OAK RIDGE
SITE SPECIFIC
ADVISORY BOARD

NEW MEMBER
ORIENTATION MANUAL

Oak Ridge Site Specific Advisory Board
New Member Orientation Manual

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The Oak Ridge Site Specific Advisory Board

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Common Abbreviations and Acronyms

These are some of the most common terms you will find in this document and hear about during your time as a member. A full list of routinely used abbreviations and acronyms is maintained by board staff and distributed at need..

BCBG..... Bear Creek Burial Grounds
CERCLA.....Comprehensive Environment Response, Compensation, and Liability Act
COLEX .....Column Exchange
D&D.....Decontamination and Decommissioning (or Demolition)
DDFO..... Deputy Designated Federal Officer
DOE ..... U. S. Department of Energy
EFPC .....East Fork Poplar Creek
EM.....Environmental Management
EMAB ..... Environmental Management Advisory Board
EMDF ..... Environmental Management Disposal Facility
EMWMF .....Environmental Management Waste Management Facility
EPA.....U. S. Environmental Protection Agency
ETTP .....East Tennessee Technology Park
EUWG..... End Use Working Group
FACA ..... Federal Advisory Committee Act
FFA..... Federal Facility Agreement
FY..... Fiscal Year
Hg.....Elemental mercury
LM..... Office of Legacy Management
MSRE..... Molten Salt Reactor Experiment
NNSA..... National Nuclear Security Administration
OREM ..... Oak Ridge Office of Environmental Management
ORNL..... Oak Ridge National Laboratory
ORR .....Oak Ridge Reservation
ORSSAB ..... Oak Ridge Site Specific Advisory Board
RCRA.....Resource Conservation Recovery Act
ROD .....Record of Decision
S&M.....Surveillance and Maintenance
SWSA..... Solid Waste Storage Area
TDEC .....Tennessee Department of Environment and Conservation
TSCAI .....Toxic Substances Control Act Incinerator
UCOR ..... URS|CH2M Oak Ridge LLC (the prime cleanup contractor for DOE Oak Ridge)
Y-12.....Y-12 National Security Complex

What is the Oak Ridge Site Specific Advisory Board?

The Oak Ridge Site Specific Advisory Board (ORSSAB) is a federally chartered citizens' panel that provides independent advice and recommendations to the U.S. Department of Energy's (DOE) Oak Ridge Environmental Management (OREM) program. OREM is responsible for cleaning up areas of the Oak Ridge Reservation (ORR) that have been contaminated with radioactive or hazardous wastes.

ORSSAB can have as many as 22 members. Individuals apply for membership and are selected by DOE to reflect a diversity of occupations, interests, gender, and race of persons living near the ORR. Technical expertise in the environmental field is not a requirement for membership, although DOE strives to have a good mix of technical and non-technical people on the board to reflect the community surrounding the reservation.

ORSSAB's primary responsibility is to provide advice and recommendations to DOE EM on its cleanup and waste management operations on the ORR.

Board leadership includes the chair, vice chair, and secretary who are elected annually and can serve in those positions for up to two years. ORSSAB also has non-voting agency liaisons from the Environmental Protection Agency (EPA) Region 4, the Tennessee Department of Environment and Conservation (TDEC), and DOE. The board has a DOE Deputy Designated Federal Officer (DDFO) and two Alternate DDFOs. See Appendix A for details. As part of its education mission, ORSSAB seats two non-voting student representatives from local high schools each year.

ORSSAB's primary responsibility is to provide advice and recommendations to DOE EM on its environmental cleanup and waste management operations on the ORR. In addition, the board provides input to DOE on cleanup project prioritization as it relates to OREM's annual fiscal year (FY) +2 budget request. Stewardship of areas with residual contamination following completion of cleanup work is also of significant interest to the board.

ORSSAB has committees that address particular issues. The current standing committees are EM & Stewardship and the Executive Committee. Additional committees may be formed as needed.

The Executive Committee

General board business is handled by the Executive Committee, which is composed of the elected officers of the board and the chair of the EM & Stewardship Committee. The committee holds general administrative authority to set board agendas, coordinate the work of the committees, and transact business as may be necessary between board meetings.

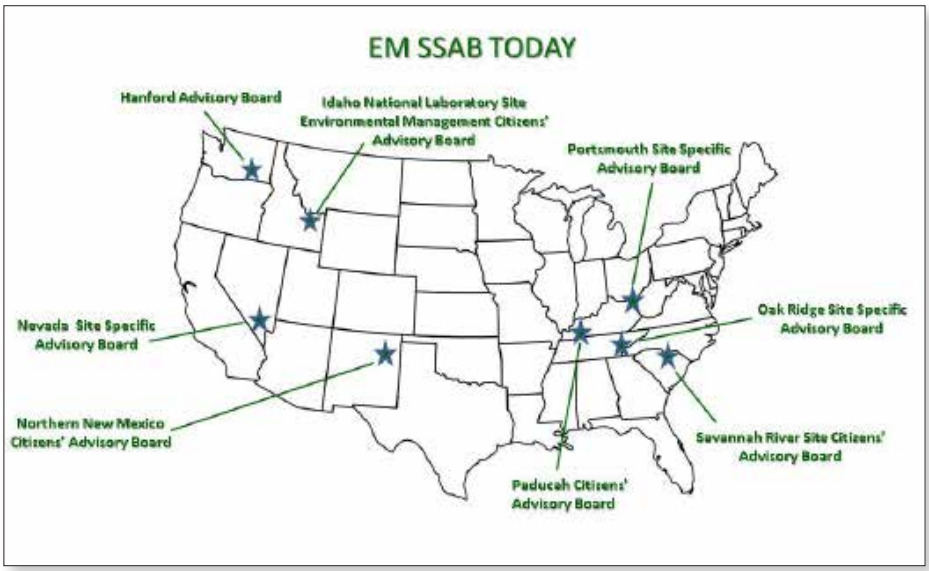
The EM & Stewardship Committee

The EM & Stewardship Committee is responsible for monitoring the major cleanup activities on the ORR as well as stewardship requirements for areas of the reservation that have been remediated, but remain contaminated long-term. It creates recommendations to be considered at full board meetings. All board members are part of this committee.

Federal Advisory Committee Act (FACA)

The Oak Ridge board is one part of a national EMSSAB organization that is chartered under FACA to provide input to DOE nationwide on its cleanup activities. Currently there are seven other local boards that make up the EMSSAB. The other boards are located at:

- Hanford, Washington
- Idaho Falls, Idaho
- Las Vegas, Nevada
- Los Alamos, New Mexico
- Paducah, Kentucky
- Portsmouth, Ohio
- Aiken, South Carolina



The EMSSAB consists of eight site specific boards across the country.

All of the local SSABs (sometimes designated as Citizens' Advisory Boards or CABs) provide input to DOE on its local cleanup activities, but each board has its own set of bylaws, committee structure, and operating procedures. Twice each year the leadership of the eight boards meet jointly with DOE EM representatives from Washington, DC to discuss common issues. The locations of these 'chairs' meetings usually rotate among the boards.

While each board provides its local DOE sites with advice and recommendations, recommendations may also be crafted and agreed to at the chairs' meetings to send to DOE Headquarters as the EMSSAB.

Be aware that there is another national advisory board, the Environmental Management Advisory Board (EMAB), which was created to provide input directly to the DOE Assistant Secretary for EM on corporate issues relating to site cleanup and risk reduction.

ORSSAB hosted the Spring 2016 EMSSAB Chairs' meeting.

EMAB is also charted under FACA, but its membership differs from that of the EMSSAB and the site specific boards in that all members are technical experts in their fields. Currently the EMSSAB and EMAB have little interaction. Just be aware of its existence, as sometimes there is confusion about respective functions of the EMSSAB and the EMAB.

Other local groups and entities, like the Environmental Quality Advisory Board, also provide input to OREM. ORSSAB, however, is the designated communications link between the public and the OREM program. It is the only group to which DOE must respond when it makes recommendations and comments on EM activities.

Your Responsibility as a Board Member

There is a lot to learn and it can all seem overwhelming at first, but we hope this introduction to the board and the work underway on the ORR will help you get a quick grasp of what's going on.

As a member you are expected, of course, to **attend board meetings**. If you are absent from two consecutive meetings, you'll be contacted by the board secretary to determine if there is a problem. The board has the right to ask DOE to remove a member with two consecutive absences from the board. This usually doesn't happen with two absences, but three or more consecutive absences could trigger that process.

Perhaps the most difficult thing is **learning the language** if you're not already familiar with work on the reservation. There is a myriad of abbreviations and acronyms to learn and understand. We ask presenters at board and committee meetings to provide some background information on the topics they are discussing and not to use acronyms without first explaining what they mean, but it's very easy for everyone to slip into using acronyms and abbreviations. Do not be afraid to speak up and ask what an acronym or abbreviation is and what it means. Before long you'll be the one helping newer members. Similarly, don't be afraid to **ask questions at board and committee meetings**. The chances are someone else has the same question. Take advantage of experienced members and talk to them about topics to learn more. The DOE, EPA, and TDEC liaisons can also help you, as well as the ORSSAB staff.

You will also be expected to **serve on the EM & Stewardship Committee**. As you gain experience you will be expected to be an issue group member or perhaps manager for a particular topic or two. Issue groups do research on a topic and draft initial recommendations for the committee to discuss further. ORSSAB staff and DOE liaisons provide help to issue groups during the drafting process.

Go on a tour of the reservation. Staff will set up tours for new members. Tours of particular facilities relevant to a monthly meeting topic are regularly scheduled during the time between board and committee meetings; take advantage of those. On occasion, training sessions and workshops are also organized. These are always good opportunities to learn more about board-related work and cleanup programs.

Staff regularly provides a table of travel opportunities to meetings, workshops and conferences that are beneficial to board members. Request to attend those opportunities when you can.

Requests for travel should be sent to staff. They are approved by the Executive Committee. OREM provides reimbursement for many associated expenses for approved travel. The OREM travel coordinator will assist you with setting up flights, hotels, etc.

ORSSAB members tour the Low Level Gaseous Waste Facility at ORNL in 2019.

How Recommendations Are Made

ORSSAB can make recommendations on plans or work underway just about any time it feels a recommendation is necessary. Usually, though, a recommendation is generated as the result of a presentation to the full board or the EM & Stewardship Committee. DOE can also explicitly request a recommendation on a particular issue or topic. While not common, an individual board member or members can submit a recommendation to the board.

The Recommendation Process

1. Topic presentation given to the board at its monthly meeting
2. EM & Stewardship Committee decides to issue a recommendation (or not)
3. Issue group, led by an issue manager, creates a draft document
4. Issue manager presents the draft for discussion and vote at committee meeting
5. Approved recommendation sent to the Executive Committee
6. Executives vote to put the recommendation to the full board or back to committee for edits
7. Board votes on the recommendation
8. Approved recommendation sent to DOE, which must respond

The job of writing a recommendation is delegated to the EM & Stewardship Committee. At the committee level, an issue manager is assigned to work on the topic and is responsible for drafting a recommendation if research supports that one is warranted. Several other members generally serve on the issue group for each particular topic. Members are encouraged to serve on at least two issue groups

After the recommendation is drafted, it is reviewed by the committee and revisions may be made. Once the committee votes on the recommendation, it is sent to the Executive Committee. The Executive Committee reviews it and agrees to put it before the entire board for discussion unless there is some reason it feels the recommendation is not ready to go to the board, in which case it is returned to the committee.

Upon approval, the recommendation is then presented to the board by the issue manager. If the recommendation is passed by the board then it is sent to either the OREM manager or to an appropriate person at DOE Headquarters. If the recommendation is approved but there are some members who cannot support the recommendation, a minority opinion may be written and attached to the recommendation.

DOE is required to respond to the recommendation. It can either accept the recommendation or decline it, but it must answer the board. Once a response is received, it is reviewed to determine if the response is adequate or if it needs follow up with a subsequent recommendation.

Example: Environmental Management Budget Requests

Each year ORSSAB is asked to provide input to the DOE OREM Program regarding the development of its budget request to headquarters. Budget requests are made for the fiscal year two years beyond (FY+2) the current fiscal year.

The Executive Committee and the EM & Stewardship Committee review previous presentations and DOE's Oak Ridge cleanup priorities, which help DOE set its budget requests to headquarters. The committee considers various cleanup scenarios developed by DOE that consider funding, technical challenges, availability of resources, etc. From these scenarios the committees develop a recommendation to DOE on how work should be prioritized for Oak Ridge, which is then voted on by the board.

What is the DOE EM Program?

DOE's EM program is responsible for waste management and cleaning up areas operated by the department that have been contaminated by radioactive or hazardous waste as a result of nuclear weapons development, nuclear energy research activities, or waste disposition. Some of the waste sites date to the World War II Manhattan Project, which was the massive effort to develop the first atomic bomb, or were involved in Cold War-era activities or both.

The DOE EM Program is responsible for cleaning up the Oak Ridge Reservation.

The DOE Office of EM was established in 1989 to oversee the cleanup of DOE facilities throughout the United States. That same year the ORR was placed on the EPA National Priorities List as a site requiring cleanup. As a result, the EM program was initiated in Oak Ridge.

Oak Ridge Office of Environmental Management (OREM)

Oak Ridge is one of the original sites that was part of the Manhattan Project. Its three main plants of K-25, Y-12, and X-10 worked to come up with methods to enrich uranium or produce plutonium for use in atomic weapons. Y-12 is now Y-12 National Security Complex (Y-12); K-25 was later renamed East Tennessee Technology Park (ETTP); and X-10, which refers to a graphite reactor facility on the site, is now Oak Ridge National Laboratory (ORNL). Each plant played discrete roles in the work and pursued different methods. As a result of that work and subsequent work in nuclear research, parts of the reservation are contaminated with radioactive or hazardous waste. It's EM's job to clean up these areas, and ORSSAB provides input on that work.

At Y-12 OREM is working to address excess contaminated facilities, remove mercury soil and groundwater contamination, and enable modernization that allows the National Nuclear Security Administration (NNSA) to continue its crucial national security and nuclear non-proliferation responsibilities. At ORNL OREM is addressing risks at excess contaminated facilities and working to process and disposition decades of waste associated with isotope research and production. The program is enhancing safety at ORNL and making way for DOE to continue its advanced supercomputing, materials, and energy research.

The primary mission of OREM is to protect the region's health and environment, ensure the department's vital missions locally, and finally, to make land clean and available for future use. OREM's work is guided under provisions set out by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Cleanup administrative processes are set out in the ORR Federal Facility Agreement (FFA), signed by DOE Oak Ridge, EPA, and TDEC and implemented January 1, 1992. For more information on the FFA, see Appendix B.

In addition to OREM, other DOE programs at ORR are the Office of Science, the NNSA, and the Nuclear Energy program. Because these programs have active missions, OREM collaborates with them when it comes to cleanup activities at Y-12 and ORNL. They must all work together to make sure current missions are not interrupted while cleanup activities are underway.

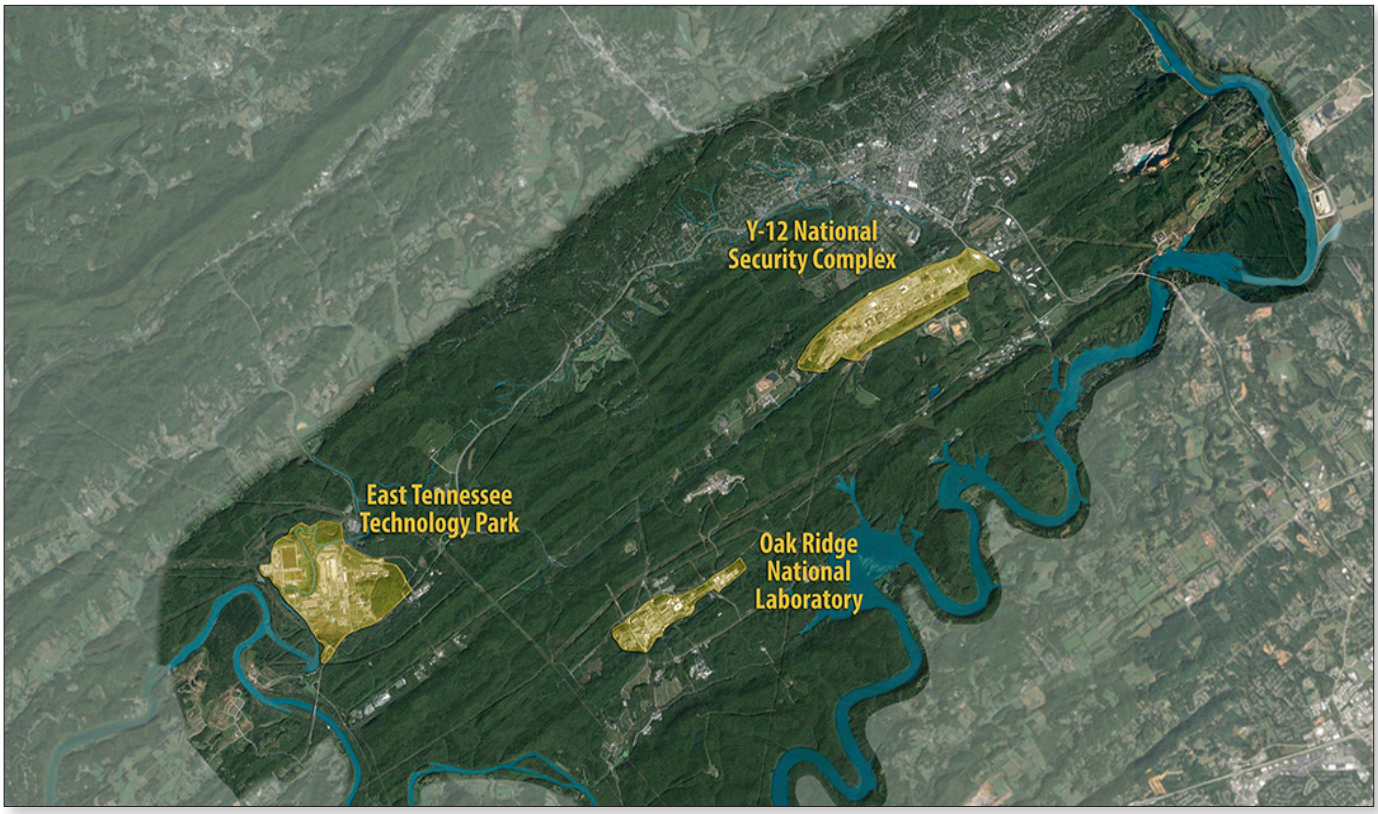
Let's take a look at the areas where OREM is performing cleanup and ORSSAB provides advice. OREM publishes the annual Cleanup Progress Report to provide details on work completed and underway. The latest copy is included in your binder. There are many projects and we can't review all of them, but the following are the major areas. You'll learn about additional cleanup operations as you serve on the board.

The three main areas — ETTP, ORNL, and Y-12 — are within the confines of the ORR, which totals more than 30,000 acres. The entire ORR is within the city limits of Oak Ridge, which is unique to all the other sites of the EMSSAB. It's important to understand that only a small portion of the ORR is impacted by radioactive or hazardous waste contamination. More information on individual projects can be found in DOE fact sheets included in your binder. They are updated regularly at energy.gov/orem/services/site-cleanup/cleanup-fact-sheets.

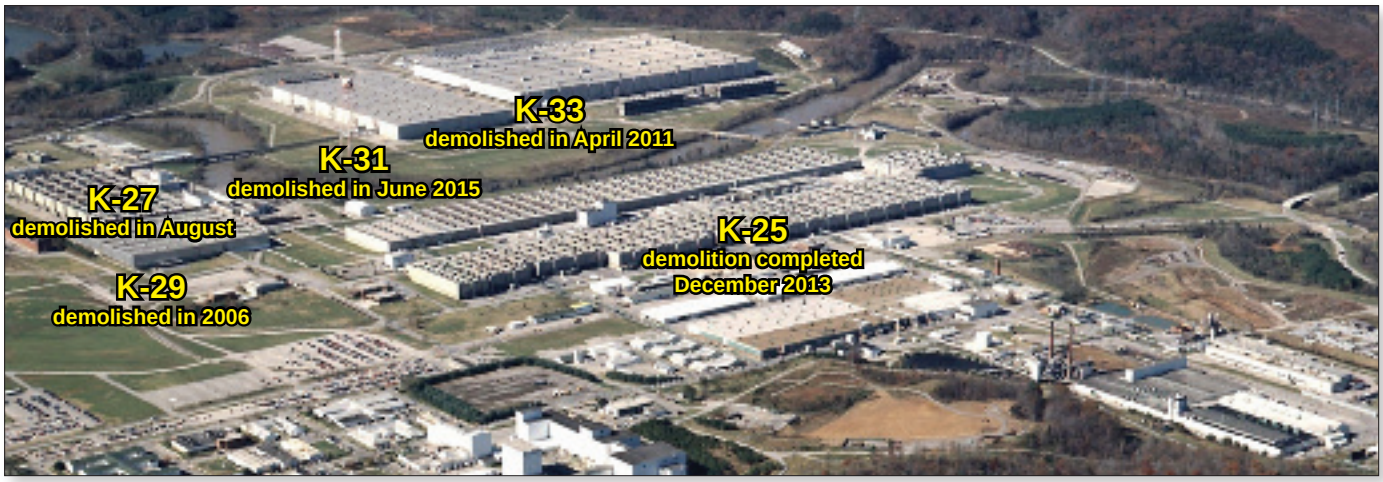
East Tennessee Technology Park (ETTP) - formerly the K-25 Gaseous Diffusion Plant

The K-25 Gaseous Diffusion Plant was one of the plants in Oak Ridge that was built to enrich uranium for use in weapons and later for nuclear power plants. Its main buildings were the process facilities for enriching uranium. The first was K-25, which was the world's largest building when it was constructed in 1943. After World War II, additional uranium processing facilities were built: K-27, K-29, K-31, and K-33. They were later shut down in stages and all enrichment activities ended by 1987. In addition to the five process buildings, scores of other support buildings were built at the site.

