U.S. DEPARTMENT OF ENERGY | Legacy Management

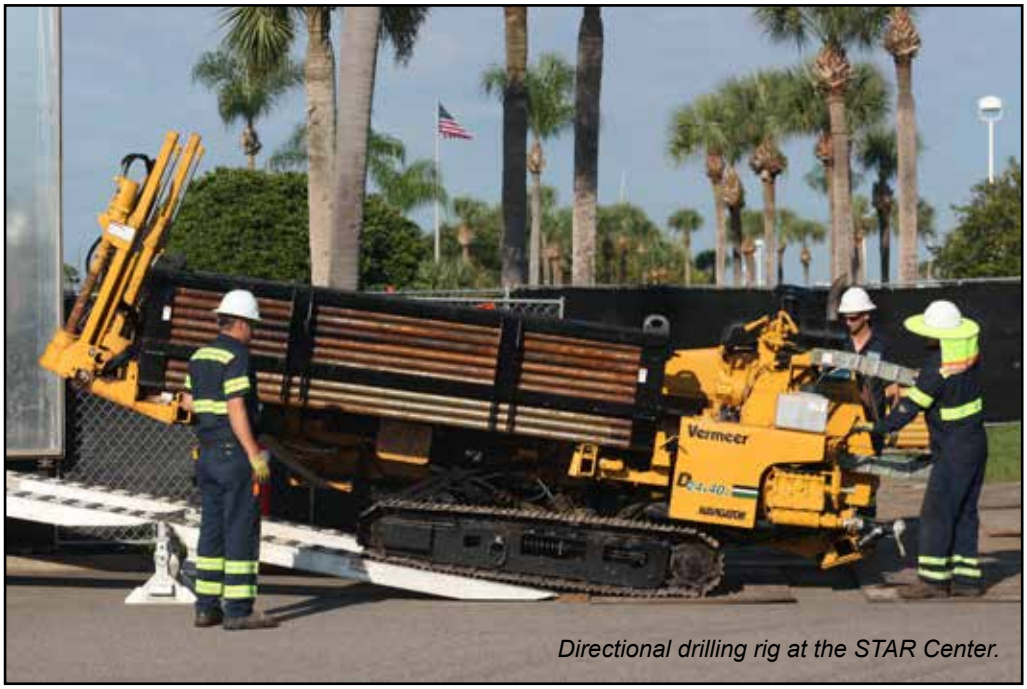
# Program Update

## October–December 2015

*Welcome to the October–December 2015 issue of the U.S. Department of Energy (DOE) Office of Legacy Management (LM)* Program Update. *This publication is designed to provide a status of activities within LM. Please direct all comments and inquiries to lm@hq.doe.gov.*

*Goal 1*

## Pinellas Site Uses Horizontal Wells for Enhanced Bioremediation




*Directional drilling rig at the STAR Center.*

Operations to develop and manufacture components at the former Pinellas Plant in Florida during the nation's Cold War–era nuclear weapons program, released solvents to subsurface soils beneath the plant's 11-acre Building 100. Release areas became sources of dissolved contamination, creating groundwater plumes that extended south and east from the source areas beneath Building 100 and onto private property.

After the Cold War ended, the plant was closed and the site was redeveloped for economic use. However, the contaminated groundwater plumes remained. Today, the U.S. Department of Energy Office of Legacy Management (LM) continues environmental restoration at the site, which is now known as the Young - Rainey Science, Technology, and Research (STAR) Center.

Bioremediation proved to be a successful approach to cleaning up two other STAR Center areas in the past, so enhanced bioremediation was chosen to treat the chlorinated-solvent source areas and groundwater plumes beneath Building 100. The remediation method used a concentrated solution of emulsified vegetable oil (EVO) and bacteria (*Dehalococcoides mccartyi* or DHM)—diluted with water prior to injection to maximize its subsurface distribution. Once introduced into the subsurface, the bioremediation mixture fermented and produced dissolved hydrogen, which the DHM used to break the bonds on contaminant molecules, resulting in nontoxic end products.

Building 100 is owned by Pinellas County and fully occupied by tenants, so remedial action could not be conducted from inside the building. The best option for implementing enhanced bioremediation beneath the building was to install injection wells via directional drilling, in a horizontal configuration. Also,

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### Inside this Update:

*Goal 1*

## Fernald Preserve: A Learning Destination

College-level environmental science class students are frequent visitors to the Fernald Preserve, Ohio, Site. Their visits are usually preceded by program-specific requests and Fernald site staff collaborates with professors to provide a program experience that meets each group's needs. Commonly requested is a general overview of the dramatic environmental changes that the 1,050-acre site has undergone.

*Group visit to see monitoring wells and discuss the wetland and prairie ecology.*

A cultural and natural site-history perspective begins with the earliest Native American occupation, moves through early European settlement, and into the U.S. Atomic Energy Commission's 1951 eminent domain acquisition from the area's agricultural families. The lesson continues as students learn about the nearly 4 decades of uranium metals production that supported the nationwide Cold War weapons complex. The historical journey winds through the environmental-contamination and community-activism era, and into the succeeding cleanup years. The Fernald site's ecological-restoration period concludes the history lesson, before the group is briefed about present activities and how the site is an undeveloped, wildlife-focused park that is open to the public.

Programs for college classes typically include a close look at the present state of the site's ecological restoration, as well as discussions and reviews about ongoing aquifer remediation and the water treatment facility. Monitoring activities for habitats, groundwater, the On-Site Disposal Facility (OSDF), and surface water also garner interest. The Visitors Center is another topic for discussion, since it's recognized by the U.S. Green Building Council as a Leadership in Energy and Environmental Design (LEED) Platinum Certified building.

