



## **AGENDA**

### **Nevada Site Specific Advisory Board Member Orientation**

Desert Research Institute Conference Room  
755 East Flamingo Road, Las Vegas, NV

**Thursday, October 13, 2016**

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# Environmental Management Site-Specific Advisory Board



**Kelly Snyder**  
Deputy Designated Federal Officer  
Nevada Site Specific Advisory Board Orientation  
October 13, 2016



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# What is the Environmental Management Site-Specific Advisory Board? (SSAB)

- Group of volunteers convened by the U.S. Department of Energy's (DOE's) Environmental Management (EM) Program to provide citizen review and feedback to DOE on EM activities throughout the country
- Largest Federally-chartered advisory board in the country
- Made up of eight boards - including the Nevada Site Specific Advisory Board (NSSAB)
- 1994 – EM SSAB Charter approved
  - Requires renewal every two years



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# Where are the Eight Local SSAB Affiliates?



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# Oversight vs. Advisory

- Oversight – monitor progress toward completion according to specified milestones that are often reflected in law and/or agreements
- Advisory – independently create recommendations that address work within the EM purview of concern and interest to the board and the public

The Nevada Site Specific Advisory Board  
is an *advisory* board



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# Scope of the NSSAB

- Groundwater characterization
- Surface soil contamination/remediation
- Facility contamination/remediation
- Low-level waste disposal and transportation
- Environmental Management budget prioritization



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# SSAB Operating Requirements

- Federal Advisory Committee Act
- EM SSAB National Charter
- DOE Guidance
- NSSAB Standard Operating Procedures

Documents available on the NSSAB website at  
**[www.nnss.gov/NSSAB](http://www.nnss.gov/NSSAB)** under *References*



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# Nevada Site Specific Advisory Board



**Kelly Snyder**, Deputy Designated Federal Officer  
and **Barbara Ulmer**, NSSAB Administrator  
Nevada Site Specific Advisory Board Orientation  
October 13, 2016



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# Who Makes Up the Nevada Site Specific Advisory Board (NSSAB)?

- Members – represent the community
- Liaisons – represent organizations
- Student Intern
- Staff



*Did you know the NSSAB used to be known as the Community Advisory Board for Nevada Test Site Programs?*



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# Board Members

- Represent the community
- Appointed by Department of Energy's (DOE) Assistant Secretary for Environmental Management (EM)
- Serve two-year term which can be renewed by DOE two times (six year limit)
- Strive for 15-20 members



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# Board Members

(continued)

- Responsibilities:
  - Attend and participate in regular Full Board meetings and training
  - Review EM issues within NSSAB's purview
  - Submit timely recommendations to DOE
  - Respond to NSSAB office communication in a timely manner



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# Chair and Vice Chair

- Chair and Vice Chair
  - Elected for one-year terms beginning October 1
  - Support Board in balanced and unbiased manner
  - Attend EM SSAB biannual meetings and participate in bimonthly EM SSAB conference calls



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# Chair and Vice Chair

(continued)

- Chair Responsibilities
  - Preside over Full Board meetings
  - Certify Full Board minutes within 45 days
  - Represent the NSSAB during media opportunities
  - Approve any extreme activities
- Vice Chair Responsibilities
  - Serve as Chair in his/her absence



# Liaisons

- Represent their parent organization
- Non-voting positions
  - Organizations are appointed by the DOE
  - Organizations are responsible for determining who will represent them on the Board
- Current representation:
  - Clark County (Phil Klevorick)
  - Consolidated Group of Tribes and Organizations (Richard Arnold)



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# Liaisons

(continued)

- Esmeralda County Commission (Ralph Keyes)
- Nye County Commission (Frank Carbone/Dan Schinhofen)
- Nye County Emergency Management (Vance Payne)
- Nye County Nuclear Waste Repository Project Office (John Klenke)
- State of Nevada Division of Environmental Protection (Chris Andres)
- U.S. National Park Service (Jonathan Penman-Brotzman)



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# Liaisons

(continued)

- Responsibilities:
  - Define and communicate clearly to the NSSAB the respective decision-making processes of the entities they represent
  - Provide timely access to information pertinent to EM and associated environmental issues and related decision-making
  - Inform the NSSAB in a timely and proactive manner of entity processes, programs, projects, and activities pertinent to the Board's mission and purpose



# Liaisons

(continued)

- Provide a short, verbal report on parent organizations involvement in EM activities at each Full Board meeting
  - If liaison is unable to attend, a written report will be submitted to the NSSAB Office via email two days prior to the Full Board meeting



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# Student Intern

- Anthony Graham, University of Las Vegas, Nevada (UNLV) graduate student
- Memo of Understanding (MOU) signed May 2016 by UNLV advisor, intern and DDFO
- MOU states that the student intern will:
  - Log 120 hours of on-site work
  - Attend NSSAB meetings and provide insights as appropriate on the opinions of the University and youth community in Las Vegas



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# Student Intern (continued)

- Read three books and five scholarly articles related to the content of the internship
- Be responsible for preparing an informational bulletin semi-monthly on the activities of the NSSAB corresponding with meetings and provide to interested students and departments at UNLV
- Complete assignments designated by NSSAB Oversight Manager
- Present actions of the NSSAB and issues confronting it to the student body multiple times to increase awareness of the NSSAB within the University community



# Deputy Designated Federal Officer (DDFO)

## *Kelly Snyder*

- Ensures the Board has opportunities for providing input to DOE
- Provides timely information to the Board relative to DOE and EM initiatives, decisions, and processes
- Provides suggestions to the Board regarding EM activities on which its input would be useful

\*Rob Boehlecke is alternate DDFO



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# Deputy Designated Federal Officer (DDFO)

(continued)

- Reviews Board input and ensures timely response
- Ensures that community and Board concerns related to EM are addressed
- Provides for adequate funding and staff support
- Attends all NSSAB meetings
- Approves meeting agenda and minutes
- Can adjourn meetings if it is in the public interest



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# Administrator

## *Barbara Ulmer*

- Arranges/facilitates meetings; prepares written summaries
- Provides day-to-day communications
- Coordinates travel activities
- Maintains complete files of NSSAB activities
- Works with NSSAB to finalize/format written recommendations



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# Member Attendance

- May not miss two consecutive Full Board meetings without an excused absence
- Attendance is required at a minimum of 50% of regular meetings in any one-year period
- To be considered “present,” must attend two-thirds of a meeting



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# Conflict of Interest

- Board members are prohibited from participating as an NSSAB member in any matter in which they have financial interest
- If aware of a conflict, Board members must refrain from discussions and recommendations
- Members must report actual/potential Conflict of Interest to the DDFO in a timely manner



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# Recommendations

- Meetings are held to discuss information and perspectives and develop draft recommendations
- Draft recommendation must be thoroughly reviewed and approved by majority of the Full Board
  - Minority Report can be included if majority of Board agrees it should be contained in the recommendation
- Approved recommendation signed by the Chair and submitted to DOE within 15 days



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# Standard Operating Procedures

- May not knowingly receive gifts or gratuities from persons having business with DOE EM, except if:
  - Less than \$20 (\$50 total per year)
  - Motivated by personal friendship
  - Result of outside activities and not enhanced by Board membership



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# Standard Operating Procedures

(continued)

- Voting
  - Meeting requires a quorum (at least 51% of voting members) for decision making
- Media
  - Only the Chair or Chair appointee may represent the Board with the press/media



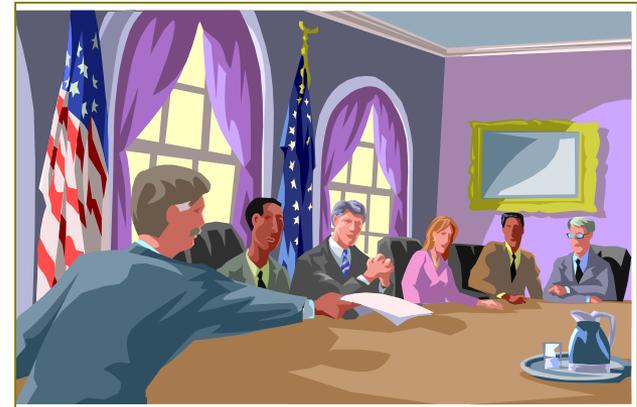
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# NSSAB Meetings

- The Board will meet as needed with length of meeting determined by agenda
- The DDFO, or appointed DOE representative, must be present at all NSSAB meetings
- Meetings follow agenda and conducted by the Chair with facilitation by the Administrator
- Voting is conducted according to Robert's Rules of Order



# NSSAB Meetings

(continued)

- Time and Location
  - Full Board typically meets the third Wednesday of selected months at 4 p.m. for two to three hours
  - Time and location must be accessible to the general public
  - While typically held in the Las Vegas area, meetings are also held in other southern Nevada communities



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# NSSAB Meetings

(continued)

- Notices
  - 72-Hour Congressional and Federal Register Notices are required for all meetings where a quorum will potentially be present
  - Members and liaisons are sent notice of meeting with request for attendance response and draft agenda approximately a week prior to meeting
  - Newspaper advertising – Las Vegas Review Journal, Mirror, and Pahrump Valley Times
  - News release (distributed to ~40 media outlets)
  - EM News Flash (distributed to nearly 3,600 subscribers)
  - Social media (i.e., Facebook, Twitter, etc.)



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# NSSAB Meetings

(continued)

- Agendas
  - Prepared by Chair, Vice Chair, DDFO, and Administrator
  - Provided to members the week prior to the meeting
  - Posted to the website
  - If available, items for vote are sent to the Board for review prior to the meeting



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# NSSAB Meetings

(continued)

- Minutes
  - Prepared by Administrator
  - Provided to members and DDFO for review
  - Full Board minutes certified by Chair and DDFO and submitted to EM Headquarters within 45 days
  - Posted to the website



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# NSSAB Meetings

(continued)

- Public Participation
  - Meetings are open to the public
  - A section of the meeting space is available for public seating
  - Public comment is included in the agenda for oral comments
  - Written comments are always accepted
  - NSSAB/DOE does not respond to public comments (may choose to address comments during applicable agenda item)



# NSSAB Meetings

(continued)

- Alternative meetings
  - On-line meetings have been and are continuing to be pursued
- Refreshments
  - Any refreshments are self-funded by members/ liaisons
- Meetings at the Nevada Support Facility require:
  - Badging at the DOE Badge Office
  - Vehicle inspection at facility entry gate
  - No prohibited articles



# Work Plan

- Work Plan developed at September Full Board meeting
- Outlines all activities the Board will participate in during the fiscal year
- Ensures Board members and DOE understand each others' expectations
- Items suggested by DOE and NSSAB members in accordance with guidance from EM Assistant Secretary
- NSSAB selects work plan items and requests approval from DOE prior to October 1
- Modifications may be requested during the fiscal year with DOE approval



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# Committees

- Membership is only standing committee
- Ad hoc committees are formed as needed in accordance with Work Plan requirements
- Committee Chairs for the fiscal year are elected by the Committee members
- Discussions held during committees that result in a draft recommendation must be rediscussed during a Full Board meeting to ensure all members have had the opportunity to fully understand all aspects of the recommendation



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# Administrative

- NSSAB office hours are Monday through Thursday, 7:30 a.m. to 4:30 p.m.
- Majority of NSSAB communication conducted via e-mail [NSSAB@nnsa.doe.gov](mailto:NSSAB@nnsa.doe.gov) or phone 702-630-0522
- Report changes regarding contact information and work status to the NSSAB office



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# Travel Overview

- Authorized Travel
  - NSSAB meeting notices sent via e-mail
  - NSSAB members *must* send a “**reply e-mail**” which will serve as your “Travel Request”
  - Members cannot receive reimbursement unless a Travel Request is submitted and DOE approval is given in advance of travel



# Travel Overview

(continued)

- Reimbursement is paid through direct deposit
- No checks are generated or mailed
- Emergency contact information is required



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# Travel Overview

(continued)

- NSSAB members must follow Federal Travel Guidelines
- NSSAB members responsible for payment of travel expenses with DOE reimbursement after travel completion
- Lodging and per diem reimbursement are dependent upon location and time of meeting



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# Travel Overview

(continued)

- Travel reimbursement is based on approved federal per diem rates for hotel and food/incidentals
  - Rates vary from city to city
  - Per diem is daily allowance for food and incidentals
  - Rates may change each fiscal year

