			100626-003	Nitrophenol, 4-	ND	3.03	U	EPA 625
			100626-003	Nitrosodimethylamine, n-	ND	3.03	U	EPA 625
			100626-003	Nitrosodipropylamine, n-	ND	3.03	U	EPA 625
			100626-003	Pentachlorophenol	ND	3.03	U	EPA 625
			100626-003	Phenanthrene	ND	0.303	U	EPA 625
			100626-003	Phenol	ND	3.03	U	EPA 625
			100626-003	Pyrene	ND	0.303	U	EPA 625
			100626-003	Trichlorobenzene, 1,2,4-	ND	3.03	U	EPA 625
			100626-003	Trichlorophenol, 2,4,6-	ND	3.03	U	EPA 625
WW007	2069G	5-Oct-2016	100627-003	Acenaphthene	ND	0.309	U	EPA 625
			100627-003	Acenaphthylene	ND	0.309	U	EPA 625
			100627-003	Anthracene	ND	0.309	U	EPA 625
			100627-003	Benzidine	ND	4.02	NU	EPA 625
			100627-003	Benzo(a)anthracene	ND	0.309	U	EPA 625
			100627-003	Benzo(a)pyrene	ND	0.309	U	EPA 625
			100627-003	Benzo(b)fluoranthene	ND	0.309	U	EPA 625
			100627-003	Benzo(ghi)perylene	ND	0.309	U	EPA 625
			100627-003	Benzo(k)fluoranthene	ND	0.309	U	EPA 625
			100627-003	Bromophenyl phenyl ether, 4-	ND	3.09	U	EPA 625
			100627-003	Butylbenzyl phthalate	ND	3.09	U	EPA 625
			100627-003	Chloro-3-methylphenol, 4-	ND	3.09	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	5-Oct-2016	100627-003	Chloroethoxy)methane, bis(2-	ND	3.09	U	EPA 625
			100627-003	Chloroethyl)ether, bis(2-	ND	3.09	U	EPA 625
			100627-003	Chloroisopropyl)ether,bis(1-	ND	3.09	U	EPA 625
			100627-003	Chloronaphthalene, 2-	ND	0.423	U	EPA 625
			100627-003	Chlorophenol, 2-	ND	3.09	U	EPA 625
			100627-003	Chlorophenyl phenyl ether, 4-	ND	3.09	U	EPA 625
			100627-003	Chrysene	ND	0.309	U	EPA 625
			100627-003	Di-n-butyl phthalate	ND	3.09	U	EPA 625
			100627-003	Di-n-octyl phthalate	ND	3.09	U	EPA 625
			100627-003	Dibenz[a,h]anthracene	ND	0.309	U	EPA 625
			100627-003	Dichlorobenzidine, 3,3'-	ND	3.09	*NU	EPA 625
			100627-003	Dichlorophenol, 2,4-	ND	3.09	U	EPA 625
			100627-003	Diethylphthalate	ND	3.09	U	EPA 625
			100627-003	Dimethylphenol, 2,4-	ND	3.09	U	EPA 625
			100627-003	Dimethylphthalate	ND	3.09	U	EPA 625
			100627-003	Dinitro-o-cresol	ND	3.09	U	EPA 625
			100627-003	Dinitrophenol, 2,4-	ND	5.15	U	EPA 625
			100627-003	Dinitrotoluene, 2,4-	ND	3.09	U	EPA 625
			100627-003	Dinitrotoluene, 2,6-	ND	3.09	U	EPA 625
			100627-003	Diphenyl amine	ND	3.09	U	EPA 625
			100627-003	Diphenylhydrazine, 1,2-	ND	3.09	U	EPA 625
			100627-003	Ethylhexyl)phthalate, bis(2-	ND	3.09	U	EPA 625
			100627-003	Fluoranthene	ND	0.309	U	EPA 625
			100627-003	Fluorene	ND	0.309	U	EPA 625
			100627-003	Hexachlorobenzene	ND	3.09	U	EPA 625
			100627-003	Hexachlorobutadiene	ND	3.09	U	EPA 625
			100627-003	Hexachlorocyclopentadiene	ND	3.09	U	EPA 625
			100627-003	Hexachloroethane	ND	3.09	U	EPA 625
			100627-003	Indeno(1,2,3-c,d)pyrene	ND	0.309	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW007	2069G	5-Oct-2016	100627-003	Isophorone	ND	3.61	U	EPA 625
			100627-003	Naphthalene	ND	0.309	U	EPA 625
			100627-003	Nitro-benzene	ND	3.09	U	EPA 625
			100627-003	Nitrophenol, 2-	ND	3.09	U	EPA 625
			100627-003	Nitrophenol, 4-	ND	3.09	U	EPA 625
			100627-003	Nitrosodimethylamine, n-	ND	3.09	U	EPA 625
			100627-003	Nitrosodipropylamine, n-	ND	3.09	U	EPA 625
			100627-003	Pentachlorophenol	ND	3.09	U	EPA 625
			100627-003	Phenanthrene	ND	0.309	U	EPA 625
			100627-003	Phenol	ND	3.09	U	EPA 625
			100627-003	Pyrene	ND	0.309	U	EPA 625
			100627-003	Trichlorobenzene, 1,2,4-	ND	3.09	U	EPA 625
			100627-003	Trichlorophenol, 2,4,6-	ND	3.09	U	EPA 625
WW008	2069I	5-Oct-2016	100630-003	Acenaphthene	ND	0.309	U	EPA 625
			100630-003	Acenaphthylene	ND	0.309	U	EPA 625
			100630-003	Anthracene	ND	0.309	U	EPA 625
			100630-003	Benzidine	ND	4.02	NU	EPA 625
			100630-003	Benzo(a)anthracene	ND	0.309	U	EPA 625
			100630-003	Benzo(a)pyrene	ND	0.309	U	EPA 625
			100630-003	Benzo(b)fluoranthene	ND	0.309	U	EPA 625
			100630-003	Benzo(ghi)perylene	ND	0.309	U	EPA 625
			100630-003	Benzo(k)fluoranthene	ND	0.309	U	EPA 625
			100630-003	Bromophenyl phenyl ether, 4-	ND	3.09	U	EPA 625
			100630-003	Butylbenzyl phthalate	ND	3.09	U	EPA 625
			100630-003	Chloro-3-methylphenol, 4-	ND	3.09	U	EPA 625
			100630-003	Chloroethoxy)methane, bis(2-	ND	3.09	U	EPA 625
			100630-003	Chloroethyl)ether, bis(2-	ND	3.09	U	EPA 625
			100630-003	Chloroisopropyl)ether,bis(1-	ND	3.09	U	EPA 625
			100630-003	Chloronaphthalene, 2-	ND	0.423	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	5-Oct-2016	100630-003	Chlorophenol, 2-	ND	3.09	U	EPA 625
			100630-003	Chlorophenyl phenyl ether, 4-	ND	3.09	U	EPA 625
			100630-003	Chrysene	ND	0.309	U	EPA 625
			100630-003	Di-n-butyl phthalate	ND	3.09	U	EPA 625
			100630-003	Di-n-octyl phthalate	ND	3.09	U	EPA 625
			100630-003	Dibenz[a,h]anthracene	ND	0.309	U	EPA 625
			100630-003	Dichlorobenzidine, 3,3'-	ND	3.09	*NU	EPA 625
			100630-003	Dichlorophenol, 2,4-	ND	3.09	U	EPA 625
			100630-003	Diethylphthalate	ND	3.09	U	EPA 625
			100630-003	Dimethylphenol, 2,4-	ND	3.09	U	EPA 625
			100630-003	Dimethylphthalate	ND	3.09	U	EPA 625
			100630-003	Dinitro-o-cresol	ND	3.09	U	EPA 625
			100630-003	Dinitrophenol, 2,4-	ND	5.15	U	EPA 625
			100630-003	Dinitrotoluene, 2,4-	ND	3.09	U	EPA 625
			100630-003	Dinitrotoluene, 2,6-	ND	3.09	U	EPA 625
			100630-003	Diphenyl amine	ND	3.09	U	EPA 625
			100630-003	Diphenylhydrazine, 1,2-	ND	3.09	U	EPA 625
			100630-003	Ethylhexyl)phthalate, bis(2-	ND	3.09	U	EPA 625
			100630-003	Fluoranthene	ND	0.309	U	EPA 625
			100630-003	Fluorene	ND	0.309	U	EPA 625
			100630-003	Hexachlorobenzene	ND	3.09	U	EPA 625
			100630-003	Hexachlorobutadiene	ND	3.09	U	EPA 625
			100630-003	Hexachlorocyclopentadiene	ND	3.09	U	EPA 625
			100630-003	Hexachloroethane	ND	3.09	U	EPA 625
			100630-003	Indeno(1,2,3-c,d)pyrene	ND	0.309	U	EPA 625
			100630-003	Isophorone	ND	3.61	U	EPA 625
			100630-003	Naphthalene	ND	0.309	U	EPA 625
			100630-003	Nitro-benzene	ND	3.09	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW008	2069I	5-Oct-2016	100630-003	Nitrophenol, 2-	ND	3.09	U	EPA 625
			100630-003	Nitrophenol, 4-	ND	3.09	U	EPA 625
			100630-003	Nitrosodimethylamine, n-	ND	3.09	U	EPA 625
			100630-003	Nitrosodipropylamine, n-	ND	3.09	U	EPA 625
			100630-003	Pentachlorophenol	ND	3.09	U	EPA 625
			100630-003	Phenanthrene	ND	0.309	U	EPA 625
			100630-003	Phenol	ND	3.09	U	EPA 625
			100630-003	Pyrene	ND	0.309	U	EPA 625
			100630-003	Trichlorobenzene, 1,2,4-	ND	3.09	U	EPA 625
			100630-003	Trichlorophenol, 2,4,6-	ND	3.09	U	EPA 625
WW011	2069K	5-Oct-2016	100629-003	Acenaphthene	ND	0.313	U	EPA 625
			100629-003	Acenaphthylene	ND	0.313	U	EPA 625
			100629-003	Anthracene	ND	0.313	U	EPA 625
			100629-003	Benzidine	ND	4.06	NU	EPA 625
			100629-003	Benzo(a)anthracene	ND	0.313	U	EPA 625
			100629-003	Benzo(a)pyrene	ND	0.313	U	EPA 625
			100629-003	Benzo(b)fluoranthene	ND	0.313	U	EPA 625
			100629-003	Benzo(ghi)perylene	ND	0.313	U	EPA 625
			100629-003	Benzo(k)fluoranthene	ND	0.313	U	EPA 625
			100629-003	Bromophenyl phenyl ether, 4-	ND	3.13	U	EPA 625
			100629-003	Butylbenzyl phthalate	5.02	3.13	J	EPA 625
			100629-003	Chloro-3-methylphenol, 4-	ND	3.13	U	EPA 625
			100629-003	Chloroethoxy)methane, bis(2-	ND	3.13	U	EPA 625
			100629-003	Chloroethyl)ether, bis(2-	ND	3.13	U	EPA 625
			100629-003	Chloroisopropyl)ether,bis(1-	ND	3.13	U	EPA 625
			100629-003	Chloronaphthalene, 2-	ND	0.427	U	EPA 625
			100629-003	Chlorophenol, 2-	ND	3.13	U	EPA 625
			100629-003	Chlorophenyl phenyl ether, 4-	ND	3.13	U	EPA 625
			100629-003	Chrysene	ND	0.313	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	5-Oct-2016	100629-003	Di-n-butyl phthalate	ND	3.13	U	EPA 625
			100629-003	Di-n-octyl phthalate	ND	3.13	U	EPA 625
			100629-003	Dibenz[a,h]anthracene	ND	0.313	U	EPA 625
			100629-003	Dichlorobenzidine, 3,3'-	ND	3.13	*NU	EPA 625
			100629-003	Dichlorophenol, 2,4-	ND	3.13	U	EPA 625
			100629-003	Diethylphthalate	ND	3.13	U	EPA 625
			100629-003	Dimethylphenol, 2,4-	ND	3.13	U	EPA 625
			100629-003	Dimethylphthalate	ND	3.13	U	EPA 625
			100629-003	Dinitro-o-cresol	ND	3.13	U	EPA 625
			100629-003	Dinitrophenol, 2,4-	ND	5.21	U	EPA 625
			100629-003	Dinitrotoluene, 2,4-	ND	3.13	U	EPA 625
			100629-003	Dinitrotoluene, 2,6-	ND	3.13	U	EPA 625
			100629-003	Diphenyl amine	ND	3.13	U	EPA 625
			100629-003	Diphenylhydrazine, 1,2-	ND	3.13	U	EPA 625
			100629-003	Ethylhexyl)phthalate, bis(2-	ND	3.13	U	EPA 625
			100629-003	Fluoranthene	ND	0.313	U	EPA 625
			100629-003	Fluorene	ND	0.313	U	EPA 625
			100629-003	Hexachlorobenzene	ND	3.13	U	EPA 625
			100629-003	Hexachlorobutadiene	ND	3.13	U	EPA 625
			100629-003	Hexachlorocyclopentadiene	ND	3.13	U	EPA 625
			100629-003	Hexachloroethane	ND	3.13	U	EPA 625
			100629-003	Indeno(1,2,3-c,d)pyrene	ND	0.313	U	EPA 625
			100629-003	Isophorone	ND	3.65	U	EPA 625
			100629-003	Naphthalene	ND	0.313	U	EPA 625
			100629-003	Nitro-benzene	ND	3.13	U	EPA 625
			100629-003	Nitrophenol, 2-	ND	3.13	U	EPA 625
			100629-003	Nitrophenol, 4-	ND	3.13	U	EPA 625
			100629-003	Nitrosodimethylamine, n-	ND	3.13	U	EPA 625
			100629-003	Nitrosodipropylamine, n-	ND	3.13	U	EPA 625