In 1997 the site was renamed East Tennessee Technology Park (ETTP) as part of OREM's goal to convert the site into a commercial industrial park. Success depends on the decontamination and demolition (D&D) of almost all the structures, the remediation of contaminated soil, and the monitoring/treatment of contaminated groundwater. In 2020, OREM achieved its Vision 2020 goal of completing core cleanup at the site, which included demolishing more than 500 structures and addressing major areas of soil



The majority of the Oak Ridge Reservation is within the boundaries of the City of Oak Ridge. The three main areas in the reservation are East Tennessee Technology Park, Oak Ridge National Laboratory, and Y-12 National Security Complex.



The K-25 Gaseous Diffusion Plant was renamed East Tennessee Technology Park in 1997. In 2020, OREM achieved its Vision 2020 goal of completing core cleanup at the site, which included demolishing more than 500 structures and addressing major areas of soil contamination. This is how the site looked before major demolition work began.

contamination. It marked the first time in the world an entire uranium enrichment complex had been removed, and it is also DOE's largest completed environmental cleanup effort to date.

DOE transfers appropriate pieces of remediated land back to the community for the creation of a private-sector industrial park. So far, more than 1,600 acres have been transferred and an additional 200 acres are slated for transfer in the years ahead. OREM has also transferred some buildings intact, emergency services, rail lines, and most of the domestic water supply and sanitary sewer infrastructure, and it completed modifications to most electrical infrastructure, allowing it to be transferred. Another 3,000 acres have been placed in a conservation easement that is open to the public for recreational use, and more than 100 acres have been set aside for historic preservation efforts.

With all the demolition complete, the remaining soil and groundwater remediation required at the site moves to the forefront.

Summaries of Major ETTP Projects

K-1200 Centrifuge Complex: Crews in June 2020 completed demolition of this complex, which included facilities constructed between 1975 and 1985 and which spanned more than 235,000 square feet. The complex was built to develop, test, and demonstrate the ability to enrich uranium using centrifuge technology. The complex included some of the largest and most recognizable structures remaining at ETTP, including the site's tallest facility, at 180 feet.

Poplar Creek Facilities: Before demolition began in this area in 2017, the Poplar Creek Facilities were comprised of 11 large buildings and numerous structures built in the 1940s and 1950s to support the site's former nuclear program. OREM finished demolishing the last two buildings, K-131 and K-631, in fall 2019. Building K-131 was built to provide purified uranium hexafluoride to the uranium enrichment cascade. Through the years, it was used for a variety of other purposes until Oak Ridge's uranium enrichment operations ceased in 1985. Building K-631 was used to withdraw gaseous depleted uranium hexafluoride from the cascade, convert it to liquid, and transfer it into transport cylinders.

Gaseous Diffusion Plant: In 2016, Oak Ridge became the first site in the world to successfully remove all its former gaseous diffusion uranium enrichment buildings (K-25, K-27, K-29, K-31, and K-33). With a footprint of 4.5 million square feet, decontamination and demolition of the five buildings was difficult and spanned a decade. Now, ETTP is safer, cleaner, and has large parcels of land that are available for redevelopment.

Stored Material

ETTP was the storage site for a variety of waste materials including low-level radioactive waste, PCB waste, depleted uranium oxide, sodium, and nickel. More than 26,000 containers of legacy low-level and mixed low-level waste were treated and disposed by 2005. In fall 2020, crews removed the last of all containers of stored wastes from ETTP, eliminating all wastes managed under the Resource Conservation and Recovery Act (RCRA) from the site. OREM also excavated a waste burial ground and contaminated rock quarry.

Groundwater Strategy

Some areas at ETTP contain contaminated groundwater plumes. Planning took a major step forward in 2023 when the U.S. Environmental Protection Agency and Tennessee Department of Environment and Conservation approved OREM's proposed plans for addressing groundwater in the Main Plant and K-31 and K-33 areas. A final site-wide Record of Decision (ROD) will address groundwater once all other activities at the site are complete. OREM places a significant focus on this topic. OREM has more than 2,000 monitoring wells across the ORR and spends an average of $15 million annually on groundwater-related work.

Soils Remediation

ETTP is divided into two zones. Zone 1 surrounds the main industrial complex of the former plant, which is Zone 2. Some areas of Zone 1 have contaminated soil. In 2002 DOE, EPA, and TDEC signed an interim ROD on soil remediation in Zone 1. A final ROD will be produced after cleanup is done. Zone 2 contains shallow soil contamination throughout the area and a few locations with deeper soil contamination that could prove hazardous to future industrial workers. OREM began removing contaminated soil as part of building demolition. Soil remediation is expected to be completed in 2024.

Oak Ridge National Laboratory (ORNL)

Originally known as Clinton Laboratories, ORNL was established in 1943 to carry out the pilot-scale production and separation of plutonium for the World War II Manhattan Project. You may also hear it referred to as X-10, which was the designation of the graphite reactor facility there. The lab was also highly involved in isotope research and production. From this foundation, ORNL has evolved into a unique resource for addressing important national and global energy and environmental issues. The EM program is conducting projects that will enhance safety at the site and enable the lab's globally important research to continue and grow.

ORNL is a challenging site for remediation for many reasons. It is an active operational research center, having dealt with a multitude of chemical elements, compounds, and radioactive materials. Cleanup must be performed in a manner that does not impact current research activities.

An aerial view of the Oak Ridge National Laboratory campus.

In 2022, workers began hot-cell processing to disposition the remaining high-dose U-233 inventory.

Uranium-233 Disposition Project

A large inventory of uranium-233 (U-233) is stored at ORNL. Since U-233 is a special nuclear material that requires strict safeguards and security, efforts are underway to remove the entire inventory from Building 3019, which is the oldest operating nuclear facility in the world.

The project includes two phases. The first phase involved directly disposing approximately half of the inventory, while the second phase involves extracting thorium from the remaining U-233 inventory for next-generation cancer research before downblending to enable its disposition. OREM completed the first phase of the project in 2017 and began phase two in 2019. In 2022, workers began hot-cell processing to disposition the remaining high-dose U-233 inventory.

Excess Contaminated Facilities

ORNL has more than 120 excess contaminated facilities, mostly in the central campus area, that require attention. Many of these buildings are in disrepair and contain significant hazards and risks that could threaten ongoing missions at the site. OREM has several projects underway that are removing risks and stabilizing facilities. Crews are actively addressing numerous facilities in the central campus area, which houses aging, former research reactors and isotope production labs. In 2023, crews completed demolition of the Low Intensity Test Reacter. Deactivation is also underway in the Oak Ridge Research Reactor.

Bulk Shielding Reactor

The Bulk Shielding Reactor complex was built in the 1950s for radiation shielding studies as part of the federal Aircraft Nuclear Propulsion Program. It included a 27-foot-deep reactor pool filled with water to shield the radioactive components contained in the pool. Its mission changed to a general-purpose research reactor in 1963 and was shut down permanently in 1991. OREM crews in November 2022 completed demolition of the Bulk Shielding Reactor, also known as Building 3010, marking the first-ever demolition of a reactor in the central campus area of ORNL.

Molten Salt Reactor Experiment (MSRE)

The Molten Salt Reactor operated from 1965-1969 to test the concept of a reactor fueled by molten salt that flowed through the reactor chamber. When the reactor was shut down, the salt was drained into three storage tanks, where it solidified.

The tanks are located in underground, concrete-shielded cells. The reactor fuel in the salt mixtures has been removed, but the salts themselves are contaminated and still need to be properly disposed. OREM performed engineering evaluations for the building to determine how to reduce risks and how best to deal with the remaining salts. Results from that and other analyses are informing new plans, including ongoing upgrades to the electrical and ventilation systems that will enhance safety in the building. ORSSAB toured the building in April 2019

Building 3026 Hot Cells

Building 3026 dated to the Manhattan Project and the postwar era, when one of the ORNL's primary missions was the production of radioactive isotopes for medical, research, and industrial uses. The outer structure was demolished in 2010, but the 'hot cells' from inside the building remained. They were sealed with fixative while plans were made for final disposition. In April 2012, four of the six hot cells were demolished and disposed. Crews installed a six-story protective cover over the final two hot cells to avoid any potential impacts to ongoing missions in nearby facilities. The fifth hot cell is down, and crews are preparing the final one for demolition.

In early 2021, crews began demolishing the final two remaining hot cells (circled) from Building 3026.

ORNL's Central Stack is part of an aging ventilation system that has reached the end of its usefulness.

Central Stack System

The 3039 stack, built in 1950, has been in operation almost continuously since its construction. The 250-foot stack discharges a total gas volume annually of about 66 billion cubic feet. Exhaust gases from the various facilities at ORNL are vented through the central stack. Eventually all facilities will be removed from the system and the stack will be demolished.

Tank W-1A/Corehole 8 Plume

The Tank W-1A site received waste from nearby process Building 3019. Over the years a myriad of radioactive isotopes, leaked from the tank and the pipeline into the surrounding soil and groundwater. In January 2012 the tank was successfully removed. The leaks also resulted in an extensive contaminated groundwater plume known as the Corehole 8 plume. New wells and a pump system were installed in 2012 to treat groundwater. Ongoing monitoring shows the plume has been contained.

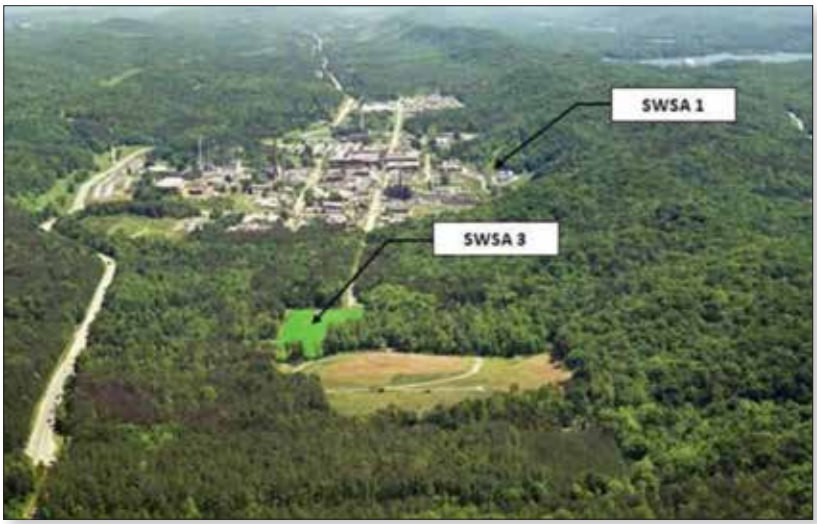
Bethel Valley Burial Grounds

The Bethel Valley Burial Grounds, which have been remediated, include the former waste disposal sites Solid Waste Storage Areas (SWSA) 1, in the southern portion of the ORNL central campus, and SWSA 3 West, away from the main central campus of ORNL.

DOE continues to monitor the sites with regular inspections and water sampling. SWSA 1 was a source of contaminant release in Bethel Valley. To stop the contaminant releases, work was done to place a low permeability, multi-layer cap over the waste area. Capping SWSA 1 was completed in 2010. SWSA 3 work included removal and disposal of 'hot spot' contaminated soils under a multilayer cap. Construction, which was completed in 2011, included placing a cap over SWSA 3, the adjacent Closed Scrap Metal Area, and some of the contaminated soil areas.

Bethel Valley Soils and Sediment Project

This project includes field walkover assessments and soil/sediment sampling to identify areas where environmental releases have occurred and lab research activities have been conducted. Characterization data will be used to determine if cleanup actions are necessary and what the boundaries of the contaminated sites are. .



Two former waste disposal sites near ORNL have been remediated.

Melton Valley

Melton Valley is located southwest of the main ORNL campus. A large portion of that area was used for waste burial. In 2006 remediation work was completed on a number of burial grounds, storage pits, and trenches. What remains to be addressed in Melton Valley are some inactive reactors, watershed area ecology, sediment, and groundwater.

A line of monitoring wells has been installed on the west side of the Clinch River to ensure contamination is not migrating away from the Melton Valley burial grounds in groundwater underneath the Clinch River and into private wells on the other side of the river. Clean water has been provided to the property owners to ensure they are not exposed to any harmful contaminants and to prevent the wells from pulling the groundwater from Melton Valley. The wells are monitored to determine if there is groundwater flow and to detect potential contaminants.

Trench 13

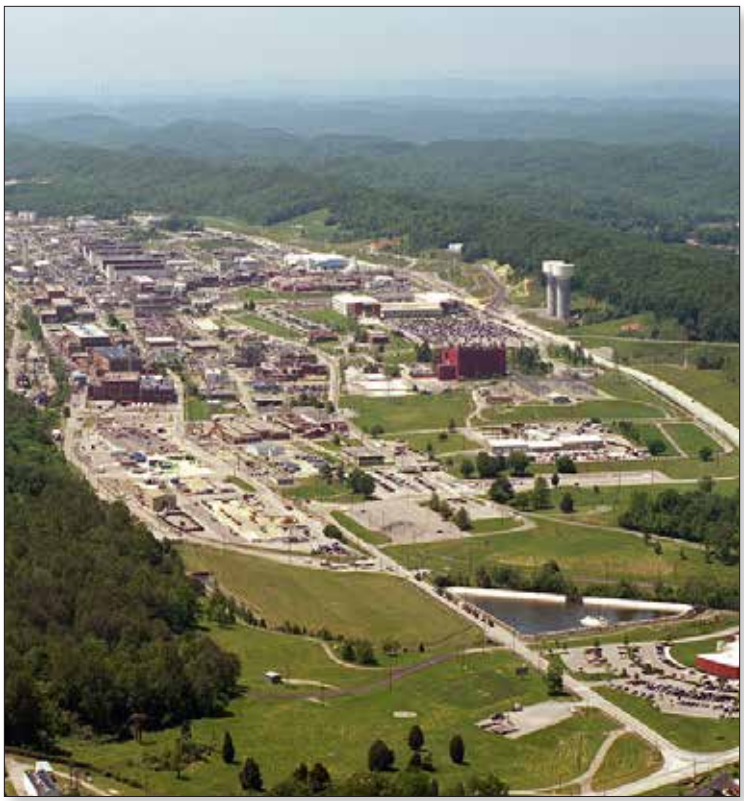
During remediation of Melton Valley in 2005, workers excavating an area known as Trench 13 encountered glass containers holding materials that could spontaneously ignite on contact with air. When the excavators broke one of the vessels, there was brief flare up. Work was suspended and the trench was stabilized and covered. DOE has requested input from ORSSAB on the management of the material that remains in the trench. It is also preparing a revised engineering evaluation for disposal of the waste.

Y-12 National Security Complex (Y-12)

Y-12 was built during World War II to enrich uranium. In the years since World War II, Y-12's mission has expanded to focus on dismantling nuclear weapons components, while also serving as one of the nation's storehouses for special nuclear materials.

Historically, Y-12's operations used large amounts of mercury. During the 1950s and 1960s, an estimated 700,000 pounds of mercury leaked from equipment into the buildings, basements, and surrounding environment. Keep in mind that mercury (often abbreviated as Hg) is much heavier than other liquids. A pound of mercury is slightly more than one fluid ounce by volume. A gallon of mercury weighs almost 113 pounds.

Ongoing efforts to capture and treat water leaving the facility have significantly reduced mercury in nearby creeks and streams.



An aerial view of Y-12.

Excess Contaminated Facilities

Y-12 has more than 90 excess contaminated facilities, and many qualify as higher-risk facilities. These buildings have not operated for decades, are in disrepair, and contain significant hazards and that could threaten ongoing missions at the site. OREM has several projects underway that are removing risks, stabilizing facilities, and removing the structures.

Criticality Experiment Laboratory

The former Criticality Experiment Laboratory, also known as Building 9213, was built in 1949 and was used to conduct experiments with fissile uranium isotopes for nuclear reactor designs. Employees performed more than 9,700 experiments there in its first decade, and the facility later supported the Oak Ridge National Laboratory's High Flux Isotope Reactor program. OREM in October 2022 completed demolition of the two-story, 24,000-square-foot building, which had been closed since 1992.

Alpha 4

Alpha 4 housed equipment in the 1950s and 1960s that used large amounts of mercury for their operations. Today, the facility is in a deteriorated state and categorized as a high-risk facility. OREM is taking steps to address risks near the facility by cleaning out the building's old, rusted Column Exchange (COLEX) equipment. So far, crews have retrieved more than 10,000 pounds of mercury, preventing a large environmental release. They have also removed all of the equipment on the west side of the building and deactivated equipment on the east side of the building. Employees are testing new technologies for future mercury cleanup.

Alpha 5, Beta 4 Legacy Material Disposition

Alpha 5 and Beta 4 are some of the largest buildings at Y-12. Both were used for uranium processing and other operations. Significant cleanout activities concluded in 2012. The contents of the buildings included non-process equipment, containers, tools, and miscellaneous contaminated material. Characterization of building materials and equipment that was physically connected to the building was also completed. Removal of the buildings is complicated by their proximity to active facilities at the site and the fact that they are inside the site's protective security perimeter.

Workers pour mercury from COLEX equipment into a container designed to hold 1,000 pounds of the element.

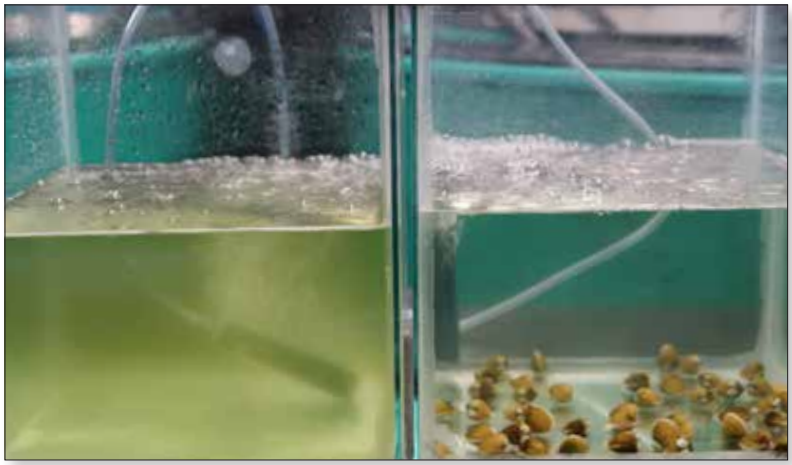
A view of demolition beginning on the six-story, 255,000-square-foot Building 9207, the final building in the former Biology Complex at Oak Ridge, which was demolished in 2021.

Biology Complex

In 2022, OREM finished clearing more than 18 acres that once housed the former Biology Complex at Y-12. The Biology Complex, originally comprised of 11 buildings, was first used as part of the uranium enrichment process during World War II but was later used for research that led to strides in understanding genetics and the effects of radiation. In early 2018 two smaller buildings in the complex were demolished. In November 2020, OREM and cleanup contractor UCOR began demolition of the final remaining buildings in the complex, with demolition of the final structures completed in 2021. The site will be the location of the National Nuclear Security Administration's (NNSA's) new Lithium Processing Facility (LPF).

East Fork Poplar Creek (EFPC) and the Mercury Treatment Facility

Remedial actions have reduced mercury in EFPC significantly, but concentrations in the tissue samples of some species of fish are still above safe levels. In early 2019 OREM announced an expansion of its partnership with researchers at the ORNL Aquatic Ecology Laboratory to advance the understanding of mercury's impact on fish, wildlife, and streams. Scientists will also support OREM in developing new technologies and remedial solutions.



ORNL researchers have discovered fresh water mussels can filter contaminated water, left, and make it clear as on the right.

Work started in 2017 on a treatment plant to remove mercury from Upper EFPC at its headwaters, which surface at a spot known as Outfall 200. The Mercury Treatment Facility will also safeguard against any further mercury released during D&D of facilities at Y-12 in the future. Site preparation began in December 2017, and construction began in 2019. The plant is scheduled to open in the mid-2020s. Efforts have also been made to purge mercury in a portion of the storm sewer system at Y-12 known as the West End Mercury Area. Steps are underway to capture as much water as possible for treatment before release to the public portions of Lower EFPC.

Artist's rendering of the Mercury Treatment Facility.

Bear Creek Valley

Waste management and disposal activities in Bear Creek Valley, mostly with waste generated from past uranium processing at Y-12, contributed to the contamination of the soils, surface water, and

groundwater. Remediation efforts have significantly reduced the concentration and quantity of uranium and secondary contaminants in Bear Creek.

Bear Creek Burial Grounds (BCBG)

BCBG is located about two miles west of Y-12 and just west of EMWMF. From 1955 to 1993 the area was used for disposal of uranium turnings and industrial waste contaminated with uranium. To close the site, DOE installed a concrete blanket over the burial grounds to mitigate the risk posed by the shock-sensitive materials. DOE continues to monitor the site through groundwater sampling and address issues such as soil settling. More extensive remediation work will be required in this area. An initial draft of a plan to remediate BCBG was developed in 2008.

Environmental Management Waste Management Facility (EMWMF)

EMWMF is the on-site CERCLA waste disposal facility in Bear Creek Valley that accepts low-level radioactive and other hazardous wastes from OREM demolition activities. Not all waste goes to EMWMF. Waste that has no radioactive or hazardous components can go to one of three landfills just south of Y-12. Waste with higher levels of contamination is shipped off-site for disposal.