*University class touring the biowetland area of Fernald site's LEED Visitors Center.*

Students place Fernald site history and activities in broader context by learning about site management by the U.S. Department of Energy Office of Legacy Management (LM), and its mission to maintain former weapons complex sites in a manner that protects human health and the environment.

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*Goal 2*

## Records Requests Continued to Increase in FY 2015

The U.S. Department of Energy Office of Legacy Management (LM) continued to see an increase in requests for records over the past year.

LM received 1,841 stakeholder requests during fiscal year (FY) 2015. Requests included information regarding the Freedom of Information Act (FOIA), the Privacy Act, Energy Employee's Occupational Illness Compensation Program Act (EEOICPA) claims, and other routine records files. Records request volumes for FY 2015 and FY 2014 were higher than the volume of requests in preceding years.

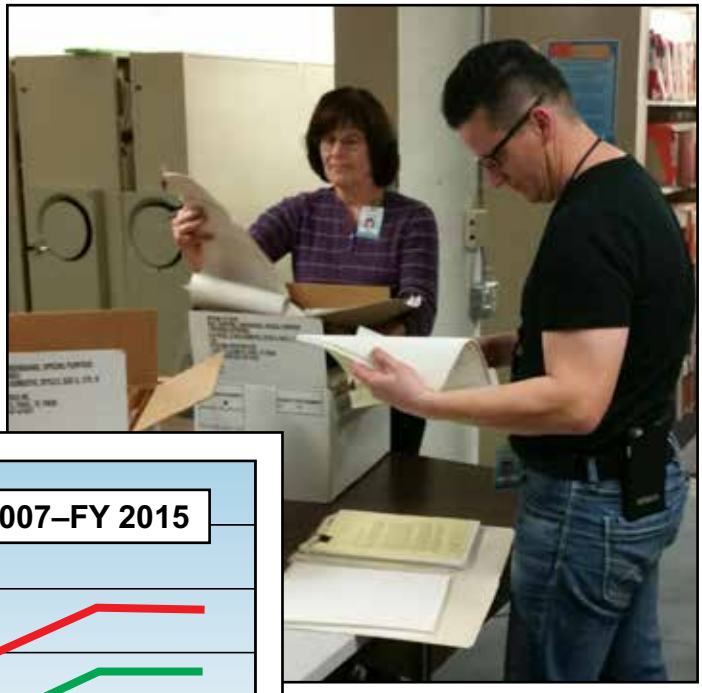
EEOICPA requests increased from FY 2014 to FY 2015. The largest percentage increase was due to former workers from the Grand Junction, Colorado, facilities, followed by requests by former workers at the Fernald and Mound sites in Ohio.

LM Program Analyst Jeanie Gueretta believes there are several possible explanations for the increase, including the U.S. Department of Labor's (DOL) increased EEOICPA program outreach to former workers who may be eligible for compensation.

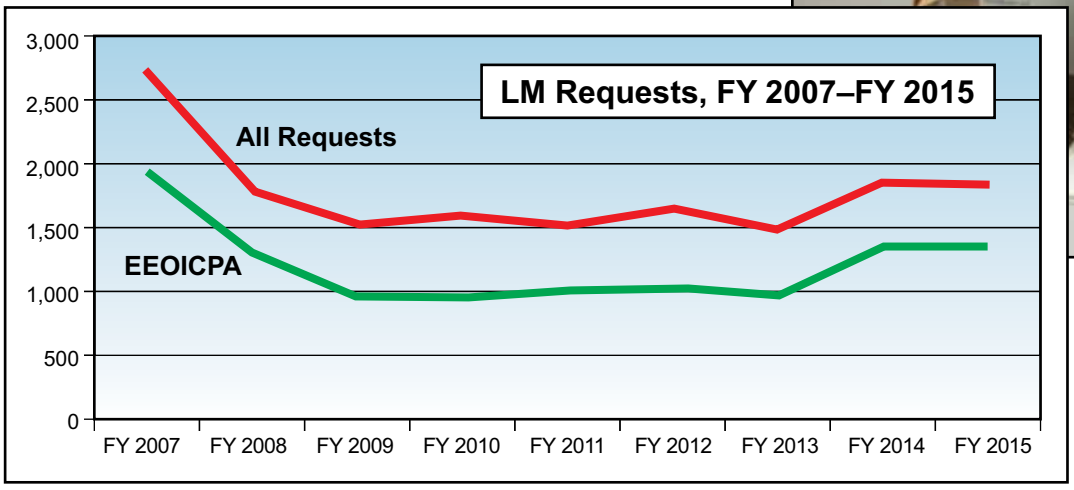
Additionally, a new Special Exposure Cohort (SEC) class designation was implemented in June 2015 for the Grand Junction facilities. The SEC class includes employees who worked at the Grand Junction site for at least 250 work days, between February 1, 1975, and December 31, 1985. The first Grand Junction SEC class designation was implemented in 2011 and included employees who worked at the Grand Junction Operations Office from March 23, 1943, through January 31, 1975.

Establishing additional employee classifications has increased community awareness through program advocates and local media.

"The two special exposure cohorts established by DOL helps to streamline the claims process for former workers," said Gueretta.