See notes at end of appendix.

Table E-8. Summary of semivolatile organic compound results for permitted sanitary outfalls, October 2016 (continued)

Station	Permit Number	Date Collected	Sample Identifier	Analyte	Result (µg/L)	MDL (µg/L)	Laboratory Data Qualifiers	Analytical Method
WW011	2069K	5-Oct-2016	100629-003	Pentachlorophenol	ND	3.13	U	EPA 625
			100629-003	Phenanthrene	ND	0.313	U	EPA 625
			100629-003	Phenol	ND	3.13	U	EPA 625
			100629-003	Pyrene	ND	0.313	U	EPA 625
			100629-003	Trichlorobenzene, 1,2,4-	ND	3.13	U	EPA 625
			100629-003	Trichlorophenol, 2,4,6-	ND	3.13	U	EPA 625

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	Aluminum	0.0426	900	EPA 200.8
		Aluminum	0.0572	900	EPA 200.8
		Aluminum	0.0584	900	EPA 200.8
		Aluminum	0.0859	900	EPA 200.8
		Aluminum, average	0.061		
		Aluminum, standard deviation	0.018		
		Aluminum, minimum	0.043		
		Aluminum, maximum	0.0859		
		Ammonia	18.2		EPA 350.1
		Ammonia	20.1		EPA 350.1
		Ammonia	22		EPA 350.1
		Ammonia	22.5		EPA 350.1
		Ammonia, average	20.700		
		Ammonia, standard deviation	1.961		
		Ammonia, minimum	18.200		
		Ammonia, maximum	22.5		
		Arsenic	0.00317	0.051	EPA 200.8
		Arsenic	0.00411	0.051	EPA 200.8
		Arsenic	0.00581	0.051	EPA 200.8
		Arsenic	0.00627	0.051	EPA 200.8
		Arsenic, average	0.005		
		Arsenic, standard deviation	0.001		
		Arsenic, minimum	0.003		
		Arsenic, maximum	0.00627		
		Boron	0.0586		EPA 200.8
		Boron	0.0751		EPA 200.8
		Boron	0.0895		EPA 200.8
		Boron	0.099		EPA 200.8
		Boron, average	0.081		
		Boron, standard deviation	0.018		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	Boron, minimum	0.059		
		Boron, maximum	0.099		
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		
		Chromium	0.0032	4.1	EPA 200.8
		Chromium	0.00402	4.1	EPA 200.8
		Chromium	0.0043	4.1	EPA 200.8
		Chromium	0.00452	4.1	EPA 200.8
		Chromium, average	0.004		
		Chromium, standard deviation	0.001		
		Chromium, minimum	0.003		
		Chromium, maximum	0.00452		
		Copper	0.0196	5.3	EPA 200.8
		Copper	0.0325	5.3	EPA 200.8
		Copper	0.0465	5.3	EPA 200.8
		Copper	0.0509	5.3	EPA 200.8
		Copper, average	0.037		
		Copper, standard deviation	0.014		
		Copper, minimum	0.020		
		Copper, maximum	0.0509		
		Fluoride	5.53	36	EPA 300.0
		Fluoride	6.18	36	EPA 300.0
		Fluoride	6.39	36	EPA 300.0
		Fluoride	7.18	36	EPA 300.0

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	Fluoride, average	6.320		
		Fluoride, standard deviation	0.680		
		Fluoride, minimum	5.530		
		Fluoride, maximum	7.18		
		Lead	0.00448	1	EPA 200.8
		Lead	0.0216	1	EPA 200.8
		Lead	0.0408	1	EPA 200.8
		Lead	0.0935	1	EPA 200.8
		Lead, average	0.040		
		Lead, standard deviation	0.039		
		Lead, minimum	0.004		
		Lead, maximum	0.0935		
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000067		
		Molybdenum	0.0131	2	EPA 200.8
		Molybdenum	0.0133	2	EPA 200.8
		Molybdenum	0.0141	2	EPA 200.8
		Molybdenum	0.016	2	EPA 200.8
		Molybdenum, average	0.014		
		Molybdenum, standard deviation	0.001		
		Molybdenum, minimum	0.013		
		Molybdenum, maximum	0.016		
		Nickel	0.00208	2	EPA 200.8
		Nickel	0.0021	2	EPA 200.8

