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<i>Title:</i>	Los Alamos 50 Year Site Stewardship Plan: An Overview
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~~Native American Fish and Wildlife Service Meeting Abstract~~

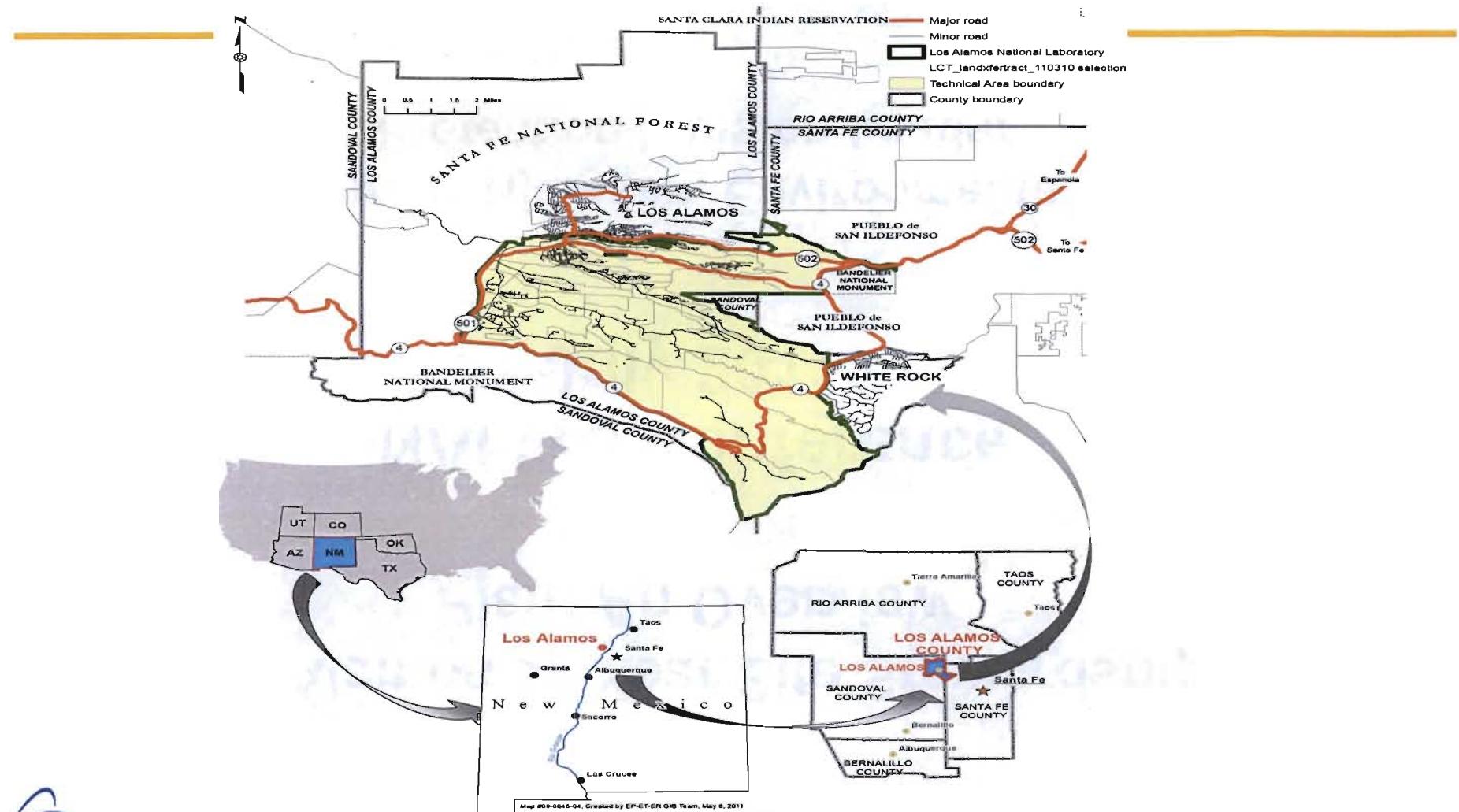
This presentation describes the management and public communication tools developed for the Los Alamos 50 Year Site Stewardship Plan. It is a status update on the development of a set of computer based communication tools that provide access to information on environmental compliance and legacy waste remediation.

