



# 2014 Environmental/Radiological Assistance Directory

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# Overall Program Objectives for Consolidated Audits and Proficiency Testing (PT)



- Provide environmental data of known, documented quality to field managers for use in making sound, confident decisions.
- Accountability/proper waste management disposition.



# Purpose of the Department of Energy Consolidated Audit Program (DOECAP)



- Eliminate/minimize redundant audits.
- Standardize audit methodology, policies, and procedures.
- Share information and communicate lessons learned.



# What DOECAP Provides



- DOECAP provides DOE environmental and waste managers confidence that:
  - Environmental analytical data quality is acceptable.
  - Risks and liabilities are minimized.
  - Corrective actions are implemented.
  - Continuous improvement is promoted.



## What DOECAP Provides (cont.)



- DOECAP links to the DOE Mixed Analyte Performance Evaluation Program (MAPEP). Poor laboratory performance for MAPEP PT samples results in DOECAP findings that are tracked to closure.
- Consolidated audits provide consistent cost savings to the Department and taxpayers
  - It is estimated that DOECAP eliminates the potential for over 170 redundant field audits annually, with a cost savings of \$7.2M per year.



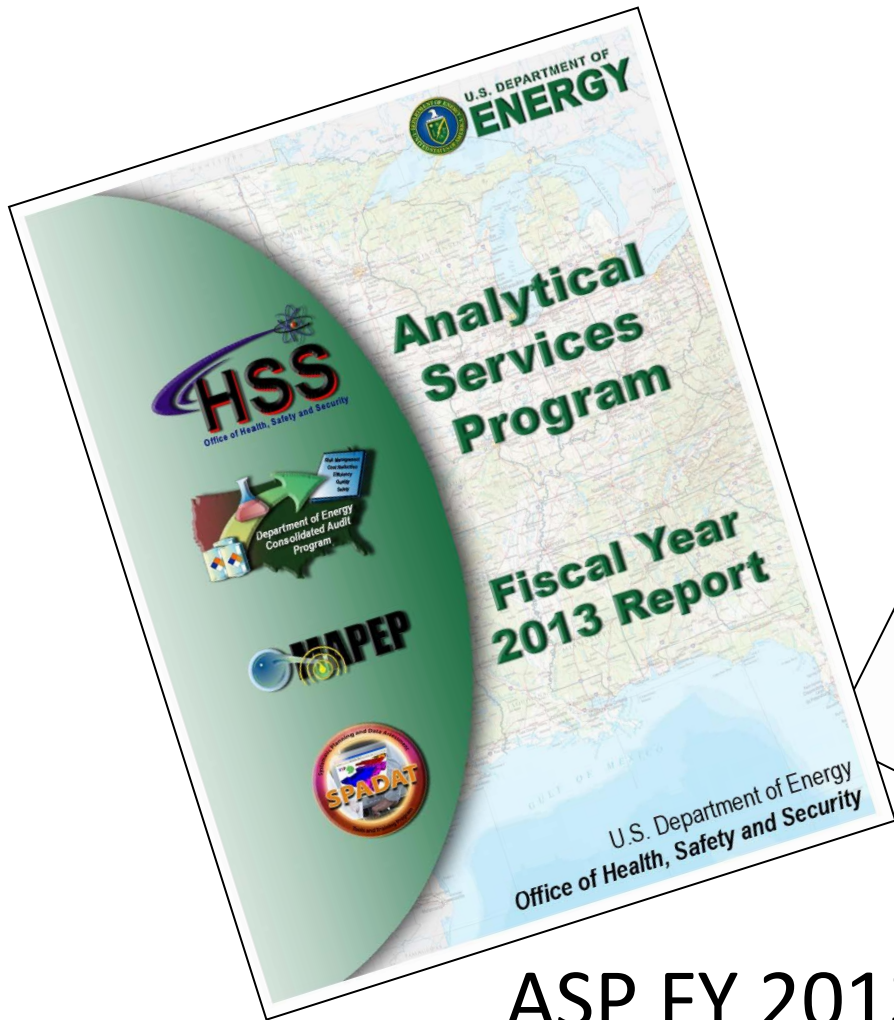
# Fiscal Year (FY) 2013 DOECAP Accomplishments



