

U.S. Department of Energy

PROGRAM UPDATE



July-September 2019



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LM Unveils the
Atomic Legacy Cabin

Fernald Preserve
wins EPA Site
Reuse Award

Legacy Management
Interns Gain Experience,
New Perspectives

Director's Corner



Another busy summer has come to a close, and students are back in school. Among them are several U.S. Department of Energy (DOE) Office of Legacy Management (LM) interns. They spent the summer with us visiting disposal cells, peering through microscopes at geologic sediment, watching environmental justice unfold at public meetings, participating in Uranium 101 workshops, sampling New Mexico's famous green chile, and much more.

Reading about their adventures in this issue of *Program Update*, as well as LM contractor Ray Johnson's experience teaching a geochemical modeling course at the University of the Witwatersrand in South Africa, reminds me that in order for LM to be successful in our mission, we must take an expansive view of the concept of long-term stewardship.

It's not enough for us to serve as custodians of our sites; we also need to nurture the students and young professionals who are poised to inherit these sites. Mentoring the next generation of engineers, hydrologists, project managers, IT professionals, public outreach specialists, administrators and others isn't something that LM does merely out of generosity – rather, it's the full expression of long-term stewardship.

It's also practical. Federal agencies and contractor partners anticipate a colossal spike in employee retirements as the Baby Boomer generation reaches pension eligibility. According to data from the U.S. Office of Personnel Management, 14% of federal employees were eligible to retire as of 2018, and that number is expected to increase to 30% within five years. Within DOE, the numbers are even more pressing. More than 17% of DOE employees are currently eligible to retire, and nearly 37% will be eligible by 2023.

A changing workforce presents both opportunity and risk. We risk losing a vast repository of institutional knowledge when long-time staff move on, but we gain the opportunity to leverage fresh talent who are engaged with emerging technologies and best practices, whether that means advanced geochemical modeling or the most effective use of social media for public outreach.

These new team members will bring a diverse set of technical and personal skills. It's incumbent upon us to give them a crash course on making their place in the workforce and navigating our organizational culture. They should be made aware of our

Expectations for All Employees and the need to work with others, not in competition with them. It's important that they learn to see problems as opportunities and anticipate the challenge of finding new, innovative solutions while understanding the perceptions of risk. We should encourage them to take on challenges and give them permission to fail, particularly because they may not have been exposed to failure and the experiential gains that come from dealing with adversity.

Thanks to the dedication of our many federal staff and contractor partners involved in mentoring, teaching, and inspiring the next generation of LM's workforce, I'm confident that our collective opportunities outweigh our risks. So the next time that you encounter an intern or a new hire in the office or the field, take the time to welcome that person aboard, share your knowledge, answer questions, and maybe learn some new things yourself. Who knows, maybe you will help that person discover where his or her passions and talents intersect your own. It's all part of long-term stewardship and my fulfilling career direction is working with you all on this mission.

Warm Regards,

Carmelo

Carmelo Melendez



LM Goals



Goal 1
Protect human health and the environment.



Goal 2
Preserve, protect, and share records and information.



Goal 3
Safeguard former contractor workers' retirement benefits.



Goal 4
Sustainably manage and optimize the use of land and assets.



Goal 5
Sustain management excellence.



Goal 6
Engage the public, governments, and interested parties.

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The Office of Legacy Management would like to congratulate the Office of Environmental Management on 30 Years of Service to Our Nation!

September 1989 - September 2019

Cover: A monarch butterfly rests under a prairie dock bloom. Visitors to the Fernald Preserve tagged the butterfly in a citizen science effort to support the study of monarch migration and population status.



Fernald Preserve Wins EPA Site Reuse Award

On July 11, 2019, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) was notified that the Fernald Preserve site in Ohio won the U.S. Environmental Protection Agency's (EPA) second annual "National Federal Facility Excellence in Site Reuse" award for the National Priorities List (NPL) category.

The EPA established the annual award program in 2018 "to recognize the teams who have supported the reuse and restoration of federal facility sites through outstanding efforts to ensure that sites are remediated to promote continued property use or support a site reuse, as well as provide an educational opportunity about how the awardees' sites were remediated and reused to serve as an example to other site remediators." Awards are made in three other categories: NPL Base Realignment and Closure (BRAC) sites, non-NPL sites, and non-NPL BRAC sites.

EPA Administrator Andrew Wheeler said, "These awards highlight the successes we have achieved through working cooperatively with our federal, state, and local partners to restore properties in a manner that protects public health and serves as a catalyst for economic growth and community revitalization."

The 2019 award for Fernald Preserve reflects the hard work; innovative thinking; and cooperation among DOE, site regulators,

and stakeholders during the cleanup performed by the Office of Environmental Management and subsequent long-term surveillance and maintenance (LTS&M) activities that LM assumed responsibility for in 2006.

Environmental remediation, ecological restoration, and continuing LTS&M of the Fernald site have converted the former Cold War production facility to an undeveloped park with an emphasis on wildlife. The 1,050-acre site now features over 350 acres of established tallgrass prairie, along with 140 acres of wetlands and open water, and almost 400 acres of forest. Wildlife observed on the site includes over 250 species of birds; many pollinators; sensitive amphibians, such as the marbled salamander; and the first verified bobcat sighting in Butler County, Ohio, in decades.

LM has also developed partnerships to promote conservation efforts at the site, such as working with the Cincinnati Zoo and the U.S. Fish and Wildlife Service on a recovery program for the federally endangered American burying beetle. A Leadership in Energy and Environmental Design (LEED) certified visitors center, an array of interpretive services, spaces available for community use, and a network of 7 miles of public hiking trails and wildlife watching opportunities continue to engage the community and bring an ever-increasing number of visitors to the Fernald site.

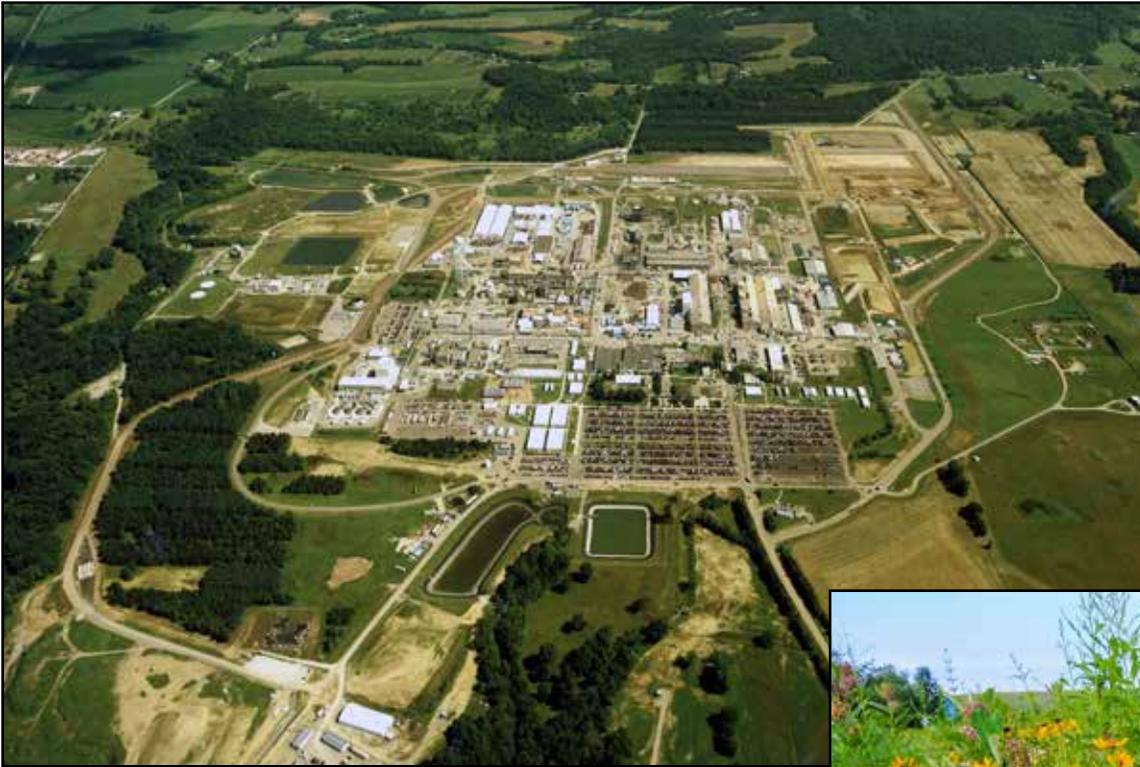
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A trailside observation deck overlooks the former production area, which is now an excellent wildlife viewing and photography spot.

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Fernald Preserve Wins EPA Site Reuse Award



Left: In July 1998, workers were halfway through the \$4.4 billion cleanup of the Fernald Closure Project, which was completed in December 2006. The site opened to the public in 2008. Below: Prairie wildflowers and grasses flank the trail sides and roadways at the Fernald Preserve.

“The Fernald Preserve serves as a great example for various environmental, economic, and social benefits of reuse. The site actively engages community use, ecological revitalization, cultural resource preservation, and renewable energy,” said Joyce Chavez, the LM reuse asset manager.

In 2019, the EPA’s “National Federal Facility Excellence in Site Reuse” program commended the exceptional work and outstanding accomplishments in remediating a federal facility site for beneficial reuse at four sites including the Fernald Preserve, Ohio (NPL site); Former Naval Air Station Cecil Field, Florida (NPL BRAC); Former Myrtle Beach Air Force Base, South Carolina (Non-NPL BRAC); and Denver Federal Center, Colorado (Non-NPL BRAC). Federal facility sites such as these are examples of successful site reuse that can occur at remediated sites.

At present, EPA is involved in cleanup and property transfer work at over 170 federal sites across the country, including some of the largest and most complex Superfund program sites.

For more information about EPA’s National Federal Facility Excellence in Site Reuse Awards: <https://www.epa.gov/fedfac/2019-national-federal-facility-excellence-site-reuse-awards>. ❖





LM Unveils the Atomic Legacy Cabin



Above: The Atomic Legacy Cabin, a new interpretive center located at the DOE Grand Junction, Colorado, office. Right: LM Program Analyst Padraic Benson emcees the opening ceremony of the Atomic Legacy Cabin.

On June 6, 2019, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) hosted a ribbon-cutting ceremony for the Atomic Legacy Cabin, a new interpretive center located at the DOE Grand Junction, Colorado, office. The cabin once was the epicenter of the nationwide search for uranium that was started by the Manhattan Project and later escalated during the Cold War.

