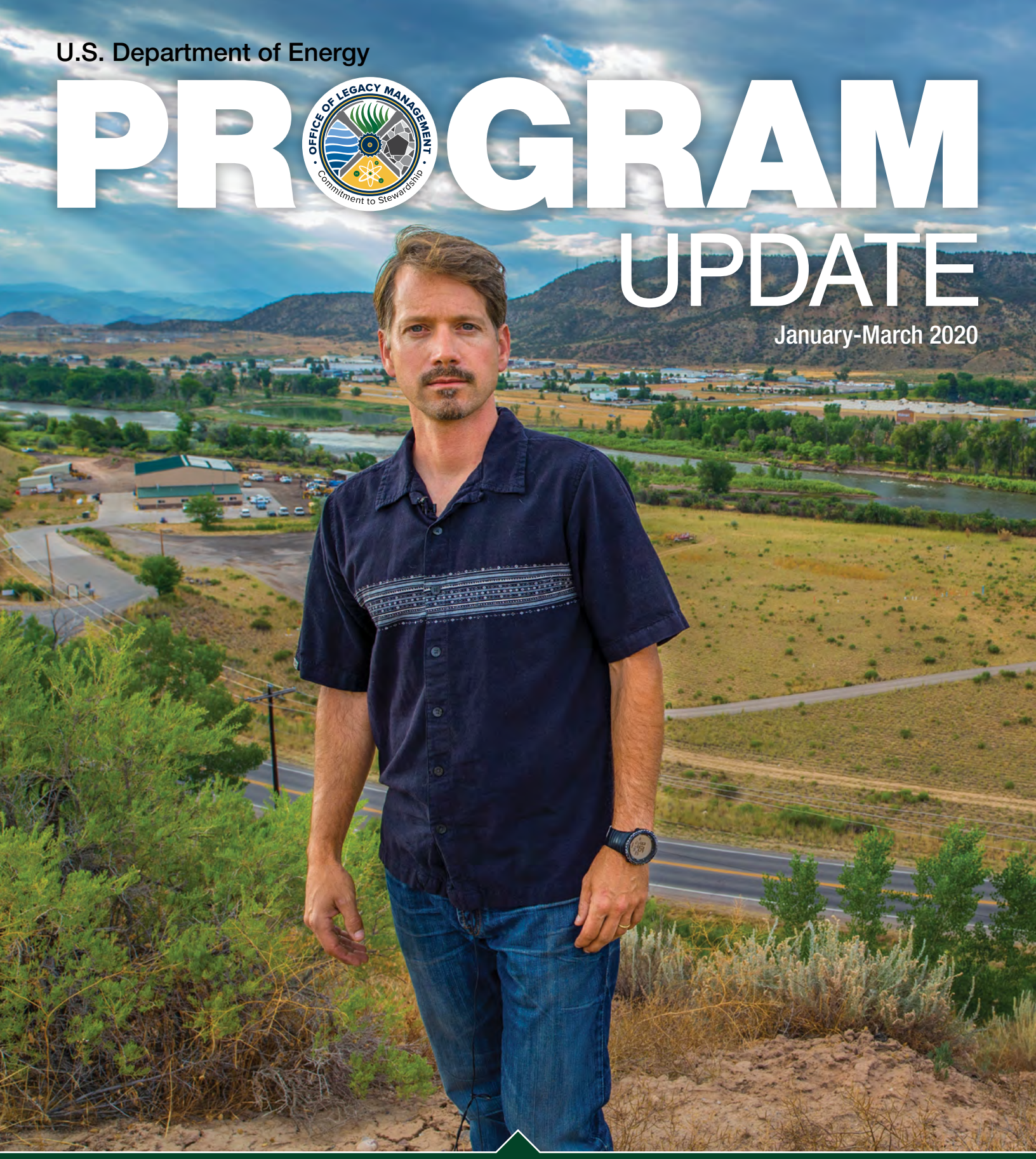
U.S. Department of Energy

PROGRAM UPDATE

January-March 2020



Fernald Preserve Completes Overhaul of Wastewater Treatment

Bioremediation Expert: An Interview with Ken Williams

LM Engages Alaskans at Forum on the Environment

Director's Corner

In this issue of *Program Update*, we bring you a profile of Ken Williams, one of our partners from the U.S. Department of Energy (DOE) Lawrence Berkeley National Laboratory. A pioneer in biogeophysics, Ken has worked closely with the Office of Legacy Management (LM) for years to help us advance our environmental remediation and long-term stewardship goals.

As I read about Ken's rewarding career overseeing field activities for a multidisciplinary team of researchers, I'm reminded that career paths in science don't unfold magically. I've worked with enough engineers, technicians, scientists, and researchers over the years to know that we need to nurture the curiosity and intellect of students at a young age and provide the right resources for them to embark on this intellectually demanding career path.

In 2018, the U.S. Department of Education released a five-year strategy for federal agencies to provide all Americans with lifelong access to quality STEM (science, technology, engineering, and mathematics) education to ensure that the United States is a global leader in high-quality technical education. The strategy outlines a nationwide collaboration within the STEM community of schools, educators, and other partners.

I'm proud to say that LM is fully committed to supporting this collaboration. We have a robust STEM program in place that supports the nationwide effort via school and community events, curriculum development, student and teacher mentoring, internships and graduate programs, interpretive centers, tribal collaborations, and the integration of applied studies and technology into LM's site management activities. In February 2020, we took part in a department-wide workshop hosted by the DOE Research and Technology Investment Committee in which STEM leaders came together to contribute to an overall strategy for DOE.

I'm excited to announce that this year, we're poised to take our STEM efforts to a new level with the launch of *STEM with LM*, a comprehensive program designed to inspire, educate, and spark student interest in STEM careers. The central feature of *STEM with LM* is that our staff will conduct STEM outreach in their communities via paid hours during and outside of work.

While a number of our Earth Day activities across sites are canceled due to real world events, we will celebrate at a future date. Eventually, we'll also return to regular STEM programming at our interpretive centers and on the Navajo Nation. When that time comes, get involved, volunteer your time, and help inspire the next generation of STEM professionals.

Warm Regards,

Carmelo

Carmelo Melendez

OFFICE OF LEGACY MANAGEMENT
Commitment to Stewardship

STEM WITH LM

Welcome to the January-March 2020 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-ProgramUpdate@lm.doe.gov****.*

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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Cover: Ken Williams at LM's Old Rifle site in Colorado. (© 2010-2019 The Regents of the University of California, Lawrence Berkeley National Laboratory.)

Bioremediation Expert: An Interview with Ken Williams

Growing up in northern New Mexico, Ken Williams knew from a young age that he wanted to be a geologist. "You look out and literally see the rock record," he said. "The earth is in your face."

Today, Williams leads the Environmental Remediation and Water Resources Program at Lawrence Berkeley National Laboratory. A pioneer in biogeophysics, he's been collaborating closely with the U.S. Department of Energy (DOE) Office of Legacy Management (LM) for more than 15 years. His research on bioremediation — the use of naturally occurring microorganisms to consume and break down environmental pollutants — began years ago at LM's Rifle, Colorado, Processing Site. Today, the results of that research reverberate far beyond LM.

We caught up with Ken to ask him a few questions about his research, his partnership with LM, and his thoughts on science careers.

Ken Williams and his former Ph.D. advisor, Jillian Banfield of the University of California, Berkeley, at LM's Old Rifle site. (© 2010-2019 The Regents of the University of California, Lawrence Berkeley National Laboratory.)

Program Update: Why does LM's Old Rifle site have a special place in your heart?

Williams: The Rifle site has been an incredible scientific launching pad for me and my team. My involvement with LM began in 2004, when I did research as a grad student for my dissertation at the Old Rifle site. The work was part of a larger research program funded by the DOE Office of Science geared toward understanding whether we could stimulate subsurface microorganisms to remove uranium from groundwater. In 2007, I became affiliated with a larger Office of Science program, the Rifle Integrated Field Research Challenge, in close partnership with LM. That project took a broader view than just exploring bioremediation for groundwater cleanup. We were interested in understanding all the processes — hydrological, geological, geochemical, microbiological — that impact uranium mobility and plume persistence.

Program Update: In 2019, we wrote about the apatite field study that you're currently running at Rifle with partners from Sandia National Laboratories. (See "An Apatite for Uranium: Taking a Bite Out of a Persistent Groundwater Contaminant," *Program Update* April-June 2019.) Can you give us an update on this project?