Las Vegas	Hotel	Full-Day Per Diem	Partial-Day Per Diem
Oct. 1, 2016 – Sep. 30, 2017	\$102	\$ 64	\$ 48



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# Travel Overview

(continued)

- Mileage
  - Roundtrip mileage is always calculated from your *residence* to the *meeting location* and *back*
  - Mileage reimbursement is offered if meeting location is more than 30 miles one-way from residence
  - Reimbursed at \$0.54 per mile (*current rate*)



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# Travel Overview

(continued)

- Receipts
  - E-mail or fax (702-295-2025) all receipts to the NSSAB office
  - Do not submit receipts for food (this is covered by your per diem, if applicable)
  - Vouchers cannot be processed without receipts and traveler's approval
- Payment
  - Made via direct deposit
  - Usually within one week of voucher submittal



# Travel Overview

(continued)

- Nevada Travel
  - NSSAB members are responsible for own hotel reservations
  - Government room rate must be requested (per guidelines)



# Travel Overview

(continued)



- Out-of-State Travel
  - All arrangements (air, hotel, transportation) for out-of-state NSSAB meetings are made by the NSSAB Office
  - Most cities have a government contracted airline and NSSAB members must travel via these carriers



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# NSSAB Website

[www.nnss.gov/NSSAB](http://www.nnss.gov/NSSAB)



## Nevada Site Specific Advisory Board

...citizens working together on environmental issues

Home ▶ Recommendations ▶ Meetings/Minutes ▶ Work Plan ▶ EM Monthly Reports ▶ Membership ▶ Participants ▶ References

The next NSSAB Full Board meeting is November 9, 2016

### About the NSSAB

The Nevada Site Specific Advisory Board is a part of the Environmental Management Site-Specific Advisory Board, a stakeholder board that provides the Assistant Secretary for Environmental Management and designees with independent advice, information, and recommendations on issues affecting the EM program at various sites. Among those issues are clean-up standards and environmental restoration; waste management and disposition; stabilization and disposition of non-stockpile nuclear materials; excess facilities; future land use and long-term stewardship; risk assessment and management, and clean-up science and technology activities.

The board's membership is carefully considered to reflect a full diversity of viewpoints in the affected community and region.

Meetings are open to the public and participation is encouraged.

### Who We Are

The NSSAB is comprised of volunteer members who represent Nevada stakeholders by reviewing and commenting on environmental restoration (i.e. groundwater contamination, historic nuclear test area clean-up, etc.) and waste management (i.e. radioactive waste transportation and disposal) activities at the Nevada National Security Site, formerly known as the Nevada Test Site. The members bring a variety of perspectives to the Board on issues of significant concern to the region. Members also offer scientific and technical expertise to the Board, while also including rural interests, environmental concerns, and local government viewpoints.

Liaisons, who are not voting members, participate in NSSAB deliberations and contribute their institutional views. Liaisons represent: Clark County, Consolidated Group of Tribes and Organizations, Esmeralda County Commission, Nye County Commission, Nye County Emergency Management, Nye County Nuclear Waste Repository Project Office, State of Nevada, and U.S. National Park Service.



*NSSAB participates in EM SSAB National Chairs' Meetings*



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# Environmental Management Complex Overview



**Scott Wade**

**Assistant Manager for Environmental Management**

U.S. Department of Energy, Nevada Field Office

Nevada Site Specific Advisory Board Orientation

October 13, 2016



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# History of Environmental Management (EM)

- The U.S. nuclear weapons complex contaminated waste, water, soil, and structures that will remain radioactive for thousands of years
- U.S. Department of Energy (DOE) created the Office of EM in 1989 to clean-up legacy contamination resulting from this nuclear research and testing



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# National EM Program Responsibility

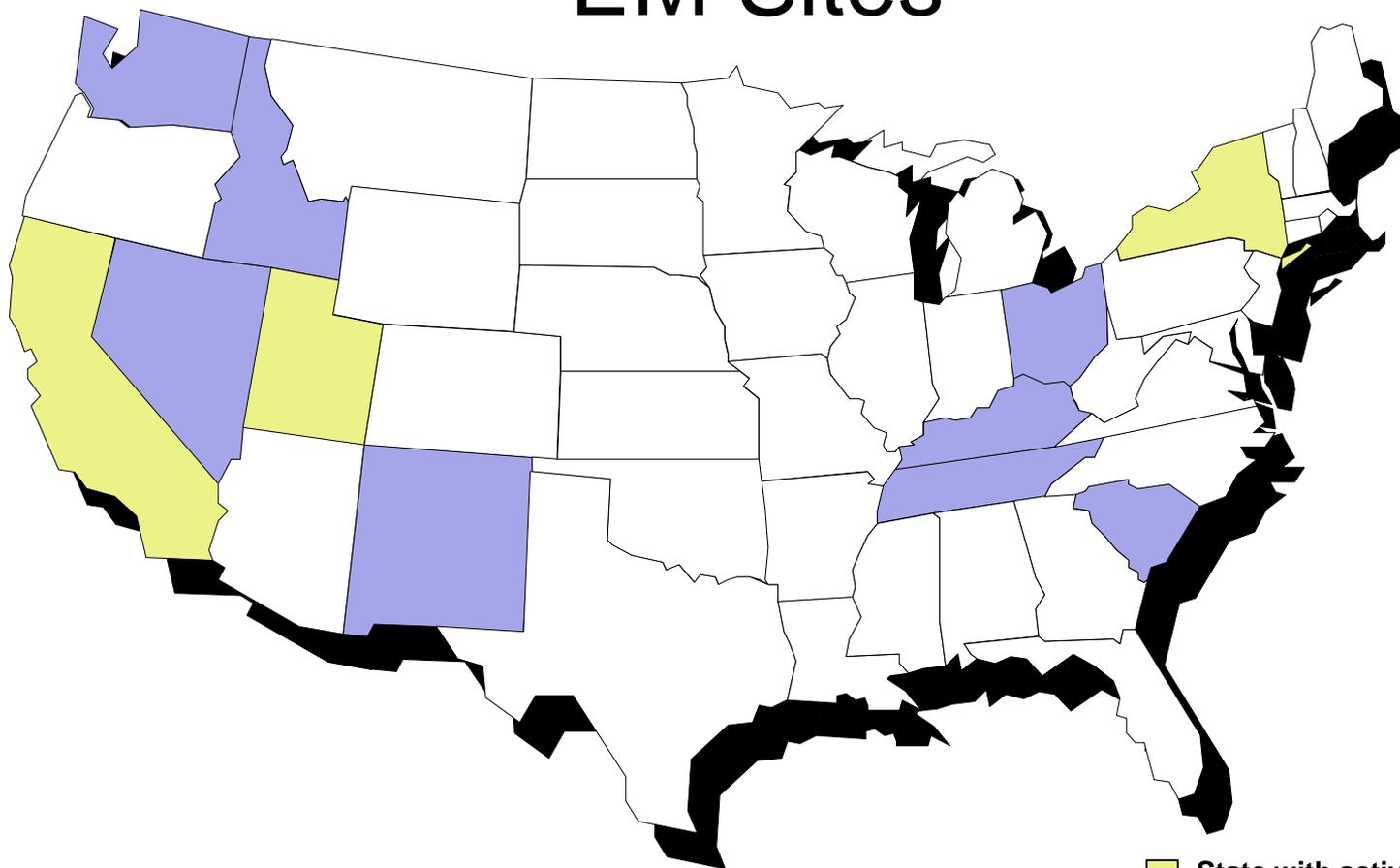
- EM is responsible for:
  - Remediating extensive surface and groundwater contamination
  - Safely disposing large volumes of nuclear waste
  - Decontaminating and decommissioning contaminated facilities no longer needed



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# EM Sites



-  State with active EM site
-  State with active EM site and Site-Specific Advisory Board



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# Hanford (Washington)



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# Hanford (Washington)

(continued)

- Located in southeastern Washington State; Columbia River runs through the northern portion of the site; Richland is located on the southern border
- Established in 1943 for plutonium production, chemical processing, and research and development of nuclear weapons
- Current mission is to manage facilities and inventories of special materials, remediate contamination, and support national research efforts in environmental and other sciences



Decontaminating and Decommissioning  
Hanford Plutonium Finishing Plant



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# Idaho



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# Idaho

(continued)

- Located in southeastern Idaho desert near northwest end of the Snake River Plain, 25 miles east of Idaho Falls
- Established in 1949 – missions included designing and testing nuclear reactors and reprocessing spent nuclear fuel
- Current missions include nuclear energy research, national security, and EM



Tank removed at the Idaho Test Area North will be treated and prepared for disposal



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# Los Alamos (New Mexico)



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# Los Alamos (New Mexico)

(continued)

- Located in north-central New Mexico, approximately 60 miles northeast of Albuquerque and 25 miles northwest of Santa Fe
- Established in 1943 as Site Y of the Manhattan Project for a single purpose: to design and build an atomic bomb
- Current missions includes multi-program national laboratory with research and development programs in broad range of scientific and technical fields; and environmental risk reduction relative to current activity as well as remediation of legacy waste



Large industrial vacuum system being used in the Canyon Floor of the Los Alamos "Acid Canyon" to remove high volumes of contaminated soil



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# Nevada National Security Site (NNSS)

- Located in the southern Nevada desert 65 miles northwest of Las Vegas
- Established in 1950 to conduct field testing of nuclear explosives
  - 100 total atmospheric tests (until 1962)
  - 828 total underground tests (until 1992)
- Current missions are National Security and EM



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# Oak Ridge Reservation (Tennessee)



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# Oak Ridge Reservation (Tennessee)

(continued)

- Located in east Tennessee; entirely within the city limits of Oak Ridge; and bordering the Clinch River
- “Secret City” established in early 1940s by the U.S. Army Corps of Engineers for the Manhattan Project to produce enriched uranium
- Current missions include energy and computing technologies and science research (Oak Ridge National Laboratory); national security (Y-12 National Security Complex); and EM of legacy contamination and waste



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# Paducah Gaseous Diffusion Plant (Kentucky)



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# Paducah Gaseous Diffusion Plant (Kentucky)

(continued)

- Located in rural western Kentucky, 15 miles from the city of Paducah near the Ohio and Mississippi rivers; sister-site to the Portsmouth plant in Piketon, Ohio
- Established in 1952 to produce enriched uranium for the Federal Government and commercial nuclear power and later for low-enriched uranium production
- Current missions include environmental cleanup, waste management, depleted uranium conversion, deactivation and decommissioning, re-industrialization, and long-term stewardship



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# Portsmouth Gaseous Diffusion Plant (Ohio)



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# Portsmouth Gaseous Diffusion Plant (Ohio)

(continued)