EMWMF has been expanded several times and is close to its capacity of 2.2 million cubic yards of material. This should be sufficient to finish ETTP cleanup and take some waste from other cleanup activities through the early- to mid-2020s but is not enough capacity for OREM to complete cleanup at ORNL and Y-12.

Environmental Management Disposal Facility (EMDF)

A new facility, the EM Disposal Facility (EMDF) has a Proposed Plan and Record of Decision that have been approved by DOE, EPA, and TDEC.

OREM began water and soil sampling at the preferred site, approximately one mile from EMWMF, in early 2018 and a draft proposal for public comment was released later that year. Board members should expect to see additional studies and documents related to the project during their terms. DOE would like to open the site prior to closure of EMWMF to ensure continuity of use. Construction of EMDF will allow OREM to complete its cleanup responsibilities at ORNL and Y-12. OREM began site preparations in 2023.

Stewardship

Stewardship activities on the ORR are followed by the EM & Stewardship Committee. The definition of stewardship as it relates to cleanup of radioactive/hazardous waste on the Oak Ridge Reservation is:
The definition was developed by the End Use Working Group. Through their work, Oak Ridge was one of the first sites to address the need for long-term stewardship of contaminated sites. Simply put, areas where contamination has been left in place after remediation must be continually monitored and protected to make sure that the contamination does not escape its confines or that humans do not disturb the area, which could lead to harmful personal or environmental exposure.

A warning sign is one example of stewardship physical controls to protect the public from contaminated areas.

ORSSAB's mission related to stewardship was established in the Final Report of the Oak Ridge Reservation End Use Working Group and the Stakeholder's Reports on Stewardship, volumes 1 and 2 For more on the End Use Working Group, see Appendix B.

DOE is required to perform stewardship activities under several different agreements and internal directives. Once EM completes cleanup missions at sites, DOE transfers them to its Office of Legacy Management (LM), which was created in 2003. LM is responsible for ensuring that DOE's post-closure responsibilities are met and for providing DOE programs for long-term surveillance and maintenance, records management, work force restructuring and benefits continuity, property management, land use planning, and community assistance.

Specific Stewardship Functions and Controls

The success of stewardship is dependent on the activities that are conducted to ensure remediation remains effective, access and monitoring systems are functional, and that the necessary location and cautionary information is always accessible to the public.

The Six Elements of Stewardship

- Monitoring – regular sampling of all contaminated media to identify possible failure of physical controls and to continually understand the nature and extent of contamination
- Maintenance – regular upkeep of systems and controls to ensure long-term effectiveness
- Surveillance – regular oversight to ensure all necessary activities occur
- Enforcement – legal constraints to maintain protection of people and the environment
- Inspection and reevaluation – periodic review of systems to ensure continued need and effectiveness
- Public participation – involvement of the public to ensure citizen concerns are addressed and information is available

In most cases where waste has been selected to remain in the ground on the ORR, land use controls must be conducted in perpetuity because of the long-lived radionuclides or other hazardous wastes that are being protected.

Physical controls are barriers that limit public access.

These include:
- Fences
- Natural barriers – trees, surface water, slopes, and buffer zones
- Warning signs and markers
- Security patrols

Institutional controls are legal provisions such as ordinances, deed restrictions, and state and federal laws that control land uses. For more detailed information on institutional controls see the Stakeholder Reports on Stewardship.

Stewardship Information

Stewardship information includes the locations, amounts, and characteristics of residual contamination. Deed restriction information can be found in county land records offices after land parcels have been remediated. It can also be found in a Stewardship Map Reference Book, a companion piece to the Stewardship Map that ORSSAB helped develop. Information is also available on the DOE Oak Ridge Geographical Information System (emgis.oro.doe.gov) and the Oak Ridge Environmental Information System (ucor.com/oreis.html).

Monitoring wells were drilled on the west side of the Clinch River to determine if any contamination was migrating from DOE property into groundwater on private property

Specific Areas Where ORSSAB is Interested in Stewardship:

East Tennessee Technology Park

When cleanup work is completed at ETTP, there should be little residual contaminated waste left at the site, but ORSSAB is interested in making sure the area is sufficiently cleaned up for new industry to relocate there with little or no need for stewardship by DOE. If there are remaining concerns at the site, DOE will always be responsible for them. However, there are roles that others will be responsible for if the area is available for industrial use, such as excavation permitting, underground utilities, and deed restrictions. For more information, see page 6.

Bethel Valley

An area of current stewardship concern is the Bethel Valley Burial Grounds Solid Waste Storage Area 3. SWSA 3 is not in the ORNL central campus and was cleaned up for recreational use. Stewardship controls will be put in place from this area westward to the Clinch River. For more information, see page 9.

Melton Valley
Melton Valley, in the southwest portion of the Oak Ridge Reservation, was used for a wide range of waste disposal methods for more than 50 years. Waste disposal areas included large solid waste dumps, pits, trenches, and waste injected into the earth's strata.

A large remediation effort was completed in 2006. OREM cleaned up some source areas and implemented protections for surface and groundwater from waste that was left in place. ORSSAB has a particular interest in making sure this area is well-protected from a stewardship standpoint because of the thousands of years that this waste will be an environmental and human health concern.

As previously mentioned, monitoring wells have been installed across the river from Melton Valley to detect any contamination leaving Melton Valley and moving off the ORR. For more information, see page 10.

Bear Creek Valley
Bear Creek Valley was used for disposal of uranium and associated waste from operations at Y-12 (see page 11). The only remaining, active waste management site in this area is EMWMF, which accepts low-level radioactive waste from cleanup and demolition projects across the Oak Ridge Reservation (see page 13).

Former waste disposal areas that have been remediated and closed include the Boneyard/Burnyard, the Oil Landfarm, and the S-3 Ponds. While remedial actions in years past have reduced contamination into nearby Bear Creek, contaminant levels in the creek near the Bear Creek Burial Grounds still do not meet water quality standards set by the state. Additional options are being considered to address portions of the valley to lessen the problem. For more information, see page 13.

While not in the immediate vicinity of the Bear Creek Burial Grounds, the White Wing Scrapyard is nearby. It also was used as a disposal area for scrap and debris from Oak Ridge plant operations. Surface debris removal was completed in 1994, but a significant volume of waste is buried at the site.

Historic Preservation
Another part of stewardship is the responsibility to document the important activities of people in Oak Ridge, both during the Manhattan Project and in important research and development that followed. ORSSAB was asked by DOE to provide input on historic preservation options for the Oak Ridge Reservation. In response, ORSSAB cosponsored a meeting to gather input from the public on how best to preserve the historic significance of the K-25 Building. A recommendation followed. A follow-up recommendation offered input on a reservation-wide historical program that includes ORNL and Y-12.

The board was also active in an effort that led to the creation of an organization called the Center for Oak Ridge Oral History, which preserves the memories of those involved in the history of the City of Oak Ridge. Nearly 1,000 oral histories were collected as part of that effort.

ORSSAB is a consulting party to a memorandum of agreement for historic site interpretation at ETTP. The ORSSAB Stewardship Committee took the lead in commemorating the K-25 Building at ETTP, including the K-25 Virtual Museum launched in 2015 (k-25virtualmuseum.org) and the K-25 History Center, which opened in February 2020. The history center offers visitors 7,500 square feet of exhibits with more than 250 original artifacts on display. Nearly 1,000 oral histories were collected over a 10-year span from former Manhattan Project and Cold War-era workers that museum professionals used to develop the exhibits and interactive galleries to commemorate the history of K-25 and provide context for the way it fits into the national story.

Visitors explore the many exhibits and interactive displays in the K-25 History Center during the center's grand opening in February 2020.

The board continues to provide input and follow progress for local efforts on the Manhattan Project National Historical Park (nps.gov/mapr), which was created via an agreement between DOE and the National Park Service in 2015.

Conclusion

We hope this introduction is helpful in giving you an initial understanding of the work on the ORR. You will learn more as you attend meetings, go on tours, travel to conferences, and participate in other board activities.

We encourage you to participate in the board's Facebook Page, facebook.com/ORSSAB; stay informed with our weekly email newsletter; and review activities in our quarterly newsletter, *The Advocate*. Back issues are available on our website, energy.gov/orssab.

Additional information is available in specific training materials for individual committees, as well as supplemental material (fact sheets, reports, histories, guidance, board bylaws, etc.). Contact board staff members or the board's Alternate Deputy Designated Federal Officer for any assistance.

Melyssa Noe, Deputy Designated Federal Officer
(865) 241-3315
Melyssa.Noe@orem.doe.gov

Shelley Kimel, ORSSAB Support Office
Phone: (865) 241-4584
Shelley.Kimel@orem.doe.gov

Sara McManamy-Johnson, ORSSAB Support Office
Phone: (865) 241-4583
Sara.McManamy-Johnson@orem.doe.gov

Appendix A

Board Officers, Deputy Designated Federal Officer, Liaisons

ORSSAB can have as many as 22 voting members. Through an application process they are chosen by DOE to reflect diversity of occupations, interests, gender, and race of persons living near the ORR. Technical expertise is not a requirement to be a member of the board.

Members are chosen to serve two-year terms, and they can serve a total of three terms. The officers include a chair, vice chair, and secretary. Officers are nominated at the board's annual planning meeting in August and are elected at the September meeting. The board's fiscal year is October through September and officers assume their seats at the October meeting. Officers can serve in a position for two years.

Melyssa Noe
ORSSAB DDFO

Deputy Designated Federal Officer (DDFO)
Each FACA committee, like ORSSAB, is required to have a Designated Federal Officer (DFO) who works closely with the board. The DFO is based in DOE Headquarters and is responsible for working with the nationwide EM SSAB.

The current DFO is Kelly Snyder. Since the DFO cannot attend all of the meetings of the individual SSABs, she has designated individuals at each site to be Deputy Designated Federal Officers (DDFO). The DDFO for ORSSAB is Melyssa Noe. Responsibilities of the DDFO include:

- Approve agendas and attend board meetings
- Ensure required records on board costs and memberships are maintained
- Certify the minutes of the meetings
- Ensure board meetings are publicly announced and accessible
- Inform the board of programs, projects, and activities directly affecting the board's mission and purpose
- Work closely with the board to prioritize issues
- Approve the annual work plan that includes goals and priorities
- Appoint an Alternate DDFO to assist in the management of the SSAB and supporting activities.

Roger Petrie
ORSSAB Alternate DDFO

ORSSAB Alternate Deputy Designated Federal Officer
As noted above the DDFO often appoints an Alternate DDFO to work closely with the board. Roger Petrie is the board's Alternate DDFO and its first point of contact with OREM. You will see her at all board and committee meetings. The Alternate DDFO's responsibilities include many of those listed for the DDFO above. In addition:

- Assist in the management of the board, provide guidance, and support its activities
- Ensure board presentations are developed and provided
- Facilitate membership appointments
- Ensure FACA requirements are met and provide annual FACA report to DOE Headquarters
- Facilitate board member training and travel needs
- Ensure that DOE responds to recommendations and track action items
- Provide oversight of members' conflict of interest issues

Samantha Urquhart-Foster EPA

Kristof Czartoryski TDEC

Jay Mullis OREM manager

Eric Olds OREM deputy manager

Agency Liaisons

In addition to the DDFO and alternates, the board has several agency liaisons from DOE, EPA, and TDEC. The agency liaisons attend the board meetings but do not vote. Their responsibilities include: Providing agency opinions on EM issues, recommending board topics and prioritization, and participating in board discussions

Samantha Urquhart-Foster is the standing liaison from EPA and Kristof Czartoryski represents TDEC with the board. Other members of those organizations may fill in from time to time based on need or a particular expertise.

Likewise, while David Adler serves as the Board's official liaison, other DOE leadership may also present to the board. You are likely to meet Jay Mullis, OREM manager and Eric Olds, OREM deputy manager.

Appendix B

Important Documents and Publications

There are a number of documents and publications that are the foundation for ORSSAB's existence and mission. The following are the main instruments that set the stage for ORSSAB's work:

Federal Advisory Committee Act Charter

As mentioned earlier the EMSSAB is chartered under the Federal Advisory Committee Act (FACA). For more about EMSSAB, see the separate tab in your binder. Under that umbrella organization operate eight local (site specific) boards in Idaho, Kentucky, Nevada, New Mexico, Ohio, South Carolina, Tennessee, and Washington State. These local boards exist as long as work needs to be done. In places where work has been finished site specific boards have been disbanded.

Local site board membership is composed primarily of people who may be directly affected by the need for site cleanup. Members may include stakeholders from local governments, environmental and civic groups, labor organizations, universities, industry, and other interested citizens.

Under the FACA charter, at the request of the DOE Assistant Secretary for EM or the Field Managers, the EMSSAB (and the site specific boards like Oak Ridge) may provide advice and recommendations concerning the following EM site-specific issues:

- Cleanup standards and environmental restoration;
- Waste management and disposition;
- Stabilization and disposition of non-stockpile nuclear materials;
- Excess contaminated facilities;
- Future land use and long-term stewardship;
- Risk assessment and management;
- Cleanup science and technology activities.

ORSSAB was chartered under FACA in 1995 and the charter is periodically renewed. Each board is organized under its own bylaws (see next page), which must remain in compliance with FACA.

The Federal Facility Agreement

In 1992 the Federal Facility Agreement (FFA), a CERCLA-required cooperative agreement among DOE, EPA, and TDEC was initiated. The agreement promotes cooperation and participation of the three parties in cleaning up the reservation. Full text of the FFA is available at www.ucor.com/RegAgreements.html.

DOE Oak Ridge is responsible for ensuring the provisions of the FFA are carried out. EPA and TDEC (the regulators) make sure DOE carries out its responsibilities. The main point of the agreement is to ensure that past and present environmental impacts to the ORR are investigated and appropriate remedial actions are taken to protect individuals and the environment. The FFA also establishes a framework and schedule for developing, implementing, and monitoring response actions.

The FFA has a number of appendices. The two you will hear referenced often are Appendices E and J. Appendix E is the list of all milestones that DOE, EPA, and TDEC have agreed to be reached during the current fiscal year and the next two fiscal years. These milestones could be the submission of required documentation or the initiation of field work. The milestones in Appendix E are enforceable; DOE must reach those milestones or risk being penalized by the regulators. Appendix J is a list of planning targets the FFA parties have agreed to for years beyond those stated in Appendix E. These targets are not enforceable and can be modified as conditions change. When the current fiscal year ends (September 30), the milestone targets in the next fiscal year in Appendix J roll into Appendix E on October 1 and then those milestones become enforceable.

Making cleanup decisions is a constant negotiation process among the FFA parties that is based on funding, budget targets, risk, technical challenges, availability of resources, and many other factors, including board recommendations. ORSSAB is kept well-informed of work planned or being done by DOE. Each year ORSSAB develops a work plan to get more information about projects on the reservation. The board can use that information to develop recommendations to DOE.

End Use Working Group (EUWG)

In 1996 DOE asked ORSSAB to initiate a process to gain a better understanding of what the community wanted regarding future use of contaminated areas of the ORR. In response, ORSSAB formed the End Use Working Group (EUWG) in 1997, which was composed initially of about 100 citizens concerned with the need to clean up the site. About 20 community volunteers finished the work 16 months later.
They were tasked with:

The End Use Working Group was charged with developing recommendations for final uses of the ORR and determining community values that would be used to guide DOE's remedial action decision-making process. The group's final report was published in 1998.

- Making recommendations for end (final) uses of contaminated areas of the ORR
- Determining community values that would be used to guide DOE's remedial action decision-making process

The recommendations of the EUWG were to identify preferences for the future of contaminated areas following remediation. These preferences were developed to guide the decision-making process with end-use goals for remediation but with no intent to identify specific remediation levels or technology or to contradict existing laws or regulations.

The EUWG developed a number of community guidelines for contaminated land and water for DOE to use in making future use decisions. Fourteen guidelines for contaminated land and five for contaminated water were written. The land guidelines were ranked in order of importance, while the water guidelines were of equal importance.

In addition to the guidelines for DOE to follow in making end-use decisions, the EUWG wrote several specific recommendations to DOE. A more detailed look of the EUWG's work is available in the report.

Stewardship

The EUWG recognized that if DOE implemented its recommendations significant amounts and levels of radioactive and chemical contaminants would have to be managed in place or moved to a different disposal facility. Transportation off the reservation to another facility was deemed too expensive, potentially risky, and politically difficult because few places want to receive radioactive mixed waste. Because the decisions that this group was supporting would result in contamination remaining on the reservation, the EUWG could not endorse any remediation program without assurance of long-term care for waste remediated in place. As a result, the EUWG formed a Stewardship Committee to develop detailed stewardship recommendations, which produced two reports on stewardship.

Stakeholder Report on Stewardship

In July 1998, the Stewardship Committee produced the first of two reports on stewardship – the Stakeholder Report on Stewardship. The report described the need for a stewardship program and the basic elements it should have.

Stakeholder Report on Stewardship, Volume 2

In 1999 the Stewardship Working Group, which was the result of a recommendation made in the first Stakeholder Report, published a second volume on stewardship.

The work of the Stewardship Working Group in the second Stakeholder's report was based on the earlier work, but the basic elements and unresolved issues in the first report were more fully developed in the second report. Unresolved issues included more explicit treatment of stewardship in CERCLA documents, five-year reviews, and the role of the community with regard to oversight of stewardship.

Basically, the second report went into more detail in the execution of stewardship activities and the roles of the stewards and the public.

Each of the above documents may be viewed at the DOE Information Center or requested digitally. Detailed summaries begin on the next page.

Environmental Management Site-Specific Advisory Board
U.S. Department of Energy

Advisory Board Charter

1. **Committee's Official Designation.** Environmental Management Site-Specific Advisory Board (EM SSAB).

2. **Authority.** This charter establishes the Board under the authority of the Department of Energy (DOE). The Board is being renewed in accordance with the provisions of the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C., App. 2.

3. **Objectives and Scope of Activities.** The EM SSAB is made up of local site chapters (also known as "local boards") at EM sites throughout the country that operate under this charter and provide the Assistant Secretary for Environmental Management (EM), or the appropriate DOE EM official, with advice and recommendations concerning issues affecting the EM program. At the request of the Assistant Secretary or the Field Managers, the Board may provide advice and recommendations concerning the following EM site-specific issues: clean-up activities and environmental restoration; waste and nuclear materials management and disposition; excess facilities; future land use and long-term stewardship. The Board may also be asked to provide advice and recommendations on any EM program components, such as risk assessments, communications, and funding priorities.

4. **Description of Duties.** The duties of the Board are solely advisory in nature.

5. **Official(s) to Whom the Committee Reports.** The Board reports to the Assistant Secretary for Environmental Management and any other DOE EM official the Assistant Secretary shall designate.

6. **Agency Responsible for Providing Necessary Support for this Committee.** The Department of Energy. Within the Department, primary support shall be furnished by the Office of Environmental Management.

7. **Estimated Annual Operating Costs in Dollars and Staff Years.** The estimated annual costs associated with supporting the EM SSAB are $3.6 million, including 7 staff years (FTE) of Federal employee support.

8. **Designated Federal Officer.** A full-time or permanent part-time DOE employee, appointed in accordance with agency procedures, will serve as Designated Federal Officer (DFO). The DFO (or designee) will approve or call for all of the Board and subcommittee meetings, approve all meeting agendas, attend all Board and subcommittee meetings, and adjourn any meeting if adjournment is determined to be in the public interest.

   The DFO may designate Deputy Designated Federal Officers (DDFOs) to be responsible for conducting DFO duties at the local site chapters of the EM SSAB.

9. **Estimated Number and Frequency of Meetings.** Local board meeting schedules vary by site. Depending on the level of current clean-up activity, DOE site management may convene the full local boards on a monthly basis, or less frequently. Additionally, members representing each local board typically attend semi-annual EM SSAB Chairs meetings to discuss complex-wide EM issues.

10. **Duration.** Continuing in nature.

11. **Termination.** The Board terminates two years from the Charter filing date and may not meet or take any action if the Charter is not renewed biennially.

12. **Membership and Designation.** Pursuant to delegated authority by the Secretary of Energy, the Assistant Secretary for Environmental Management is authorized to appoint and remove EM SSAB members.

    a. The standard term for Board members is two years, and members are to serve no more than three two-year terms for a total of six years.
    b. Field Managers may request a term-limit exception only after a thorough effort to recruit new members has been conducted and no viable candidates were identified. Documentation outlining all recruitment efforts must accompany the exception request to be considered. Exception requests are granted at the discretion of the Assistant Secretary for Environmental Management (or his/her designee) and are not guaranteed.
    c. Board member appointments are staggered so that approximately one-third of the membership is retained for continuity.
    d. Members shall be from communities directly affected by EM Program activities and reflect a full diversity of viewpoints including environmental, public health, civic groups, workforce, local and Tribal government, education, local businesses, economic development; and demographics such as ethnicity, age, and gender.
    e. Nomination and appointment of Board members shall be accomplished using procedures designed to ensure a diverse Board membership and a balance of representative viewpoints.
    f. The Assistant Secretary or DOE Field Managers for EM activities may request that other Federal, State, local or Tribal governments name liaisons to the local boards to provide information and represent their agency's interests at local board meetings. These liaisons may participate in discussions, but shall have no voting privileges and shall not be included in the quorum count.
    g. Approximate number of members: 200
    h. Members of the Board serve without compensation; however, members may be reimbursed in accordance with the Federal Travel Regulations for authorized travel and per diem expenses incurred while participating in Board activities.