- 22 Laboratory Audits, including 1 Lab Closure Audit
- 9 Treatment, Storage, and Disposal Facility (TSDF) Audits, plus 1 TSDF Audit Scoping Visit
- Federal Partnership – Joint Department of Defense/  
*DOE Quality Systems Manual (QSM) for Environmental Laboratories*
- Revised DOECAP laboratory and TSDF checklists
- Conducted field manager briefings on DOECAP process and audit results
- ASP Workshop – Asheville, North Carolina



# FY 2013 DOECAP Accomplishments (cont.)



## ASP FY 2013 Report



# Active DOECAP Participants



Argonne National Laboratory Argonne Site Office	Brookhaven National Laboratory Brookhaven Site Office
Environmental Management Consolidated Business Center (EMCBC)	Fermi National Accelerator Laboratory Fermi Site Office
Hanford Site Office of River Protection (ORP)	Hanford Site Richland Operations Office (RL)
Idaho National Laboratory Idaho Operations Office	Lawrence Berkeley National Laboratory (LBNL) Berkeley Site Office
Lawrence Livermore National Laboratory (LLNL) Livermore Field Office	Los Alamos National Laboratory (LANL) Los Alamos Field Office
Nevada National Security Site (NNSS) Nevada Field Office	Oak Ridge National Laboratory (ORNL) ORNL Site Office
Oak Ridge Office of Environmental Management (OREM)	Oak Ridge Office Integrated Support Center (ORO ISC)
Office of Environmental Management (EM) DOE Headquarters	Office of Environment, Health, Safety and Security (EHSS) DOE Headquarters





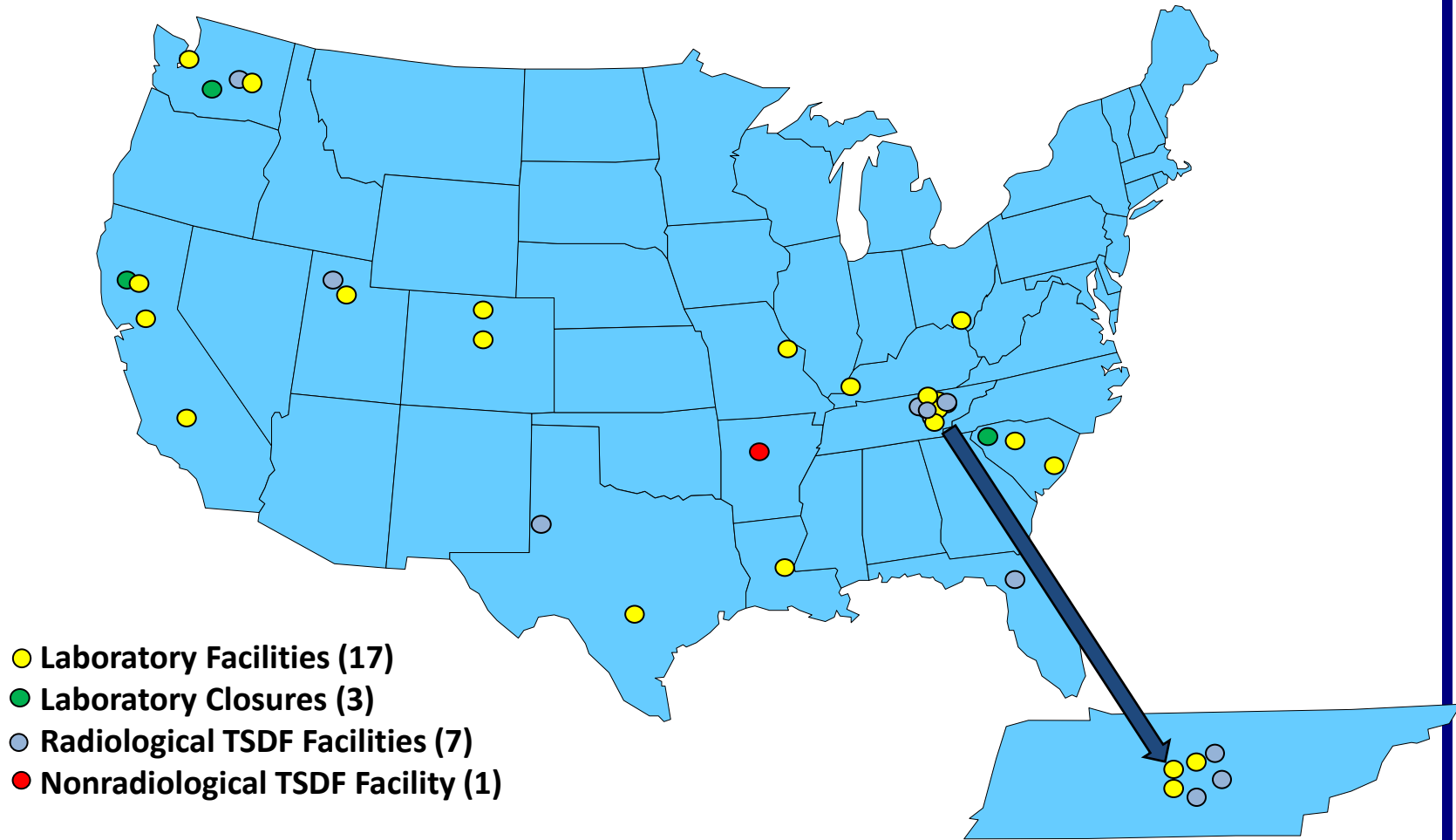
# Active DOECAP Participants (cont.)



