New Mexico Environment Department
DOE Oversight Bureau

Federal Fiscal Year 2011
Fourth Quarter Report
July 1, 2011 to September 30, 2011

Environmental Oversight and Monitoring
At Department of Energy Facilities in New Mexico

Cover Photograph

The Las Conchas fire, the largest fire in New Mexico recorded history, was started on the afternoon of June 26, 2011, by a downed power line in the Santa Fe National Forest in the Jemez Mountains, approximately 10 miles west of Los Alamos National Laboratory. The fire burned the upper portions of three (3) of the major watersheds on Laboratory property: the Los Alamos Canyon, Pajarito Canyon and Water Canyon/Cañon de Valle watersheds.

Los Alamos Oversight Section staff initiated emergency daily low-volume air monitoring from June 29 to July 7. Staff also initiated stormwater sampling and monitoring in watersheds affected by the fire.

Photographed by Kim Granzow.

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LIST OF ACRONYMS

AIP	Agreement-In-Principle
AIRNET	Air Radioactive Particulate and Tritium Monitoring Network
AQB	Air Quality Bureau, New Mexico Environment Department
BMP	Best Management Practices
BSL-3	Bio-Safety Lab, Level Three
CBFO	Carlsbad Field Office, DOE - WIPP Site Office
CCNS	Concerned Citizens for Nuclear Safety
CDC	Centers for Disease Control and Prevention
CEMRC	Carlsbad Environmental Monitoring and Research Center, WIPP
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980 (also known as "Superfund")
CH Waste	Contact Handled Waste, WIPP
CMRR	Chemistry and Metallurgy Research Replacement (facility)
COOC	Compliance Order on Consent
CRMG	Community Radiation Monitoring Group
CTAC	Carlsbad Technical Advisory Contractor
CWA	Clean Water Act
D & D	Decommissioning and Demolition
DARHT	Dual Access Radiographic Hydro Test Facility
DDT	DichloroDiphenylTrichloroethane
DOE	U.S. Department of Energy
DOE/NNSA	U.S. Department of Energy National Nuclear Security Administration, operators of the LASO, SSO and WSO
DOE OB	DOE Oversight Bureau, New Mexico Environment Department
DPR	Direct Penetrating Radiation
EA	Environmental Assessment
EMIG	Effluent Monitoring Improvement Group, WIPP
EIS	Environmental Impact Statement
EES-6 Group	Earth and Environmental Sciences Division, LANL
EMSR	Environmental Monitoring, Surveillance and Remediation Committee, Northern New Mexico Citizens' Advisory Board
EPA	U.S. Environmental Protection Agency
EVEMG	Embudo Valley Environmental Monitoring Group
FFCA	Federal Facility Compliance Act
FFY	Federal Fiscal Year
GAP	Government Accountability Project
GIS	Geographic Information System
GNEP PEIS	Global Nuclear Energy Partnership Programmatic Environmental Impact Statement
GTCC LLW	Greater-Than-Class C Low-Level (Radioactive) Waste
HEPA	High Efficiency Particulate Air
HOPE	Honor Our Pueblo Existence
HWB	Hazardous Waste Bureau, New Mexico Environment Department
IEER	Institute for Energy and Environmental Research

IWD	Integrated Work Document
LANL	Los Alamos National Laboratory, located in Los Alamos, New Mexico
LANS	Los Alamos National Security, Limited Liability Corporation (LANS, LLC), the operator of the LANL facility
LANSCE	Los Alamos Neutron Science Center, LANL
LASG	Los Alamos Study Group
LASO	Los Alamos Site Office, U.S. Department of Energy
LA-UR	Los Alamos – Unclassified Report (LANL)
LC/MS/MS	Liquid Chromatography/Mass Spectrometry/MS (Tandem MS)
LOS	Los Alamos Oversight Section, NMED, DOE OB
LRRI	Lovelace Respiratory Research Institute (formerly the Inhalation Toxicology Research Institute)
LVAS	Low-Volume Air Sampling
MDA	Material Disposal Area
MW	Monitoring Well
MWL	Mixed Waste Landfill, SNL
NAS	National Academy of Sciences
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGO	Non-Governmental Organization
NMCF	New Mexico Community Foundation
NMDOH	New Mexico Department of Health
NMDOT	New Mexico Department of Transportation
NMED	New Mexico Environment Department
NMWQCC	New Mexico Water Quality Control Commission
NNMC	Northern New Mexico College
NPDES	National Pollutant Discharge Elimination System
NNMCAB	Northern New Mexico Citizens' Advisory Board
NNSA	National Nuclear Security Administration
NRC	Nuclear Regulatory Commission
PCB	Polychlorinated Biphenyl
PPE	Personal Protective Equipment
QAPP	Quality Assurance Project Plan
RAC	Risk Assessment Corporation
RACER	Risk Analysis Communication Evaluation Reduction
RCRA	Resource Conservation and Recovery Act
RH Waste	Remote Handled Waste (WIPP)
RSRL	Regional Statistical Reference Level
R-Well	Regional Aquifer Monitoring Well
Ri-Well	Intermediate Aquifer Monitoring Well
Sandia	Sandia Corporation, the operator of the SNL/NM facility
SAP	Sampling Analysis Plan
SCADA	Supervisory Control and Data Acquisition
SEIS	Site Environmental Impact Statement
SNL/NM	Sandia National Laboratories/New Mexico, located in Albuquerque, New Mexico
SOS	Sandia Oversight Section, NMED DOE OB

SSC	Suspended Sediment Concentration
SSO	Sandia Site Office (DOE)
SWMU	Solid Waste Management Unit
SWQB	Surface Water Quality Bureau, New Mexico Environment Department
TA	Technical Area
TLD	Thermoluminescent Dosimeter
TMD	Total Maximum Daily Load
UNM	University of New Mexico
URS	URS Corporation, the manager and operator, through WTS, of WIPP (originally named United Research Services)
USGS	U.S. Geological Survey
VOC	Volatile Organic Compound
WIPP	Waste Isolation Pilot Plant, located southeast of Carlsbad, New Mexico
WOS	WIPP Oversight Section, NMED, DOE OB
WQH	Water Quality and Hydrology, LANL
WRES	Washington Regulatory and Environmental Services
WTS	Washington TRU Solutions, operators of the WIPP facility

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DOE OVERSIGHT BUREAU SUMMARY

ADMINISTRATION

Bureau staff completed general training, managed personnel activities and budgeted for monitoring and oversight activities.

The Las Conchas fire, the largest fire in New Mexico recorded history, was started on the afternoon of June 26, 2011, by a downed power line in the Santa Fe National Forest in the Jemez Mountains, approximately 10 miles west of Los Alamos National Laboratory (LANL or the Laboratory). The fire burned over 150,000 acres of forested land in Sandoval, Los Alamos and Rio Arriba counties, including areas of Santa Clara Pueblo, Jemez Pueblo, Cochiti Pueblo, Santo Domingo Pueblo, Santa Fe National Forest, Bandelier National Monument and the Valles Caldera National Preserve (http://inciweb.org/incident/2385/).

Bureau Chief Tom Skibitski served as one of the New Mexico Environment Department staffers at the New Mexico Emergency Operations Center during the fire. The Las Conchas fire was 100 percent contained on August 3, 2011.

In response to the Las Conchas fire, Los Alamos Oversight Section (LOS) staff initiated emergency daily low-volume air monitoring from June 29 to July 7 to monitor for airborne fire-related radionuclides.

The fire burned the upper portions of three (3) of the major watersheds on Laboratory property: the Los Alamos Canyon, Pajarito Canyon and Water Canyon/Cañon de Valle watersheds. LOS staff also installed stormwater sampling equipment and initiated stormwater monitoring at multiple locations throughout the watersheds affected by the Las Conchas fire.

Staff monitored the suspension and eventual resumption of waste shipments from Idaho National Laboratory to the Waste Isolation Pilot Project (WIPP). The decision to suspend shipments was based upon Corrective Action Report (CAR) 11-043, arising from Audit-11-14 of the Central Characterization Project (CCP) activities at Idaho National Laboratory (INL). CAR 11-043 cited a violation of the WIPP Permit C4.3c, stating that "AK [Acceptable Knowledge] records are not getting into the CCP records system."

A fray was discovered in the cable supporting the waste hoist at WIPP in July, requiring the waste hoist be removed from service until repairs could be made. Repairs required that the 2,300-foot-long Head Rope #1 be replaced. Waste shipments were suspended until repair operations were completed.

The first waste shipment to WIPP using the new TRUPACT-III (Transuranic Package Transporter-Model 3) arrived this quarter from the Savannah River Site.

Disposal operations in Panel 5 were completed this quarter, taking just over two years. A brick and mortar isolation wall is currently under construction to isolate this area from the rest of the underground.

Staff met at the NMED Carlsbad District Office and discussed the floor plan for the new office consolidation project.

PERSONNEL

The New Mexico Environment Department named the Las Conchas Fire Group the third quarter 2011 Department Group of the Quarter. Bureau staff that was part of the Las Conchas Fire Group included: Chris Armijo, Bill Bartels, Dave Englert, Ralph Ford-Schmid, Kim Granzow, Susan Lucas Kamat, Courtney Perkins and Steve Yanicak. Also recognized as part of the Las Conchas Fire Team Bobby Lopez, Santiago Rodriguez and Michael Taylor from the Radiation Control Bureau and Michael Dale from the Hazardous Waste Bureau.

The Bureau applied for a reclassification of the vacant hydrologist position at LOS from Hydrologist - Operational to Hydrologist - Advanced.

The vacant Environmental Scientist – Operational position at LOS was advertised in late September. Interviews will be conducted during FFY 2012 Q-1.

Barry Birch, Program Manager of the Sandia Oversight and WIPP Oversight Sections, retired from the New Mexico Environment Department on July 29, 2011.

FINANCE

Bureau staff worked with administrative personnel to reconcile analytical sampling expenditures for SFY 2011 and to encumber funds for contract laboratories in support of 2011 sampling activities in SFY 2012.

Bureau management submitted the FFY 2012 budget to DOE for approval.

Approval was granted from the New Mexico Department of Finance and Administration (DFA) for an emergency purchase for five (5) ISCO automated samplers and accessory equipment at a cost of $38,292.25. The equipment will replace lost units and upgrade existing equipment that was damaged in several monsoon stormwater events in the Cochiti Pueblo region during August. This emergency purchase is intended to quickly replace the lost and damaged sampling equipment so that the Bureau can continue its task of successively collecting stormwater throughout the remainder of the calendar year 2011 without any interruptions or significant service cuts. Delivery of the equipment is in progress.

Approximately 72% ($1,899,709) of the projected 2011 work plan amount ($2,640,492) has been obligated or spent by the end of the fourth quarter. Within the three major budget groups, approximately 78% of budgeted labor expenses were recorded; approximately 64% of budgeted contract expenses were recorded; and approximately 40% of equipment expenses were recorded.

Grant modification #057 obligated $440,000 on July 8, 2011 and modification #058 obligated $250,000 on September 20, 2011.

TRAINING

Several LANL Oversight Section staff attended the annual OSHA HAZWOPER refresher class offered through LANL's White Rock training center.

Bureau staff attended a free webinar, "International Stormwater Best Management Practices (BMP) Database," sponsored by the Water Environmental Research Foundation.

Bureau staff member Erik Galloway was re-qualified as a Certified Inspector of Sediment and Control for 2011.

Staff Scientist Thomas Kesterson successfully completed the Safety 502, Mine Safety Experienced Miner Refresher class offered by the Washington TRU Solutions Training Department, fulfilling all requirements of 30 CFR Part 48 for annual miner refresher training. Completion of this training allows for continued unescorted access in the mine.

Bureau staff attended a free half-day ESRI-sponsored best management practices seminar, "Extend the Reach of Your GIS." The seminar covered the ArcGIS Online environment and creating feature class and map services for sharing authoritative data and maps.

Administrative staff in the Sandia and WIPP Oversight Sections is participating in continuing education. Ms. Mia Ortiz is pursuing a degree program and attending classes in accounting, and management. Ms. Krissie Carrasco is taking classes in business and accounting.

OUTREACH

DOE Oversight Bureau staff attended the LANL Individual Permit Technical Meeting at Northern New Mexico College. Bureau staff also attended the Chemical and Metallurgy Research Replacement (CMRR) Project public meeting on September 20, 2011.

Tom Skibitski, Steve Yanicak, Bill Bartels, Dave Englert, Erik Galloway and Ralph Ford-Schmid participated in the NMCF FEED Las Conchas fire public meeting on August 18, 2011. Bill Bartels presented "NMED's Air Monitoring during the Las Conchas Fire" as part of the proceedings.

The DOE Oversight Bureau and LANL have teamed with the New Mexico Department of Health to reestablish the Interagency Flood Risk Assessment Team (IFRAT). Bureau staff participated in the Interagency Flood Risk Assessment Team meeting in Santa Fe on September 28, 2011. Other participants included LANL and their risk assessment contractor, the New Mexico Department of Health, the NMED Hazardous Waste Bureau and the Albuquerque Bernalillo County Water Utility Authority. The interagency effort includes coordination of sampling locations to maximize stormwater flow coverage and minimize duplication of efforts, coordination of analyte lists and laboratory analytical methods to ensure compatibility and comparability of data, and coordination of sampling regimes to enhance data comparability and help fill in data gaps.

Bureau Hydrologist Dave Englert and Environmental Scientist Ralph Ford-Schmid presented at a workshop hosted by Pueblo de Cochiti on September 29, 2011. The workshop, titled "The Effects Ash from the Las Conchas Fire Might Have on Your Water," featured presentations by the New Mexico State University Cooperative Extension Service (NMSU CES) and the Oversight Bureau.

Courtney Perkins, Erik Galloway, and Steve Yanicak attended the monthly Pajarito Plateau Working Partnership (PPWP) meeting. The meeting attendees also included Rey Gonzalez (Los Alamos County) and Gene Turner (DOE). The discussed topics included the post-Las Conchas fire DOE OB stormwater monitoring efforts, a LANL and Los Alamos County MS4 (Municipal Separate Storm Sewer Systems) designation status update and the current roadwork and stormwater controls (BMPs) in the county.

Bureau Chief Tom Skibitski presented a "Summary of Rio Grande Water Sampling Efforts by the New Mexico Environment Department," to the Buckman Direct Diversion Board on October 6, 2011.

DOE Oversight staff attended the Laboratory Directed Research and Development (LDRD) conference on September 9, 2011.

Steve Yanicak, Kim Granzow and Susan Lucas Kamat attended the 2011 New Mexico Geological Society Annual Fall Field Conference "Geology of the Tusas Mountains and Ojo Caliente," September 28 to October 1. The conference focused on the volcanic and Proterozoic geology of the area, ore deposits, hydrogeology and Santa Fe Group fossils and stratigraphy.

Erik Galloway attended the New Mexico General Membership meeting of the International Erosion Control Association. The meeting featured a presentation by Dr. Alan Kuhn, of Kuhn Associates, LLC, titled, "Designs for erosion and seepage control in uranium tailings."

In July, staff attended the 115th WIPP Quarterly Meeting in Santa Fe. Updates were provided by DOE CBFO, WTS, HWB, DOE OB and the New Mexico Waste Transportation Coordinator. Staff discussed ongoing projects and latest results.

Division Director Jim Davis, Bureau Chief Tom Skibitski, and Environmental Scientist Susan Lucas Kamat attended a presentation by Jim Griswold, a hydrologist with the Oil Conservation Division of the Energy, Minerals, and Natural Resources Department, detailing brine wells and brine well collapses in southeastern New Mexico. Much of the presentation focused on the geophysical investigations and early warning system of the I&W brine wells Eugenie 1 and Eugenie 2, located at the Y-Intersection of US 285 and US 180/62 in Carlsbad. Most of the infrastructure for Carlsbad, including the Carlsbad Irrigation District canal, Union Pacific Railroad, WIPP transport routes and Carlsbad/Eddy County fiber optic line are located within a half-mile of the two wells and would be catastrophically affected by any well collapse. Transportation of waste to the WIPP site has been temporarily routed around the Y-Intersection.

PUBLICATIONS

The report, titled "Radiological Particulates in Air, Los Alamos, NM, Las Conchas Fire Air Monitoring Results, June 21 to July 7, 2011," was posted on the Department website. An electronic copy was provided to the New Mexico Community Foundation for posting on their website. Air monitoring results were uploaded to the RACER database as well as the EPA Scribe.net system.

Staff submitted a draft report to the DOE titled, "Station A Exhaust Air Monitoring at the Waste Isolation Pilot Plant Conducted by the New Mexico Environment Department, DOE Oversight Bureau, January – March, 2011." This final report is pending.

The final report, titled "Direct Penetrating Radiation Monitoring at the Waste Isolation Pilot Pant Conducted by NMED/DOE OB for the CY 2010 Q-4," was submitted to DOE and NMED for public release.

The final report, titled "Soil Sampling in the Vicinity of the Waste Isolation Pilot Plant Conducted by NMED/DOE OB, 2011," was released.

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LOS ALAMOS NATIONAL LABORATORY OVERSIGHT

GENERAL ADMINISTRATION (LAD01)

Under this Activity ID, the Bureau manages, administers and finances the overall activities of staff members in the Los Alamos and Santa Fe offices. Staff provides assistance to NMED and the Bureau and DOE developing workplans, budgets and training requirements.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff responded to the Las Conchas fire, managed personnel activities, budgeted for monitoring and oversight activities and attended required and optional trainings and classes.