Williams: Apatite is a naturally occurring mineral in soils that can uptake contaminants from groundwater, including uranium. Having worked on the general topic of uranium remediation and mobility for well over a decade, this apatite-based remediation technology is far and away the most effective method that I've seen. I'm astounded at how successful it's been. In fact, it's proven so successful that we're now working to replicate the experiment at the Moab UMTRA [Uranium Mill Tailings Remedial Action] site in Utah and potentially LM's Shiprock, New Mexico, site. Right now, we're involved in long-term monitoring of this apatite remediation system, working to evaluate how sustainable the treatment is. Eventually we'll reach a point when uranium is no longer being effectively removed. This is critical information from a regulatory perspective. How long does the treatment last?

Program Update: LM has a history of leveraging the DOE National Laboratories in the management of its sites, and in recent years we've taken additional steps to strengthen these relationships. What are your thoughts on these partnerships?

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Bioremediation Expert: An Interview with Ken Williams

View of the Colorado River and river corridor looking upstream toward the former uranium mill site (left bank) near Rifle, Colorado. (© 2010-2019 The Regents of the University of California, Lawrence Berkeley National Laboratory.)

Ken Williams views an outcrop upstream of the former uranium mill site near Rifle, Colorado. Outcrops provide important insights into aquifer materials at the site, and how specific layers impact aquifer permeability and groundwater flow rates — critical parameters impacting uranium plume persistence. (© 2010-2019 The Regents of the University of California, Lawrence Berkeley National Laboratory.)

Williams: The research program at Rifle is an uber example of national lab scientists collaborating with LM and its subcontractor to address scientific and technical challenges that are important to LM. It's been so important to have LM as a scientific partner, not just in our research at Rifle, but also for expanding our studies to a broader class of environmental problems. Rifle has proved to be an incredible location for studies at sites not solely associated with contaminants but rather sites focusing on nutrients, such as carbon, nitrogen, and phosphorus.

Program Update: Let's switch gears a bit and talk about STEM (science, technology, engineering, and mathematics). LM is deeply committed to STEM outreach, and we're currently working to take our efforts to a new level of engagement. (See "Director's Corner," page 2.) You have years of experience overseeing students in field research. What are your thoughts on how to inspire the next generation of scientists?

Williams: In my experience, engaging students within field environments resonates in a way that makes them passionate and excited about science — it's critically important that they understand the behavior of natural systems by working in nature. At the Rifle site, we have partnered with the University of Colorado Boulder and Colorado Mesa University to host field programs for geology undergrads to learn sampling and in-field chemical analysis as a way to better understand subsurface processes. These programs are a great teaching tool to engage and inspire undergrads to continue with research.

We've also placed an emphasis on the education of young female scientists at the Rifle site over the years, with a strong cohort of women scientists on the project. To date, field activities at Old Rifle have been central to the academic training of 40+ graduate students and 50+ postdoctoral scholars, with 50 of these being female or underrepresented minority students.

Program Update: Any final thoughts?

Williams: It's important for LM to recognize what it has helped to create. The publication record that has resulted from the Rifle site makes us one of the world's foremost subsurface microbial observatories. Our insights into subsurface microbial biology have even helped rewrite the tree of life, which depicts how life has evolved and diversified on the planet. It wouldn't have happened without LM's involvement. ❖

LM Hits the Gym

Above: LM Site Manager Tashina Jasso encourages a gym full of nearly 900 students to explore interests and career options early.

Jasso addresses freshman and sophomore classes at Central High School Career Day.

On January 22, Tashina Jasso, site manager for the U.S. Department of Energy Office of Legacy Management (LM) was invited to be the keynote speaker for Central High School's 2020 Career Day in Grand Junction, Colorado.

Nearly 900 freshman and sophomore students started their school day in the gymnasium with Jasso's words of inspiration. She encouraged students to start exploring their career interests early and stressed the importance of keeping their options open. Students then rotated through Career Day in the adjacent gym where representatives from the LM Support (LMS) team and dozens of other organizations set up booths to talk to students about their organizations and different career options.

Jasso's keynote opened with a little of her background, explaining her path into the STEM career she's in today.

"At 16, I definitely did not envision myself working as an environmental scientist with the Department of Energy," said Jasso. "In fact, I would bet that most adults you know are not in careers they imagined for themselves when they were in high school."

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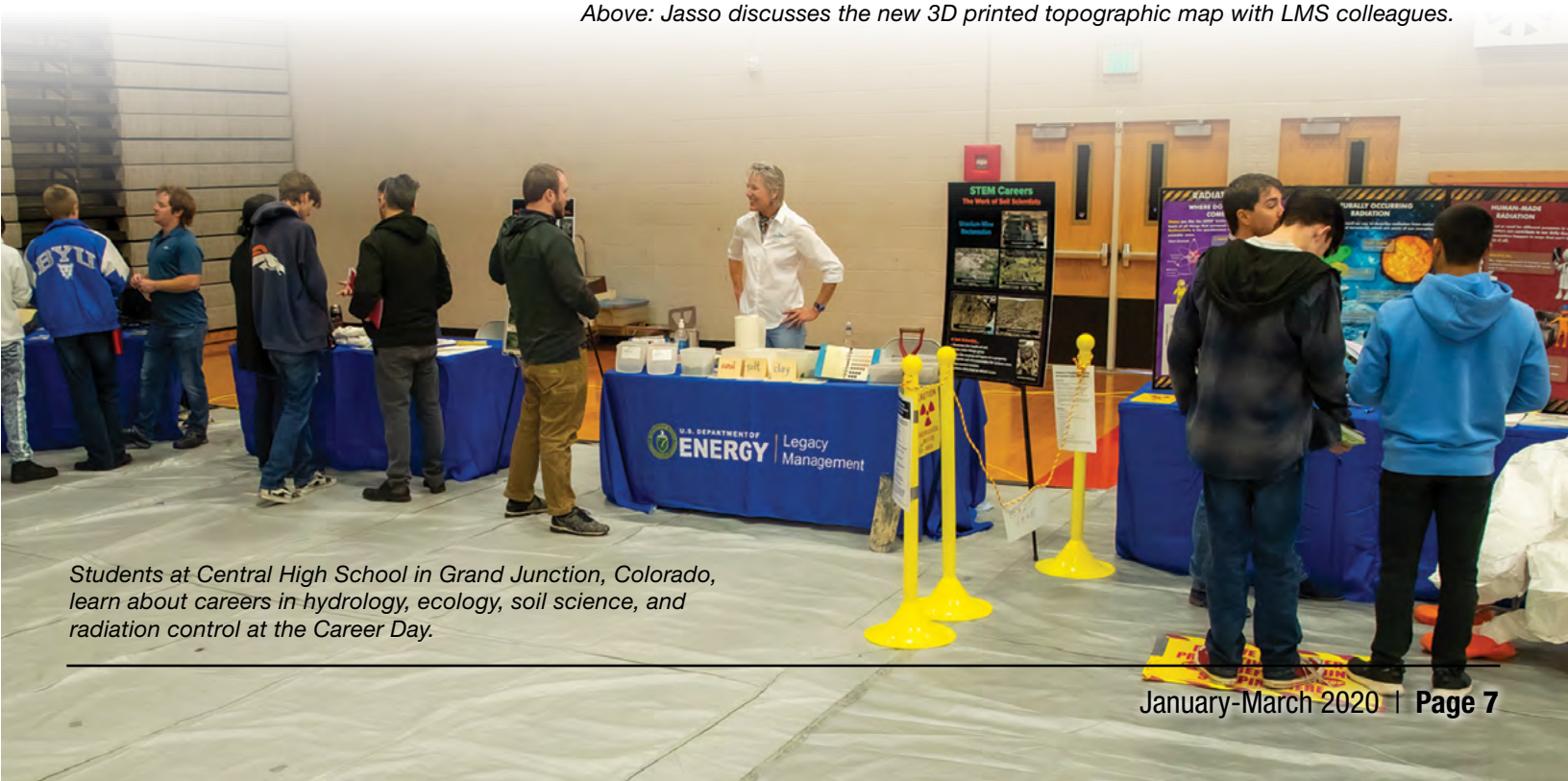
LM Hits the Gym

Jasso highlighted opportunities offered by Central High School, which include the only nationally certified STEM high school in Colorado, and the P-Tech Program, which offers students the opportunity to simultaneously earn both a high school diploma and an associate degree from a local community college. She then stressed the wide variety of educational paths available to find a rewarding career, including military service, community colleges, trade/vocational schools, certificate programs, and four-year universities, noting that there are significantly more jobs available for skilled laborers than qualified people to fill these jobs. Jasso also encouraged students to pursue internships, apprenticeships, and job shadow opportunities, citing her own experience starting with LMS as an intern, which led to her recruitment by LM as a site manager.