13. **Subcommittees.** DOE has the authority to form subcommittees. Subcommittees may be formed for each local site chapter of the EM SSAB with the approval of the DFO or DDFO. The objectives of the subcommittees are to make recommendations to the full local board with respect to particular matters which are related to the responsibilities of the full local board. Such subcommittees or workgroups may not work independently and must report their recommendations and advice to the full local board for

deliberation and discussion. Subcommittees have no authority to make decisions on behalf of the local board, nor can they report directly to DOE. Members of the public can serve on subcommittees.

14. **Recordkeeping.** The records of the Board shall be handled in accordance with General Records Schedule 6.2 and Administrative Records Schedule 16, Item 8b (1.1), and approved agency records disposition schedule. These records shall be available for public inspection and copying, subject to the Freedom of Information Act, 5 U.S.C. 552.

15. **Filing Date.**

Date filed with Congress: April 8, 2022.

Miles Fernandez
Acting Committee Management Officer

Oak Ridge Site Specific Advisory Board

BYLAWS

Contents

I. MISSION

The mission of the Oak Ridge Site Specific Advisory Board (ORSSAB) is to provide informed advice and recommendations concerning site specific issues related to the Department of Energy's (DOE's) Environmental Management (EM) Program at the Oak Ridge Reservation. In order to provide unbiased evaluation and recommendations on the cleanup efforts related to the Oak Ridge site, the ORSSAB seeks opportunities for input through collaborative dialogue with the communities surrounding the Oak Ridge Reservation, governmental regulators, and other stakeholders.

The EM Site Specific Advisory Board is chartered under the Federal Advisory Committee Act (FACA), as amended, 5 U.S.C., App. 2. The ORSSAB is one of eight local boards that make up the EM SSAB. ORSSAB is thereby subject to the requirements of the EM Site Specific Advisory Board Charter, FACA and its implementing regulations (Title 41 C.F.R. Part 102-36).

II. FUNCTIONS, SCOPE, AND ACCOUNTABILITY

At the specific request of EM, the Board will provide independent advice and recommendations to the Assistant Secretary for EM, the Manager for the Oak Ridge Office of Environmental Management, or the appropriate DOE EM official.

A. Functions: The Board will provide advice and recommendations in response to charges issued by EM or the Site Manager.

B. Scope: The scope of the advice and recommendations of the Board includes:

1. Clean-up activities and environmental restoration; waste and nuclear materials management and disposition; excess facilities; future land use and long-term stewardship.
2. The Board may also be asked to provide advice and recommendations on any EM program components, such as risk assessments, communications, and funding priorities.

C. Accountability: The Board interacts with the appropriate EM decision makers to provide advice on matters within its scope, on behalf of the citizens of Oak Ridge and the surrounding communities.

1. The Board seeks a free and open two-way exchange of information and views between Board members and EM, where all are invited to speak and to listen.
2. Board members may request access to independent technical advice, staff, and training.
3. The Board will develop specific operating procedures and undergo requisite training to ensure that all members will hear a wide range of views and use constructive methods for resolving conflict, making decisions, and dealing with the differing viewpoints.
4. The Board will always remain accountable to the public and EM, and seek to promote multicultural community involvement. The Board is committed to ensuring a diverse Board membership and a balance of representative viewpoints.
5. In compliance with the Federal Advisory Committee Act, Board meetings will be open to the public, and the Board will give advance notice of a minimum of 15 days. Board

meetings will be held at regular times in public locations to encourage maximum public and Board participation.

6. Board membership shall reflect a full diversity of viewpoints in the affected community and region, and will be composed of people who are directly affected by EM site clean-up activities.
7. The Board members will send all requests to the EM Deputy Designated Federal Officer (DDFO) to ensure a prompt response. The DDFO is responsible for tracking DOE responses to requests from the Board and ensuring the completeness of those responses.
8. The Board shall develop and publish an Oak Ridge–specific annual report of its activities for stakeholders.
9. Board members should collaborate with DOE and seek stakeholder input to develop a general work plan each year based on the Board's charge to guide the Board and its subcommittees' activities. All work plan items shall be approved by DOE headquarters prior to implementation.
10. The Board will also maintain a repository of the Oak Ridge Board documents and will comply with all FACA recordkeeping requirements.

III. MEMBERSHIP

A. Authority: Pursuant to delegated authority, the Assistant Secretary for EM is authorized to appoint and remove EM SSAB members.

B. Terms of Office: The Board shall consist of not more than 22 voting members. Two non-voting student representatives identified each year by area high schools may participate in Board activities for one year but cannot count toward the quorum. The Board membership is on a rotation schedule that will encourage new individuals to participate and will maintain a balance between continuity and diversity inherent in the makeup of the Board.

1. Terms of office will be two years.
2. Members may serve three terms for a total of six years.
3. If after significant recruitment efforts, it is found that the member pool is limited, a request for an exception from term limits may be made by the affected Field Manager to the Assistant Secretary in accordance with the EM SSAB Charter.

C. Vacancies: Membership packages requesting appointments for new two-year member terms are completed on a scheduled basis, typically one per year. When a vacancy exists due to resignation or removal of a Board member mid-appointment, the vacancy may be filled by site appointment for the remainder of the unexpired term in accordance with the DOE EM Site Specific Advisory Board Membership Balance Plan.

IV. MEMBERSHIP RESPONSIBILITIES

A. Member Commitments: Board members make the following commitments:

1. To attend regular meetings and receive training;

2. To review and comment on EM and other documents within their purview that come before the Board, and submit timely recommendations to EM;
3. To be available for subcommittee work between Board meetings, and to participate fully in the affairs of the Board;
4. To work collaboratively and respectfully with other Board members and liaisons in the best interests of both the Board and the public;
5. To represent accurately all matters before the Board;
6. To handle in a responsible manner information and materials provided by the agencies, particularly drafts developed for an agency's in-house use, that might have significant future revisions as part of the agency's working practices;
7. To share any written communication about or for Board activities with the Board as a whole and with the DDFO;
8. To act for the Board or as its representative only with the majority vote of the Board;
9. To serve on at least one subcommittee during any given twelve-month period as appointed by the Chair; and
10. To abide by the terms and conditions of the EM SSAB Charter, these bylaws and all applicable laws or other DOE polices or requirements.

B. Liaison Commitments: The Board requests that liaisons make the following commitments:

1. To provide timely access to information pertinent to EM and associated environmental issues and related decision making;
2. To inform the Board in a timely and proactive manner of agency processes, programs, projects, and activities pertinent to the Board's mission and purpose.

V. BOARD STRUCTURE

A. Chair, Vice Chair, and Secretary: The Board will elect by majority vote, a Chair, Vice Chair, and Secretary, who will ensure that a diversity of viewpoints are considered in all Board discussions. It is preferred that candidates for the office of Chair have previous experience on the Executive Subcommittee to better facilitate the function of said subcommittee. The Chair will support the Board in a balanced and unbiased manner, irrespective of any personal views on a particular issue and see that all Board members have the opportunity to express their views.

1. The election for Chair, Vice Chair, and Secretary will ideally be held before the first meeting of the fiscal year but may be held as the first item of board business at the first meeting of the fiscal year. The terms of the Chair, Vice Chair, and Secretary will be one fiscal year.
2. The Chair will serve as liaison with the Federal Coordinator, support staff, and facilitator(s), assisting in the preparation of the agendas, minutes of the meetings, and other necessary arrangements.
3. The Chair certifies to the accuracy of all minutes.

4. The Chair signs the certification of a recommendation that the Board has passed by consensus/majority. If consensus/majority is not reached, the Chair may refer the matter back to the applicable subcommittee, as applicable, or sign and send to DOE the majority and minority reports.
5. The Chair assures necessary administrative support for any subcommittees and requests DOE support through the DDFO.
6. The Chair shall recommend appointment of members of subcommittees to the DDFO and ensure that the membership of any subcommittees reflects the diversity of the Board to the extent practicable.
7. The Chair serves between regular meetings of the Board as contact for EM, interest groups, and the public.
8. The Vice Chair serves as Chair in the absence or incapacity of the Chair.
9. The Secretary shall:
    a. Assume the duties of the Vice Chair in his/her absence;
    b. Work with administrative staff to give due notice to DOE, Board members, and the public of all Board and subcommittee meetings;
    c. Keep full and accurate records of the proceedings of the Board and subcommittee meetings (including attendance), with assistance from administrative staff;
    d. Notify the Executive Subcommittee of any member with two consecutive absences from regularly scheduled Board meetings;
    e. Review minutes of Board meetings with the administrative staff for timely distribution to Board members; and
    f. Work with the DOE Federal Coordinator, administrative staff, and any designated subcommittee to review an annual report and an annual work plan. The Board year begins October 1.
    g. Prior to any vote, provide a status of members present to verify whether a sufficient quorum exists for recommendations.
10. The Chair, Vice Chair, and Secretary will have other duties as assigned by the Board.
11. In the absence of the Chair, Vice Chair, and Secretary, the immediate past Chair, if that person still serves on the Board, shall serve as Chair of the Board meeting. In the absence of the immediate past Chair, the immediate past Vice Chair, if that person still serves on the Board, shall serve as Chair of the Board meeting. If none of these persons is present, those Board members present shall select, with the approval of the DDFO, a Chair for the meeting.
12. No officer of the Board shall serve more than two consecutive years in the same office.

B. Subcommittees: Subcommittees may be formed with the approval of the DFO or DDFO. The Board will establish any needed subcommittees prior to the beginning of each fiscal year to reflect the Board's approved work plan for that year. The Board may establish ad hoc committees as it deems necessary.

C. Structures of Subcommittees and/or Ad-hoc Committees:

1. Membership on subcommittees will be on a volunteer basis, and Board members must serve on at least one subcommittee.
2. Members may develop additional operating procedures consistent with the bylaws.
3. Subcommittees may not directly submit recommendations to EM. They are solely responsible for producing draft proposals or information for the full Board. Before presenting a recommendation to the Board, the subcommittee should have passed the recommendation by majority vote of the members attending the meeting.
4. The subcommittees will meet independently of the Board. If the meetings of the subcommittee are open to the public, they must hold them in public locations after appropriate notice.
5. If a written summary of the subcommittee meetings is prepared, the Chair of the subcommittee will provide it to the Board.
6. Election of the Chair for any subcommittees will occur annually, or as necessitated by vacancies. Standing subcommittees may, at their discretion, internally select, elect, appoint, or remove subcommittee Co-Chair or Vice Chair (either title bearing the same intended meaning), from among only the properly appointed Board members of the subcommittee. Co-Chairs or Vice Chairs shall serve and act in the temporary absence of the duly elected subcommittee chairperson.
7. Subcommittee Chairs shall notify the Board Chair and the DDFO of the selection, election, appointment, or removal of any standing subcommittee Co-Chair or Vice Chair.
8. Except for the Nominating and Executive subcommittees, non-Board members shall be allowed to vote in subcommittee meetings but shall not hold leadership positions.
9. Subcommittees shall be established by the Board, following approval by the DFO or DDFO, for the purpose of investigating special topics. The charge to, Board membership of, and Chair of the subcommittees shall be established by the Board and approved by the DDFO.
10. Subcommittees shall be confirmed by the Chair, upon recommendation of the Chair of the respective subcommittee. Members of the public may be allowed to participate on a non-voting basis for any subcommittee except for the Executive and the Nominating subcommittees. The DDFO shall concur in all recommendations for participation by non-Board members.

D. Executive Subcommittee: The Board has an Executive Subcommittee consisting of the Chair, Vice Chair, Secretary, and Chairs, Co-Chairs, or Vice Chairs of any standing subcommittees established during the fiscal year. It shall meet at least bimonthly and may hold other meetings at the call of the Board Chair to consider matters of importance that may require immediate resolution. The DDFO or the DDFO-designated Federal Coordinator shall serve as a non-voting member of the Executive Subcommittee.

1. During the intervals between Board meetings, decisions involving the daily business operations of the Board (e.g., setting budgets and agendas, coordinating subcommittee requirements and activities, etc.) shall be made by majority vote of the Executive

Subcommittee. However, this committee shall have no authority to set Board policy or make any recommendations to EM.

2. Actions on routine general administrative matters requiring time-critical action by the Executive Subcommittee may be handled by polling members of the Executive Subcommittee through any quick means of communication. Decisions will be validated by the Board Chair and documented in the minutes of the next regularly scheduled Board meeting.

3. The Executive Subcommittee shall have no authority to act for the Board on any motion or recommendation that affects a decision made by the full Board. Any motion or recommendation affecting a decision of the Board shall be submitted by the Executive Subcommittee to the Board for consideration at the next regularly scheduled Board meeting.

E. Work Sessions: Work sessions are defined as meetings that include at least two members of the Board, at which official action is not being taken.

F. Closed Session: Should the Board seek to close a meeting, it shall do so in compliance with 41 CFR 102-3.155 and any applicable DOE procedures.

G. Removal of Officers: An officer of the Board (Chair, Vice Chair, Secretary, or standing subcommittee Chair, Vice Chair, or Co-Chair), may be removed from their office for misconduct or neglect of duty by a vote of the Board upon the recommendation of the Executive Subcommittee, the recommendation of the DDFO, or a duly authorized motion tendered by a Board member at a regularly scheduled Board meeting.

H. Replacement of Officers:

1. A Board office vacancy (Chair, Vice Chair, or Secretary) that comes into existence will be announced at a regularly scheduled Board meeting.

2. An election by the entire Board will be held at the next regularly scheduled Board meeting after the meeting at which the vacancy was announced. In the event of a removed, resigned, or abandoned vacancy in the Chair, Vice Chair, or Secretary, the term of office of any interim replacement election for the Chair, Vice Chair, or Secretary shall expire on September 30th and the regularly scheduled annual election shall be held as provided in Article V, Section A, Number 1.

3. If both the Chair and Vice Chair become vacant at or near the same time, then the Board shall, at the meeting at which the vacancy is announced, elect by majority vote a Chair and Vice Chair to serve the Board until, and at, the next regularly scheduled Board meeting. To prevent delay in Board work, and in the absence of a timely interim election, the Executive Subcommittee shall appoint, subject to DDFO approval, an Acting Chair and Vice Chair (if needed or desired), from among the voting members of the Executive Subcommittee, to serve the Board until the next regularly scheduled Board meeting.

VI. DECISION MAKING

All Board decisions relating to recommendations and advice to DOE shall be reached through parliamentary procedure. The Board shall strive for substantial agreement among Board members for approval of recommendations and advice to DOE.

A. Quorum for Meetings: For the purpose of conducting business, a quorum shall be a majority (i.e. one more than one half) of the authorized membership of the Board, excluding liaison members.

B. Approval of Recommendations: Recommendations shall be approved by majority vote of the appointed Board membership.

C. Proxy Voting: Voting by proxy on any Board or subcommittee action is prohibited.

D. Bylaws Amendments: These Bylaws may be amended at any regular meeting of the Board by a majority vote of the entire Board membership, provided that the proposed amendment was submitted in writing and read at a previous regular business meeting. (Also see Section XII.)

E. Removal of Officers: An officer of the Board may be deposed from office for misconduct or neglect of duty in office by a two-thirds vote of the Board.

F. Requirements for Recommendations to EM:

1. Standing subcommittees, the Executive Subcommittee, or individual members may propose recommendations to the Board.
2. Proposed recommendations must be in writing.
3. Proposed recommendations will be included in Board packets or be made available to members prior to the Board meeting, along with supporting background documentation.
4. Proposed recommendations will be discussed at Board meetings and will be approved, rejected, or returned to subcommittees for further work (e.g., editing, refinement, and incorporation of public and/or members' comments).
5. Proposed recommendations will be introduced as motions for Board approval.
6. When an issue comes before the Board, the Chair may refer the issue to the appropriate standing subcommittee or create a subcommittee for that issue. The subcommittee will report progress to the Board at the next meeting.
7. Board members who disagree with an approved recommendation should document it in writing.
8. When it appears that the Board has reached agreement on a particular recommendation, the Chair may call for a vote.
9. Recommendations dealing with complicated and/or controversial issues may require more than one draft and may take multiple meetings to evolve into a form that is acceptable by a majority of the Board.

G. Administrative Decision Making:

1. Administrative functions of the Board may be delegated to the Chair who may assign actions to the Federal Coordinator and/or his/her staff.
2. If the Board finds need to review or affirm specific decisions made under the authority delegated to the Chair, such affirmation will be expressed by a majority vote of the Board at the next meeting.

H. Procedures and Parliamentary Law: The current edition of "Robert's Rules of Order" shall apply on all questions of procedures and parliamentary law not specified in these bylaws.

VII. ROLE OF THE FACILITATOR

A professional facilitator may be hired to help the Board organize its work, prepare an agenda based on consultations with the Board and the Chair, facilitate the Board meetings, and work with the staff to prepare the minutes of the meetings.

VIII. CONDUCT AND FORMAT OF MEETINGS

A. Meeting Format:

1. Public notices will be printed in the Federal Register at least fifteen (15) days before the meeting. Additional announcements may be made via other outlets, such as on the radio and in local newspapers.
2. The Board will meet as needed, with the length of meetings determined by the agenda.
3. The Board will submit its agenda for the approval of the DDFO. In preparing the agenda, the Board reviews its work plan and, if appropriate, obtains additional input from its members and subcommittees and the public.
4. Meetings will be open to the public; a section of the meeting room will be set aside for observers; and public comment is invited at appropriate times during a meeting.
    - **a.** At least 15 minutes will be included in the agenda for public comment, unless questions are taken throughout the meeting. A non-recused Board member may not address the Board during the time set aside for public comment. The public comment period may be extended by the Chair or by consensus of the Board members in attendance.
    - **b.** If required, at the discretion of the Chair, the fixed time will be divided equally among the members of the public who request to speak.
    - **c.** In addition to formal public comment and before a decision on a recommendation is made, the Chair may invite members of the public to offer their input. The Board will determine in advance how much time they will allocate for this additional public input.
    - **d.** Members of the public may offer their comments in writing and give them to the DDFO to be read into the meeting record.
    - **e.** Time will be set aside for Board member comments during each meeting.

5. Any meeting will be set up in terms of both the physical arrangements and the agenda to facilitate hearing and discussion.
6. Minutes of the meetings will be kept by an individual designated by the Chair, distributed to the Board members for their review and made available to the public. Each meeting agenda will include the opportunity for members to make revisions to the minutes of the previous meetings.

   The Chair or Vice Chair must approve the minutes within 90 calendar days of the meeting to which they relate. In the absence of the Chair or Vice Chair the DDFO must make such certification.
7. Any product of the Board, such as policies, positions, reports, advice or recommendations given to DOE, must be reviewed by the Board in final distribution form before distribution and being placed in the DOE public reading rooms and any other places deemed appropriate.

B. Conduct of Meetings:

1. The Board may utilize a neutral third-party facilitator to assist it in accomplishing its mission. In all instances the facilitator will operate in a completely neutral, balanced, and fair manner.
2. Board members will show respect to each other, EM, liaisons, and the public.

IX. BUDGET

1. **Authority**. DOE EM retains the fiscal responsibility for the Board. If requested by the DDFO, the Board can provide input regarding funding for the Board.
2. **Compensation:** Board members will serve without compensation but may receive reimbursement for direct expenses related to the work of the Board and meeting attendance.
3. **Travel Expenses:** Board and subcommittee members are required to follow applicable federal travel regulations. All travel expenses must be submitted to the Federal Coordinator for reimbursement according to Federal guidelines. Trip reports by Board members must be prepared within 30 days and submitted to the support staff for inclusion in the Board's records.

X. CONFLICT OF INTEREST

Definition: Board members appointed as special Government employees (SGEs) are subject to the Federal statutes and regulations regarding conflicts of interest, including not participating personally and substantially, in any particular matter, before the Board, in which, a financial interest is held by the member, or the member's spouse, minor child, general partner, or organization in which the member is serving as officer, director, trustee, general partner, or employee, or any person or organization with whom the member is negotiating or has any arrangement concerning prospective employment. Board members appointed as representative members, as a matter of DOE policy, should agree to be recused from participating in any

meeting, study, recommendation, or other Board matter or activity that would have a direct and predictable effect on the companies, organizations, agencies, or other entities with whom the representative member, or the representative's family member, are personally associated, or in which a financial interest is held.

A. Enforcement of Conflict of Interest Policy: Questions concerning conflict of interest shall be referred to the DDFO and/or the Federal Coordinator, who will seek the advice of DOE's Office of General Counsel for resolution.

B. Recusal: If a Board member is aware of a conflict of interest, as defined above, the member shall immediately inform the DDFO and the Board of the interest and shall refrain from participating in discussions and recommendations in which a conflict or potential for conflict of interest exists.

C. Principles of Conduct: Board members shall abide by the following conflict of interest principles:

1. Members shall refrain from any use of their membership, which is or gives the appearance of being motivated, by the desire for private gain.
2. Members shall not use, either directly or indirectly for private gain, any inside information obtained as a result of Board or subcommittee service.
3. Members shall not use their positions in any way to coerce, or give the appearance of coercing, another person to provide a financial benefit to the member or any person with whom the member has family, business, or financial ties.
4. Members who are appointed as SGEs must follow the prohibitions on accepting gifts contained in 5 CFR 2635.201 et seq. and should seek the advice of the Office of General Counsel, as applicable.

XI. AMENDING THE BYLAWS

A. Policy: The Board shall have the power to alter, amend, and repeal these bylaws in ways consistent with the Charter of the EM Site Specific Advisory Board, and any other applicable laws, regulations, and guidelines. Any member of the public, the Board, or one of the Agencies may propose an amendment. However, to be considered by this Board the proposed amendment must be sponsored by a Board member. The bylaws may be amended at any regular meeting of the Board by a majority vote of the entire Board membership, provided that the proposed amendment was submitted in writing and read at a previous regular business meeting.

B. Approval: All amendments to these bylaws must be approved by the Designated Federal Officer in consultation with the Office of General Counsel.