Delivering the keynote address, LM Deputy Director Peter O’Konski shared the historical significance of not only the cabin, but also the specific day in history: June 6, 2019, which marked the 75th anniversary of Operation Overlord — more commonly known as “D-Day” — when the Allied forces landed on the beaches of Normandy, France, in 1944 and battled against German occupation.

The historic nature of the site, which is listed on the National Register of Historic Places, was a consistent theme during the event. The family of Samuel Billison, who served as a Navajo Code Talker and was critical to the Allied victory in the Battle

of Iwo Jima, attended the event. Also in attendance was Bill Babbel, son of Gordon Babbel, the famed inventor of the Babbel Counter, which was used for surveying and identifying uranium. Historic exhibits in the interpretive center reference and honor the contributions of Billson, Babbel, and many others.

“In addition to being stewards of the environment, LM strives to be stewards of history — and this is history coming to life,” said O’Konski.

In 1943, Second Lieutenant Phillip Leahy, under secret orders, traveled to Grand Junction to develop a domestic uranium procurement program as part of the Manhattan Project. Under the auspices of the U.S. Army Corps of Engineers Manhattan Engineer District, Leahy procured a 55-acre gravel pit located near the Gunnison River.

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LM Unveils the Atomic Legacy Cabin

The log cabin located on the site later became the base of operations for the U.S. Atomic Energy Commission (AEC) Colorado Raw Materials Office, which was the regional epicenter of uranium mining and processing that characterized the arms race between the U.S. and the Soviet Union during the Cold War.

During the aftermath of the Cold War, former uranium-processing sites were remediated and repurposed. In 2001, DOE transferred ownership of 46 acres of the original 55-acre Grand Junction site to the Riverview Technology Corporation (RTC), a business-development nonprofit sponsored by Mesa County and the city of Grand Junction. The site is now home to the award-winning Business Incubator Center, a nonprofit that supports the launch and growth of businesses by local entrepreneurs.

RTC, DOE, and associated stakeholders partnered to renovate the cabin for historical purposes. RTC and Business Incubator Center Executive Director Jon Maraschin highlighted the substantial efforts and public-private partnership necessary for this project to come to fruition.

“It was quite the Sisyphean task,” said Maraschin.

Not all contributors to this project could attend the ceremony. Leahy, who passed away in 1996, was represented by his daughters, Sharon Leahy-Bachochin and Linda Dierks. In a heartfelt speech, Leahy-Bachochin shared her memories of her father.

“My father would be particularly pleased that the cabin will have a second life as a museum,” said Leahy-Bachochin. “It will be an

asset to Grand Junction and the state of Colorado for educational purposes — a place to explore and understand the milling and refining that helped end World War II.”

Speakers also paid respect to Bill Chenoweth, a former AEC and DOE employee of 30 years. Though a geologist by trade, Chenoweth worked tirelessly to preserve the history of the site through his interactions with Leahy. Chenoweth died in 2018. Also honored during the event was Richard “Dick” Dayvault, a 35-year contractor to DOE, who also played a significant role in the historical preservation for the site. Dayvault passed away in 2015.

Following the speeches, the official ribbon cutting took place. A reception and open house followed. Approximately 160 people attended the event.

The Atomic Legacy Cabin is open to the public on Tuesdays from 9 a.m. to noon, Wednesdays from 10 a.m. to 1 p.m., and on Thursdays from 1 p.m. to 4 p.m. Tours are available upon request. Email AtomicLegacyCabin@lm.doe.gov for more information. ❖



Above: LM Deputy Director Peter O'Konski delivers the keynote speech during the opening ceremony of the Atomic Legacy Cabin.

The ribbon-cutting for the DOE Atomic Legacy Cabin. From left to right: Jon Maraschin, Grand Junction Business Incubator executive director; Sharon Leahy-Bachochin, daughter of Philip Leahy; Peter O'Konski, LM deputy director; Bud Sokolovich, supervisor for the LM Asset Management Team.



Atomic Legacy Cabin Sparks Outreach in Grand Junction

Word is spreading, and the Grand Junction, Colorado, community wants to learn more about the U.S. Department of Energy (DOE) Office of Legacy Management's (LM) new Atomic Legacy Cabin, which opened in June 2019.

The Atomic Legacy Cabin focuses on the ongoing uranium story of the Colorado Plateau. The region's communities played an important role in the Manhattan Project and the Cold War, providing the raw materials for the nation's nuclear weapons complex. The cabin invites open communication between LM and community members about our shared past and commitment to long-term stewardship of legacy sites.

Staff with the Atomic Legacy Cabin is developing educational and outreach programming that will be available to local schools and community groups in the future.

Homeschool Students Visit Atomic Legacy Cabin

Students of Galileo's Village Homeschool Co-Op attended the Atomic Legacy Cabin's first educational program on August 16.

About 30 students from all grade levels and their teachers participated in the "Become a Historical Thinker" presentation in the cabin's classroom area. The presentation was designed to meet Colorado State Education Standards by discussing the importance of analyzing history using multiple primary sources to gain a more accurate understanding of events. World War II history and the cabin's role in the Manhattan Project were explained through a variety of homefront perspectives.



About 30 students and teachers from Galileo's Village Homeschool Co-op visited the Atomic Legacy Cabin.

After the presentation, the students participated in a fun activity designed to help them engage with the interpretive center exhibits by "cracking the secret code" to answer questions about the cabin exhibits.

History of Atomic Legacy Cabin Shared with Historical Society



Richie Ann Ashcraft, the LM Support interpretive center lead, shows members of the Mesa County Historical Society a miner's helmet that once used carbide fuel to produce an open flame as a light source. The helmet is one of many artifacts on display at the Atomic Legacy Cabin.

LM Support Interpretive Center Lead Richie Ann Ashcraft presented "Atomic Legacy Cabin — History of Uranium on the Colorado Plateau" at the monthly meeting of the Mesa County Historical Society (MCHS). The event was hosted by the society and the Museums of Western Colorado.

Ashcraft's presentation featured historical photos of western Colorado and its residents during World War II and through the Cold War uranium boom. It also included discussion of the recent reuse project that resulted in the development and opening of the Atomic Legacy Cabin.

"The presentation given to our attendees was a comprehensive insight into what it took to create the Atomic Legacy Cabin," said Priscilla Mangnall, MCHS president. "The presenter's knowledge of the uranium boom and the culture it created in western Colorado was vast and very interesting."

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Atomic Legacy Cabin Sparks Outreach in Grand Junction

Society members had many questions about the history and location of the interpretive center. The group also expressed interest in using the new facility for meetings and scheduling group tours.

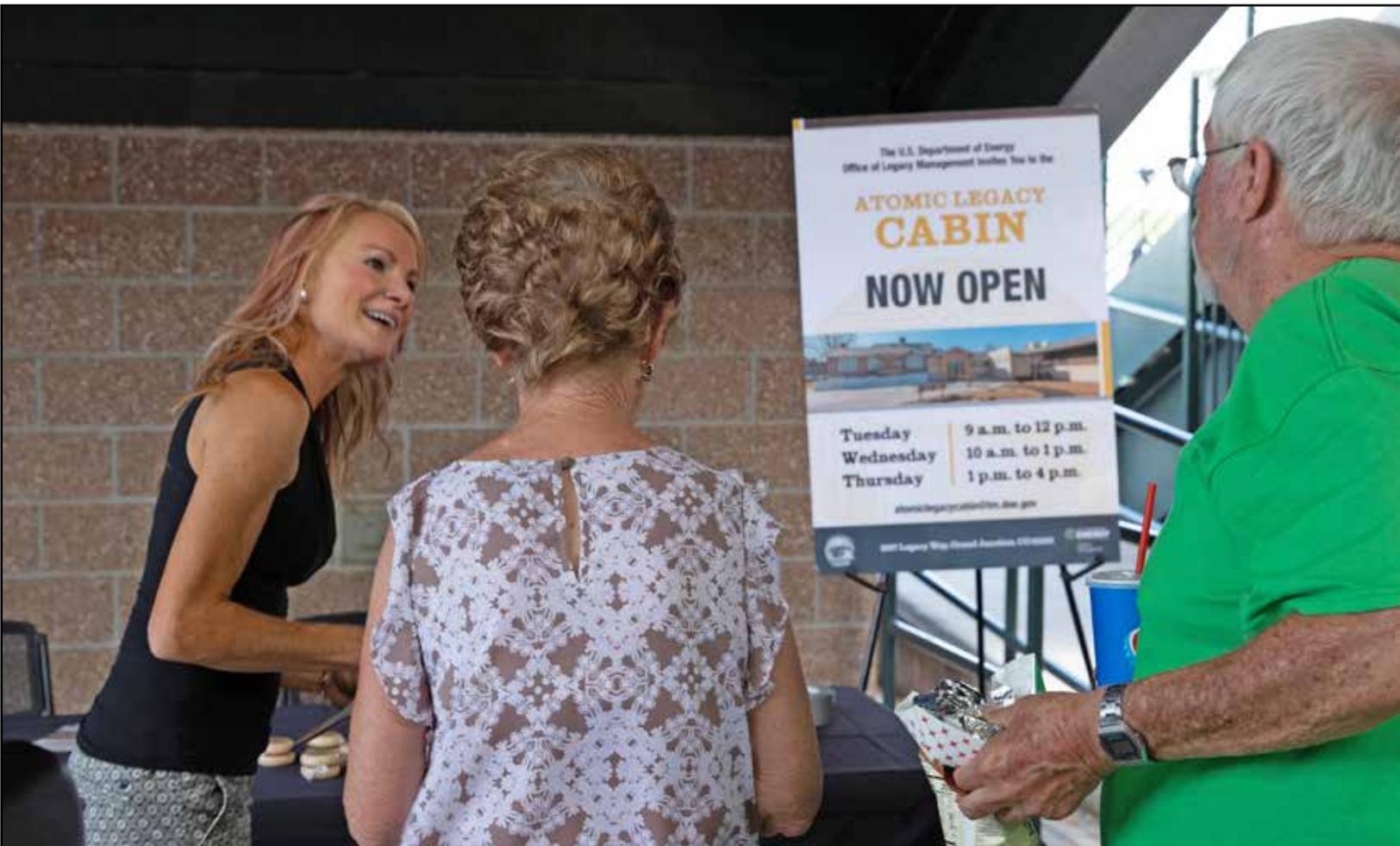
Those in attendance who had already visited the cabin said the new interpretive center was impressive and enthusiastically encouraged all to visit.