Administration:

The Las Conchas fire, the largest fire in New Mexico recorded history, was started on the afternoon of June 26, 2011, when a tree downed power line in the Santa Fe National Forest in the Jemez Mountains. The fire burned over 150,000 acres of forested land in Sandoval, Los Alamos and Rio Arriba counties, including areas of Santa Clara Pueblo, Pueblo de Jemez, Pueblo de Cochiti, Santo Domingo Pueblo, Santa Fe National Forest, Bandelier National Monument and the Valles Caldera National Preserve (http://inciweb.org/incident/2385/).

Figure LAD01-1. The LOS office was closed in late June and early July due to the Las Conchas fire.

Bureau Chief Tom Skibitski served as the Agency Representative and one of the New Mexico Environment Department staffers at the New Mexico Emergency Operations Center during the fire. The Las Conchas fire was 100 percent contained on August 3, 2011.

According to Los Alamos National Laboratory (LANL), the fire did not burn on laboratory property, with the exception of a 1-acre spot fire in Technical Area 49 next to NM 4 that was quickly extinguished by firefighters. Back fires burned on the west side of State Road 501 on buffer areas dedicated to the laboratory however these areas have never been utilized for laboratory operations. The Las Conchas fire forced the evacuation of the Town of Los Alamos and the closure of the LANL on June 27, 2011. The evacuation order for Los Alamos was lifted on July 3, and the Laboratory reopened on July 6, 2011.

In response to the Las Conchas fire, Los Alamos Oversight Section (LOS) staff initiated emergency daily low-volume air monitoring from June 29 to July 7 to monitor for airborne fire-related radionuclides. A report, titled "Radiological Particulates in Air, Los Alamos, NM, Las Conchas Fire Air Monitoring Results, June 21 to July 7, 2011," was released and posted on the Department website. An electronic copy was provided to the New Mexico Community Foundation for posting on their website. Air monitoring results were uploaded to the RACER database as well as the EPA Scribe.net system.

The fire burned the upper portions of three (3) of the major watersheds on Laboratory property: the Los Alamos Canyon, Pajarito Canyon and Water Canyon/Cañon de Valle watersheds. In addition, the fire burned several watershed located outside the LANL boundaries, including Bland, Cochiti, Peralta, Capulin, Frijoles and Santa Clara Canyons. LOS staff installed stormwater sampling equipment and initiated stormwater monitoring at multiple locations throughout the watersheds affected by the Las Conchas fire.

LOS and NMED Financial Services staff performed an equipment inventory audit at the Los Alamos site office. All Bureau equipment on the itemized list was identified and inventoried.

Bureau staff helped to compiled activity report information from FFY 2011 Q-3 for inclusion in the quarterly report.

Personnel

The New Mexico Environment Department named the Las Conchas Fire Group the 2011 Department Group of the (third) Quarter. Bureau staff from the LOS office that was part of the Las Conchas Fire Group included: Bill Bartels, Dave Englert, Kim Granzow, Courtney Perkins, Ralph Ford-Schmid and Steve Yanicak.

The Bureau applied for a reclassification of the vacant hydrologist position at LOS from Hydrologist - Operational to Hydrologist - Advanced.

The vacant Environmental Scientist – Operational position at LOS was advertised in late September. Interviews will be conducted during FFY 2012 Q-1.

Finance
Bureau staff worked with administrative personnel to reconcile analytical sampling expenditures and to encumber funds for contract laboratories in support of 2011 sampling activities.

Bureau management submitted the FFY 2012 budget to DOE for review and approval.

Approval was granted from the New Mexico Department of Finance and Administration (DFA) for an emergency purchase for five (5) ISCO automated samplers and accessory equipment at a cost of $38,292.25. Many watersheds that were impacted by the Los Conchas fire are experiencing some of the most damaging flash floods on record. The equipment will replace lost units and upgrade existing equipment that was damaged in several monsoon stormwater events in the Cochiti Pueblo region during August. This emergency purchase is intended to quickly replace the lost and damaged sampling equipment so that the Bureau can continue its task of successively collecting stormwater throughout the remainder of the calendar year 2011 without any interruptions or significant service cuts. Delivery of the equipment is in progress.

Training:
Several LANL Oversight Section staff attended the annual OSHA HAZWOPER refresher class offered through LANL's White Rock training center.

Bureau staff attended a free webinar, titled "International Stormwater Best Management Practices (BMP) Database (2010-2011), sponsored by the Water Environmental Research Foundation (WERF). Questions discussed during the webinar included:

1. What level of treatment is typical for various BMPs and green infrastructure practices?
2. What pollutant removal mechanisms do they employ?
3. How can this information be used to help select and design effective stormwater controls?

This web seminar was designed to help answer some of these questions based on the International Stormwater BMP Database project, which represents over 15 years of ongoing work to advance the science behind urban stormwater BMPs. In addition, this seminar was designed to try to provide stormwater managers and others with the latest BMP performance evaluation results for several pollutant categories including: bacteria, nutrients, volume reduction, sediment and metals. These evaluations were based on analysis of the data contained in the BMP Database, and is summarized in a new series of technical memos. The webinar included an overview of the BMP Database tools and resources.

Bureau staff member Erik Galloway was re-qualified as a Certified Inspector of Sediment and Control for 2011.

PUBLIC OUTREACH (LPO02)
Under this Activity ID, Bureau staff interacts with the public through meetings, listening sessions, website development, consultations and reports.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff attended public meetings on new LANL facilities and permits, attended public meetings sponsored by the New Mexico Community Foundation, participated in meetings and workshops related to the Las Conchas fire, attended the Pajarito Plateau Watershed Partnership meetings, participated in workshops and conferences.

Individual Permit Technical Meeting

DOE Oversight staff attended the Individual Permit Technical Meeting at Northern New Mexico College. The meeting was facilitated by an independent party and the covered topics included:

- Goals and objectives of the joint technical meetings, Denny Hjeresen (LANL)
- Baseline Control Measures, Terrill Lemke (LANL)
- Site Discharge Pollution Prevention Plan (SDPPP), Steve Veenis (LANL)
- Website Content, Jackie Little (LANL)

The next public meeting will be scheduled in November 2011, after monsoon stormwater data has been analyzed. The next technical meeting date will be scheduled for April 2012, after the SDPPP is issued.

Chemical and Metallurgy Research Replacement Project

Bureau staff attended the Chemical and Metallurgy Research Replacement (CMRR) Project public meeting on September 20, 2011.

Las Conchas Fire Public Meeting, New Mexico Community Foundation Forum for Environmental Education and Dialogue

The Forum for Environmental Education and Dialogue (FEED) is an ongoing monthly community meeting sponsored by the New Mexico Community Foundation (NMCF - www.nmcf.org) that invites public involvement and active dialogue on issues of environmental monitoring, contamination and remediation around Los Alamos National Laboratory.

Tom Skibitski, Steve Yanicak, Bill Bartels, Dave Englert, Erik Galloway and Ralph Ford-Schmid participated in the NMCF FEED Las Conchas fire public meeting on August 18, 2011, at the Pojoaque Valley School Administration Building.

Panelists and their presentation topics included:

- Emergency Preparation and Operations During the Las Conchas Fire – Lessons Learned, Manny L'Esperance (LANL)
- LANL's Air Monitoring during the Las Conchas Fire, Mike McNaughton (LANL)
- NMED's Air Monitoring during the Las Conchas Fire, Bill Bartels (NMED)
- Fire Impacts on Stormwater Runoff at LANL, Dave McInroy (LANL)

The meeting began with an introduction of the panelists and an overview of their presentations. The introduction was followed by a 15-minute open public question period. The objective was to host a highly interactive meeting; provide an opportunity for the public to openly request information; interact directly with subject matter experts; and, allow LANL and NMED to relay their emergency preparedness response and describe the extent of environmental monitoring during the fire.

Sarah Wolters, of NMCF, interviewed six community members and organized that input into several specific questions to be discussed at the meeting.

1. How were regional air sampling monitors located? Based on what information/input?
2. In NMED's professional opinion, what public health risks will result from the Las Conchas fire?
3. How does air data collected by LANL differ from data collected by NMED?
4. What information is used to make air quality advisories? Who makes them? How are these advisories made available to the public?

The meeting was filmed and the video shared on the RACER Project website.

Figure LPO02-1. Las Conchas Fire from Los Alamos on June 28, 2011.

Interagency Flood Risk Assessment Team

The DOE Oversight Bureau and LANL have teamed with the New Mexico Department of Health to reestablish the Interagency Flood Risk Assessment Team (IFRAT). The original IFRAT was formed following the Cerro Grande fire in 2000. The focus of the IFRAT is to collect and analyze data and evaluate health and environmental risks associated with the Las Conchas fire, including the impact of fire-related ash on the drinking and irrigation waters drawn from the Rio Grande.

Bureau staff participated in the IFRAT meeting in Santa Fe on September 28, 2011. Other participants included LANL and their risk assessment contractor, the New Mexico Department of Health, the NMED Hazardous Waste Bureau and the Albuquerque Bernalillo County Water Utility Authority. The interagency effort includes coordination of sampling locations to maximize stormwater flow coverage and minimize duplication of efforts, coordination of analyte lists and laboratory analytical methods to ensure compatibility and comparability of data, and coordination of sampling regimes to enhance data comparability and help fill in data gaps.

Cochiti Pueblo Water Quality Workshop
Bureau Hydrologist Dave Englert and Environmental Scientist Ralph Ford-Schmid presented at a workshop hosted by Pueblo de Cochiti on September 29, 2011. The workshop, titled "The Effects Ash from the Las Conchas Fire Might Have on Your Water," featured presentations by the New Mexico State University Cooperative Extension Service (NMSU CES) and the Oversight Bureau. The workshop was hosted by Pueblo de Cochiti, the U.S. Department of Agriculture (USDA) Office of Advocacy and Outreach and the USDA National Institute of Food and Agriculture.

Pajarito Plateau Watershed Partnership
Courtney Perkins, Erik Galloway, and Steve Yanicak attended the monthly Pajarito Plateau Watershed Partnership (PPWP) meeting at the DOE OB office in Los Alamos. The meeting attendees also included Rey Gonzalez (Los Alamos County) and Gene Turner (DOE). The discussed topics included the post-Las Conchas fire DOE OB stormwater monitoring efforts, a LANL and Los Alamos County MS4 designation status update and the current roadwork and stormwater controls (BMPs) in the county.

Buckman Direct Diversion Board Meeting
Bureau Chief Tom Skibitski gave a presentation, titled "Summary of Rio Grande Water Sampling Efforts by the New Mexico Environment Department," to the Buckman Direct Diversion Board on October 6, 2011.

Laboratory Directed Research and Development Conference
DOE Oversight staff attended the Laboratory Directed Research and Development (LDRD) conference on September 9, 2011, at the Hilton Hotel at Buffalo Thunder. The conference hosted two (2) poster sessions. Featured speakers included:

- Investing in Scientific Leadership, Dr. William C. Priedhorsky (LANL)
- The Imperative of Startups, Clinton W. Bybee (ARCH Venture Partners)
- National Laboratory Investments to Promote Economic Security, John Chavez (New Mexico Angels)
- Climate Change, Vegetation Mortality, and Carbon Consequences, Dr. Nathan G. McDowell (LANL)

New Mexico Geological Society Annual Fall Field Conference
Steve Yanicak and Kim Granzow attended the 2011 New Mexico Geological Society Annual Fall Field Conference "Geology of the Tusas Mountains and Ojo Caliente," September 28 to October 1. The conference focused on the volcanic and Proterozoic geology of the area, ore deposits, hydrogeology and Santa Fe Group fossils and stratigraphy.

International Erosion Control Association Annual Meeting
Erik Galloway, of the DOE Oversight Bureau, attended the New Mexico General Membership meeting of the International Erosion Control Association held in Albuquerque, NM. The meeting featured a presentation by Dr. Alan Kuhn, of Kuhn Associates, LLC, titled, "Designs for erosion and seepage control in uranium tailings."

Publications
The report entitled "Radiological Particulates in Air, Los Alamos, NM, Las Conchas Fire Air Monitoring Results, June 21 to July 7, 2011" was posted on the Department website. An electronic copy was provided to the New Mexico Community Foundation. Air monitoring results were uploaded to the RACER database as well as the EPA Scribe.net system.

GENERAL ER/EM PROJECTS (LGE03)
Under this Activity ID, Bureau staff provides verification and validation of projects conducted by LANS to remediate environmental and human hazards from legacy waste and to monitor current activities for safe practices.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

DIRECT PENETRATING RADIATION PROJECT (LDP04)
Under this Activity ID, Bureau staff monitors the environment at LANL and in the vicinity for LANL-sourced or ambient gamma radiation using electret passive ion chambers. The electret passive ion chamber uses the principle of ion pair production resulting from gamma photons interacting with air molecules to reduce the voltage of a charged Teflon™ disk. Using a predetermined formula, the voltage drop indicates the amount of radiation passing through the chamber. The on-going program reads electret passive ion chambers at the end of each quarter, converts readings into quarterly dose values and submits quarterly results to DOE, LANS and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff conducted routine monitoring and maintenance of electrets at on- and off-site locations.

Staff participated in an air and direct penetrating radiation (DPR) meeting with Oversight Bureau staff from all locations. Agenda items included the eventual transfer of Oversight data into a common cloud-based database and the procurement and construction of PVC pipe housing for the DPR monitors at WOS. Staff is preparing for several updates to the DPR program which will be implemented in the near future, including:

- Applying temperature and pressure correction factors to dose calculations, using data from the HOBO data loggers and GPS units
- Modifying Bureau-wide DPR data collection and dose calculation procedures, as outlined in the new version of Rad Elec's E-PERM® System User's Manual

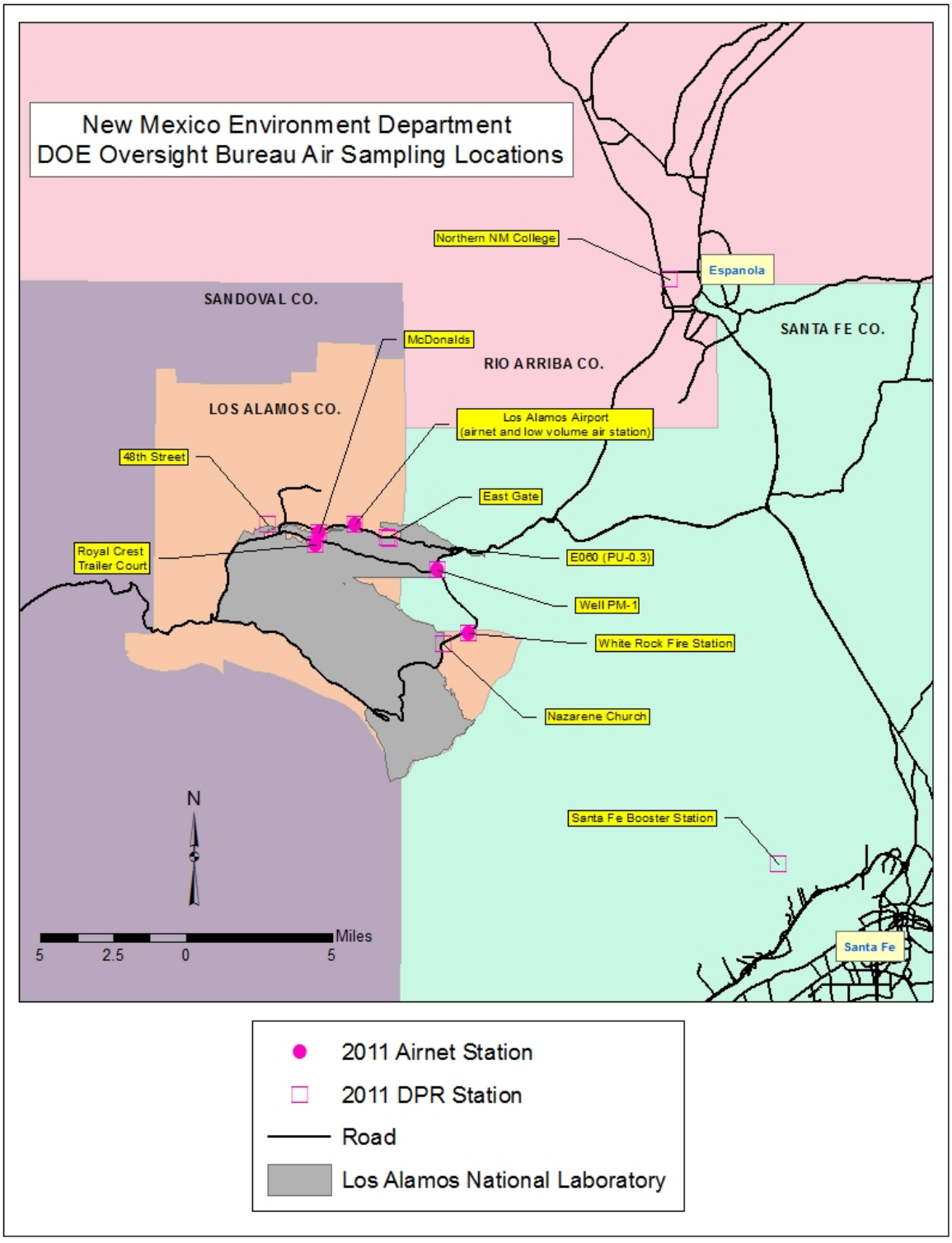

Figure LPD04-1. High- and low-volume air sampling stations and direct penetrating radiation monitoring sites are located throughout LANL and its vicinity.

