Advocate

A publication of the Oak Ridge Site Specific Advisory Board – a federally appointed citizens panel providing independent recommendations and advice to DOE's Environmental Management Program

# Vision 2020 Becomes Reality: Historic Cleanup Achieved

A decades-long effort to clean and transform the former Oak Ridge Gaseous Diffusion Plant has been realized, resulting in the historic first-ever removal of a uranium enrichment complex in the world.

In the early 1940s, when the U.S. Army Corps of Engineers began acquiring farmland that would later become Oak Ridge, few could envision the massive facilities that would be constructed there, including what at that time was the largest building in the world. The site, first codenamed K-25, produced enriched uranium that would power the weaponry that ended World War II.

After the war, the site, renamed the Oak Ridge Gaseous Diffusion Plan, expanded and new buildings were constructed to produce enriched uranium for defense and commercial purposes and later to explore new enrichment technologies. Those operations continued until the mid-1980s, and the site was shut down permanently in 1987. This left hundreds of contaminated facilities that had to be carefully addressed and removed. Among those were five huge gaseous diffusion enrichment buildings, including the mile-long, U-shaped K-25 Building.

By the 1990s, DOE formulated a plan to not only clean up the site, but to also transform it into an asset that could generate new economic opportunities for the community. In 1996, the site was renamed the East Tennessee Technology Park to reflect its new trajectory.

The first major structure to be removed was also one of the first that was built at the site—the K-1001 Administration Building. Containing more than two acres of floor space, the four-wing structure included DOE and contractor offices. It was demolished in 1999.


*After a decades-long effort, EM has completed demolition on all the buildings at ETTP. This removed hundreds of deteriorating, contaminated structures that spanned 13 million square feet.*

Through the next decade, various facilities were taken down, including a large cafeteria, medical facility, and various laboratories. In 2006, the first of the five massive enrichment facilities fell. The K-29 facility, built in 1951, was the first to be demolished. Its teardown paved the way for the demolition of the other four gaseous diffusion buildings: K-25, K-27, K-31, and K-33. K-27 was the last to come down, which was accomplished in 2016.

The largest and most challenging demolition project was the K-25 Building. Demolishing the four-story, 44-acre facility took years of planning as workers had to remove uranium deposits throughout the facility and address other contaminants. It had degraded over the years, with rainfall often infiltrating and deteriorating the

*(See Vision on page 6*

Issue 80 • October 2020

IN THIS ISSUE

# Reservation Update

## Oak Ridge Completes Major Soil Remediation Project

ETTP, the former Oak Ridge Gaseous Diffusion Plant, once contained five massive uranium enrichment buildings, which included Building K-25, along with hundreds of support facilities

After conducting sampling and characterization, Oak Ridge's cleanup contractor UCOR identified areas in a section of the 44-acre K-25 footprint where contaminated soil needed to be excavated and removed. Workers have now completed that excavation — which began in 2018 — removing more than 90,000 cubic yards of soil. The site has been backfilled and seeded.

The K-25 Building was built in 1943 as part of the Manhattan Project. At that time, K-25 was the largest building in the world. It operated until 1964, producing enriched uranium for defense and commercial purposes.

The K-25 Building demolition project began in December 2008, and that work was completed on the mile-long, U-shaped structure in December 2013.

Tearing down the 1.6-million-square-foot facility was EM's largest ever demolition project. Waste hauled from the site included 6,000 compressors, 3,000 converters, 187,000 cubic yards of steel, 3,800 miles of electrical conductors, and 1.2 million cubic feet of asbestos insulation. In total, more than 460,000 cubic yards of K-25 waste — which could fill more than 33,000 dump trucks — was shipped for disposal.

Completing this soil remediation project eliminates risks at the site, and it will also help facilitate future plans to transform the K-25 Building footprint into a commemorative site as part of the Manhattan Project National Historical Park. The K-25 History Center opened earlier this year adjacent to the footprint, and future plans include a viewing tower, equipment building, and wayside exhibits.


*Workers have completed an excavation of contaminated soil from the K-25 footprint, removing more than 90,000 cubic yards of soil.*

## Oak Ridge Constructing Test Facility for Sludge Processing

Construction is underway on the $10 million Sludge Processing Mock Test Facility, which will play a vital role in maturing technologies needed to begin processing Oak Ridge's 500,000-gallon inventory of transuranic sludge waste.