Take Me Out to the Ball Game

In recognition of former DOE employees, the Grand Junction Rockies baseball team hosted its third annual Atomic Workers Appreciation Night at Suplez Field in Grand Junction, Colorado, on August 2. The event was sponsored by Nuclear Care Partners.

LM Support contractors Richie Ashcraft and Heather Cates managed an outreach booth at the event on behalf of the Atomic Legacy Cabin. They gave away yo-yos and pencils as well as provided information about the new interpretive center's hours and location. About 300 baseball fans visited the table to learn more about the cabin.

Many former DOE employees were excited to learn that a new interpretive center had been opened to share the story of the search for uranium that was started by the Manhattan Project and later escalated during the Cold War on the Colorado Plateau. ❖



Heather Cates, a member of the LM Support Public Affairs staff, provided information about the new Atomic Legacy Cabin at the Grand Junction Rockies baseball game on August 2.



We Have a Tie! Two Winners of the Philip C. Leahy Employee of the Year Award



LM Director Carmelo Melendez presents the Philip C. Leahy Employee of the Year Award to co-winner Padraic Benson



Co-winner Nicole Pino accepts the Philip C. Leahy Employee of the Year Award from LM Director Carmelo Melendez.

For the first time, there were two winners of the Philip C. Leahy Employee of the Year Award.

Both Nicole Pino and Padraic Benson were recognized for their hard work and dedication during the 2019 All-Hands Awards Banquet.

The Philip C. Leahy Award recognizes staff who demonstrate the qualities of a team player, as described by John C. Maxwell's "The 17 Essential Qualities of a Team Player." The book lists qualities such as: dependable, enthusiastic, prepared, self-improving, selfless, and tenacious. Nominees are expected to possess these qualities and notably take extra steps to ensure LM's organizational mission and goals are achieved.

For 2019, 18 staff members received the Philip C. Leahy Award, and after a thorough review, the award committee determined there was tie for first place. They forwarded a recommendation to honor two winners, and LM Director Carmelo Melendez approved the committee's suggestion.

Pino, a member of the Financial Audits and Contracts Services (FACS) Team, was recognized for her role in developing a strategic uncosted balance prediction model, a financial tool that plays a key role in forecasting the optimal levels of carry-over and informs management of the best pathways forward for funding.

That might sound complicated, but Pino explained it simply as something that "helps management understand how things are going to be spent through the fiscal year and in out-years."

"I work with a lot of talented individuals," said Pino. "We're a high performing team. The work is challenging, engaging, and always evolving."

Jeff Austin, the project controls analyst for the FACS Team, said the model Pino developed has significant impact on the ability of DOE to meet the requirements of financial and fiduciary stewardship.

"Nicole is a top-notch person and a consummate professional," said Austin. "She truly is humble and kind. No matter who you are in the organization she will make you feel valued. She's a huge part of the FACS Team's success, and her financial and budget expertise is priceless. It's truly a pleasure working with Nicole each day."

"Nicole is always willing to go above and beyond to help her colleagues," said co-winner Benson. "In fact, in many ways I owe my award to the example she set when I first joined LM."

Benson has split duties as a member of the Communication, Education, and Outreach Team. He supports site operations teams and serves as a historian for LM, covering both the history of the organization and the history of the sites now under stewardship.

He received the award, in part, for his work on restoration of the Grand Junction cabin and development of the Atomic Legacy Cabin Interpretive Center.

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We Have a Tie! Two Winners of the Philip C. Leahy Employee of the Year Award

The award committee said, Benson has “a unique ability to make complicated histories understandable, relatable, and relevant.” They also said that with restoration of the cabin development of the interpretive center: “Mr. Benson encapsulated 75 years of Manhattan Project and Cold War History within 2,000 square feet of space.”

Benson said that the diversity of sites in LM provides endless opportunities to learn new things and to apply his interest in history.

“We have sites stretching from Alaska to Puerto Rico. There are more than 90 sites, and they each have their own unique history. So, I’ve been able to learn about the history of uranium mining, milling, and processing, as well as topics like metal fabrication. There’s a wide range of histories to learn about within LM,” Benson said.

Both award winners said the real satisfaction is knowing that their coworkers nominated and selected them for the award.

“It means a lot to me,” said Pino. “To have management set forward a path to recognize employees is really thoughtful and appreciated. I’m very humbled and honored to be nominated amongst so many talented and hardworking colleagues. It feels really good to see all your hard work recognized.”

“Being nominated by my co-workers and receiving the Leahy Employee of the Year Award was a tremendous honor,” said Benson. “I’ve benefitted greatly from the opportunities that LM and my colleagues have provided me, and it’s great to know that my work is furthering our mission.”

LM established the Philip C. Leahy Award in 2017 to recognize employees who are outstanding team players. Leahy set up what is now LM’s Grand Junction office as part of the Manhattan Project, and later served as the site’s first manager under the U.S. Atomic Energy Commission. ❖

Below: 2019 Philip C. Leahy Award winners (L-R): Tracy Atkins, Brent Lewis, Tashina Jasso, Teresa Collins, Dante Tan, Darina Castillo, Josh Linard, Quin Clyburn, Cliff Carpenter, LM Director Carmelo Melendez (not a recipient), Doc Parks, Nicole Pino, Jalena Dayvault, Pdraic Benson, Jeff Murl, Brian Zimmerman, LM Deputy Director Peter O’Konski (not a recipient), and Ken Starr.





Colorado Mesa University Internship at the Grand Junction Office: New Frontiers on a Microscopic Scale



CMU intern, Jordan Drake, working in the ESL microscope room.

An intern with the Persistent Secondary Contaminant Sources (PeSCS) Project recently completed work that improves the techniques used to identify uranium in geologic samples using scanning electron microscopes.

Jordan Drake, a Colorado Mesa University geology major, interned with the PeSCS project during the spring of 2018. Her work involved the use of a high-resolution scanner and dual microscopes at the Environmental Sciences Laboratory (ESL) in Grand Junction, Colorado.

The PeSCS Project, which is part of the Applied Studies and Technology Program, is focused on determining how uranium at U.S. Department of Energy Office of Legacy Management (LM) sites may be retained in persistent secondary source zones, even when the original uranium tailings materials have been removed. These persistent secondary uranium sources formed below former tailings piles due to complex geochemical reactions created by interactions between the tailings' fluids and the native material.

Drake's work involved the identification of uranium from fission-track radiography along with traditional thin section mineralogy. Fission-track radiography uses a thin section of the geologic sample (usually sediment), which is saturated with epoxy, cut, and mounted on a glass slide. The thin section is then covered with mica and the whole sample is irradiated in a research nuclear reactor. As the uranium in the sample undergoes fission decay in the nuclear reactor, the uranium decay particles etch the mica, producing fission tracks that can be seen under a microscope. Images from the fission tracks in the mica are compared with thin section images to correlate very low concentrations of uranium with the associated mineralogy.

Drake created images of the thin sections and the fission-tracked mica with the scanner and microscopes in order to



Left to right: Microscope image of a thin section in plain light. Fission-track image of the same grain, where dark "etched" lines are created by uranium decay. Image from the SEM at the U.S. Geological Survey Denver Microbeam Lab, where the circle is the location of elemental analyses, which indicated an iron oxide and clay coating was retaining the uranium seen in the fission-track image.

provide new overlay images for interpretations of uranium occurrence. These images were manipulated on a computer screen to compare the microscopic location of the uranium from the fission tracks with the grains and minerals seen in the thin sections. The thin sections were then imaged with a scanning electron microscope (SEM) under even higher magnification than the standard microscope. The SEM has the capability to identify the actual elements and minerals in these coatings, which turned out to be iron oxides and clays.

"Ms. Drake's imaging work helped show where uranium occurred within the thin section using the fission-track radiography," said Ray Johnson, an LM Support senior geochemist/hydrogeologist, who oversaw the work. "This allowed for significant time savings when using the SEM, as we could then zoom into the exact grain locations (micrometer scale) on the thin sections where uranium was being concentrated."

"This internship opportunity allowed me to take direction from a highly sophisticated senior geochemist and hydrogeologist in an advanced work environment with creative, energetic, scientists," said Drake. "This environment allowed me to be a part of an extensive research project that taught me how to think creatively, abstractly, and theoretically while using hands-on techniques to help identify hazards."

The combination of thin section, fission-track radiography, and SEM techniques is a new frontier in identifying the mineralogy of secondary uranium sources and determining how uranium can be stored or released from the solid phase, and it improves our understanding of how PeSCS can influence subsequent groundwater quality. This work is providing added information on how protectiveness of human health and the environment can be maintained at LM sites, while providing educational outreach to a local university. ❖



Legacy Management Interns Gain Experience, New Perspectives

Ki'Ana Speights, a senior at Hollins University, and **Alyssa Renteria**, a sophomore studying environmental sciences at the University of Hawai'i, spent eight weeks living and working together during their internship at the Grand Junction, Colorado, office.

Did the internship affect how you think about your future career?

AR: The internship taught me that I want to pursue becoming a hydrologist, and it has even given me a few of the tools I will need in the future.

KS: The internship reiterated why I chose to pursue environmental justice. Initially, I was interested in wildlife ecology and how climate change is affecting these organisms. Even though I love animals with all my being, I just do not see myself doing that for the next 20 to 30 years. I also realized through this internship how much I truly care about the well-being of others and want to help make a change.

What are a few things you learned by interning with the U.S. Department of Energy (DOE) Office of Legacy Management?

AR: I've learned about the goals of the U.S. Department of Energy and how the Office of Legacy Management is part of the greater mission.

KS: I learned about how the DOE took part in the Manhattan Project, the Five-Year Plan to clean up uranium on the Navajo Nation, Navajo culture and customs, outreach techniques, and the planning that goes into outreach events.

What were the highlights of your internship?

AR: A huge highlight was learning more about the Navajo culture since it opened my mind to a new perspective. I attended the [Navajo Nation Division of Natural Resources Summit] DNR Summit and the Community Outreach Network's Uranium 101 Workshops, which allowed me to interact with communities and help them solve issues they face daily.



Ki'Ana Speights (left) and Alyssa Renteria (right) forged a strong friendship during their internship at the Grand Junction, Colorado, office.

KS: My highlights were attending the outreach events; traveling and seeing the different landscapes in Colorado; going to Albuquerque, New Mexico; trying a Lotaburger and Laguna Burger with New Mexico green chile; and traveling the Four Corners, all in three days.