Los Alamos 50 Year Site Stewardship Plan: An Overview

**NAFWS Conference
July 2011**

**Dennis Hjeresen, Environmental
Protection Division Leader**

Putting LANL on the Map

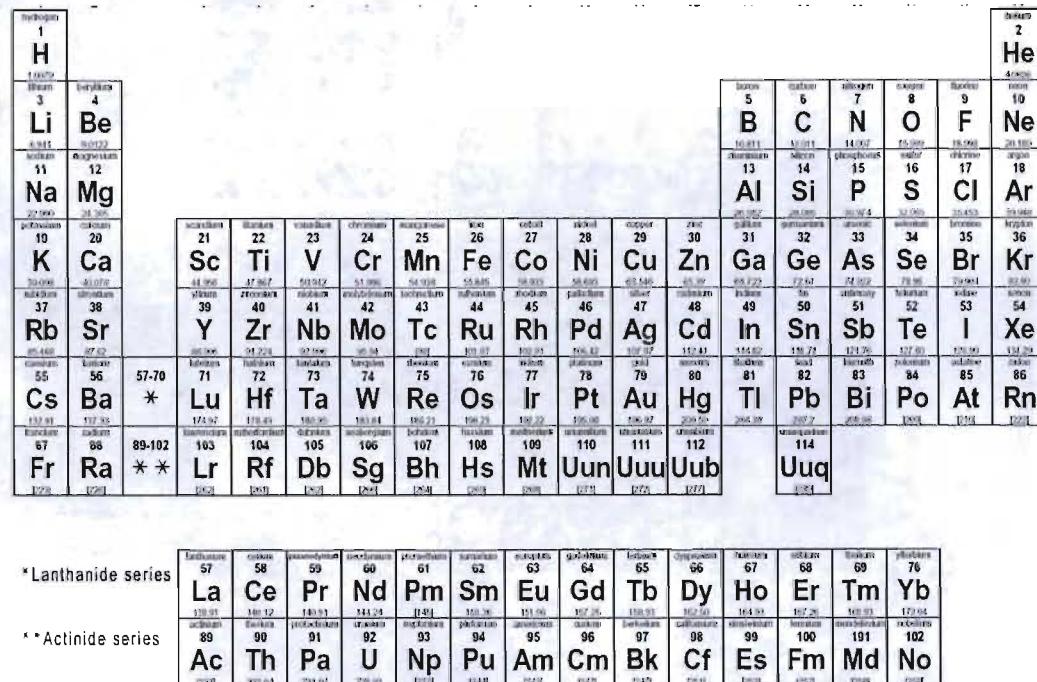


LANL has been assigned critical national missions

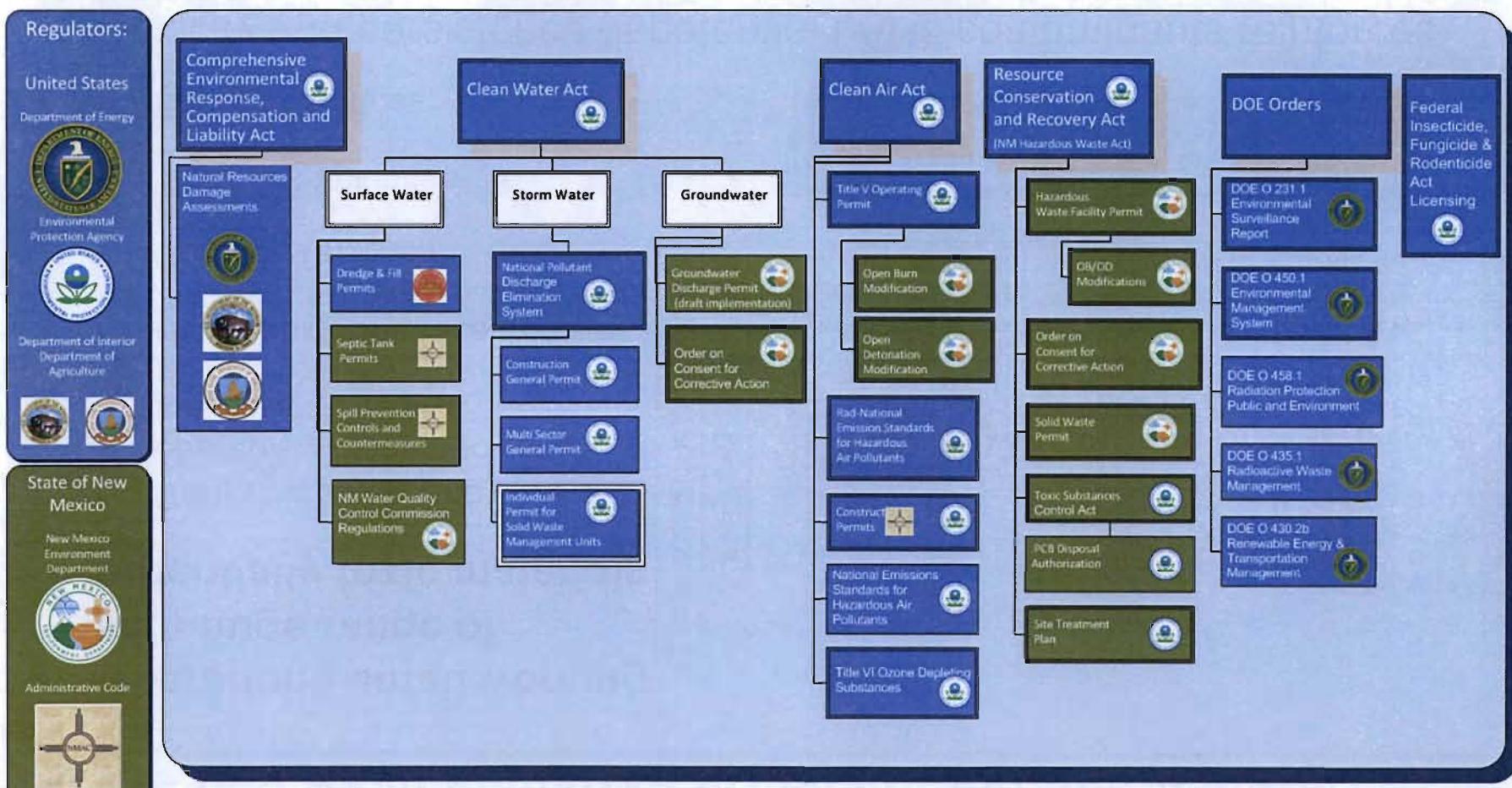
- Operations entail working with huge range of potentially toxic materials

- Certifying safety and operability of the nuclear stockpile
- High-explosives research
- Counter Terrorism
- Materials Sciences
- Energy Sciences

- Toxicity and persistence of potential LANL contaminants reinforces need for long-term management and controls



Laboratory operates under regulatory requirements



What Prompts a 50 Year Plan?

- **Complexity of environmental situation at LANL makes a cohesive picture difficult to paint**
 - Legacy contamination and buildings from two previous site incarnations
 - Complex permitting structure for current operations
 - Long-term stewardship requirements
 - Interactions of site eco-system with surrounding neighbors
 - Multiple programs operating on large site:
 - Cleanup, waste management, compliance all managed separately
- **65 year history shows that if you don't plan you get what results**
- **Process must begin with a system**

50 Year Stewardship Plan - Purpose

- **Provide integrated view of LANL site environmental stewardship**
 - Highlight key geographical, public or project interest areas
- **Metrics: Provide an ongoing scorecard of LANL performance against requirement standards and including trends**
- **Community and regulator outreach**
 - Address community interests
 - Provide technical justification for decisions on regulated actions
- **Align long-term site stewardship goals across programs**

Framing a 50 Year Plan

- **Get management buy-in (DOE made it a contract award term)**
- **Create strong cross-disciplinary/organizational team**
 - Planners, data managers, natural resource managers, outreach pro's, hydrologists, air quality, waste mgmt., GIS and graphics
- **Assume change as a constant factor – don't predict**
- **Start with ISO 14001 certified Environmental Management System**
 - Work assessment
 - Environmental risk assessment
 - Corrective and preventive pathways
 - Set objectives and targets
 - Metrics and independent third-party assessment
 - Establish a strategy and communication framework

Strategy

■ Key Messages:

- Clean up the Past – remove or manage legacy contamination
- Control the Present – Compliance and improvement in current operations
- Create a Sustainable Future – Reduce sources, footprint and manage

■ Defense-in-depth strategy

- Monitoring for change in on-site and off-site for contaminants
- Establishing triggers for actions based on regulatory requirements and environmental risks
- Scientifically based actions -Physical controls, cleanup actions
- Establish management responsibility for key elements