XII. ADOPTION OF THE BYLAWS

A. These bylaws will be effective:

1. Upon the affirmative vote of the Board membership,
2. Execution by the Chair,

3. Review and approval by the DOE Office of the General Counsel, and
4. Approval of the EM SSAB Designated Federal Officer.

B. All previous bylaws or procedures are hereby rescinded.

XIII. SEVERABILITY OF THE BYLAWS

In the event that any provision of these bylaws is invalid, such invalidity shall not affect the remaining provisions that shall continue in full force and effect to the extent practicable.

APPROVED: November 14, 2007

REVISED: April 10, 2019

REVISED: June 9, 2021

REVISED: May 13, 2022

Summaries of the Final Report of the End Use Working Group and the Stakeholder Reports on Stewardship

Summaries of the Final Report of the End Use Working Group and the Stakeholder Reports on Stewardship

In 1989 the Oak Ridge Reservation (ORR), which includes the main plants of the Oak Ridge National Laboratory (ORNL), the Y-12 National Security Complex, and East Tennessee Technology Park (formerly the K-25 Gaseous Diffusion Plant), was placed on the Environmental Protection Agency's National Priorities List for cleanup (also known as Superfund).

In 1995, the Department of Energy established the Oak Ridge Site Specific Advisory Board (ORSSAB) to serve as the citizens' advisory group to the department on its Oak Ridge Environmental Management Program to clean up the reservation of legacy radioactive and hazardous waste left over from operations at Y-12, ORNL, and K-25.

In 1996 DOE asked ORSSAB to initiate a process to gain a better understanding of what the community wanted regarding future use of contaminated areas of the ORR. To address the department's request the board in 1997 formed the End Use Working Group (EUWG), which was composed of about 20 community volunteers and tasked with developing:

- Recommendations for end uses of contaminated areas of the ORR
- Determining community values that would be used to guide DOE's remedial action decision-making process

EUWG deliberations determined that additional issues needed to be evaluated, including:

- The relationship of the use of contaminated groundwater and surface water to recommended end uses of contaminated areas
- The need for a long-term stewardship program when an end use recommendation resulted in residual contamination
- The need for an on-site waste disposal facility

The recommendations of the EUWG were to identify preferences for the future of contaminated areas after remediation. They were developed to guide the decision making process of remediation but with no intent to identify specific remediation levels or technology or to contradict existing laws or regulations.

EUWG developed a number of community guidelines for contaminated land and water for DOE to use in making future use decisions. Fourteen guidelines for contaminated land and five for contaminated water were written. The land guidelines were ranked in order of importance, while the water guidelines were of equal importance.

The primary guidelines for contaminated land included:

- Property owners/operators must comply with all laws and regulations to ensure safe working conditions and to protect nearby residents and the environment
- Contamination left on site must be controlled to prevent spreading
- Trust funds should be established for long-term care (stewardship) of contaminated land
- Impacts to the environment should be minimized during remediation and the environment should be restored when remediation is complete
- Buffer zones should be put in place to protect nearby and future populations from areas with residual contamination
- End use of contaminated land should allow for future development

Guidelines for water include:

- Groundwater leaving the reservation should meet criteria for unrestricted use

- Contaminated groundwater must be controlled so that it doesn't impact uncontaminated groundwater
- Contaminated groundwater remaining after remediation must be controlled to prevent spreading
- Contaminated groundwater underneath uncontaminated land should be restored to health-based standards if possible
- Surface water on the ORR must eventually meet safe water quality standards

Recommendations from the End Use Working Group
In addition to the guidelines for DOE to follow in making end use decisions, the EUWG wrote several specific recommendations to DOE, which are summarized here.

Recommendation for Bethel Valley of ORNL
The central campus of ORNL had, and still has, a number of contaminated areas that threaten the health and safety of employees and the associated working environment.

The EUWG recommended that remediation decisions should achieve, at a minimum, a controlled industrial end use for the entire Bethel Valley area, which would allow for surface use of contaminated land.

Recommendation to Site a Waste Disposal Facility
The EUWG recognized that large volumes of waste would be generated during cleanup activities. It also recognized that it would be impractical to try to ship all waste off-site.

The EUWG recommended that a waste disposal facility be built to accept contaminated materials meeting specified waste acceptance criteria. Material not meeting the criteria would be shipped off-site.

The recommendation was to site the facility in East Bear Creek Valley, which had been used for earlier waste disposition. The Environmental Management Waste Management Facility was later built at that location.

Recommendation for the End Use of Disposal Areas in Melton Valley
Melton Valley, in the southwest portion of the ORR, had been used for many years as a disposal area of burial grounds, seepage pits, and hydrofracture sites. It was also the solid waste storage area for about 50 off-site facilities.

Because the area contains highly radioactive waste, excavation and removal was considered too risky and cost prohibitive.

The EUWG recommended that the area have restricted use, but that worker safety should be ensured and migration of contaminants controlled to prevent release of contaminants in White Oak Lake and subsequently the Clinch River. The group also recommended that DOE continue to monitor major sources of radiological risk.

Remediation of Melton Valley was completed in 2006.

Recommendation for the End Use of the Upper East Fork Poplar Creek Watershed
The Upper East Fork Poplar Creek Watershed (UEFPC) lies between Pine Ridge and Chestnut Ridge, which is also the location of the Y-12 National Security Complex. Y-12 was built in the 1940s to produce enriched uranium by means of an electromagnetic process.

Y-12's primary mission today and well into the future is dismantling of nuclear arms and storage of highly enriched uranium.

But during World War II and the ensuing Cold War years operations at Y-12 resulted in significant contamination of soil, surface water, and groundwater.

For the purpose of its recommendations, the EUWG divided Y-12 into eastern and western portions – the west end being more heavily contaminated than the east.

The EUWG recommendations for the UEFPC Watershed and Y-12 are as follows:

- The western end of Y-12 is expected to remain controlled industrial property
- The eastern end should be made suitable for uncontrolled industrial use
- Lake Reality and New Hope Pond, in the eastern portion, will require continued federal government control and use of the area should be consistent with end use of the eastern end
- Chestnut Ridge should be used for regulated waste disposal for the ORR
- UEFPC must eventually meet State water quality standards. In the interim, water quality must not pose an unacceptable risk to Y-12 workers or residents or businesses near the creek or its tributaries
- Contaminated groundwater from Y-12 must not be allowed to contaminate uncontaminated groundwater

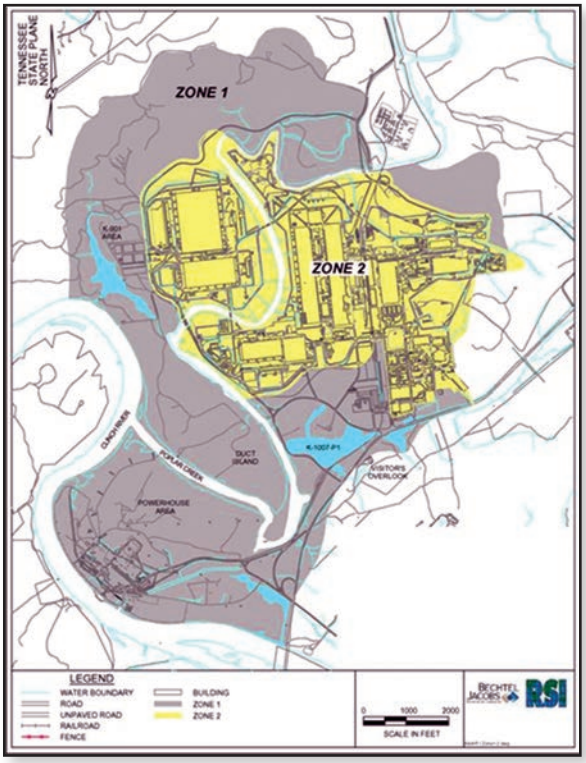
Recommendation for the End Use of the Former K-25 Site at East Tennessee Technology Park (ETTP)

The K-25 Site was one of the three major plants built on the ORR during World War II. It is the reservation's western most facility on the Clinch River.

From 1945 to 1964 the site produced weapons-grade uranium. From 1965 to 1985 the site produced commercial-grade uranium. Of the 4,600 acres that lie in the administrative watershed of ETTP, about 1,000 acres have been impacted by operations at the site.

In addition to five large uranium processing buildings, the site also contained many support buildings, labs, maintenance shops, and so on.

Most of the demolition work of old facilities on the ORR has and is taking place at ETTP. Almost all of the original buildings will be torn down eventually. The site also has a number of contaminated areas.



Map of ETTP showing Zones 1 and 2.

For administrative purposes ETTP was divided into three zones. Zone 2 is the central industrial and administrative area. Zone 1 borders Zone 2 from the south to the northwest and borders the Clinch River. It is not as developed as Zone 2. Zone 3 is a former support area on the northeast quadrant of the site.

The EUWG made the following recommendations regarding the end use of ETTP:

- Zone 1 should be remediated to allow for uncontrolled industrial end use, with a focus on natural resource conservation
- Zone 2 should be remediated to provide for uncontrolled industrial end use
- Zone 3 should be remediated to provide for controlled industrial end use. If the existing K-1070-B and K-1070 C/D waste disposal areas in Zone 3 cannot be fully remediated to controlled industrial use, then

these areas should be maintained as restricted access waste disposal properties and should be managed to ensure the safety of surrounding populations and the environment.
- The continued storage of UF_6 (uranium hexafluoride) is not compatible with these recommended end uses. The incompatibility should be resolved on a schedule that coincides with the planned remediation of the site (UF_6 cylinders have been removed from the site).

STEWARDSHIP

The EUWG recognized that if DOE implemented its recommendations some radioactive and chemical contaminants would have to be managed in place or moved to a different disposal facility. Transportation off the reservation to another facility was deemed too expensive, potentially risky, and politically difficult because few places want to receive waste. Because most contamination would remain on the reservation the EUWG could not endorse any remediation program without assurance of long-term care.

As a result the EUWG formed a Stewardship Committee to develop detailed stewardship recommendations, which produced two reports on stewardship.

Summaries of those reports follow.

Stakeholder Reports on Stewardship Summarized
In July 1998, the Stewardship Committee, recommended by the End Use Working Group, produced the first of two reports on stewardship – Stakeholder Report on Stewardship. The report describes the need for a stewardship program and the basic elements it should have.

What is Stewardship?
The committee defined stewardship as "Acceptance of the responsibility and the implementation of activities necessary to maintain long-term protection of human health and the environment from hazards posed by residual radioactive and chemically hazardous materials."

The report outlined a number of attributes for attaining a successful stewardship program.

Attributes of Successful Stewardship
- Stewardship planning must be done concurrently with remediation.
- Stewardship of contaminated sites requires that society accept responsibility for providing a healthy and safe environment for current and future generations. The federal government must provide funding for long-term stewardship. All stakeholders must work together to develop and implement a stewardship program.
- Stewardship programs must be designed to protect human health and the environment for the life of the contaminants.
- Stewardship programs must be adaptable to changing physical and technological conditions and political demands to provide ongoing protection.

Elements of stewardship
- Authority and funding
- Stewards
- Operations
- Physical controls
- Institutional controls
- Information systems
- Research

Authority and funding
Long-term stewardship is impossible without concurrent financial support. At federal facilities authority begins with Congress and is delegated to an appropriate federal entity.

Stewards
Groups or individuals responsible for stewardship activities.

- Principal steward has legal responsibility for contaminated land and facilities including financial obligation and to take corrective action if the stewardship program becomes ineffective. In Oak Ridge the principal stewardship is the Department of Energy.

- Implementation steward is responsible for monitoring, maintenance, and record keeping. In Oak Ridge implementation stewards are DOE and contractors.

- Oversight stewards ensure that goals and requirements of a stewardship program are met. In Oak Ridge the oversight stewards are the Tennessee Department of Environment and Conservation, the Environmental Protection Agency, and interested stakeholders (the public).

Operations
The success of stewardship is dependent upon the numerous activities that must be conducted to ensure remediation remains effective and systems are working as expected.

- Monitoring – regular sampling to make sure controls are working and to provide continuous information about the nature and extent of contamination.
- Maintenance – regular upkeep of remediation systems.
- Surveillance – regular oversight of remediation and institutional systems to ensure that all necessary activities occur.
- Enforcement – legal restraints to maintain human health and the environment.
- Inspection and reevaluation – periodic review of existing systems and activities to ensure continued need and effectiveness.
- Public participation – continuous involvement of the public to ensure concerns are addressed and relevant public information is provided.

Physical Controls
Physical controls are barriers to limit public access to contaminated areas or areas where contamination has been remediated in place. These could include natural barriers such as trees or surface water or engineered barriers like fences and warning signs.

Institutional Controls
Institutional controls are legally binding provisions to control future uses of land or resources by limiting development or restricting public access with residual contamination. They can be divided into governmental controls and proprietary controls.

- Government controls use the power of national, state, or local governments to impose restrictions.
- Proprietary controls allow property owners to control the use of or limit access to their properties.

Stewardship Information
Stewardship information provides present and future stakeholders with records of locations, amounts, and characteristics of contaminants. Information must be kept current. Data from surveillance and monitoring activities must be readily available.

Research
When remediation activities are completed significant data gaps and uncertainties will remain about hazards. Over time new data may provide better assessments of contamination, risks, appropriate remedial technologies, management of wastes, and so on.

Stewardship and CERCLA
The principal federal law governing hazardous waste cleanup is the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA, also known as Superfund). The Environmental Protection Agency evaluates federal facilities for inclusion on the National Priorities List for cleanup.

Under CERCLA a record of decision (ROD) documents a cleanup method for any given area. A number of pre-ROD documents are prepared leading to a cleanup decision including a remedial investigation/feasibility study and a proposed plan. The ROD decision is taken from the proposed plan. The public can provide input on the proposed plan.

The Stakeholder's Report on Stewardship said that stewardship planning must be part of the CERCLA process whenever a remedy for cleanup calls for leaving radioactive or chemically hazardous materials on the ORR. The report states that 'long-term stewardship issues and requirements should be addressed at each phase of the process to ensure effective integration of stewardship into decision making.' Specifically the report said stewardship requirements should be included in the feasibility study, the proposed plan, and the ROD, and also included in post-ROD documents - the remedial design work plan, the remedial action work plan, and the remedial action report that documents exactly what actions were taken when the project is finished.

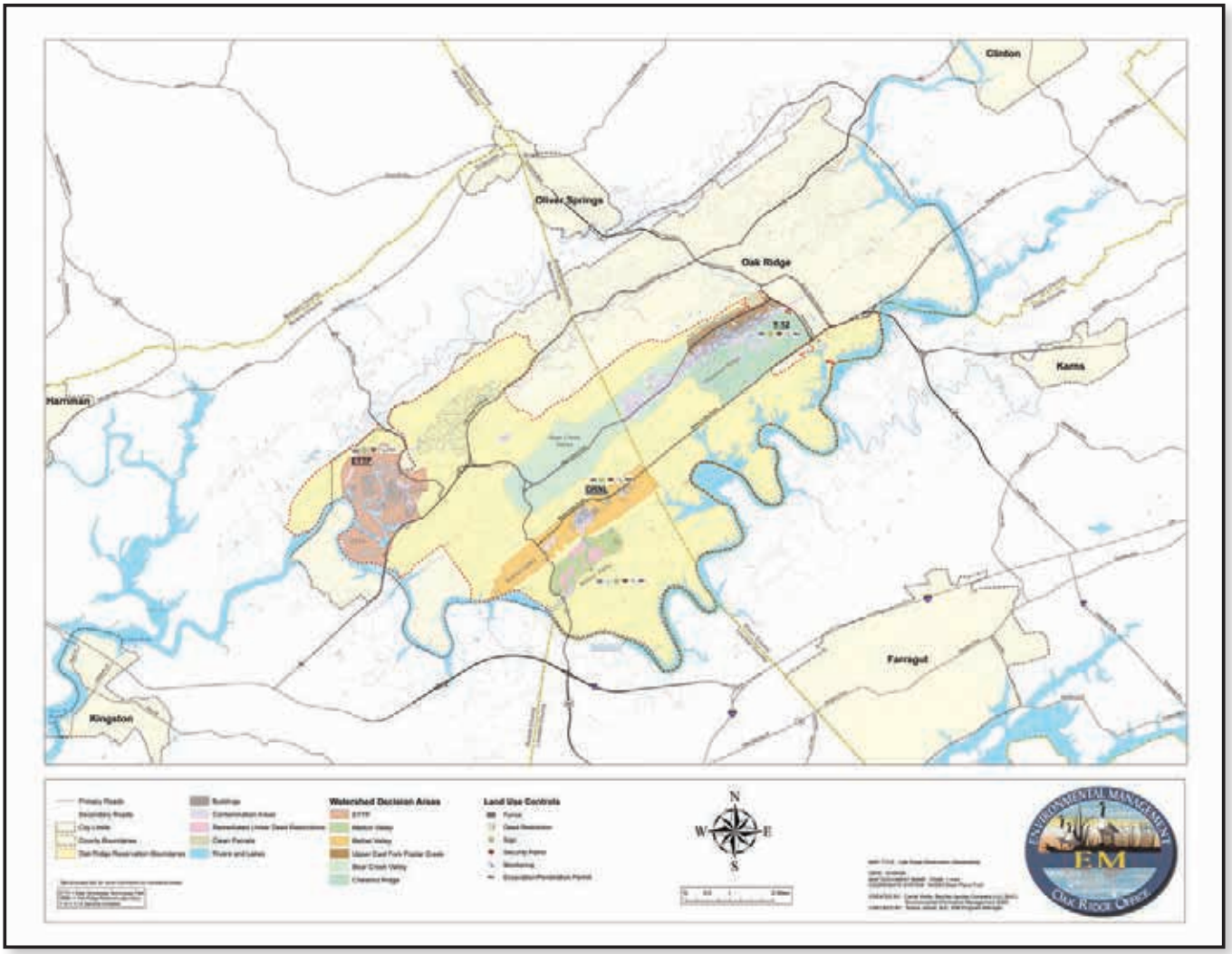
The Problem on the Oak Ridge Reservation
While the ORR is about 35,000 acres only 10 percent contains old waste disposal sites. Contaminants of concern in these areas include uranium- 235 and 238, strontium-90, cesium-137, technetium-99, mercury, tricholorethene, trichloroethane, volatile organic compounds, polychlorinated biphenyls, and others. Half-lives of radioactive elements range from 12 years to basically forever.

Abundant rainfall in the area and high water tables contribute to leaching of contaminants from waste areas into surrounding soil, surface water, and groundwater. Migration of contaminants in groundwater is especially difficult to track.

The reservation has been divided into large tracts of land that are equivalent to the major watersheds in the area. One or several RODs for each watershed will be produced instead of developing many documents for individual cleanup sites.

The major watershed decision areas are:
- East Tennessee Technology Park
- Melton Valley
- Bethel Valley
- Upper East Fork Poplar Creek
- Bear Creek Valley
- Chestnut Ridge

Within each of these watersheds are remediated areas that have stewardship requirements in place or that will be remediated eventually and will require long-term stewardship. See the Stewardship Map for a depiction of the various watersheds and related physical and institutional controls that are currently in place.



Stewardship map

Stakeholder Report on Stewardship, Volume 2
In 1999 the Stewardship Working Group, which was the result of a recommendation made in the first Stakeholder Report, published a second volume on Stewardship.

The work of the Stewardship Working Group in the second Stakeholder's report was based on the earlier work, but the basic elements and unresolved issues in the first report were more fully developed in the second report. Unresolved issues included more explicit treatment of stewardship in CERCLA documents and five year reviews and the role of the community with regard to oversight of stewardship.

Basically the second report went into more detail in the execution of stewardship activities and the roles of the stewards and the public.

OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT (OREM)

John A. Mullis II, Manager Date

JOHN A. MULLIS II, MANAGER
THEODORE E. OLDS, DEPUTY MANAGER
MIKE T. KOENTOP, EXECUTIVE OFFICER
LAURA O. WILKERSON, CHIEF ENGINEER
ROBERT E. MEEKS, RESOURCE MANAGER
QUINCY MASON, HQ SITE LIAISON

EM-91
Procurement and Contracts Division
Karen S. Shears, Director

Terri Abel
Scott Boyd
Talia Burchfield
Katherine Hernandez
Raul Holguin
Carol Jennings
John Phelps
Jessica Speed
Natasha White

Technical Support Contractors: 3

Portfolio Federal Project Directors
James Daffron, *Acting ORNL*
Joanna Hardin, ETTP
Brian Henry, Y-12

EM-92
Planning and Execution Division
Alan G. Stokes, Director

EM-921
Project Management
James G. Nunz, Branch Chief

Morgan Carden
Steven Clemons
Michael Griswold
Laura Hedrick
Dennis Mayton
Mark McIntosh
Alexandra Schenk#
Michael Vestal

Technical Support Contractors: 9

EM-922
Planning and Baseline Management
Karen R. Thompson, Branch Chief

Kim Bowers**
Ken Dziedzic
James Kidd
Cari Mendez-Sanchez
Donna Mitchell
Mame Ndiaye
E. King Ragos
Rocky Stafford
Travis Todd
Michael Wolney**

Technical Support Contractors: 14

EM-93
Operations Management Division
Larry D. Perkins, Director

EM-931
Facilities Oversight
Timothy D. Noe, Branch Chief

Franklin Brooks
Kara Bush
Joseph Carson
Jennifer David
Jorge González
Dale Greer
William Haver
Ryan Hilmes
Kiento Lanter
Carl Pilj
Billy Staggs
Melanie Underwood
Bryan Westich

Technical Support Contractors: 6

EM-932
Safety, Security, and Waste Management
Amanda N. Kereakoglow, Branch Chief

Antonio Almaguer
Hunter Brown#
James Craven
Emese Krivan
Kevin Levy
Richard Neal#

Technical Support Contractors: 13

EM-933
Engineering
William E. Bailey, Branch Chief

Franklin Brooks
Thomas Leusner
Justin Miller
Henry Mutka
Christopher Perry

Technical Support Contractors: 5

EM-94
Quality and Mission Support Division
Erin F. Sutton, Director

EM-941
Quality Assurance
Ana Rosado-González
Branch Chief & QA Manager

Kaelyn Dauer#
Antonio Ferré
Michael Rigas

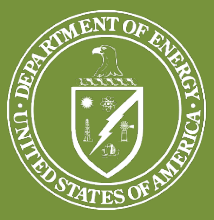
Technical Support Contractors: 6

EM-942
Program Support
Melyssa P. Noe, Branch Chief

Leah Alexander#
Steve Cooke
Alicia Harris
Sierra Hellemans#
Abby Newberry
Roger Petrie
Elizabeth Phillips
Ellen Reed
Sam Scheffler
Somer Stephens
Ben Williams

Technical Support Contractors: 10

+Special Assignment/Detail
**EM Funded - CFO Personnel (FM)
Intern/Fellow
Administrative Support Contractors: 9



U.S. DEPARTMENT OF
ENERGY

Environmental Management Site-Specific Advisory Board

Policies Desk Reference

April 2023

Table of Contents

ENVIRONMENTAL MANAGEMENT SITE-SPECIFIC ADVISORY BOARD

Policies Desk Reference

The purpose of this document is to provide guidance regarding the operation of the Environmental Management Site-Specific Advisory Board (EM SSAB or Board). This updated guidance supersedes the guidance document dated July 2013. This document is intended to summarize pertinent sections of the requirements of the Federal Advisory Committee Act (**FACA**) of 1972, **5 United States Code (U.S.C.) Appendix 2**; the General Services Administration (GSA) implementing regulations, **41 Code of Federal Regulations (41 CFR) Subpart 102-3**; the Department of Energy (DOE or Department) Manual entitled *Advisory Committee Management Program*, **DOE M 515.1-1;** the **EM SSAB Charter;** and the **EM SSAB Membership Balance Plan**. It is not intended to replace these documents. In addition, it provides specific direction for the EM SSAB.

REVISION HISTORY

This document was reviewed by CMO/Butler, GC/Comfort and approved by DFO/Snyder on August 18, 2022.

Revised September 29, 2022. Revision reviewed by CMO/Kennerly, GC/Comfort and approved by DFO/Snyder.

Revised April 17, 2023. Revision reviewed by CMO/Butler, GC/Comfort and approved by DFO/Snyder.

Background and Introduction

The EM SSAB, established in May 1994, involves stakeholders directly in DOE EM cleanup decisions. While only one FACA-chartered EM SSAB exists, eight local boards under its umbrella charter have been organized at the following sites: Hanford in Washington State, Idaho, Northern New Mexico, Nevada, Oak Ridge in Tennessee, Paducah in Kentucky, Portsmouth in Ohio, and Savannah River in South Carolina. The EM SSAB charter has been renewed every two years since 1996.

In accordance with its charter, the EM SSAB provides the Assistant Secretary for Environmental Management (EM), or the appropriate DOE EM official, with advice and recommendations concerning issues affecting the EM program. At the request of the Assistant Secretary or the Field Managers, the Board may provide advice and recommendations concerning the following EM site-specific issues: clean-up activities and environmental restoration; waste and nuclear materials management and disposition; excess facilities; future land use and long-term stewardship. The Board may also be asked to provide advice and recommendations on any EM program components, such as risk assessments, communications, and funding priorities.

Throughout the EM SSAB's history, several local boards have been created and dissolved. Reasons for the boards' dissolution vary: the completion of the EM mission at the local board's respective site, the local board's fulfillment of its mission, or the diminished effectiveness of the local board. These include:

- Fernald Citizens Advisory Board (Ohio)
- Monticello Site-Specific Advisory Board (Utah)
- Pantex Citizens Advisory Board (Texas).
- Rocky Flats Citizens Advisory Board (Colorado)
- Sandia Site-Specific Advisory Board (New Mexico)

The local boards organized under the EM SSAB Charter draw upon diverse community viewpoints and demographics to provide advice and recommendations to DOE. Some local boards are associated with DOE field offices for which EM is the landlord program, while other local boards are supported by field offices that are managed either by the Office of Science (SC), the National Nuclear Security Administration (NNSA), or the Office of Nuclear Energy (NE). However, in accordance with the EM SSAB Charter, the mission and operation of any given local board is unaltered whether the landlord is EM, SC, NNSA, or NE.

The goal of the EM SSAB is to involve a diverse group of community members in EM planning and decision-making processes for the cleanup of historic nuclear testing activities. The EM SSAB is only one component of EM's public participation program and is not intended to be an exclusive means of public participation. It is the policy of DOE and EM to conduct its programs in an open and responsive manner, thereby, encouraging and providing the opportunity for public participation in its planning and decision-making processes.

Roles and Responsibilities

A. DOE Headquarters

Office of the Secretary of Energy

The Secretary of Energy, per the requirements of FACA and the CFR, will:

- Comply with FACA and the CFR. **FACA § 8; 41 CFR § 102-3.105(a)**
- Issue administrative guidelines and management controls. **FACA § 8(a); 41 CFR § 102-3.105(b)**
- Designate a Committee Management Officer (CMO). **FACA § 8(b); 41 CFR § 102-3.105(c)**
- Ensure that meetings of the full advisory board are open to the public unless a written determination for closing any meeting is provided. **41 CFR § 102-3.105(d)**
- Review, at least annually, the need to continue the advisory committee. **41 CFR § 102-3.105(e)**
- Develop procedures to assure that advice and recommendations of the advisory committee is the result of independent judgment. **41 CFR § 102-3.105(g)**
- Assure that the interests and affiliations of advisory board members conform to applicable conflict of interest statutes and regulations. **41 CFR § 102-3.105(h)**
- Designate a Designated Federal Officer (DFO) for the advisory committee. **41 CFR § 102-3.105(i)**
- Provide opportunity for reasonable public participation in advisory committee activities. **41 CFR § 102-3.105(j)**

Office of the Executive Secretariat

The Executive Secretariat, per the requirements of FACA and the CFR, will:

- Ensure compliance with FACA. **FACA § 8(b)(1); 41 CFR § 102-3.115**
- Ensure that the interests and affiliations of advisory committee members are reviewed for conformance with applicable conflict of interest statues.
- Renew or terminate the EM SSAB Charter as appropriate. Annually, review the need to continue the EM SSAB. **41 CFR § 102-3.115**
- Process *Federal Register* notices for EM SSAB meetings. **FACA § 8(b)(1), 10(a)(2); 41 CFR § 102-3.115, 102-3.150(a)**.

DOE Manual 515.1-1 requires that the Executive Secretariat:

- Act as the Department's Committee Management Officer. **Manual § I.6.c**

- Review and concur on all advisory committee packages and appraise the need for or the continuation of advisory committees. **Manual § I.6.c**
- In coordination with heads of departmental elements and the Office of General Counsel, ensure that advisory committees are fairly balanced in membership in terms of points of view represented and functions to be performed. **Manual § I.6.c**
- Review and concur on all requests for closing part or all of an advisory committee meeting. **Manual § I.6.c**
- Maintain hard copies of the following advisory committee records. **Manual § VII.2.a:**
    - Committee establishment and renewal proposals
    - *Federal Register* notices
    - Detailed minutes and transcripts (if available) of all meetings
    - Committee reports.

Office of the Assistant General Counsel for General Law

The Manual requires that the Office of the Assistant General Counsel for General Law:

- Provide legal support for EM SSAB Charter renewal, charter termination, official appointments of Board members, and policy issues. **Manual § I.6.g**

To enhance compliance with FACA, the CFR, and DOE policy, the Office of the Assistant General Counsel for General Law will:

- Review operating procedures/bylaws submitted by the local boards to be approved by the DFO.

Office of the Assistant Secretary for Environmental Management (EM-1)

EM-1, per the requirements of FACA and the CFR, will:

- Ensure compliance with FACA and the CFR
- Issue administrative guidelines and management controls
- Appoint and remove Board members per delegated authority from the Secretary (in limited cases, this authority has been delegated to the DFO/field under section III.C of this guidance).

Office of Intergovernmental and Stakeholder Programs

The Office of Intergovernmental and Stakeholder Programs, per the requirements of FACA and the CFR, will:

- Manage and maintain a library of EM SSAB documentation, including annual reports, work plans, recommendations and responses, meeting minutes, and membership information. **FACA § 10(b), 12(a)**
- Provide the organizational location for the EM SSAB Designated Federal Officer (DFO), a position that is required for management of each Federal advisory board. (See responsibilities in Section C below.) **FACA § 10 (e); 41 CFR § 102-3.120**

DOE Manual 515.1-1 requires that the agency perform certain functions in administering its chartered advisory boards. The following functions are some of the assigned tasks to the Designated Federal Officer and the office in which she/he is located:

- Prepare *Federal Register* notices for local EM SSAB public meetings. **Manual § I.6.i**
- Ensure that conflict of interest regulations are followed. **Manual § I.6.i**
- Prepare, process, and obtain approval of EM SSAB appointment/reappointment membership packages. **Manual § I.6.i**
- Prepare, process, and obtain approval of EM SSAB Charter renewal. **Manual § I.6.i**
- Maintain EM SSAB records and documentation. **Manual § I.6.i**

To enhance compliance with FACA, the CFR, and DOE policy, the Designated Federal Officer will:

- Designate Deputy Designated Federal Officers (DDFOs) to be responsible for conducting day-to-day operations of the local site chapters of the EM SSAB (also known as "local boards"). A site may have two Co-DDFOs appointed at one time.
- Inform the EM SSAB members of Departmental processes, programs, projects, and activities directly affecting the Board's mission and purpose.
- Coordinate the review of local board operating procedures/bylaws with the Office of General Counsel to ensure that they follow FACA and other regulations and requirements. The DFO is responsible for giving final approval of local procedures/bylaws and the EM SSAB Policies Desk Reference.
- Coordinate the review and finalize the EM SSAB Annual Comprehensive Report to Congress.
- As required, coordinate HQ review of presentations to be given to the local boards by DOE employees, its contractors, or other representatives.

B. <u>DOE Field Offices</u>

Although DOE headquarters (HQ), through the Assistant Secretary for EM, the CMO and the EM SSAB DFO, is responsible for the EM SSAB, DOE field offices are accountable to DOE-HQ

for local board activities and act for EM HQ at the local level for the Deputy Designated Federal Officers, issued by the EM Designated Federal Officer.

The DOE field offices, per the requirements of FACA and the CFR, will:

- Ensure required records on local board costs and membership are maintained, as each agency needs to keep records that will fully disclose the disposition of any funds at the disposal of the local board. **FACA § 12(a); 41 CFR § 102-3.175(b); Manual § VII**
- Make records available to interested members of the public. **41 CFR § 102-3.170; Manual § VII.4**
- Recommend to the DFO, a DOE official (or officials) to serve as the DDFO for the local board. **FACA § 10(e); 41 CFR § 102-3.120**
- Ensure that DOE diversity goals are met through adequate outreach and recruitment efforts for membership. Board membership should reflect a diverse cross-section of those directly affected by, interested, and qualified as appropriate to the nature and functions of the local board. **41 CFR 102-3.60 (b)(3)**
- Provide adequate resources to enable the local board to carry out its functions as described in **FACA § 12 (b); 41 CFR § 102-3.95(a); Charter § 7; Manual § I.6.h**

To enhance compliance with FACA, the CFR, and DOE policy, the DOE field offices will:

- Ensure that member appointment and reappointment packages are submitted to EM Headquarters with nominations for the Assistant Secretary's appointment. Assistant Secretary approval of new and reappointed members is required, except for member appointments to fill an unexpired term or interim appointments. (See section III.C.)
- Provide timely responses to local board recommendations. Local office should strive to provide responses within 90 days.
- Review and, if satisfactory, submit local board operating procedures/bylaws to the DFO for review and coordination with the Office of the Assistant General Counsel for General Law to ensure that they follow FACA and other regulations and requirements.
- Develop and submit draft local annual work plans to the DFO for review and coordination with senior EM HQ leadership. Once EM HQ concurrence is received, the field office will provide final approval.
- Coordinate with DOE-HQ on EM SSAB issues and processes.

C. Designated Federal Officer (DFO)/Deputy Designated Federal Officer (DDFO)/Federal Coordinator

Under **FACA § 10(e) and 41 CFR § 102-3.120**, each federal advisory committee is required to have a DFO, in this case a DOE employee who works closely with the Board. The DFO for the EM SSAB is in the Office of Intergovernmental and Stakeholder Programs. The DFO may designate to local DOE field site employees the responsibility to provide day-to-day management of the boards. These employees are known as DDFOs. A Federal Coordinator may be appointed by the appropriate site official to assist the DDFO in board activities, but this position cannot fulfil the responsibilities assigned to the DFO/DDFO under the Federal Advisory Committee Act (FACA). Federal Coordinators generally facilitate the activities of the local board, bring policy-related and other key issues to the attention of the DDFO, and provide administrative and some managerial support for the board. For instance, some Federal Coordinators work with the board and, particularly the Chair, on agenda creation, presentation and material preparation, and other duties as they are capable. While contractor staff may assist in carrying out described responsibilities, the federal employees (the DDFO, in particular) are accountable for board management.

The DFO/DDFO, per the requirements of FACA and the CFR, will:

- Call for and attend board meetings. **FACA § 10(e)&(f), 41 CFR § 102-3.120(a),(c)&(e)**
- Adjourn board meetings if it is in the public interest. **FACA § 10(e), 41 CFR § 102-3.120(d)**
- Approve meeting agendas. **FACA § 10(f), 41 CFR § 102-3.120(b)**
- Ensure required records on board costs and membership are maintained, as each agency needs to keep records that will fully disclose the disposition of any funds at the disposal of the board. **FACA § 12(a); 41 CFR § 102-3.175(b)**
- Ensure that detailed minutes of meetings, containing items specified in **41 CFR § 102-3.165**, are prepared and duly certified. **FACA § 10(c), 41 CFR § 102-3.165**

DOE Manual 515.1-1 requires that the DFO/DDFO, with Federal Coordinator assistance, as appropriate,

- Ensure that conflict of interest regulations are followed. **DOE Manual § IV.6**
- Arrange for reimbursement of travel expenses as necessary. **DOE Manual § V.6.a.(2).(f)**
- Ensure that each board meeting is held at a reasonable time and in a manner or place reasonably accessible to the public. **DOE Manual § V.3**

To enhance compliance with FACA, the CFR, and DOE policy, the DFO/DDFO/Federal Coordinator will:

- Complete Federal Advisory Committee Act 101 training prior to conducting DDFO/Federal Coordinator activities.
- Complete Federal Advisory Committee Act 201 training within 6 months of being appointed.
- Attend/participate in any board activity where board business will be conducted. This includes administrative meetings and subcommittee meetings.
- Encourage the board to listen carefully to all points of view and to work toward developing group advice.
- Provide information for *Federal Register* notices within the required timeframe to the Office of Intergovernmental and Stakeholder Programs and work closely with field site Public Affairs to issue broad local notification about EM SSAB meetings and activities to, e.g., the local media, public reading rooms, and public libraries.
- Ensure that the board has the opportunity to offer advice and recommendations on work plan items. To support this, the DFO/DDFO/Federal Coordinator will
    - Ensure that EM's decision-making process is clearly communicated.
    - Inform the board members of EM programs, projects, and activities directly affecting the EM SSAB mission and purpose.
    - Work closely and cooperatively with the board to prioritize issues.
    - Work with site management, the DFO, and the local board to develop annual work plans and to approve those work plans on the agency's behalf.

D. EM SSAB Members

The success and effectiveness of the EM SSAB depends largely upon the interest, commitment, input and integrity of its members. EM SSAB members are expected to

- Attend meetings and participate in an open, constructive, and respectful manner.
- Provide advice and recommendations to DOE decision-makers at the field and DOE-HQ levels on relevant EM issues.
- Review, evaluate, and comment on EM documents and other materials.
- Members who are appointed to represent a specific organization are expected to report to those groups on board activities and issues.
- Share with their community information on board activities, invite public participation and to promote interest for potential new members. These kinds of activities, however, are voluntary and are not a requirement for membership.

- When sharing their experiences with other community groups about their position on a local board, speak and/or participate in their personal capacities, not representing the local board. Members asked to participate in community events in their official capacity as a board member must consult with the local board DDFO.

Operating a Local Site-Specific Advisory Board

A. Public Participation and Record-Keeping

Public Participation

In accordance with FACA and the CFR

- Each advisory board meeting shall be open to the public. **FACA § 10(a)(1)**
    - Although subject matter may indicate the need to close a meeting (e.g., for security considerations), **FACA § 10(d)** requires the head of the agency to which the committee reports to approve, in writing, closed sessions of the board. **41 CFR § 102-3.155**
- Each meeting shall be held at a reasonable time and in a manner or place reasonably accessible to the public at facilities that are readily accessible to and usable by persons with disabilities. **41 CFR § 102-3.140(a**)
- Any member of the public shall be permitted to file a written statement with the board. **41 CFR § 102-3.140(c)**
- Any member of the public shall be permitted to speak at designated times. **FACA § 10(a)(3); 41 CFR § 102-3.140(d); DOE Manual § V.3.a.(2).(b)**
- Any meeting conducted in whole or part by teleconference, videoconference, the Internet or other electronic medium must meet the requirements of **41 CFR** Subpart D; **41 CFR § 102-3.140(e)**
- Subcommittees may be formed for each local site chapter of the EM SSAB with the approval of the DFO or DDFO. The objectives of the subcommittees are to make recommendations to the full local board with respect to matters which are related to the responsibilities of the full local board. Such subcommittees or workgroups may not work independently and must report their recommendations and advice to the full local board for deliberation and discussion. Subcommittees have no authority to make decisions on behalf of the local board, nor can they report directly to DOE.

To enhance compliance with FACA, the CFR, and DOE policy, EM requires that

- Subcommittee meetings are open to the public and should be noted as such on the local board website. In addition, at least one public comment period should be set

aside during the meeting. At the discretion of the local site management, members of the public may participate in subcommittee meetings in accordance with the EM SSAB Charter but cannot hold leadership roles.

In accordance with the DOE Manual,

- Media representatives attending and reporting on meetings are at liberty to use tape recorders, cameras, and electronic equipment for broadcast purposes. The use of such equipment must not interfere with the orderly conduct of the meeting. To preclude any disruption, news media personnel should be encouraged to position all equipment before the meeting and to defer removal until an ample intermission period or meeting adjournment. **DOE Manual § V.3.b.**

Public Notification

In accordance with FACA and the CFR,

- Notice must appear in the *Federal Register* at least 15 calendar days prior to EM SSAB public meetings. **FACA § 10(a)(2) and 41 CFR § 102-3.150(a).**
- All meetings shall have the advance approval and be attended by the DFO and/or DDFO. **FACA § 10(e)&(f); 41 CFR § 102-3.120(a)&(c)**

In accordance with the DOE Manual,

- Local DOE operations, field, or area offices must ensure that *Federal Register* notices are sent to the Office of Intergovernmental and Stakeholder Programs in timely manner. Whenever possible, 37-day notice will be given. **DOE Manual § V.3.c**

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- *Federal Register* notices also include the locations where meeting minutes will be made available to the public, an individual to contact to acquire copies of the minutes, and information on the public comment period.
- Meetings are publicized on the board website and in other places that are likely to attract public participation.
- Local DOE operations, field, or area offices ensure that timely notification is provided to the Office of Intergovernmental and Stakeholder Programs in the event a public meeting has been cancelled following the original submission of the *Federal Register* notice.

Minutes and Records

In accordance with FACA and the CFR,

- Detailed minutes of each advisory committee meeting shall be kept on file**. FACA §10(c), 41 CFR § 102-3.165**
- The DDFO must ensure that the meeting minutes are certified by the Chair within 90 calendar days of the meeting to which they relate (**41 CFR § 102-3.165)**
- The local boards and the field offices must maintain in a single location for public inspection and copying copies of records, reports, minutes, transcripts, drafts, working papers, appendixes, studies, agenda, or other documents which were made available to or prepared for or by each local board. **FACA § 10(b); 41 CFR § 102-3.170**
- The field offices and the DDFOs must keep records to fully disclose the disposition of any funds which may be at the disposal of its advisory committees and the nature and extent of their activities. **FACA § 12(a); 41 CFR § 102-3.175(b)**
    - The multi-site structure of the EM SSAB necessitates that fiscal records be developed and maintained at local sites.

In accordance with DOE Manual 515.1-1,

- The minutes must include names of any member who may have recused themselves from a meeting or a portion of it and their reason(s) for doing so. **DOE Manual § V.5.a.(2)**
- Board minutes must be posted on the board webpage within 90 days after the meeting.

To enhance compliance with FACA, the CFR and DOE policy, EM requires that the following electronic submissions be made:

- One copy of all local board reports, minutes, transcripts (where applicable), recommendations and responses, self-evaluations, and EM SSAB work plans to the local reading room and/or other appropriate information resource center(s).
- One copy of each EM SSAB recommendation and the EM response to the DFO at DOE-HQ for files.
- One copy of minutes, annual reports, self-evaluations, and work plans to the DFO at DOE-HQ for files.