Would you recommend being a DOE Office of Legacy Management intern to another student?

AR: I would 100 percent recommend being an intern for the DOE Office of Legacy Management.

KS: Yes, if you like being outside and traveling for work, DOE is a perfect place to intern. ✦



The Savannah River Site Museum and Heritage Foundation Visit

A small contingent of U.S. Department of Energy (DOE) Office of Legacy Management (LM) employees visited the Savannah River Site Museum and Heritage Foundation in Aiken, South Carolina,

on July 25, as a side trip during the All Hands meeting. The museum was chartered in 2005 and organized to interpret and preserve the history of the Savannah River Site. ❖

"I want you to know that I consider this project as one of the highest urgency and vitally important to our national security and defense."

President Harry S. Truman to Du Pont, July 25, 1950





Geochemical Tracer Testing to Better Understand Contaminant Transport Processes



Understanding the movement of contaminants (including uranium) is an ongoing process at many U.S. Department of Energy Office of Legacy Management (LM) sites.

As a part of this process, many LM sites have models that are used for determining contaminant transport processes, assessing contamination remedy performance, improving monitoring procedures, and planning closure strategies. This includes frequent evaluation and updates to site models when long-term monitoring data become available as part of LM's long-term site surveillance and maintenance. However, a good way to measure contaminant movement and get model inputs without waiting for long-term monitoring data is to artificially stress the groundwater chemistry by injecting different trace fluids.

Stressing the chemistry of a shallow alluvial aquifer was recently completed with geochemical tracer testing at the Grand Junction, Colorado, Site. This work was part of the Persistent Secondary Contaminant Sources Project under the Applied Studies and Technology Program. Work at the Grand Junction site included the installation of new wells, along with the injection of nearby Gunnison River water with multiple tracers into zones above and below the water table. This work was conducted in areas that were below former uranium mine tailings. These tests were designed to stress the system to determine how uranium and other contaminants may or may not be mobilized.

Traditionally, groundwater tracer testing has been used to measure typical hydrogeologic properties, such as contaminant dispersion and groundwater velocity. This project is providing cutting edge geochemical tracer testing with continuous measurements of the groundwater chemistry during aquifer stressing. Using various tracer injection techniques, interaction between the water and aquifer solids was tested during the introduction of river water. This test provided additional information beyond traditional tracer testing (like measuring



Left and right: Dr. Paul Reimus (LANL) oversees fluorescein dye tracer injection and pumping at the Grand Junction, Colorado, Site.

fluorescein dye dilution) to better understand the possible release of remaining contaminants (including uranium), even after mill tailings have been moved or covered. This work is delivering the necessary input parameters for ongoing model updates to evaluate if these contaminants can later become soluble and adversely affect groundwater quality.

Results of these tests are still being analyzed, but preliminary data indicate that contaminants above the water table can be mobilized during recharge events, such as flooding, sudden snowmelt, or large rain events. The pros and cons of the various geochemical tracer testing techniques will be published and presented to the public, the scientific community, and within the LM organization. This information will assist LM site managers, LM Support (LMS) site leads, and managers of other legacy mill sites in determining the most valuable approaches for understanding contaminant movement at their sites; thereby, achieving the LM goal of leading by example for the best long-term site stewardship possible.

The geochemical tracer testing at the Grand Junction site included assistance from Los Alamos National Laboratory scientists, Dr. Paul Reimus and Dr. Charles Paradis. These scientists have expertise in tracer testing at multiple sites and assisted the LMS contractors in the study approach and interpretations. LM provided agreements for site access and water disposal and LMS contractors provided the overall study design, along with geochemistry expertise. Multiple co-authored papers have already been started and this ongoing collaborative effort in geochemical tracer testing is planned to continue at the Riverton, Wyoming, Processing Site in 2020. ❖



International Educational Outreach at the University of the Witwatersrand in Johannesburg, South Africa



Class attendees from left to right: Elvis Fosso-Kankeu, Innocentia Erdogan, Raymond Johnson (LMS instructor), Lungisa Ngundu, Hlanganani Tutu (Wits professor), Khathutshelo Netshiongolwe, Alseno Mosai, and Denzil Bent.

The U.S. Department of Energy Office of Legacy Management (LM) values sharing its expertise in long-term stewardship of legacy uranium mine sites with people from around the world.

Dr. Raymond Johnson (LM Support contractor) first met Dr. Hlanganani Tutu in 2011 at an International Mine Water Association (IMWA) meeting in Aachen, Germany. Dr. Tutu is a professor at the University of the Witwatersrand, Johannesburg, South Africa with an interest in uranium geochemistry. In Johannesburg and the surrounding area, tailings from gold mining can release uranium to the groundwater, since the original ore material is also high in uranium. Dr. Tutu saw a presentation by Dr. Johnson at the 2011 IMWA meeting on geochemical modeling of uranium in groundwater. Given their mutual interests, Dr. Johnson and Dr. Tutu have been subsequent collaborators on projects related to uranium geochemistry and have co-authored several papers.

When he was an employee with the U.S. Geological Survey, Dr. Johnson co-taught a five-day geochemical modeling class with Mr. David Parkhurst and Dr. Pierre Glynn. He also co-taught a two-day geochemical modeling class with Mr. William Deutsch in 2012 for the National Ground Water Association. Given his expertise in groundwater geochemistry, Dr. Johnson was invited by Dr. Tutu to provide a five-day geochemical modeling class at the University of the Witwatersrand (Wits) in 2014 for

graduate students, researchers, and consultants interested in geochemistry modeling related to mine-water drainage. Dr. Johnson was fortunate to be able to teach this first course in South Africa as a private consultant with the assistance of Dr. Tutu and Dr. Bronwyn Grover (Ph.D. student at Wits).

In 2018, the annual IMWA meeting was being held in nearby Pretoria, South Africa, where Dr. Johnson gave a talk on recent data related to uranium fate and transport at the Riverton, Wyoming, Processing Site, again sharing LM's expertise in long-term stewardship of legacy uranium mine sites with people from around the world. In conjunction with that trip, Dr. Johnson was able to teach a second geochemical modeling course at Wits for a new set of interested students. While Dr. Tutu and the University of Witwatersrand provided logistics for the class, LM was proud to support Dr. Johnson's time and travel for this important international outreach.

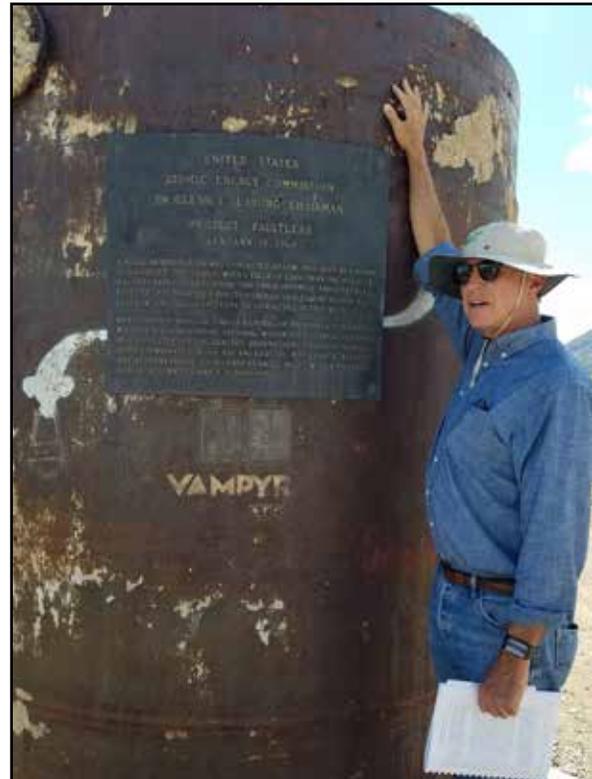
"It was a pleasure to present and discuss current geochemical modeling techniques with such an engaged group of current graduate students and professors," said Dr. Johnson. "We learned a lot from each other during our few days together and it is always energizing to compare our experiences. As an instructor, I always learn about new problems that people are trying to solve that make me think and grow in my own work. I hope that our interaction with the folks in South Africa will continue and grow in the coming years." ❖

GOAL 6



LM Leadership Tours Nevada Offsites

The LM leadership team and officials from the DOE Office of Environmental Management and Nevada Department of Environmental Protection visited two underground nuclear test sites, the Project Shoal Area and the Central Nevada Test Area, as well as the Tonopah Test Range in Nevada in early September. ❖





K-25 History Center Coming Soon

K-25 was the Manhattan Project codename for the program that produced weapons-grade enriched uranium using the gaseous diffusion method.

Eventually, the codename was adopted to refer to the massive building constructed in 1944 in Oak Ridge, Tennessee, to house the program. At the time of construction, the mile-long, U-shaped K-25 Building was the world's largest with 1.64 million square feet of floor space. Engineers and operators used bicycles to move around the building during shifts.

The K-25 History Center is currently under construction near the original building site (demolition of the original building was completed in 2013) and is scheduled to open in late 2019 or early 2020. The center will preserve the history of one of the most important sites in America's nuclear history.

The new center represents a significant achievement in the long-term vision of the site, now known as the East Tennessee Technology Park (ETTP), as a multi-use space that provides jobs, preserves history, and protects greenspace.

Portions of ETTP, including the K-25 History Center, will eventually transfer from the U.S. Department of Energy (DOE) Oak Ridge Office of Environmental Management (OREM) to long-term stewardship under the DOE Office of Legacy Management (LM). In late July, LM representatives met with OREM staff in Oak Ridge to discuss the transfer process.

LM's visit to the ETTP site included a tour of the nearly complete K-25 History Center. Approximately 300 artifacts, 4,400 square



Melissa Lutz, an LM Support site manager for the Mound site in Ohio, views the new exhibits at the American Museum of Science and Energy in Oak Ridge.

feet of exhibit hall space, and a 50-seat theater are all planned in the new facility. Plans also include construction of a K-25 equipment building with a viewing tower to follow the opening of the K-25 History Center. The three-story K-25 Equipment Building will recreate a scale representation of the gaseous diffusion technology and contain authentic production-era equipment used in the K-25 Building. The building's viewing tower will provide visitors an impressive, bird's eye view of the remaining K-25 slab.

The K-25 slab is part of Manhattan Project National Historical Park, created in November 2015 through an agreement between DOE and the National Park Service. Construction of the K-25 History Center and the Equipment Building and Viewing Tower are part of the agreement for mitigating the demolition of the original K-25 Building, which was too contaminated and deteriorated to preserve.