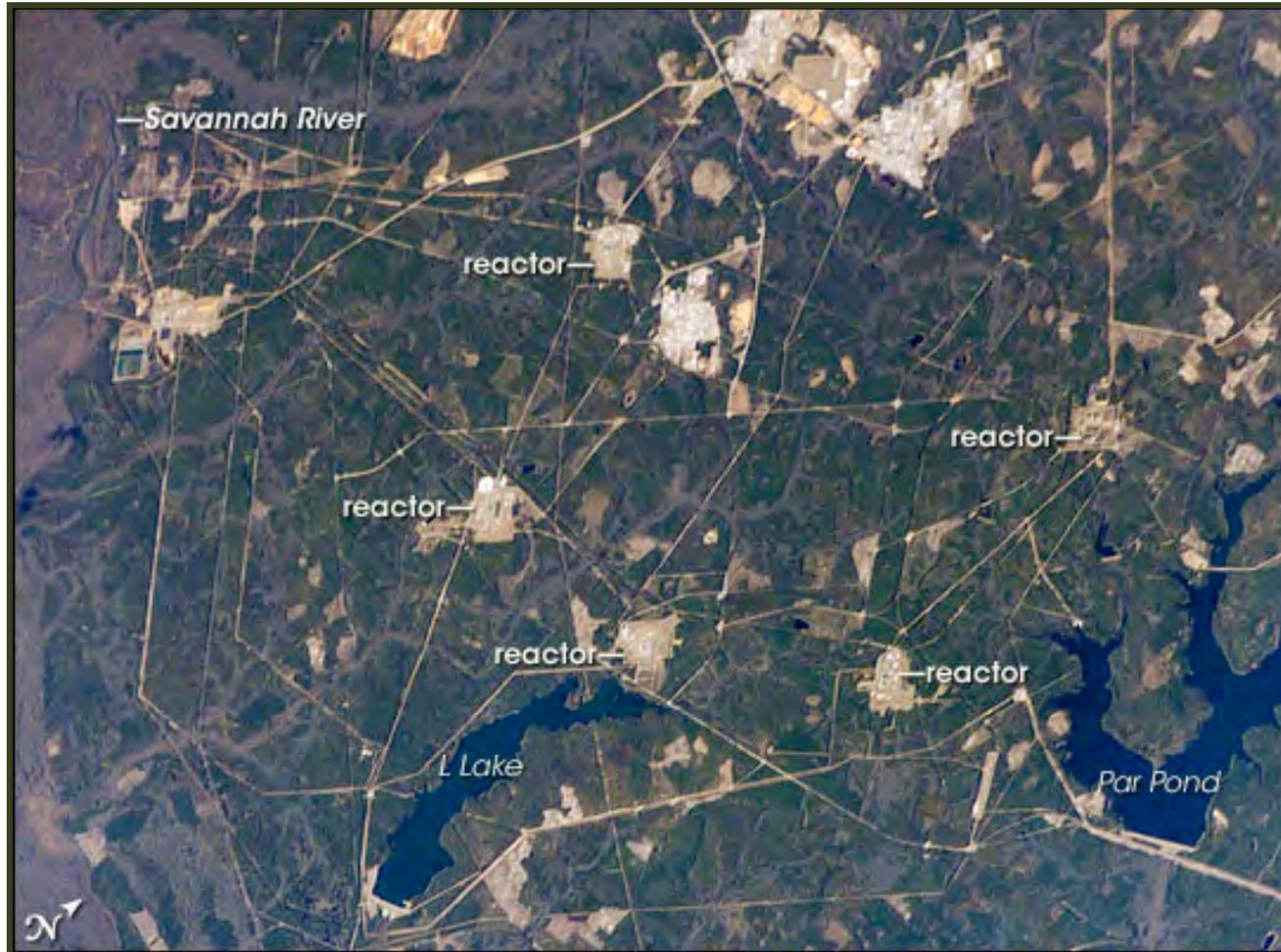
- Located in Piketon, Ohio along the Scioto River
- Established in 1954 to support expansion of highly-enriched uranium production for military reactors and nuclear weapons and later for low-enriched uranium production for nuclear power plants
- Current missions include decontamination and decommissioning of the former gaseous diffusion plant, conversion of the site's depleted uranium hexafluoride inventory, and other soil and groundwater remediation efforts



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# Savannah River Site (South Carolina)



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# Savannah River Site (South Carolina)

## (continued)

- Located in South Carolina on the Savannah River which borders Georgia; close to Augusta, Georgia, and Aiken, South Carolina
- Established in the early 1950s to produce basic materials used to fabricate nuclear weapons, primarily tritium and plutonium-239
- SRS missions remain vital to the Nation
  - Support the Environmental Management priority to safely and efficiently clean up the environmental legacy, reduce risk and protect public health and the environment (Defense Waste Processing Facility)
  - Support National Nuclear Security Administration missions with key role in meeting nonproliferation objectives (MOX, H Canyon)
  - Support Office of Nuclear Energy goals to provide clean, reliable energy sources, reduce greenhouse gases and enhance national security (Biomass Cogeneration Facility)
  - Savannah River National Laboratory (Putting Science to Work – Underpinning of Site missions)



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# EM Sites Working Together

- Sites offering essential complex-wide cleanup resources
  - Idaho National Laboratory – Central Characterization Facility for transuranic waste
  - NNSS – low-level and mixed low-level waste disposal
  - Oak Ridge – mixed waste treatment
  - Savannah River – transuranic waste consolidation in preparation for disposal at the Waste Isolation Pilot Plant
  - Waste Isolation Pilot Plant – transuranic/mixed transuranic waste disposal



Fernald Before Cleanup  
Began in 1991



Fernald After Cleanup  
Completed in 2006



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# Environmental Management in Nevada



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Nevada Site Specific Advisory Board Orientation  
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# Federal Responsibilities

- Two federal entities responsible for activities
  - National Nuclear Security Administration is responsible for national security mission and overarching management of the Nevada National Security Site (NNSS) (not within the NSSAB's purview)
  - The Department of Energy's (DOE's), Office of Environmental Management (EM) is responsible for remediating historic locations on the NNSS and portions of the Nevada Test and Training Range (NTTR) (within the NSSAB's purview)



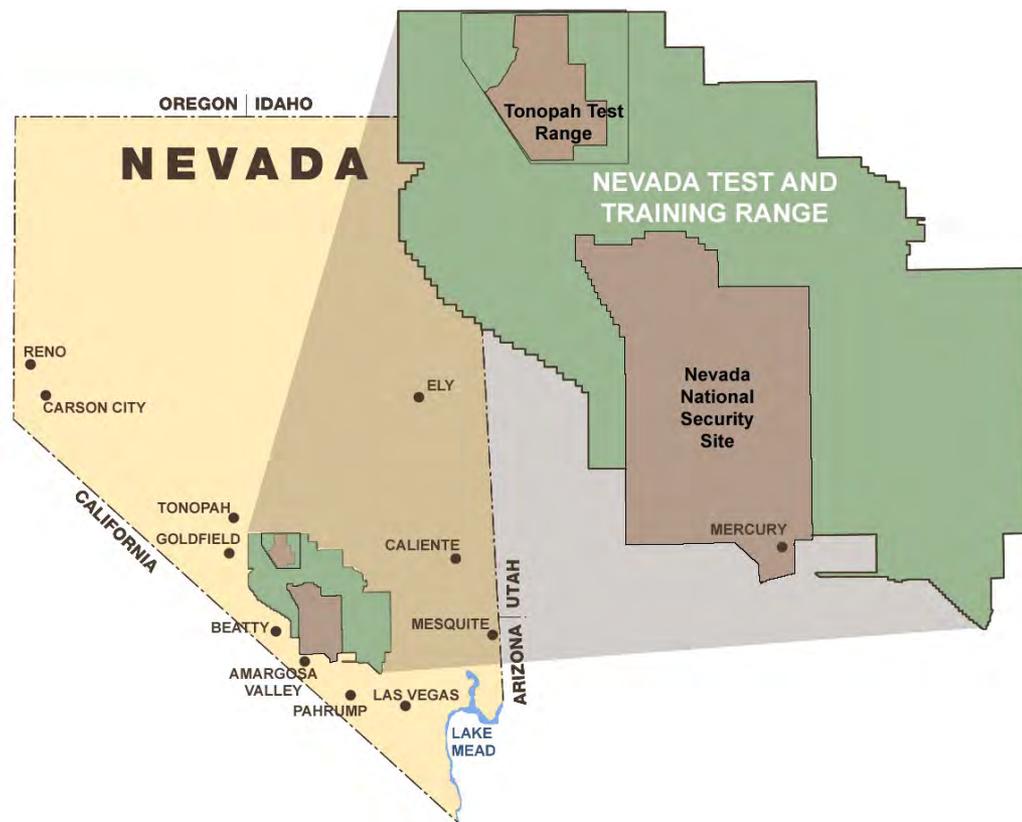
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# The NNSS and NTTR

- Approximately 1,360 square miles of federally owned and controlled land – surrounded by approximately 4,500 square miles of federally owned and controlled land
  - Tonopah Test Range is approximately 275 square miles on the NTTR
- Located 65 miles northwest of Las Vegas



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# EM Activities

- Underground Test Area
- Industrial Sites
- Soils



- Low-Level Waste Transportation and Disposal

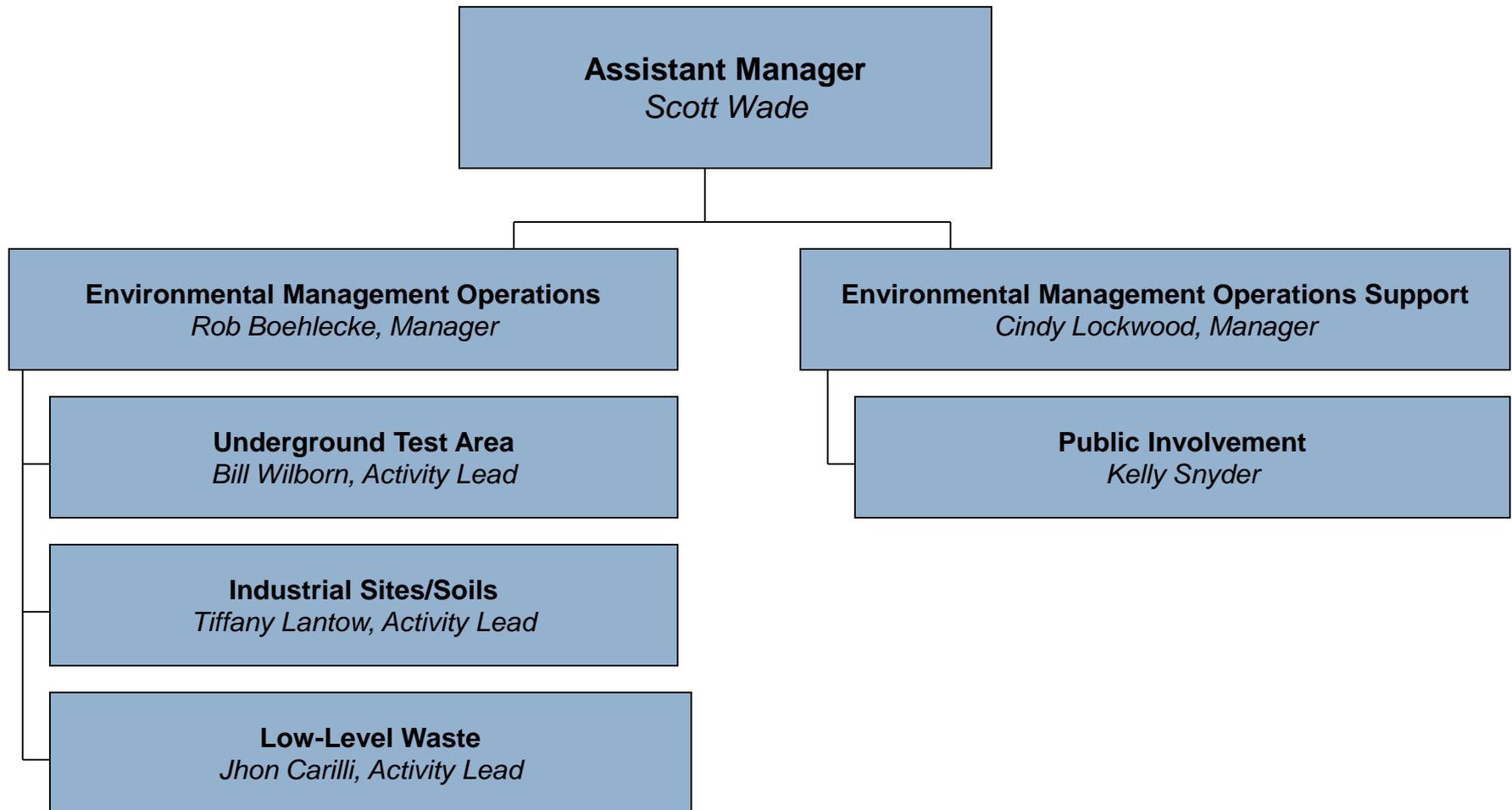


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# EM Personnel Leads



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# EM Baseline for Fiscal Year (FY) 2017

Scope	Baseline (\$K)
Soils	\$9,950
Underground Test Area	\$18,559
Industrial Sites	\$675
Low-Level Waste	\$26,257
Program Management	\$8,382
Agreements in Principle and Grants	\$3,778
<b>EM Nevada Field Office Total</b>	<b>\$67,601</b>



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# State of Nevada's Role

- The State of Nevada's Division of Environmental Protection provides programmatic and regulatory oversight of Environmental Restoration and Waste Management activities conducted by the DOE's EM in the State of Nevada
- Participates as NSSAB liaison



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# Key Documents

- Federal Facilities Agreement and Consent Order (FFACO)
- Federal Facility Compliance Act-Consent Order (FFCA Act-CO)



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# Soils Overview



**Tiffany Lantow**

Soils/Industrial Sites Activity Lead  
U.S. Department of Energy, Nevada Field Office  
Nevada Site Specific Advisory Board Orientation  
October 13, 2016