Office of Fossil Energy, Planning & Engineering Office, DOE Headquarters	Office of Legacy Management DOE Headquarters
Pacific Northwest National Laboratory (PNNL) Pacific Northwest Site Office	Pantex Plant National Nuclear Security Administration (NNSA) Production Office Pantex
Portsmouth Site and Paducah Site Portsmouth/Paducah Project Office	Sandia National Laboratories NNSA Sandia Field Office
Savannah River Site Savannah River Operations Office	Separations Process Research Unit EMCBC
SLAC National Accelerator Laboratory SLAC Site Office	Thomas Jefferson National Accelerator Facility Thomas Jefferson Site Office
West Valley Demonstration Project EMCBC	Y-12 National Security Complex NNSA Production Office Y-12



# FY 2014 DOE/CAP-Audited Laboratories and TSDFs





# FY 2014 Audit Overview



During FY 2014, DOECAP will conduct:

8 TSDf Audits  
17 Lab Audits  
3 Lab Closure Audits  
28 TOTAL AUDITS

Number of New Findings identified for Laboratories and TSDfS since 2008:

FY 2008 = 216	FY 2011 = 215
FY 2009 = 277	FY 2012 = 191
FY 2010 = 227	FY 2013 = 192



# DOECAP Case Studies



- Laboratories:
  - Employee toxic chemical exposure monitoring and reporting
  - Facility bankruptcy; DOE samples not secure/derived waste management
  - Unauthorized waste disposal



## DOECAP Case Studies (cont.)



- TSDFs:
  - Legacy aged waste
  - Repeat quality assurance (QA) deficiencies
  - Confined space inventory and postings, waste accountability, and electrical hazards



# FY 2014 Laboratory Auditors



<u>Site</u>	<u>Total</u>	<u>Site</u>	<u>Total</u>	<u>Site</u>	<u>Total</u>
Albuquerque	3	Oak Ridge:	9	NNSS	5
Brookhaven	1	ORO ISC	4	Paducah	4
DOE HQ EHSS	3	ORNL	1	Portsmouth	1
Idaho:	8	UCOR	3	Hanford:	8
DOE Idaho 1		Y-12	1	PNNL	2
CWI	3	Sandia	1	WCH	1
BEA	4	Savannah River	6	MSA	1
LANL	1	Legacy Mgmt.	3	DOE ORP	1
LBNL	3	LLNL	4	WRPS	3