The K-25 History Center will also be one of the stops on the DOE public bus tours, which begin at the American Museum of Science and Energy (AMSE). The LM team visited AMSE in their new Oak Ridge location to view all new exhibits and observe the site's educational programming.

Transfer of ETTP will continue to evolve as OREM's cleanup mission eventually transitions into long-term stewardship with LM. Work and discussions will continue regarding stakeholder engagement, public use, regulatory environment, operations, maintenance, groundwater, radiological support, and related mission activities. ❖



A Criticality Unit will be one of approximately 300 artifacts in the K-25 History Center.



New Gasbuggy Interpretive Signs

Working with the U.S. Forest Service, LM installed two new interpretive panels at the Gasbuggy, New Mexico, Site in August. Visitors to the Carson National Forest will now be able to read about the geology and history of the site, where in 1967 the

U.S. Atomic Energy Commission detonated a nuclear device 4,227 feet below ground surface in an attempt to stimulate natural gas production. ❖



Be Environmentally Conscious

LM is continually seeking opportunities to protect the environment and conserve natural resources. 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-ProgramUpdate@lm.doe.gov so that we can update our database.

Thank you for your assistance.



BONUS, Puerto Rico, Records Management Project – A Successful Records Recovery Effort



View of the BONUS Decommissioned Reactor Site and the Dr. Modesto Iriarte Technological Museum.

Rincón, Puerto Rico is home to one of the island's most famous beaches, Domes Beach, which is named after the striking architecture of the blue dome of the decommissioned Boiling Nuclear Superheater (BONUS) reactor rising over the tropical canopy.

The BONUS reactor (decommissioned in 1970) was developed as a prototype nuclear power plant to investigate the technical and economic feasibility of the integral boiling superheating concept. It was one of only two boiling-water superheater reactors ever developed in the United States and was established to evaluate the effectiveness of the reactor design.

Since 2004, the U.S. Department of Energy Office of Legacy Management (LM) and the Puerto Rico Electric Power Authority (PREPA) have been working jointly to recover, digitize, and manage BONUS records for long-term stewardship. During an LM site inspection in 2004, original BONUS records were discovered in a storage closet. The site inspection team prepared and indexed 204 boxes of records and made copies

of records that were deemed necessary for LM to conduct stewardship of the site. The original records and remaining documents remained under PREPA ownership and management at the site and in the San Juan office.

During the 2016 site inspection, LM offered PREPA the opportunity to relocate the BONUS records collection from Puerto Rico to the Legacy Management Business Center (LMBC) in Morgantown, West Virginia. The LMBC is a National Archives and Records Administration-compliant storage facility.

In fall of 2018, PREPA accepted LM's offer and agreed to ship the BONUS records collection containing 394 boxes from their San Juan office to the LMBC where they would be indexed and archived. Upon opening the shipment of boxes, LMBC staff encountered boxes of records containing non-toxic mold.

The entire shipment of records became suspect of mold, and LM moved quickly to develop a plan, a schedule, and assemble a records recovery project, which included identification of

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BONUS, Puerto Rico, Records Management Project – A Successful Records Recovery Effort

records for digitization and archiving as well as sorting out the documents approved by PREPA for destruction because they were deemed to have no historical value. A professional records management company was contracted for proper cleaning, digitization, and destruction of the records.

With the recovery plan in place, the records recovery team proceeded to open the boxes (using proper personal protective equipment), review the content, catalog the documents, describe the document condition, and note whether mold was present.



Cliff Carpenter, the BONUS LM site manager, reviews cataloged records at the Legacy Management Business Center.

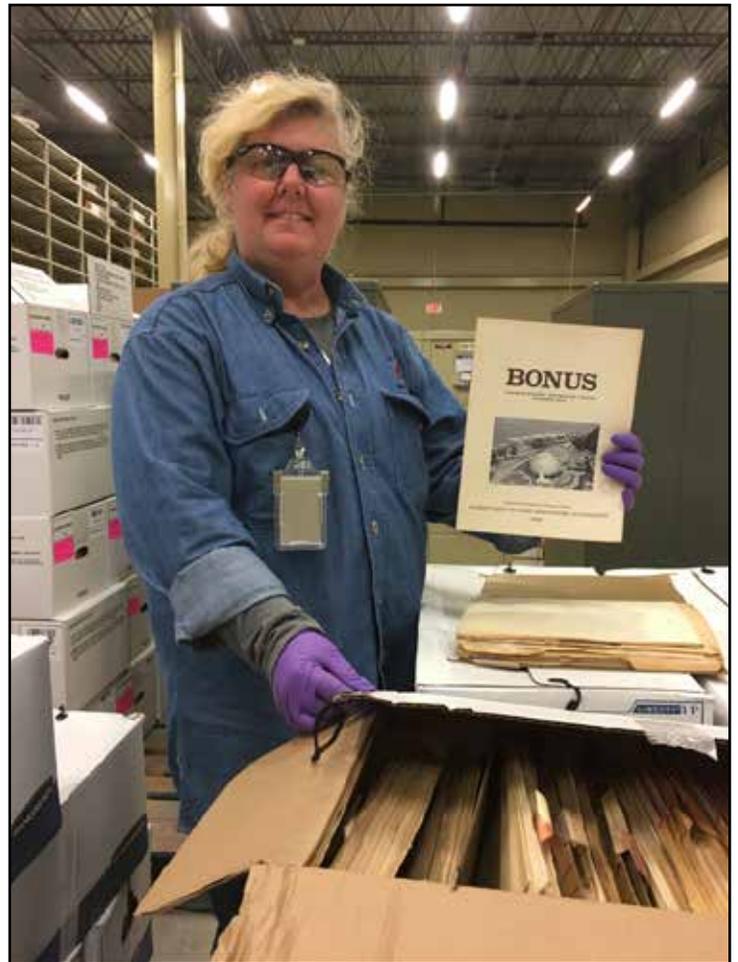
During the cataloging process, the team discovered important records, including hundreds of specification drawings for the design of the reactor facility, purchase orders and vendor information material for operating components dating back to the 1960s, operations logbooks and reports, and environmental monitoring data.

The next step in the recovery plan was to share the collection review results with PREPA who owns the record collection. PREPA reviewed and approved the records identified for retention and approved the documents for destruction that are viewed as having no historic value.

The work started in June 2019 and is scheduled for completion in September 2019.

Because of the integrated and cross-functional approach taken by LM and LM Support (LMS), only 17% of the original records cataloged are needed for long-term stewardship. As a result, the forecasted cost to digitize the entire collection of records was significantly reduced.

“The BONUS record recovery project has been a successful collaboration between LM and PREPA,” said Michele Miller, the BONUS LMS site lead since 2008. “The presence of mold was unfortunate, but jointly we overcame this obstacle to safely recover and preserve the record of BONUS reactor for future generations.” ❖



Michele Miller, the BONUS LMS site lead, managed the cataloging of 394 boxes of records for the record recovery project.



LM Staff Tours Northeast FUSRAP Sites



LM staff reviewed FUSRAP-related holdings at the Hagley Library in Wilmington, Delaware.

During the first week of June, the U.S. Department of Energy (DOE) Office of Legacy Management (LM) toured eight Formerly Utilized Sites Remedial Action Program (FUSRAP) sites in New York and New Jersey, ranging from active industrial facilities to city parks and vacant lots.

FUSRAP addresses radiological contamination primarily at privately owned sites that were contracted by the Manhattan Project and the U.S. Atomic Energy Commission (AEC) during World War II and the Cold War. The sites were cleaned up to contemporary environmental standards when they were no longer needed for government radiological work. However, increasingly stringent environmental regulations enacted over time required additional remediation at some sites to ensure protectiveness. LM takes over long-term stewardship of FUSRAP sites after the U.S. Army Corps of Engineers (USACE) completes site cleanup.

The tour allowed LM staff to gain additional perspective on long-term stewardship and potential opportunities to use the land for community benefit. Discussions with multiple

agencies and with community stakeholders during the tour provided updates on remediation activities and anticipated final site conditions, as well as potential opportunities for beneficial reuse in the future. LM will use the information gathered to refine budget and environmental liability estimates, providing a forward-looking assessment of the level of effort required for site management once a site is transferred to the LM program. Overall, the tour strengthened the working interagency relationships needed to successfully complete transfer of the sites to LM.

The group's travels took them to Maywood, Middlesex, and Deepwater in New Jersey and Hicksville in New York to see sites that are currently being cleaned up by USACE. The Maywood site is completing the final phases

of soil remediation and implementing a benzene pilot study for groundwater. The site is currently slated for transfer to LM in FY 2026. Discussions between USACE and LM will facilitate planning for the long-term use of the property and the management of inaccessible soils beneath area roadways.

The Middlesex South site tour concluded with a meeting with the representatives for the borough of Middlesex, the New Jersey Department of Environmental Protection, USACE, and the U.S. Environmental Protection Agency Region 2. The group discussed a potential path forward to provide the borough with an easement for public road access, which would support the redevelopment of an adjacent property. Ultimately, the borough would like to obtain the entire Middlesex South property for siting of a future public works facility.