■ Share the data as transparently as possible

- Multiple platforms
- Multiple routes of communicating information

Plan Structure – Two Basic Parts

■ Strategy – Plan Document

- How we manage risk associated with past present and future contaminants
- Monitor and sample to permit/compliance requirements
- Set triggers and thresholds
- Implement corrective actions
- Conduct remediations and/or long term surveillance

■ Communications Tools

- The communication tools will address two levels of communication:
 - SME level management tool, and
 - Public non-technical, issues oriented tool
- It will help the public understand the difference between regulatory requirements and actual public health risk
- Data behind tools will be traceable to the Ph.D. level
- Assessment of cumulative environmental performance is based on clearly defined (quantitative) human health risk metrics



Los Alamos National Laboratory

50 year environmental stewardship plan

Management Application



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Defenses in Depth Around MDA G

Includes sampling of:

Gage Stations

SMA Samplers

Stormwater

BMPs

Wells

Soils

Air

Small Mammals



MDAs	Environmental Surveillance Soils
	Special Studies
	Perimeter, stations
	Regional
SMA Sampler location	Gage Stations
Stormwater Sample Program location	
	Corrective Actions Project
	Env. Surv. Report
	Los Alamos/Pueblo Cyn
	MSGP
	Rio Grande Background Study
	Rain Gage Network
	BMP (shown as fine features)
	Berm
	Channel/Swale
	Check Dam
	BMP (shown as a polygon layer)
	Seed and Mulch
	Permanent Vegetation
	Sediment Trap/Basin
	Gabion
	Cap
	Wells
	Alluvial
	Baseflow
	Intermediate
	Regional



Distribution of SMA Samplers in Los Alamos Canyon

Query of Los Alamos samplers allows managers to view samplers and surface water constituent information allowing for management of the resource. Detailed information is given for the selected