PARTICULATES LOW-VOLUME AIR PROJECT (LPL05)

Under this Activity ID, Bureau staff conducts continuous air monitoring to evaluate the presence of selected radioactive particles and tritium in the ambient air near LANL. Ambient air is sampled with continuously running, low-volume air samplers drawing air through particulate filters and silica gel cartridges. Filter samples and gel collectors are submitted and analyzed quarterly and results are provided for DOE, LANS and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected AIRNET particulate samples, submitted filter samples from CY 2011 Q-1 and Q-2 to contract laboratories for analysis, continued emergency air monitoring in response to the Las Conchas fire and released a report, titled "Radiological Particulates in Air, Los Alamos, NM, Las Conchas Fire Air Monitoring Results, June 21 to July 7, 2011."

The Los Alamos Oversight Section had six (6) low-volume air samplers in operation during FFY 2011 Q-4. Five (5) sampling stations are co-located with LANL AIRNET stations: Los Alamos Airport, McDonalds, Royal Crest Trailer Court, Well PM-1 and White Rock Fire Station. The sixth AIRNET station is a mobile solar-powered station located at the Los Alamos Airport.

LANL Section staff performed maintenance and switched out filters on the Bureau's five (5) perimeter AIRNET stations. LANL Oversight staff deployed the Bureau's new solar powered air sampler at the Los Alamos County Airport. The new monitor will remain at the airport throughout the remainder of the TA-21 decommissioning and demolition activities, scheduled through the end of 2011. The older solar powered sampler will be operated at an interim location near the Los Alamos site office until the end of the monsoon season.

Figure LPL05-1. Bureau Scientist Bill Bartels installed the new solar-powered mobile air sampling unit at the Las Alamos Airport. The unit includes a trailer, sampler, and solar panels and replaces the older solar unit.

During the week of June 26, 2011, Bureau staff initiated emergency daily low-volume air monitoring in response to the Las Conchas fire. Daily sampling continued until July 7, 2011. Staff released a report, titled "Radiological Particulates in Air, Los Alamos, NM, Las Conchas Fire Air Monitoring Results, June 21 to July 7, 2011," detailing the results of the emergency monitoring. An electronic copy of the report was provided to the New Mexico Community Foundation for posting on their website. Air monitoring results were uploaded to the RACER database as well as the EPA Scribe.net system.

An excerpt from the report, detailing the monitoring, states:

> The table of results for "Radiological Particulates in Air" from the NMED DOE Oversight Bureau samples collected during the Las Conchas fire show values for radioisotopes in air per cubic meter. The sample results listed in the table are slightly elevated over the long term measured results, which have been established as normal for ambient conditions. The slight elevation in these measurements may result from a combination of more particulate matter present (and captured on the filter) and a smoke component that is generally expected to have greater radiological activity. All results are much closer to the long term observed values than the federal limits in 40CFR61 shown in the data table.

Results from two data sets are shown. The first samples were collected on air particulate filters which were run continuously from June 21 to July 1. The fire began June 26 at 1:00 pm so the air particulates collected for this data set demonstrate average air quality over a ten-day period including five days with potentially smoky conditions. The second data set are for a six-day period during the fire.

The particulate filters are normally collected every two weeks as part of the Oversight Bureau's routine monitoring of air emissions near LANL. In response to the fire, filters were changed daily to preserve the possibility of obtaining daily results should enough particulate matter be captured. It would then be possible to correlate results with a particular day and, potentially, with smoke levels/fire activity recorded for that day with respect to the monitoring locations. Ultimately, not enough mass was collected on the daily filters to get meaningful analytical results. The next best approach was to then composite the daily filters by location for multiple days. This alternative provided enough particulate mass to get accurate measurements; however, the ability to correlate results with each day was lost. If a "spike" or anomalous measurement were to occur on a particular day it would still be demonstrated in the composite result but it could not be correlated with a specific day.

Results with less uncertainty representing a longer interval (several days) may be more meaningful than results with greater uncertainty over a shorter interval (individual days). Checking the samplers and collecting the filters daily preserved the opportunity to obtain the best possible outcome knowing that the filters could then be composited if too little mass was collected each day.

Bureau staff submitted AIRNET projects LPL05-5 and LPL05-6 to contract laboratories for analysis, representing samples collected during CY 2011 Q-1 and Q-2.

Staff participated in an air and direct penetrating radiation meeting with Oversight Bureau staff from all locations. Agenda items included the eventual transfer of Oversight data into a common cloud-based database and resolving compatibility issues between the existing Access database and the new contract lab EDD.

PARTICULATES HIGH-VOLUME AIR PROJECT (LPH06)

Under this Activity ID, Bureau staff conducts continuous air monitoring for radioactive particles, metals and organic compounds using high-volume air pumps to independently monitor environmental restoration clean-ups and decommissioning and demolition operations. Filter samples are submitted and analyzed quarterly and results are provided for DOE, LANS and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff performed maintenance of high-volume samplers.

The Particulate High-Volume Air Project (LPH06) has been phased out. All activities, including equipment, laboratory fees, work hours and budget, have been absorbed into the Particulates Low-Volume Air Project (LPL05). The LPL05 AIRNET activities now includes all sampling methods (high- and low-volume) for collecting air particulates at LANL, in addition to offsite locations

DRINKING WATER MONITORING (LPW07)

Under this Activity ID, Bureau staff conducts annual sampling in a cooperative event with LANS Water Quality and Hydrology, Los Alamos County and Pueblo de San Ildefonso for supplemental and verification sampling of Los Alamos County and Pueblo de San Ildefonso production wells. Generally, the analytes are substances not addressed under Safe Drinking Water Act.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

GROUNDWATER MONITORING (LMW08)

Under this Activity ID, Bureau staff conducts verification and supplemental sampling of the LANL Regional Wells in cooperation with LANS Water Quality and Hydrology, Los Alamos County, Pueblo de San Ildefonso and Santa Clara Pueblo.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected samples for carbon-14, tritium, and stable isotopes from several regional wells in the Water, Pajarito and Mortandad Canyon watersheds.

WHITE ROCK SPRINGS MONITORING (LSM09)

Under this Activity ID, Bureau staff conducts annual sampling in a cooperative event with LANS Water Quality and Hydrology and Pueblo de San Ildefonso. The sampling includes approximately 25 groundwater springs located off-site from LANL and on San Ildefonso Pueblo in White Rock Canyon along the Rio Grande.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff planned for the sampling of 16 springs in White Rock Canyon during the first two (2) weeks of October 2011.

LANL informed the Oversight Bureau that the annual rafting trip to sample White Rock Canyon springs was cancelled for 2011. In light of the on-going monsoon rains and associated health and safety concerns, the sampling will occur this year without the use of rafts. LANL project managers decided that a trip cancellation was the best course of action as a result of a blockage in the Rio Grande above Cochiti Reservoir. Logs, debris, sediment, and ash have collected above the Bland Canyon confluence following post-Las Conchas fire flash flooding in the Jemez Mountains. Cochiti Reservoir was closed while an Army Corps of Engineers special task force removed the blockage. The risks include sudden, uncontrolled releases: dangerous debris flows and flash flooding.

Bureau staff prepared a sampling plan for 16 springs in White Rock Canyon. Staff will collect the samples on hikes in and out of the canyon. All the springs will be evaluated for ultra low-level metals.

STORMWATER BELOW SWMUS PROJECT (LSF10)

Under this Activity ID, Bureau staff conducts on-going sampling of stormwater discharges from Solid Waste Management Units (SWMUs) for compliance with the LANL Individual Stormwater Permit. Bureau staff evaluates BMP implementation at SWMUs that are intended to enhance contaminant transport reduction in accordance with the LANL Individual Stormwater Permit.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff conducted research on Site Monitoring Areas (SMAs) for potential stormwater sampling during the current federal fiscal year. Stormwater management area locations from the Federal Facility Compliance Act (FFCA) sampling are being compared with those from the new Individual Permit (IP) to determine if any areas require modified monitoring locations under the IP.

STORMWATER IN WATERSHED PROJECT (LSW11)

Under this Activity ID, Bureau staff conducts on-going sampling of LANL watersheds for water quality standards compliance verification and post-Las Conchas fire risk assessment. The focus is on post-Las Conchas fire watershed monitoring in Pueblo and Los Alamos Canyons and cooperative watershed monitoring with Pueblo de San Ildefonso and Pueblo de Cochiti.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff initiated and continued stormwater monitoring in watersheds affected by the Las Conchas fire. Eighty-six (86) stormwater samples were collected and submitted for radiological, metal, total organic carbon (TOC) and suspended sediment concentration (SSC) analyses. Eighteen (18) samples were archived and will be submitted in FFY 2012 Q1.

LANL Oversight Section staff met with management at the Los Alamos office to discuss post-fire stormwater monitoring priorities and SFY 2012 and FFY 2012 budgets. The Bureau has collaborated with LANL to maximize our combined resources. LANL is focusing their resources on LANL watersheds, while NMED has committed to monitoring watersheds impacting Pueblo de Cochiti, Tent Rocks National Monument and Pueblo de San Ildefonso. The Oversight Bureau also maintains samplers located in Los Alamos and Pueblo Canyons and along the Rio Grande at Otowi Bridge, Buckman Direct Diversion and in Albuquerque upstream from the Alameda Bridge.

Las Conchas Fire Burned Area Emergency Response

Staff participated in the Las Conchas Burned Area Emergency Response (BAER) meetings. All BAER projects and treatments are intended to reduce the impacts of monsoonal rainfall on lands and private property downstream from the burned landscape. Activities include seeding, mulching, trail and road repair work.

A breach of the Los Alamos Canyon Dam was discussed. The Las Conchas fire burned more acres than the Cerro Grande fire above the reservoir (2,130 acres compared to 1,355) in Los Alamos Canyon. Rehabilitation construction at the dam was underway prior to the Las Conchas fire. The dam had no spillway or embankment armoring and had no protection from overtopping and possible failure if a modest rainfall occurs in the watershed. A catastrophic failure of the dam from impounded floodwaters and subsequent release of floodwater could be disastrous.

After the Cerro Grande fire, the dam was reinforced to manage the stormwater and sediment captured by the dam. This action prevented all but one overtopping of the reservoir. The lower canyon was thus protected from devastating floods, contrary to what happened in Pueblo Canyon. The modeled flood flows in Los Alamos Canyon post-Las Conchas fire are very large, depending on the rain intensity and durations, and Los Alamos Canyon can be expected to experience major flooding. The goal is to make it through this rainy season with no major failure of the structure and then re-mobilize and finish the dam construction after the monsoon season in November.

An order was issued to Los Alamos County by the Office of the State Engineer on July 14, 2011, to develop a plan to control the location of the dam failure to minimize the impacts of failure. The plan is to excavate a "notch" in the dam that will allow storm flows to pass straight through the reservoir thereby avoiding a complete failure of the structure. The amount of sediment stored in the drainage channels upstream from the reservoir and within the reservoir is very large (all excavated material from the dam spillway work was stockpiled in the reservoir) and we can expect much of those sediments and soils to be flushed out with expected large monsoonal floods. Ultimately, a new plan was developed and implemented channeling storm flows down an existing roadway bypassing the dam and impoundment entirely.

DOE/LANS excavated 1,200 cubic yards from the low-head weir at State Road 4 (SR4) to increase capacity and have armored, with linked jersey barriers, the retention basins below LA-SMA2, the PCB cleanup site in upper LA canyon.

Sampling of Las Conchas Fire-Affected Watersheds

The DOE Oversight Bureau currently maintains ten (10) stormwater monitoring stations within or below the Pajarito Plateau. Three (3) stations are located in the Los Alamos Canyon watershed (at or near LANL gage stations), four (4) stations are located on the Rio Grande and three (3) stations are located within the southern portion of the Pajarito Plateau.

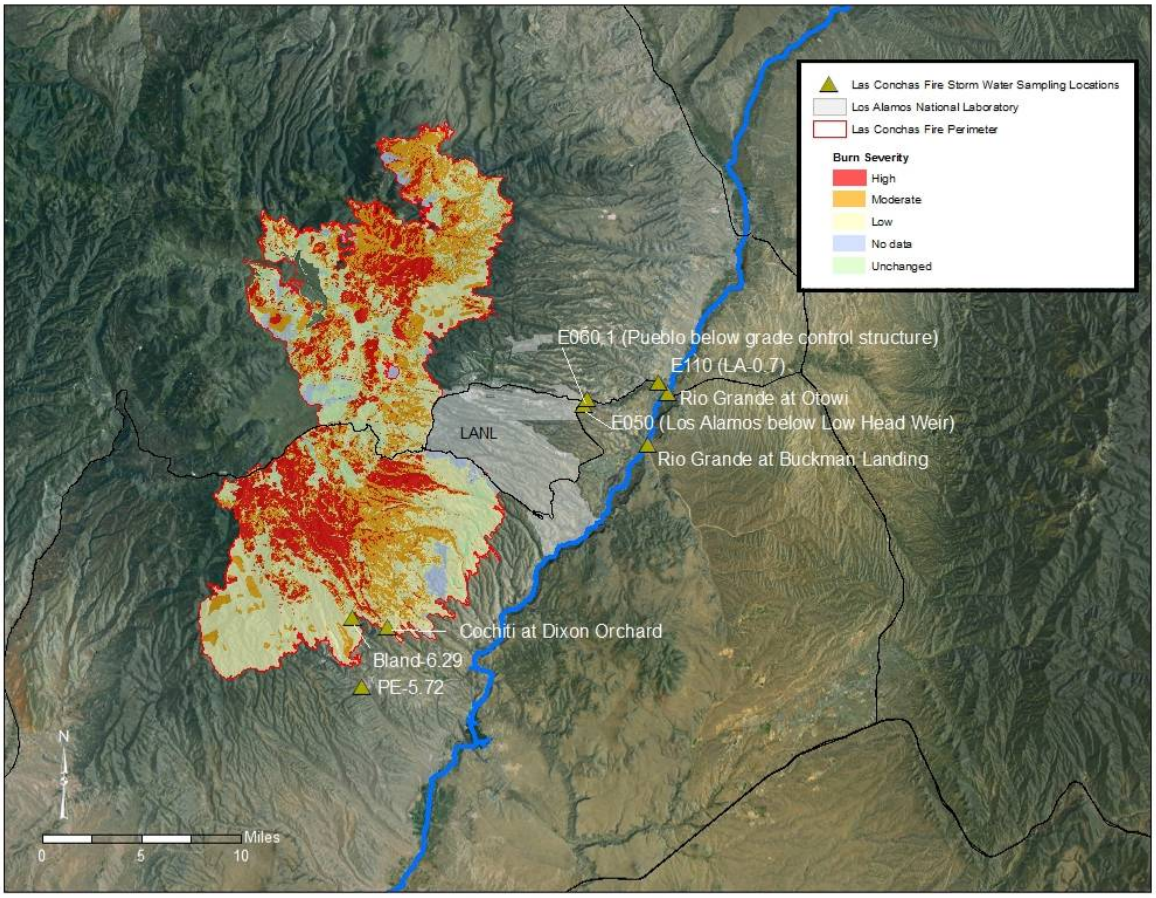

Figure LSW11-1. Stormwater sampling sites were located throughout watersheds affected by the Las Conchas fire**.**

Stormwater samples are analyzed for

- 23 target analyte list (TAL) metals with cyanide (Total)
- 23 TAL metals with cyanide (Dissolved)
- alkalinity plus carbonate and bicarbonate
- suspended sediment concentration (SSC)
- total organic carbon (TOC)
- PCBs (209 congeners)
- dioxin and furans
- gross alpha and beta
- gamma emitters (Cs-137)
- isotopic plutonium (Pu-239/240, Pu-238)
- isotopic americium (Am-241, Am-243)
- unfiltered strontium (Sr-90)
- filtered strontium (Sr-90)
- isotopic uranium (U-234, U-235, U-238)

The suspended sediments are separated from the stormwater and analyzed separately for

- 23 TAL metals with cyanide (Total)
- total organic carbon (TOC)
- alkalinity plus carbonate and bicarbonate
- gamma emitters (Cs-137)
- isotopic plutonium (Pu-239/240, Pu-238)
- total strontium (Sr-90)

Stations in the Los Alamos Canyon watershed include:

- E050 is located in Los Alamos Canyon at the eastern LANL boundary just above the Los Alamos/Pueblo Canyon confluence. The Upper Los Alamos Canyon is a source of legacy radioactive, PCB and other contaminants, primarily from DP Canyon below Technical Area–21 (TA-21), an old plutonium processing facility.
- E060 is located in Pueblo Canyon at the eastern LANL boundary just above the Pueblo and Los Alamos Canyons confluence. Pueblo Canyon is a source of legacy radioactive contaminants originating from Acid Canyon, site of the original research and industrial discharge.
- E110 is located in Lower Los Alamos Canyon downstream of LANL on Pueblo de San Ildefonso property, approximately ½ mile above the Rio Grande.

LANL Section personnel collected several grab samples from a moderate flow event at E110 in lower Los Alamos Canyon on September 7, 2011. Images of the flow at the low head weir above E050 and at the gage from just below E110 are included.

Figure LSW11-2. Flow at the low head weir above E050 on September 7, 2011.

Figure LSW11-3. Flow at the gage just below E110 on September 7, 2011.

A July 22nd event at E110 was from flows originating from Guaje Canyon, located east of Los Alamos on Pueblo lands. The automated ISCO sampler collected ¾ liter of sludgy water (only 200 ml of water after centrifuging) and the analysis, given such a small sample amount, focused primarily on the suspended sediment. Initial results indicate typical ash constituents with some detected fallout radionuclides.

Stations on the Rio Grande include:

- One station is located above the Otowi Bridge; just above the Los Alamos watershed and Rio Grande confluence. The ISCO automated sampler is programmed to collect regional storm events in the river.
- Two (2) stations are located at the Buckman Direct Diversion. One station is programmed to collect stormwater from regional storm events in the Rio Grande; the other is programmed to take timed samples when the Los Alamos watershed flows. A telemetric signal is received from E110 when the Los Alamos watershed flows.
- Another station is located on the Rio Grande in northern Albuquerque near the Alameda Bridge, downstream of the North Diversion Channel. The sampler is a short distance upstream of the Albuquerque Bernalillo County Water Utility Authority drinking water diversion.