In Staten Island, New York, LM staff were able to visit a site that LM recently referred to USACE for consideration of inclusion in FUSRAP. In New Brunswick and Wayne, New Jersey, the group was able to check in on two cleaned up sites that are

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LM Staff Tours Northeast FUSRAP Sites

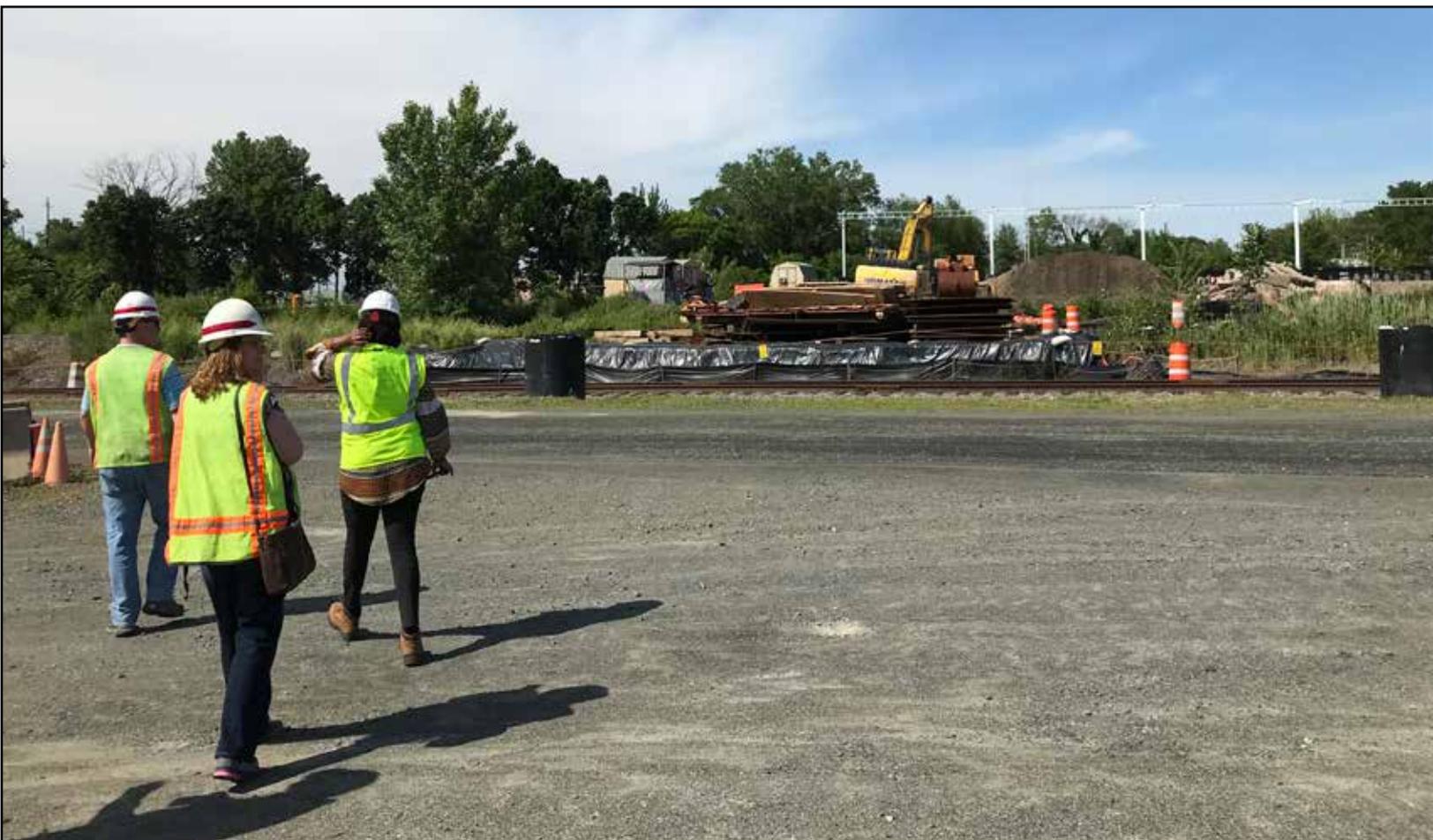
already under LM's stewardship responsibility for records management and stakeholder support. The New Brunswick and Wayne sites provided an excellent example of beneficial reuse in action. From 1948 to 1977, it was the location of a U.S. government-owned laboratory that supported nuclear reactor and weapons research. Subsequently, DOE remediated the property and transferred it to a private owner in 2009. The current owner is developing the site into a solid waste transfer facility with a 72,000-square-foot building and a railroad siding area. The Wayne site has been converted to a playground and dog park.

LM staff also had the opportunity to visit the Hagley Museum and Library in Wilmington, Delaware. The library contains an extensive collection of DuPont Company records pertaining to work performed at the Deepwater site for the Manhattan Engineer District during World War II. Lucas Clawson, the site historian, gave the group an engaging and interactive

tour of the library holdings. LM was extremely interested in his discussion of the Hagley's stakeholder engagement activities and intends to further engage with the Hagley Library and their staff to gain a better understanding of the collection and to seek opportunities to collaborate in engaging stakeholders in FUSRAP communities. Further information on the Hagley Museum and Library may be found on the website at <https://www.hagley.org/>.

Dante Tan, an official with the LM Office of Site Operations, said the trip was invaluable.

"The site visits afforded me a first-hand look at existing site conditions, complexity of on-going remediation operations, institutional controls, and interactions with the local community and stakeholders," Tan said. "The results of collaboration between LM, our LMS partners and the USACE, as well as, effective public/stakeholder communication and outreach efforts, were evident in all aspects of the program." ❖



Touring the Maywood site.



LM Strengthens Stakeholder Involvement Through Annual Rocky Flats Tour

The U.S. Department of Energy Office of Legacy Management (LM) hosted a tour of Rocky Flats Site, Colorado, for the Rocky Flats Stewardship Council (RFSC) on June 10. This year's trip also included members of the Colorado Department of Public Health and Environment (CDPHE) and featured detailed narratives by LM Support (LMS) staff. The annual event fosters a spirit of community engagement that is essential to the ongoing relationship.

“Legacy Management is happy to show the progress of the work to Stewardship Council members and provide subject matter experts to explain the success of the treatment systems and the monitoring of the residual contamination,” said Gwen Hooten, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980/Resource Conservation and Recovery Act/Formerly Utilized Sites Remedial Action Program team lead.

Approximately 35 event attendees listened to descriptions of notable projects within the Central Operable Unit (COU), such as the North Walnut Creek/South Walnut Creek drainages, Solar Ponds Plume Treatment System, a surface water monitoring station, and the Original Landfill (OLF). Each presentation focused on LM's immediate and ongoing ecological and environmental strategies.

As the group viewed a herd of elk in the distance, Senior Ecologist Jody Nelson spoke of the importance of re-establishing the vegetation at the site, stabilizing the soil to minimize the potential of contaminant movement, and providing a positive impact on wildlife habitat.

“The use of only native plant species, the same dominant species as found on the native grasslands surrounding the COU, provides continuity with the goals of the refuge,” Nelson said. “One of the folks on the tour said she now understands the importance of the revegetation aspect of the work and how it has provided habitat for wildlife.”

At OLF, LMS contractor Jeremy Wehner explained LM's upcoming project involving the eastern stabilization area. He described the surrounding terrain and existing infrastructure already in place that helps control surface and ground water.

“I value the opportunity to show our stakeholders a few of the active projects and systems while also providing a sense of the physical separation between the COU and the surrounding communities,” Wehner said. “This interaction is important because it provides us an opportunity to meet directly with local stakeholders, share site information, and show them what we do and why.”



Jeremy Wehner, an LMS contractor, answers questions from event attendees.

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LM Strengthens Stakeholder Involvement Through Annual Rocky Flats Tour



Left and below: George Squibb, an LMS contractor, explains surface water monitoring stations during the Rocky Flats Stewardship Council tour.

LMS contractor George Squibb reiterated the importance of RFSC board members acquiring a visual reference for the monitoring locations, treatment systems, closed landfills, and ecological assets at the site. He also provided historical information about the cleanup and closure of the site, remaining residual contamination, and issues involving interior and terminal dams.

“I also discussed surface water routing and ongoing water monitoring,” Squibb said. “It’s essential to know that monitoring at the site continuously measures the concentrations of contaminants in surface water to ensure that residual contamination doesn’t pose an unacceptable risk while confirming that the remedy remains protective.”

Established by LM in 2006, RFSC supports two-way communication between LM and the community and local governments concerning post-closure management of the former nuclear weapons plant. LM also utilizes RFSC for hosting public meetings, distributing LM communications, soliciting public input, as well as providing an additional forum for public communications. When performing these activities, the RFSC interacts with the U.S. Environmental Protection Agency, CDPHE, and the community. ❖





DOE Participates in Inaugural “Going Green with Deb” Event

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) joined the inaugural “Going Green with Deb” event on August 17 in Albuquerque, New Mexico. The event was hosted by Congresswoman Deb Haaland (NM-01) to provide sustainability resources and fun for the community. Haaland said the goals of the event were to make sustainability tools accessible to everyone no matter their socioeconomic status or where they live

LM Site Manager Bernadette Tsosie and LM Support contractor Site Lead Alison Kuhlman hosted a booth at the event. At the request of the New Mexico congressional

delegation, the pair previously provided congressional staffers a tour of the Bluewater, New Mexico, Uranium Mill Tailings Radiation Control Act (UMTRCA) Disposal Site in May 2019. After the success of that tour, Congresswoman Haaland’s office requested LM participate in the “Going Green with Deb” event.

Approximately 100 people attended the event, including grandparents, parents, volunteers, and children. Tsosie and Kuhlman provided information on LM’s sites in New Mexico as well as proposed environmental projects at the Bluewater site. The event provided a forum to communicate LM’s long-term stewardship efforts in New Mexico with local stakeholders. Attendees learned about LM, our mission, and our New Mexico sites.

“Everyone has a role to play in protecting our planet for future generations, and many of the things we can do are small adjustments to our everyday lives,” said Congresswoman Deb Haaland. “I’m excited to build a community conversation around ‘going green,’ and making sustainability accessible for everyone.” ❖



Above: LM Site Manager Bernadette Tsosie and LM Support contractor Site Lead Alison Kuhlman hosted a booth at the “Going Green with Deb” event in Albuquerque, New Mexico. Right: Kuhlman and Tsosie share information about LM’s stewardship of the New Mexico sites.

U.S. DEPARTMENT OF ENERGY | Legacy Management



Conservation Reuse Efforts at Pennsylvania Sites

Native prairie is on the rebound at one U.S. Department of Energy (DOE) Office of Legacy Management (LM) site in Pennsylvania, and a riparian buffer is being established at another.

The ongoing revegetation efforts at the Canonsburg and Burrell disposal sites are part of the habitat restoration and enhancement components emphasized in LM's Beneficial Reuse Management Plan.

At the Canonsburg site, an expanded riparian buffer is being established as part of streambank protection efforts along Chartiers Creek. The use of riparian buffers brings a variety of benefits, such as improving stream quality, reducing impacts from flooding, and preventing erosion. The Pennsylvania Department of Conservation and Natural Resources has a goal of creating 95,000 acres of riparian forest buffers by 2025. The work at Canonsburg will contribute to this effort.

Legacy Management Support (LMS) staff conducted a walkdown of the riparian area adjacent to Chartiers Creek in spring 2019 in advance of construction activities scheduled for late summer. Several tree seedlings were observed during the walkdown, including box elder and sycamore, and trees planted in 2010 have become well-established, with an enclosed canopy present at several locations. Staff also observed native switchgrass.

The Canonsburg team reduced mowing frequency in early summer to promote the establishment of woody vegetation prior to the start of the construction activities, which will include

seeding native grasses and wildflowers and planting more than 500 native trees and shrubs.