# Laboratory Auditors in FY 2014 (Cont.)



<u>Audit Disciplines</u>	<u>Total</u>		
QA	35		
Data Quality for Organic	17	Total Lab Auditors:	60
Data Quality for Inorganic	19	Total Lead Auditors:	14
Data Quality for Radio- Chemistry	16	Total Audit Disciplines Covered:	115
Laboratory Information Management System	6	Auditors-In-Training to Schedule in 2014:	14
Hazardous & Radiological Materials Management	16		
Geotechnical	1		
Aquatic Toxicity	2		
Nondestructive Assay	3		



# Recurring Laboratory Audit Findings



- Lack of timely review/approval of operating procedures tied to analytical methods
- Failure to Implement training associated with the latest operating procedures and methods
- Failure to maintain personnel training records for initial and continuing demonstrations of capability
- Lack of worker chemical exposure monitoring data





# TSDF Auditors in FY 2014



<u>Site</u>	<u>Total</u>	<u>Site</u>	<u>Total</u>	<u>Site</u>	<u>Total</u>
Brookhaven	5	Oak Ridge:	15	NNSS	4
EMCBC	5	ORO ISC	6	Pantex	1
DOE HQ EM	3	OREM	1	Paducah	2
Idaho:	5	ORNL	4	Portsmouth	3
DOE Idaho	1	Y-12	3	Hanford:	8
CWI	3	TWPC	1	PNNL	2
BEA	1	Sandia	2	DOE RL	2
LANL	5	Jefferson Lab	1	CHPRC	1
LBNL	1	Savannah River	7	WRPS	3
		LLNL	2		



# TSDF Auditors in FY 2014 (cont.)



<u>Audit Disciplines</u>	<u>Total</u>
QA	22
Data Quality	12
Waste Operations	31
Env. Compliance and Permitting	16
Radiological Control	12
Industrial and Chemical Safety	11
Transportation Mgmt.	17

Total TSDF Auditors:	69
Total Lead Auditors:	12
Total Audit Disciplines Covered:	121
Auditors-In-Training to Schedule in 2014:	12



# Recurring TSDF Audit Findings



- Lack of adherence to operating procedures
- Lack of conformity with QA requirements (e.g., training completion and records, updating the QA Plan)



## Recurring TSDF Audit Findings (cont.)



- Lack of compliance with regulatory and waste management requirements/practices:
  - Aisle spacing
  - Drum stacking
  - Identifying and posting confined spaces
  - Exposed electrical boxes



# Laboratory Audit Schedule for FY 2014



<b>Laboratory</b>	<b>Month/Year</b>
TestAmerica, Inc., Knoxville, TN	January 2014
Eberline Analytical Corporation, Oak Ridge, TN	January 2014
ALS Laboratory Group, Salt Lake City, UT	February 2014
Davis and Floyd, Inc., Greenwood, SC – Closure Audit	March 2014
TestAmerica, Inc., Earth City, MO	March 2014
GEL Laboratories, LLC, Charleston, SC	April 2014
ALS Laboratory Group, Cincinnati, OH	April 2014
American Radiation Services, Inc., Port Allen, LA	May 2014
Shealy Environmental Services, Inc., West Columbia, SC	May 2014
TestAmerica, Inc., Arvada, CO	May 2014



# Laboratory Audit Schedule for FY 2014 (cont.)



Laboratory	Month/Year
ALS Environmental Fort Collins Laboratory, Fort Collins, CO	May 2014
TestAmerica, Inc., Richland, WA	May 2014
Brooks Rand Laboratory, Seattle, WA	June 2014
CEBAM Analytical, Inc., Bothell, WA – Closure Audit	June 2014
Materials & Chemistry Laboratory, Inc., Oak Ridge, TN	June 2014
Southwest Research Institute, San Antonio, TX	June 2014
BCL Laboratories, Inc., Bakersfield, CA	Proposed June 2014
Curtis and Tompkins Laboratory, Berkeley, CA	Proposed June 2014
Caltest Analytical Laboratory, Napa, CA	Proposed June 2014
Eberline Analytical Corporation, Richmond, CA – Closure Audit	Proposed June 2014