Transuranic waste contains elements heavier than uranium, hence the name "trans," or "beyond" uranium. Oak Ridge's inventory of that waste was generated and stored onsite from years of defense-related research, conducted primarily at ORNL.

OREM has been working since 2003 to process, repackage, and ship Oak Ridge's inventory of contact- and remote-handled transuranic waste for permanent disposal at the Waste Isolation Pilot Plant near Carlsbad, New Mexico. With that processing scheduled for completion in 2022, OREM is now working to address the site's inventory of transuranic sludge waste.

Crews have already placed footers and poured the foundation for the mock test facility. They took another major step forward last week when they transported a 50,000-gallon tank to the worksite that will be used during testing.

Site preparation for the Sludge Processing Mock Test Facility began in January. Crews recently poured the concrete slab for the structure, which is slated for completion in October 2021.

## DOE signs two-year contract extension with UCOR

DOE has signed a two-year contract extension with UCOR to maintain its environmental cleanup progress in Oak Ridge. The extension includes an initial one-year term from August 1, 2020 until July 2021 and two six-month option periods. The current contract expires July 31, 2020.

UCOR, an Amentum-led partnership with Jacobs, has been a primary cleanup contractor for DOE's Oak Ridge Office of Environmental Management (OREM) since August 2011. The contractor's work has involved removing facilities and environmental risks from ETTP and overseeing waste management operations across the Oak Ridge Reservation.

UCOR has also advanced recent efforts to address risks and stabilize a portion of the excess, contaminated facilities located at ORNL and Y-12.

Under the extension, UCOR will be responsible for transitioning the trained, experienced workforce from ETTP to new deactivation and demolition projects at ORNL and Y-12. These projects will eliminate deteriorating, high-risk facilities, enhance safety, and clear land for future national security and scientific research missions.

Workers recently finished removing contaminated soil under a section of the former Building K-25 footprint in another major action to help EM reach its goal to complete cleanup at ETTP.

*A view of the Centrifuge Complex at the East Tennessee Technology Park as the initial stages of demolition began in fall 2019.*

*A view of the Centrifuge Complex area after demolition was completed at the end of July 2020.*

## Crews Finish Takedown of Centrifuge Complex at ETTP

EM's cleanup at ETTP took a major step forward with removal of the Centrifuge Complex in late July.

EM is working to complete significant cleanup at ETTP this year — an EM 2020 priority — and tearing down the sprawling 235,000-foot complex marks one of the final demolition projects at the site.

The Oak Ridge Gaseous Diffusion Plant, now called ETTP, was closed permanently in 1987. EM has been conducting large-scale demolition at the site since 2006, resulting in the removal of hundreds of old, contaminated facilities totaling more than 13 million square feet.

The Centrifuge Complex — one of the most recognizable structures in ETTP's skyline — was built to develop, test, and demonstrate the capability of centrifuge technology for uranium enrichment. The last of these facilities ceased operation in the mid-1980s.

The Centrifuge Complex was one of the most recognizable structures in the ETTP skyline.

OREM and its cleanup contractor UCOR began tearing down the Centrifuge Complex in October 2019. This task presented challenges due to the structures' size and height. Some buildings stood at 180 feet in height, which is too tall to be knocked down by conventional demolition equipment.

The Centrifuge Complex contained four major sections. The K-1004-J lab section was an original Manhattan Project facility built for research and development in 1944. The K-1200 section, known as the Advanced Machine Development Laboratory and Component Preparation Laboratory, was used from 1975 to 1985 to develop machines and manufacturing processes for centrifuges.

The K-1210 section was referred to as Component Test Facility and Advanced Equipment Test Facility. It operated from 1975 to 1985 to test the reliability and operability of centrifuge machines. The facility also served as a pilot plant for testing feed, withdrawal, and depleted uranium hexafluoride transfer systems.

The fourth section — the K-1220 Complex Centrifuge Plant Demonstration Facility — was used from 1981 to 1985 primarily to test production centrifuges to be used in the Gas Centrifuge Enrichment Plant.

Issue 80 • October 2020

STAFF

Editor: Shelley Kimel

Writer: Sara McManamy-Johnson

Review Board: Amy Jones, Shell Lohmann, Melyssa Noe, Leon Shields, Bonnie Shoemaker, Ben Williams

# 25 Years of ORSSAB Input Key in Vision 2020 Achievement at ETTP

*A picture of the End Use Working Group in 1998. Members of the board were instrumental in writing stewardship documents and suggestions for long-term stewardship that attracted national attention and remain a guide for modern cleanup.*

ORSSAB has proudly witnessed OREM transform ETTP to the site's end-use state that its members helped chart 25 years ago. When the board was established in 1995, its core principles focused on providing stakeholder input on final use and long-term stewardship of local DOE sites.