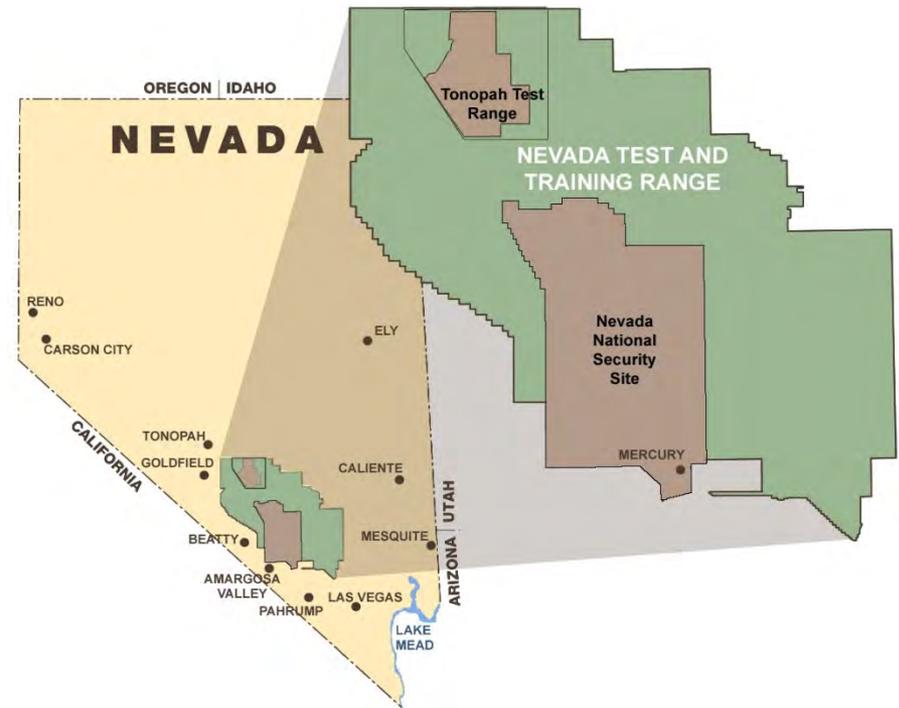
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# Background

Atmospheric nuclear weapons tests, nuclear safety experiments, and evaluation tests for peaceful uses of nuclear explosives conducted at the Nevada National Security Site and Nevada Test and Training Range (operated by the U.S. Air Force) resulted in the radioactive contamination of surface and near surface soils



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# Background

(continued)

- The Soils activity is responsible for:
  - Characterizing and/or remediating surface soil contamination
    - Characterize means to identify the nature and extent of the contamination present
    - Remediating means to select a closure option (clean close, closure in place, etc)



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# Background

(continued)

- Ensuring appropriate controls (i.e. postings, barriers, etc.) are in place at the sites with remaining contamination
- Conducting long-term monitoring of sites
- State of Nevada Division of Environmental Protection (NDEP) provides oversight under the Federal Facility Agreement and Consent Order



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# Terminology

- Corrective Action Site (CAS) - A site that has been identified as needing remediation
- Corrective Action Unit (CAU) - A grouping of Corrective Action Sites that are similar in remediation technique, type of contaminants or proximity to each other

There are 32 Soils CAUs  
which consist of 148 Corrective Action Sites\*

\* As of 9/30/16



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# Remediation Processes

- Corrective Action Investigation Plan (CAIP) – Details the investigation plan and provides information for planning investigation activities
- Site Investigation – Act of conducting field characterization activities
- Corrective Action Decision Document (CADD) – Describes the results of the characterization, multiple corrective action alternatives, and the recommended corrective action alternative and the rationale for its selection
- Corrective Action Plan (CAP) – Plan for implementing the selected corrective action



# Remediation Processes

(continued)

- Closure Field Work - Implementation of the selected corrective action at the site
- Closure Report (CR) – Documented overview and results of corrective actions implemented, closure verification information, and use restriction and monitoring requirements (when applicable)

***Note: All documents must be approved by NDEP***



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# Alternative Remediation Processes

- CADD/CR can be used when only “minor” corrective actions are needed, as agreed to by NDEP
- CADD/CAP can be used when site knowledge gained through characterization and similar historical corrective actions is sufficient, as agreed to by NDEP, for planning corrective actions
- Housekeeping process can be used when removal and disposal of debris/materials (such as batteries or drums) can be easily accomplished, and verification of clean closure is achieved through visual inspection and/or laboratory analysis of soil samples
- Streamlined Approach for Environmental Restoration (SAFER) process may be used only when extensive process knowledge or sampling data exists – this process combines the CAIP, CADD and CAP into one plan

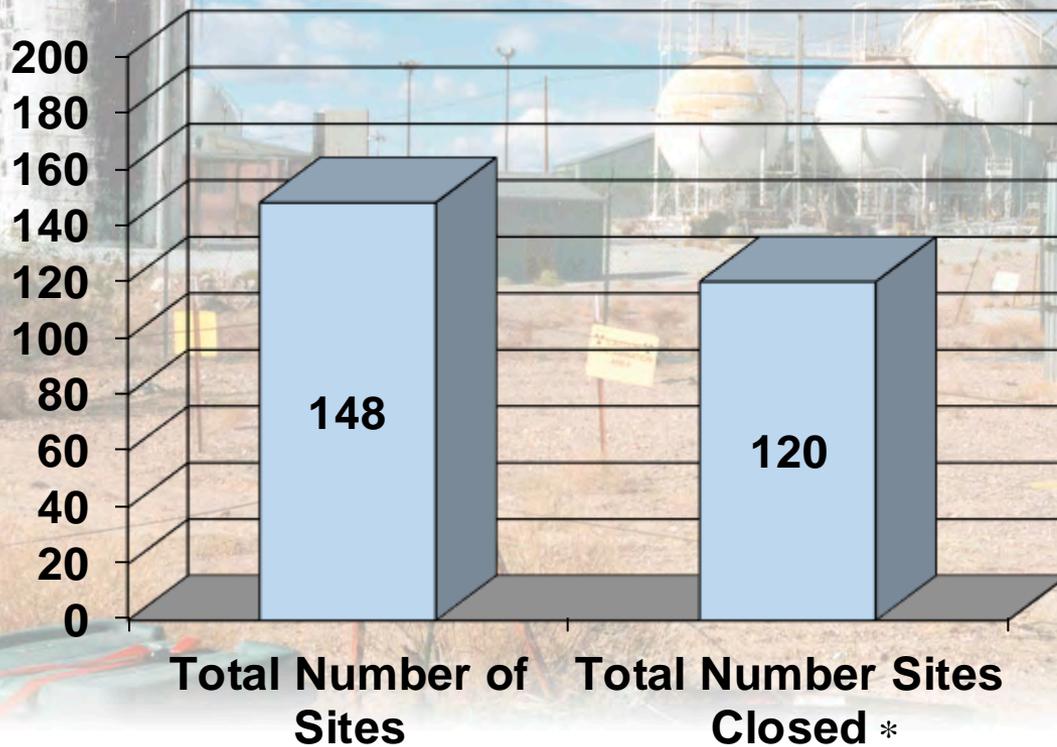


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# Soils Sites Cleanup



\* As of 9/30/16



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# Industrial Sites



## Overview



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# Background

- Portions of the facilities and land at the Nevada National Security Site and Nevada Test and Training Range were used in direct support of nuclear testing
  - Facilities included such things as gas stations, motor pools, worker housing, and research buildings
- Activities resulted in hazardous and radioactive waste generation and subsequent environmental contamination



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# Background

(continued)

- Nevada Field Office Environmental Management program established the Industrial Sites activity to remediate the contaminated sites
- Industrial Sites have included leach fields, sumps, disposal wells, tanks, contaminated waste piles, ordnance sites, etc.
- Contaminants of Concern may include hazardous chemicals, unexploded ordnance, and radionuclides
- Potential risks are to workers and the environment

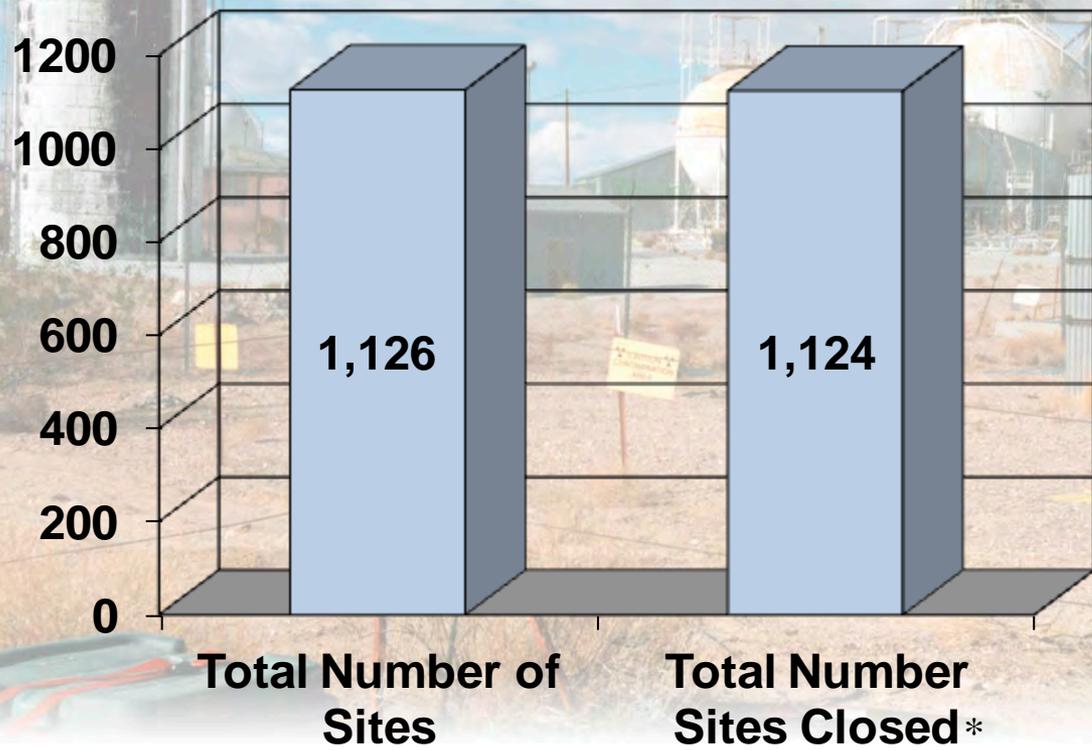


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# Industrial Sites Cleanup



\* As of 9/30/16



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# Industrial Sites Wrap-up

- Almost all Industrial Sites activity is complete
- Remaining Corrective Action Sites at Engine Maintenance, Assembly and Disassembly will not be addressed for a few years
- Continue to conduct *Resource Conservation and Recovery Act* (RCRA), Non-RCRA, and Tonopah Test Range post-closure inspections and submit monitoring reports to NDEP



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# Groundwater Overview



**Bill Wilborn**

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U.S. Department of Energy, Nevada Field Office  
Nevada Site Specific Advisory Board Orientation  
October 13, 2016



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# Historic Nuclear Testing Impacts on the Groundwater

- 828 underground nuclear tests conducted at the Nevada National Security Site from 1951 to 1992
- Underground tests conducted at depths ranging from approximately 90 to 4,800 feet below the ground surface
- One-third of these tests occurred near, below, or in the water table
- Some radioactive contamination detected in groundwater on the Nevada National Security Site and the Nevada Test and Training Range



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# Nevada National Security Site (NNSS) Groundwater Program Objectives

- Because of the significant worker safety concerns and cost associated with any type of active remediation, the Department of Energy in consultation with the State of Nevada Division of Environmental Protection has selected an end state that requires modeling and monitoring strategy that is documented in the Federal Facilities Agreement and Consent Order



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# NNSS Groundwater Program Objectives (continued)

- This strategy is supported with the activities described below:
  - Tackle challenges using investigative methods, such as drilling wells to investigate the hydrology and geology (Underground Test Area [UGTA])
  - Sample wells, analyze samples, and build computer models from gathered data (UGTA)
  - Implement controls to prevent access to contaminated groundwater (UGTA and National Nuclear Security Administration)
  - Ongoing monitoring of wells on and off the Nevada National Security Site (National Nuclear Security Administration)
  - Establish a comprehensive long-term monitoring network to ensure public protection (UGTA)