Subcommittee and Administrative Meetings

Subcommittees (also referred to locally as “committees”) of the local boards are not required to comply with the provisions of FACA so long as the full local board deliberates on any recommendations before they are approved. **41 CFR § 102-3.35 and 102-3.145.**

The objectives of the subcommittees are to make recommendations to the full local board with respect to particular matters which are related to the responsibilities of the full local board.

Subcommittees may not work independently and must report their recommendations and advice to the full local board for deliberation and discussions.

Subcommittees have no authority to make decisions on behalf of the local board, nor can they report directly to DOE.

To ensure transparency and open communication, EM requires that

- Subcommittee formation must be approved by the DFO/DDFO.
- The DDFO must attend, or designate an EM federal official to be present, during any board activity where board business will be conducted. This includes administrative and subcommittee meetings.
- Subcommittee meetings are open to the public and members of the public can serve on subcommittees.
    - There must be more appointed board members than members of the public serving on the committee.
- Only appointed Board members may serve in leadership roles.
- Subcommittee meetings should be listed on the local board website but do not require a Federal Register notice unless a quorum of the board is expected.
- At least one public comment period should be set aside during the meeting.
- Meeting notes should be developed to capture the discussion and proposed products developed during the meeting. The notes do not have to be published but should be made available if requested.

<u>Annual Comprehensive Review to Headquarters</u>

The DFO is required each year to provide to the GSA Committee Management Secretariat (through the DOE Committee Management Office) an Annual Comprehensive Review (formerly Annual Report) on the activities of the EM SSAB during the preceding fiscal year. **DOE Manual VII. 3(b)**. Accordingly, local EM SSAB DDFOs and Federal Coordinators must submit each local board's data to the DFO within one month of the close of each fiscal year.

In accordance with FACA and the CFR,

- An informational report from DOE is provided to the GSA at the close of each fiscal year. **41 CFR § 102.105(e) and 102-3.175(b)**.
    - The report includes

- The activities, status, and changes in EM SSAB composition during the fiscal year
- The dates of EM SSAB meetings and names and occupations of its members
- The estimated annual cost to DOE to fund, service, and supply the EM SSAB
- Any reports and recommendations submitted by the EM SSAB.

In accordance with the DOE Manual 515.1-1,

- The CMO will issue instructions to the DFO regarding reporting requirements, procedures, and submission dates. The CMO will then be responsible for coordinating the Annual Comprehensive Review. **DOE Manual § VII.3.b.2**
- The DFO, and subsequently the DDFO, is responsible for accurately and completely compiling the requested information by the due date assigned by the CMO. **DOE Manual § VII.3.b.2**

B. Board Recommendations and DOE Responses

FACA, the CFR, and the DOE Manual do not provide specific parameters for Board recommendations or DOE responses. The CFR does suggest that EM continually seek feedback from the Board members and the public regarding the effectiveness of the Board's activities. At regular intervals, EM should communicate to the Board members how their advice has affected DOE programs and decision-making. **41 CFR § 102-3.95(e)**

To enhance compliance with FACA, the CFR, and DOE policy, EM requires that

- In general, DOE should strive to reply to site-specific recommendations within 90 days of receipt. Responses should be in writing. A copy of any recommendation and response should be sent to the Office of Intergovernmental and Stakeholder Programs.

DOE written responses should include the following:

- A clear statement of acceptance or rejection of the recommendation, in whole or in part;
- If the recommendation is accepted in whole or in part, a statement about how the changes will be implemented and in what time frame;
- If the recommendation is rejected in whole or in part, a substantive reason for the decision, as well as possible alternatives for addressing the concerns or issues raised in the recommendation; and
- If unresolved issues still remain, DOE may indicate this in written correspondence to the local EM SSAB with the goal of establishing (or continuing) a near-term dialogue.

C. Membership

Membership Composition

FACA requires that membership be fairly balanced in terms of views represented and functions to be performed. In this regard, local sites must make vigorous outreach efforts and be able to demonstrate that they have attempted to recruit members from all segments of the communities directly affected by EM site activities. In order to comply with both FACA and departmental policies regarding balance and diversity requirements of advisory committees, the DOE Offices of EM, Management (MA), and GC closely scrutinize Board membership. Additionally, a Membership Balance Plan has been established that provides specifics on board point of views, balance factors, and candidate identification process.

In accordance with FACA and the CFR,

- The Board must be "fairly balanced in terms of the points of view represented and functions to be performed." **41 CFR § 102-3.60(b)(3), Appendix A to Subpart B**

In accordance with the DOE Manual 515.1-1,

- In selecting membership nominees, attention must be given to the conflict of interest considerations discussed in section IV of the guidance. Pursuant to DOE policy, employees of Management and Operating (M&O) and Management and Integration (M&I) DOE contractors may be appointed only when necessary to achieve balance or diversity on a local board. Such individuals must receive a written waiver from the DOE Committee Management Officer. **DOE Manual § IV. 3.b**

The EM SSAB Charter states that "Members shall be from communities directly affected by EM Program activities and reflect a full diversity of viewpoints including environmental, public health, civic groups, workforce, local and Tribal government, education, local businesses, economic development; and demographics such as ethnicity, age, and gender." **EM SSAB Charter § 12. d.**

In order to achieve balance required by FACA, the CFR and DOE Policy, EM nomination and appointment of members shall be accomplished using procedures designed to ensure a diverse board membership and a balance of representative viewpoints, including, but not limited to, the following:

- Information available from the U.S. Census Bureau may serve as a source for seeking to have board membership reflect the diversity in the affected community and region. Board members are typically drawn from stakeholder groups and organizations or have specific viewpoints, such as
    - Residence in an area potentially affected by EM cleanup activities

    - Local governments
    - Tribal governments
    - Environmental and public health organizations
    - Labor organizations
    - Educators
    - Tribal, Hispanic and other Minority organizations
    - Business groups
    - Civic groups. **DOE Manual § IV. 3.a2.**
- Federal, state, tribal and local government officials are encouraged to recommend prospective members for the local EM SSAB to EM.
- The Assistant Secretary or DOE Field Managers may request that other federal, state, local, or tribal governments name liaisons to the EM SSAB to provide information and represent their agency's interests at local meetings. Liaisons may attend and participate in board meetings, but do not have voting privileges and are not included in a quorum.

<u>Member Appointment and Reappointment</u>

In accordance with FACA and the CFR,

- Membership terms are at the sole discretion of the appointing or inviting agency. **41 CFR § 102-3.130(a)**

In accordance with the DOE Manual 515.1-1,

- Appointments should be staggered. **DOE Manual § IV.2.e.1**
- GC and the CMO will review nominations to the Board to ensure compliance with FACA requirements, as well as GSA and departmental requirements. **DOE Manual § I.6.g, IV.2.b**
- EM must include the following information in member nomination packages (see **DOE Manual § IV. 5.a**):
    - A memorandum from the field manager to the Assistant Secretary for EM recommending the nominees for membership;
    - A copy of the current charter;
    - Up-to-date biographies for all proposed and continuing members;
    - The names and companies of DOE M&O and M&I contractor employees requiring letters of exception to serve on the Board;
    - The names and companies of other DOE contractor employees or consultants proposed to serve on the Board;
    - Recruitment efforts conducted to attract new members in the current membership drive;
    - Completed membership criteria matrices for proposed and current members; and
    - Letters of invitation to each member for signature by the Assistant Secretary.

- The Secretary of Energy has delegated authority for EM SSAB member appointments and reappointments to the Assistant Secretary for EM. In limited cases (specifically, for site manager appointments to replace members who are not serving out their terms) and with prior coordination with the EM Office of Intergovernmental and Stakeholder Programs and the DOE Office of General Counsel, the authority to appoint has been delegated to the Field. (See § III.C.)
- Appointments and reappointments require concurrence from the Office of Intergovernmental and Stakeholder Programs, GC, MA, and the CMO. **DOE Manual § IV.5.b**
- DOE retains appointment and removal authority. **DOE Manual § IV.2.g**

Delegated Authority to the Field for Member Appointments

To enhance compliance with FACA, the CFR and DOE policy, the Assistant Secretary for EM has delegated limited authority to appoint new EM SSAB members to the DOE EM field office, with prior coordination with the Office of Intergovernmental and Stakeholder Programs and the Office of General Counsel.

- The field can replace members who have resigned with time remaining in their membership terms under the following terms and conditions:
  - The appointments can be made *only* for the remainder of the previous member's term
  - No more than 20% of members can be appointed by any one site in any given calendar year
  - When appointing new members under this delegated authority, DOE field office managers must comply with FACA, GSA and DOE regulations, including appropriate conflict-of-interest restrictions.
- The DFO must be advised of all such appointments, and all relevant information must be provided (i.e., name, contact information, biography, and matrix information) in a timely manner. The DFO and GC must concur on the site appointment.

Delegated Authority to the DFO to Appoint Interim Members

To ensure functionality of the board, current members who have been formally proposed for reappointment to the Assistant Secretary in accordance with DOE policy may continue to serve in an interim status for up to 90 calendar days after their current term expires. Individuals in interim membership status must continue to abide by all laws and policies applicable to their membership on the board. All board members serve at the pleasure of the Secretary, and any membership on the board may be terminated without notice.

Removal and Resignation of Members

Local offices may recommend to the Designated Federal Officer that local board members be removed from the EM SSAB as deemed necessary to carry out the mission of the EM SSAB. As members serve at the pleasure of the Assistant Secretary for EM, recommendations for removal must be approved by the Assistant Secretary, after concurrence by the Designated Federal Officer. (See section II.D of this guidance for EM SSAB member roles and responsibilities.)

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- Members who wish to resign from the Board are requested to submit their resignation in writing to the local DDFO, the local EM SSAB Chair. The DDFO is responsible for notifying the DFO in the Office of Intergovernmental and Stakeholder Programs of the resignation.

Community Education and Member Recruitment

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- Field office staff ensure the community is made aware of and engaged in local board activities.
- DDFOs and Federal Coordinators ensure that board activities are appropriately coordinated with other field office public involvement activities.
- The board members represent a full diversity of viewpoints and demographics that are reflective of the community from which the board draws its members. Recruitment efforts should be targeted to achieve diversity through consideration of the communities affected by DOE's cleanup activities and the individuals who reside in those communities.
- Community education and membership recruitment efforts may include, but are not limited to: new media tools, targeted mailings, speaking engagements, recruiting tables at public events, notices in newsletters, press releases, advertisements in local and regional papers, advertisements on websites, and radio and television advertisements.

II. Conflict of Interest

Members of the EM SSAB are not Federal employees. However, in order to protect the integrity of the EM SSAB and the credibility of its work product, as a matter of policy, DOE requests that representative members be recused from working on matters before the advisory committee in which they and others (e.g. some family members and entities they are affiliated with) have a direct financial interest.

Per DOE M 515.1-1, Advisory Committee Management Program, employees of DOE site/facility management and operating or management and Integration contractors are ineligible for advisory committee membership. Appointing, or reappointing employees, of these entities as local board members requires a memorandum of exception that provides a justification for the appointment, and why the appointment will not result in a conflict of interest; and must be included in the board's membership package. The CMO has the authority to approve a memorandum of exception.

To enhance compliance with FACA, the CFR and DOE policy, it is EM policy that the appointment or reappointment of employees of prime contractors (defined as a contractor with a direct contract with the DOE Office of EM) is also subject to the above requirements of DOE M 515.1-1.

If such a member is appointed, the DFO and local site DDFO are required to ensure that the appointment of this member will not result in a conflict of interest or appearance of such conflict, including ensuring that the member be recused from voting on issues that would have a direct and predictable effect on his/her financial interests resulting from any employment interests.

All members should advise the local board chair and the DDFO of a potential or actual conflict in advance of any discussion of such. Meeting minutes must contain the names of any members who recused themselves from the meeting, the reason for the recusal and a statement that they did not participate in the matter from which they were recused, or that they were not present during the discussion.

The Assistant General Counsel for General Law reviews new member qualifications for conflict-of-interest issues and proposed mid-term replacements (section III.C.3 of the guidance). If a proposed mid-term appointment exhibits a potential conflict or conflict of interest, the local DDFO must provide any relevant materials and consult with the Designated Federal Officer and the Office of the Assistant General Counsel for General Law if necessary.

All Board members must adhere to the following general conflict-of-interest requirements:

- A member shall refrain from any use of his or her membership, which is, or gives the appearance of being, motivated by the desire for private, professional, or financial gain;
- A member shall not use either directly or indirectly for private or professional gain for him/herself or for his/her represented group any inside information obtained as a result of advisory committee service;
- A member shall not use his or her position in any way to coerce or give the appearance of coercing another individual to provide a financial benefit to the member with the conflict of interest or any person with whom that member has family, business, or financial relationships.

III. Funding and Other Support

In 1997, funding of the local boards under the EM SSAB became the responsibility of the DOE field offices. Accordingly, DOE field office managers provide adequate funding to local boards to enable them to operate efficiently and effectively.

In accordance with FACA and the CFR,

- DOE will provide adequate support services as necessary. **FACA § 12(b); 41 CFR § 102-3.95(a)**

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- EM SSAB procurement mechanisms will be structured and managed to ensure proper stewardship of this stakeholder activity and to increase accountability and visibility of resources provided and subsequently used. The three options for funding administrative support for the EM SSAB are:
    - Non-Profit Organization (Section 501(c) of the IRS Code)
    - Direct DOE Federal Management and Support
    - Support Services Contract with a Section 8(a) Small Business.

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- Adequate support services may include, but are not limited to
    - Office space
    - Necessary supplies and equipment
    - Federal staff support
    - Coordination of meetings and agendas
    - Support monitoring emerging issues and activities
    - Funding for an independent facilitator if necessary to ensure that Board members set and reach objectives, maintain focus, work as a team, strive for consensus, and operate at maximum efficiency and
    - Funding for independent technical reviews of key issues or ongoing technical assistance to the board. However, field offices should ensure that technical assistance funding is used to complement, rather than duplicate, the technical programs of DOE and its regulating agencies.
- After the annual work plan is approved by the DDFO, the DOE operations, field, or area offices should provide sufficient funding to carry out the work plan.
- DDFOs and Federal Coordinators should report the level of funding, including technical assistance funding, to the Designated Federal Officer in the form of an Annual Comprehensive Review of all EM SSAB activities at the end of each fiscal year.

VI. Compensation and Travel Expenses

A. Board Service Is Not Compensable

The EM SSAB Charter provides that: "Members of the Board serve without compensation; however, members may be reimbursed in accordance with the Federal Travel Regulations for authorized travel and per diem expenses incurred while participating in Board activities."

In accordance with the DOE Manual 515.1-1,

- (Coverage) Members will be reimbursed for travel expenses and per diem only when they are on site approved board business while away from their residence or regular places of business. **DOE Manual *§* VI.3.a**
- (Tickets) Generally, DOE will provide members with a Government fare common carrier ticket. If DOE is unable to provide a member with a common carrier ticket, the member may use personal means to purchase transportation, but when costs exceed $100, a senior DOE official is required to review the circumstances of the purchase before reimbursement, which may not exceed the Government authorized fare. **DOE Manual § VI. 3.b**
- (Major travel to and from meetings) Airfare is limited to the regular, round trip, coach-class fare or, when available, Government contract airlines between the member's residence or regular place of business and the meeting site. Train travel is authorized when it is advantageous to the Government. A member may also travel to and from the meeting in his/her private vehicle, and DOE will reimburse the member at the mileage allowance rate and for fees. **DOE Manual § VI.3.c**
- DOE will reimburse members for lodging, meals, and incidental subsistence expenses associated with site approved travel for meetings using a per diem allowance (i.e., a daily payment instead of reimbursement for actual expenses). **DOE Manual § VI.3.e**

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- Members with questions on travel requirements or reimbursements should consult with the local field office prior to commencing travel or completing the reimbursement voucher.
- In addition, DDFOs and Federal Coordinators are responsible for determining, after consultation with appropriate offices and/or individual at their field sites, whether it is appropriate to fund official travel for non-members to specific EM SSAB-related activities, and, if so, how it should be funded.
- Funding and compensation for travel is considered part of the annual budget allocation for the local board.

VII. Food and Refreshments

The Committee Management Secretariat at US General Services Administration does not have any government-wide guidance on providing refreshments at government-sponsored meetings or conferences. The legality of decisions to provide light refreshment should be determined by agency counsel on an event by event and department by department basis.

In general, a Federal agency or department may not use appropriated funds to purchase items such as food and refreshments because they are considered personal expenses. Although desirable, serving such items at meetings is not considered a necessary expense and thus it cannot be provided with appropriated funds.

There are limited situations, defined by specific statutory authority, in which the provision of food by agencies is permitted. For example, Federal Travel Regulation (FTR) allows for the Department of Energy (DOE) to pay EM SSAB members a per diem if the member is in a travel status. In addition, food and refreshments may be provided if the meeting facility provides the food at no added cost to the government. Some hotels include food and refreshments in the cost of renting the facility and the hotel does not itemize this cost separately on the bill. In this situation, the fee for the rental facility must be "all-inclusive," meaning it must remain the same whether or not the food is accepted. Accordingly, if the invoice for the rental facility includes a separate line item regarding food or refreshments it may not be paid for and must be removed from the invoice.

There are times when non-Federal entities, including contractors, offer to donate or pay for the food and refreshment at EM SSAB meetings. Federal employees are reminded that the Federal ethics laws prevent them from accepting a gift that is provided by a prohibited source (e.g., contractor) or because of their official position. This same restriction has been extended by way of DOE policy to EM SSAB members. Food and refreshments are considered gifts. There are exceptions to this rule. The most applicable exception that allows Federal employees and EM SSAB members to accept food and refreshments is when the per person cost of the food and refreshments is less than $20 per occasion and does not exceed $50 from the same source in aggregate in the calendar year. As a reminder, contractors might offer to pay the costs of food and refreshments at EM SSAB meetings; however, the contractor might submit this expense to DOE for reimbursement. Consistent with the authorities above, DOE is not authorized to reimburse a contractor for food and refreshments at EM SSAB meetings except in very limited circumstances.

This guidance applies to both public meetings, subcommittee meetings, and meetings that are considered administrative and preparatory.

VIII. Board Termination

The EM SSAB Charter provides that the Board terminates two years from the most recent Charter filing date and may not meet or take any action if the Charter is not renewed biennially.

- Criteria for termination of the EM SSAB are contained in **FACA § 14, 41 CFR § 102-3.55(a) and DOE M 515.1-1**

To enhance compliance with FACA, the CFR and DOE policy, EM requires that

- Once the EM mission is completed at a site where there is a local board under the EM SSAB Charter, the local board will be terminated.
- Other criteria for termination include the criteria in FACA and the CFR. The decision to terminate a committee may include a determination that the advice is no longer essential to EM or is no longer in the public interest; that the committee has not been staffed for one year; or that the committee has not met for a two-year period. **DOE Manual § III.8.a**
- If the chartered purpose for a local board cannot be fulfilled, the DDFO, in consultation with DFO and members of the local EM SSAB, will prepare a timetable for disestablishing the local board. The resulting termination package will be sent through the same concurrence chain as a member appointment package.
- The package, to be signed by the field office manager at the local board's site, should note the reasons for the board's suggested termination, as well as its accomplishments over the years.

In accordance with the DOE Manual,

- Letters of appreciation from the Assistant Secretary to the Board members for services rendered must be included in the termination package. **DOE Manual § III.8.b.1**

VIII. Acronyms & Definitions

CFO Chief Financial Officer
CFR Code of Federal Regulations
CMO Committee Management Officer
DDFO Deputy Designated Federal Officer
DFO Designated Federal Officer
DOE U.S. Department of Energy
EM Office of Environmental Management
EM SSAB Environmental Management Site-Specific Advisory Board
EM-1 Assistant Secretary for EM
EPA Environmental Protection Agency
FACA Federal Advisory Committee Act
FTR Federal Travel Regulations
GC General Counsel
GSA General Services Administration
MA Office of Management
NE Office of Nuclear Energy
NNSA National Nuclear Security Administration
MA Office of Management and Administration
OMB Office of Management and Budget
SC Office of Science

Advisory Committee: any committee, board, commission, council, conference, panel, task force, or other similar group, or any subcommittee or other subgroup thereof which is established by statute, established or utilized by the President, or established or utilized by one or more agencies, in the interest of obtaining advice or recommendations for the President or one or more agencies or officers of the Federal Government. **FACA § 3(2)**

EM SSAB Charter: The governing document for the EM SSAB, including all local boards, which is renewed biannually and approved by the CMO.

DOE Field Office: Any DOE area, field, and site offices, and/or business centers located outside the Washington, D.C. area.

DOE Manual: "Advisory Committee Management Program" Manual, DOE M 515.1-1, 10/22/07

Subcommittee: any subset, task force, panel, or other similar group made up of appointed members of the board that gathers to discuss board-related topics or to conduct board business.

IX. Applicable Law, Regulations, Orders and Policies

Statutes: Federal Advisory Committee Act (FACA), 5 U.S.C. App. 2 (1997) (original version at Pub. L. No. 92-463, 86 Stat. 770 (1972))

http://www.gsa.gov/portal/content/104514

Regulations: Federal Advisory Committee Management, 41 CFR Part 102-3. See also: 52 Fed. Reg. 45926 (1987). http://www.access.gpo.gov/nara/cfr/waisidx_99/41cfr105-54_99.html

Specific Agency Regulations: Office of Human Resources and Administration, U.S. Department of Energy (DOE), Pub. No. DOE M 515.1-1, *Advisory Committee Management Program* (2007) (DOE Manual). https://www.directives.doe.gov/directives/0515.1-DManual-1/view

Charter: Office of Environmental Management, Office of Intergovernmental and Stakeholder Programs, U.S. Department of Energy Amended Charter: Environmental Management Site-Specific Advisory Board (2022). http://energy.gov/sites/prod/files/em/EMSSABCharter-FINAL.pdf

Membership Balance Plan: Contact the Office of Environmental Management, Office of Intergovernmental and Stakeholder Programs

Delegations:

- Department of Energy Delegation Order No. 00-002.00B to the Under Secretary for Energy, Science, and Environment (October 4, 2004).
- https://www.directives.doe.gov/sdoa/delegations-documents/002.00B/view

- Department of Energy Re-delegation Order No. 00-002.03B to the Assistant Secretary for Environmental Management (January 29, 2007).
- https://www.directives.doe.gov/sdoa/delegations-documents/002.03B/view

EM SSAB Member Code of Conduct

The success and effectiveness of this board depends largely upon the interest, commitment, input, and integrity of its members. All EM SSAB members are expected to attend meetings and participate in an open, constructive, and respectful manner.