# TSDF Audit Schedule for FY 2014



<b>TSDF</b>	<b>Month/Year</b>
Diversified Scientific Services, Inc., Kingston, TN	January 2014
Clean Harbors Environmental Services, El Dorado, AR (nonradiological hazardous waste incineration)	February 2014
EnergySolutions, LLC, Oak Ridge, TN	February 2014
Materials and Energy Corporation, Oak Ridge, TN	March 2014
Perma-Fix Northwest, Inc., Richland, WA	May 2014
EnergySolutions, LLC, Clive, UT	June 2014
Perma-Fix Environmental Services of Florida, Gainesville, FL	June 2014
Waste Control Specialists LLC, Andrews, TX	June 2014



# Consolidated Audit Program Summary Remarks



- DOECAP saves taxpayers significant amounts of money (\$7.2 million a year).
- Voluntary participation continues to be vital to the success and viability of DOECAP.
- Participation in DOECAP includes the contribution of auditors and their travel funds, as well as the identification of federal and contractor points of contact.





# DOECAP Website



[https://doecap.oro.doe.gov/EDS\\_Public/default.aspx](https://doecap.oro.doe.gov/EDS_Public/default.aspx)

- Protected Side – DOE participants receive an identification code and password for access to Official Use Only information:
  - Audit Reports
  - Corrective Action Plans – response to audit findings/observations
- Public Side – Access to:
  - DoD/DOE *Quality Systems Manual (QSM) for Environmental Laboratories*
  - Checklists – Laboratory and TSDf audit disciplines
  - Current FY audit schedules
  - ASP Workshop presentations



# DOECAP Contacts



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# Radiological and Environmental Sciences Laboratory (RESL)

## Idaho National Laboratory



# Mixed Analyte Performance Evaluation Program (MAPEP)



- RESL manages the DOE Mixed Analyte Performance Evaluation Program (MAPEP)
- MAPEP evaluates laboratories performing radiological/nonradiological environmental analyses and provides:
  - Performance-based evaluation of laboratories' capabilities
  - Support for DOE's cleanup mission, monitoring, and surveillance



# Why is MAPEP Important?



- Federal government spends a lot of money on commercial environmental analytical work:
  - Environmental remediation
  - Worker protection
- Commercial analytical results can be inaccurate
- DOE must ensure the quality of environmental analytical data reported to state and federal agencies, workers, and the public



# MAPEP Proficiency Testing (PT)



- Semiannual MAPEP PT samples to environmental analytical laboratories supporting DOE's missions and interests
- MAPEP PT is provided at no cost to participating laboratories
- PT samples are provided in four natural matrices:
  - Water (groundwater, surface, etc.)
  - Soil
  - Air Filters
  - Vegetation



# MAPEP PT (cont.)



- PT Samples Contain Mixed Analytes:
  - Radiological analytes (alpha, beta, gamma)
  - Inorganic analytes (priority pollutant for Resource Conservation and Recovery Act and universal treatment standards)
  - Organic analytes (semivolatiles, pesticides)



# MAPEP Provides Real-World PT Samples



- MAPEP offers PT samples that simulate real-world DOE samples
- MAPEP challenges the laboratories' analytical performance with these specialized tests:
  - False positive testing
  - Sensitivity/false negative testing
  - Unique isotopic ratios
  - Varying sample matrices and concentrations
  - Natural matrices (soil, water, air filters, vegetation)