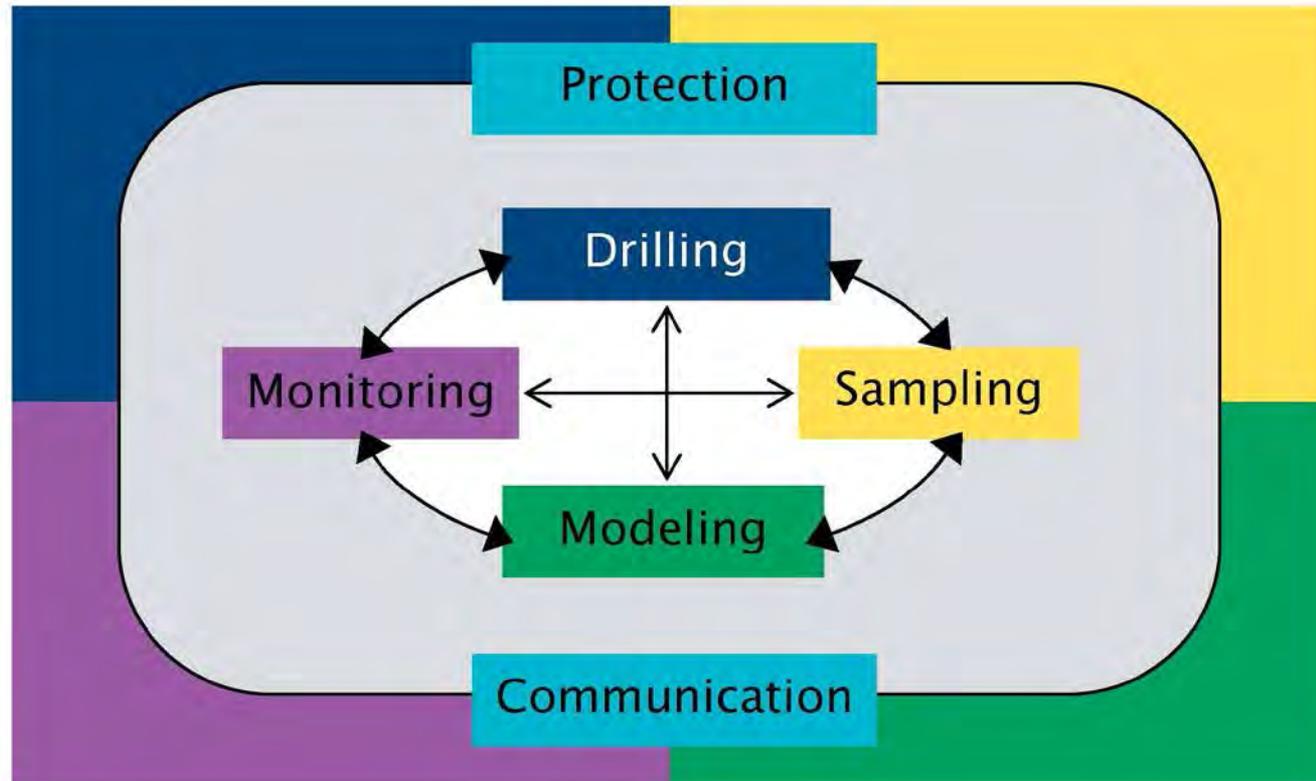


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# Understanding Groundwater... an Integrated Approach



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# Technical Working Group

- Federal staff continually work with outside organizations to ensure a collaborative approach to understand the nature and extent of groundwater contamination
  - Lawrence Livermore National Laboratory
  - Los Alamos National Laboratory
  - Desert Research Institute
  - United States Geological Survey
  - State of Nevada, Division of Environmental Protection (NDEP)
  - National Security Technologies, LLC
  - Navarro Research and Engineering, Inc.



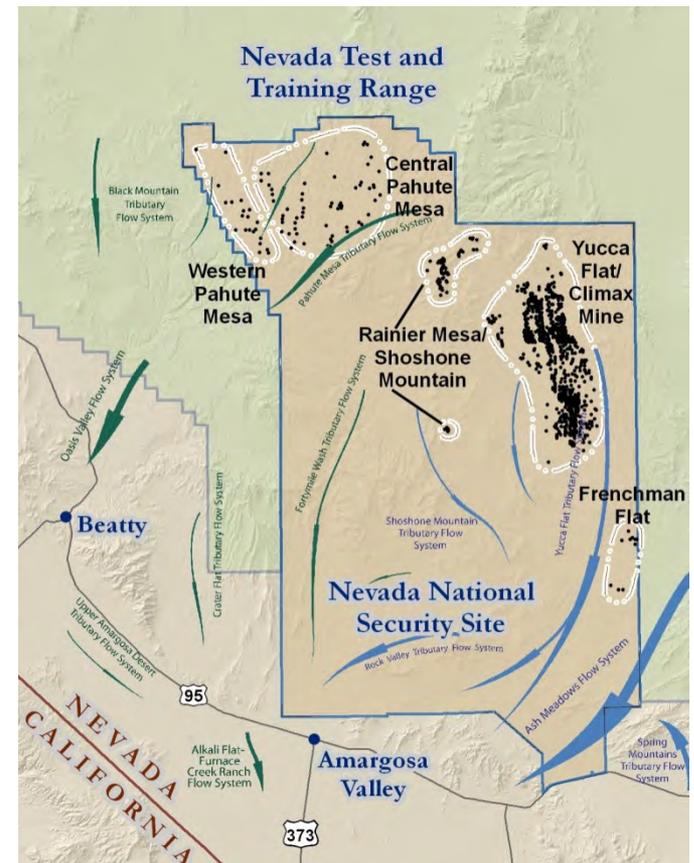
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# Corrective Action Units

- There are five Corrective Action Units that make up the UGTA activity
  - Corrective Action Units are determined by location and geologic conditions



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# UGTA Closure Strategy

(see figure of strategy in binder)

- Outlined within the Federal Facility and Consent Order
- Corrective Action Investigation (some Corrective Action Units may require a Phase I and II)
  - Corrective Action Investigation Plan (CAIP)
  - Data collection
  - Modeling
  - Contaminant boundary
  - Peer review



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# UGTA Closure Strategy

(continued)

- Corrective Action Decision Document/Corrective Action Plan (CADD/CAP)
  - Model evaluation
  - Use restriction boundary
  - Regulatory boundary negotiations with NDEP



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# UGTA Closure Strategy

(continued)

- Closure
  - Closure Report
  - Address regulatory boundary changes if necessary
  - Closure in place with long-term monitoring
  - Institutional controls



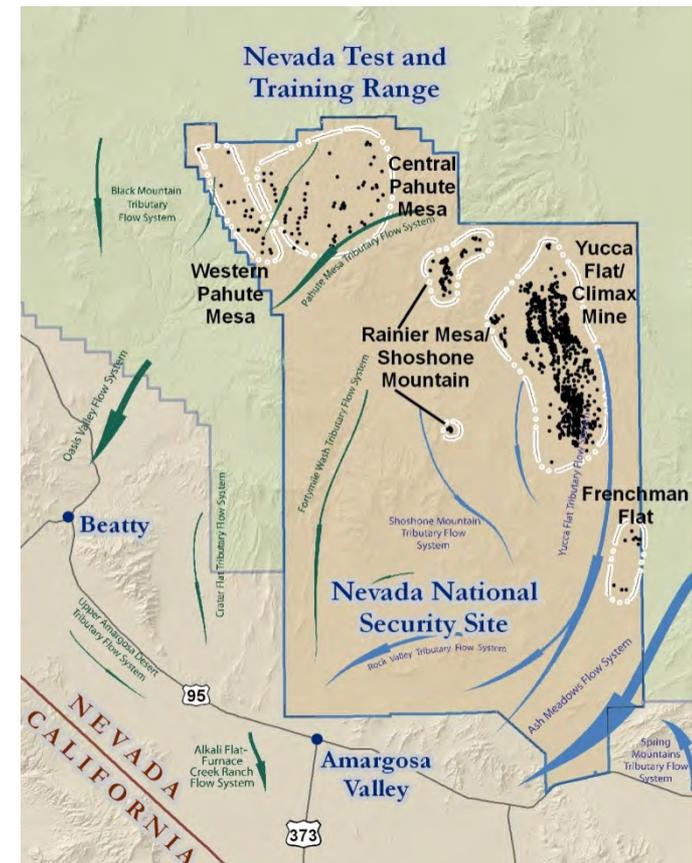
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# Corrective Action Units (CAUs) Standing

- Frenchman Flat (CAU 98)  
In closure, performing annual groundwater monitoring
- Yucca Flat/Climax Mine (CAU 97)  
Finishing External Peer Review comment responses, moving into CADD/CAP (collect and evaluate new data to address key uncertainties and defend that the CAU is acceptable for closure)
- Rainier Mesa/Shoshone Mountain (CAU 99)  
Modeling conducted under Alternative Modeling Strategy
- Central Pahute Mesa (CAU 101) and Western Pahute Mesa\* (CAU 102)  
Phase II CAI (characterize site and develop groundwater and contaminant transport models)



*\*Western and Central Pahute Mesa are managed as one entity*



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# Why Do We Drill?

- Provides access to the complex subsurface for sampling
  - More than 300 different geologic units (types of rock) representing more than 500 million years of geologic history
- Gives access to groundwater and surrounding geology
- Provides multiple/ongoing opportunities to sample and monitor
- In addition to recent groundwater studies, the UGTA team is tapping into, and expanding upon, approximately 50 years of groundwater research



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# Geology/Hydrology 101

(see cross section figure in binder)

- Rocks are categorized according to their hydrologic properties (e.g., aquifer or aquitard [confining unit])
  - An aquifer is a *permeable* unit of rock through which water moves (could be single or dual porosity)
  - An aquitard is a unit of rock which is confining in its nature and generally *impermeable* to water movement (no porosity or a single porosity)



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# Geology/Hydrology 101

## (continued)

- Units are then grouped into larger hydrostratigraphic units (colored layers on the cross sections)
  - Hydrostratigraphic units, together with faults, form the three dimensional Hydrostratigraphic Framework Models
  - Faults are structural breaks in the rock units with significant continuity and typically displacing the units



# Why Do We Sample?



- Identify the natural conditions of groundwater and geology in the subsurface, and constituents introduced by nuclear testing
- Acquire data used as building blocks for computer models
- Obtain laboratory results for regulatory compliance, stakeholder communications, and additional subsurface investigations



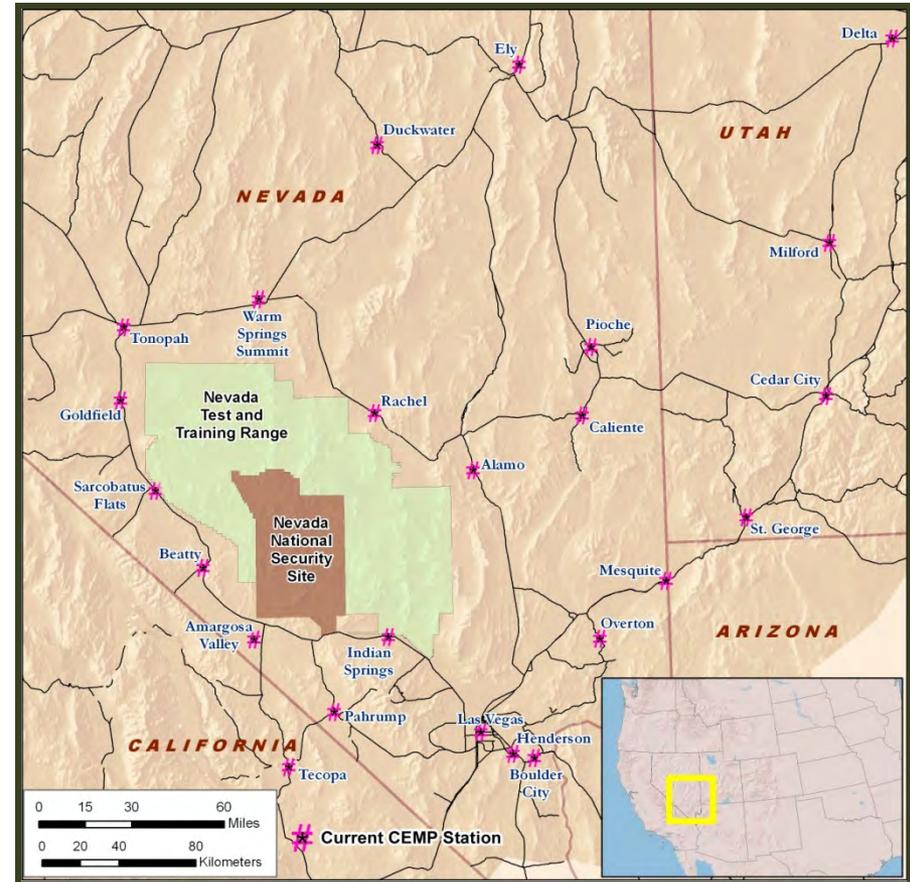
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# Why Do We Monitor?