At Career Day, following Jasso's presentation, the LMS team featured four interactive booths highlighting career opportunities in hydrology, soil sciences, rangeland ecology, and radiation control. Students had the chance to speak with experts, ask questions about education and advancement opportunities, and discover what a "day in the life" looks like at LM. Career opportunities in the STEM fields were of interest to many students, so speaking with Jasso and LMS staff provided a unique opportunity for them to learn more about possible career paths.

"This was a great opportunity to provide some insight about the work LM does across the nation with an audience that likely wasn't familiar with us, and hopefully inspire the next generation of STEM professionals," Jasso said. ❖

Above: Jasso discusses the new 3D printed topographic map with LMS colleagues.



Students at Central High School in Grand Junction, Colorado, learn about careers in hydrology, ecology, soil science, and radiation control at the Career Day.

GOAL 1

Fernald Preserve Completes Overhaul of Wastewater Treatment

In December 2019, refurbishment of the backwash basin wrapped up at the Fernald Preserve, Ohio, Site, completing the third and final phase of a long-term project to overhaul and optimize the site's wastewater treatment facility.

"The three-plus-year renovation of the wastewater treatment facilities at Fernald was completed without any worker injuries, and the updated facility is anticipated to meet all the site's treatment needs until groundwater remediation is completed in the middle to late 2030s," said Fernald Preserve Site Manager Sue Smiley. "LM continues to evaluate and re-evaluate processes and structures and make changes when necessary."

Top: Vegetation and aquatic plants growing in the backwash basin before refurbishment.

Bottom: The backwash basin after refurbishment, filled with floating, sun-blocking hexagons that will help prevent aquatic plant growth.

An industrial wastewater treatment facility was constructed in 1951 to support the site's original uranium metals production mission. Production ceased in 1989 and wastewater treatment became a critical component of the site's cleanup under the U.S. Department of Energy (DOE) Office of Environmental Management (EM). Large treatment facilities were constructed to handle contaminated surface water, groundwater, remediation wastewater, and leachate from the proposed On-Site Disposal Facility. The centerpiece of these facilities was the Advanced Wastewater Treatment (AWWT) facility, which had a design treatment capacity of 2,900 gallons per minute (gpm).

As site remediation neared completion in 2003, EM and the U.S. Environmental Protection Agency determined that a reduced treatment capacity of 1,800 gpm (slightly more than a one-half reduction of the original capacity) would support future wastewater treatment needs in a re-designed "Converted" Advanced Wastewater Treatment (CAWWT) facility. This facility was completed by EM in January 2006, as the site began transfer to long-term stewardship under the DOE Office of Legacy Management (LM).

In early 2015, LM completed an assessment of the CAWWT equipment and identified numerous components at or approaching the end of their design life. The analysis also determined that the facility treatment capacity was more than what was needed to address current and future needs. LM began looking at options for a new treatment system that would be right-sized to handle the site's needs until groundwater remediation is completed (currently projected for 2039).

LM evaluated options in spring 2015, and decided to pursue approval of a new 50 gpm treatment system designed to handle the site's wastewater treatment needs through the projected completion of aquifer restoration in the late 2030s. LM presented the recommended changes to site regulators and stakeholders, and approvals for a new smaller capacity system were obtained through a series of presentations and meetings in summer 2015. After more detailed planning during fall 2015, LM initiated the project in 2016.

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Fernald Preserve Completes Overhaul of Wastewater Treatment

CAWWT tanks with a wastewater processing capacity of 1,800 gpm, built to support remediation era and initial post-closure wastewater treatment needs.

Three phases of right-sizing the CAWWT were identified and scheduled for 2016 to 2019. The first phase was the removal and disposal of piping and tanks to make room for the new system in the existing CAWWT building. This decontamination and demolition work was completed in January 2017.

The second phase included the design, construction, installation, and start-up of the new system. The design was finalized in spring 2017, after which a contractor was hired to complete the construction and installation of the new CAWWT system, which became operational in spring 2018.

CAWWT tanks after right-sizing with a capacity of 50 gpm for current and future wastewater treatment needs.

The third and final phase, refurbishment of the system's backwash basin, was completed in late 2019. Accumulated sediments, the old liner, and wall panels were removed from the basin. A total 600 cubic yards of low-level radiological waste from the backwash basin project were shipped off-site and disposed of in a licensed disposal facility. Afterward, the wall panels and liner were replaced. Floating, sun-blocking hexagons that fit together in a honeycomb configuration were added to the basin to prevent water plants from taking root and growing in the basin.

Top: CAWWT building and backwash basin before completion of the third and final phase of the wastewater treatment facility overhaul.

Bottom: CAWWT building and backwash basin after completion of the four-year-long wastewater treatment facility optimization project.

Fernald Preserve serves as a success story in beneficial reuse and ongoing stewardship aided by a long-term vision, proper planning, and efficient execution of the latest technologies in water treatment for uranium removal. ❖

GOALS 1 & 6

High-Tech Storytelling: Story Mapping the Colonie Site

Knowing what highway passes by a sampling well, seeing how the topography of the earth changes after soil removal, and visualizing the contaminant concentrations in a groundwater plume are all concepts once left to the interpretation of black-and-white text and data.

Thanks to a combination of historic photos, satellite imaging, 3D maps, and data-informed animations, the story of environmental remediation and beneficial reuse comes to life with LM's new Colonie, New York, Site story map.

Story maps are interactive tools that combine maps with text, images, and multimedia content to convey a narrative about a topic, such as the history of a U.S. Department of Energy (DOE) Office of Legacy Management (LM) site or project. They are an effective medium for conveying information to nontechnical audiences in an organized and visually rich, web-based environment.

"Story maps provide stakeholders with accessible insights into the legacy of a site that are only available currently by digging through information found in documents on the site webpage and the Geospatial Environmental Mapping System [GEMS]," explained Josh Linard, technical data manager for LM. "The story map lets stakeholders experience both data and context on an intuitive platform."

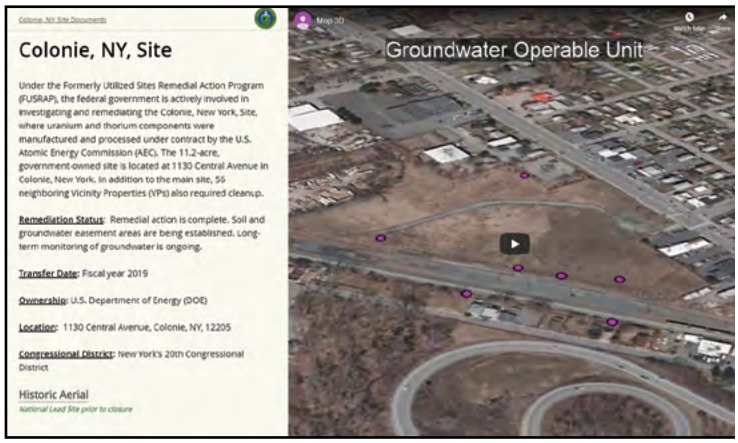
The Colonie story map begins with the history of manufacturing on the site, dating back to 1870 when Colonie was home to a commercial wood operation. Using black-and-white photos of the site during operations, the story map describes the role of Colonie during the Cold War when National Lead Industries (NL) owned the property. NL fabricated shielding components and ballast weights for aircraft and armor-piercing projectiles from depleted uranium under license with the U.S. Atomic Energy Commission.

Story map users can also explore photos from the site cleanup, which began in 1984 and continued through 2014 under both DOE and the U.S. Army Corps of Engineers.