*Grand Junction, Colorado, records personnel search for information to respond to and process former-worker employment claims.*



*Goal 6*

# Luis Alvarez and the Manhattan Project

*Luis W. Avarez (c. 1940s). The Nobel Laureate made significant contributions to the Manhattan Project.*

National Hispanic Heritage Month (September 15 to October 15, 2015) provided an opportunity to remember Luis W. Alvarez's involvement in the Manhattan Project. The U.S. Department of Energy Office of Legacy Management (LM) has responsibilities at several sites where Alvarez contributed to the Manhattan Project, including the Site A/Plot M, Illinois, Decommissioned Reactor Site; the Chicago South, Illinois, Site; and the Bayo Canyon, New Mexico, Site.

Alvarez began his Manhattan Project work at his alma mater, the University of Chicago, in the fall of 1943. The university was home to the project's metallurgical laboratory—referred to as Met Lab—which led research into plutonium-production reactors. Shortly after arriving, Alvarez was told to report to the inconspicuously named Site A in the Argonne Forest, 20 miles south of Chicago. On his first trip out, he was escorted by a bodyguard from the U.S. Army. Over the next 6 months, he made the hour-long commute to Argonne aboard Met Lab's small, blue school bus that Manhattan Project scientists had nicknamed the Blue Flash.

Before Alvarez's arrival, the world's first reactor, named Chicago Pile-1 (CP-1), was constructed at Met Lab on a squash court under a University of Chicago stadium. CP-1 was dismantled in early 1943 and moved to Site A's remote location. The rebuilt reactor was renamed CP-2. Alvarez described it as "a 30-foot cube of graphite bricks set with slugs of uranium oxide and metal surrounded by a thick concrete shield."

At the time, CP-2 was used to test the purity of graphite and uranium components before sending them to the newer and larger production reactors at Hanford, Washington, and Oak Ridge, Tennessee. It did not take Alvarez long to learn how to operate CP-2, a task he found tedious despite its significance. He later recalled his work as dull, "but an essential service to the cause." Still, Met Lab gave him a chance to decompress. Having spent the early war years performing an increasing amount of administrative work at a radar laboratory, he was glad to get back to theoretical physics and hands-on research.

During Alvarez's time at Met Lab, General Leslie Groves of the U.S. Army Corps of Engineers, tasked him with determining a way to detect if Germany was operating nuclear reactors. Taking up the assignment, Alvarez moved his office from Site A to Eckhart Hall on the University of Chicago campus. To fulfill the General's request, Alvarez designed instruments that could be flown over enemy territory to collect air samples, which could then be tested for radioactive gas. The equipment did not detect anything when it was eventually put to use. Unknown to the U.S., the German atomic bomb program had largely stalled, so there was nothing to detect.

In spring 1944, Alvarez left Met Lab to join the work at Los Alamos. Compared to Hispanic Americans in

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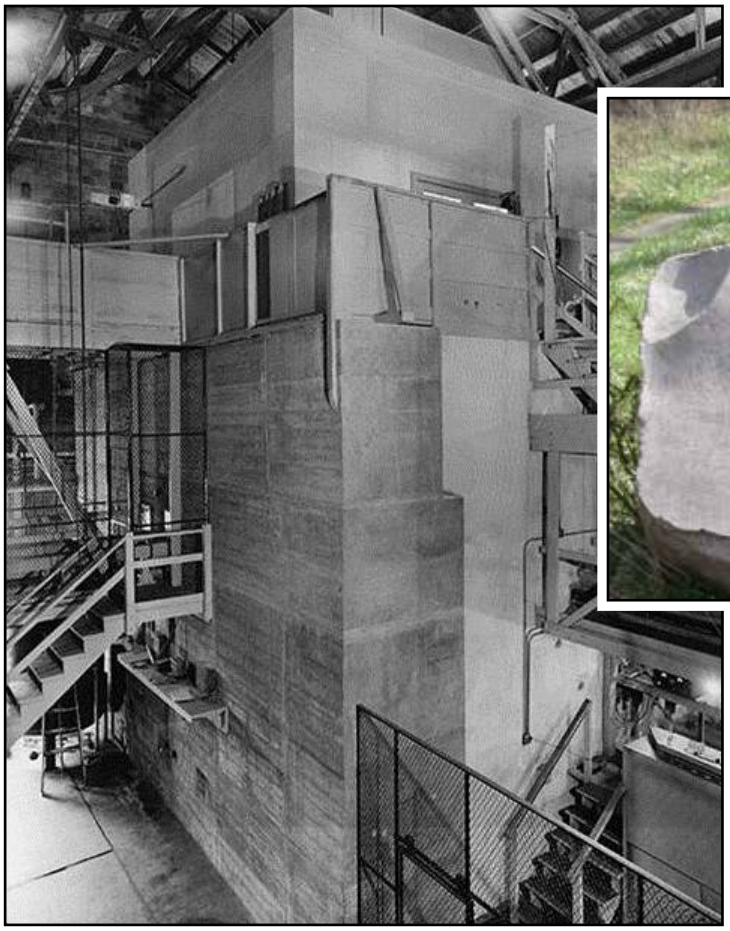
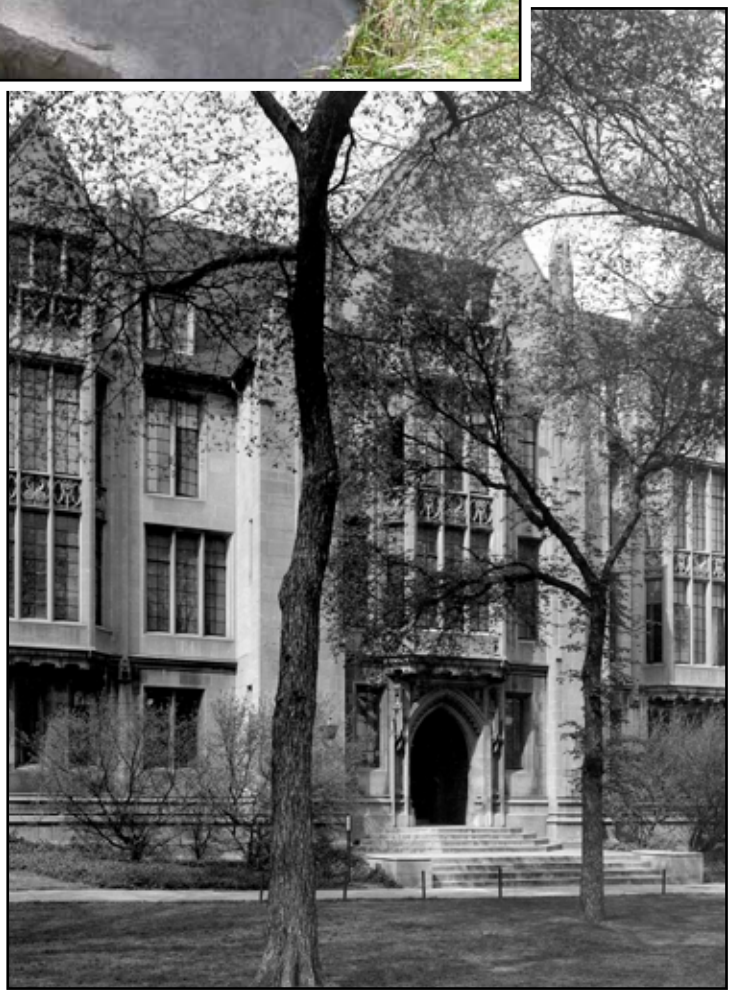
*Site A in the 1940s. Alvarez traveled an hour by bus to reach Site A in the Argonne Forest outside Chicago.*