- Helps protect the public by providing a system of continuous detection
- Provides baseline to establish existing conditions
- Identifies trends and verifies compliance with regulatory standards
- Community-based monitoring done by the public provides a level of independence



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# Why Do We Model?

- Creates 3-dimensional representations of otherwise inaccessible subsurface
- Helps forecast where contamination is moving and how far over a period of time
- Provides flexibility for integrating available data
- Provides basis for regulatory compliance and risk decisions



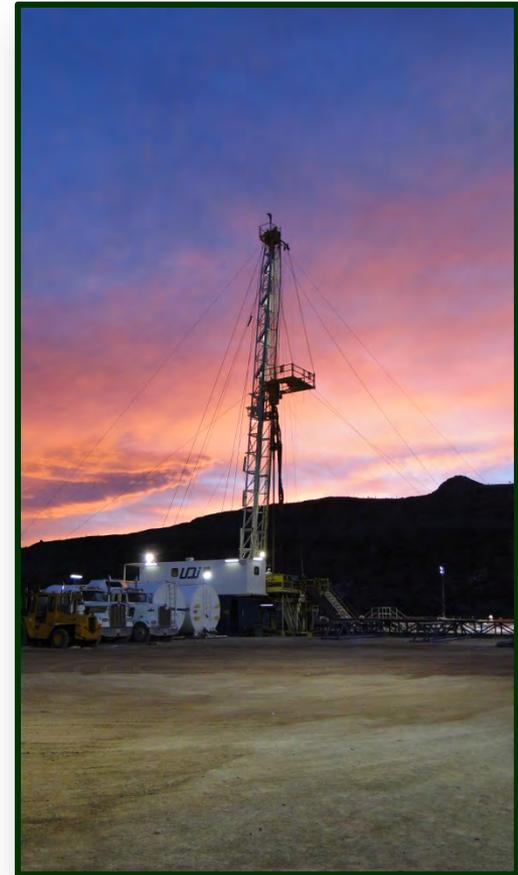
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# What Do We Know Today?

- Groundwater affected by historic Nevada National Security Site activities has not reached public water sources
- Groundwater models are providing output that is key to enhancing current and developing future monitoring strategies
- No forecasted threat to public

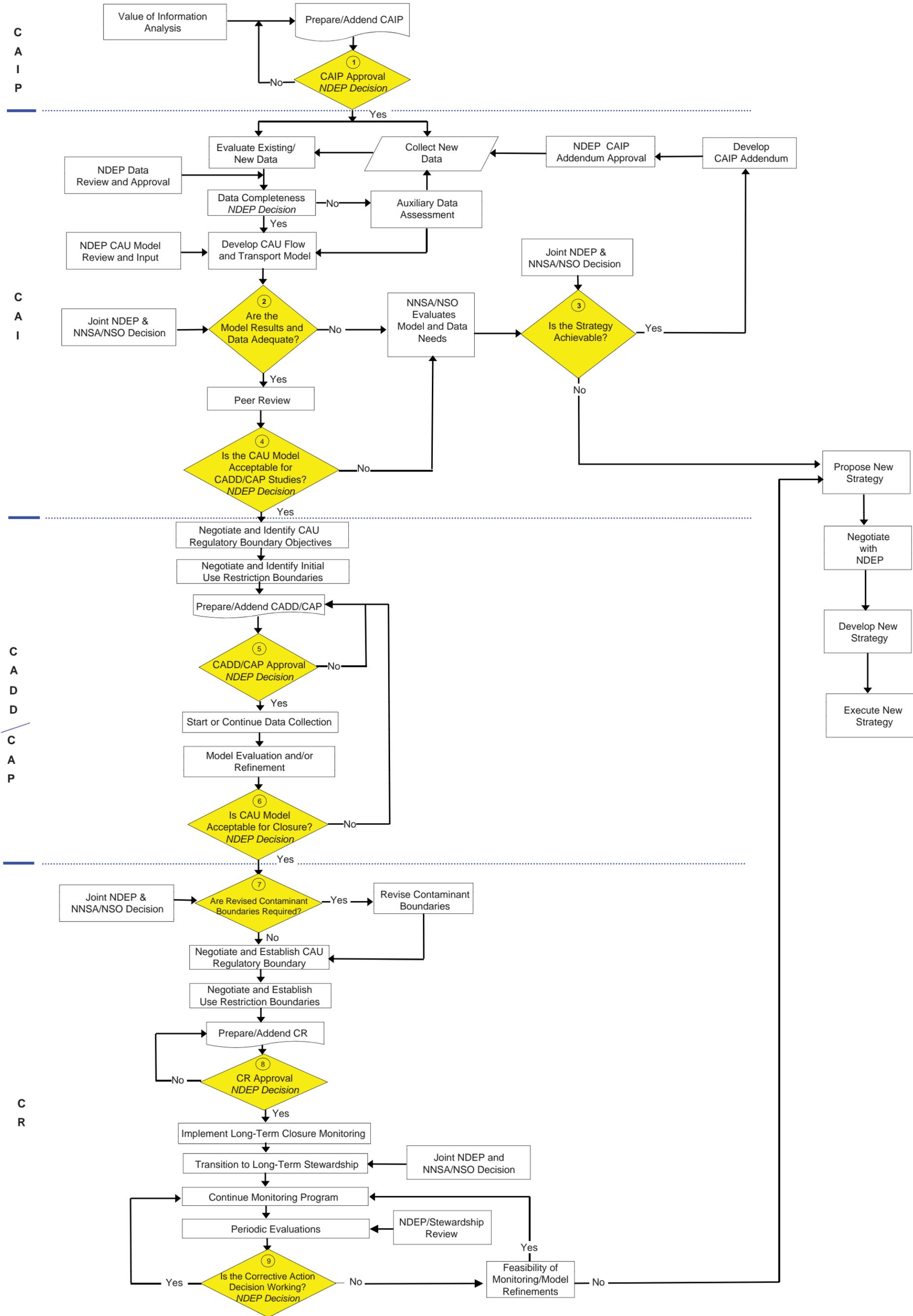


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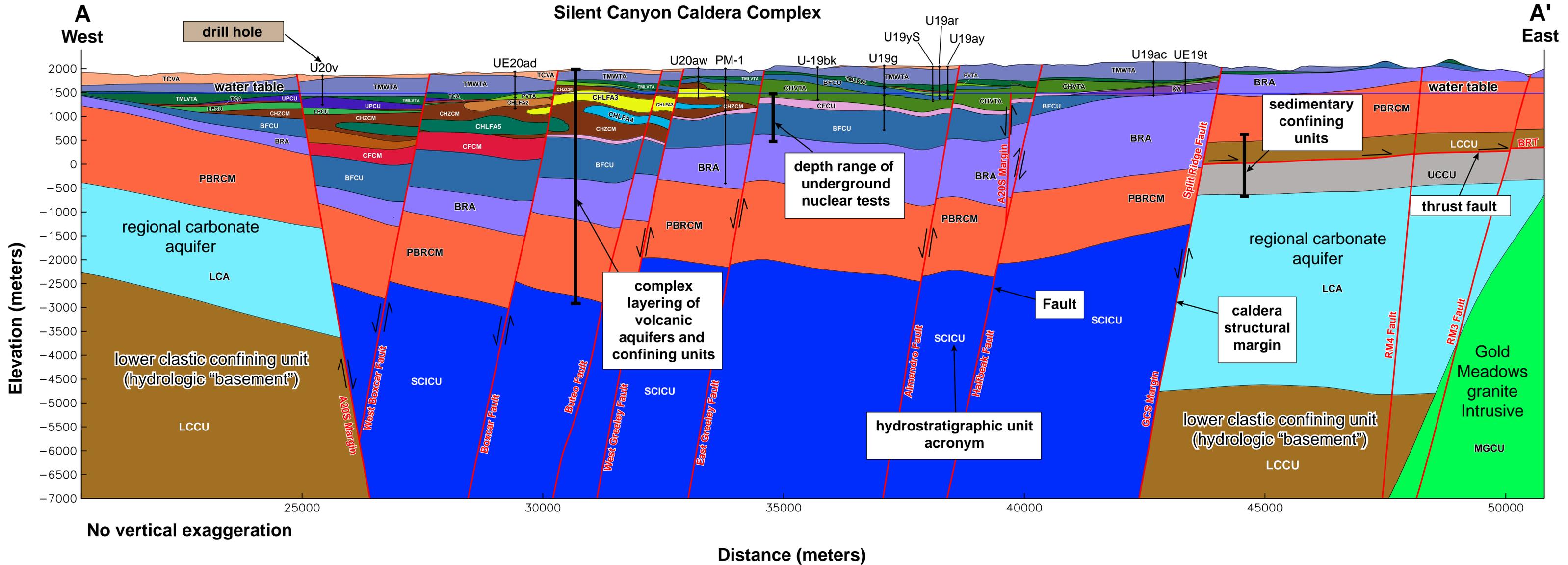
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# Underground Test Area (UGTA) Groundwater Closure Strategy



# West-East Cross Section (A-A') through Pahute Mesa

## Silent Canyon Caldera Complex



# Low-Level Waste Disposal Overview



**Jhon Carilli**

Low-Level Waste Activity Lead

U.S. Department of Energy, Nevada Field Office

Nevada Site Specific Advisory Board Orientation

October 13, 2016



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# What Type of Waste is Disposed at the Nevada National Security Site (NNSS)?

- Radioactive waste not classified as high-level waste, transuranic waste, spent fuel, or by-product material
  - Typical waste includes contaminated metal, debris, soils, clothing, tools, etc.
- Mixed Low-Level Waste contains Low-Level Waste and a hazardous component (i.e. toxic, corrosive, reactive, ignitable or is listed by U.S. Environmental Protection Agency as a hazardous waste)



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# What Type of Waste is Disposed at the NNSS? (continued)

- Classified waste requires protection for national security reasons and cannot be declassified
  - May contain a hazardous component
  - May be radioactive
- Nuclear Regulatory Commission does not regulate the U.S. Department of Energy's (DOE's) radioactive materials and/or waste



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# Background

- Cold War-related activities and nuclear research generated Low-Level Waste at sites across the country
- DOE is responsible for consolidating and disposing Low-Level Waste generated by DOE clean-up activities
  - Ensures the safety of the public
  - Allows for the permanent closure of these sites



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# Background

(continued)

- The Nevada National Security Site (NNSS) was chosen due to its isolated location and arid climate
  - No groundwater pathways
  - Deep groundwater (~700 feet – 1,600 feet)
  - Low precipitation (5-7 inches per year)
- Currently, the NNSS is the only federal site disposing off-site generated Low-Level Waste