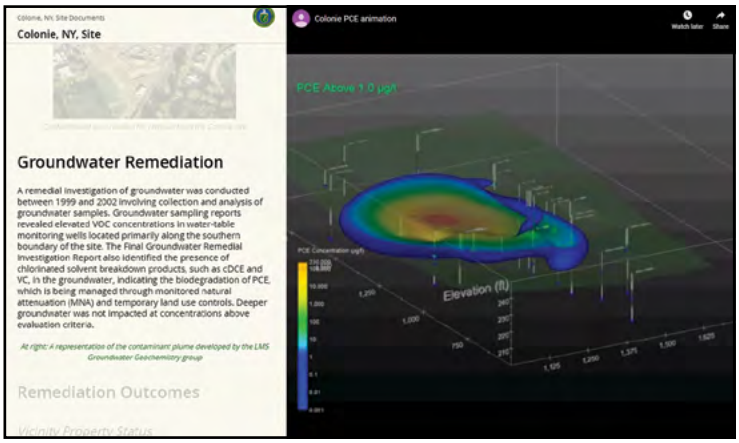
One of the most powerful functions of the story map format is the incorporation of animations. One animation shows the methodical and large-scale effort of on-site soil remediation. The accompanying animation shows the site after excavation of contaminated soil with an additional layer illustrating what the site looked like after resurfacing. In addition, the LM Support Groundwater Geochemistry group created an animation that shows the location, depths, and concentrations of contaminants in the groundwater, allowing users to visualize the contamination and placement of monitoring wells. Linard said there is potential to use the story map technology for other LM sites.

"The Colonie story map was LM's pilot to better understand the effort required," Linard said. "We're excited to better understand how we can leverage this technology for other LM sites." ❖

Check LM News for updates when the Colonie story map is published.



Story map of the Colonie site.



Groundwater plume contamination animation.

GOALS 2 & 6

Information Sharing Is Integral to the Success of LM's Work on the Navajo Nation

Mark Kautsky presenting at the second scoping meeting in Shiprock, New Mexico (September 21, 2019).

David Begay presenting on Traditional Ecological Knowledge (September 21, 2019).

Information sharing and outreach development are integral components in the success of U.S. Department of Energy (DOE) Office of Legacy Management (LM) work on the Navajo Nation.

On January 23, Mark Kautsky, LM site manager for the Shiprock, New Mexico, Disposal Site, gave a presentation to members of the community and the Diné Uranium Remediation Advisory Commission (DURAC) at the Shiprock Chapter House.

DURAC was formed to study the impacts of past uranium mining and milling on the Navajo Nation. The commission's task is to make recommendations to the president of the Navajo Nation and to the Navajo Nation Council for policies, laws, and regulations to address those impacts. The Uranium Commission holds meetings in each of the six abandoned uranium mine regions of the Navajo Nation that were impacted by uranium mining and milling.

More than 20 community members attended along with six Uranium Commission members. Kautsky updated the Uranium Commission on the status of the Environmental Assessment (EA) effort and the path forward for the groundwater treatment evaporation pond at the site. Constructed in 2002, the evaporation pond liner is nearing the end of its warranty period of 20 years.

Kautsky focused on the comments received as part of the EA scoping process that began in August 2019 and concluded in December 2019. LM and LM Support staff held two public meetings at the Shiprock Chapter House in August and September 2019. Staff presented a range of three potential alternatives for the evaporation pond and encouraged community members to share comments at the meetings. The LM project team provided several additional outlets to receive comments, including an address for written comments, self-mailing postcards, and a dedicated phone number and email address that were accessible throughout the public comment period.

LM made changes to the decision process based on feedback from DURAC and community members.

"The community expressed the desire for consideration of additional alternatives," said Kautsky. "We recorded those and have evaluated them as we've gone through our process."

Part of the presentation addressed the incorporation of Traditional Ecological Knowledge (TEK) and cultural uses of plants in the floodplain, which may overlie an area of contaminated groundwater that could affect traditional plant gathering.

"We want to make sure we incorporate other uses of the groundwater that cut more to the core of Navajo culture," said Kautsky. "Incorporating TEK is a work in progress. As we learn more, we're going to continue to evolve and have more meaningful interaction with our tribal partners."

The Shiprock disposal site, a Uranium Mill Tailings Radiation Control Act Title I disposal site, is licensed to DOE for custody and long-term care, and managed by LM. Kerr-McGee built the former mill, and it operated from 1954 to 1963. ❖

GOAL 1

Linda Kaiser Leaves a Legacy of Innovation and Inclusion at Rocky Flats

After supporting the Rocky Flats Site in Colorado for 22 years, Linda Kaiser retired this month. In her most recent role as the Rocky Flats contractor lead supporting the U.S. Department of Energy (DOE) Office of Legacy Management (LM) team, she expertly managed and facilitated all site activities, from monitoring and maintenance to safety and environmental compliance — doing what was needed to ensure the site remains protective of human health and the environment.

Over the course of two decades, Linda Kaiser became a key component of the Rocky Flats Site team. She retired in February 2020.

When Linda Kaiser began working at Rocky Flats as a contractor in 1998, she didn't know she'd work in stewardship of the site for the rest of her career.

"I had no expectation I would be at the Rocky Flats Site after cleanup was finished," Kaiser said, referring to the cleanup of contamination resulting from nuclear weapons production. "I came over to help the LM team at Rocky Flats for a little while and just never left."

A Career Dedicated to DOE

Kaiser has spent her entire professional life working with DOE.

After earning a mechanical engineering degree from Colorado State University, she specialized in decontamination and environmental restoration of the nation's nuclear sites at DOE's Idaho National Laboratory and Oak Ridge National Laboratory. This experience prepared her for her future role at Rocky Flats.

"While each DOE site is different, many of their cleanup and environmental restoration needs are similar," Kaiser said. "So, I was eager to join the Rocky Flats team and contribute to its stewardship mission."

Kaiser and her team regularly conducted site inspections and tested water samples from the site's groundwater and streams. They also reintroduced native plant species to the site and used specific insects to combat invasive weeds. The team will maintain these efforts after Kaiser's departure, and continue to share results online and at the Rocky Flats Stewardship Council's quarterly meetings.

Kaiser (left) accepts well wishes and a gift of photos from her Rocky Flats Site team, presented by Faith Anderson (right).

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Linda Kaiser Leaves a Legacy of Innovation and Inclusion at Rocky Flats

Kaiser and her team also looked for ways to improve stewardship processes at Rocky Flats. For example, they upgraded one of the site's underperforming groundwater treatment systems to a solar-powered system that meets all treatment standards, an effort that earned the team a Presidential Award for innovation and sustainability.

"I didn't carry out any of these accomplishments — my team members did," she said. "While I helped them find funding and navigate obstacles, they are truly responsible for this great work. I've been blessed to collaborate with so many incredible people here."

Kaiser's people-first mindset with the Rocky Flats team also helped establish positive relationships and transparent communication with residents and stakeholders near the site. As a Coloradan, she provides a unique blend of expert knowledge and local insight.

"I've called Colorado home since I was nine years old and have spent most of my life living in the state," she said. "After working at Rocky Flats for more than 20 years, I can say with confidence that there isn't any reason for people to be concerned."

"I believe in the science and that the cleanup is protective of human health and the environment," she said. "But most of all, I believe in the LM team managing the Rocky Flats Site today, because they are incredibly committed to ensuring this cleanup remains effective."

The Evolution of Women in STEM

Besides leading the Rocky Flats Site team, Kaiser has also helped lead the way for women in STEM (science, technology, engineering, and mathematics) fields.

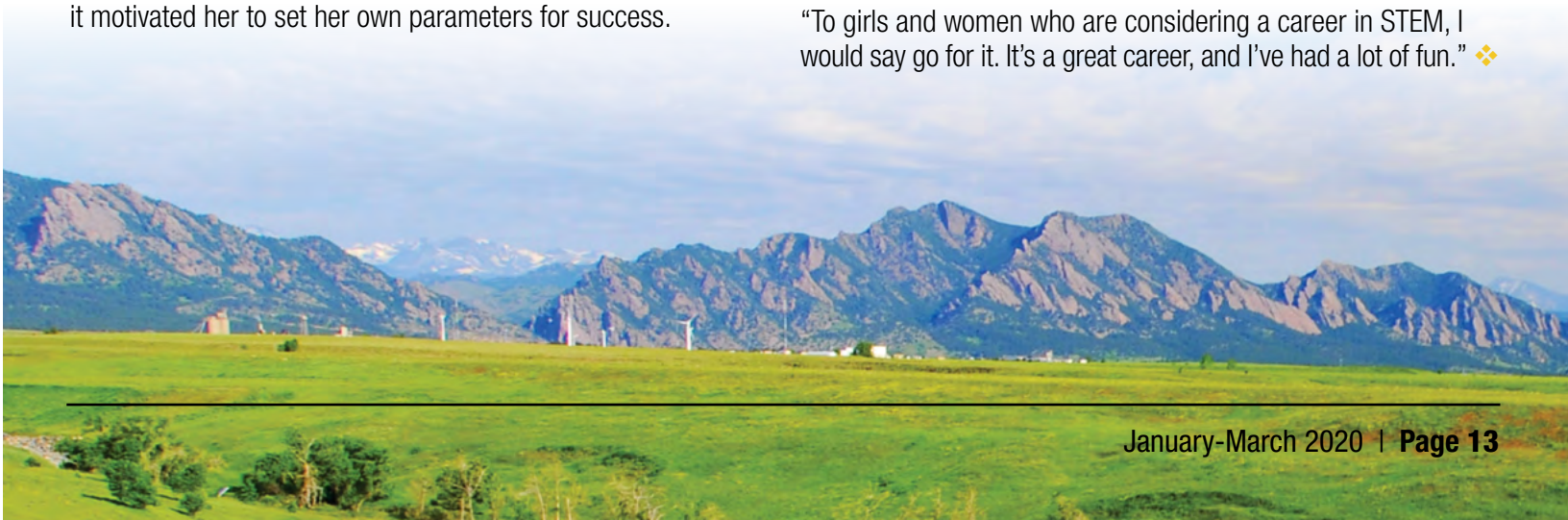
During her college years, Kaiser was often the only woman in the room. Though more women joined STEM fields as the years went by, men still made up the majority of her colleagues. But this never stopped Kaiser from fulfilling her goals. Instead, it motivated her to set her own parameters for success.