Seeing ETTP fulfill its new purposes as a vibrant commercial/industrial park is a tribute to the board's partnership with OREM over the last 25 years.

"DOE has shown a deep commitment to the community with the time spent attending board meetings, listening to our concerns, and taking our recommendations into account," said Michelle Lohmann, the board's 2020 chairperson.

Many of the more than 200 recommendations ORSSAB has provided to OREM in the years since its formation addressed cleanup and historic preservation at ETTP.

"Every major record of decision developed by OREM has had heavy SSAB involvement and none of the final records of decisions have been at odds with SSAB majority opinions," said Dave Adler, director of OREM's Quality and Mission Support Division and the board's Deputy Designated Federal Officer.

Since major cleanup efforts began at the site, the board has been there providing OREM impactful recommendations focused on cleanup and future uses at ETTP. They include:

- Sponsorship of a public information meeting on the reindustrialization of ETTP in April 1998
- Recommendations for the End Use at ETTP in July 1998 as part of the Final Report of the End Use Working Group and the Stakeholder Report on Stewardship
- Inclusion in the K-25 memorandum of agreement beginning in 2005
- Hosting a public meeting on changes to the cleanup of K-25 and K-27 in July 2006
- Launching an oral history program in October 2007
- Sponsorship of a public meeting on K-25 historic preservation
- Commentary on the Request for Proposal for ETTP cleanup, ETTP site interpretation efforts, and land transfers in 2010

"The SSAB members come from diverse backgrounds and DOE was very diligent in bringing subject matter experts to the meetings … so that all of our questions could be addressed," said Belinda Price, a former board member and officer who served a full three terms on the board. "These experts always spent the time necessary to make sure that the SSAB members fully understood the material that was presented so the board could provide informed recommendations."

Since ORSSAB's establishment, its members have always been unpaid volunteers who have devoted thousands of hours of their time to the government as a public service.

In the early 1990s, a group of Oak Ridge residents (which would form the basis for ORSSAB a few years later) were instrumental in writing several stewardship documents for DOE. These suggestions for long-term stewardship of DOE properties (especially those that are not be able to be transferred) attracted national attention and remain a guide for modern cleanup in Oak Ridge and at other sites across the nation.

That original group of concerned citizens, and the more than 150 individuals who have been ORSSAB members since, helped make Oak Ridge a leader in community-based environmental cleanup and stewardship.

Without their planning and input over the years, the cleanup and transformation at ETTP might look very different today. Through their involvement, the site is a unique success story and it will be an asset for the community in the years to come.

As OREM celebrates the completion of a major milestone, the board's work is not finished as they shift their focus and recommendations to the upcoming projects at the Y-12 National Security Complex and Oak Ridge National Laboratory.

"We have all witnessed the dramatic transformation of the site after decades of collaboration among DOE, federal and state agencies, and groups like ORSSAB," said Lohmann. "And the current membership is excited to be the group that will support a similar effort for ORNL and Y-12 cleanup."

# OREM Begins Next Major Cleanup Phase at ORNL, Y-12 Facilities

While cleanup at ETTP is coming to an end this year, OREM is continuing progress in another chapter of its mission at ORNL and Y-12.

OREM recently received authority to conduct work inside five buildings at ORNL and Y-12, enabling trained, experienced crews from ETTP to transition to ORNL and Y-12 to begin characterization and deactivation projects to prepare those facilities for demolition.

Challenging tasks await OREM in the years ahead at ORNL and Y-12. Together, those sites have more than 200 excess, contaminated facilities that no longer serve national security or science missions. This inventory also includes the highest number of high-risk facilities in the DOE complex. Their removal will eliminate significant risks and open land for future DOE missions.

Two of the five buildings where OREM recently received authority to conduct cleanup work —Buildings 3034 and 3036 at ORNL — will join a number of facilities already undergoing deactivation by OREM and cleanup contractor UCOR.

Buildings 3034 and 3036 previously supported isotope research and production and are situated in ORNL's central campus area. Both were constructed in the 1950s. Building 3034 housed the central electrical distribution station. Building 3036 was used as a decontamination facility for trucks and equipment, and served as a general storage site.