*Chicago Pile-2 (CP-2) in 1943.*


*An engraved stone marks the location of Site A today.*



*Eckhart Hall on the University of Chicago Campus. While working out of Eckhart Hall, Alvarez designed a way to detect German reactors. The hall is part of LM's Chicago South, Illinois, Site.*

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## Luis Alvarez and the Manhattan Project

New Mexico, the Alvarez family were relative newcomers to North America. Louis Alverez's paternal grandfather had arrived in the U.S. from Cuba during the 1870s. In contrast, Spaniards had arrived in what became New Mexico during the sixteenth century. In fact, Hispanic American homesteaders had been among those displaced by the creation of the Los Alamos Laboratory.

Ethnicity reinforced social divisions at Los Alamos. Hispanic Americans from nearby towns, such as Española and Chimayó, took on much of the service work for the new community in contrast to the technical work performed by the predominantly non-Hispanic laboratory staff. In his autobiography, Alvarez recollected that "Chicano" crews had the dirty job of shoveling coal into furnaces. He also

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*Goal 5*

## LM Announces New Team Leaders

### Tony Carter

Tony Carter is the new Public and Intergovernmental Engagement (PIE) Team Leader for the U.S. Department of Energy (DOE) Office of Legacy Management (LM). Prior to leading the PIE Team, Tony was the Senior Policy Advisor to the LM Director and served as the Office of Stakeholder Relations Acting Director.

Tony joined DOE in 1993 as Director for the Office of Research and Analysis in the Office of Congressional and Intergovernmental Affairs. Prior to that, he spent almost 10 years with the U.S. House of Representative as both Legislative Assistant and Legislative Director. He has more than 30 years of federal agency experience in the legislative and executive branches.

Tony holds a bachelor of science degree in business administration from the University of South Carolina.

Tony works in LM's Washington, DC, office. ❖

### Russel Edge

Russel Edge is the new Team Leader for the LM Uranium Mine Team. Prior to this position, he served as Senior Advisor to the Director of the Office of Site Operations, a role he took on when he joined LM in November 2014. Additionally, Russel is the current Acting Director for the Office of Site Operations.

Russel worked 6.5 years for the International Atomic Energy Agency (IAEA), located in Vienna, Austria. IAEA is the United Nations branch that addresses international nuclear safety and security issues and promotes the safe use of nuclear applications. His primary IAEA focus was on uranium mining and milling legacies in former Soviet republics. While with IAEA, Russel established the International Forum for the Regulatory Supervision of Legacy Sites and the Coordination Group for Uranium Legacy Sites. Both groups support developing a comprehensive regulatory framework and improving national capacity relative to the uranium production life cycle, including uranium exploration, mining, milling, remediation, and post-closure care.

Prior to joining IAEA, Russel served in various positions within DOE. Preceding his transfer to IAEA, Russel was the program manager for the Laboratory Directed Research

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*Goal 5*

## Annual Accountability Report in Review as LM Readies Its 2017–2021 HPO Proposal

In May 2012, the U.S. Department of Energy Office of Legacy Management (LM) submitted a proposal for the Office of Management and Budget to designate LM as a High-Performing Organization (HPO). Upon the proposal's concurrence LM developed the Post-Competition Accountability Report (PCAR) and identified measures in two specific areas: Management Excellence and Program Performance.

Under each of these areas, LM identified goals and actions that reflected the President's six key management strategies:

1. Driving Top Priorities
2. Cutting Waste
3. Reform Contracting
4. Closing the IT Gap
5. Promoting Accountability and Innovation Through Open Government
6. Attracting, Motivating, and Retaining Top Talent

The annual PCAR is comprehensive, including a status update of all goals and actions contained in the May 2012 proposal. Additionally, LM conducts a quarterly status review on a subset of goals and actions identified as warranting more frequent reporting, such as cutting waste, personnel reporting, and safety records. The fourth annual LM PCAR draft is currently in review and, once finalized, it will be available on the LM website at (http://energy.gov/lm).