Kaiser pursued her engineering passions despite being a minority in the field.

"When I began working in engineering, it was when women were just starting to say, *you know, I think I can do that*," she said. "So, I set high standards for myself and did the very best I could to meet them. That seemed to be all I needed to do to prove myself."

While Kaiser acknowledges that STEM has evolved, and women who enter these fields today work with many more female peers now than they did years ago, she still thinks the situation could improve. Women make up less than one third of the STEM workforce, so Kaiser encourages girls and young women to embrace STEM fields and the professional opportunities they offer.

"To girls and women who are considering a career in STEM, I would say go for it. It's a great career, and I've had a lot of fun." ❖



GOALS 4 & 6

Fernald Preserve Showcased at Brownfields Conference

LM staff at the Brownfields Conference booth: (left to right) Karen Edson, Angelita Denny, Joyce Chavez, and Shawn Montgomery.

In December, more than 2,000 attendees convened at the Los Angeles Convention Center for the 2019 National Brownfields Training Conference — the nation's largest gathering of stakeholders focused on cleaning up and reusing former commercial and industrial properties.

Leading industry experts spoke during the conference, highlighting the work completed in their communities. U.S. Department of Energy Office of Legacy Management (LM) and LM Support staff took part in sessions, hosted an informational booth, and networked with conference attendees and presenters.

"Considering our commitment to beneficial reuse, LM is a natural fit for this conference," said Joyce Chavez, LM reuse asset manager.

LM's beneficial reuse program repurposes formerly contaminated sites and promotes LM's strategic goal of optimizing use of public lands.

Deb Brown, "professional small-town enthusiast" and co-founder of the website www.SaveYour.Town, opened the conference as keynote speaker with an inspiring presentation of what she has accomplished working with small towns across the country — transitioning abandoned and unoccupied storefronts into thriving small business incubators.

LM staff also shared their own beneficial reuse stories with booth visitors between sessions.

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Fernald Preserve Showcased at Brownfields Conference

"It was exciting to share the success stories of the many LM sites that have developed into vital community assets," Chavez said.

One success story is the Fernald Preserve, Ohio, Site. Earlier this year, the U.S. Environmental Protection Agency awarded Fernald Preserve the second annual National Federal Facility Excellence in Site Reuse award for the National Priorities List (NPL) category. The award was displayed at the booth, along with a display that showcases the work completed at Fernald.

Fernald Preserve is a former uranium processing facility located northwest of Cincinnati, Ohio, which operated from 1951 to 1989. The site was placed on the NPL in 1989 because of contaminant releases to the environment and growing public health concerns. Environmental remediation and subsequent ecological restoration converted the site from an industrial production site to an undeveloped natural park, encompassing restored wetlands, prairies, and forests.

The $4.4 billion cleanup of Fernald was one of the largest in U.S. history at the time. Close collaboration with the community and regulators has been key to the successful transformation at Fernald.

Today, the site features Ohio's first Leadership in Energy and Environmental Design platinum-certified visitors center, interpretive exhibits and services, 7 miles of hiking trails, and expansive natural habitats supporting biological diversity.

Conference attendees stopped by the booth to learn more about beneficial reuse at Fernald and to find out more about LM's work. LM staff answered questions about the diverse portfolio of sites designated for different types of beneficial reuse. As LM's responsibilities continue to grow, so does public curiosity regarding formerly contaminated sites now monitored by LM. The National Brownfields Training Conference enabled LM to showcase its commitment to stewardship. ❖

GOAL 6

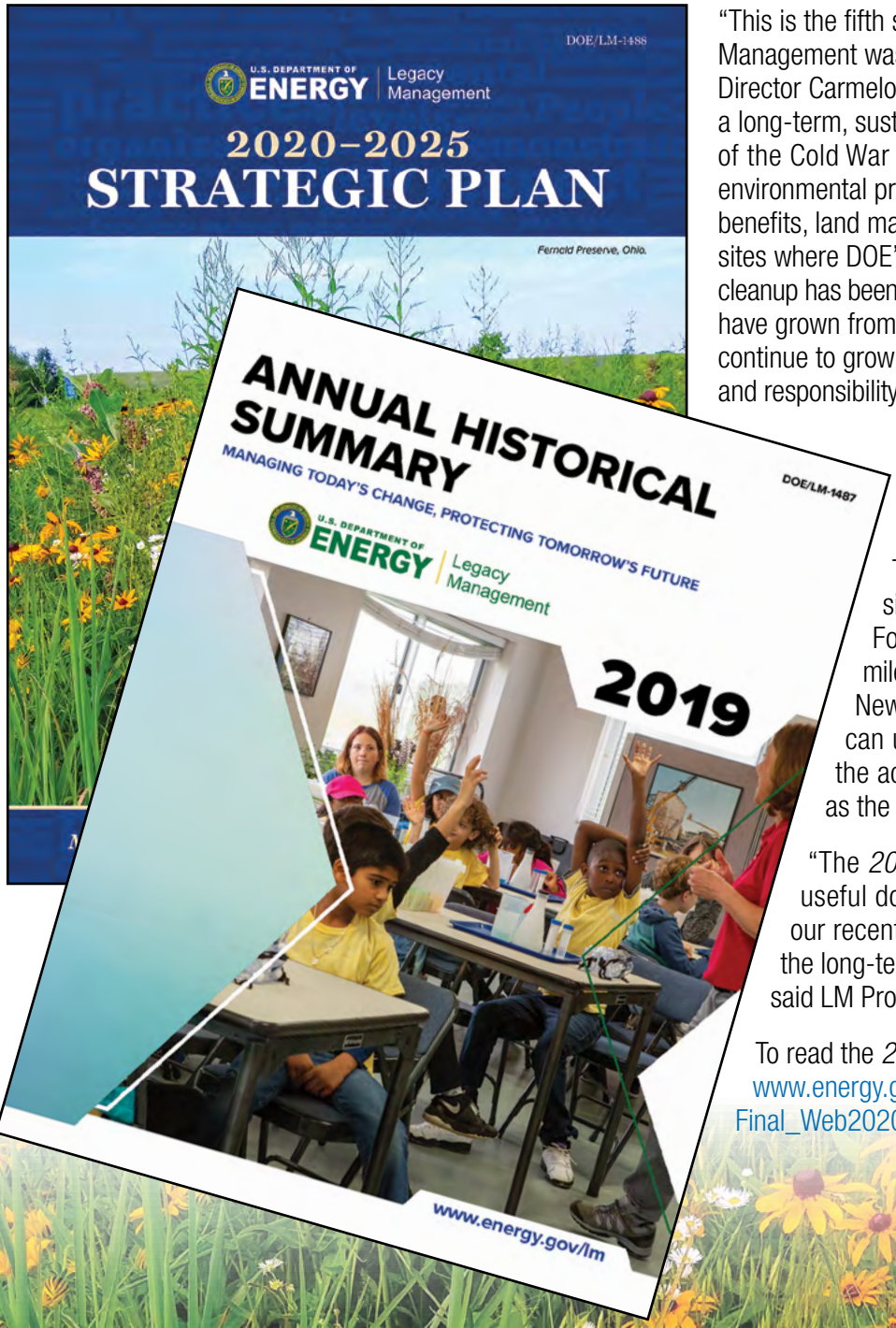
African Americans and the Manhattan Project

In honor of Black History Month, the U.S. Department of Energy Office of Legacy Management (LM) recognizes the important role African Americans played in the Manhattan Project. The U.S. National Park Service — LM's partner in the Manhattan Project National Historical Park — recently released *African Americans at Los Alamos and Oak Ridge: A Historic Context Study*. It is a great resource for learning about the contributions made by African Americans to the research and deployment of U.S. atomic weaponry during World War II. ❖

www.nps.gov/mapr/learn/historyculture/upload/Study-African-Americans-at-Los-Alamos-and-Oak-Ridge.pdf

LM Rolls Out New Strategic Plan and Annual Historical Summary

LM is starting the new decade with a look to the future and a review of the past, marked by the release of the *2020-2025 Strategic Plan* and the *2019 Annual Historical Summary*. Taken together, these documents show how the U.S. Department of Energy (DOE) Office of Legacy Management (LM) is using lessons from the past to plan for an expanding set of new challenges.