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW001	2069A	Nickel	0.00232	2	EPA 200.8
		Nickel	0.00282	2	EPA 200.8
		Nickel, average	0.002		
		Nickel, standard deviation	0.000		
		Nickel, minimum	0.002		
		Nickel, maximum	0.00282		
		Selenium	0.00289	0.46	EPA 200.8
		Selenium	0.00292	0.46	EPA 200.8
		Selenium	0.00336	0.46	EPA 200.8
		Selenium	0.00357	0.46	EPA 200.8
		Selenium, average	0.003		
		Selenium, standard deviation	0.000		
		Selenium, minimum	0.003		
		Selenium, maximum	0.00357		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.0004		
		Zinc	0.0584	2.2	EPA 200.8
		Zinc	0.0611	2.2	EPA 200.8
		Zinc	0.105	2.2	EPA 200.8
		Zinc	0.173	2.2	EPA 200.8
		Zinc, average	0.099		
		Zinc, standard deviation	0.054		
		Zinc, minimum	0.058		
		Zinc, maximum	0.173		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	Aluminum	0.0391	900	EPA 200.8
		Aluminum	0.0527	900	EPA 200.8
		Aluminum	0.0539	900	EPA 200.8
		Aluminum	0.0705	900	EPA 200.8
		Aluminum, average	0.054		
		Aluminum, standard deviation	0.013		
		Aluminum, minimum	0.039		
		Aluminum, maximum	0.0705		
		Ammonia	28.6		EPA 350.1
		Ammonia	29.6		EPA 350.1
		Ammonia	39.1		EPA 350.1
		Ammonia	39.6		EPA 350.1
		Ammonia, average	34.225		
		Ammonia, standard deviation	5.935		
		Ammonia, minimum	28.600		
		Ammonia, maximum	39.6		
		Arsenic	0.0021	0.051	EPA 200.8
		Arsenic	0.00218	0.051	EPA 200.8
		Arsenic	0.00338	0.051	EPA 200.8
		Arsenic	0.00375	0.051	EPA 200.8
		Arsenic, average	0.003		
		Arsenic, standard deviation	0.001		
		Arsenic, minimum	0.002		
		Arsenic, maximum	0.00375		
		Boron	0.0779		EPA 200.8
		Boron	0.0844		EPA 200.8
		Boron	0.0911		EPA 200.8
		Boron	0.113		EPA 200.8
		Boron, average	0.092		
		Boron, standard deviation	0.015		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	Boron, minimum	0.078		
		Boron, maximum	0.113		
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		
		Chromium	0.002	4.1	EPA 200.8
		Chromium	0.00202	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium, average	0.003		
		Chromium, standard deviation	0.001		
		Chromium, minimum	0.002		
		Chromium, maximum	0.003		
		Copper	0.0111	5.3	EPA 200.8
		Copper	0.0159	5.3	EPA 200.8
		Copper	0.0173	5.3	EPA 200.8
		Copper	0.0318	5.3	EPA 200.8
		Copper, average	0.019		
		Copper, standard deviation	0.009		
		Copper, minimum	0.011		
		Copper, maximum	0.0318		
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00215	0.45	EPA 335.4
		Cyanide, total	0.0022	0.45	EPA 335.4
		Cyanide, total	0.00235	0.45	EPA 335.4
		Cyanide, total	0.00255	0.45	EPA 335.4
		Cyanide, total	0.00313	0.45	EPA 335.4
		Cyanide, total	0.00397	0.45	EPA 335.4
		Cyanide, total	0.0135	0.45	EPA 335.4
		Cyanide, total, average	0.003		
		Cyanide, total, standard deviation	0.003		
		Cyanide, total, minimum	0.002		
		Cyanide, total, maximum	0.0135		
		Fluoride	0.7	36	EPA 300.0
		Fluoride	0.715	36	EPA 300.0
		Fluoride	1.1	36	EPA 300.0
		Fluoride	1.24	36	EPA 300.0
		Fluoride, average	0.939		
		Fluoride, standard deviation	0.273		
		Fluoride, minimum	0.700		
		Fluoride, maximum	1.24		
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.00071	1	EPA 200.8
		Lead	0.001	1	EPA 200.8
		Lead, average	0.001		
		Lead, standard deviation	0.000		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	Lead, minimum	0.001		
		Lead, maximum	0.001		
		Mercury	0.000		EPA 245.1/245.2
		Mercury	0.000		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000067		
		Molybdenum	0.020	2	EPA 200.8
		Molybdenum	0.026	2	EPA 200.8
		Molybdenum	0.0301	2	EPA 200.8
		Molybdenum	0.0444	2	EPA 200.8
		Molybdenum, average	0.030		
		Molybdenum, standard deviation	0.010		
		Molybdenum, minimum	0.020		
		Molybdenum, maximum	0.0444		
		Nickel	0.000991	2	EPA 200.8
		Nickel	0.00124	2	EPA 200.8
		Nickel	0.00153	2	EPA 200.8
		Nickel	0.00155	2	EPA 200.8
		Nickel, average	0.001		
		Nickel, standard deviation	0.000		
		Nickel, minimum	0.001		
		Nickel, maximum	0.00155		
		Selenium	0.0015	0.46	EPA 200.8
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.00201	0.46	EPA 200.8
		Selenium	0.00226	0.46	EPA 200.8

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW006	2069F	Selenium, average	0.002		
		Selenium, standard deviation	0.000		
		Selenium, minimum	0.002		
		Selenium, maximum	0.00226		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.0004		
		Zinc	0.0261	2.2	EPA 200.8
		Zinc	0.0396	2.2	EPA 200.8
		Zinc	0.107	2.2	EPA 200.8
		Zinc	0.799	2.2	EPA 200.8
		Zinc, average	0.243		
		Zinc, standard deviation	0.372		
		Zinc, minimum	0.026		
		Zinc, maximum	0.799		
WW007	2069G	Aluminum	0.015	900	EPA 200.8
		Aluminum	0.015	900	EPA 200.8
		Aluminum	0.015	900	EPA 200.8
		Aluminum	0.015	900	EPA 200.8
		Aluminum, average	0.015		
		Aluminum, standard deviation	0.000		
		Aluminum, minimum	0.015		
		Aluminum, maximum	0.015		
		Ammonia	3.61		EPA 350.1
		Ammonia	3.92		EPA 350.1

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	Ammonia	4.77		EPA 350.1
		Ammonia	4.93		EPA 350.1
		Ammonia, average	4.308		
		Ammonia, standard deviation	0.642		
		Ammonia, minimum	3.610		
		Ammonia, maximum	4.93		
		Arsenic	0.0017	0.051	EPA 200.8
		Arsenic	0.0017	0.051	EPA 200.8
		Arsenic	0.00226	0.051	EPA 200.8
		Arsenic	0.00314	0.051	EPA 200.8
		Arsenic, average	0.002		
		Arsenic, standard deviation	0.001		
		Arsenic, minimum	0.002		
		Arsenic, maximum	0.00314		
		Boron	0.012		EPA 200.8
		Boron	0.0145		EPA 200.8
		Boron	0.0206		EPA 200.8
		Boron	0.0251		EPA 200.8
		Boron, average	0.018		
		Boron, standard deviation	0.006		
		Boron, minimum	0.012		
		Boron, maximum	0.0251		
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	Chromium	0.002	4.1	EPA 200.8
		Chromium	0.002	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium, average	0.003		
		Chromium, standard deviation	0.001		
		Chromium, minimum	0.002		
		Chromium, maximum	0.003		
		Copper	0.00156	5.3	EPA 200.8
		Copper	0.00226	5.3	EPA 200.8
		Copper	0.00231	5.3	EPA 200.8
		Copper	0.00233	5.3	EPA 200.8
		Copper, average	0.002		
		Copper, standard deviation	0.000		
		Copper, minimum	0.002		
		Copper, maximum	0.00233		
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00177	0.45	EPA 335.4
		Cyanide, total, average	0.002		
		Cyanide, total, standard deviation	0.000		
		Cyanide, total, minimum	0.002		
		Cyanide, total, maximum	0.00177		
		Fluoride	7.93	36	EPA 300.0
		Fluoride	8.58	36	EPA 300.0

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	Fluoride	9.7	36	EPA 300.0
		Fluoride	9.95	36	EPA 300.0
		Fluoride, average	9.040		
		Fluoride, standard deviation	0.950		
		Fluoride, minimum	7.930		
		Fluoride, maximum	9.95		
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead, average	0.001		
		Lead, standard deviation	0.000		
		Lead, minimum	0.001		
		Lead, maximum	0.0005		
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000067		
		Molybdenum	0.0123	2	EPA 200.8
		Molybdenum	0.0143	2	EPA 200.8
		Molybdenum	0.0146	2	EPA 200.8
		Molybdenum	0.0183	2	EPA 200.8
		Molybdenum, average	0.015		
		Molybdenum, standard deviation	0.003		
		Molybdenum, minimum	0.012		
		Molybdenum, maximum	0.0183		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	Nickel	0.000885	2	EPA 200.8
		Nickel	0.00106	2	EPA 200.8
		Nickel	0.00128	2	EPA 200.8
		Nickel	0.00187	2	EPA 200.8
		Nickel, average	0.001		
		Nickel, standard deviation	0.000		
		Nickel, minimum	0.001		
		Nickel, maximum	0.00187		
		Selenium	0.0015	0.46	EPA 200.8
		Selenium	0.0015	0.46	EPA 200.8
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.002	0.46	EPA 200.8
		Selenium, average	0.002		
		Selenium, standard deviation	0.000		
		Selenium, minimum	0.002		
		Selenium, maximum	0.002		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.0004		
		Zinc	0.0035	2.2	EPA 200.8
		Zinc	0.0035	2.2	EPA 200.8
		Zinc	0.0035	2.2	EPA 200.8
		Zinc	0.0035	2.2	EPA 200.8
		Zinc, average	0.004		
		Zinc, standard deviation	0.000		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW007	2069G	Zinc, minimum	0.004		
		Zinc, maximum	0.0035		
WW008	2069I	Aluminum	0.0368	900	EPA 200.8
		Aluminum	0.0473	900	EPA 200.8
		Aluminum	0.0487	900	EPA 200.8
		Aluminum	0.0822	900	EPA 200.8
		Aluminum, average	0.054		
		Aluminum, standard deviation	0.020		
		Aluminum, minimum	0.037		
		Aluminum, maximum	0.0822		
		Ammonia	34.6		EPA 350.1
		Ammonia	44.1		EPA 350.1
		Ammonia	48		EPA 350.1
		Ammonia	51.5		EPA 350.1
		Ammonia, average	44.550		
		Ammonia, standard deviation	7.289		
		Ammonia, minimum	34.600		
		Ammonia, maximum	51.5		
		Arsenic	0.00215	0.051	EPA 200.8
		Arsenic	0.0023	0.051	EPA 200.8
		Arsenic	0.0032	0.051	EPA 200.8
		Arsenic	0.00389	0.051	EPA 200.8
		Arsenic, average	0.003		
		Arsenic, standard deviation	0.001		
		Arsenic, minimum	0.002		
		Arsenic, maximum	0.00389		
		Boron	0.0544		EPA 200.8
		Boron	0.0598		EPA 200.8
		Boron	0.0756		EPA 200.8
		Boron	0.0766		EPA 200.8