The remaining three buildings are Alpha-2, Beta-1, and Building 9401-1 at Y-12. Alpha-2 and Beta-1 are large, former Manhattan Project buildings that supported uranium enrichment efforts, using an electromagnetic separation process, for the first nuclear weapons created during the Manhattan Project.

The 325,000-square-foot Alpha-2 housed operations that ended in the 1950s. The more than 210,000-square-foot Beta-1 was decommissioned in 1947 and was later used to support ORNL missions. Research and development and operational activities ended there in 1995.

Building 9401-1, a former steam plant for the site, was built in 1943. It served Y-12 missions in the 1960s and 1970s, and ORNL later used the facility to test non-radiological fuels such as ethanol and car and jet fuels.

*Buildings 3034 and 3036 are located at left in Isotope Row in the heart of Oak Ridge National Laboratory. Addressing these facilities will eliminate significant risks, and their removal will provide valuable space for new research missions.*

*Alpha 2 is a former Manhattan Project building that supported uranium enrichment efforts for the first nuclear weapons developed in the Manhattan Project. EM will conduct deactivation efforts inside the building to prepare it for eventual demolition.*

*The most challenging demolition project at the site was the K-25 Building. The project took five years to safely take down the mile-long former enrichment building.*

## Vision 2020

*(Continued from page 1)*

structure. Workers began tearing into the building in 2008, and demolition was completed five years later in 2013.

DOE's goal to complete demolition of all five gaseous diffusion buildings by 2016, called Vision 2016, was successfully realized. Then DOE set out for its next goal, Vision 2020, to take down the remainder of the facilities in the former enrichment complex by the end of 2020. Recent notable demolition activities that led to this achievement include:

**TSCA Incinerator:** This facility, which operated from 1991 until closure in 2009, treated 35.6 million pounds of waste. It was demolished in 2018.

**Central Neutralization Facility:** This sprawling complex previously treated the site's industrial wastewater. With new treatment systems installed, this facility was no longer needed and was demolished in 2018.

**K-1037 Barrier Production Facility:** The K-1037 Building was constructed in 1945. Through the years, the building was expanded to 380,000 square feet. It was originally used as a warehouse, but it was later used to produce the barrier material used in the gaseous diffusion process. The facility was shut down in 1982 and demolished in 2019.

**Poplar Creek cleanup:** The Poplar Creek area housed some of the most contaminated facilities at the site and posed significant cleanup challenges. When operational, these facilities supported the enrichment buildings. Demolition of these 11 structures was completed in 2019.

**Centrifuge Complex:** This complex was built in stages to develop, test, and demonstrate centrifuge technology for uranium enrichment. The last of these facilities ceased operation in the mid-1980s. Workers completed demolition of this four building, 235,000-square-foot complex earlier this year.

"It's hard to convey the magnitude of what our workforce just achieved," said Jay Mullis, manager of DOE's Oak Ridge Office of Environmental Management. "They safely took down hundreds of deteriorated and contaminated structures, some of which were the largest buildings in the world. We've now arrived at the finish line on this marathon effort, and I couldn't be more proud of the skilled, talented men and women who made this accomplishment possible for the first time ever."

*(See Vision on page 7*

## Upcoming Meetings

Due to recommendations to avoid large gatherings and practice social distancing, ORSSAB has not yet scheduled its next meeting. The board is working with DOE on possible solutions for fall.

We will continue to monitor the situation and provide updates as circumstances change.

Check our website at **www.energy.gov/orssab** for the latest information.

For questions or to subscribe to our news updates or The Advocate, email orssab@orem.doe.gov or call 865-241-4584.

# ORSSAB Participates in 2021 CERCLA Five-Year Review Site Visits

Members of ORSSAB's Executive committee recently joined other stakeholders participating in virtual site visits as part of the 2021 CERCLA Five-Year Review process.

Every five years, the CERCLA Five-Year Review Report is generated for all of the completed and ongoing remediation sites to evaluate the level of protection the remediation has and will provide. The report is a comprehensive culmination of the cleanup actions taken and the associated monitoring data generated during the previous five-year period. The purposes of the review are to determine whether the remedies undertaken protect human health and the environment and to evaluate implementation and performance of those remedies and implement any needed changes.

"These site visits make up one appendix of the Five-Year Review and allow for EPA and the Tennessee Department of Environment and Conservation (TDEC) to see how these individual sites are being maintained and respond to how the different site visit/site manager interview forms are filled out. We hear their comments and adjust the site visit forms or respond with clarification accordingly," said Sam Scheffler, Groundwater Programs Manager and Long-term Stewardship/ Remediation Effectiveness Report/Five Year Review Manager and among the presenters for the recent site visits.