The presence of native switchgrass and woody vegetation seedlings is an encouraging sign, according to John Homer, the LMS Ecology lead for eastern sites. This indicates that native volunteer species will readily establish once regular mowing of the bank is stopped. The goal of the project is to have a native, diverse forest community between 50 and 100 feet wide along the northern property boundary.

At the Burrell site, a 2-acre test prairie was seeded in the fall of 2018. Field staff observed seeded forbs and grasses during a site walkdown in spring 2019. A number of native seedlings were observed, and noxious weeds were minimal. Although an established prairie with annual blooms isn't expected for several more years, initial indications are that seeding efforts were successful.

Both projects have the added benefit of promoting pollinator species. The DOE Pollinator Protection Plan is part of a national strategy to protect and enhance pollinator habitat. The planting of native flowering species is considered a "best management practice" that provides food and cover for a variety of insects, including bees and butterflies. Wildflowers native to western Pennsylvania are included in the seed mixes for both the Burrell and Canonsburg sites.

"I'm excited about the initial success of our new conservation initiatives," says Cliff Carpenter, the LM site manager for both sites. "They will continue to enhance the protectiveness and long-term well-being of both sites." ❖

Riparian habitat will be expanded along Chartiers Creek at the Canonsburg site.



Records Transfer Completed for Northeast FUSRAP Sites



Left to right: LM Support contractor Teresa Wayne reviews received records material and prepares records for shelving. LM Support contractor Dale Spradley transports records boxes after the boxes were received, weighed, and labeled. LM Support contractor Scott Whitaker loads a records box onto the Crown Wave lift, as Seth Wagner prepares to utilize the lift to shelve the record material.

Dozens of boxes of records for three Formerly Utilized Sites Remedial Action Program (FUSRAP) sites in the Northeast recently arrived at the Legacy Management Business Center in Morgantown, West Virginia. Their arrival completed the records transfer from the U.S. Army Corps of Engineers (USACE) to the U.S. Department of Energy (DOE) Office of Legacy Management (LM) for the Tonawanda, New York, Site; the Attleboro, Massachusetts, Site; and the Windsor, Connecticut, Site.

The records contain the complete body of documents that forms the basis for selecting completing a cleanup action. Under FUSRAP, both National Priorities List (NPL) and non-NPL sites adhere to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 process. LM's management of the FUSRAP site records will ensure transparency, efficiency, and accountability to the site and to the project stakeholders.

The Tonawanda site was transferred to LM in March 2017, and USACE began transferring records for the site to LM in October 2017, when USACE provided both electronic and hard copy files (12 boxes) of the Administrative Record (AR). The record transfer was completed in July 2019, when the Permanent Record was provided to LM.

USACE began transferring records for the Attleboro and Windsor sites to LM in October 2018, when USACE provided both electronic and hard copy files of the ARs. In June 2019,

the Permanent Record was provided to LM. This consisted of transfer of both electronic records and hard-copy files (25 boxes).

As of June 27, 2019, LM has posted the redacted ARs for the Attleboro and Windsor sites on the LM website and on the site webpages so they are available to stakeholders. By posting the AR, this allows project stakeholders the ability to view and download the documents that form the basis for selecting the CERCLA cleanup decision. This openness will provide better stakeholder support by fostering trust and allowing LM to better support the FUSRAP stakeholders.

The records transfers for these three sites used guidance provided by the LM and USACE Joint Data Management Working Group. LM and USACE established the Data Management Working Group (DMWG) to establish a common understanding of DOE and USACE district-specific data, records practices, and requirements as they apply to FUSRAP programmatic documents for site transition and transfer. The DMWG established methods and a timeline to ensure accurate data transfer. These methods will ensure continuity of stewardship while transitioning from cleanup to long-term surveillance and maintenance and beyond as more FUSRAP sites transfer from USACE to LM.

USACE and LM's collaborative approach to site transfers continues to pay off in efficiencies, making the most of taxpayer dollars. ❖



LM and EM Sign Memorandum of Understanding

In May 2019, the U.S. Department of Energy Office of Legacy Management (LM) and Office of Environmental Management (EM) signed a Memorandum of Understanding (MOU) to collaborate on the EM Uranium Mill Tailings Remedial Action (UMTRA) project in Moab, Utah. The MOU marked another milestone in mutual cooperation and collaboration between EM and LM.

EM is currently excavating uranium mill tailings from the former Atlas Uranium Mill Site along the Colorado River in Moab and transporting the tailings to an engineered disposal cell near Crescent Junction, Utah.

engineering design and construction of the Crescent Junction disposal cell, which LM will ultimately be responsible for after the site transfers for long-term surveillance and maintenance.

LM will be supported by the Legacy Management Support contractors' Applied Studies and Technology group, which is spearheaded by Dr. Jody Waugh. Dr. Waugh has conducted studies related to the performance of ET covers for more than 20 years. Several of Dr. Waugh's studies have been collaborations with the NRC and his study findings will be critical to obtaining concurrence from the NRC for an ET or other alternative cover design. As part of this effort, the NRC invited Dr. Waugh to present his study findings at NRC Headquarters in Rockville, Maryland.

According to LM UMTRCA Program Manager Mark Kautsky, "This partnership represents a rare opportunity for both the LM and EM program offices to leverage the excellent technical knowledge, skills, and abilities in our contractor workforce to benefit the long-term performance of the Crescent Junction disposal cell." ❖



Crescent Junction, Utah, Disposal Cell Site (2018).

Moab UMTRA project leadership is considering alternate cover designs for the Crescent Junction disposal cell, including an evapotranspiration (ET) cover, which would likely reduce the cost of completing the cell and improve its long-term performance. Through this collaboration, EM will gain access to LM's knowledge, skills, and abilities in cover design and cell performance, thereby adding value to the Moab UMTRA project. EM will also gain a strategic partnership with LM to build trust and confidence with the U.S. Nuclear Regulatory Commission (NRC). LM will gain knowledge and insight concerning the



The tailings pile at the former Atlas Uranium Mill site in Moab, Utah, after the start of removal and relocation to the Crescent Junction site (2018).



New Employee Bios

Denise Freeman

Denise Freeman joined the U.S. Department of Energy (DOE) Office of Legacy Management (LM) in August as a communications liaison.

Denise will serve as a critical connection between the LM deputy director, the Office of Public Affairs, the Office of Congressional and Intergovernmental Affairs, the Communication, Education and Outreach Team supervisor, and the Environmental Justice (EJ) program manager. She will continue to serve as the co-chair of the National Environmental Policy Act (NEPA) committee of the Federal Interagency Working Group on Environmental Justice (EJ IWG), with the U.S. Environmental Protection Agency.

She joins LM officially after working for more than a year on a detail assignment as a senior advisor to the LM director and EJ program manager.

Denise is moving to LM from the DOE Office of General Counsel's Office of NEPA Policy and Compliance where she worked for 19 of her 28 years with DOE, providing assistance, guidance, and training on NEPA and related environmental matters, including EJ. She previously served in different roles in DOE, such as a physical scientist in the Office of Environment, Safety, and Health and a program manager with the Office of Environmental Management Fernald program office.

Denise is currently participating in the DOE Leadership Development Program at the University of Maryland Baltimore County Training Center. Ms. Freeman has previously participated in other leadership programs, including the 2018 Darlene H. Young Leadership Academy with Blacks in Government, a nine month competency-based leadership program. She also participated in a six-month interagency rotation at the U.S. Department of Agriculture under the DOE President's Management Council Program in 2016.

She is a native Washingtonian and has a bachelor's degree in chemistry from Lincoln University and a master's degree in environmental management from University of Maryland, University College.

She is the proud mother of two adult children. In her spare time, she loves competitive tennis, travelling, exercising, and is a Wellness Coach.

Shawn Montgomery

Shawn Montgomery comes to the U.S. Department of Energy Office of Legacy Management (LM) Communication, Outreach, and Education (CEO) Team by way of the U.S. Department of Veterans Affairs Western Colorado Health Care System, where he served as the director of communications and community development.

Shawn's focus in his new role with the CEO Team is the Navajo Nation.

Shawn is a veteran of the U.S. Army 1st Infantry Division. He served five years as a combat medic, deploying to both Kosovo and Iraq. After being honorably discharged, Shawn was hired by the Grand Junction Fire Department (GJFD) as a firefighter/paramedic, and served the city of Junction for nearly 10 years. In 2014, Shawn promoted to the role of public information officer for GJFD.

While in this role with GJFD, Shawn deployed to incidents such as the Gold King Mine spill, working as the lead public information officer for the state of Colorado's Joint Information Center.

Shawn holds a degree in communications with a focus on media studies and hopes to obtain a master's degree and accreditation in public relations in the near future.

Shawn has been married to his childhood sweetheart, Jamie, for over 18 years and they have three children. Shawn enjoys racquetball, Brazilian jiu-jitsu, and coaching youth sports. ❖



Environmental Justice Activities

Environmental Justice Outreach Program Boot Camp

The Environmental Justice Outreach Program (EJOP) Boot Camp is a week-long summer program for high school students interested in environmental science, environmental justice (EJ), and other DOE-related STEM fields.



Students on a tour of the Aiken Water Treatment Plant.



Lessie B. Price, a Boot Camp keynote speaker, talks to participants at the senior and youth center named in her honor in Aiken, South Carolina.



Students presenting their reflections on their Boot Camp experience.

EJOP was developed by Cydney Christian and Indigo Rockmore, both of whom are former Mentors for Environmental Scholars (MES) undergraduate interns in the U.S. Department of Energy (DOE) Environmental Justice (EJ) program. The most recent EJOP boot camp was held July 15-19, 2019 in Aiken, South Carolina.

The boot camp is designed to provide a foundation for those students who want to be involved in monitoring, repairing, and advocating for the environment.

In addition to the EJ- and STEM-focused coursework, the program also helps students develop personal strategic plans for their high school and/or college careers. During the course of the boot camp, students developed public service announcements (PSAs) on local EJ issues, which included calls to action for the community. The students also developed plans to incorporate EJ advocacy in their academic and personal pursuits.

Public Service Announcement

One of the greatest hurdles to disaster relief in poor and disenfranchised areas is the availability of clear and understandable warning information. As a part of the boot camp, the students had the opportunity to discuss some past, present, and future events that have happened in their states and local areas. The instructors then assisted the students with brainstorming the types of information and modes of communication that would allow all residents to receive ample warning and instructions. At the end of the week, the students were broken into teams and asked to produce a PSA to be released to the public.