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	Boron, average	0.067		
		Boron, standard deviation	0.011		
		Boron, minimum	0.054		
		Boron, maximum	0.0766		
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.000228	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		
		Chromium	0.002	4.1	EPA 200.8
		Chromium	0.002	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium, average	0.003		
		Chromium, standard deviation	0.001		
		Chromium, minimum	0.002		
		Chromium, maximum	0.003		
		Copper	0.0263	5.3	EPA 200.8
		Copper	0.0265	5.3	EPA 200.8
		Copper	0.034	5.3	EPA 200.8
		Copper	0.0391	5.3	EPA 200.8
		Copper, average	0.031		
		Copper, standard deviation	0.006		
		Copper, minimum	0.026		
		Copper, maximum	0.0391		
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00179	0.45	EPA 335.4
		Cyanide, total	0.00224	0.45	EPA 335.4
		Cyanide, total	0.00327	0.45	EPA 335.4
		Cyanide, total	0.00381	0.45	EPA 335.4
		Cyanide, total	0.00402	0.45	EPA 335.4
		Cyanide, total, average	0.003		
		Cyanide, total, standard deviation	0.001		
		Cyanide, total, minimum	0.002		
		Cyanide, total, maximum	0.00402		
		Fluoride	0.532	36	EPA 300.0
		Fluoride	0.658	36	EPA 300.0
		Fluoride	0.693	36	EPA 300.0
		Fluoride	0.742	36	EPA 300.0
		Fluoride, average	0.656		
		Fluoride, standard deviation	0.090		
		Fluoride, minimum	0.532		
		Fluoride, maximum	0.742		
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.00125	1	EPA 200.8
		Lead, average	0.001		
		Lead, standard deviation	0.000		
		Lead, minimum	0.001		
		Lead, maximum	0.00125		
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000085		EPA 245.1/245.2

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000085		
		Molybdenum	0.00237	2	EPA 200.8
		Molybdenum	0.00319	2	EPA 200.8
		Molybdenum	0.00446	2	EPA 200.8
		Molybdenum	0.00453	2	EPA 200.8
		Molybdenum, average	0.004		
		Molybdenum, standard deviation	0.001		
		Molybdenum, minimum	0.002		
		Molybdenum, maximum	0.00453		
		Nickel	0.00427	2	EPA 200.8
		Nickel	0.0045	2	EPA 200.8
		Nickel	0.00506	2	EPA 200.8
		Nickel	0.00555	2	EPA 200.8
		Nickel, average	0.005		
		Nickel, standard deviation	0.001		
		Nickel, minimum	0.004		
		Nickel, maximum	0.00555		
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.00202	0.46	EPA 200.8
		Selenium	0.00224	0.46	EPA 200.8
		Selenium	0.00322	0.46	EPA 200.8
		Selenium, average	0.002		
		Selenium, standard deviation	0.001		
		Selenium, minimum	0.002		
		Selenium, maximum	0.00322		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW008	2069I	Silver	0.0004	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.0004		
		Zinc	0.0378	2.2	EPA 200.8
		Zinc	0.0488	2.2	EPA 200.8
		Zinc	0.0575	2.2	EPA 200.8
		Zinc	0.0849	2.2	EPA 200.8
		Zinc, average	0.057		
		Zinc, standard deviation	0.020		
		Zinc, minimum	0.038		
		Zinc, maximum	0.0849		
WW011	2069K	Aluminum	0.0755	900	EPA 200.8
		Aluminum	0.0813	900	EPA 200.8
		Aluminum	0.085	900	EPA 200.8
		Aluminum	0.0869	900	EPA 200.8
		Aluminum, average	0.082		
		Aluminum, standard deviation	0.005		
		Aluminum, minimum	0.076		
		Aluminum, maximum	0.0869		
		Ammonia	16.9		EPA 350.1
		Ammonia	19.2		EPA 350.1
		Ammonia	22.7		EPA 350.1
		Ammonia	23		EPA 350.1
		Ammonia, average	20.450		
		Ammonia, standard deviation	2.929		
		Ammonia, minimum	16.900		
		Ammonia, maximum	23		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	Arsenic	0.00317	0.051	EPA 200.8
		Arsenic	0.0032	0.051	EPA 200.8
		Arsenic	0.00331	0.051	EPA 200.8
		Arsenic	0.00377	0.051	EPA 200.8
		Arsenic, average	0.003		
		Arsenic, standard deviation	0.000		
		Arsenic, minimum	0.003		
		Arsenic, maximum	0.00377		
		Boron	0.225		EPA 200.8
		Boron	0.229		EPA 200.8
		Boron	0.266		EPA 200.8
		Boron	0.284		EPA 200.8
		Boron, average	0.251		
		Boron, standard deviation	0.029		
		Boron, minimum	0.225		
		Boron, maximum	0.284		
		Cadmium	0.000126	0.05	EPA 200.8
		Cadmium	0.000159	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		
		Chromium	0.003	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium	0.00342	4.1	EPA 200.8
		Chromium	0.00366	4.1	EPA 200.8
		Chromium, average	0.003		
		Chromium, standard deviation	0.000		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	Chromium, minimum	0.003		
		Chromium, maximum	0.00366		
		Copper	0.0202	5.3	EPA 200.8
		Copper	0.0211	5.3	EPA 200.8
		Copper	0.0316	5.3	EPA 200.8
		Copper	0.0459	5.3	EPA 200.8
		Copper, average	0.030		
		Copper, standard deviation	0.012		
		Copper, minimum	0.020		
		Copper, maximum	0.0459		
		Fluoride	0.777	36	EPA 300.0
		Fluoride	0.791	36	EPA 300.0
		Fluoride	0.825	36	EPA 300.0
		Fluoride	0.939	36	EPA 300.0
		Fluoride, average	0.833		
		Fluoride, standard deviation	0.073		
		Fluoride, minimum	0.777		
		Fluoride, maximum	0.939		
		Lead	0.000808	1	EPA 200.8
		Lead	0.0011	1	EPA 200.8
		Lead	0.0011	1	EPA 200.8
		Lead	0.00133	1	EPA 200.8
		Lead, average	0.001		
		Lead, standard deviation	0.000		
		Lead, minimum	0.001		
		Lead, maximum	0.00133		
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000233		EPA 245.1/245.2
		Mercury	0.000247		EPA 245.1/245.2

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000247		
		Molybdenum	0.0752	2	EPA 200.8
		Molybdenum	0.151	2	EPA 200.8
		Molybdenum	0.165	2	EPA 200.8
		Molybdenum	0.238	2	EPA 200.8
		Molybdenum, average	0.157		
		Molybdenum, standard deviation	0.067		
		Molybdenum, minimum	0.075		
		Molybdenum, maximum	0.238		
		Nickel	0.00194	2	EPA 200.8
		Nickel	0.00209	2	EPA 200.8
		Nickel	0.00226	2	EPA 200.8
		Nickel	0.00268	2	EPA 200.8
		Nickel, average	0.002		
		Nickel, standard deviation	0.000		
		Nickel, minimum	0.002		
		Nickel, maximum	0.00268		
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.0024	0.46	EPA 200.8
		Selenium	0.00337	0.46	EPA 200.8
		Selenium, average	0.002		
		Selenium, standard deviation	0.001		
		Selenium, minimum	0.002		
		Selenium, maximum	0.00337		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
WW011	2069K	Silver	0.0004	5	EPA 200.8
		Silver	0.000708	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.000708		
		Zinc	0.0518	2.2	EPA 200.8
		Zinc	0.0776	2.2	EPA 200.8
		Zinc	0.0776	2.2	EPA 200.8
		Zinc	0.0935	2.2	EPA 200.8
		Zinc, average	0.075		
		Zinc, standard deviation	0.017		
		Zinc, minimum	0.052		
		Zinc, maximum	0.0935		
CINT	2238A	Aluminum	0.015	900	EPA 200.8
		Aluminum	0.015	900	EPA 200.8
		Aluminum	0.015	900	EPA 200.8
		Aluminum	0.0152	900	EPA 200.8
		Aluminum, average	0.015		
		Aluminum, standard deviation	0.000		
		Aluminum, minimum	0.015		
		Aluminum, maximum	0.0152		
		Ammonia	0.149		EPA 350.1
		Ammonia	0.164		EPA 350.1
		Ammonia	0.205		EPA 350.1
		Ammonia	0.879		EPA 350.1
		Ammonia, average	0.349		
		Ammonia, standard deviation	0.354		
		Ammonia, minimum	0.149		
		Ammonia, maximum	0.879		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	Arsenic	0.00462	0.051	EPA 200.8
		Arsenic	0.00583	0.051	EPA 200.8
		Arsenic	0.00668	0.051	EPA 200.8
		Arsenic	0.00898	0.051	EPA 200.8
		Arsenic, average	0.007		
		Arsenic, standard deviation	0.002		
		Arsenic, minimum	0.005		
		Arsenic, maximum	0.00898		
		Boron	0.0318		EPA 200.8
		Boron	0.0334		EPA 200.8
		Boron	0.0514		EPA 200.8
		Boron	0.0528		EPA 200.8
		Boron, average	0.042		
		Boron, standard deviation	0.011		
		Boron, minimum	0.032		
		Boron, maximum	0.0528		
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.00011	0.05	EPA 200.8
		Cadmium	0.0003	0.05	EPA 200.8
		Cadmium, average	0.000		
		Cadmium, standard deviation	0.000		
		Cadmium, minimum	0.000		
		Cadmium, maximum	0.0003		
		Chromium	0.002	4.1	EPA 200.8
		Chromium	0.00249	4.1	EPA 200.8
		Chromium	0.00295	4.1	EPA 200.8
		Chromium	0.003	4.1	EPA 200.8
		Chromium, average	0.003		
		Chromium, standard deviation	0.000		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	Chromium, minimum	0.002		
		Chromium, maximum	0.003		
		Copper	0.00222	5.3	EPA 200.8
		Copper	0.00361	5.3	EPA 200.8
		Copper	0.00517	5.3	EPA 200.8
		Copper	0.0103	5.3	EPA 200.8
		Copper, average	0.005		
		Copper, standard deviation	0.004		
		Copper, minimum	0.002		
		Copper, maximum	0.0103		
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00167	0.45	EPA 335.4
		Cyanide, total	0.00652	0.45	EPA 335.4
		Cyanide, total, average	0.002		
		Cyanide, total, standard deviation	0.002		
		Cyanide, total, minimum	0.002		
		Cyanide, total, maximum	0.00652		
		Fluoride	0.629	36	EPA 300.0
		Fluoride	0.8	36	EPA 300.0
		Fluoride	0.871	36	EPA 300.0
		Fluoride	1.08	36	EPA 300.0
		Fluoride, average	0.845		
		Fluoride, standard deviation	0.187		
		Fluoride, minimum	0.629		
		Fluoride, maximum	1.08		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead	0.0005	1	EPA 200.8
		Lead, average	0.001		
		Lead, standard deviation	0.000		
		Lead, minimum	0.001		
		Lead, maximum	0.0005		
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury	0.000067		EPA 245.1/245.2
		Mercury, average	0.000		
		Mercury, standard deviation	0.000		
		Mercury, minimum	0.000		
		Mercury, maximum	0.000067		
		Molybdenum	0.0481	2	EPA 200.8
		Molybdenum	0.062	2	EPA 200.8
		Molybdenum	0.0673	2	EPA 200.8
		Molybdenum	0.076	2	EPA 200.8
		Molybdenum, average	0.063		
		Molybdenum, standard deviation	0.012		
		Molybdenum, minimum	0.048		
		Molybdenum, maximum	0.076		
		Nickel	0.0005	2	EPA 200.8
		Nickel	0.0005	2	EPA 200.8
		Nickel	0.0005	2	EPA 200.8
		Nickel	0.0005	2	EPA 200.8
		Nickel, average	0.001		
		Nickel, standard deviation	0.000		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	Nickel, minimum	0.001		
		Nickel, maximum	0.0005		
		Selenium	0.0015	0.46	EPA 200.8
		Selenium	0.002	0.46	EPA 200.8
		Selenium	0.00281	0.46	EPA 200.8
		Selenium	0.00318	0.46	EPA 200.8
		Selenium, average	0.002		
		Selenium, standard deviation	0.001		
		Selenium, minimum	0.002		
		Selenium, maximum	0.00318		
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8
		Silver	0.0002	5	EPA 200.8
		Silver	0.0004	5	EPA 200.8
		Silver, average	0.000		
		Silver, standard deviation	0.000		
		Silver, minimum	0.000		
		Silver, maximum	0.0004		
		Zinc	0.0035	2.2	EPA 200.8
		Zinc	0.0035	2.2	EPA 200.8
		Zinc	0.00443	2.2	EPA 200.8
		Zinc	0.00531	2.2	EPA 200.8
		Zinc, average	0.004		
		Zinc, standard deviation	0.001		
		Zinc, minimum	0.004		
		Zinc, maximum	0.00531		
		Grand, average			
		Grand, average, average	#DIV/0!		
		Grand, average, standard deviation	#DIV/0!		