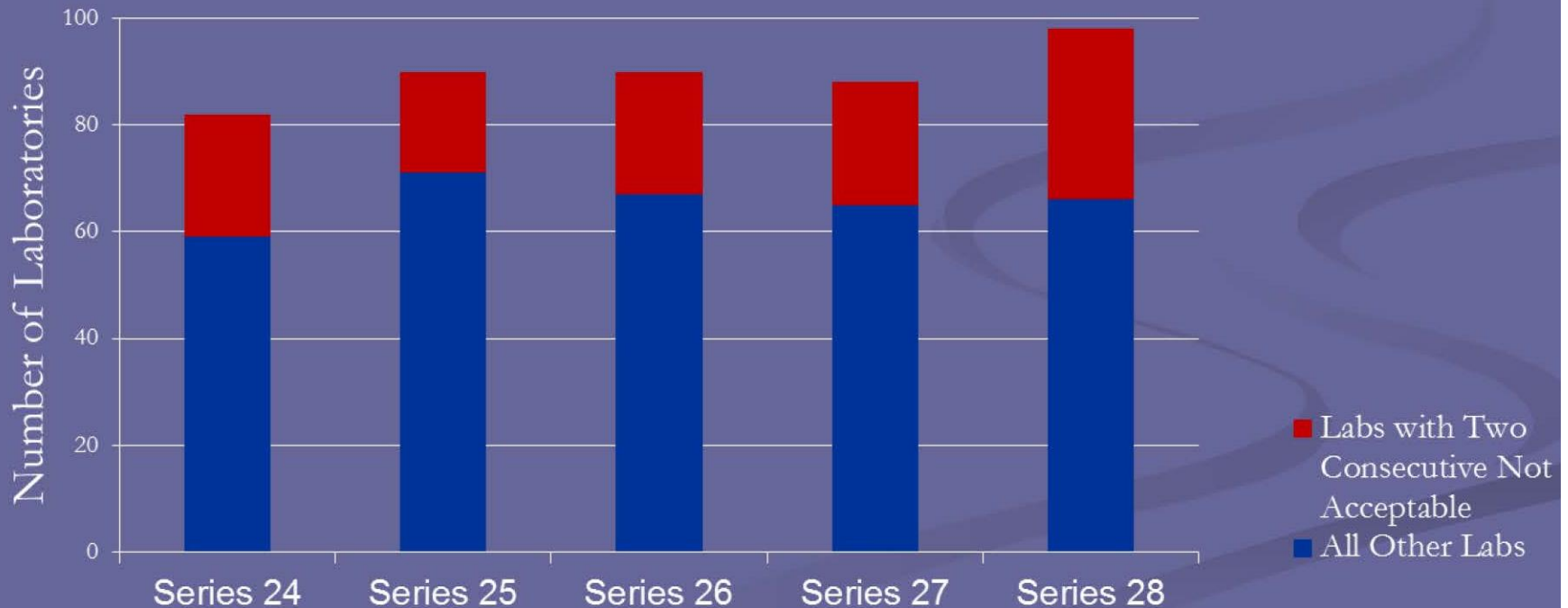


# MAPEP Links to DOECAP



Two MAPEP PT Failures Result in a DOECAP Priority I Finding

## Two Consecutive Not Acceptable Performances





# MAPEP Highlights



The screenshot displays the MAPEP Mixed Analyte Performance Evaluation Program web interface. The main content area shows a 'Laboratory Analyte Summary' table for 'Iodine-129'. The table lists 20 studies with columns for Study ID, Lab Code, Result, Ref Value, Flag, Notes, Bias (%), Unc Value, Unc Flag, and Units. The flags are color-coded: red for 'N' (Not Reported), yellow for 'W' (Warning), and green for 'A' (Acceptable).