A proposal to recognize LM as an HPO for a third 5-year period (fiscal years 2017 to 2021) is being drafted. Questions or comments on the LM PCAR may be sent to Brenda.Waters@hq.doe.gov. ❖

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## Luis Alvarez and the Manhattan Project

encountered prejudice when, for example, the wives of fellow scientists protested after discovering that a family with the Hispanic name "Alvarez" had been assigned to their apartment building. He later observed that "they certainly did not count Spanish-Americans among their best friends."

Nevertheless, Alvarez found the Los Alamos work stimulating. J. Robert Oppenheimer—theoretical physicist assigned as scientific director of the Manhattan Project by General Groves—charged him with testing the implosion method for setting off atomic bombs. Due to the dangers, Alvarez conducted the tests outside of Los Alamos in nearby Bayo Canyon, observing the initial test from within an army tank. The precautions proved well-founded when the test sent scorching-hot shrapnel in all directions and caught the surrounding woods on fire. Alvarez went on to enjoy a long and distinguished career after the war, winning the 1968 Nobel Prize in Physics.

Today, Alvarez's journey through the Manhattan Project can be retraced at LM sites. Although the structures are gone, an engraved stone marks Site A's location within the Forest Preserve District of Cook County. Eckhart Hall is now home to the University of Chicago math department. And hikers can traverse Bayo Canyon along Los Alamos County's trail network. LM honors and remembers the important work that Alvarez and the many other nuclear weapons and uranium workers performed at its sites. ❖

*Top: Implosion testing in Bayo Canyon (c. 1940s). Bottom: Bayo Canyon today.*

LM is continually seeking opportunities to protect natural resources and the future. One simple step we can take toward improving environmental consciousness is to distribute the *Program Update* newsletter by email instead of sending a printed copy.

Please send your email address and your first and last names to lm@hq.doe.gov so that we can update our database.

Thank you for your assistance.

*Goal 1*

## Environmental Justice Activities

### 2015 AISES National Conference – Phoenix, AZ

The American Indian Science and Engineering Society (AISES) 37th annual conference was held in November in Phoenix, Arizona. The AISES conference has become the premier event for Native American science, technology, engineering, and math (STEM) professionals and students, and hosts the largest college and career fair for American Indians. This 3-day event focused on educational, professional, and workforce development of American Indians in STEM disciplines.

More than 1,700 participants from a variety of sectors attended this year's conference:

- American Indian high school and college students and teachers
- Business professionals
- Tribal leaders
- Enterprise and corporation personnel
- U.S. Department of Energy (DOE) representatives
  - DOE Headquarters (Washington, DC)
  - DOE Office of Legacy Management (Grand Junction, Colorado)
  - Los Alamos National Laboratory (New Mexico)
  - Bonneville Power Administration (Portland, Oregon)

The AISES National Conference is a "Safe Camp," which is welcoming, inclusive, supportive, and safe for all AISES family members regardless of race, color, sex, religion, sexual orientation, or gender expression/identity.

This year's theme, *STRIVE, RISE, and THRIVE,* encouraged attendees to always be and do their very best. Supporting the conference theme, 1964 Olympic Gold Medalist, Billy Mills, shared an inspirational keynote address during the opening ceremony. In 2012, Billy was awarded the Presidential Citizens Medal (second highest honor awarded to a civilian) by President Obama. On January 17, 2014, the National Collegiate Athletic Association presented Billy with the "Teddy," named after President Theodore Roosevelt and the highest award the NCAA bestows on an individual. On October 27, 2014, Billy was honored during the Anti-Defamation League *In Concert Against Hate,*

*LM Site Manager, Angelita Denny (left), with members of the U.S. Marine Corps at the AISES 2015 Conference in Phoenix, Arizona.*

held at the John F. Kennedy Center for Performing Arts in Washington, DC. In May, Billy received the 2015 Lifetime Achievement Award by the President's Council on Fitness, Sports, and Nutrition.

Another key component of this year's conference agenda was an exciting and motivational plenary session with Dr. Howard G. Adams. This kickoff for the conference provided key strategies and information for discovering and utilizing one's personal best and Dr. Adams indeed inspired attendees to *STRIVE, RISE, and THRIVE.*

The session explored five essential principles that can be used for building academic, career, personal, and professional success:

1. Purpose
2. Preparation
3. Practice
4. Perseverance
5. Professionalism

The AISES conference experience was enhanced by the opportunity to interact with the amazing AISES Council of Elders at the Friday morning Blessing Ceremony and uplifting women's and men's talking circles. The AISES Conference closed with the Traditional Honors Banquet and a "Rock your Mocs" Pow Wow that has become a popular way to close the conference experience. The 2016 conference will be held in Minneapolis, Minnesota. ❖

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*Goal 5*

## Navarro Research and Engineering, Inc. – LM Support Services Contractor

Navarro Research and Engineering, Inc., took over as support services contractor to the U.S. Department of Energy (DOE) Office of Legacy Management (LM) on October 1, 2015. The cost-plus-award-fee contract provides support services for LM's primary mission to manage DOE's post-closure responsibilities and ensure protection of human health and the environment.