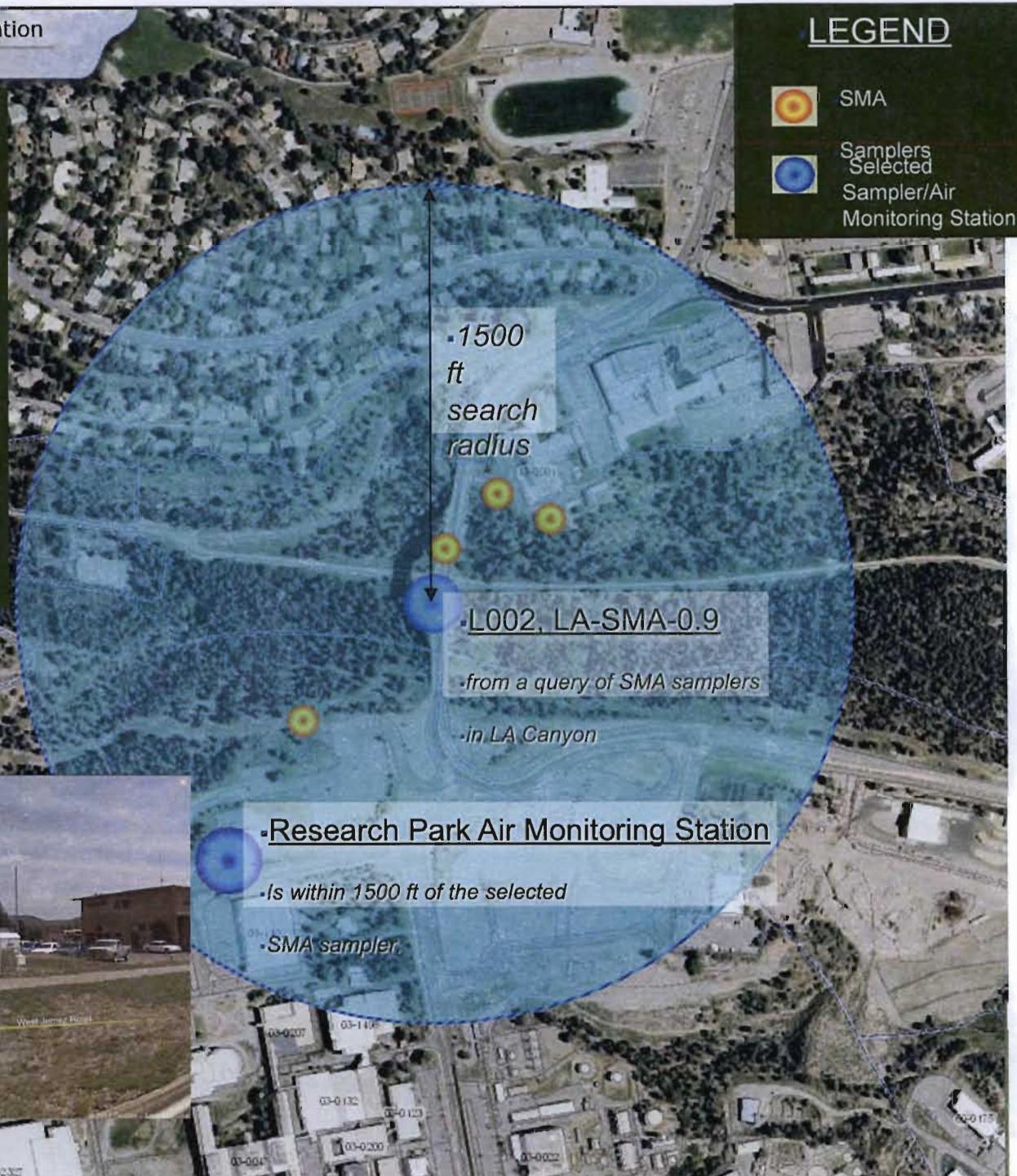
LEGEND

-  SMA
-  Samplers Selected
-  Sampler/Air Monitoring Station

Search for Nearby Features

Managers can examine potential spatial relationships between samples of different media and types within specified distances. This allows data from multiple sources and media types to be integrated.

A SMA sampler was selected and an air monitoring station was identified within a 1500 ft radius





Tools



Full Map



Zoom Out



Imagery

Los Alamos Grade Control Structure with Streetview

- The application allows managers to view sediment sample information above and below grade control structures to assess effectiveness of the control.

Sediment sample locations

Los Alamos
Grade Control
Structure

Streetview

- Defenses in Depth
- Air
- Water
 - Basins, 01-001(f)
 - Stormwater Sample Program location
- Corrective Actions Project
- Env. Surv. Report
- Los Alamos/Pueblo Cyn
- MSGP
- Rio Grande Background Study
- Rain Gage Network
- Stormwater Sample (LABELS)
- SMA Sampler location
- SMA Sampler location (LABELS)
- SMA drainage
- NPDES Outfalls
- Springs
- Wells
- Gage Stations
 - Checkmark
- Weirs
 - (Grade Control Structures)



Los Alamos National Laboratory

50 year environmental stewardship plan

Public Communications



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50 Year Plan Outreach in 3 parts

1. Educate the public
2. Deliver answers
3. Provide additional data

Educate on program management, contaminants and their remediation

Environmental 50-year Plan - What is in the environment at LANL, how does it affect me and what is LANL doing about it? All: Environment: LANL Inside - Mozilla Firefox

File View History Bookmarks Tools Help

Environmental 50-year Plan - What is in the ... +

http://int.lanl.gov/environment/all/SDv1_what.shtml

Air

Biological Resources

Clean-up

Compliance & Monitoring

Cultural Resources

Environmental Risk Reduction

Fire

Waste

Water

EMS recycle training

CONTACTS

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ADEXP
606-2337

Environment, Safety, Health & Quality
ADESHQ
667-4218

Organizational Contacts

Comments?

Environment

Stimulus »

Hot Topics »

What is in the environment at LANL, how does it affect me and what is LANL doing about it?

How can LANL reduce risk from legacy contamination?
Sources → Pathways → Receptors

The diagram shows various environmental pathways leading to receptors (People, plants, animals). Sources include Airborne (inhalation, absorption), Cosmic radiation, Chemical or Radiological (inhalation, ingestion, absorption), Water (ingestion), and Food. Receptors are People, plants, and animals. Arrows indicate the pathways: Airborne to people, cosmic radiation to people, chemical/radiological to people, water to people, and food to people. Radon is also shown as a specific source in the air.

Click Image to enlarge and view the slideshow

IS IT SAFE?

What is in the environment at LANL, how does it affect me, and what is LANL doing about it?

Can I drink the water?

Is it safe to hike on or near Laboratory property?

Can I eat wild game harvested on or near Laboratory property?