See notes at end of appendix.

Table E-9. Summary of nonradiological (inorganic) results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Result (mg/L)	Regulatory Limit (ABCWUA)	Analytical Method
CINT	2238A	Grand, average, minimum	0.000		
		Grand, average, maximum	0		
		Grand, average	1.450747093		
		Grand, standard deviation	6.342583178		
		Grand, minimum	0.000067		
		Grand, maximum	51.5		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit	Analytical Method
WW001	2069A	Actinium-228	-14	300,000	EPA 901.1
		Actinium-228	1.01	300,000	EPA 901.1
		Actinium-228, average	-6.495		
		Actinium-228, standard deviation	10.614		
		Actinium-228, minimum	-14.000		
		Actinium-228, maximum	1.01		
		Alpha, gross	0.0365		EPA 900.0/SW-846 9310
		Alpha, gross	2.95		EPA 900.0/SW-846 9310
		Alpha, gross, average	1.493		
		Alpha, gross, standard deviation	2.060		
		Alpha, gross, minimum	0.037		
		Alpha, gross, maximum	2.95		
		Americium-241	1.73	200	EPA 901.1
		Americium-241	12.1	200	EPA 901.1
		Americium-241, average	6.915		
		Americium-241, standard deviation	7.333		
		Americium-241, minimum	1.730		
		Americium-241, maximum	12.1		
		Beryllium-7	2.36		EPA 901.1
		Beryllium-7	13.7		EPA 901.1
		Beryllium-7, average	8.030		
		Beryllium-7, standard deviation	8.019		
		Beryllium-7, minimum	2.360		
		Beryllium-7, maximum	13.7		
		Beta, gross	12.8		EPA 900.0/SW-846 9310
		Beta, gross	13.9		EPA 900.0/SW-846 9310
		Beta, gross, average	13.350		
		Beta, gross, standard deviation	0.778		
		Beta, gross, minimum	12.800		
		Beta, gross, maximum	13.9		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW001	2069A	Bismuth-212	-30.5		EPA 901.1
		Bismuth-212	23.6		EPA 901.1
		Bismuth-212, average	-3.450		
		Bismuth-212, standard deviation	38.254		
		Bismuth-212, minimum	-30.500		
		Bismuth-212, maximum	23.6		
		Bismuth-214	-3.46		EPA 901.1
		Bismuth-214	8.76		EPA 901.1
		Bismuth-214, average	2.650		
		Bismuth-214, standard deviation	8.641		
		Bismuth-214, minimum	-3.460		
		Bismuth-214, maximum	8.76		
		Cesium-137	1.27	10,000	EPA 901.1
		Cesium-137	1.86	10,000	EPA 901.1
		Cesium-137, average	1.565		
		Cesium-137, standard deviation	0.417		
		Cesium-137, minimum	1.270		
		Cesium-137, maximum	1.86		
		Cobalt-60	-0.849	30,000	EPA 901.1
		Cobalt-60	-0.217	30,000	EPA 901.1
		Cobalt-60, average	-0.533		
		Cobalt-60, standard deviation	0.447		
		Cobalt-60, minimum	-0.849		
		Cobalt-60, maximum	-0.217		
		Lead-212	5.14	20,000	EPA 901.1
		Lead-212	5.77	20,000	EPA 901.1
		Lead-212, average	5.455		
		Lead-212, standard deviation	0.445		
		Lead-212, minimum	5.140		
		Lead-212, maximum	5.77		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW001	2069A	Lead-214	4.16	1,000,000	EPA 901.1
		Lead-214	12.9	1,000,000	EPA 901.1
		Lead-214, average	8.530		
		Lead-214, standard deviation	6.180		
		Lead-214, minimum	4.160		
		Lead-214, maximum	12.9		
		Neptunium-237	0.358		EPA 901.1
		Neptunium-237	3.23		EPA 901.1
		Neptunium-237, average	1.794		
		Neptunium-237, standard deviation	2.031		
		Neptunium-237, minimum	0.358		
		Neptunium-237, maximum	3.23		
		Potassium-40	-8.6	40,000	EPA 901.1
		Potassium-40	1.16	40,000	EPA 901.1
		Potassium-40, average	-3.720		
		Potassium-40, standard deviation	6.901		
		Potassium-40, minimum	-8.600		
		Potassium-40, maximum	1.16		
		Radium-223	-4.98		EPA 901.1
		Radium-223	0.0837		EPA 901.1
		Radium-223, average	-2.448		
		Radium-223, standard deviation	3.581		
		Radium-223, minimum	-4.980		
		Radium-223, maximum	0.0837		
		Radium-224	34.6		EPA 901.1
		Radium-224	40.6		EPA 901.1
		Radium-224, average	37.600		
		Radium-224, standard deviation	4.243		
		Radium-224, minimum	34.600		
		Radium-224, maximum	40.6		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW001	2069A	Radium-226	-79.1	600	EPA 901.1
		Radium-226	12.6	600	EPA 901.1
		Radium-226, average	-33.250		
		Radium-226, standard deviation	64.842		
		Radium-226, minimum	-79.100		
		Radium-226, maximum	12.6		
		Radium-228	-14	600	EPA 901.1
		Radium-228	1.01	600	EPA 901.1
		Radium-228, average	-6.495		
		Radium-228, standard deviation	10.614		
		Radium-228, minimum	-14.000		
		Radium-228, maximum	1.01		
		Sodium-22	-2.18		EPA 901.1
		Sodium-22	-0.24		EPA 901.1
		Sodium-22, average	-1.210		
		Sodium-22, standard deviation	1.372		
		Sodium-22, minimum	-2.180		
		Sodium-22, maximum	-0.24		
		Thorium-227	-14.8		EPA 901.1
		Thorium-227	-1.01		EPA 901.1
		Thorium-227, average	-7.905		
		Thorium-227, standard deviation	9.751		
		Thorium-227, minimum	-14.800		
		Thorium-227, maximum	-1.01		
		Thorium-231	21.6	300	EPA 901.1
		Thorium-231	54	300	EPA 901.1
		Thorium-231, average	37.800		
		Thorium-231, standard deviation	22.910		
		Thorium-231, minimum	21.600		
		Thorium-231, maximum	54		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW001	2069A	Thorium-234	3.73	50,000	EPA 901.1
		Thorium-234	177	50,000	EPA 901.1
		Thorium-234, average	90.365		
		Thorium-234, standard deviation	122.520		
		Thorium-234, minimum	3.730		
		Thorium-234, maximum	177		
		Tritium	-23	10,000,000	EPA 906.0 Modified
		Tritium	49.4	10,000,000	EPA 906.0 Modified
		Tritium, average	13.200		
		Tritium, standard deviation	51.195		
		Tritium, minimum	-23.000		
		Tritium, maximum	49.4		
		Uranium-235	0.613	3,000	EPA 901.1
		Uranium-235	12	3,000	EPA 901.1
		Uranium-235, average	6.307		
		Uranium-235, standard deviation	8.052		
		Uranium-235, minimum	0.613		
		Uranium-235, maximum	12		
		Uranium-238	3.73	3,000	EPA 901.1
		Uranium-238	177	3,000	EPA 901.1
		Uranium-238, average	90.365		
		Uranium-238, standard deviation	122.520		
		Uranium-238, minimum	3.730		
		Uranium-238, maximum	177		
WW006	2069F	Actinium-228	-12.9	300,000	EPA 901.1
		Actinium-228	2.95	300,000	EPA 901.1
		Actinium-228, average	-4.975		
		Actinium-228, standard deviation	11.208		
		Actinium-228, minimum	-12.900		
		Actinium-228, maximum	2.95		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW006	2069F	Alpha, gross	-0.648		EPA 900.0/SW-846 9310
		Alpha, gross	1.72		EPA 900.0/SW-846 9310
		Alpha, gross, average	0.536		
		Alpha, gross, standard deviation	1.674		
		Alpha, gross, minimum	-0.648		
		Alpha, gross, maximum	1.72		
		Americium-241	-2.45	200	EPA 901.1
		Americium-241	3.48	200	EPA 901.1
		Americium-241, average	0.515		
		Americium-241, standard deviation	4.193		
		Americium-241, minimum	-2.450		
		Americium-241, maximum	3.48		
		Beryllium-7	2.9		EPA 901.1
		Beryllium-7	4.63		EPA 901.1
		Beryllium-7, average	3.765		
		Beryllium-7, standard deviation	1.223		
		Beryllium-7, minimum	2.900		
		Beryllium-7, maximum	4.63		
		Beta, gross	13.8		EPA 900.0/SW-846 9310
		Beta, gross	17.8		EPA 900.0/SW-846 9310
		Beta, gross, average	15.800		
		Beta, gross, standard deviation	2.828		
		Beta, gross, minimum	13.800		
		Beta, gross, maximum	17.8		
		Bismuth-212	-4.19		EPA 901.1
		Bismuth-212	-3.01		EPA 901.1
		Bismuth-212, average	-3.600		
		Bismuth-212, standard deviation	0.834		
		Bismuth-212, minimum	-4.190		
		Bismuth-212, maximum	-3.01		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW006	2069F	Bismuth-214	6.42		EPA 901.1
		Bismuth-214	9.92		EPA 901.1
		Bismuth-214, average	8.170		
		Bismuth-214, standard deviation	2.475		
		Bismuth-214, minimum	6.420		
		Bismuth-214, maximum	9.92		
		Cesium-137	-0.198	10,000	EPA 901.1
		Cesium-137	1.1	10,000	EPA 901.1
		Cesium-137, average	0.451		
		Cesium-137, standard deviation	0.918		
		Cesium-137, minimum	-0.198		
		Cesium-137, maximum	1.1		
		Cobalt-60	0.83	30,000	EPA 901.1
		Cobalt-60	3.23	30,000	EPA 901.1
		Cobalt-60, average	2.030		
		Cobalt-60, standard deviation	1.697		
		Cobalt-60, minimum	0.830		
		Cobalt-60, maximum	3.23		
		Lead-212	-0.0348	20,000	EPA 901.1
		Lead-212	5.42	20,000	EPA 901.1
		Lead-212, average	2.693		
		Lead-212, standard deviation	3.857		
		Lead-212, minimum	-0.035		
		Lead-212, maximum	5.42		
		Lead-214	-1.68	1,000,000	EPA 901.1
		Lead-214	0.91	1,000,000	EPA 901.1
		Lead-214, average	-0.385		
		Lead-214, standard deviation	1.831		
		Lead-214, minimum	-1.680		
		Lead-214, maximum	0.91		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW006	2069F	Neptunium-237	-0.324		EPA 901.1
		Neptunium-237	0.554		EPA 901.1
		Neptunium-237, average	0.115		
		Neptunium-237, standard deviation	0.621		
		Neptunium-237, minimum	-0.324		
		Neptunium-237, maximum	0.554		
		Potassium-40	47	40,000	EPA 901.1
		Potassium-40	48	40,000	EPA 901.1
		Potassium-40, average	47.500		
		Potassium-40, standard deviation	0.707		
		Potassium-40, minimum	47.000		
		Potassium-40, maximum	48		
		Radium-223	-16.8		EPA 901.1
		Radium-223	3.02		EPA 901.1
		Radium-223, average	-6.890		
		Radium-223, standard deviation	14.015		
		Radium-223, minimum	-16.800		
		Radium-223, maximum	3.02		
		Radium-224	-79.1		EPA 901.1
		Radium-224	6.51		EPA 901.1
		Radium-224, average	-36.295		
		Radium-224, standard deviation	60.535		