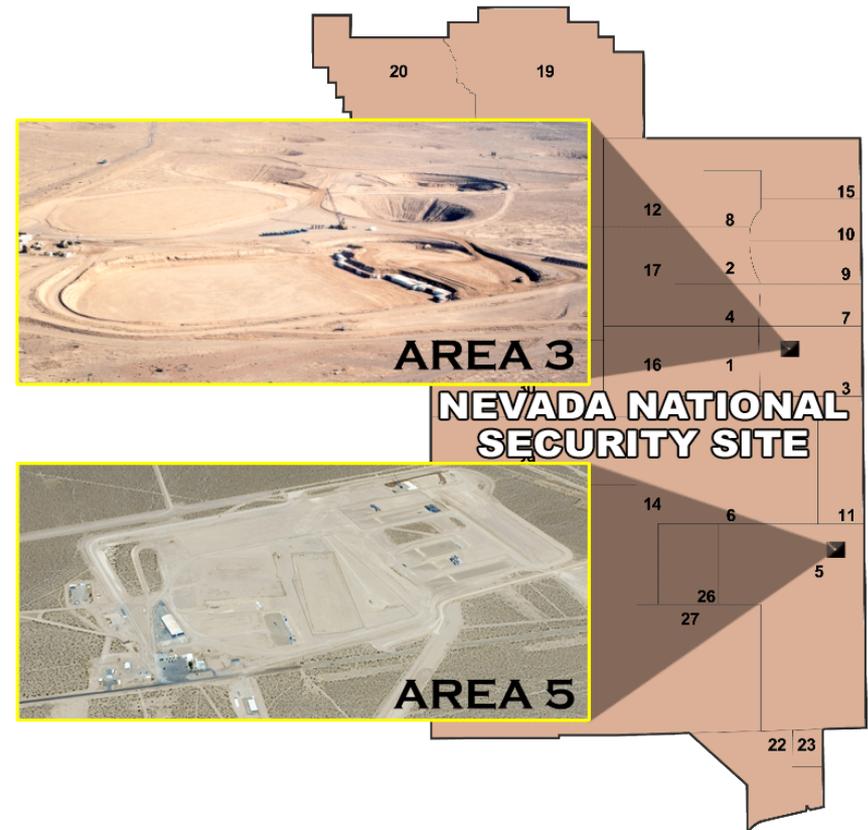
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# Activity Locations

- Low-Level Waste can be disposed at two disposal sites at the NNSS
  - Area 3 uses subsidence craters created by past underground nuclear tests to dispose of bulk and containerized waste
  - Area 5 uses engineered shallow-land burial to dispose of containerized waste



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# Activity Locations

(continued)

- Area 3 Radioactive Waste Management Site
  - Seven craters, representing five disposal cells
  - Total disposed volume is nearly 19 million cubic feet
  - Currently in cold stand-by (not active)



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# Activity Locations

(continued)

- Area 5 Radioactive Waste Management Site
  - 42 disposal cells
    - 34 total closed cells
      - ✓ Eight operationally closed
      - ✓ 26 permanently closed in 92-acre area
    - Seven active Low-Level Waste cells
    - One active Mixed Low-Level Waste cell
  - Total current disposed volume is more than 27.6 million cubic feet



# Area 5 Monitoring Activities

- Monitoring activities
  - Verifies the continued safety of workers and the public
  - Provides a measure of performance
- Continuous and ongoing

Monitor (Type)	Number of Locations
Air	2
Groundwater	3
Meteorology	1
Radon	1
Evapotranspiration	2
Soil Moisture	6
Soil Temperature	7
TLD*	12

\* Thermoluminescent Dosimeters

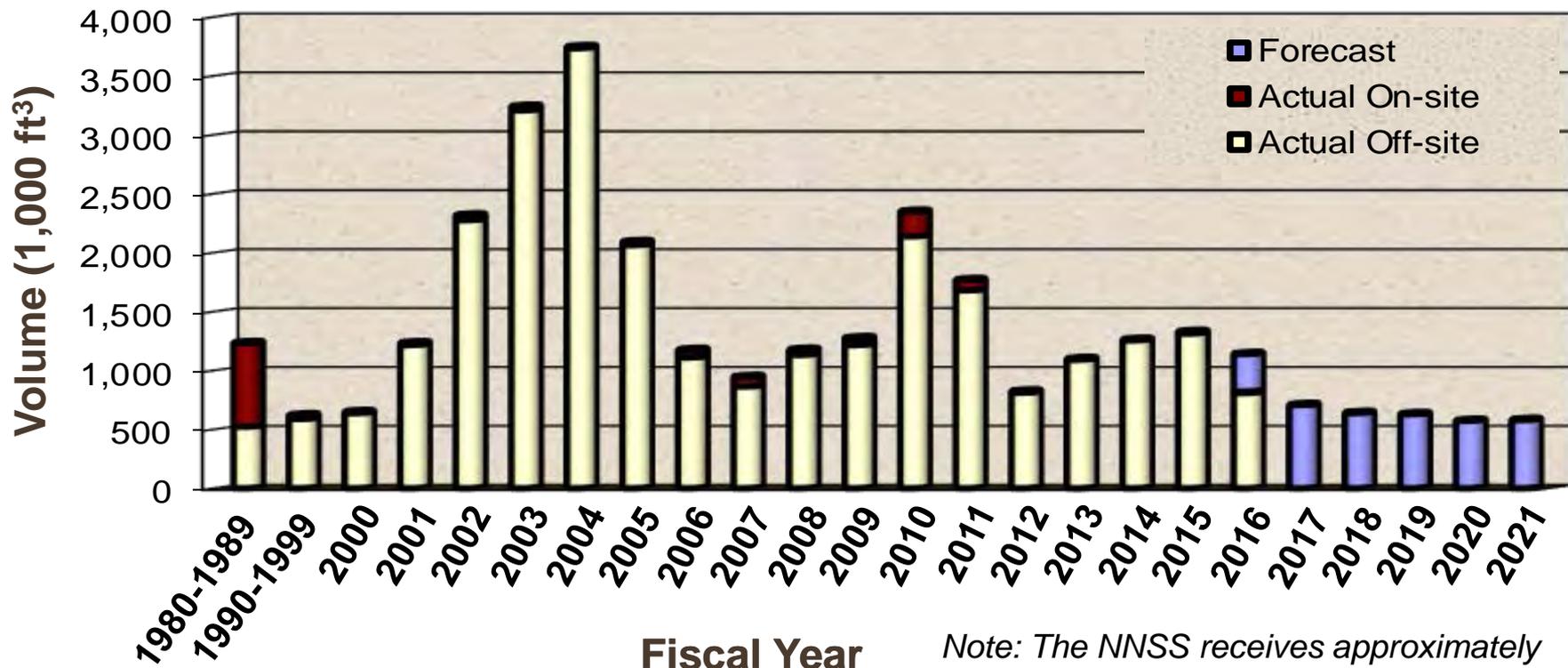


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# NNSS Low-Level and Mixed Low-Level Disposal Volumes



\*Volumes through July 31, 2016

Note: The NNSS receives approximately 5% of the waste generated in the EM program



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# Disposal Fee Surcharge

- Since 2000, generators that ship Low-Level and Mixed Low-Level Waste to the NNSS for disposal are charged an additional \$0.50 per cubic foot to fund a rural county emergency preparedness grant
  - Over \$13 million distributed through August 2016

Funding Provided to Counties for Emergency Preparedness



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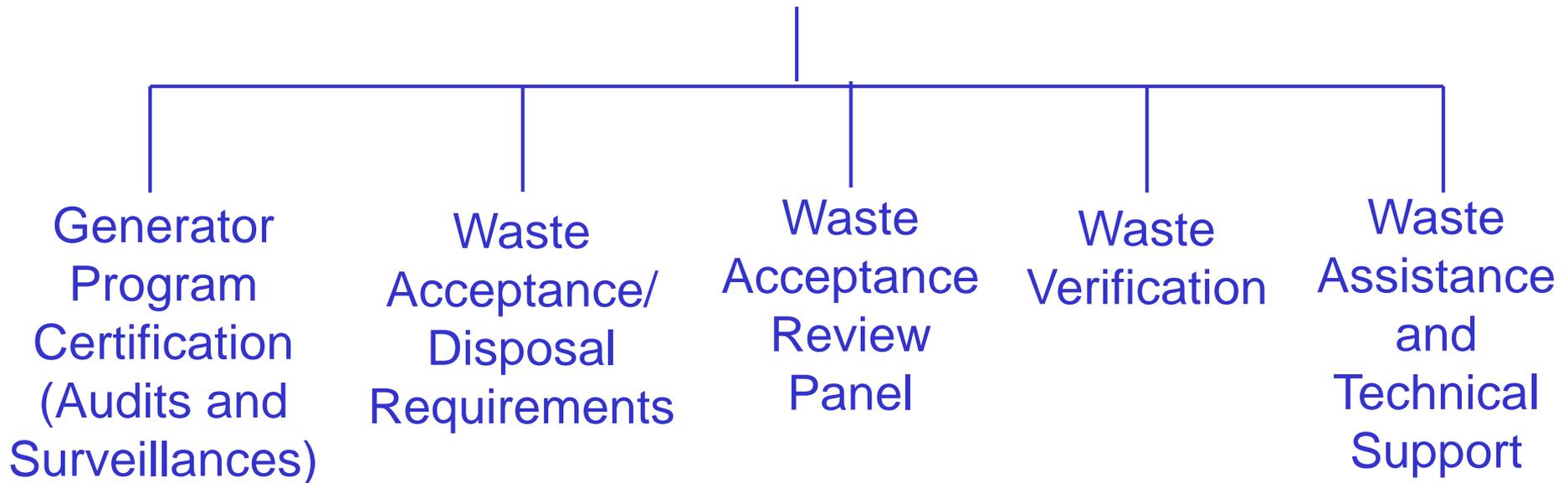
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# Radioactive Waste Acceptance Program

The Radioactive Waste Acceptance Program consists of five programs below:

## Radioactive Waste Acceptance Program (RWAP)



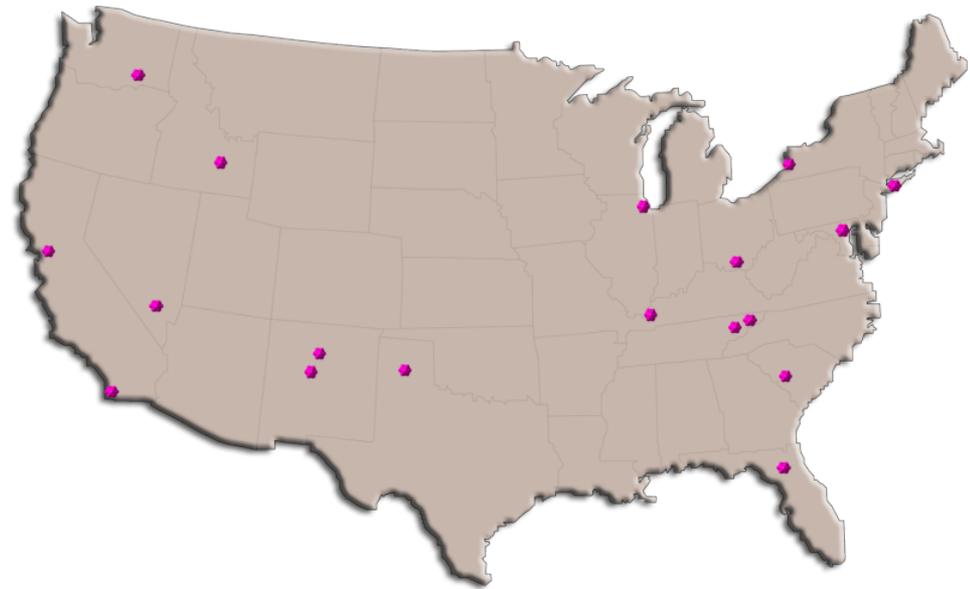
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# Generator Program Certification (Audits and Surveillances)

- Approved generators undergo an initial audit to ensure their waste program conforms to NNS requirements
- After a waste generator obtains approval status, periodic announced and unannounced surveillances are conducted to ensure the waste program maintains compliance



● Approved Waste Generators



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# Waste Acceptance/ Disposal Requirements

- Waste must be generated at a DOE facility or defense-affiliated site
- NNSS and its stakeholders expect absolute compliance with the Waste Acceptance Criteria and noncompliance results in adverse impacts to the generator's program until compliance is ensured
- Waste disposed at the NNSS must meet a rigorous disposal acceptance criteria
  - Waste may not contain free liquids
  - All waste must be containerized (examples of containers include 55-gallon steel drums, cargo containers, burrito wraps, soft-sided containers, and carbon steel boxes)



# Waste Acceptance Review Panel

- Reviews waste streams to ensure it meets waste acceptance criteria
- Waste Acceptance Review Panel consists of following:
  - Radioactive Waste Acceptance Panel
  - State of Nevada Division of Environmental Protection (Resource Conservation and Recovery Act and Joint Oversight)
  - Operations
  - Performance
  - Safety Basis Team
  - Nuclear Criticality Team
  - Eligibility Team



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# Waste Verification

- Mixed waste permit, issued by State of Nevada Division of Environmental Protection, requires verification
- Verification Types
  - Physical
    - Visual inspection
    - Real-time-radiography
  - Chemical
    - Field chemical screen
    - Split sample