Bureau staff collected two samples from the Rio Grande on July 28 at Buckman Landing, site of the Buckman Direct Diversion. This sampling event was triggered when the Buckman Direct Diversion early warning system detected stormwater flows in Los Alamos Canyon. The flow, which originated in Guaje Canyon, triggered the early warning system in Los Alamos Canyon, which sent a signal to the automated samplers at Buckman Landing to begin sampling the Rio Grande. Two samples were collected at 50 minute intervals and captured storm flow influence in the river.

At the request of several agencies, including Pueblo de Cochiti, Bureau staff deployed several ISCO stormwater samplers in Bland Canyon, Peralta Canyon and Cochiti Canyon (Dixon Apple Orchard), and installed a water level gage on the Rio Grande. Peralta Canyon discharges into the Rio Grande downstream of Cochiti Reservoir and Dam.

Figure LSW11-4. Bureau staff set up an ISCO water level monitor in a severely burned area of Cochiti Canyon just west of the Dixon Apple Orchard. Note the equipment fastened to the tree. All visible trees in this image were burned in the Las Conchas fire and were later felled (excluding the tree supporting Oversight Bureau equipment) by State Land Office work crews.

Stations within the southern Pajarito Plateau include:

- A station is located in Peralta Canyon just above the Tent Rocks National Monument. Peralta Canyon discharges into the Rio Grande downstream of Cochiti Reservoir and Dam. Stage and water quality are monitored. A previous site had been located farther upstream, but an extraordinary event washed away the Bureau's equipment.
- A station is located in Bland Canyon on forest service land. Stage and water quality are monitored. A previous site had been located farther upstream but was abandoned after an unexpectedly large event destroyed access to the site. The Bureau monitoring equipment is also temporarily unavailable until access is reestablished.
- A station had been located in Cochiti Canyon within the Dixon Apple Orchard. The station was demolished during large floods through the area. As of the middle of September, the Bureau is still attempting to relocate a new station. A flow meter was deployed in Cochiti Canyon to help correlate rainfall detected by BAER Team early warning systems up-canyon to stormwater discharge downstream. The flow data will also augment data collected by US Army Corps of Engineers sampling in Cochiti Canyon.

Figure LSW11-5. Bureau staff installed an ISCO water level monitor and stormwater sampler in Bland Canyon near Pueblo de Cochiti. (Note the "Tent Rocks" in background.)

On Wednesday, August 17, 2011, a storm cell situated over a portion of the burned watershed above Peralta Canyon dropped about 1.5 inches of rain in less than two (2) hours. The stormwater flow from that event destroyed DOE Oversight Bureau sampling station located on top of an old dam abutment, 12 feet above and about 20 feet to the side of the stream channel. A wall of water estimated to be 15 feet high and 65 feet wide came roaring down the drainage and washed away the Bureau sampling station. Flow was estimated in excess of 5,000 cubic feet per second (cfs). It was reported that someone saw Bureau equipment heading toward the Rio Grande. Interestingly, flow in the Rio Grande at the San Felipe gage station showed a 600 cfs rise in response to the rain event, which means the majority of the flow dissipated in the vast flood plain between where the flow was measured and the river. This flood plain includes the Kasha-Katuwe Tent Rocks National Monument and Pueblo de Cochiti.

Figure LSW11-6. Bureau monitoring equipment was washed out at the sampling location at the old dam abutment in Peralta Canyon after a flash flood in August 2011. Damaged equipment is circled in the photo above: the sampler suction line (lower left); the solar panel (middle); and the sampler, battery and flow meter (upper right). The red line on the left marks the vertical height from stream channel to top of abutment where the sampler was located, 12 feet. The red line on the right marks the approximate height of storm flow, 15 feet.

Figure LSW11-7. Exceptional stormwater flow event at Dixon Apple Orchard on August 22, 2011, photographed by Kerry Jones. Note rows of apple trees (green) in both this and the following images. This storm flow event was estimated to be about 12 feet high and 100 feet wide across the flood plain with flow estimated over 19,000 cubic feet of water per second (cfs). This volume of water is approximately 48 times the average flow of the Rio Grande at the Alameda Bridge in Albuquerque.

Figure LSW11-8. Dixon's Apple Orchard on August 23, the day following the severe storm flow event in the previous image. Approximately one third of the apple trees were lost.

A summary of stormwater samples collected in FFY 2011 Q-4 is detailed in the tables below.

Table LSW11-1. Summary of the DOE OB LOS stormwater activities, July 2011.

Location	**Number of samples collected**
Rio Grande at Otowi Bridge	0
Rio Grande at Buckman Direct Diversion	2
Rio Grande above Alameda (above Albuquerque Diversion)	1
Los Alamos Canyon at LANL Boundary	0
Los Alamos Canyon above the Rio Grande	2
Peralta Canyon (above Tent Rocks National Monument)	0
Total number of samples	**5**

Table LSW11-2. Summary of the DOE OB LOS stormwater activities, August 2011.

Location	Number of samples collected
Rio Grande at Otowi Bridge	4
Rio Grande at Buckman Direct Diversion	9
Rio Grande above Alameda (above Albuquerque Diversion)	3
Los Alamos Canyon at LANL Boundary	7
Los Alamos Canyon above the Rio Grande	3
Peralta Canyon (above Tent Rocks National Monument)	1
Total number of samples	**27**
Total cost for all samples submitted	**$92,442**

Table LSW11-3. Summary of the DOE OB LOS stormwater activities, September 2011.

Location	Number of samples collected
Rio Grande at Otowi Bridge	3
Rio Grande at Buckman Direct Diversion	3
Rio Grande above Alameda (above Albuquerque Diversion)	1
Los Alamos Canyon at LANL Boundary	2
Los Alamos Canyon above the Rio Grande	1
Peralta Canyon (above Tent Rocks National Monument)	0
Total number of samples	**10**
Total cost for all samples submitted	**$30,167**

NPDES MONITORING ASSESSMENT PROJECT (LPN12)

Under this Activity ID, Bureau staff conducts on-going sampling of National Pollution Discharge Elimination System (NPDES) outfalls and outfall closure verification. The focus is on stormwater management assessment at construction and Environmental Restoration remediation projects. Staff verifies that LANS has proper spill action plans, and staff provides closeout assessment and recommendations.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff conducted site evaluations and coordinated closure of numerous spill/release reports.

Bureau staff coordinated with LANL to sample the 13S Outfall (SSS13S), the Sanitary Waste Water System (SWWS). Samples were analyzed for target analyte list (TAL) metals (total and dissolved), anions and nitrogen species, perchlorate, major cations, gross alpha and gross beta, tritium and PCBs. All samples, with the exception of the PCBs which were archived for future analysis, were shipped for analysis.

Bureau staff met with LANS staff to coordinate outfall sampling at Outfall 027 (03A027) near the TA-3 power plant. The DOE Oversight Bureau physical pipe for sampling this outfall was recently damaged and repairs are underway. Currently the water is being re-routed to the SWWS plant and discharged via the 13S outfall, which combines with and ultimately discharges through

Outfall 001 (01A001), the power plant cooling tower blowdown outfall. Repairs to Outfall 027 are anticipated to be completed this fall.

The Oversight Bureau conducts non-regulatory site assessments and site investigations at LANL, in addition to reviewing all 24-hour, 7-day and 15-day notifications specific to its NPDES permit with regard to unplanned liquid releases (spills). The Bureau makes suggestions to LANL/LANS site management and staff for the implementation of sediment and erosion control safeguards during construction, demolition, and decommissioning activities, and for final mitigation activities. All groundwater well-related exceedances are under the regulatory purview of the New Mexico Environment Department Ground Water Quality Bureau (GWQB), as well as falling under the provisions of the Compliance Order on Consent, and are administratively closed by GWQB under the New Mexico Surface and Ground Water Quality Act. Surface water discharges of potable water, steam condensate or sewage spills that do not enter a watercourse are under the purview of the New Mexico Environment Department Surface Water Quality Bureau (SWQB) for final regulatory closure. If a sewage release does discharge into a water course, the Oversight Bureau works with all parties in order to obtain final closure from the United States Environmental Protection Agency under their NPDES authority.

During FFY 2011 Q-4, the following release/discharge notifications were submitted by LANL to EPA and NMED:

#307 – Duplicate of LANL # 308

#308 – Groundwater Detection: Following a data verification process, LANL Watershed Stewardship Program (LWSP) and LANL Associate Director for Environmental Programs (ADEP) staff confirmed two groundwater sample detections in excess of New Mexico Groundwater Quality standards. At alluvial well LAUZ-1, chloride was detected at 341 mg/L, and at intermediate well R-55i, manganese was detected at 435 mg/L. Following the provisions of the Compliance Order on Consent, this information was reported to the NMED Hazardous Waste Bureau (HWB). This release is also being reported pursuant to NMED's letter, "Reporting of Newly Detected Exceedances of Groundwater Standards at Los Alamos National Laboratory," dated February 10, 2011, as detections in excess of New Mexico Groundwater Quality Standards. Verbal notification was provided by LANL Water Quality & RCRA Group (ENV-RCRA) to NMED GWQB on June 15, 2011.

#309 – Groundwater Detection: LWSP and ADEP personnel confirmed detection of certain metals in groundwater in excess of New Mexico Groundwater Quality standards for data reviewed in June 2011. The filtered iron result was 1,110 µg/L in a sample collected March 18, 2011, from Los Alamos Canyon intermediate well R-9i at 278 ft. The iron result in the unfiltered sample from the current sampling event was 32 µg/L. The filtered zinc and manganese concentrations were also higher than unfiltered concentrations so the two bottles may have been switched during data collection. Following the provisions of the Compliance Order on Consent, this information was reported to the NMED HWB. This release is also being reported pursuant to NMED's letter, "Reporting of Newly Detected Exceedances of Groundwater Standards at Los Alamos National Laboratory,"

dated February 10, 2011, as detections in excess of New Mexico Groundwater Quality Standards. Verbal notification was provided by ENV-RCRA to NMED-GWQB on July 7, 2011.

#310 – Groundwater Detection: Following a data verification process, LWSP and ADEP staff confirmed two groundwater sample detections in excess of New Mexico Groundwater Quality standards. At alluvial well LAUZ-1, chloride was detected at 341 mg/L, and at Intermediate well R-55i, manganese was detected at 435 mg/L. Following the provisions of the Compliance Order on Consent, this information was reported to the NMED HWB. This release is also being reported pursuant to NMED's letter, "Reporting of Newly Detected Exceedances of Groundwater Standards at Los Alamos National Laboratory," dated February 10, 2011, as detections in excess of New Mexico Groundwater Quality Standards. Verbal notification was provided by ENV-RCRA to NMED-GWQB on June 15, 2011**.**

#311 – ENV-RCRA responded on July 21, 2011 to a discharge from the fire suppression system at TA-3-1400 at Los Alamos National Laboratory. Following a disruption of the fire suppression system during a facility elevator test, it appeared that approximately 1,000 gallons of water was discharged to the environment. The water sheet-flowed across pavement, entered a storm drain east of the Pajarito and Mercury intersection and then emptied into Sandia Canyon. There did not appear to be any erosion as a result of the release. This release was reported to NMED and EPA pursuant to 20.6.2.1203 NMAC.

#312 – Groundwater Detection, TA-5: Following a data verification process on August 11, 2011, LANL LWEP and ADEP staff confirmed one groundwater sample detection in excess of New Mexico Groundwater Quality standards and two detections in excess of EPA screening levels. At regional well R-1, located in Mortandad Canyon, Acrolein was detected in an unfiltered sample at 1.95 μg/L, in excess of the EPA tap water screening level. The port depth of the well was approximately 1,031 feet. At regional well R-61 (port depth approximately 1,125 feet), located in Mortandad Canyon, perchlorate was detected in a filtered sample at 6.54 μg/L, in excess of the New Mexico Groundwater Quality Standard. Also, at regional well R-61, Dibenz(a,h)amthracane was detected in an unfiltered sample at 0.36 μg/L, in excess of the EPA tap water screening level. This result was estimated and was not found in the field replicate and calibration appeared to be outside the method standard.

Following the provisions of the Compliance Order on Consent, this information was reported to the NMED HWB. This release is also being reported pursuant to NMED's letter, "Reporting of Newly Detected Exceedances of Groundwater Standards at Los Alamos National Laboratory," dated February 10, 2011, as detections in excess of New Mexico Groundwater Quality Standards. Verbal notification was provided by ENV-RCRA to NMED-GWQB on August 15, 2011**,** within 24 hours of ENV-RCRA receiving notification**.**

#313 – On August 18, 2011, while en route to a construction site, a Los Alamos National Laboratory subcontractor vehicle made an abrupt stop, apparently tipping over a drum in

the truck bed which contained approximately 10 gallons of gear lubricant (Product Numbers CPS224503, CPS224504). The lubricant was released into the truck bed. As the truck traveled along Diamond Drive and Pajarito Road to the NMSSUP construction site, the lubricant was released along the road surface. Some of the lubricant was also released on the NMSSUP lay down yard. LANL's HAZMAT crew responded and sprayed the impacted road surface as much as conditions would allow with Microblaze. Standing liquids were removed with absorbent at two stop lights. An emergency liquid spill control kit was used at the construction site to remove released lubricant from the lay down yard. Remaining oil was removed from the truck. Impacted areas within the lay down yard were also sprayed with Microblaze.

Relationship of the Discharge to a SWMU or PRS:
The released lubricant did not appear to impact any Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs). The release was also documented in the project's NPDES Construction General Permit Stormwater Pollution Prevention Plan.

Corrective Actions Taken (type of BMPs, etc):
Along Diamond and Pajarito Roads, the road surface was treated to the maximum as conditions would allow with Microblaze. Standing liquids were removed with absorbent by LANL HAZMAT and the area then sprayed with Microblaze. Impacted areas within the lay down area were treated with absorbent and Microblaze. The release did not appear to reach a watercourse or storm drain. It appeared to remain on the paved road surface.

#314 – On September 1, 2011, at Los Alamos National Laboratory, approximately 1,500 gallons of untreated domestic wastewater was released to the environment at a new sanitary sewer lift station (TA-61-128). A communication failure at the lift station caused a high level alarm auto dialer to fail. A worker observed the leak and immediately notified the Wastewater Maintenance Supervisor. The lift station was taken out of service as soon as practicable. The water flowed into a stormwater conveyance that is connected to Los Alamos Canyon. There appeared to be minimal erosion at the lift station. The release did not appear to cause erosion within the stormwater conveyance. Standing liquids were pumped for treatment and impacted areas were disinfected as much as worker safety allowed. The release did not appear to adversely impact any SWMUs or AOCs. The release appeared to reach Los Alamos Canyon. Safety concerns precluded a full assessment of potential impacts to the watercourse.

Corrective Actions Implemented (type of BMPs, etc):
Standing liquids were pumped for treatment and impacted areas were disinfected as much as worker safety allowed. The communication failure is currently under investigation and a mitigation plan will be developed and implemented.

#315 – On September 1, 2011, at Los Alamos Nationa1 Laboratory, approximately 4,000 gallons of potable water was released to the environment at TA-46 south of building 76. A failed pressure relief valve caused the water to discharge to a tributary to Canada del Buey, but did not appear to cause erosion within the channel. Utilities staff responded and shut

down the waterline for repairs. T he release did not appear to cause any erosion and did not appear to adversely impact any SWMUs or AOCs.

Corrective Actions Implemented (type of BMPs, etc):
The waterline was shut down for repairs as soon as the leak was discovered.

Bureau efforts helped expedite more than 90% of the LANS spill notifications last year.

During FFY 2011 Q-4, DOE OB staff submitted the following Closure recommendation report(s) to DOE LASO, LANL, NMED (SWQB, DOE OB and HWB) and EPA:

Report #302 – Groundwater Detection

Report # 303 – Groundwater Detection

Report #304 – Groundwater Detection

Report #305 – "Spill Response Assessment and Suggestion for Closure of Potable Water Release at TA-49, Building 113, April 27, 2011, LANL Discharge Notification Report #305." On April 27, 2011, the New Mexico Environment Department DOE Oversight Bureau received verbal notification of an accidental release of approximately 10,000-gallons of potable water from a line leak near Building 113, Technical Area (TA)-49. The discharged water flowed down a tributary and into Water Canyon. TA-49 is located on the southern boundary of Los Alamos National Laboratory. This release was reported to the Emergency Spill Hotline as required by §20.6.2.1203 NMAC of the New Mexico Water Quality Control Commission on April 28, 2011.

The estimated 10,000 gallons of potable water discharged at a rate of approximately 5 gallons per minute for roughly 13 hours. The release was initially reported at 8:00 am; however access limitations prevented shutting down the line until approximately 1:00 pm. There were no Potential Release Sites (PRSs) or SWMUs impacted by this spill. There did not appear to be any erosion in the area surrounding the release.

Bureau staff determined the actions taken by LANS were adequate in the protection of New Mexico's health and environment under §20.6.2.1203 NMAC of the Water Quality Control Commission.

Report # 311 - "Spill Response Assessment and Request for Administrative Closure of an Unplanned, Potable Water Release at TA-3 Building 1400, LANL report #311 on July 21, 2011." The NMED SWQB received a request to closeout this release by correspondence dated August 4, 2011. The SWQB has determined that corrective actions taken to remediate impacts to surface water from this spill are satisfactory. This letter suggests closure of the Department's files on this action.