		Radium-224, minimum	-79.100		
		Radium-224, maximum	6.51		
		Radium-226	-40.3	600	EPA 901.1
		Radium-226	-19.6	600	EPA 901.1
		Radium-226, average	-29.950		
		Radium-226, standard deviation	14.637		
		Radium-226, minimum	-40.300		
		Radium-226, maximum	-19.6		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW006	2069F	Radium-228	-12.9	600	EPA 901.1
		Radium-228	2.95	600	EPA 901.1
		Radium-228, average	-4.975		
		Radium-228, standard deviation	11.208		
		Radium-228, minimum	-12.900		
		Radium-228, maximum	2.95		
		Sodium-22	-3.27		EPA 901.1
		Sodium-22	1.7		EPA 901.1
		Sodium-22, average	-0.785		
		Sodium-22, standard deviation	3.514		
		Sodium-22, minimum	-3.270		
		Sodium-22, maximum	1.7		
		Thorium-227	0.897		EPA 901.1
		Thorium-227	7.17		EPA 901.1
		Thorium-227, average	4.034		
		Thorium-227, standard deviation	4.436		
		Thorium-227, minimum	0.897		
		Thorium-227, maximum	7.17		
		Thorium-231	-6.02	300	EPA 901.1
		Thorium-231	-4.79	300	EPA 901.1
		Thorium-231, average	-5.405		
		Thorium-231, standard deviation	0.870		
		Thorium-231, minimum	-6.020		
		Thorium-231, maximum	-4.79		
		Thorium-234	-80.2	50,000	EPA 901.1
		Thorium-234	109	50,000	EPA 901.1
		Thorium-234, average	14.400		
		Thorium-234, standard deviation	133.785		
		Thorium-234, minimum	-80.200		
		Thorium-234, maximum	109		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW006	2069F	Tritium	-34.2	10,000,000	EPA 906.0 Modified
		Tritium	30.6	10,000,000	EPA 906.0 Modified
		Tritium, average	-1.800		
		Tritium, standard deviation	45.821		
		Tritium, minimum	-34.200		
		Tritium, maximum	30.6		
		Uranium-235	2.15	3,000	EPA 901.1
		Uranium-235	12.2	3,000	EPA 901.1
		Uranium-235, average	7.175		
		Uranium-235, standard deviation	7.106		
		Uranium-235, minimum	2.150		
		Uranium-235, maximum	12.2		
		Uranium-238	-80.2	3,000	EPA 901.1
		Uranium-238	109	3,000	EPA 901.1
		Uranium-238, average	14.400		
		Uranium-238, standard deviation	133.785		
		Uranium-238, minimum	-80.200		
		Uranium-238, maximum	109		
WW008	2069I	Actinium-228	3.69	300,000	EPA 901.1
		Actinium-228	14.4	300,000	EPA 901.1
		Actinium-228, average	9.045		
		Actinium-228, standard deviation	7.573		
		Actinium-228, minimum	3.690		
		Actinium-228, maximum	14.4		
		Alpha, gross	-0.752		EPA 900.0/SW-846 9310
		Alpha, gross	0.756		EPA 900.0/SW-846 9310
		Alpha, gross, average	0.002		
		Alpha, gross, standard deviation	1.066		
		Alpha, gross, minimum	-0.752		
		Alpha, gross, maximum	0.756		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW008	2069I	Americium-241	-2.95	200	EPA 901.1
		Americium-241	6.73	200	EPA 901.1
		Americium-241, average	1.890		
		Americium-241, standard deviation	6.845		
		Americium-241, minimum	-2.950		
		Americium-241, maximum	6.73		
		Beryllium-7	0.289		EPA 901.1
		Beryllium-7	2.21		EPA 901.1
		Beryllium-7, average	1.250		
		Beryllium-7, standard deviation	1.358		
		Beryllium-7, minimum	0.289		
		Beryllium-7, maximum	2.21		
		Beta, gross	15.8		EPA 900.0/SW-846 9310
		Beta, gross	20.2		EPA 900.0/SW-846 9310
		Beta, gross, average	18.000		
		Beta, gross, standard deviation	3.111		
		Beta, gross, minimum	15.800		
		Beta, gross, maximum	20.2		
		Bismuth-212	-14.4		EPA 901.1
		Bismuth-212	27.2		EPA 901.1
		Bismuth-212, average	6.400		
		Bismuth-212, standard deviation	29.416		
		Bismuth-212, minimum	-14.400		
		Bismuth-212, maximum	27.2		
		Bismuth-214	-7.44		EPA 901.1
		Bismuth-214	5.73		EPA 901.1
		Bismuth-214, average	-0.855		
		Bismuth-214, standard deviation	9.313		
		Bismuth-214, minimum	-7.440		
		Bismuth-214, maximum	5.73		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW008	2069I	Cesium-137	-2.28	10,000	EPA 901.1
		Cesium-137	1.83	10,000	EPA 901.1
		Cesium-137, average	-0.225		
		Cesium-137, standard deviation	2.906		
		Cesium-137, minimum	-2.280		
		Cesium-137, maximum	1.83		
		Cobalt-60	-0.834	30,000	EPA 901.1
		Cobalt-60	0.707	30,000	EPA 901.1
		Cobalt-60, average	-0.064		
		Cobalt-60, standard deviation	1.090		
		Cobalt-60, minimum	-0.834		
		Cobalt-60, maximum	0.707		
		Lead-212	-6.06	20,000	EPA 901.1
		Lead-212	1.22	20,000	EPA 901.1
		Lead-212, average	-2.420		
		Lead-212, standard deviation	5.148		
		Lead-212, minimum	-6.060		
		Lead-212, maximum	1.22		
		Lead-214	-3.36	1,000,000	EPA 901.1
		Lead-214	0.514	1,000,000	EPA 901.1
		Lead-214, average	-1.423		
		Lead-214, standard deviation	2.739		
		Lead-214, minimum	-3.360		
		Lead-214, maximum	0.514		
		Neptunium-237	-1.92		EPA 901.1
		Neptunium-237	-0.0173		EPA 901.1
		Neptunium-237, average	-0.969		
		Neptunium-237, standard deviation	1.345		
		Neptunium-237, minimum	-1.920		
		Neptunium-237, maximum	-0.0173		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW008	2069I	Potassium-40	-4.52	40,000	EPA 901.1
		Potassium-40	5.89	40,000	EPA 901.1
		Potassium-40, average	0.685		
		Potassium-40, standard deviation	7.361		
		Potassium-40, minimum	-4.520		
		Potassium-40, maximum	5.89		
		Radium-223	8.67		EPA 901.1
		Radium-223	12.9		EPA 901.1
		Radium-223, average	10.785		
		Radium-223, standard deviation	2.991		
		Radium-223, minimum	8.670		
		Radium-223, maximum	12.9		
		Radium-224	-68.5		EPA 901.1
		Radium-224	10.8		EPA 901.1
		Radium-224, average	-28.850		
		Radium-224, standard deviation	56.074		
		Radium-224, minimum	-68.500		
		Radium-224, maximum	10.8		
		Radium-226	-87.4	600	EPA 901.1
		Radium-226	-7.92	600	EPA 901.1
		Radium-226, average	-47.660		
		Radium-226, standard deviation	56.201		
		Radium-226, minimum	-87.400		
		Radium-226, maximum	-7.92		
		Radium-228	3.69	600	EPA 901.1
		Radium-228	14.4	600	EPA 901.1
		Radium-228, average	9.045		
		Radium-228, standard deviation	7.573		
		Radium-228, minimum	3.690		
		Radium-228, maximum	14.4		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW008	2069I	Sodium-22	0.177		EPA 901.1
		Sodium-22	2.58		EPA 901.1
		Sodium-22, average	1.379		
		Sodium-22, standard deviation	1.699		
		Sodium-22, minimum	0.177		
		Sodium-22, maximum	2.58		
		Thorium-227	-4.08		EPA 901.1
		Thorium-227	7.86		EPA 901.1
		Thorium-227, average	1.890		
		Thorium-227, standard deviation	8.443		
		Thorium-227, minimum	-4.080		
		Thorium-227, maximum	7.86		
		Thorium-231	10.8	300	EPA 901.1
		Thorium-231	22.8	300	EPA 901.1
		Thorium-231, average	16.800		
		Thorium-231, standard deviation	8.485		
		Thorium-231, minimum	10.800		
		Thorium-231, maximum	22.8		
		Thorium-234	-7.32	50,000	EPA 901.1
		Thorium-234	125	50,000	EPA 901.1
		Thorium-234, average	58.840		
		Thorium-234, standard deviation	93.564		
		Thorium-234, minimum	-7.320		
		Thorium-234, maximum	125		
		Tritium	-106	10,000,000	EPA 906.0 Modified
		Tritium	142	10,000,000	EPA 906.0 Modified
		Tritium, average	18.000		
		Tritium, standard deviation	175.362		
		Tritium, minimum	-106.000		
		Tritium, maximum	142		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW008	2069I	Uranium-235	-4.27	3,000	EPA 901.1
		Uranium-235	0.621	3,000	EPA 901.1
		Uranium-235, average	-1.825		
		Uranium-235, standard deviation	3.458		
		Uranium-235, minimum	-4.270		
		Uranium-235, maximum	0.621		
		Uranium-238	-7.32	3,000	EPA 901.1
		Uranium-238	125	3,000	EPA 901.1
		Uranium-238, average	58.840		
		Uranium-238, standard deviation	93.564		
		Uranium-238, minimum	-7.320		
		Uranium-238, maximum	125		
WW011	2069K	Actinium-228	-1.31	300,000	EPA 901.1
		Actinium-228	7.79	300,000	EPA 901.1
		Actinium-228, average	3.240		
		Actinium-228, standard deviation	6.435		
		Actinium-228, minimum	-1.310		
		Actinium-228, maximum	7.79		
		Alpha, gross	-1.73		EPA 900.0/SW-846 9310
		Alpha, gross	1.36		EPA 900.0/SW-846 9310
		Alpha, gross, average	-0.185		
		Alpha, gross, standard deviation	2.185		
		Alpha, gross, minimum	-1.730		
		Alpha, gross, maximum	1.36		
		Americium-241	-12.6	200	EPA 901.1
		Americium-241	-2.4	200	EPA 901.1
		Americium-241, average	-7.500		
		Americium-241, standard deviation	7.212		
		Americium-241, minimum	-12.600		
		Americium-241, maximum	-2.4		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW011	2069K	Beryllium-7	3.38		EPA 901.1
		Beryllium-7	8.04		EPA 901.1
		Beryllium-7, average	5.710		
		Beryllium-7, standard deviation	3.295		
		Beryllium-7, minimum	3.380		
		Beryllium-7, maximum	8.04		
		Beta, gross	22		EPA 900.0/SW-846 9310
		Beta, gross	32.5		EPA 900.0/SW-846 9310
		Beta, gross, average	27.250		
		Beta, gross, standard deviation	7.425		
		Beta, gross, minimum	22.000		
		Beta, gross, maximum	32.5		
		Bismuth-212	-52.4		EPA 901.1
		Bismuth-212	12.7		EPA 901.1
		Bismuth-212, average	-19.850		
		Bismuth-212, standard deviation	46.033		
		Bismuth-212, minimum	-52.400		
		Bismuth-212, maximum	12.7		
		Bismuth-214	-2.78		EPA 901.1
		Bismuth-214	0.156		EPA 901.1
		Bismuth-214, average	-1.312		
		Bismuth-214, standard deviation	2.076		
		Bismuth-214, minimum	-2.780		
		Bismuth-214, maximum	0.156		