Can I garden in or near Laboratory property?

Is it safe to breathe the air and live near Laboratory property?

Is it safe Homepage

DATA & DOCUMENTS

Laboratory Environmental Governing Policy

Air Emissions
Non-Radiative | Radioactive

Environmental GIS Database (SMART)

Environmental Monitoring Data (RACER)

Image Library

Plans & Procedures
by Subject | by Organization

Potential Release Site Database

Public Reading Room
Electronic (EPRR) |

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INSTITUTE FOR ENVIRONMENTAL MANAGEMENT

Answer the most pressing questions:

Can I drink the water?

Environment  Stimulus »  Hot Topics »

Can I drink the water?

[Why?](#) [Where?](#) [How?](#) [Defenses](#) [Future](#) [Facts](#)

Why is protecting the groundwater important?

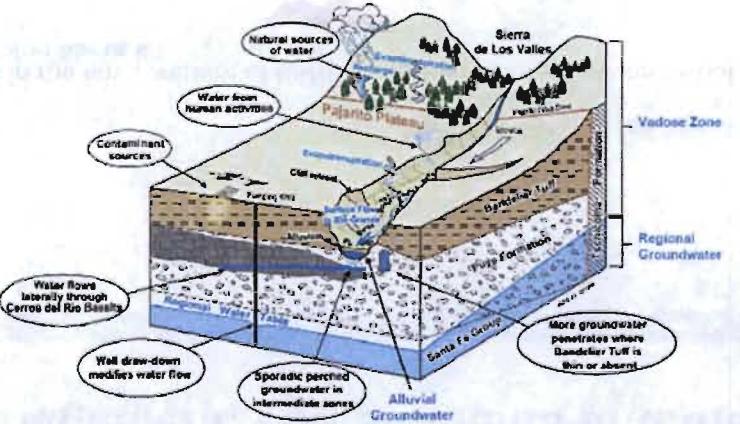
The groundwater in Los Alamos is crucial to the community. It provides most of the drinking water and is an important part of the ecology. Of the three levels of groundwater, alluvial groundwater occupies shallow sediments in canyon bottoms. Below canyons, intermediate depth water sometimes settles in pockets of top of low-permeability rock, which slows the transport to the regional aquifer 600-1200 feet below the surface beneath several layers of unsaturated rock. Only the regional aquifer is a source of drinking water for people.

Drinking Water Quality Reports

Regional municipal drinking water is provided by Los Alamos, Santa Fe and Rio Arriba County. The counties are responsible for monitoring and meeting drinking water standards at the tap.

- [Santa Fe Water Quality report](#)
- [Los Alamos Water Quality report](#)

Water Flow Model on the Pajarito Plateau Groundwater Zones



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- [Air Emissions](#)
- [Non-Radioactive](#) | [Radioactive](#)
- [Environmental GIS Database \(SMART\)](#)
- [Environmental Monitoring Data \(RACER\)](#)
- [Image Library](#)
- [Plans & Procedures](#) by Subject | by Organization
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- [Public Reading Room](#)
- [Electronic \(EPRR\)](#) | [Hard-copy \(PRR\)](#)
- [Publications & Reports](#)
- [Records Library](#)
- [EPRM](#) | [Domino](#)
- [Water Quality Database](#)

PUBLIC NOTICES

- [Review of April 2011 Groundwater Data](#)

Can I breath the air?

Biological Resources
Clean up
Compliance & Monitoring
Cultural Resources
Environmental Risk Reductions
Fire
Waste
Water

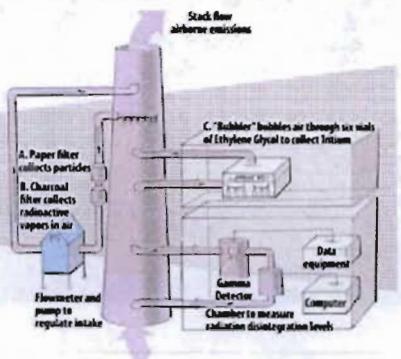
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Stimulus  

Is it safe to breathe the air and live near Laboratory property?

Why? Where? How? Facts

Why is this important?
Many sites on LANL property have exhaust stacks that release air emissions from LANL experimental work. No airborne contamination from LANL surpasses human health nor environmental risk safety standards.



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Where do you monitor?