Navarro provides support to LM in the areas of long-term surveillance and maintenance, information technology, records management, asset management, and business-related activities. The contract has a 2-year base period, including the June 1, 2015 through September 30, 2015, transition period, along with a 3-year option period. ❖

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## Environmental Justice Activities

### Environmental Justice Institute, Allen University – Columbia, SC

This past October the U.S. Department of Energy (DOE) and Allen University established an Environmental Justice (EJ) Institute. Allen University was founded in 1870 and is a private, liberal arts, historically black college and university (HBCU) located in Columbia, South Carolina. The university is recognized as the state's first institution to be founded by African Americans to educate African Americans. Its purpose is to prepare leaders skilled in communication and critical thinking, and who demonstrate high moral character. It aims to provide an environment of academic excellence to heighten students' chances of succeeding in a culturally diverse and economically global world. Allen University desires to follow a Total Life Curriculum model to develop student intellect, spirit, and body as they are educated in a climate designed for success.

The EJ Institute works with EJ communities to promote youth development; attract and mentor students toward the science, technology, engineering, and mathematics (STEM) discipline; and to build a sustainable training, education, and employment pipeline. A collaborative partnership plans, develops, and implements an EJ Institute as a community-sustainable resource center for rural and economically challenged minorities and low-income populations around the DOE Savannah River Site in Aiken, as well as other communities in South Carolina.

Promoting environmental, sustainable, and healthy communities by enabling them to address the burden of EJ issues through strategic partnerships and programs will be achieved by accomplishing a three-phased intervention:

1) Engagement

2) Education

3) Empowerment

Implementing this institute will demonstrate broad-based collaboration with strategic partners and reduce costly duplication efforts while meeting the community's needs. ❖

*Goal 6*

## Federal Agencies Collaborate To Improve Communication with the Navajo Nation

The newly formed, multi-agency Navajo Nation Community Outreach Network met in Albuquerque, New Mexico, in October to work on an outreach plan to improve communication with community members about uranium issues on the Navajo Nation. Representatives from six federal agencies and the Navajo Nation make up the outreach network, which is part of the second Navajo Nation five-year plan outlined in the *Federal Actions to Address Impacts of Uranium Contamination in the Navajo Nation* (http://www.lm.doe.gov/Tuba/2014_Navajo_Nation_Five-Year_Plan.pdf).

*Navajo Nation Community Outreach Network members discuss community concerns during an October 2015 meeting in Albuquerque, New Mexico. From left to right: David Yogi (EPA), Rose Grey (Navajo Abandoned Mine Lands/Uranium Mill Tailings Remedial Action), Frances Totsoni (Navajo Nation Outreach Liaison), and Elena Neibaur (EPA).*

*Dr. April Gil (LM) welcomes Frances Totsoni as the new outreach liaison.*

In 2008, the U.S. House Committee on Oversight and Government Reform directed federal agencies to coordinate their efforts to address uranium contamination on the Navajo Nation. The U.S. Department of Energy Office of Legacy Management (LM), U.S. Environmental Protection Agency (EPA), Bureau of Indian Affairs, U.S. Nuclear Regulatory Commission, Indian Health Service, and the Agency for Toxic Substances and Disease Registry responded to this direction by creating and committing to the actions in the five-year plan. The second five-year plan, prepared in 2014, builds on the work of the first five years based on lessons learned, including creating the outreach network. The purpose of the outreach network is for all of the agencies involved to work together to enhance community understanding of uranium issues and communicate what each agency is doing to address the issues.

The federal agencies and the Navajo Nation agreed that in-person outreach and education plays an important role in identifying and responding to community members' concerns and questions about uranium. The Navajo Nation Outreach Liaison position was created to support effective dialog with all stakeholders. Frances Totsoni was hired to serve in that position. Ms. Totsoni is fluent in Navajo and English languages. She has several years of experience working for the Navajo government agencies and will lead communication efforts and establish and maintain the community outreach network for the benefit of all agencies with roles in the five-year plan.

"The outreach network will help inform people about issues that are important to them," Ms. Totsoni said. "I'm looking forward to helping my people." ❖

*Goal 1*

## Weldon Spring Site Reaches New Milestones

The U.S. Department of Energy Office of Legacy Management (LM) proudly announces that the Weldon Spring, Missouri, Site Interpretive Center has capped off 2015 with three very important milestones:

1. More than 250,000 visitors since the Interpretive Center opened in August 2002
2. The year's 27,079-visitor count was the highest annual total since the Interpretive Center opened
3. Scheduling capacity was exceeded for interpretive programs and a waiting list has been established

The purpose of the Interpretive Center is to inform the public about the site's history, remedial action activities, and final conditions. The Weldon Spring site was once used for explosives production (1941 to 1945) and uranium refining (1957 to 1966). Extensive remediation concluded with the 41-acre, onsite disposal cell completion in 2001. Today, the site includes the publically accessible disposal cell, a 150-acre native prairie, educational gardens, and the Interpretive Center. Audiences and visitors to the site have come to depend on interpretive opportunities to supplement school curriculum and to learn about the site's history, remediation, restoration, and long-term surveillance and maintenance activities.

Interpretive Center staff strives to create the highest quality educational experience for visitors and program attendees. LM is pleased to have reached significant attendance numbers and to know that each community member involved in interpretive programs is connecting with the site's historical legacy and overall mission. ❖


*Weldon Spring Site Interpretive Center staff celebrates the attendance milestone.*

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## Pinellas Site Uses Horizontal Wells for Enhanced Bioremediation