Report #313 – "Spill Response Assessment and Suggestion for Closure of a Ten-Gallon Gear Lubricant Release at TA-3 and TA-55, August 18, 2011, LANL Discharge Notification

Report #313." The report briefly summarized that the DOE OB found the actions taken by LANS adequate in the protection of New Mexico's health and environment and recommended no further action under the discharge notification. Additionally, this release was documented in the projects Storm Water Pollution Prevention Plan (SWPPP), as required by the sites NPDES General Construction Permit (GCP). There were no PRSs or SWMUs impacted due to this release.

Report #314 – "Spill Response Assessment and Suggestion for Closure of a 1,500-Gallons of Untreated Domestic Wastewater Release at TA-61, Building 128, September 1, 2011, LANL Discharge Notification Report #314." The report briefly summarized that the DOE OB found the actions taken by LANS to be adequate in the protection of New Mexico's health and environment and recommended no further action under the discharge notification. There were no PRSs or SWMUs impacted by to this release. Spill event #314 was reported to the Emergency Spill Hotline as required by §20.6.2.1203 NMAC of the New Mexico Water Quality Control Commission on August 18, 2011.

Report #315 – "Assessment and Suggestion for Closure of Potable Water Release at TA-46 south of Building 76, September 1, 2011, LANL Discharge Notification Report # 315." The report briefly summarized that the DOE OB found the actions taken by LANS to be adequate in the protection New Mexico's health and environment and recommended no further action under the discharge notification. No PRSs or SWMUs were impacted due to this release.

REGIONAL PCB STUDY PROJECT (LPC13)

Under this Activity ID, Bureau staff conducts a special study to characterize PCB concentrations in stormwater and precipitation on a regional basis (upper & middle Rio Grande) to put LANL and SNL contributions to the Rio Grande in perspective.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff shipped precipitation and stormwater samples from the Rio Grande and Las Conchas burn scar areas to contract laboratories for PCB and dioxin/furan analysis.

Bureau staff is co-authoring a report with LANL on background PCBs in precipitation, snowpack and stormwater from un-impacted watersheds.

Four (4) precipitation samples were submitted for analyses of PCBs and two (2) were archived until FFY 2012 Q1. Twenty-eight (28) samples of stormwater from the Rio Grande and burned watersheds were submitted for PCB and dioxin/furan analyses and eight (8) were archived until FFY 2012 Q1.

FISH TISSUE PROJECT (LFT14)

Under this Activity ID, Bureau staff conducts annual sampling of fish tissue in the Rio Grande and reservoirs under a cooperative sampling plan developed with Santa Clara Pueblo. A primary result of this effort is the fish consumption advisory development.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

MACROINVERTEBRATE PROJECT (LMI15)

Under this Activity ID, Bureau staff conducts water quality assessments of LANL-area streams utilizing benthic macroinvertebrate population sampling. Macroinvertebrate populations (such as dragon flies, which begin the lifecycle at the bottom of lakes and streams) are long-term indicators of the chemical, biological and physical health of flowing waters. The numbers and diversity of species of macroinvertebrates reflect water quality stressors and/or water quality trends.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

DEMOLITION AND DECOMMISSIONING PROJECT (LDD16)

Under this Activity ID, Bureau staff conducts site-specific monitoring of air quality downwind from ongoing demolition and decommissioning projects.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff continued to split soil samples from Material Disposal Area B with LANS and monitored the demolition and decommissioning progress at DP West (Technical Area 21).

At Material Disposal Area B (MDA-B), 534 cubic yards of low-level waste was excavated and shipped. Total waste shipped from the site includes 34,064 cubic yards of low-level waste, 5,280 cubic yards of industrial waste and 1,062 cubic yards of metal for recycling.

Staff worked to compile confirmation sampling results from both LANL and the Oversight Bureau on split samples from MDA-B. The data that LANL has reported is in various formats and locations and has been difficult and time consuming to compile. Work also began on a summary report of the split sampling that was coordinated with Northwind (LANL's contractor) for enclosure 9, including the Beryllium Area.

Bureau staff is preparing a data submittal to LANL that consists of the Bureau's entire split-sampling data set collected during 2010 and 2011. LANL requested the NMED data in advance of their final MDA-B Report submittal to the Hazardous Waste Bureau.

Staff compiled all the archived confirmation split samples from MDA-B that were collected over that past two months and shipped them for analysis. Fifty (50) samples from four previous collections will be analyzed for isotopic uranium, isotopic plutonium and target analyte list (TAL) metals plus uranium. Pending data from these samples, work continues on a summary report of the split sampling that was coordinated with Northwind.

GIS DATA AND REPORTS INFO PROJECT (LGD19)

Under this Activity ID, Bureau staff provides map generation, internal database management and RACER database support.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff updated the Bureau databases, created maps for publications and continued to discuss and plan for the upcoming migration of LANL and RACER environmental data to a cloud-based system.

Staff successfully added the Bland, Cochiti, and Peralta canyon locations to the Bureau's LANL database. The new locations are the post-Las Conchas fire monitoring stations in the vicinity of Pueblo de Cochiti. Bureau staff prepared a burn severity map of the Las Conchas fire that displays stormwater monitoring locations.

Six (6) CY2010 PCB sampling locations were also added to the database so that a map showing all sampling locations can be included in the joint LANL/NMED Regional PCB paper.

The Bureau submitted AIRNET data collected during the first two weeks of the Los Conchas fire for web publication and transmitted the data to RACER for posting on their website.

Bureau personnel continue to participate in a weekly meeting with representatives of LANS and their service provider, Locus Technologies, to discuss the upcoming migration of LANL and RACER environmental data to a cloud-based system. Bureau staff attended RACER meetings with LANL to coordinate the new cloud system that will replace RACER for storage and dissemination of LANL-related environmental data. Currently, the Surface Water Quality Bureau data integration project is on hold until the conversion is made to the cloud system.

In late August, Bureau staff participated in the LOCUS Technical Committee meeting at the DOE OB office to set the scheduling and topic scope of future meetings as well as discussing priority data-related items. The discussion covered introductions and issues related to consolidation of items in LANL's Look Up Tables. Some of the more weighty items identified include: Location Group, Suites (Parameter Groups and Analytical Groups), Unit Conversions, Blank Corrections, Detection Status, Data Validation and Comparison Values/Standards. Bureau staff took an action to consolidate all DOE OB analytes and forwarded the list to LANL for comparison and further consolidation into a unique analyte list for the LOCUS look up table. The consolidation process will identify and resolve all pre-Cloud areas and issues between LANL and NMED so when the system goes live, the users from both agencies will see consistency among the database modules.

LANL Section staff participated in the LOCUS Technical Committee meeting at the DOE OB office on September 8th. The group agreed to continue with weekly meetings through September 15th and consider bi-weekly meetings for the remainder of the calendar year. The main discussion focused on LANL's Look Up Tables and the detailed comparison of LANL and NMED Parameter Codes and Parameter Descriptions to allow consolidation of the two for use in the cloud. There was considerable agreement between the two agencies on most aspects of

analyte consolidation and the majority of discrepancies were easily worked out. The next item up for review is the specific laboratory-generated analytes in the QA/QC look up table. The LOCUS cloud-based system was scheduled to go live in October with debugging completed by the end of November. This implementation schedule proved optimistic and the go-live date has been pushed back to early January. This will include all LANL-related environmental data except for air particulate data. The air data will follow soon after the initial loading of the sediment, soil and water data.

The September 15th LOCUS Technical Committee meeting at the DOE OB office was cancelled. The next meeting was scheduled for September 22nd, but the meetings were postponed indefinitely after LANL was unable to provide staff to prepare for and attend the meetings.

TECHNICAL REVIEW (LMP23)

Under this Activity ID, Bureau staff provides technical support to DOE and LANS, other NMED bureaus, state and federal entities, and public interest and oversight groups.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff completed a review of the "Draft Supplemental Environmental Impact Statement for the Nuclear Facility Portion of the Chemistry and Metallurgy Research Building Replacement Project at Los Alamos National Laboratory, Los Alamos New Mexico."

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SANDIA NATIONAL LABORATORIES/NEW MEXICO OVERSIGHT

GENERAL ADMINISTRATION (SAD40)

Under this Activity ID, the Bureau manages, administers, and finances the overall activities of staff members in the Albuquerque office. Staff provides assistance to NMED and the Bureau and DOE developing workplans, budgets and training requirements.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff assigned to the Las Conchas fire, managed personnel activities, budgeted for monitoring and oversight activities and attended required and optional trainings and classes.

Administration

Bureau Chief Tom Skibitski served as the Agency Representative and was one of the New Mexico Environment Department staffers at the New Mexico Emergency Operations Center during the fire. The Las Conchas fire was 100 percent contained on August 3, 2011.

Personnel

Barry Birch retired from the New Mexico Environment Department on July 29, 2011. Mr. Birch had serves as Staff Manager for the Sandia Oversight Section (SOS) and WIPP Oversight Section for the past three years.

The New Mexico Environment Department named the Las Conchas Fire Group the 2011 Department Group of the (third) Quarter. Bureau staff from the SOS that was part of the Las Conchas Fire Group included: Chris Armijo and Susan Lucas Kamat.

Finance

Bureau management submitted the FFY 2012 budget to DOE for approval.

Staff submitted IPRFs for approval for equipment and laboratory services.

Training

Bureau staff attended a no-cost half-day ESRI-sponsored best management practices seminar titled, "Extend the Reach of Your GIS." The seminar covered the ArcGIS Online environment and creating feature class and map services for sharing authoritative data and maps.

Administrative staff in the Sandia section is participating in continuing education. Ms. Mia Ortiz is pursuing a degree program and attending classes in accounting, and management.

PUBLIC OUTREACH (SPO41)

Under this Activity ID, Bureau staff interacts with the public through meetings, listening sessions, website development, consultations, and reports.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff updated the Bureau website, participated in presentations, workshops and conferences and prepared technical and periodic reports for publication.

Fire Ecology
Bureau staff attended a talk at UNM-Albuquerque by Craig Allen, U.S. Geological Survey - Los Alamos, titled "Ecosystem Thresholds and Interactions among Broad-Scale Tree Mortality, Fire, and Erosion Dynamics - With Illustrations from New Mexico Landscapes to Planet Earth."

New Mexico Geological Society Annual Fall Field Conference
Susan Lucas Kamat attended the 2011 New Mexico Geological Society Annual Fall Field Conference "Geology of the Tusas Mountains and Ojo Caliente," September 28 to October 1. The conference focused on the volcanic and Proterozoic geology of the area, ore deposits, hydrogeology and Santa Fe Group fossils and stratigraphy.

Figure SPO40-1. Susan Lucas Kamat and Kim Granzow take a short break from pondering the Tertiary stratigraphy**.**

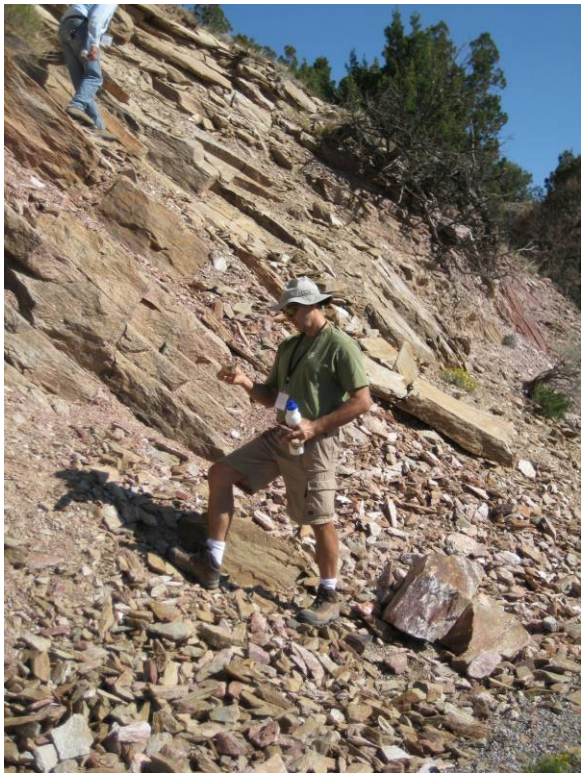

Figure SPO40-2. Jerzy Kulis of the Hazardous Waste Bureau examines pre-Cambrian rocks within a fault zone.

Figure SPO40-3. NMGS participants are lectured on the occurrence and importance of spring hydrogeology and travertine deposits.

New Mexico Mine Health and Safety Conference

Staff attended the planning committee meeting for the New Mexico Mine Health and Safety Conference. DOE Carlsbad Field Office, Washington TRU Solutions and CTAC continue to be major supporters of the conference.

Carlsbad Brine Well Collapse

Bureau staff attended a presentation by Jim Griswold, a hydrologist with the Oil Conservation Division of the Energy, Minerals and Natural Resources Department, detailing brine wells and brine well collapses in southeastern New Mexico. Much of the presentation focused on the geophysical investigations and early warning system of the I&W brine wells Eugenie 1 and Eugenie 2, located at the Y-Intersection of US 285 and US 180/62 in Carlsbad. Most of the infrastructure for Carlsbad, including the Carlsbad Irrigation District canal, Union Pacific Railroad, WIPP transport routes and Carlsbad/Eddy County fiber optic line are located within a half-mile of the two wells and would be catastrophically affected by any well collapse.

GENERAL GROUNDWATER MONITORING (ER) (SGE42)

Under this Activity ID, Bureau staff evaluates groundwater parameters to determine if there is any change in groundwater quality at SNL and also compares data results from the analytical laboratory used by Sandia to data results obtained by the analytical laboratory used by the Bureau as an independent verification.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected groundwater samples from the Burn Site, Chemical Waste Landfill and Tijeras Arroyo Groundwater monitoring wells.

During Q-4 FY2011, Bureau staff collected groundwater samples from the following monitoring wells: CWL-BW5, CWL-MW9, CWL-MW10, CWL-MW11, CYN-MW1D, CYN-MW3, CYN-MW4, CYN-MW6, CYN-MW7, CYN-MW8, TA1-W-02, TA2-SW1-320, TA2-W-01, TA2-W-19, TA2-W-27, TJA-2, TJA-4, TJA-6, TJA-7 and WYO-4. Samples were analyzed by a contract analytical laboratory for inorganics, organics, metals and radionuclides.

Bureau staff is reviewing groundwater data collected from previous sampling events, creating data tables and writing up data submittals for DOE review. Bureau staff is also reviewing Sandia groundwater data collected during the same events and comparing to Bureau results. Sample splits were collected by DOE OB and Sandia and sent to independent analytical laboratories.

Staff attended the monthly Sandia Groundwater meetings. The sampling schedule for remainder of FFY 2011 was discussed, as was the sampling of the five (5) new wells in SWMUs 8/58 and 68.

Burn Site Groundwater
Bureau staff collected groundwater samples from Burn Site monitoring wells CYN-MW1D, CYN-MW3, CYN-MW4, CYN-MW6, CYN-MW7 and CYN-MW8. Split samples were collected using standard Sandia sampling procedures and equipment. Samples were submitted to an independent contract laboratory to be analyzed for volatile organic compounds (VOCs), gasoline range organics (GROs), diesel range organics (DROs), nitrate-nitrite as Nitrogen, anions, target analyte list (TAL) metals plus Uranium, gross alpha/beta, gamma emitting isotopes, isotopic uranium and tritium.

Bureau staff reviewed groundwater data collected during 2010 and 2011.

Groundwater Protection Program
No groundwater monitoring activities were performed as part of the Groundwater Protection Program (GWPP) during FFY 2011 Q-4.

Mixed Waste Landfill Groundwater
No groundwater monitoring activities were performed at the Mixed Waste Landfill (MWL) during FFY 2011 Q-4.

Technical Area-V Groundwater
No groundwater monitoring activities were performed at Technical Area-V (TA-V) during FFY 2011 Q-4.

Tijeras Arroyo Groundwater
Bureau staff collected groundwater samples from Tijeras Arroyo Groundwater (TAG) monitoring wells TA1-W-02, TA2-SW1-320, TA2-W-01, TA2-W-19, TA2-W-27, TJA-2, TJA-4, TJA-6, TJA-7 and WYO-4. Split samples were collected using standard Sandia sampling

procedures and equipment. Samples were shipped to an independent analytical laboratory. They will be analyzed for VOCs, nitrates, anions, TAL metals plus uranium, gross alpha beta, gamma emitting isotopes, and tritium.

Chemical Waste Landfill (CWL) Groundwater
Bureau staff collected groundwater samples from Chemical Waste Landfill (CWL) monitoring wells CWL-BW5, CWL-MW9, CWL-MW10 and CWL-MW11. Split samples were collected using standard Sandia sampling procedures and equipment. Bureau samples were submitted to an independent contract laboratory to be analyzed for target analyte list (TAL) metals and volatile organic compounds (VOCs).

DIRECT PENETRATING RADIATION PROJECT (SDP43)

Under this Activity ID, Bureau staff monitors the environment at SNL and in the vicinity for SNL-sourced or ambient gamma radiation using electret passive ion chambers. The electret passive ion chamber uses the principle of ion pair production resulting from gamma photons interacting with air molecules to reduce the voltage of a charged Teflon™ disk. Using a predetermined formula, the voltage drop indicates the amount of radiation passing through the chamber. The on-going program reads electret passive ion chambers at the end of each quarter, converts readings into quarterly dose values and submits quarterly results to DOE, Sandia and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff conducted direct penetrating radiation measurements from all 12 electret stations located on-site and off-site.

Results will be reported to DOE once data results have been received from SNL.