Personal Strategic Plan

Developing a personal strategic plan allowed student participants to take a look at their current and future academic courses and develop plans that will help them to be academically successful and in whatever career path they choose—attending a two- or four-year institution of higher education, joining the military, transitioning directly to employment, or any combination thereof. In addition to educational activities, student participants were prompted to think of and include other extra-curricular activities that could support their plan. ❖

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Environmental Justice Activities

Teaching Radiation, Energy and Technology Workshop

The annual Teaching Radiation, Energy and Technology (TREAT) workshop helps to educate students, teachers, and members of the community who reside near the Savannah River Site (SRS) about radiation, radioactive waste management, and the effects of radiation on environmental and human health. The goal is to provide an opportunity to capitalize on building stronger networks with neighboring stakeholders, as well as those downstream from the SRS.

The 2019 TREAT workshop was held July 10-12, 2019, in Aiken, South Carolina. The U.S. Department of Energy (DOE) and SRS partners with Savannah State University (SSU) in Georgia to develop and carry out the workshops.

These interactive TREAT workshops are also designed to educate teachers so they can provide essential information to their students, with hopes of fostering career opportunities in engineering and nuclear fields. Teachers also hope the students will take the radiation message back to their communities.

The workshop agenda included presentations from university officials, DOE employees, federal partners, and community members. Attendees included 30 teachers and 12 students.

The fall TREAT workshop will be held in October in Augusta, Georgia. ❖



Guest speakers at the TREAT Workshop (pictured left to right): Dr. Kenneth Sajwan, SSU; Lessie Price, councilwoman for the city of Aiken; Mike Budney, DOE-SRS manager; Dr. Melinda Downing, DOE; Mayor Rick Osborn; Sandra Jordan, chancellor of the University of South Carolina; de'Lisa Carrico, DOE-SRS; Mindy Mets, manager of the Community Reuse Organization; Reverend Brendolyn Lovette Jenkins Boseman, executive director of the Imani Group, Inc.

Community Leaders Institutes and Technical Assistance Workshops

More than 50 participants attended the most recent Technical Assistance Workshop (TAW) held in August at Tennessee State University in Nashville, Tennessee.



Workshop Panelists (left to right): Dr. Glenda Baskin-Glover, TSU; Dr. Melinda Downing, DOE; and Dr. Oluwole Ariyo, Allen University.



Participants in the Community Leaders Institute Technical assistance Workshop.

The Medical University of South Carolina (MUSC), Allen University, and the U.S. Department of Energy (DOE) sponsored the one-day TAW.

The purpose of the TAW is to reinforce the principle that progress requires informed and active leaders and to emphasize the unique relationship between environmental protection, human health, environmental justice, and economic development as an essential part of community development.

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Environmental Justice Activities

The program emphasizes essential how-to skills needed to prepare a strong grant application. Experts led hands-on sessions in finding available grant funding agencies, as well as planning, preparing, and submitting a grant application.

Session topics were:

- Terms and Techniques of Grant Writing
- Developing a Proposal and Budget
- Where is the Money? Finding Available Grant Funding Agencies.

The TAW seeks to provide opportunities, such as this training, to assist rural and underserved communities around DOE sites. ❖

Congressional Black Caucus Environmental Justice Braintrust

Broadband is critical to addressing the many social determinants of human health and community well-being that contribute to health status disparities impacting low-income and minority Americans.

The issue was brought into focus at the Congressional Black Caucus Foundation Annual Legislative Conference

Environmental Justice Braintrust meeting held on September 13, 2019, in Washington, D.C.

The Braintrust focuses on the unique relationship between environmental protection, environmental justice, human health, and economic development.

Access to broadband provides a massive opportunity to change lives for the better. This opportunity is not available to all Americans on an equal basis, if at all. Across the country, approximately 24 million Americans lack access to broadband and individuals in rural counties and communities of color are disproportionately impacted.

Majority Whip Representative James E. Clyburn, chair of the Braintrust, led an interactive panel discussion on the state of broadband in rural and underserved communities across the country and how broadband expansion across all divides can be a basic part of the solution to address access to healthcare and environmental quality.

The panelists were: Mignon L. Clyburn, former commissioner of the Federal Communications Commission; Dr. James T. McElligott, medical director of Telehealth, Medical University of South Carolina; Christina M. Mason, vice president of government affairs, Wireless Internet Service Provider's Association. ❖



LM NEWS Feed

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SEPTEMBER 24, 2019

Rocky Flats Site Original Landfill Stabilizing Project Underway

Construction begins to stabilize the Rocky Flats Site Original Landfill, and repair two sections of a steep hillside.

AUGUST 28, 2019

BONUS, Puerto Rico, Records Management Project – A Successful Records Recovery Effort

LM and the Puerto Rico Electric Power Authority (PREPA) work jointly to recover, digitize, and manage records for the BONUS site.

JULY 23, 2019

Conservation Reuse Efforts at Pennsylvania Sites

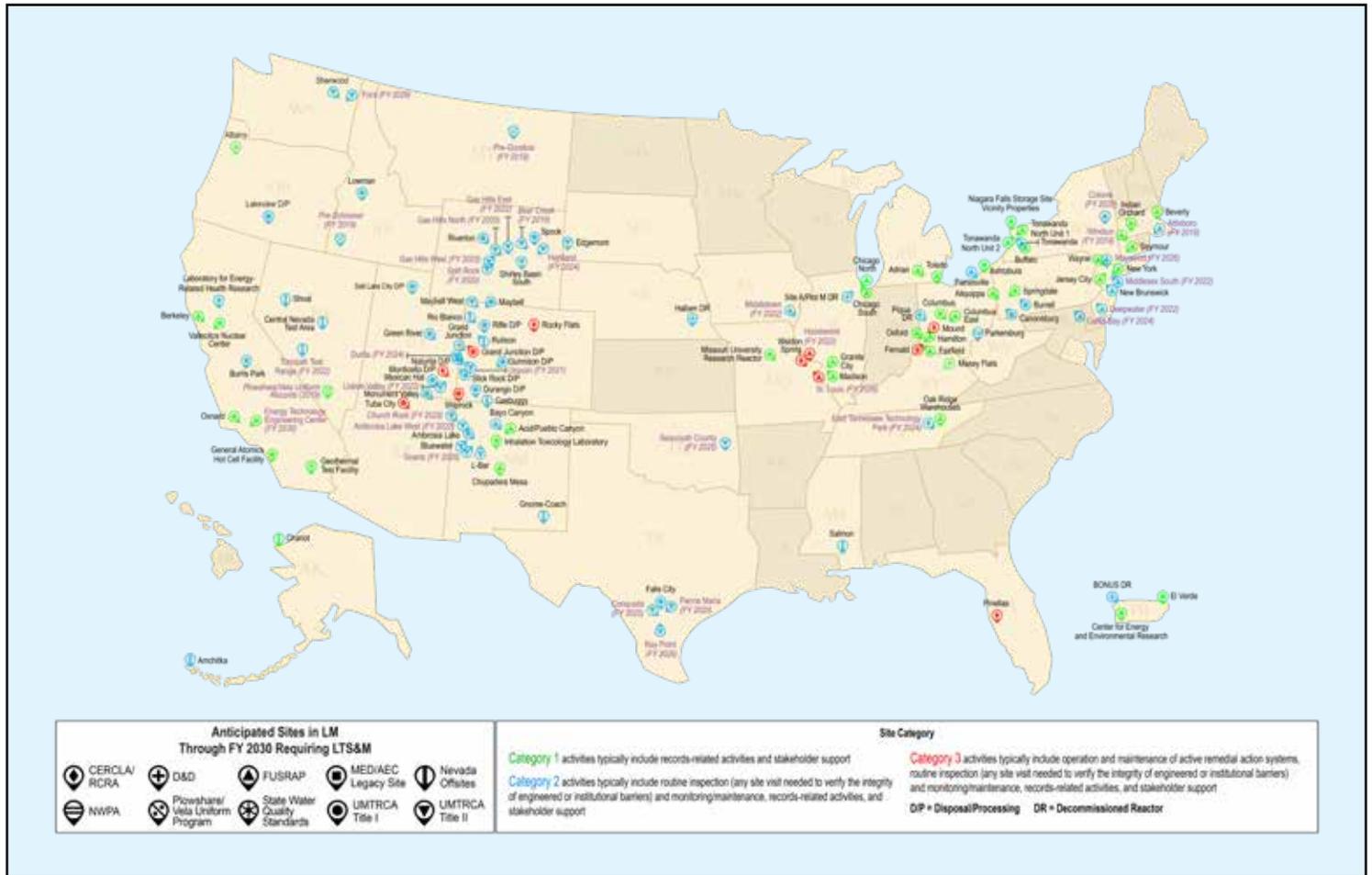
A native prairie rebounds at Burrell and a riparian buffer grows at Canonsburg.

JULY 11, 2019

LM Lends Expertise on Cell Cover Design in Moab

LM collaborates with DOE Office of Environmental Management on cell cover designs at the Crescent Junction, Utah, Disposal Site.

Anticipated LM Sites Through Fiscal Year 2030



Beneficial Reuse

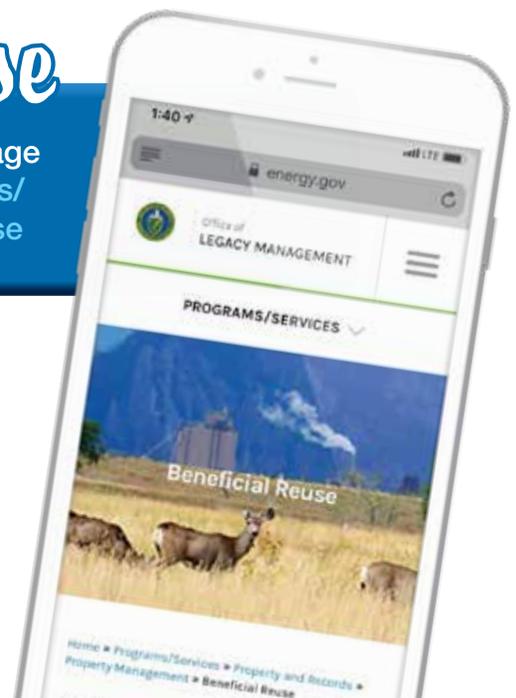
Check out our beneficial reuse webpage at <https://www.energy.gov/lm/services/property-management/beneficial-reuse>

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