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# Waste Assistance and Technical Support

- Performs:
  - Site visits to generators
  - Assist generators to be compliant with NNSS Waste Acceptance Criteria



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# Transportation

- Shipping is regulated by the U.S. Department of Transportation – not by DOE



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# Quarterly Reports

Quarterly Waste Volume and  
Transportation Reports accessible at:

[nss.gov/pages/programs/RWM/Reports.html](http://nss.gov/pages/programs/RWM/Reports.html)

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SECURITY SITE

ABOUT PROGRAMS FACILITIES NEVADA FIELD OFFICE RESOURCES

SITE-DIRECTED R&D APPLIED TECHNOLOGIES PUBLIC AFFAIRS/OUTREACH NEWS

Mixed low-level waste disposed in an engineered and permitted cell at the Area 5 Radioactive Waste Management Site

Acceptance Program Transportation HAZTRAK Reports Grant Funding

## Reports

Transportation Reports	Waste Volume Reports
<b>FY 2016</b> 3rd Quarter, April – June 2016 2nd Quarter, January – March 2016 1st Quarter, October – December 2015	<b>FY 2016</b> FY 2016 – 2nd Quarter FY 2016 – 1st Quarter



EM

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[www.em.doe.gov](http://www.em.doe.gov)

# Environmental Management Outreach Initiatives



**Kelly Snyder**  
Deputy Designated Federal Officer  
Nevada Site Specific Advisory Board Orientation  
October 13, 2016



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# Environmental Management (EM) Outreach Initiatives

- Variety of methods and tools used to engage stakeholders in EM activities:
  - Operation Clean Desert
  - Social Media (Facebook, Twitter, Flickr, YouTube)
  - Articles
  - Open Houses/Events
  - Fact Sheets
  - Educational Demonstrations
  - Displays
  - Kiosks
  - NNSS Remediation Sites Map
  - Other Website Links/Contact Information



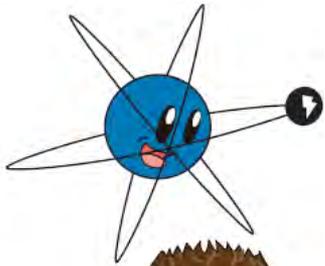
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# Operation Clean Desert

- Geared toward educating 6<sup>th</sup> to 8<sup>th</sup> grade students (based on science curriculum objectives) on EM activities
- Offers teachers free materials:
  - Student Activity Book
  - Teacher's Guide
  - Display
  - Interactive Computer Game (on-line only)
- Distributed ~33,000 activity books, computer games, and teacher guides



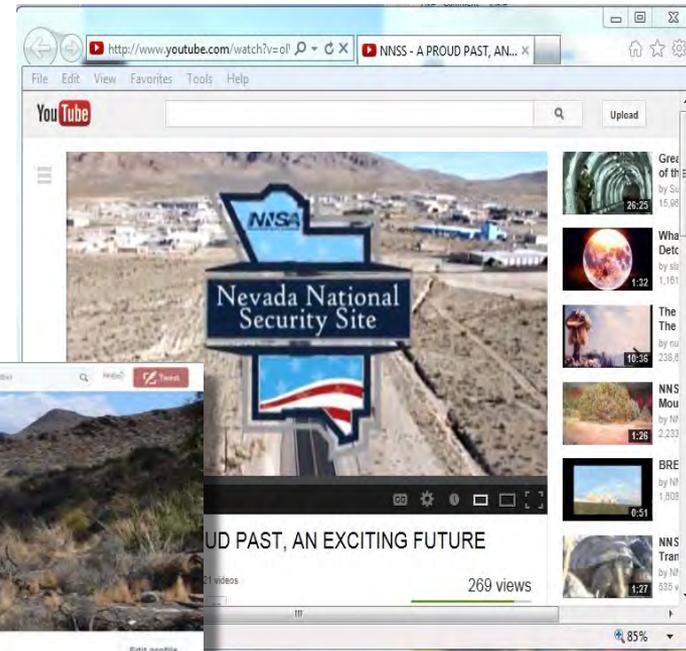
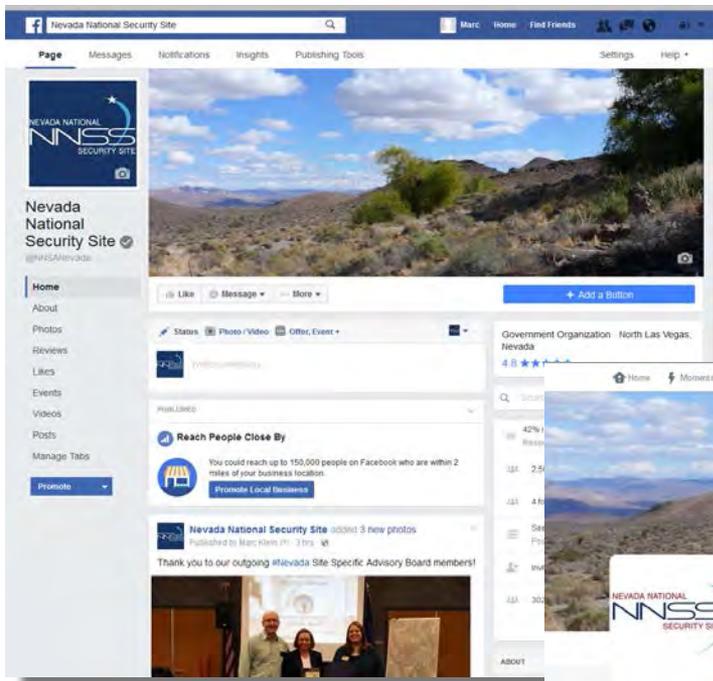
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# Social Media

- Facebook
- Twitter
- YouTube
- Flickr



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# Articles

September 28, 2016

U.S. Department of Energy Nevada Field Office

## EM NEWS FLASH

Upcoming Tour is a Second Chance to Learn about NNSS Groundwater!



Residents of surrounding communities visit Sedan Crater during a groundwater-focused tour of the NNSS earlier this year.

If you missed the Nevada National Security Site (NNSS) Groundwater Open House in Amargosa Valley in July, you still have a chance to learn more about the NNSS groundwater program! Seats are available for U.S. citizens only on a first-come, first-serve basis for a special groundwater-focused tour of the NNSS. Tour participants will learn about the NNSS groundwater characterization program, as well as the fascinating history of the site.

The full-day tour is scheduled for Thursday, November 3. If you are interested in signing up, please call (702) 295-1993 or e-mail [enwmt@nnsa.doe.gov](mailto:enwmt@nnsa.doe.gov) by the end of the day on Friday, October 7.

Visit us at [www.nnss.gov](http://www.nnss.gov)

- Publish articles as an EM News Flash and/or in OneVoice (NNSS newsletter) and/or in HQ's EM Update newsletter
- Distribute via e-mail to nearly 3,600 NNSS news subscribers (public, employees and media) and published to Nevada Field Office website ([www.nnss.gov](http://www.nnss.gov))
- NSSAB members are automatically subscribed to receive via e-mail

# Open Houses/Events

To encourage an open dialogue with stakeholders, EM:

- Hosts periodic Groundwater and Waste Management Open House events with posters, discussions, demonstrations, status and handouts
- Organizes public meetings to gain community perspectives on specific issues or the release of documents/information
- Conducts sessions at teacher conferences on EM-related curriculum opportunities
- Hosts Operation Clean Desert display at back-to-school fairs



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# Fact Sheets

Stakeholders can learn about all EM activities from a wide selection of fact sheets and brochures, available in:

- Electronic version:
  - Nevada Field Office website ([www.nnss.gov](http://www.nnss.gov))
  - EM Kiosks
- Hard copy:
  - Public Reading Room (across lobby from Atomic Testing Museum)
  - Upon request in single or group quantities



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# Educational Demonstrations

- Feature topics, such as:
  - *Groundwater*: Scientists use a cross-section model to show how sub-surface attributes affect water movement
  - *Radiation*: Scientists explain naturally occurring vs. man-made forms of radiation and how radiation detection works
- Geared for:
  - Classrooms
  - Science fairs
  - Open houses (e.g., Groundwater Open House)
- Provide based upon availability of resources



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# Displays

- Operation Clean Desert, Groundwater, Waste Disposal, and Transportation displays have been located at:
  - Public Reading Room
  - Pahrump Library
  - Caliente Library
  - Beatty Library
  - Amargosa Library
  - Esmeralda County Repository Oversight Office (Goldfield)
  - Central Nevada Museum (Tonopah)
  - White Pine County Library (Ely)



# Kiosks

- Interactive, touch-screen system that connects to:
  - Nevada Field Office Internet and social media websites
  - Related government websites
  - The NNSS Remediation Sites (Desert Research Institute)
- Two EM kiosks rotate on 3-4 month cycles at community facilities throughout Southern Nevada



**EM Environmental Management**

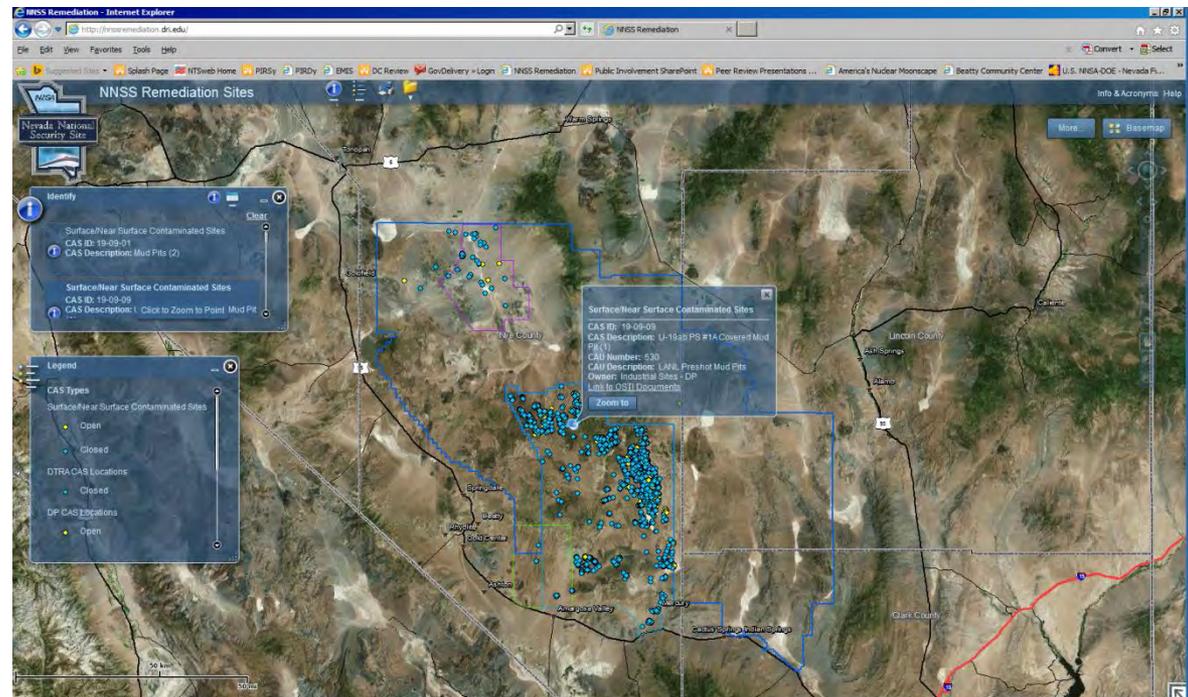
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# NNSS Remediation Sites Map

(<http://nnsremediation.dri.edu/>)

- Interactive, on-line map that provides a cleanup status for every NNSS Corrective Action Site (CAS)
- Features direct links to NNSS cleanup site documents (submitted via OSTI Office of Scientific and Technical Information)



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# EM Wants to Hear from You!

We encourage stakeholder feedback and invite your requests, questions, and suggestions. Feel free to contact us via:

- Email [envmgt@nnsa.doe.gov](mailto:envmgt@nnsa.doe.gov)
- Phone 702-295-3521
- Social media messaging
  - [www.facebook.com/NNSANevada](http://www.facebook.com/NNSANevada)
  - [www.twitter.com/NNSANevada](http://www.twitter.com/NNSANevada)

Remember to follow us!



You Tube

flickr



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