Staff participated in an air and direct penetrating radiation (DPR) meeting with Oversight Bureau staff from all locations. Agenda items included the eventual transfer of Oversight data into a common cloud-based database and the procurement and construction of PVC pipe housing for the DPR monitors at WOS. Staff is preparing for several updates to the DPR program which will be implemented in the near future, including:

- Applying temperature and pressure correction factors to dose calculations, using data from the HOBO data loggers and GPS units
- Modifying Bureau-wide DPR data collection and dose calculation procedures, as outlined in the new version of Rad Elec's E-PERM® System User's Manual

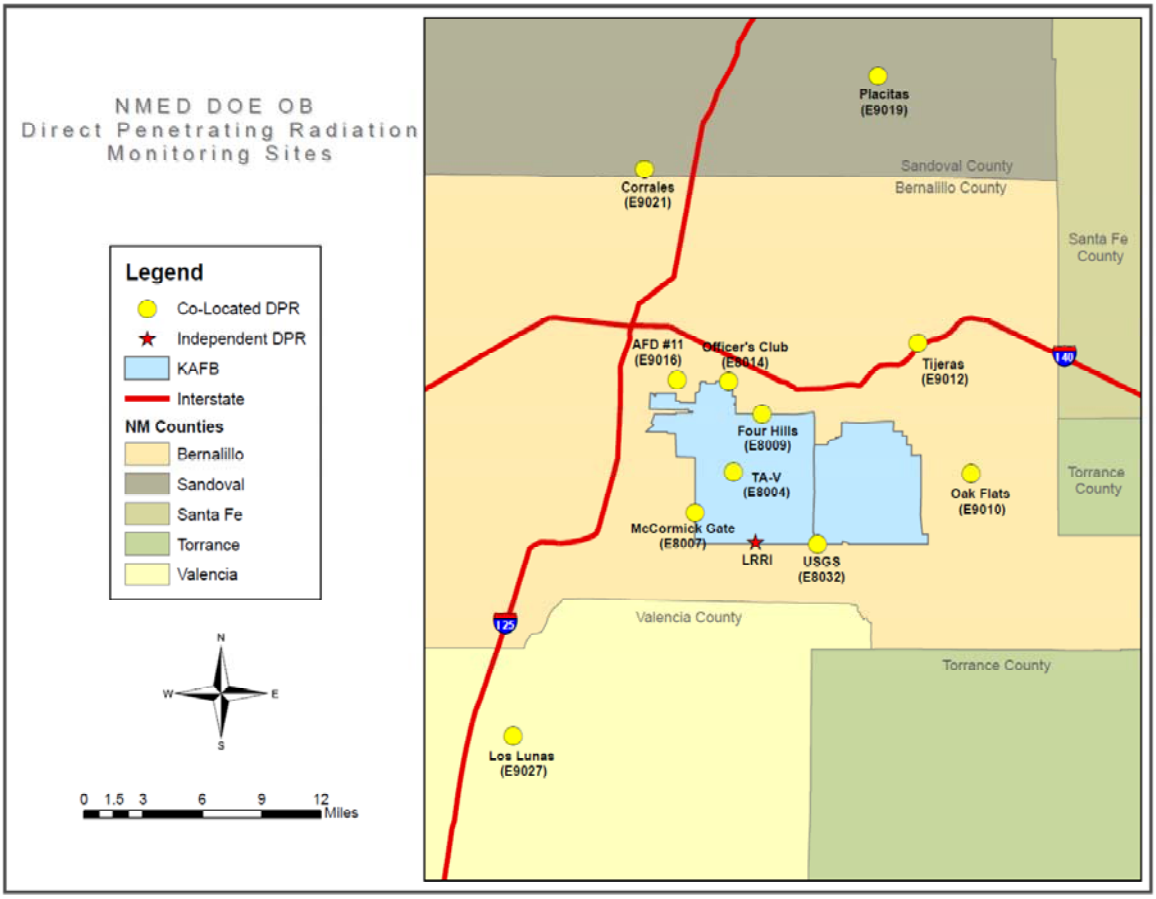

Figure SDP43-1. Direct penetrating radiation monitoring sites are located on- and off-site of Kirtland Air Force Base.

PARTICULATES LOW-VOLUME AIR PROJECT (SPL44)

Under this Activity ID, Bureau staff conducts continuous air monitoring to evaluate the presence of selected radioactive particles and tritium in the ambient air near SNL. Ambient air is sampled with continuously running, low-volume air samplers drawing air through particulate filters and silica gel cartridges. The filters are analyzed for gross alpha/beta and the presence of gamma-emitting isotopes and isotopes of americium, plutonium, and uranium. Filter samples and gel collectors are submitted and analyzed quarterly and results are provided for DOE, Sandia and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff continued to collect bi-weekly air particulate filters from three (3) perimeter monitoring stations and one (1) on-site station located at the Mixed Waste Landfill. Silica gel samples taken from the perimeter stations are collected bi-weekly and composited for the quarter. Silica gel samples taken from MWL are also collected bi-weekly, but are analyzed separately.

Bureau staff continues to collect bi-weekly air particulate filters from 3 perimeter monitoring stations and 1 on-site station located at the Mixed Waste Landfill. In addition to collecting particulate filters, the Bureau collects silica gel samples that are used to trap environmental

moisture that is analyzed for the presence of tritium. Silica gel samples taken from perimeter stations are collected bi-weekly and composited for the quarter. Silica gel samples taken from MWL are also collected bi-weekly, but are not composited.

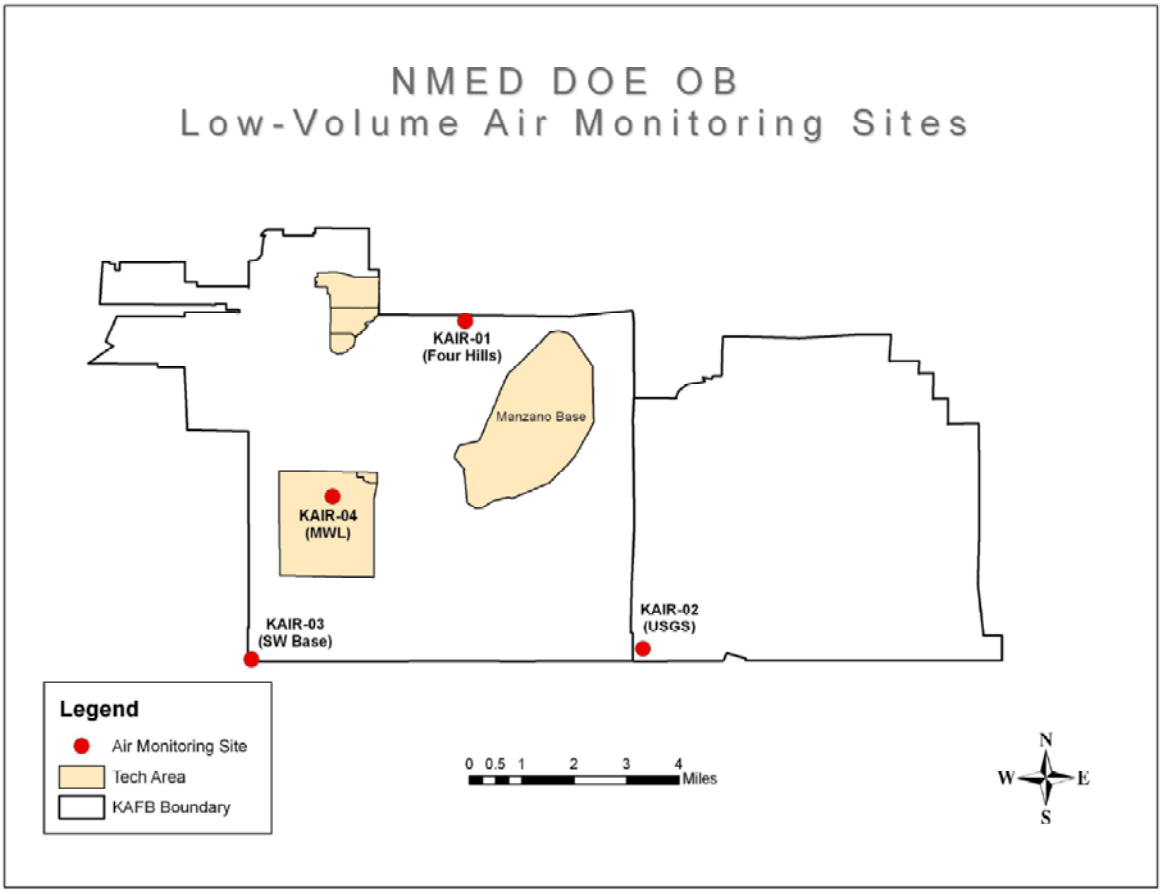

Figure SPL44-1. AIRNET sites are located on the perimeter of Kirtland Air Force Base and at the Mixed Waste Landfill.

Bureau staff shipped second quarter calendar year 2011 samples to ALS Laboratory Group. Particulate filters will be analyzed for gross alpha/beta, gamma emitting isotopes, isotopic americium, plutonium and uranium. Silica gel samples will be analyzed for the presence of tritium.

Bureau staff loaded field and weather data into the Sandia OB Air database.

Staff participated in an air and direct penetrating radiation (DPR) meeting with Oversight Bureau staff from all locations. Agenda items included the eventual transfer of Oversight data into a common cloud-based database and resolving compatibility issues between the existing Access database and the new contract lab EDD.

STORMWATER PROJECT (SSW45)

Under this Activity ID, Bureau staff conducts stormwater monitoring at stations generally co-located with Sandia monitoring stations down gradient from Areas of Concern or Solid Waste Management Units.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected stormwater runoff samples after seven (7) rain events. Samples were analyzed for dissolved metals plus uranium, total cyanide, suspended sediment concentration, total oxygen concentration, gross alpha/beta, gamma-emitting isotopes, isotopic uranium, total suspended solids, hardness and PCB congeners. Bureau staff also updated the NEPA documents and prepared a Kirtland Air Force Base (KAFB)-specific stormwater sampling and analysis plan (SAP).

Staff deployed eight (8) stormwater samplers at the four (4) sampling sites in Technical Area III in preparation for monsoon season. Staff also deployed samplers at five (5) test locations on Kirtland Air Force Base.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on July 25. Stormwater monitoring point (SWMP)-10 collected two gallons of stormwater. The sample was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after observing Arroyo de Coyote was wet on August 1. The samplers at locations Test D and E were washed away in the rains over the weekend of July 30. Staff located the sampler from Test E and collected one half-gallon sample. The sample was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon and hardness.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.8 inches of rainfall outside Building 803 (SOS office) on August 4. SWMP-10 and -15 each collected one gallon of stormwater. SWMP-13 did not collect a full gallon, but sufficient stormwater was collected for analysis. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. Test C collected sufficient sample to be delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon and hardness.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.5 inches of rainfall outside Building 803 (SOS office) on August 18. SWMP-10 collected two gallons of stormwater; SWMP-15 collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. Test B, C, D and E each collected one gallon

of stormwater. The samples was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon and hardness.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on August 26. SWMP-15 collected one and a half gallons of stormwater; SWMP-13 collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. SWMP-12 did not collect a full gallon, but sufficient stormwater was collected for analysis of 23 TAL dissolved metals with cyanide, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.5 inches of rainfall outside Building 803 (SOS office) on September 7. SWMP-13 collected one gallon of stormwater. The samples was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. Test D and E each collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon and hardness.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on September 14. SWMP-10 collected one gallon of stormwater. The sample was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon and hardness.

Bureau staff is reviewing stormwater data collected from previous sampling events in 2010 and 2011, creating data tables and writing data submittals to the DOE for review.

Bureau staff met with representatives from SNL/NM to discuss the calendar year 2011 stormwater monitoring plan and sampling locations. Discussions focused on the location and type of equipment to be placed at SWMP-19 and SWMP-20 in Technical Area I, PCB sampling and U.S. Air Force (USAF) approval of the sampling sites located on USAF or USAF/DOE lease lands. Staff visited several sampling sites with representatives from the Sandia Stormwater group.

Bureau staff updated the NEPA documents and prepared a KAFB-specific stormwater SAP for Karen Agonino, NNSA/SSO Point-of-Contact, to present to USAF management. The documents detail co-location of SNL/NM and Oversight Bureau stormwater sampling equipment on Kirtland-owned property.

Bureau staff reviewed the FFY 2012 Stormwater sampling SAP, which combines all the stormwater and Tijeras Arroyo locations with the NPDES monitoring.

Staff is developing a table of all stormwater monitoring points, both past and current. The table will serve as the basis of a stormwater geospatial database.

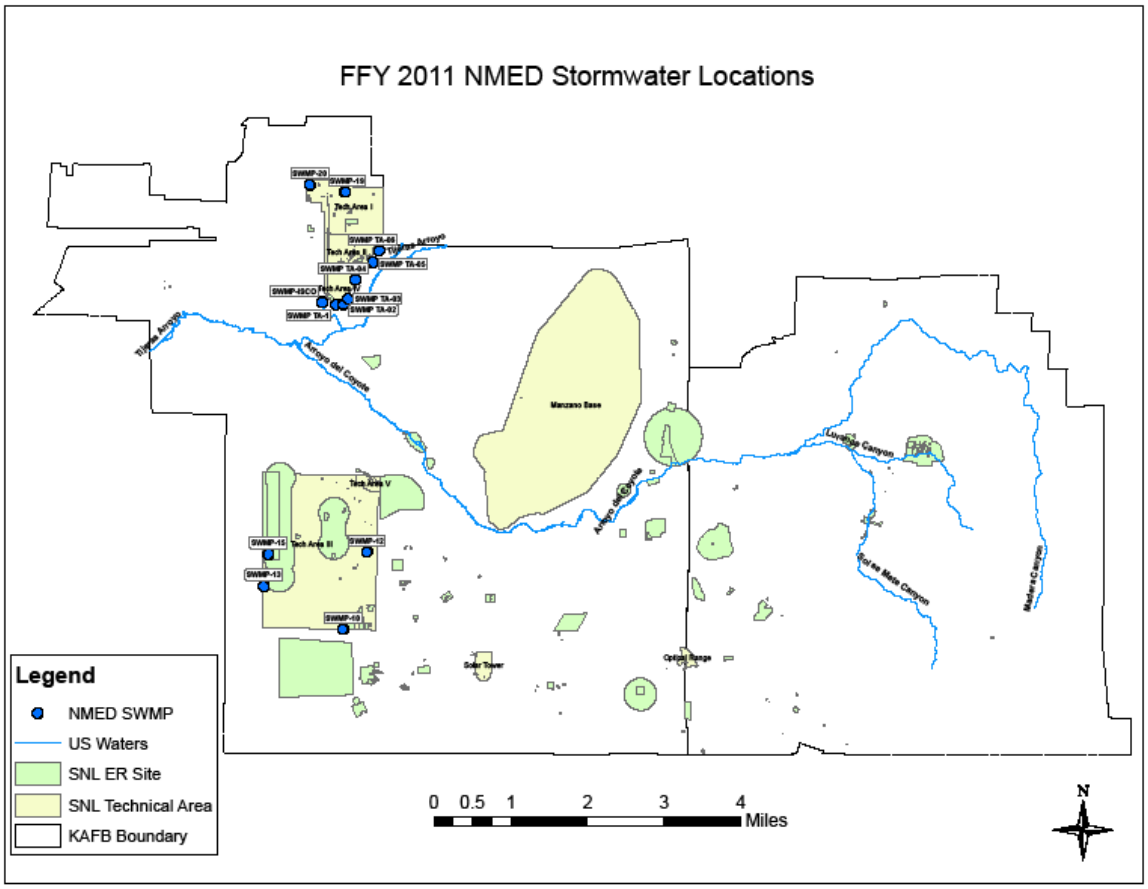

Figure SSW45-1. Stormwater sampling sites are located in Technical Area III and along Tijeras Arroyo.

TIJERAS ARROYO STUDY (STA47)

Under this Activity ID, Bureau staff conducts stormwater monitoring by collecting samples from single-stage one-gallon containers located down gradient from Areas of Concern or Solid Waste Management Units along the Tijeras Arroyo.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected stormwater runoff samples after ten (10) rain events. Samples were analyzed for dissolved metals plus uranium, total cyanide, suspended sediment concentration, total oxygen concentration, gross alpha/beta, gamma-emitting isotopes, isotopic uranium, total suspended solids, hardness and PCB congeners.

Staff deployed one (1) ISCO automated sampler and twelve (12) stormwater samplers at the six (6) Tijeras Arroyo sampling sites in preparation for the monsoon season.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on July 19. Stormwater monitoring point (SWMP)-TA02 collected two gallons of stormwater. SWMP-TA03 and –TA04 collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on July 21. SWMP-TA03 collected two gallons of stormwater. SWMP-TA02 collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on July 25. SWMP-TA03 collected one gallon of stormwater. SWMP-TA-ISCO collected four liters of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.8 inches of rainfall outside Building 803 (SOS office) on August 4. SWMP-TA01, -TA02 and –TA03 each collected one gallon of stormwater. SWMP-TA05 collected two gallons of stormwater. SWMP-04 and -TA06 did not collect a full gallon, but sufficient stormwater was collected for analysis. SWMP-TA-ISCO collected six liters of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.5 inches of rainfall outside Building 803 (SOS office) on August 18. SWMP-TA02, -TA03 and –TA05 each collected two gallons of stormwater. SWMP-TA-ISCO collected seven liters of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on August 26. SWMP-TA02 collected two gallons of stormwater. SWMP-TA03 collected one gallon of stormwater. SWMP-TA-ISCO collected eight liters of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. SWMP-TA04 and –TA06 did not collect a full gallon, but sufficient stormwater was collected for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium and hardness.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.4 inches of rainfall outside Building 803 (SOS office) on August 29. SWMP-TA03 collected two gallons of stormwater. SWMP-TA02 collected one gallon of stormwater. SWMP-TA-ISCO collected eight liters of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.5 inches of rainfall outside Building 803 (SOS office) on September 7. SWMP-TA02 collected one gallon of stormwater. The sample was delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners. SWMP-TA03 and –TA06 did not collect a full gallon, but sufficient stormwater was collected for analysis of 23 TAL dissolved metals with cyanide.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on September 14. SWMP-TA02 and –TA03 each collected two gallons of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff inspected all stormwater-monitoring stations after the collection of 0.2 inches of rainfall outside Building 803 (SOS office) on September 15. SWMP-TA02 collected two gallons of stormwater. SWMP-TA03 collected one gallon of stormwater. The samples were delivered to an independent contract laboratory for analysis of 23 TAL dissolved metals with cyanide, total cyanide (unfiltered), low-level gross alpha and beta, isotopic uranium, total suspended solids, total organic carbon, hardness and PCB congeners.