#	Study	Lab Code	Result	Ref Value	Flag	Notes	Bias (%)	Unc Value	Unc Flag	Units
1	MAPEP-11-XaW25	ANED01	5.5	9.5	N		-42.1	1.4	H	(Bq/L)
2	MAPEP-11-XaW25	AY1201	13.9	9.5	A		46.3	2.9	H	(Bq/L)
3	MAPEP-11-XaW25	CDH501	9.70	9.5	A		2.1	0.48		(Bq/L)
4	MAPEP-11-XaW25	DEH501	-6.7	9.5	N		-170.5	7.5	L	(Bq/L)
5	MAPEP-11-XaW25	DRMG01	9.85E+00	9.5	A		3.7	2.16E+00	H	(Bq/L)
6	MAPEP-11-XaW25	ERCL01	7.18	9.5	W		-24.4	0.11	L	(Bq/L)
7	MAPEP-11-XaW25	ETTP01	11.9	9.5	W		25.3	4.5	H	(Bq/L)
8	MAPEP-11-XaW25	EULCO1	4.095	9.5	N		-56.9	0.904		(Bq/L)
9	MAPEP-11-XaW25	FOHED1	11.667	9.5	W		22.8	3.46	H	(Bq/L)
10	MAPEP-11-XaW25	FOHED1	11.859	9.5	W		-8.2	0.231	L	(Bq/L)
11	MAPEP-11-XaW25	GENED1	8.723	9.5	A		203.2	3.6		(Bq/L)
12	MAPEP-11-XaW25	LAWRO1	28.8	9.5	N		-3.4	0.58		(Bq/L)
13	MAPEP-11-XaW25	LAWRO1	28.8	9.5	A		-18.9	0.33		(Bq/L)
14	MAPEP-11-XaW25	NARL01	9.18	9.5	A		-18.9	0.33		(Bq/L)
15	MAPEP-11-XaW25	NARL02	7.7	9.5	A		-71.2	0.72	H	(Bq/L)
16	MAPEP-11-XaW25	NARL02	7.7	9.5	A		-6.6	0.40		(Bq/L)
17	MAPEP-11-XaW25	NESID1	2.74	9.5	N		13.7	8.7	H	(Bq/L)
18	MAPEP-11-XaW25	NESID1	8.87	9.5	A		-37.1	0.231		(Bq/L)
19	MAPEP-11-XaW25	QUAND1	10.8	9.5	A		-31.4	0.339		(Bq/L)
20	MAPEP-11-XaW25	QUAND1	5.98	9.5	N		-30.5	3.62E-01		(Bq/L)
20	MAPEP-11-XaW25	SAVA01	6.60E+00	9.5	N					(Bq/L)

- MAPEP has over 130 national and international participating laboratories.
- Over 12,000 results are evaluated each year.
- RESL issues MAPEP Performance Reports and Letters of Concern.
- RESL has administered MAPEP for over 18 years.



# RESL Provides Certified Reference Materials



## Certified Reference Material

### Certificate of Traceability

U.S. Department of Energy  
Radiological and Environmental Sciences Laboratory  
1955 Fremont Avenue, MS 2112  
Idaho Falls, Idaho 83415  
(208) 526-8031

CRM ID: RESL-CON-081513

This Certified Reference Material (CRM) contains a known quantity of analyte(s) in a stable and homogeneous matrix. This material is intended for the verification of the accuracy and precision of analytical measurements. The reference value listed for each analyte is mathematically derived from a certified value traceable to a national or international standard. The traceability of the CRM is maintained through an unbroken chain of comparisons, all having stated uncertainties, calculated according to ISO and NIST Guidelines.

This CRM was prepared and the reference value(s) were verified by the Radiological and Environmental Sciences Laboratory (RESL). RESL maintains direct traceability to the United States National Institute of Standards and Technology (NIST) through successful participation in the NIST/RESL Radiological Traceability Program. RESL is accredited to ISO 17043 (2377.02) as a Performance Testing Provider, ISO 17025 (2377.01) as a Chemical Testing Laboratory, and ISO G34 (2377.03) as a Reference Material Producer by The American Association for Laboratory Accreditation.

David S. Sill  
Senior Technical Manager – Chemistry



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# RESL's ISO Accreditations



- RESL has three International Organization for Standardization (ISO) accreditations:
  - ISO 17025 for Chemical Testing (*General Requirements for the Competence of Testing and Calibration Laboratories*)
  - ISO 17043 for PT Provider (*Conformity Assessment - General Requirements for Proficiency Testing*)
  - ISO G34 for Certified Reference Materials Producer (*General Requirements for the Competence of Reference Material Producers*)