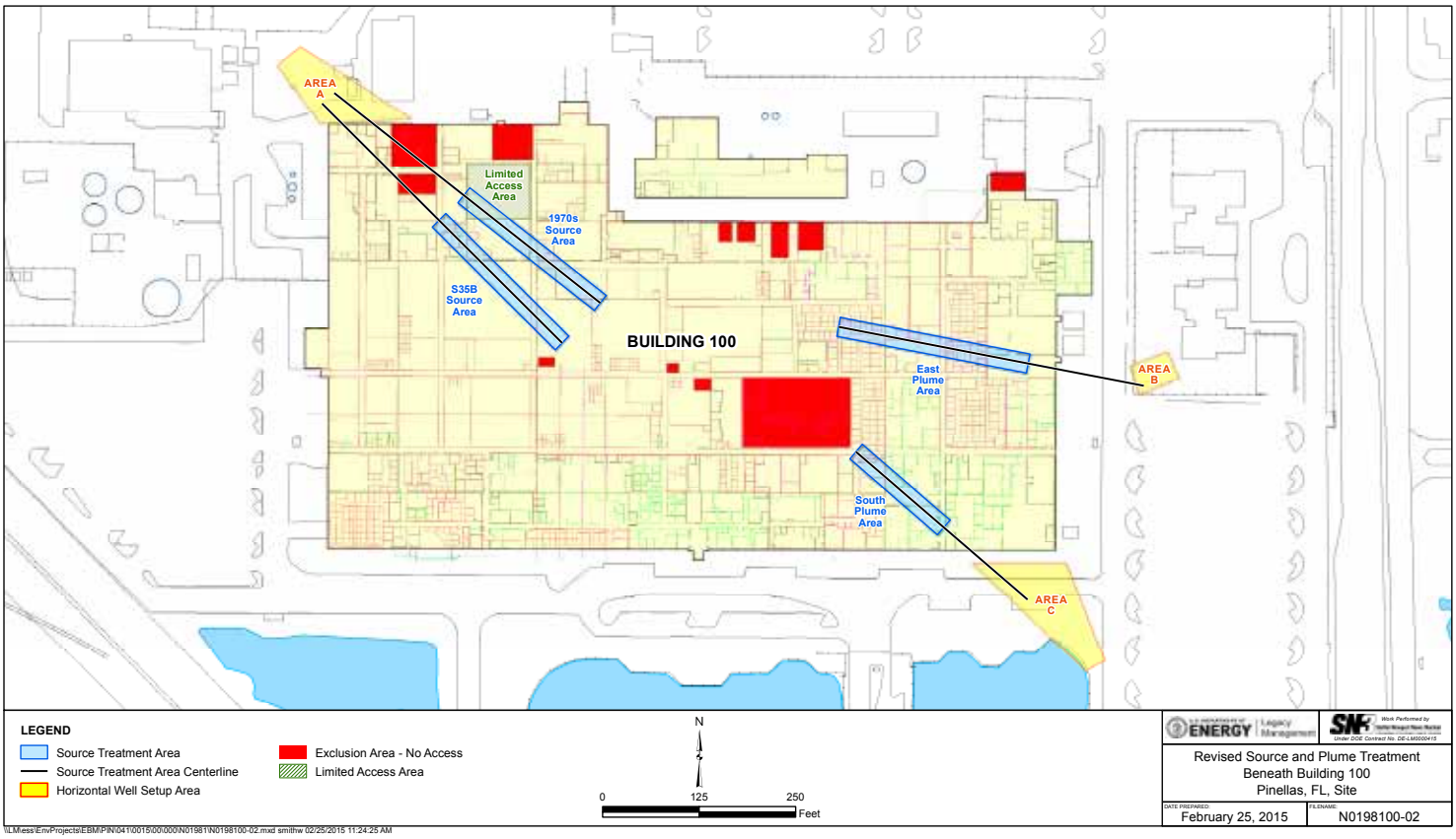



*Figure 1. Treatment Area Locations Beneath Building 100.*

remediation work was performed during the building's second shift time frame to minimize disruptions to tenant activities.

In July, August, and September 2015, eight horizontal wells were installed (as deep and shallow pairs) to target the deep and shallow aquifer portions beneath Building 100 (see Figure 1 above). Installation depths ranged from 13- to 32-feet below surface. Horizontal well lengths ranged from 350 to 470 feet, and the slotted sections of each well ranged from 150 to 250 feet. The slot size and spacing (0.013 inch wide and 1.5 inches long, with one slot per 2-foot well section) were specifically designed for injecting EVO and DHM. The 3-inch diameter wells were constructed of fiberglass reinforced epoxy, a high-strength material that was chosen to limit the potential for well failure during installation.

The property landlord and tenants were kept informed during all field activity phases to address any concerns or questions. Locating subsurface utilities prior to drilling was critical to the project's success due to the shallow drilling angle (15º below horizontal). Using a supplemental drilling navigation system (the short steering tool) was also critical because radio interference inside the building, combined with no- or limited-access areas, precluded sole use of the typical surface navigation system (see Figure 1 above).

The horizontal wells were used to inject EVO and DHM in November 2015. Diluted EVO and DHM volumes ranged from 4,500 to 7,500 gallons, depending on slotted well length. These volumes included approximately three well casing volumes of clean water, injected to flush the EVO and DHM from the well. Monitoring wells placed inside and outside Building 100 will be used to monitor project performance. ❖

Continued from page 2

## Fernald Preserve: A Learning Destination

Site staff members support numerous, specific college-class subject requests, including local conservation issues, ecological restoration, hazardous materials and waste management, groundwater treatment, general environmental science, green-building design, environmental activism history, restoration and remediation, engineering, and other related topics, as requested.