The *2020-2025 Strategic Plan* charts LM's path forward over the next five years. While the plan is similar in format to prior versions, LM's site management responsibilities have grown, and the office has adapted and improved performance. The plan covers LM's mission and vision, goals and objectives, program evaluation, and performance measurement.

"This is the fifth strategic plan since the Office of Legacy Management was established in December 2003," said LM Director Carmelo Melendez. "Legacy Management provides a long-term, sustainable solution to the environmental legacy of the Cold War and is responsible for activities such as environmental protection, information management, retiree benefits, land management, and community engagement at sites where DOE's mission has ended, and active environmental cleanup has been completed. Since inception, LM's responsibilities have grown from 33 sites to 100 sites. Our responsibilities will continue to grow as cleanup is completed at additional sites and responsibility is transferred to our office for long-term care."

To read the *2020-2025 Strategic Plan*: www.energy.gov/lm/articles/lm-s-2020-2025-strategic-plan-released

The *2019 Annual Historical Summary* captures significant accomplishments from the past year. For example, in 2019, LM marked a major milestone when it took on its 100th site — Colonie, New York. Future historians and researchers can use annual historical summaries to place the activities of LM into larger contexts, such as the history of DOE.

"The *2019 Annual Historical Summary* is a very useful document, both in the short-term, to share our recent accomplishments with the public, and in the long-term, to document LM's evolution through time," said LM Program Analyst Padraic Benson. ❖

To read the *2019 Annual Historical Summary*: www.energy.gov/sites/prod/files/2020/02/f71/2019AHS_Final_Web20200214_1.pdf

GOAL 5

After 22 Years of Service, Roxana Burrows Plans New Adventures

Travel expert Roxana Burrows has been managing trips for federal employees in the U.S. Department of Energy (DOE) out of the Grand Junction, Colorado, office for more than 22 years. In that time, she's developed close relationships with her "travelers," as she fondly calls the people she works with.

"The past 22 years have been the best job," said Burrows. "I've really loved the job and I've loved working with my travelers — they're all just wonderful."

Burrows' history working with DOE stretches back to 1977, when she worked as a computer operator for Bendix Field Engineering, a contractor to DOE. She worked for Bendix until 1984, and then returned to working with DOE contractors in 1998, eventually working on the DOE Office of Legacy Management (LM) contract, when LM was established in 2003.

She has seen every travel snafu possible in her decades of service. "There's not anything that I would consider unusual at this point because so many odd things happen all the time," Burrows said. "People miss their flights, or we're trying to get everyone in the same hotel. It's challenging, but we don't look at it that way because we enjoy it — it's really a fun job."

Burrows said her success has come from working hard, learning as much as she could about her job, and focusing on service to her clients. "Although, it can be challenging when doing foreign travel or when many changes become necessary," she said. "You just have to let things roll. Customer service is paramount in this job."

Outside of work, Burrows has been active in the community.

Her husband, Charles L. (Chuck) Burrows, was a highly decorated Vietnam War veteran, who served in the 101st Airborne Division, receiving a Silver Star, two Bronze Stars, two Air Medals, the Vietnamese Cross of Gallantry, and two Purple Hearts. While he was director of the Disabled American Veterans — Vietnam Veterans Outreach Center in Grand Junction, she facilitated a wives' support group through the Veterans Administration hospital.

As part of her work with the veterans' group, Burrows organized and coordinated an oral history project with local Vietnam War vets for the Museums of Western Colorado and the Mesa County Libraries.

"We had a Navy vet interviewing Navy vets, an Army vet interviewing Army vets, etcetera," she said. "We did two years of interviews that we used to put together a slide-tape presentation that was stored at the museum."

Roxana Burrows has managed travel for DOE and LM for more than 22 years.

Burrows received the Community Treasure Award from the museum for her work on the project.

After spending decades arranging travel for others, Burrows plans to spend her retirement arranging some of her own trips. "I hope to do some travel and visit all of my family all over the country," she said. "I figure I'm just going to try to slide into it gracefully."

We wish Roxana best of luck in her next steps in life and safe travels! ❖

GOAL 6

LM Engages Alaskans at Forum on the Environment

This February, U.S. Department of Energy (DOE) Office of Legacy Management (LM) staff and LM Support (LMS) contractors traveled to the Denáina Center in Anchorage, Alaska, where they operated a booth and delivered a presentation at the 22nd annual Alaska Forum on the Environment (AFE).

AFE is an annual gathering of environmental professionals, representatives from government agencies, non-profit and for-profit business leaders, Alaskan youth, conservationists, biologists, and community elders. Participants at this year's forum could choose from more than 100 technical training sessions, ranging from marine debris and environmental regulations to rural issues and pollution prevention.

LM Communications, Education, and Outreach Team Lead Kristen Holmes works the booth at the Alaska Forum on the Environment.

"Alaska is a big state," said LM Director of Site Operations David Shafer. "And it's rare that so many of the regulators, stakeholders, other federal agencies, and companies we are working with on LM's Alaska sites are all in the same place."

LM Amchitka Site Manager Jason Nguyen presented on recent LM work on Amchitka Island, including efforts to address earthquake damage to mud disposal pits at the site and the sampling results from the radiologic monitoring completed in 2016.

"Our results over the past two sampling events have consistently showed that fisheries around Amchitka have not been impacted by DOE operations on the island," said Nguyen. "LM will continue to evaluate food safety in the vicinity of the island to meet its goal of protection of human health and the environment."

The federal government conducted three underground nuclear tests on Amchitka Island in the 1960s and 1970s, including the largest underground detonation that had occurred in the United States at the time. The legacy from those tests includes seven disposal pits containing diesel-contaminated drilling mud and three underground cavities where the nuclear tests were conducted. LM is responsible for the long-term stewardship and monitoring of the former test sites and associated wastes.

LM is also responsible for long-term stewardship of the Project Chariot site near Cape Thompson, Alaska. Project Chariot was a proposed plan to construct an artificial harbor at Cape Thompson by detonating multiple nuclear devices. After strong public opposition, the project was canceled. Although the detonations never occurred, the site was

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LM Engages Alaskans at Forum on the Environment

Above: The "bag monster" was an attendee favorite at the AFE Conference. The bag monster was created to draw attention to plastic pollution.

Right: Amchitka Site Manager Jason Nguyen presents at the conference. (Photo Credit: Alaska Teen Media Institute)

contaminated by diesel fluids used in drilling and radioactive fission products used in test plots.

With 1,800 attendees, AFE provided a rich opportunity for LM and LMS staff to interact with diverse audiences interested in the environment and provide information about LM's work across the country.

"Working the LM booth at the forum has been a great opportunity to meet with Alaskans and discuss our long-term stewardship work in their state," said LM Program Analyst Padraic Benson. "One of the great things about this event is that it brings out folks of all ages from across Alaska, from school children to elders." ❖

Kickoff With the Corps in New Mexico

Left: The LM team presents on quality assurance, an integral part of all LM projects. Center: DOE and USACE discuss roles and responsibilities on two New Mexico projects. Right: Site Manager William Frazier explains L-Bar using a 3D site model.

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) and the U.S. Army Corps of Engineers (USACE, the Corps) are taking important steps in the initiation of two multi-year collaborative projects in New Mexico.