Bureau staff is reviewing Tijeras Arroyo stormwater data collected from previous sampling events in 2010 and 2011, creating data tables and writing data submittals to the DOE for review.

Bureau staff reviewed the FFY 2012 Stormwater sampling SAP, which combines all the stormwater and Tijeras Arroyo locations with the NPDES monitoring.

Staff is developing a table of all stormwater monitoring points, both past and current. The table will serve as the basis of a stormwater geospatial database.

DEMOLITION AND DECOMMISSIONING PROJECT (SDD48)

Under this Activity ID, Bureau staff conducts site evaluations and media monitoring during decommissioning and demolition operations.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

BIOTA AND TERRESTRIAL PROJECT (STE49)

Under this Activity ID, Bureau staff conducts annual sampling of soils and plants in a cooperative effort with Sandia on KAFB and the surrounding area.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

WASTEWATER PROJECT (SWW51)

Under this Activity ID, Bureau staff conducts annual sampling of wastewater discharges from SNL operations in a cooperative effort with Sandia and the Albuquerque Bernalillo County Water Utility Authority.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

SOIL AND SEDIMENT PROJECT (SSS53)

Under this Activity ID, Bureau staff conducts annual soil sampling in a cooperative effort with Sandia to evaluate clean-up efforts by Sandia after open-air explosive experiments.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

TECHNICAL REVIEW (STR54)

Under this Activity ID, Bureau staff provides technical support to DOE and Sandia, other bureaus in NMED, state and federal entities, and public interest and oversight groups.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff compiled and edited portions of the CY 2010 Annual Report and prepared FFY 2011 Q-3 quarterly report.

NPDES MONITORING (SNP55)

Under this Activity ID, Bureau staff conducts site evaluations in consultation with Sandia to determine compliance with facility-generated Stormwater Pollution Prevention Plans, and to monitor activities after reportable spills on SNL.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff reported no activity.

GIS DATA PROJECT (SGD56)

Under this Activity ID, Bureau staff provides map generation, internal geospatial data management and internal database management.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff inventoried Sandia Oversight Section GIS data sets and attended ESRI training.

Staff is working on updating the SOS geospatial files and data to reflect the SNL/NM change from NAD27 to NAD83.

Susan Lucas Kamat has been added to the New Mexico Community Foundation RACER project management and collaboration system "Basecamp." This will assist in the eventual inclusion of the Sandia environmental monitoring and sampling data into the new cloud-based RACER database.

Susan Lucas Kamat visited with LOS staff and discussed the databases developed by LOS.

Bureau staff inventoried existing GIS data sets and location coordinates to verify coordinate system and datum and ensure consistent location measurements. Many of the sampling locations are missing elevation data and may need to be recollected with the Trimble GPS unit.

Staff is developing a table of all stormwater and Tijeras Arroyo monitoring points, both past and current. The table will serve as the basis of a stormwater geospatial database.

Bureau staff attended a no-cost half-day ESRI-sponsored best management practices seminar titled, "Extend the Reach of Your GIS." The seminar covered the ArcGIS Online environment and creating feature class and map services for sharing authoritative data and maps.

WASTE ISOLATION PILOT PLANT OVERSIGHT

GENERAL ADMINISTRATION (WAD70)

Under this Activity ID, the Bureau manages, administers, and finances the overall activities of staff members in the Carlsbad office. Staff provides assistance to NMED and the Bureau and DOE developing workplans, budgets and training requirements.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff attended Audit A-11-16 of the Washington TRU Solutions Monitoring Programs, observed facility activities, managed personnel activities, budgeted for monitoring and oversight activities and attended required and optional trainings and classes.

Administration

WIPP Oversight Section (WOS) staff often attends audits and surveillances throughout the year. The Department of Energy Oversight Bureau (DOE OB) does not participate in regulatory actions, although it has, upon request, served as on-site observers for the NMED Hazardous Waste Bureau (HWB) and the United States Environmental Protection Agency (U.S. EPA) Region 6. Occasionally, staff performs observations pertaining to modifications of the Waste Isolation Pilot Plant's (WIPP) Hazardous Waste Facility Permit (HWFP) on behalf of the NMED HWB and other agencies.

Staff monitored the suspension and eventual resumption of waste shipments from Idaho National Laboratory. The decision to suspend shipments was based upon Corrective Action Report (CAR) 11-043, arising from Audit-11-14 of the Central Characterization Project (CCP) activities at Idaho National Laboratory (INL). CAR 11-043 cited a violation of the WIPP Permit C4.3c, stating that "AK [Acceptable Knowledge] records are not getting into the CCP records system."

WIPP (the Permittee) was instructed to suspend all waste shipments from INL/CCP until CAR 11-043 was evaluated, the appropriate corrective actions were implemented and the CAR was closed. On July 1, 2011, NMED received a letter from the Permittees stating that CAR 11-043 had been evaluated, corrected and closed. Furthermore, the Permittees lifted the suspension of waste shipments from INL/CCP, a decision with which NMED concurred.

In July, inspection of the cable supporting the waste hoist revealed frayed wires requiring the waste hoist be removed from service. Repairs required the replacement of the 2,300-foot-long Head Rope #1. Waste shipments to the facility were suspended; Head Rope #1 was successfully replaced; inspection and testing was completed; and, waste shipments resumed.

The first waste shipment using the new TRUPACT-III (Transuranic Package Transporter-Model 3) arrived this quarter from the Savannah River Site. Staff members were present to observe some of the steps involved in the processing of this waste. The TRUPACT-III transports a single box of defense-generated contact-handled transuranic waste that is too large to ship in other available transportation packages. The container is scheduled to remain at the WIPP for programming of the bolting robot.

After two years of waste disposal, operations in Panel 5 were completed this quarter. A brick and mortar isolation wall is under construction to isolate this area from the rest of the underground. Construction of the wall is stipulated in the HWFP, Attachment G-1. On September 8, Bureau staff accompanied the Permittee's Site Regulatory Specialist underground to see initial preparations for construction of the blast wall. At a later date, staff observed a portion of wall construction.

Figure WAD70-1. Contractors build the blast wall at the entrance to Panel 5.

Staff attended Audit A-11-16, WTS Waste Handling Operations. This audit evaluated the adequacy of WTS procedures with respect to CBFO and WTS quality assurance requirements. Evaluation included waste receipt, container loading and unloading, container movement, container lid handling, container inspection and emplacement for both loaded and empty containers. The audit team concluded that the overall status of the program is adequate, satisfactorily implemented and effective.

During the week of September 19, WTS announced an impending reduction in force. This is the second part of a workforce restructuring plan by the WTS. Those affected include WTS personnel, temporary employees and subcontract personnel.

Julia Marple has been added to the New Mexico Community Foundation RACER project management and collaboration system "Basecamp." This will assist in the eventual inclusion of

the WIPP environmental monitoring and sampling data into the new cloud-based RACER database.

Staff met at the NMED Carlsbad District Office and discussed the floor plan for the new office consolidation project.

Staff prepared the WOS input to the FFY 2011 Q-4 report.

Finance
Bureau management submitted the FFY 2012 budget to DOE for approval.

Administrative staff submitted 4 IPRFs for approval for equipment and laboratory services.

Training
Staff Scientist Thomas Kesterson successfully completed the Safety 502, Mine Safety Experienced Miner Refresher class offered by the Washington TRU Solutions (WTS) Training Department, fulfilling all requirements of 30 CFR Part 48 for annual miner refresher training. Completion of this training allows for continued unescorted access in the mine.

Administrative staff in the WIPP section is participating in continuing education. Ms. Krissie Carrasco is taking classes in business and accounting.

PUBLIC OUTREACH (WPO71)

Under this Activity ID, Bureau staff interacts with the public through meetings, listening sessions, website development, consultations, and reports.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff participated in the 115th WIPP Quarterly Meeting, attended a Carlsbad Brine Well presentation and published several reports.

WIPP Quarterly Meeting
In July, staff attended the 115th WIPP Quarterly Meeting in Santa Fe. Bureau Chief Tom Skibitski presented an update of the WOS activities. Carlsbad staff attended the Quarterly meeting by telephone. This event occurs every three months and is hosted alternately by the DOE, NMED DOE OB, NMED HWB, and the NM EMNRD Radioactive Waste Consultation Task Force. Staff discussed ongoing projects and latest results. Updates were provided by DOE CBFO, WTS, HWB, DOE OB, and the NM Waste Transportation Coordinator.

Carlsbad Brine Well
Division Director Jim Davis, Bureau Chief Tom Skibitski, and Environmental Scientist Susan Lucas Kamat attended a presentation by Jim Griswold, a hydrologist with the Oil Conservation Division of the EMNRD, detailing brine wells and brine well collapses in southeastern New Mexico. Much of the presentation focused on the geophysical investigations and early warning system of the I&W brine wells Eugenie 1 and Eugenie 2, located at the Y-Intersection of US 285 and US 180/62 in Carlsbad. Most of the infrastructure for Carlsbad, including the Carlsbad Irrigation District canal, Union Pacific Railroad, WIPP transport routes and Carlsbad/Eddy

County fiber optic line are located within a half-mile of the two wells and would be catastrophically affected by a well collapse. Division Director Davis requested that Cabinet Secretary Martin be briefed on this issue.

Publications
Staff submitted a draft report to the DOE titled, "Station A Exhaust Air Monitoring at the Waste Isolation Pilot Plant Conducted by the New Mexico Environment Department, DOE Oversight Bureau, January – March, 2011." This final report is pending.

The final report, titled "Direct Penetrating Radiation Monitoring at the Waste Isolation Pilot Pant Conducted by NMED/DOE OB for the CY 2010 Q-4," was submitted to DOE and NMED for public release.

The final report, titled "Soil Sampling in the Vicinity of the Waste Isolation Pilot Plant Conducted by NMED/DOE OB, 2011," was released.

EXHAUST AIR MONITORING PROJECT (WEA72)
Under this Activity ID, Bureau staff monitors the exhaust air stream exiting the underground of the WIPP site. Staff collects air filters daily and attends weekly or bi-weekly preventative maintenance probe pulls.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff continued National Emissions Standards for Hazardous Air Pollutants (NESHAP) air filter collection at WIPP Station A (both primary and back-up) and Station B, shipped CY 2011 Q2 filters to a contract lab for analysis and attended preventative maintenance probe pulls.

Exhaust Air Monitoring
Bureau staff continued to collect air filters for NESHAP contaminants at WIPP Station A, EPA compliance point, and Station B. This quarter, staff collected filters daily from Station A and weekly from Station B. Filters collected at Station A are compiled monthly and shipped to the contract lab where they are analyzed for radionuclides. Staff collects these filters during the standard work week; the Permittee's surface air monitor collects these filters over the weekends and holidays.

Skid A-3 serves almost exclusively as the primary skid of record, Skid A-2 serves as back-up and Skid A-1 is secured from service. However, there are times when either Skid A-2 or A-3 must be removed for maintenance. During these times, Skid A-1 is placed into operation, usually as the back-up. Skid A-1 was placed into service as back-up during three (3) weeks this quarter when Skid A-3 was removed from service for maintenance and Skid A-2 was placed into service as the primary skid of record.

Station A air flow data is provided to the Oversight Bureau by the Permittees on a monthly basis. Staff reviews this data and compares it to the information recorded on the Chains of Custody, verifying its accuracy. There were no issues found this quarter arising from the air flow data review.

In early August, staff submitted a final report to the DOE and NMED DOE OB, titled "Station A Exhaust Air Monitoring at the Waste Isolation Pilot Plant, July – December 2010."

There were no detections for strontium-90, cesium-137, or uranium-235 for July to December 2010. Uranium-234 was detected in the filters collected for the months of September, November and December; uranium-238 was also detected in the filters collected during December. Plutonium-238 was detected in filters collected during both July and November; plutonium-239/240 was detected in August. Americium-241 was detected in August and September. It should be noted that plutonium-238 and americium-241 were detected in the sample blanks, indicating the results for the months showing detections are questionable.

Staff submitted a draft report to the DOE titled, "Station A Exhaust Air Monitoring at the Waste Isolation Pilot Plant Conducted by the New Mexico Environment Department, DOE Oversight Bureau, January – March, 2011." This final report is pending.

In September, filters collected from Station A during CY2011 Q-2 were shipped to an independent contract lab for analysis.

Preventative Maintenance Probe Pulls

Staff members regularly attend preventative maintenance probe-pulls at Station A for the cleaning of the shrouds and nozzles (the probe). Personnel representing the Permittees and Carlsbad Environmental Monitoring and Research Center (CEMRC) are also present. Regular removal and cleaning of the nozzles and shrouds minimizes the accumulation of salt and insures a collection of a representative sample of particulates on the filter. The shrouds are photographed as they are removed and staff forwards these photos to the U.S. EPA Region 6 in Dallas, Texas. The Permittees then measure any salt occlusion in the nozzles and forward this information to the Bureau. A nozzle occlusion in excess of 66.7% indicates a failure, with that station deemed unable to collect a representative air sample.

This quarter, preventative maintenance probe pulls this took place every other week This quarter, there were no failures in any of the nozzles. The shroud on Skid A-1 failed twice in September, but the skid was not in service at this time.

In August, staff attended Surveillance S-11-22, WTS NESHAP Reporting. The purpose of this surveillance was to verify the adequacy and implementation of the WTS Quality Assurance Program with respect to sampling, data compilation and reporting; to maintain compliance with CBFO and federal requirements for NESHAP reporting activities. There were no findings or concerns reported.

DIRECT PENETRATING RADIATION PROJECT (WDP73)

Under this Activity ID, Bureau staff monitors the environment at WIPP and in the vicinity for WIPP-sourced or ambient gamma radiation using electret passive ion chambers. The electret passive ion chamber uses the principle of ion pair production resulting from gamma photons

interacting with air molecules to reduce the voltage of a charged Teflon™ disk. Using a predetermined formula, the voltage drop indicates the amount of radiation passing through the chamber. The on-going program reads electret passive ion chambers at the end of each quarter, converts readings into quarterly dose values and submits quarterly results to DOE, WTS and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff collected quarterly DPR measurements around the WIPP area, performed data entry and maintenance of the DPR database and sent data submittals to the DOE for CY 2010 Q-4 and CY 2011 Q-1 and Q-2.

The final report, titled "Direct Penetrating Radiation Monitoring at the Waste Isolation Pilot Pant Conducted by NMED/DOE OB for the CY 2010 Q-4," was submitted to DOE and NMED for public release.

The final data submittal for CY 2011 Q-1, titled "Direct Penetrating Radiation Monitoring at the Waste Isolation Pilot Plant Conducted by NMED/DOE OB for the CY 2011 Q-1," and the draft report for CY 2011 Q-2, titled "Direct Penetrating Radiation Monitoring at the Waste Isolation Pilot Plant Conducted by NMED/DOE OB for the CY 2011 Q-2," were sent to the Bureau Quality Control officer for review prior to release. The draft data submittal for CY 2011 Q-3 is pending. Results appear to be within normal background range.

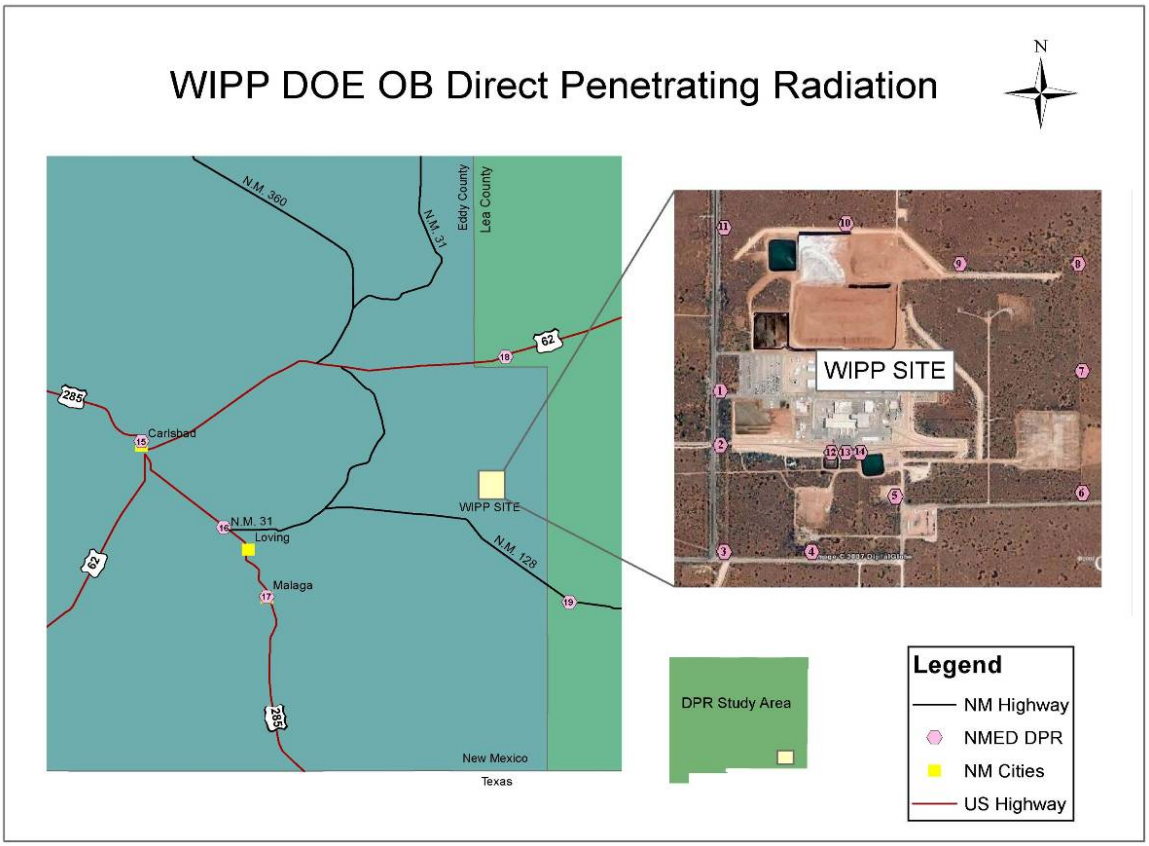

Figure WPD73-1. Direct penetrating radiation monitoring sites are located in the area surrounding WIPP and in remote areas.