		Cesium-137	0.637	10,000	EPA 901.1
		Cesium-137	2.94	10,000	EPA 901.1
		Cesium-137, average	1.789		
		Cesium-137, standard deviation	1.628		
		Cesium-137, minimum	0.637		
		Cesium-137, maximum	2.94		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW011	2069K	Cobalt-60	-1.36	30,000	EPA 901.1
		Cobalt-60	0.928	30,000	EPA 901.1
		Cobalt-60, average	-0.216		
		Cobalt-60, standard deviation	1.618		
		Cobalt-60, minimum	-1.360		
		Cobalt-60, maximum	0.928		
		Lead-212	0.786	20,000	EPA 901.1
		Lead-212	3.72	20,000	EPA 901.1
		Lead-212, average	2.253		
		Lead-212, standard deviation	2.075		
		Lead-212, minimum	0.786		
		Lead-212, maximum	3.72		
		Lead-214	-2	1,000,000	EPA 901.1
		Lead-214	-0.377	1,000,000	EPA 901.1
		Lead-214, average	-1.189		
		Lead-214, standard deviation	1.148		
		Lead-214, minimum	-2.000		
		Lead-214, maximum	-0.377		
		Neptunium-237	0.92		EPA 901.1
		Neptunium-237	1.92		EPA 901.1
		Neptunium-237, average	1.420		
		Neptunium-237, standard deviation	0.707		
		Neptunium-237, minimum	0.920		
		Neptunium-237, maximum	1.92		
		Potassium-40	50	40,000	EPA 901.1
		Potassium-40	54.9	40,000	EPA 901.1
		Potassium-40, average	52.450		
		Potassium-40, standard deviation	3.465		
		Potassium-40, minimum	50.000		
		Potassium-40, maximum	54.9		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW011	2069K	Radium-223	11.4		EPA 901.1
		Radium-223	11.5		EPA 901.1
		Radium-223, average	11.450		
		Radium-223, standard deviation	0.071		
		Radium-223, minimum	11.400		
		Radium-223, maximum	11.5		
		Radium-224	6.71		EPA 901.1
		Radium-224	21		EPA 901.1
		Radium-224, average	13.855		
		Radium-224, standard deviation	10.105		
		Radium-224, minimum	6.710		
		Radium-224, maximum	21		
		Radium-226	-42.5	600	EPA 901.1
		Radium-226	9.07	600	EPA 901.1
		Radium-226, average	-16.715		
		Radium-226, standard deviation	36.465		
		Radium-226, minimum	-42.500		
		Radium-226, maximum	9.07		
		Radium-228	-1.31	600	EPA 901.1
		Radium-228	7.79	600	EPA 901.1
		Radium-228, average	3.240		
		Radium-228, standard deviation	6.435		
		Radium-228, minimum	-1.310		
		Radium-228, maximum	7.79		
		Sodium-22	0.32		EPA 901.1
		Sodium-22	4.9		EPA 901.1
		Sodium-22, average	2.610		
		Sodium-22, standard deviation	3.239		
		Sodium-22, minimum	0.320		
		Sodium-22, maximum	4.9		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW011	2069K	Thorium-227	-5.42		EPA 901.1
		Thorium-227	6.74		EPA 901.1
		Thorium-227, average	0.660		
		Thorium-227, standard deviation	8.598		
		Thorium-227, minimum	-5.420		
		Thorium-227, maximum	6.74		
		Thorium-231	-3.08	300	EPA 901.1
		Thorium-231	2.65	300	EPA 901.1
		Thorium-231, average	-0.215		
		Thorium-231, standard deviation	4.052		
		Thorium-231, minimum	-3.080		
		Thorium-231, maximum	2.65		
		Thorium-234	-85.3	50,000	EPA 901.1
		Thorium-234	-23.6	50,000	EPA 901.1
		Thorium-234, average	-54.450		
		Thorium-234, standard deviation	43.628		
		Thorium-234, minimum	-85.300		
		Thorium-234, maximum	-23.6		
		Tritium	-71.9	10,000,000	EPA 906.0 Modified
		Tritium	-66.1	10,000,000	EPA 906.0 Modified
		Tritium, average	-69.000		
		Tritium, standard deviation	4.101		
		Tritium, minimum	-71.900		
		Tritium, maximum	-66.1		
		Uranium-235	-5.05	3,000	EPA 901.1
		Uranium-235	13.5	3,000	EPA 901.1
		Uranium-235, average	4.225		
		Uranium-235, standard deviation	13.117		
		Uranium-235, minimum	-5.050		
		Uranium-235, maximum	13.5		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
WW011	2069K	Uranium-238	-85.3	3,000	EPA 901.1
		Uranium-238	-23.6	3,000	EPA 901.1
		Uranium-238, average	-54.450		
		Uranium-238, standard deviation	43.628		
		Uranium-238, minimum	-85.300		
		Uranium-238, maximum	-23.6		
CINT	2238A	Actinium-228	-16.6	300,000	EPA 901.1
		Actinium-228	0.0307	300,000	EPA 901.1
		Actinium-228, average	-8.285		
		Actinium-228, standard deviation	11.760		
		Actinium-228, minimum	-16.600		
		Actinium-228, maximum	0.0307		
		Alpha, gross	-10.7		EPA 900.0/SW-846 9310
		Alpha, gross	1.23		EPA 900.0/SW-846 9310
		Alpha, gross, average	-4.735		
		Alpha, gross, standard deviation	8.436		
		Alpha, gross, minimum	-10.700		
		Alpha, gross, maximum	1.23		
		Americium-241	-3.53	200	EPA 901.1
		Americium-241	-0.984	200	EPA 901.1
		Americium-241, average	-2.257		
		Americium-241, standard deviation	1.800		
		Americium-241, minimum	-3.530		
		Americium-241, maximum	-0.984		
		Beryllium-7	-4		EPA 901.1
		Beryllium-7	3.8		EPA 901.1
		Beryllium-7, average	-0.100		
		Beryllium-7, standard deviation	5.515		
		Beryllium-7, minimum	-4.000		
		Beryllium-7, maximum	3.8		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
CINT	2238A	Beta, gross	2.05		EPA 900.0/SW-846 9310
		Beta, gross	2.6		EPA 900.0/SW-846 9310
		Beta, gross, average	2.325		
		Beta, gross, standard deviation	0.389		
		Beta, gross, minimum	2.050		
		Beta, gross, maximum	2.6		
		Bismuth-212	-6.16		EPA 901.1
		Bismuth-212	10.1		EPA 901.1
		Bismuth-212, average	1.970		
		Bismuth-212, standard deviation	11.498		
		Bismuth-212, minimum	-6.160		
		Bismuth-212, maximum	10.1		
		Bismuth-214	1.33		EPA 901.1
		Bismuth-214	1.56		EPA 901.1
		Bismuth-214, average	1.445		
		Bismuth-214, standard deviation	0.163		
		Bismuth-214, minimum	1.330		
		Bismuth-214, maximum	1.56		
		Cesium-137	0.776	10,000	EPA 901.1
		Cesium-137	1.21	10,000	EPA 901.1
		Cesium-137, average	0.993		
		Cesium-137, standard deviation	0.307		
		Cesium-137, minimum	0.776		
		Cesium-137, maximum	1.21		
		Cobalt-60	-0.441	30,000	EPA 901.1
		Cobalt-60	1.02	30,000	EPA 901.1
		Cobalt-60, average	0.290		
		Cobalt-60, standard deviation	1.033		
		Cobalt-60, minimum	-0.441		
		Cobalt-60, maximum	1.02		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
CINT	2238A	Lead-212	-1.21	20,000	EPA 901.1
		Lead-212	2.96	20,000	EPA 901.1
		Lead-212, average	0.875		
		Lead-212, standard deviation	2.949		
		Lead-212, minimum	-1.210		
		Lead-212, maximum	2.96		
		Lead-214	2.04	1,000,000	EPA 901.1
		Lead-214	2.32	1,000,000	EPA 901.1
		Lead-214, average	2.180		
		Lead-214, standard deviation	0.198		
		Lead-214, minimum	2.040		
		Lead-214, maximum	2.32		
		Neptunium-237	-1.36		EPA 901.1
		Neptunium-237	0.158		EPA 901.1
		Neptunium-237, average	-0.601		
		Neptunium-237, standard deviation	1.073		
		Neptunium-237, minimum	-1.360		
		Neptunium-237, maximum	0.158		
		Potassium-40	-9.57	40,000	EPA 901.1
		Potassium-40	5.51	40,000	EPA 901.1
		Potassium-40, average	-2.030		
		Potassium-40, standard deviation	10.663		
		Potassium-40, minimum	-9.570		
		Potassium-40, maximum	5.51		
		Radium-223	-24.8		EPA 901.1
		Radium-223	-10.3		EPA 901.1
		Radium-223, average	-17.550		
		Radium-223, standard deviation	10.253		
		Radium-223, minimum	-24.800		
		Radium-223, maximum	-10.3		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
CINT	2238A	Radium-224	-231		EPA 901.1
		Radium-224	-0.788		EPA 901.1
		Radium-224, average	-115.894		
		Radium-224, standard deviation	162.784		
		Radium-224, minimum	-231.000		
		Radium-224, maximum	-0.788		
		Radium-226	-48.8	600	EPA 901.1
		Radium-226	-29.2	600	EPA 901.1
		Radium-226, average	-39.000		
		Radium-226, standard deviation	13.859		
		Radium-226, minimum	-48.800		
		Radium-226, maximum	-29.2		
		Radium-228	-16.6	600	EPA 901.1
		Radium-228	0.0307	600	EPA 901.1
		Radium-228, average	-8.285		
		Radium-228, standard deviation	11.760		
		Radium-228, minimum	-16.600		
		Radium-228, maximum	0.0307		
		Sodium-22	0.224		EPA 901.1
		Sodium-22	0.502		EPA 901.1
		Sodium-22, average	0.363		
		Sodium-22, standard deviation	0.197		
		Sodium-22, minimum	0.224		
		Sodium-22, maximum	0.502		
		Thorium-227	-7.94		EPA 901.1
		Thorium-227	2.66		EPA 901.1
		Thorium-227, average	-2.640		
		Thorium-227, standard deviation	7.495		
		Thorium-227, minimum	-7.940		
		Thorium-227, maximum	2.66		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
CINT	2238A	Thorium-231	-5.07	300	EPA 901.1
		Thorium-231	2.73	300	EPA 901.1
		Thorium-231, average	-1.170		
		Thorium-231, standard deviation	5.515		
		Thorium-231, minimum	-5.070		
		Thorium-231, maximum	2.73		
		Thorium-234	27.6	50,000	EPA 901.1
		Thorium-234	36.2	50,000	EPA 901.1
		Thorium-234, average	31.900		
		Thorium-234, standard deviation	6.081		
		Thorium-234, minimum	27.600		
		Thorium-234, maximum	36.2		
		Tritium	-40.1	10,000,000	EPA 906.0 Modified
		Tritium, average	-40.100		
		Tritium, standard deviation	#DIV/0!		
		Tritium, minimum	-40.100		
		Tritium, maximum	-40.1		
		Uranium-235	-19.3	3,000	EPA 901.1
		Uranium-235	5.58	3,000	EPA 901.1
		Uranium-235, average	-6.860		
		Uranium-235, standard deviation	17.593		
		Uranium-235, minimum	-19.300		
		Uranium-235, maximum	5.58		
		Uranium-238	27.6	3,000	EPA 901.1
		Uranium-238	36.2	3,000	EPA 901.1
		Uranium-238, average	31.900		
		Uranium-238, standard deviation	6.081		
		Uranium-238, minimum	27.600		
		Uranium-238, maximum	36.2		