Although previous years' Five-Year Review site visits were physically held in the field, this year's visits were held virtually due to recent concerns regarding gatherings and travel.

Previous reviews for the Oak Ridge National Priorities List Site were conducted in 1996, 2001, 2006, 2011, and 2016.

## Oak Ridge Native Brings Field Experience to Groundwater Role

Sam Scheffler recently joined OREM as a physical scientist serving as Groundwater Programs Manager and Long-term Stewardship / Remediation Effectiveness Report/ Five Year Review manager.

Scheffler's role includes work on documents such as the CERCLA Five-Year Review and the annual Remediation Effectiveness Report, as well as the Comprehensive Monitoring Programs that have been developed for each different administrative watershed throughout the Oak Ridge Reservation.

Prior to this role, Scheffler most recently worked with RSI Entech in Oak Ridge collecting and analyzing some of the same groundwater data used in the Five-Year Review and Remediation Effectiveness Report.

*Sam Scheffler*

Scheffler, a native of Oak Ridge, said he is elated to be part of OREM's work.

"I grew up in Oak Ridge, graduated from Oak Ridge High School, graduated from the University of Tennessee with a degree in geology, and effectively immediately returned here for work," said Scheffler. "I really do care for this particular place…The documents that I work with here at OREM are, in my mind, an essential part of the remediation being done, so I've never had a problem with finding purpose in my work."

# Vision 2020

*(Continued from page 6)*

Since cleanup operations began, hundreds of buildings measuring more than 13 million square feet have been demolished. More than 1.7 million cubic yards of waste—enough to fill up 515 Olympic-size swimming pools—have been disposed of, including nearly 30,000 truckloads of soil. All of this progress has paved the way for DOE to transfer 1,300 acres back to the community for economic development and another 100 acres have been set aside for historic preservation.

*EM's cleanup has transformed the site into a multi-use industrial park that is providing new economic opportunities to the community.*

25 Advocate

Oak Ridge Site Specific Advisory Board
October 2020

# ORSSAB Wants You! Annual Member Recruitment Drive Underway

Each year, ORSSAB seeks candidates to join the board and contribute to shaping DOE's environmental cleanup, monitoring, and stewardship activities in Oak Ridge.

**Apply online.** Tell us a bit about yourself and why you would be a good candidate. You must be a legal resident or U.S. Citizen and not a Federal employee. Contractors are eligible.

**No technical expertise is necessary.** Members are chosen to reflect the diversity of gender, race, occupations and interests of people living near reservation. Training is provided both onsite and through sponsored opportunities to attend related events.

**Help ensure a safe, healthy future for your community.** Some of the board's latest activities include recommendations on OREM budget priorities and waste cleanup technology. Members recently toured ORNL and Y-12 for a first-hand look the cleanup mission. The board encourages historic preservation efforts by DOE and suggested topics and displays for the K-25 History Center.

**Your voice matters.** DOE seeks interested residents of the multi-county area surrounding the Oak Ridge Reservation. As an active member, you will volunteer just 4 hours per month, on average. We are especially interested this year in representation of Scarboro.

**Apply now.** Potential members can help recruit: Share this opportunity with a friend, family member, or colleague!

## APPLY TODAY

*Learn more about ORSSAB membership and download an application on the website or contact our office:*

**www.energy.gov/orssab**

**orssab@orem.doe.gov**

**865-241-4584**

Like us on Facebook

YouTube

## ABBREVIATIONS

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund
DOE – Department of Energy
EM – Environmental Management
EMWMF – Environmental Management Waste Management Facility
ETTP – East Tennessee Technology Park
OREM – Oak Ridge Environmental Management
ORNL – Oak Ridge National Laboratory
ORR – Oak Ridge Reservation
ORSSAB – Oak Ridge Site Specific Advisory Board
TDEC – Tennessee Department of Environment & Conservation
UCOR – URS | CH2M Oak Ridge
Y-12 – Y-12 National Security Complex

## UPCOMING MEETINGS

As the United States responds to COVID-19 DOE is postponing all SSAB meetings until further notice.

ORSSAB will continue to monitor the situation and provide updates. Check the website for the latest information.

Oak Ridge Site Specific Advisory Board
P.O. Box 2001, EM-90
Oak Ridge, Tennessee 37831
www.energy.gov/ORSSAB
orssab@orem.doe.gov