Staff participated in an air and direct penetrating radiation (DPR) meeting with Oversight Bureau staff from all locations. Staff is preparing for several updates to the DPR program which will be implemented in the near future, including:

- Applying temperature and pressure correction factors to dose calculations, using data from the HOBO data loggers and GPS units
- Modifying Bureau-wide DPR data collection and dose calculation procedures, as outlined in the new version of Rad Elec's E-PERM® System User's Manual
- Changing DPR data management from an Excel spreadsheet to an Access database to promote Bureau-wide consistency and to ease the eventual transfer of Oversight data into a common cloud-based system
- Procuring and constructing PVC pipe housings for the DPR monitors at WOS
- Adding a new gamma monitoring location at the Southeast Control Site

PARTICULATES LOW-VOLUME AIR PROJECT (WPL74)

Under this Activity ID, Bureau staff conducts continuous air monitoring to evaluate the presence of selected radioactive particles in the ambient air near WIPP. Ambient air is sampled with continuously running, low-volume air samplers drawing air through particulate filters. The filters are analyzed for the presence of americium-241, cesium-137, plutonium-238, plutonium-239/240, and strontium-90. Filter samples are submitted and analyzed quarterly and results are provided for DOE, WTS and the public.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff maintained six low-volume air monitoring stations and collected bi-weekly filter samples.

The WIPP Oversight Section had six (6) low-volume air samplers in operation during FFY 2011 Q-4. Five (5) air samplers are located at the WIPP site. Two (2) sampling locations have co-located samplers; one (1) is for quality purposes. Filters from the other co-located sampler are archived for future use as needed. The sixth sampler is at the Southeast Control Site, which is located at a distance upwind from the WIPP. Bureau staff collected filter samples from the six (6) air sampling stations bi-weekly, or more frequently as dusty conditions warranted.

Samples from CY 2010 Q-4 and CY 2011 Q-1 were sent to a new contract lab for analysis. Results are pending, as is the corrected EDD format requested for the original test sample sent for analysis in April 2010. No reports were submitted for low-volume ambient air sampling during FFY 2011 Q-4.

Staff continually manages the ambient air program's documents, procurement, planning, database and the maintenance of field equipment and sampling sites.

The Bureau is continuing its effort to achieve consistency in data reporting. WOS staff are improving their understanding and functional use of the Bureau-wide Access data system. Data from the new HOBO temperature data loggers will be used in future low-volume air calculations to provide an accurate temperature correction factor.

Staff participated in an air and direct penetrating radiation (DPR) meeting with Oversight Bureau staff from all locations. Agenda items included the eventual transfer of Oversight data into a common cloud-based database and resolving compatibility issues between the existing Access database and the new contract lab EDD.

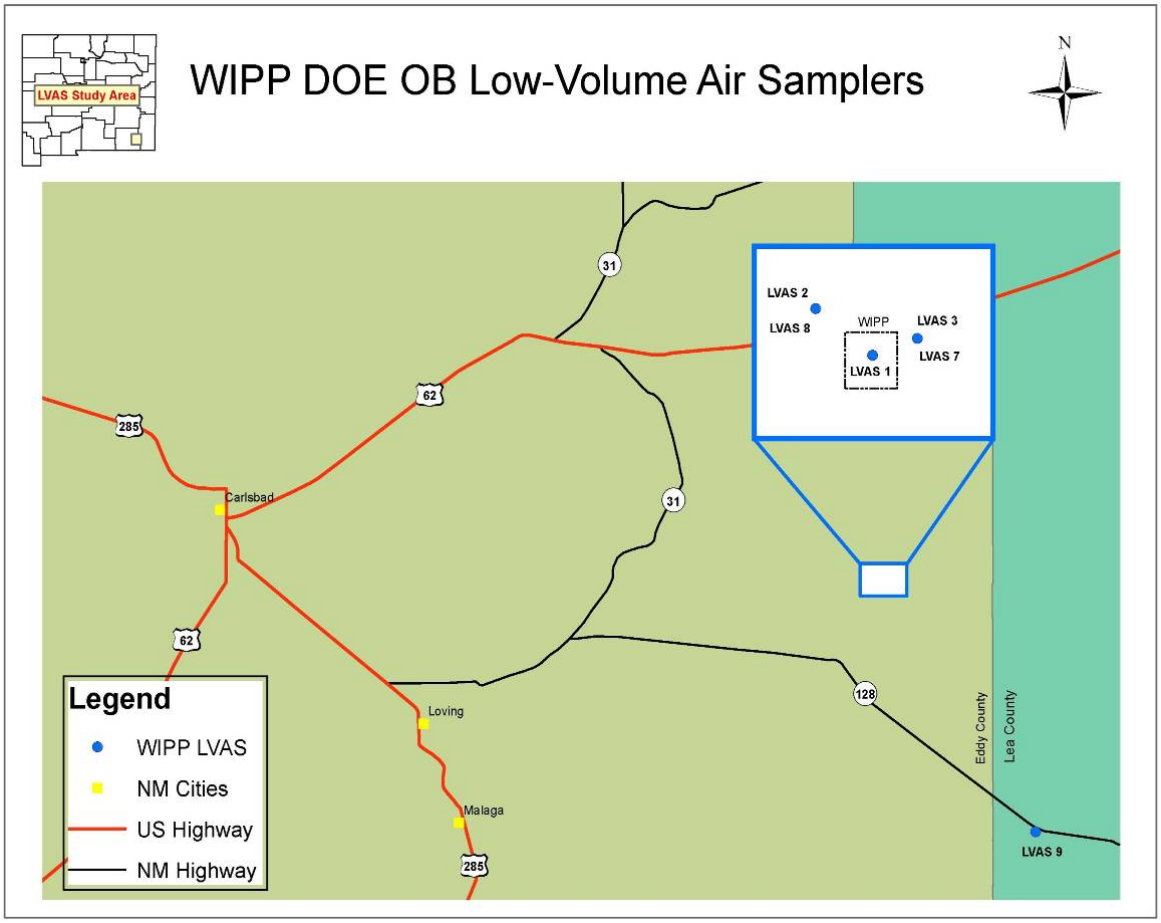

Figure WPL74-1. Low-volume air monitoring stations are located at WIPP and in the vicinity.

GENERAL ER/EM PROJECTS (WGE75)

Under this Activity ID, Bureau staff conducts multi-media environmental sampling on a periodic basis, and provides technical review services to the DOE, WIPP and public interest groups.

Quarterly Summary: During FFY 2011 Q-4, Bureau staff completed soil and sediment sampling and initiated volatile organic compound sampling.

This quarter, staff completed its sampling and analysis plan (SAP) for volatile organic compounds (VOCs). The first VOC samples were collected in September from evaporation pond H-19. Results have been returned and reviewed by the staff. The draft report is pending.

Staff met with the Permittees to develop a sampling plan for collecting sediments from evaporation pond H-19. H-19 is the evaporation pond into which the Permittees dispose of water originating through the exhaust shaft. This sediment will be shipped to the contract lab for lead analysis. H-19 is included for monitoring under Discharge Permit DP–831, and is another opportunity for the Oversight Bureau to work with the Permittees to verify permit compliance.

Staff completed both the terrestrial soil and sediment sampling projects this quarter. Soils were collected from Mills Ranch, WIPP North, WIPP North East and WIPP South, with a field duplicate collected from WIPP North. At each location, independent samples were collected from three depths: 0-2 cm, 2- 5 cm and 5-10 cm. Upon collection, these samples were shipped to an independent contract laboratory for analysis of americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, uranium-234, uranium-235 and uranium-238.

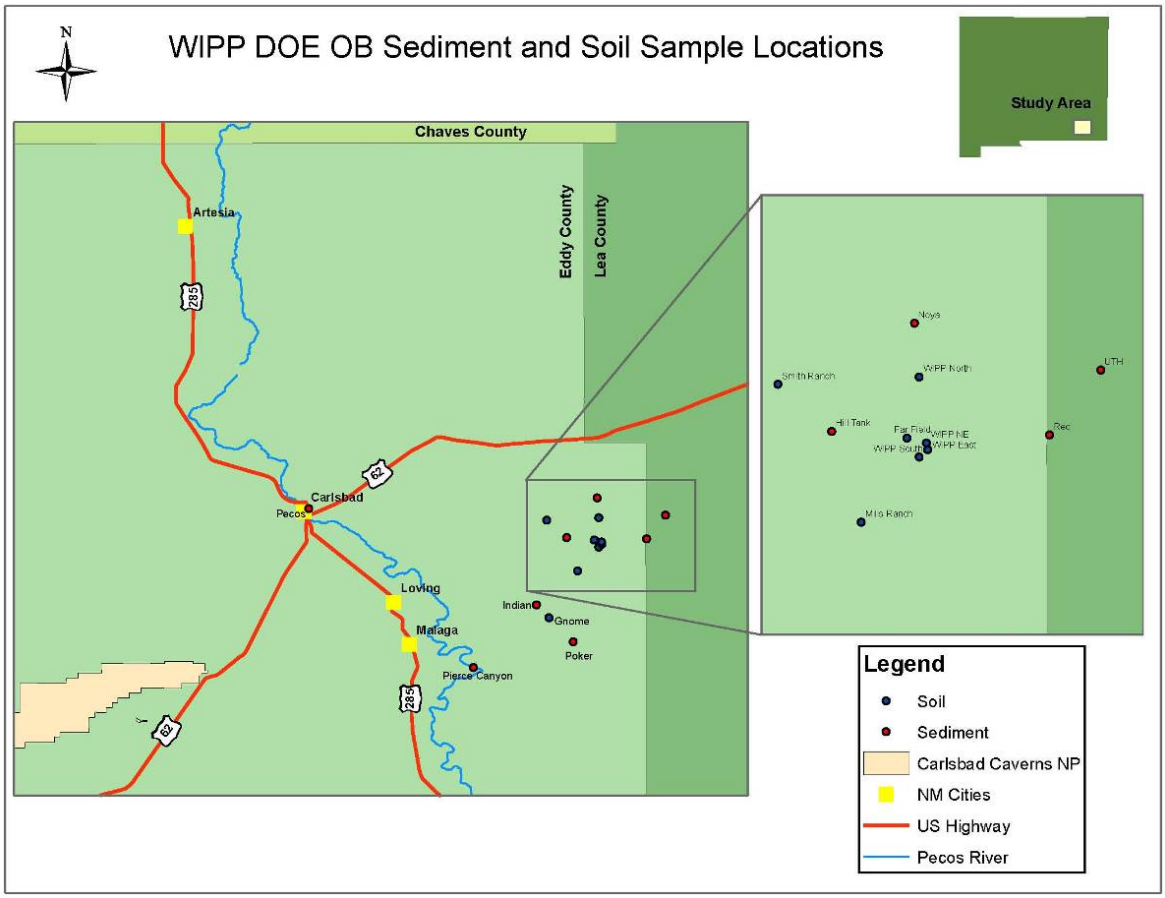

Figure WGE75-1. Terrestrial soils and sediments were sampled at WIPP and the vicinity area and analyzed for select radionuclides.

In the final report, titled "Soil Sampling in the Vicinity of the Waste Isolation Pilot Plant Conducted by NMED/DOE OB, 2011," staff reported plutonium-238 was detected in concentrations above the sample minimum detectable concentration (MDC) in soils collected at Mills Ranch (2- 5 cm and 5-10 cm sampling depths), WIPP North (0-2 cm sampling depth), and WIPP South (2-5 cm sampling depth). Plutonium-238 was not detected in the WIPP North field

duplicate. Plutonium-238 was also detected above the MDC in the laboratory method blank. It should be noted that plutonium-238 has not been previously detected by the Oversight Bureau at any of these locations.

Plutonium-239/240 was found in concentrations above the sample MDC in soils from WIPP North (5-10 cm sampling depth), but not in the corresponding field duplicate and WIPP North East (0-2 cm sampling depth). Previously, this analyte was found in soils collected by the Oversight Bureau from WIPP North East (0-2 cm sampling depth) during its 2009 soils sampling campaign. All results for plutonium were either below or within the average range of plutonium from atmospheric fallout found in surface soils.

Americium-241 was found in concentrations above the sample MDC in soils collected from Mills Ranch (all three sampling depths), WIPP North (2-5 cm and 5-10 cm sampling depths) and the corresponding field duplicates, WIPP North East (0-2 cm and 2-5 cm sampling depths), WIPP South (0-2 cm and 5-10 cm sampling depths). Americium-241 was also detected above the MDC in the laboratory method blank. This analyte was previously found in the 2010 soil sampling campaign by the Oversight Bureau at Mills Ranch (2-5 cm sampling depth) and at WIPP South (2-5 cm sampling depth).

Cesium-137 was found in concentrations above the sampling MDC at Mills Ranch (0-2 cm and 2-5 cm sampling depths). In previous sampling campaigns, this analyte was detected at WIPP South (0-2 cm sampling depth) in 2009 and at Mills Ranch (0-2 cm sampling depth) in 2010. All results for cesium-137 were below the average concentration found in surface soil from atmospheric deposition.

Uranium-234 and U-238 were found in concentrations above the sample MDC in soils collected from all four sites and depths, including the field duplicate. In previous sampling campaigns by the Oversight Bureau, these two analytes have consistently been found at all locations and depths.

Uranium-235 was found in concentrations above the sample MDC at Mills Ranch (5-10 cm sampling depth), and at WIPP North East (5-10 cm sampling depth). In 2009, uranium-235 was found at Mills Ranch (5-10 cm sampling depth) and at WIPP North (0-2 cm sampling depth). No uranium-235 was found during the DOE OB 2010 sampling campaign. All uranium results are within the historical range of reported results around the WIPP site prior to emplacement of any waste (Waste Isolation Pilot Plant 1999 Site Environmental Report) and within the average range of uranium found naturally in soils worldwide.

Strontium-90 was not detected in any of the soil samples.

In the final report, titled "Analytical Results of Sediments Collected from Selected Water Bodies near the WIPP, New Mexico, 2011," staff present results from sediment collected from eight surface water bodies near the WIPP. These include Hill Tank, Indian Tank, Lost Tank, Noya Tank, Pierce Canyon, Poker Tank, Red Tank and Under-the-Hill Tank, with a field duplicate collected at Red Tank. Selected analytes included americium-241, cesium-137, plutonium-238, plutonium-239/240, strontium-90, uranium-234, uranium-235 and uranium-238.

Strontium-90 was detected in activities greater than the sample MDC in sediments collected from Hill Tank, Noya Tank and Under-the-Hill Tank. Historically, it has not been detected around the WIPP site. This analyte was neither detected in previous sediment activities, nor was it detected by the Permittee's lab this year.

Plutonium-238 was detected in sediments collected from Hill Tank, Indian Tank, Noya Tank and Red Tank. However, it was not detected in the field duplicate. As with strontium-90, this analyte was not detected in the previous sampling activities, nor did the Permittee's lab detect it this year. Another analyte, plutonium-239/240, was detected in activities greater than the sample MDC is sediments collected from Indian Tank this year. This analyte was detected in samples collected by the DOE OB from this tank in 2009. These results are within the average range of plutonium levels in surface soil.

The analyte americium-241 was detected in activities greater than the sample MDC in samples collected from Hill Tank, Indian Tank, Lost Tank, Noya Tank, Pierce Canyon and Red Tank. This analyte was not detected in the field duplicate. In 2010, americium-241 was detected in each of these tanks, with the exception of Indian Tank. This analyte was not detected in any of the Permittee's samples this year.

Cesium-137 was not detected in any of the DOE OB sediment samples this year, though it was detected in earlier sampling activities. Cesium-137 was detected in all but one of the Permittee's samples this year.

The analytes uranium-234 and uranium-238 were detected in activities exceeding the sample MDC in all sediment samples this year, as was the case in previous sampling activities. Uranium-235 was also detected at Indian Tank, Poker Tank and the field duplicate from Red Tank this year, and has previously been detected in these tanks during previous sampling campaigns. All measured uranium activities were within the average range of uranium found naturally in soils worldwide.

Staff visited Groundwater Monitoring pad H-11, where a new well is being sunk into the Culebra Dolomite Member of the Rustler Formation.

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