On January 9, LM Team Lead Paul Kerl, LM site managers Bernadette Tsosie and William Frazier, and LM Support (LMS) site leads Alison Kuhlman and Jordan Cario participated in a roles and responsibilities meeting with project managers and experts from USACE at the Albuquerque District Office. LM and USACE senior management also utilized this opportunity to meet and discuss other LM projects that could benefit from USACE support. The meeting was an important step in the initiation of projects at Uranium Mill Tailings Radiation Control Act (UMTRCA) Title II sites in New Mexico: the repair of depressions on the Main Tailings Disposal Cell at the Bluewater site and design of erosion control structures at the L-Bar site. These projects are the first joint collaboration between USACE and DOE at UMTRCA sites under long-term site management.

In June 2018, Director Carmelo Melendez signed a Memorandum of Agreement with USACE to enable LM to better leverage nationwide assets available throughout the multiple Corps districts and offices. LM then approached the USACE Albuquerque District in spring 2019 to discuss the Bluewater and L-Bar projects and to provide conceptual design overviews to determine the Corps' interest and availability.

An interagency agreement (IA) was developed to address specific requirements for the L-Bar and Bluewater projects. Planning, design, and construction of two large projects with varying schedules, costs, and expectations is challenging; therefore, mechanisms are needed to ensure efficient and effective collaboration. The IA provided a framework for project management and assisted in integrating the two federal agencies into one cohesive project team. Once the IA was finalized, the project team held a project kickoff meeting in fall 2019 that included tours of both UMTRCA sites.

Since LM has significant experience working within the UMTRCA framework, a method to share this knowledge with USACE was developed in the form of a presentation that defined roles and responsibilities. LM/LMS then identified general project objectives, regulations, orders, and DOE goals that would be fundamental throughout the life of the projects. These key

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Kickoff With the Corps in New Mexico

objectives included engineering design considerations for long-term protectiveness and functionality, thorough geotechnical investigations, minimal land disturbance, and reductions in radioactive material handling. General project management considerations, such as communication plans and interactions between the two agencies, were also considered. The result was a series of PowerPoint presentations to define roles and responsibilities that LM delivered to USACE in January.

The roles and responsibilities meeting consisted of nine individual presentations given by experts in project management, engineering, applied studies and technology, public affairs, environmental compliance, ecosystem management, health and safety, radiological control, and quality assurance. Each presenter outlined key considerations related to the planned work and offered suggestions to effectively integrate discipline-related needs and support in each phase of the projects. The day-long meeting required coordination across three offices and utilized web-based teleconference and video services to provide a cost-effective and efficient method of multiagency interaction. Visual aids, including a 3D model of the L-Bar disposal site, were taken to Albuquerque to familiarize team members with each site.

Feedback from key participants indicated the success and value of the event. Defining key roles and responsibilities early in the process helped develop expectations for both agencies and resulted in the identification of near-term actions that will further define the process moving forward. A key expectation endorsed by both LM and USACE was the need for routine communication and coordination. Decisions and discussions resulting from the roles and responsibilities meeting will be formally documented in a Project Management Plan for each site that will clearly specify the division of tasks between LM and USACE. The Project Management Plans will then serve as tools to help navigate the challenges ahead.

Disciplined planning is required to ensure disciplined execution. LM embraced this concept at the outset to ensure the multiagency team had mutually aligned perspectives on communication, project planning, execution, and goals. LM looks forward to the partnership with USACE and utilizing each organization's strengths to achieve project success. ❖

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.

GOAL 5

LM Program Manager Explores Different Facets of Leadership

Joyce Chavez shows her diploma from the Office of Personnel Management Colorado Leader Development Program.

On January 16, Joyce Chavez, reuse asset manager for the U.S. Department of Energy Office of Legacy Management (LM), graduated from the Office of Personnel Management (OPM) Colorado Leader Development Program (CLDP). The OPM CLDP is a seven-month program designed to meet the leadership development needs of federal, state, and local government employees in Colorado.

Program curriculum focuses on development of executive core qualifications, such as leading change, leading people, building coalitions, and "leadership competencies." The main competencies emphasized are conflict management, developing others, interpersonal skills, leveraging diversity, partnering, and team building.

"The CLDP was a great opportunity," said Chavez. "So much of the time we get inundated with tasks and lose sight of the importance of relationships and how our mission relates to people."

Chavez started working for LM in 2016 on the Asset Management Team after a long federal career working as a physical scientist for the U.S. Army Corps of Engineers in Germany and across western Europe, and for various stateside U.S. Air Force and U.S. Army installations, focusing on environmental planning, policy, and guidance.

Her primary role at LM is beneficial reuse management planning. In addition, she serves as one of two National Environmental Policy Act (NEPA) compliance officers for LM, developing and implementing procedures and guidance for NEPA compliance.

She said the class encouraged introspection, forcing her to examine her strengths and weaknesses, and explore why she approached certain situations in certain ways. The classes also emphasized being aware of others' preferences and how to work to accommodate them.

Chavez's supervisor on the Asset Management Team, Bud Sokolovich, said that the leadership qualities Chavez is developing will pay big dividends for LM, as she puts the ideas she learned into practice.

"The investments that LM makes today in training the leaders of the future will infuse the organization with implementable ideas that will continue to propel us forward," Sokolovich said.

Chavez said the CLDP gave her the tools to approach a wide range of different situations and challenges encountered in the work environment.

"It's not always about leading up or down," said Chavez. "Sometimes it's about leading laterally — getting the support of your colleagues when you need them." ❖

GOAL 6

DOE Convenes Resource and Technology Investment Committee

In February, the Office of Science hosted the U.S. Department of Energy (DOE) Research and Technology Investment Committee (RTIC) meeting on STEM (science, technology, engineering, and mathematics) at DOE Headquarters. The RTIC was established in 2019 to bring together the key elements of DOE that support research and development activities, coordinate their strategic research priorities, and identify potential crosscutting opportunities in both basic and applied science and technology.

During the one-day workshop, each DOE program highlighted their major STEM programs, efforts, and objectives, focusing on STEM as an important driver for training and a tool for recruiting top talent from universities to join the DOE team. Many of the presenters acknowledged the broader message and importance the program bears for the future competitiveness of the nation's scientific research programs.

The DOE Office of Legacy Management (LM) supports STEM-related activities for all educational levels. Denise Freeman, LM communications liaison and HQ STEM coordinator, provided an overview of LM STEM outreach and education activities, including internships, work-based training, course-based training, curriculum development, applied science and technology fellowships, STEM competitions, and hiring programs.

"The workshop was very valuable because it brought together many of the DOE elements to share their STEM activities and objectives," said Freeman. "It is important that we ask ourselves what we can do with the information in the future to support and improve all of our program STEM initiatives." ❖

LM HQ STEM Coordinator Denise Freeman provides an overview of LM STEM activities at the RTIC event.

GOAL 5

New Employee Bios

Greg Kuntz

Greg Kuntz joined the U.S. Department of Energy Office of Legacy Management (LM) in January 2020 after serving 32 years in the U.S. Navy (retiring as a lieutenant commander in 2011) and numerous positions in civilian government service.

Greg is the new public affairs specialist assigned to the Grand Junction, Colorado, office. He will work with the Nevada Offsites Team and will be LM's crisis communications lead.

Greg was born in Anchorage, Alaska. He graduated from high school in Myrtle Creek, Oregon, and joined the U.S. Navy in 1980. During his commissioned years before becoming a public affairs officer (PAO), Greg served in many facets, with the most notable being that of an air carrier operations officer. As a PAO, Greg has diverse experience: first as the 7th Fleet Flagship PAO, then as the first public information officer for the U.S. Navy's forward-deployed, nuclear-powered warships in Submarine Group Seven and Carrier Strike Group 5, located in Japan. Following the 2011 Tōhoku earthquake, Greg worked as the primary press officer and U.S. Navy spokesperson for tsunami relief efforts and the Fukushima Daiichi Reactor response.

Since joining civilian government service in 2011, Greg has worked as the lead PAO at Naval Air Facility Atsugi, Japan; public affairs operations and training lead at Navy Region Northwest; deputy region PAO for Joint Region Marianas in Guam; lead PAO for the Navy Program Executive Office for Anti-Submarine Warfare and Special Mission Aircraft; and communications director for Naval Aviation Enterprise.

Greg and his wife Yolanda have been married for 36 years. They have two grown children and five grandchildren. Of all the places Greg and Yolanda have lived, their favorite place was Japan. ❖

Environmental Justice Activities

Myah Singleton, a freshman student at Charleston Southern University, speaks at the Jedburg CLI.