See notes at end of appendix.

Table E-10. Summary of radiological results for permitted sanitary outfalls, 2016 (continued)

Station	Permit Number	Analyte	Activity (pCi/L)	Monthly Average Regulatory Sewer Release Limit*	Analytical Method
CINT	2238A	Grand, average	1.3795		
		Grand, standard deviation	36.44876946		
		Grand, minimum	-231		
		Grand, maximum	177		

See notes at end of appendix.

Appendix Notes

Units

µg/L = micrograms per liter
mg/L = milligrams per liter
pCi/L = picocuries per liter

Station

CINT = Center for Integrated Nanotechnologies
WW = wastewater

MDL or MDA

MDA = minimal detectable activity or minimum measured activity in a sample required to ensure a 95% probability that the measured activity is accurately quantified above the critical level
MDL = method detection limit; the minimum concentration or activity that can be measured and reported with 99% confidence that the analyte is greater than zero; analyte is matrix specific
ND = not detected above method detection limit

Laboratory Data Qualifier

B = analyte detected in the blank
H = analytical holding time was exceeded
J = estimated value, the analyte concentration fell above the effective MDL and below the effective practical quantitation limit
N = a spike was outside limits
U = analyte is absent or below the method detection limit
X = data rejected due to peak not meeting identification criteria
* = a replicate was outside limits

Regulatory Limit

Albuquerque Bernalillo County Water Utility Authority (ABCWUA), *Sewer Use and Wastewater Control Ordinance.*

Monthly Average Regulatory Sewer Release Limit

New Mexico Administrative Code (NMAC) 20.2.3 *Standards for Radiation Protection.*

Analytical Method

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