Example of one professor's request:

*"I have attached the course syllabus, to give you a sense of what we do. This is a broad overview of the field of environmental history, so touring Fernald allows us to cover three important topics:*

- *Environmental history of the Cold War and nuclear technology.*
- *Environmental activism and reform.*
- *Ecological restoration and the long term environmental consequences of modern technology."*

Students and professors come to the Fernald site from local and regional college campuses. They are attracted to its teaching opportunities because site staff concentrate on requested topics and help students put lessons learned at the Fernald Preserve into a complete story that reveals an environmental issue that has come full circle. Programs are accomplished using site and Visitors Center amenities including exhibits, the biowetland, meeting space, the water treatment facility, restored habitats, the OSDF, and an extensive network of nature trails.

*University class learning about past Feed Materials Production Center operations.*

Positive feedback is received from students and teachers regarding their site experiences. Many return with other classes or friends and family to share what they have learned.

> *"Thank you both for taking the time out and showing us the Fernald site and explaining the past and present activities."*
>
> *"As always, I am very impressed with the Fernald Preserve."*

Supporting the next generation of environmental scientists enables them to become better equipped for a future when they will be responsible for solving environmental management issues. Understanding historical and current, real-world circumstances helps ensure that visiting college students are prepared to protect the environment for future generations. ❖

## Anticipated Legacy Management Sites Through Fiscal Year (FY) 2021


Continued from page 6

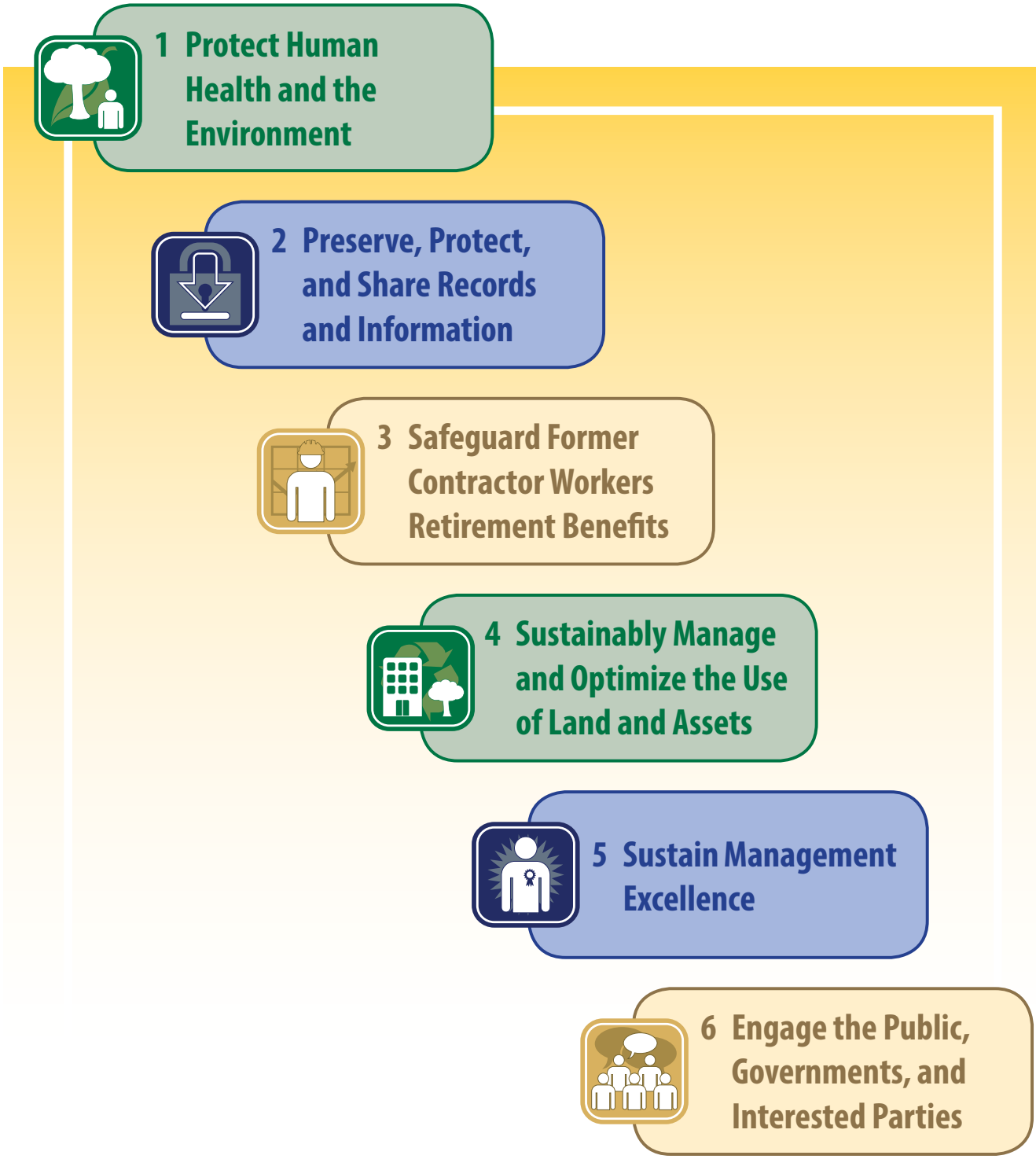
## LM Announces New Team Leaders

and Development program, supporting Sandia National Laboratories (SNL) in Albuquerque, New Mexico, and was point of contact for the Defense Nuclear non-Proliferation programs at SNL. He also served as the Long-Term Surveillance and Maintenance Program Manager in Grand Junction, Colorado, and as a project manager on the Uranium Mill Tailings Remedial Action project, which addressed remediation of 22 former uranium mill sites nationwide.

Russel has over 30 years of experience in remediation and the long-term surveillance and monitoring of legacy uranium milling facilities within the U.S. Government and private sectors.

Russel works in LM's Westminster, Colorado, office. ❖

## Legacy Management Goals



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