DOE Co-Sponsors Community Leaders Institute

The Community Leaders Institute (CLI) emphasizes the unique relationship between environmental protection, human health, environmental justice, and economic development as an essential part of community development. CLI also reinforces the principle that progress requires informed and active leaders.

On January 24-25, the U.S. Department of Energy co-sponsored a CLI in Jedburg, South Carolina. Melinda Downing, the DOE Environmental Justice program manager, provided introductory remarks at the Jedburg CLI. The CLI included over 150 registered participants, including representatives from the U.S. Environmental Protection Agency-Region 4, South Carolina Department of Environmental Conservation, Medical University of South Carolina, and Allen University. South Carolina Congressman James E. Clyburn was a keynote speaker along with Harleyville, South Carolina, Mayor Charles Ackerman. ❖

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Members of the economic development panel (L to R): Michelle Emerson, Stephanie Mangini, Debbie Turbeville, and David Rivers.

Natasha Chatman, with the Fetter Health Care Network, speaks at the Jedburg CLI.

Congressman James Clyburn (South Carolina, 6th District) provides remarks at the Jedburg CLI.

Members of the health disparities/health issues panel (L to R): Tara Tsehlana, James McElligott, Natasha Chatman, Jeannette Jordan, and Sabra Slaughter.

Members of the youth panel (L to R): Myah Singleton, Myra Haney Singleton, Paul Stoney, and James White, Jr.

Continued from page 24

Environmental Justice Activities

Scholars Graduate from Allen University Environmental Justice Institute

The Allen University Environmental Justice Institute proudly celebrated the graduation of a second cohort of scholars from the Allen University Environmental Justice Scholars Program (AUEJSP). Eight Allen University students of high academic achievement and with strong character references were selected to the program from different academic disciplines.

Allen University Environmental Justice Scholars Program Graduation Ceremony: (L to R), Jennifer Almeda (teacher), Kendale Salmon (scholar), and Program Director Oluwole Ariyo.

The program comprises nine different modules taught over nine weeks. It is envisaged that these new AUEJSP graduates will be instrumental to creating positive change in relation to environmental challenges in their respective communities. ❖

Graduation Ceremony of Allen University Environmental Justice Scholars: (From left) (1st row): Akhira Rumph, Mikkella Mcilwain, Michelle Hill, Latrelle Witter, and Program Director Oluwole Ariyo; (2nd row): Eugina Ford and Ashley Floyd; (3rd row): Shemar Sutton and Kendale Salmon.

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GOAL 6

LM NEWS Feed

Visit www.energy.gov/lm/listings/lm-news to access these articles in the LM NEWS Feed.

MARCH 16, 2020

LM Visitors' Centers Closed to the Public

Starting, Monday, March 16, 2020, DOE LM visitors' centers are closed to the public, and all associated programming is canceled until further notice.

MARCH 12, 2020

LM Celebrates Women's History Month

In honor of Women's History Month, LM is highlighting four women who worked on the Manhattan Project.

FEBRUARY 26, 2020

Office of Legacy Management Fiscal Year 2021 Budget Request

On Monday, February 10, 2020, DOE rolled out its fiscal year 2021 budget request, which includes approximately $317 million for LM.

FEBRUARY 26, 2020

Rocky Flats Site, Colorado Original Landfill Stabilization Project Update

Installation of the first row of hillside anchors is complete.

FEBRUARY 24, 2020

LM 2019 Annual Historical Summary Released

The 2019 Annual Historical Summary documents more than 100 of the most significant projects and activities completed by LM during the calendar year 2019.

FEBRUARY 20, 2020

LM's 2020-2025 Strategic Plan Released

The 2020-2025 Strategic Plan documents the strategic planning efforts of LM.

FEBRUARY 18, 2020

Linda Kaiser Leaves Legacy of Innovation and Inclusion at Rocky Flats

Decades of Commitment Honored: Linda Kaiser retires after supporting the Rocky Flats Site for 22 years.

JANUARY 30, 2020

Signing of New Uranium Leasing Program Lease Agreements Underway

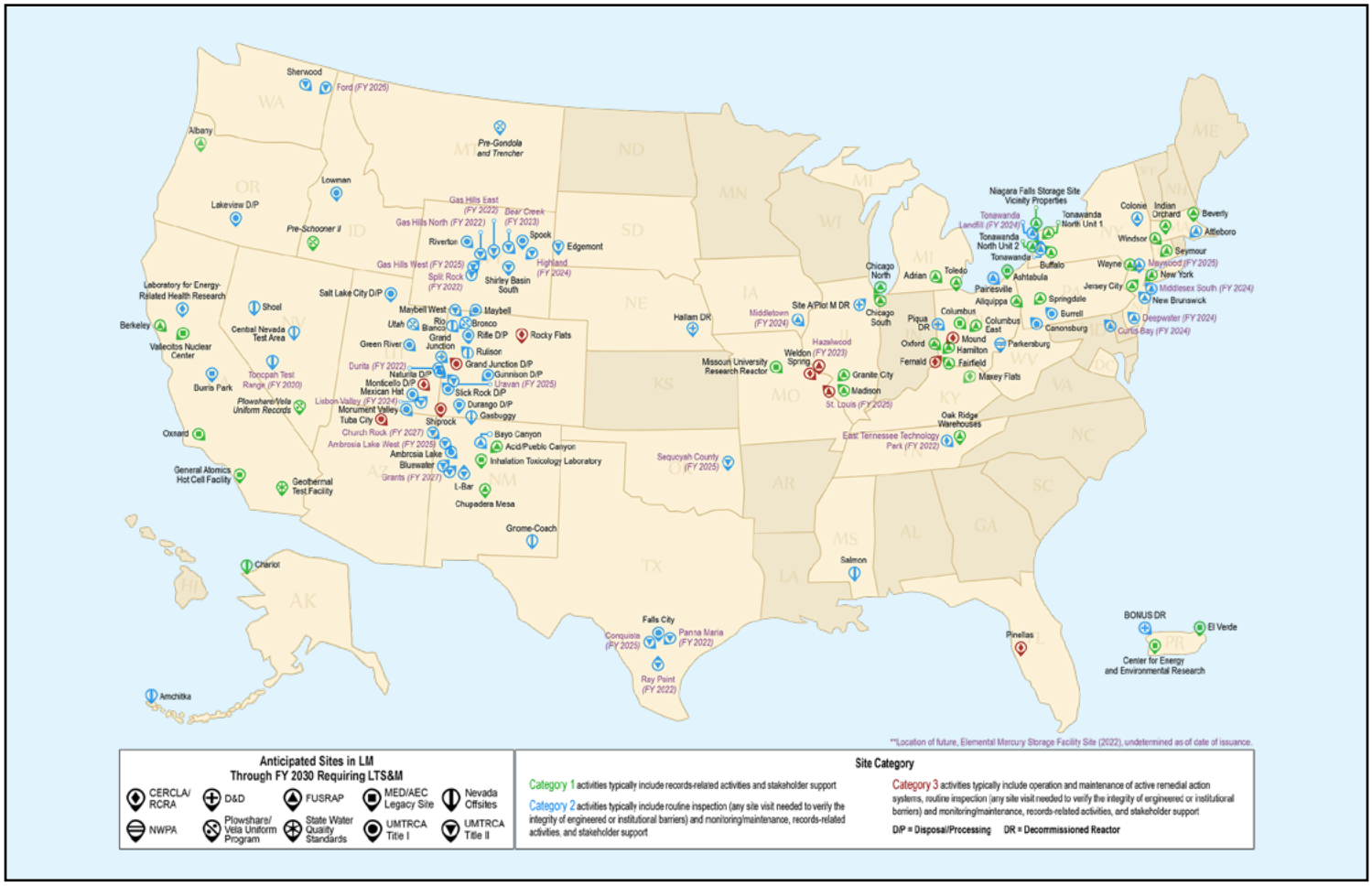
LM is currently executing new 10-year leases with existing lessees under the Uranium Leasing Program.

JANUARY 15, 2020

Atomic Pop Culture: LM Collaborates with Colorado Mesa University Public History Students

In partnership with LM, Colorado Mesa University students opened an exhibit at the Atomic Legacy Cabin in Grand Junction, Colorado.

Anticipated LM Sites Through Fiscal Year 2030



Internship Information

Check out our internship information webpage at
www.energy.gov/lm/internship-information

Stay Up-To-Date

For up-to-date LM news, be sure to visit
LM's website, LinkedIn, and Facebook page.

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