# MAPEP Website

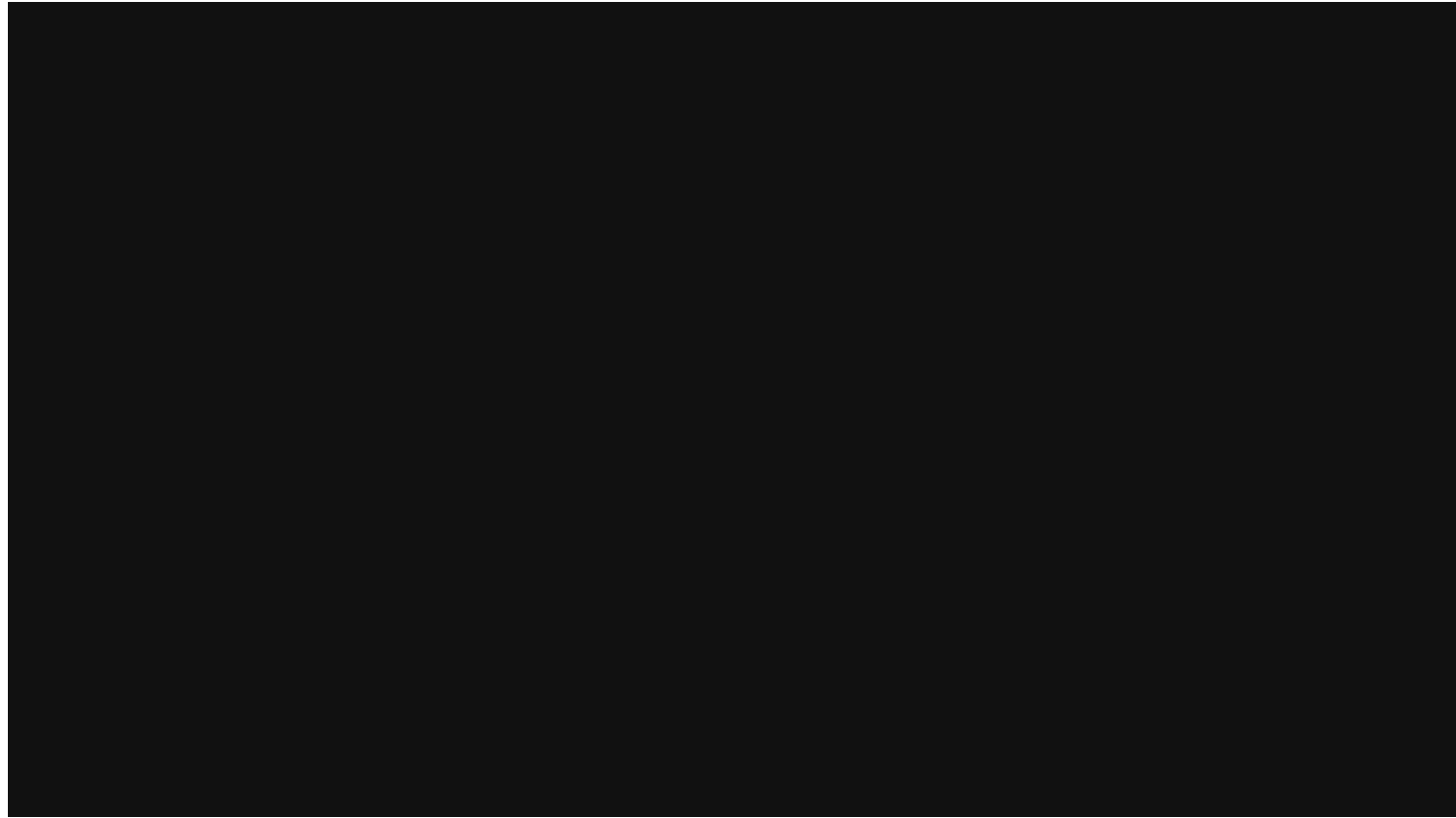


<http://www.id.energy.gov/resl/mapep/mapep.html>

- DOE/NNSA program and field element personnel, DOECAP DOE points of contact and auditors, regulators, and other approved users have access to the MAPEP website to:
  - View laboratories' PT performance.
  - View individual laboratory performance reports.
  - View session summary reports for each MAPEP series.
  - Query for historical trending by analyte and/or matrix.



# Take the RESL Tour





# Questions?