Biological Resources
Clean up
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Cultural Resources
Environmental Risk Reductions
Fire
Waste
Water

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Is it safe to breathe the air and live near Laboratory property?

Why? Where? How? Facts

Where is it monitored?
Twenty seven stacks were monitored in Los Alamos in 2007, including stacks at the Los Alamos Neutron Science Center and various chemistry stacks.



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Why? Where? How? Facts

How is air monitored?
LANL samples ambient air with a network called AIRNET. There are 60 AIRNET stations on or around Laboratory property and a few far away at regional locations.



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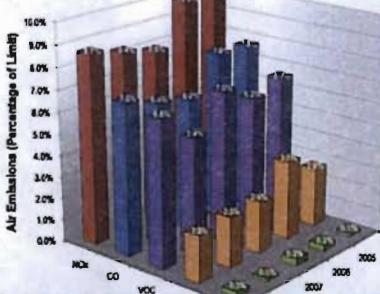
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Stimulus  

Is it safe to breathe the air and live near Laboratory property?

Why? Where? How? Facts

What do the monitoring results show?
In 2009, there were 65 operating AIRNET stations. Annual average radionuclide concentrations at all LANL perimeter stations were less than 1% of the EPA dose limit for the public. At regional locations away from Los Alamos, all air sample measurements were consistent with background levels. As in past years, the AIRNET system detected slightly elevated radionuclides from known areas of contamination. No new or increase airborne radioactivity was detected and there were no unplanned airborne releases.



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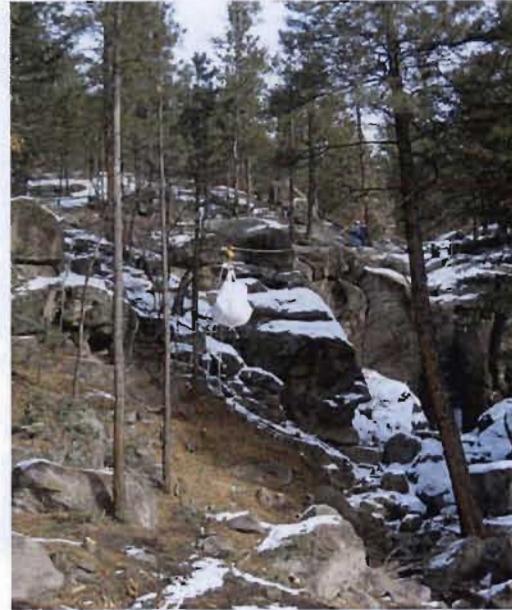
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How does it work?

What is the result?

- Can I hike in the canyon?
- Are there contaminants?
- What are you doing about it?

•PCBs in Upper LA Canyon have been reduced by 99%. Water containment was installed to trap runoff.



Contaminant Source Removal



Defense in depth: After removing contaminants, catchment systems hold rain water for testing

DEMOS ON LINE

- Questions

50 Year Stewardship Plan - Purpose

- **Provide integrated view of LANL site environmental stewardship using key geographical or project interest areas**
- **Metrics: Ongoing scorecard of LANL performance against requirement standards and including trends**
- **Community and regulator outreach**
 - Address community interests
 - Provide technical justification for decisions on regulated actions
- **Align long-term site stewardship goals across programs**

Strategy

- **Defense-in-depth strategy**
 - Monitoring for change
 - Establishing triggers for actions
 - Scientifically based actions
 - Establish management responsibility for key elements
- **Use existing Environmental Management System (ISO14001) to provide a framework for:**
 - Work assessment
 - Environmental risk assessment
 - Corrective and preventive pathways
 - Set objectives and targets
 - Metrics and independent third-party assessment
- **The Plan will serve as the framework for future environmental stewardship activity and for future post-consent order agreements with regulators**

Plan Structure – Two Basic Parts

■ Strategy – Plan Document

- How we manage risk associated with past present and future contaminants
- Monitor and sample to permit/compliance requirements
- Set triggers and thresholds
- Implement corrective actions
- Conduct remediations and/or long term surveillance

■ Communications Tools

- The communication tools will address two levels of communication: SME level management tool, and public non-technical, issues oriented tool
- It will help the public understand the difference between regulatory requirements and actual public health risk
- Data behind tools will be traceable to the Ph.D. level
- Assessment of cumulative environmental performance is based on clearly defined (quantitative) human health risk metrics