The following code of conduct more clearly spells out the expectations of all EM SSAB members. Adherence will be considered during the reappointment process. Repeated non-compliance with the code of conduct will be considered detrimental to the group's purpose, and member removal may be sought by the Deputy Designated Federal Officer (DDFO).

- Adhere to your board's attendance policy. In the event of an absence, notify the DDFO or Federal Coordinator in advance. Be prompt in arriving to the meeting and in returning from breaks.
- Treat members with respect both during the board meetings and outside of the meeting. Be respectful of other people's ideas or situations when they talk.
- Talk one at a time, waiting to be recognized by the Chair or designated facilitator. Each member has the right to participate without any one dominating the discussion.
- Stay on the topic being discussed, in accordance with the annual work plan.
- Address any concerns about the discussion or the meeting with the Chair or facilitator. It is the Chair's job to bring the meeting to order. If you feel you can't speak about your issues or concerns during the meeting, you can talk to the DDFO, Federal Coordinator, or designated facilitator after the meeting or during a break.
- Avoid techniques such as "bargaining" and acquiescence simply to avoid conflict and reach agreement. Differences of opinion are natural, expected, and lead to better solutions. Avoid engaging in parliamentary maneuvering (e.g., trading votes) as this is in direct opposition to the board's purpose.
- Avoid responding directly to public comments during this period at board meetings. Any comments, questions, or requests regarding public comments should be directed to the Chair or the DDFO for disposition.
- Don't use your title or represent the board outside of an EM SSAB meeting.
- Report any potential conflicts of interest – even something that gives the appearance of a conflict of interest – to the DDFO or Federal Coordinator. Conflicts of interest are defined as any area that has direct and predictable effect on the companies, organizations, agencies, or other entities with whom you or a member of your family are personally associated or in which you have a financial interest. The DDFO will discuss the creation a recusal plan when it determined there is a conflict of interest or the appearance of a conflict of interest.
- To maintain the credibility of the Board's work product, if you suspect that an outside entity is attempting to influence your decisions, please report this immediately to your DDFO or Federal Coordinator.

July 2018

Abbreviations/Acronyms List for Environmental Management Projects

AM – action memorandum
ACM – asbestos containing material
ARARs – Applicable or Relevant and Appropriate Requirements
ARRA – American Recovery and Reinvestment Act
BCV – Bear Creek Valley
BG – burial grounds
BV - Bethel Valley
CARAR – Capacity Assurance Remedial Action Report
CART - carbon steel casing dollies
CBFO – Carlsbad Field Office
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
CD – critical decision
CH – contact handled
CNF – Central Neutralization Facility
COLEX – column exchange
CS – construction start
CY – calendar year
D&D – decontamination and decommissioning
DARA – Disposal Area Remedial Action
DDFO – Deputy Designated Federal Officer
DNAPL – Dense Non-Aqueous Phase Liquids
DOE – Department of Energy
DSA – documented safety analysis
DQO – data quality objective
EE/CA – engineering evaluation/cost analysis
EFPC – East Fork Poplar Creek
EM – environmental management
EMDF – Environmental Management Disposal Facility
EMWMF – Environmental Management Waste Management Facility
EPA – Environmental Protection Agency
EQAB – Environmental Quality Advisory Board
ETTP – East Tennessee Technology Park
EU – exposure unit
EV – earned value
FACA – Federal Advisory Committee Act
FCAP - Facilities Capability Assurance Program
FFA – Federal Facility Agreement
FFS – Focused Feasibility Study
FPD – federal project director
FY – fiscal year
GIS – geographical information system

GW – groundwater
GWTS – groundwater treatability study
HQ – Headquarters
HRE – Homogenous Reactor Experiment
IROD – Interim Record of Decision
ISD - In-Situ Decommissioning
LEFPC – Lower East Fork Poplar Creek
LGWO – Liquid and Gaseous Waste Operations
LLW – low-level waste
MLLW – mixed low-level waste
MSRE – Molten Salt Reactor Experiment
MTF – Mercury Treatment Facility
MV – Melton Valley
NaF – sodium fluoride
NDA – non-destructive assay
NEPA – National Environmental Policy Act
NNSS – Nevada National Security Site (new name of Nevada Test Site, formerly NTS)
NPDES – National Pollutant Discharge Elimination System
NPL – National Priorities List
OR – Oak Ridge
ORGDP – Oak Ridge Gaseous Diffusion Plant
OREIS – Oak Ridge Environmental Information System
OREM – Oak Ridge Office of Environmental Management
ORNL – Oak Ridge National Laboratory
ORO – Oak Ridge Office
OROP - Oak Ridge Oxide Processing
ORR – Oak Ridge Reservation
ORRR – Oak Ridge Research Reactor
ORRS – operational readiness reviews
PaR – trade name of remote manipulator at the Transuranic Waste Processing Center
PCB - polychlorinated biphenyls
PCCR – Phased Construction Completion Report
PM – project manager
PP – Proposed Plan
PPE – Personal Protective Equipment
QAPP – Quality Assurance Project Plan
RA – remedial action
RAR – Remedial Action Report
RAWP – Remedial Action Work Plan
RCRA – Resource Conservation Recovery Act
RDR – Remedial Design Report
RDWP – Remedial Design Work Plan
RER – Remediation Effectiveness Report

RFI – Request for Information
RGRS – Reactive Gas Removal System
RH – remote handled
RI/FS – Remedial Investigation/Feasibility Study
RIWP – Remedial Investigation Work Plan
RmAR – Removal Action Report
RmAWP – Removal Action Work Plan
ROD – Record of Decision
RSE – Remedial Site Evaluation
RUBB – trade name of a temporary, fabric covered enclosure
S&M – surveillance and maintenance
SAP – sampling analysis plan
SEC – Safety and Ecology Corp.
SEP – supplemental environmental project
STP – site treatment plan
SW – surface water
SWSA – solid waste storage area
Tc – technetium
TC – time critical
TDEC – Tennessee Department of Environment and Conservation
TRU – transuranic, an artificially made, radioactive element that has an atomic number higher than uranium in the periodic table
TSCA – Toxic Substances Control Act
TWPC – Transuranic Waste Processing Center
U – uranium
UEFPC – Upper East Fork Poplar Creek
UPF – Uranium Processing Facility
URS/CH2M – (UCOR) DOE's prime cleanup contractor
VOC – volatile organic compound
VPP – Voluntary Protection Plan
WAC – waste acceptance criteria
WEMA – West End Mercury Area (at Y-12)
WHP – Waste Handling Plan
WIPP – Waste Isolation Pilot Plant
WRRP – Water Resources Restoration Program
WWSY – White Wing Scrap Yard
Y-12 – Y-12 National Security Complex
ZPR – Zero Power Reactor

OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT

OREM
Oak Ridge Office of Environmental Management

The U.S. Department of Energy's (DOE) Oak Ridge Reservation occupies more than 32,000 acres within Anderson and Roane counties in East Tennessee. It contains three sites— the Y-12 National Security Complex (Y-12), Oak Ridge National Laboratory (ORNL), and East Tennessee Technology Park (ETTP).

In previous decades, those sites conducted research and operations that created environmental legacies and placed Oak Ridge on the U.S Environmental Protection Agency's National Priorities List in 1989. Today, OREM is responsible for advancing environmental cleanup at all three sites. Our projects are eliminating hazards, opening land for redevelopment, and modernizing campuses that support important ongoing missions.

PROTECT THE REGION'S HEALTH AND ENVIRONMENT

Our projects are focused on removing hazards or potential risks to human health or the surrounding environment. They involve taking down old and contaminated buildings, removing inventories of radiological waste stored at the site, and addressing any impacted soil and groundwater.

MAKE CLEAN LAND AVAILABLE FOR FUTURE USE

Our work at ETTP has transformed a shuttered uranium enrichment complex into a multi-use industrial center. We removed all the old structures and transferred 1,600 acres to the community that is attracting new investments and businesses to the region. We also set aside more than 3,000 acres for conservation and recreational use.

ENABLE RESEARCH AND NATIONAL SECURITY MISSIONS

We are actively demolishing excess and contaminated buildings at Y-12 and ORNL. These projects are helping protect thousands of employees who work at these sites, and they are also clearing space for new facilities that will support research and national security missions.

U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

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January 2024

OAK RIDGE OFFICE OF ENVIRONMENTAL MANAGEMENT

Oak Ridge National Laboratory

ORNL employs approximately 5,500 researchers and staff who are advancing almost every field of research in DOE's broad portfolio. The site dates back to the Manhattan Project, and many of the facilities in the heart of ORNL were built and operated in the 1940s–1960s.

OREM is slated to remove more than **200 facilities** at ORNL. More than 30 of those structures are considered high-risk due to structural, radiological, or chemical hazards. Major cleanup is already underway. Crews have taken down two former reactor facilities since 2022, and they are busy preparing numerous other reactor facilities and isotope labs for near-term demolition.

Bulk Shielding Reactor demolition

The nation's **inventory of uranium-233** is housed at ORNL, and its removal is our highest priority at that site. Processing operations are underway to convert the remaining inventory into a disposal-ready form. Through an innovative partnership with TerraPower, the project is also providing rare medical isotopes for next generation cancer treatment research. We are scheduled to finish processing and disposing of the remaining material in the late 2020s.

Y-12 National Security Complex

More than 7,500 employees work at Y-12 supporting its mission to maintain the safety, security and effectiveness of the U.S. nuclear weapons stockpile. Many of the facilities there were constructed and operated during the Manhattan Project and Cold War. Y-12 is ushering in a new chapter with numerous infrastructure projects underway that will keep it at the forefront of its field.

Our cleanup is enabling that transformation from old to new. We anticipate removing nearly **80 facilities** at Y-12 in the decades ahead. Of those, more than 25 are considered high-risk, and a portion of those were deemed "the worst of the worst" in the entire DOE complex in a report to Congress.

Construction progressing on Mercury Treatment Facility

Crews are already reshaping the landscape. They demolished the former **Biology Complex**, opening an 18-acre area for NNSA to construct its new Lithium Processing Facility. Workers are also scheduled to begin demolition on **Alpha-2** in 2024. That marks OREM's first project to remove a former enrichment building at Y-12, and many more are scheduled in the years ahead.

Before demolition can begin on some of the site's oldest and largest buildings, OREM must complete construction on the **Mercury Treatment Facility**. That facility will prevent mercury releases into the nearby creek as crews demolish massive mercury contaminated buildings and remove the sources of mercury trapped in the soil beneath them.

East Tennessee Technology Park

The K-25 plant was constructed during the Manhattan Project to enrich uranium for the first atomic weapon using the gaseous diffusion process. Due to the success of this technique, the original plant was expanded during the Cold War, but it was eventually closed in 1987. Shortly after, OREM was formed and began addressing the deteriorating facilities and associated hazards created during decades of uranium enrichment.

The site was renamed the East Tennessee Technology Park in 1997. Along with cleanup, OREM pursued a vision to transform the site from a liability into a multi-use industrial center, national park, and conservation area that benefits the community and created new economic opportunities. In 2020, OREM completed DOE's largest-ever cleanup effort when it finished taking down 500 structures at the site. Together, those facilities had a footprint that could cover 225 football fields. The final phases of cleanup involve soil and groundwater remediation. Crews will finish **soil remediation** in 2024, and OREM will implement any needed **groundwater remedies** in 2026.

East Tennessee Technology Park

We've transferred more than 1,600 acres of land to the community for reuse and economic development, and more than 100 more are scheduled for transfer in 2024. This area is now home to more than 20 private businesses.

REGULATORY PARTNERSHIPS AND FRAMEWORK

The Federal Facility Agreement (FAA) parties responsible for the safe and efficient cleanup of the Oak Ridge Reservation include:

» DOE's Oak Ridge Office of Environmental Management (OREM)

» U.S. Environmental Protection Agency (EPA) Region 4

» Tennessee Department of Environment and Conservation (TDEC)

UCOR, DOE's environmental management contractor, works with the FFA parties to effectively and expeditiously facilitate regulatory consensus and approval for cleanup actions across the three sites in Oak Ridge.

In 2019, with critical cleanup milestones approaching and the need for a new onsite disposal facility, regulatory delays and technical issues were impacting collaboration and trust among all parties. Recognizing the need to resolve issues and keep cleanup moving forward, the FFA parties committed to a renewed partnership framework.

Strengthened Partnership Framework

A structured, tiered process was developed to:

» Foster collaborative problem solving at all levels; "getting to yes" mindset

» Allow early and timely input to the decision-making partnership by community partners

» Enhance communication

Other measures employed to improve working relationships between FFA parties:

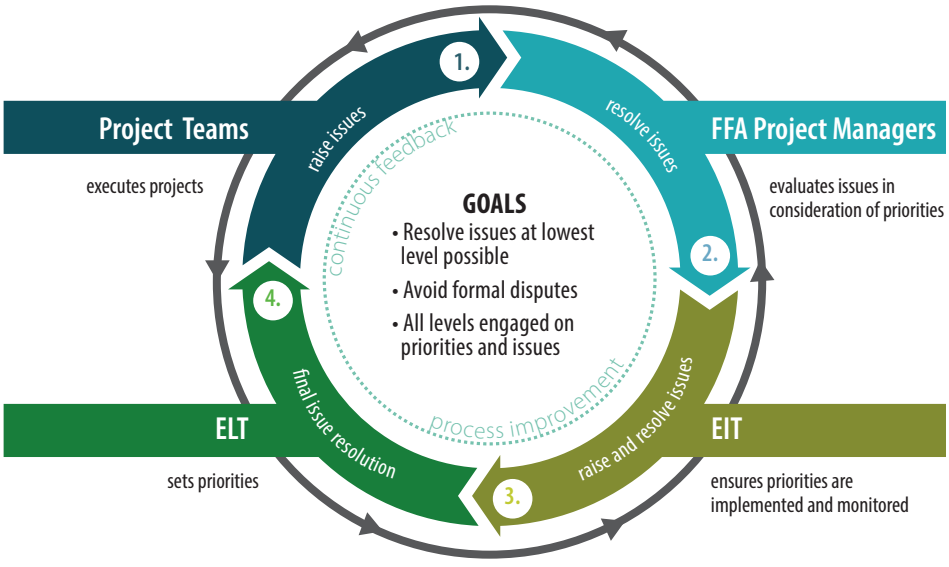
» Quarterly partnership meetings open to all parties: forum for education, process improvement and open discussion

» Monthly project team meetings sharing near real-time data results, discuss document review delays, find solutions as a team

» Collaborative data quality objectives workshops and upfront storyboarding of regulatory documents to identify potential issues early and often

Executive Leadership Team (ELT)
DOE Site Manager with UCOR President, EPA Region 4 Administrator, TDEC Commissioner – sets policy and establishes strategic goals

Emerging Issues Team (EIT)
Senior level managers of each organization – identifies, tracks and works to resolve emerging issues



The success of the framework is attributed to participation and engagement at all levels

OAK RIDGE RESULTS

Since the launch of the renewed regulatory framework, Oak Ridge's cleanup program has accomplished remarkable achievements. By working together, key decision documents are being approved and cleanup is advancing across the Reservation.

Record of Decisions

» Signed ROD for new onsite disposal facility

» Two draft RODs in review for groundwater remedies at the East Tennessee Technology Park

Dispute Resolution

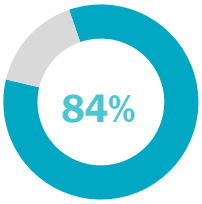
» 18 informal disputes resolved at the Project Team or FFA Project Manager Level

» Today, three new issues have been identified and they are near resolution at the lower levels

Remedial Action Progress

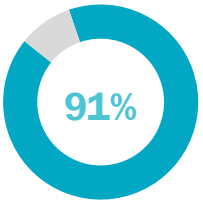
SInce 2020, the Oak Ridge team has been responsible for 61% of the completed and 80% of the newly initiated remedial actions across the DOE-EM Complex.

Oak Ridge share of DOE-EM completed remedial actions in the last three years



soil remediation

385,000 cubic yards

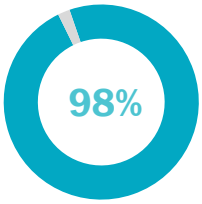


debris

31,915 cubic yards

sediment

1,234 cubic yards



treated wastewater

941,000 gallons

Leader in Superfund Cleanup

OREM is setting the pace for environmental cleanup across the 175 federal facilities in the Superfund program.

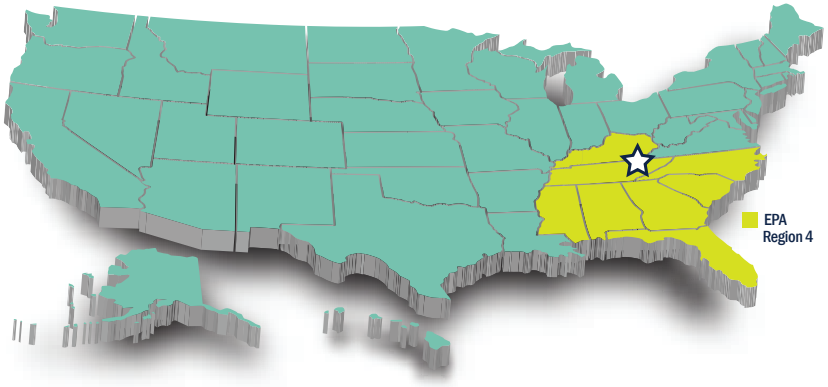
From fiscal years 2018 to 2022, OREM accounted for

» 13% of all completed federal facility remedial actions in the U.S.

» 40% of all completed actions in EPA's Region 4, which includes Tennessee, Alabama, Florida, Georgia, Kentucky, North Carolina and South Carolina

13%
Total U.S. EPA completed sites

40%
EPA Region 4 completed sites



DOE Oak Ridge Environmental Management Program

History of the Oak Ridge EM Program

OREM
Oak Ridge Office of Environmental Management

1980

- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) becomes law and provides broad federal authority to address potential releases of hazardous substances.

1985

- Uranium enrichment operations at the Oak Ridge K-25 Gaseous Diffusion Plant (now known as East Tennessee Technology Park) are halted.

1987

- The Oak Ridge K-25 Gaseous Diffusion Plant is permanently shut down.

1989

- DOE establishes the Office of Environmental Management (EM) to oversee the cleanup of hazardous materials at DOE facilities throughout the United States, including the Oak Ridge Reservation.
- The Oak Ridge Reservation is placed on the National Priorities List, identifying it to be cleaned up under the provisions of CERCLA.

1991

- The Toxic Substances Control Act (TSCA) Incinerator begins operation at the Oak Ridge K-25 Site. It is the only incinerator in the nation capable of incinerating wastes containing PCBs.

1992

- The Oak Ridge Reservation Federal Facility Agreement is enacted. It is a CERCLA-required cooperative agreement among DOE, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation to promote cooperation and participation of the three parties in cleaning up the Oak Ridge Reservation.

1993

- A Citizens Working Group is formed to provide feedback to DOE on potential remedial alternatives for the cleanup of Lower East Fork Poplar Creek, which would become one of the first major cleanup efforts in Oak Ridge. Public input into the remediation was the catalyst for modifying cleanup levels, resulting in less cost and less environmental disruption from excavation.

1995

- Records of Decision are issued for remediation of Lower East Fork Poplar Creek and Lower Watts Bar Reservoir.
- DOE establishes the Oak Ridge Site Specific Advisory Board (ORSSAB) under the Federal Advisory Committees Act. The ORSSAB is a federally appointed citizens panel that provides advice and recommendations to DOE's Environmental Management Program.

1996

- First lease of a K-25 Site facility is signed between the Community Reuse Organization of East Tennessee (a DOE leasing agent) and a private company. DOE's goal is to eventually convert the site into a self-sustaining private industrial park.

History of the Oak Ridge EM Program (continued)

1997

- ORSSAB sponsors public meeting that results in the formation of the End Use Working Group, a diverse group of stakeholders tasked with developing recommendations for end uses of contaminated sites.
- Lower East Fork Poplar Creek remediation is completed.
- Records of Decision are issued for removal of sludge from gunite tanks at Oak Ridge National Laboratory (ORNL), remediation of Surface Impoundments at ORNL, remediation of Clinch River/Poplar Creek, and remediation of Union Valley Groundwater Plumes.

1998

- Bechtel Jacobs Company LLC becomes the prime cleanup contractor for the Oak Ridge Reservation, replacing Lockheed Martin Energy Systems Inc.
- End Use Working Group issues two reports: *Final Report of the Oak Ridge Reservation End Use Working Group* and *The Oak Ridge Reservation Stakeholder Report on Stewardship.*

1999

- The ORSSAB forms the Stewardship Working Group to address issues associated with long-term stewardship on the Oak Ridge Reservation. The group produces *The Oak Ridge Reservation Stakeholder Report on Stewardship, Vol. 2.*
- The ORSSAB hosts the National Site Specific Advisory Board Meeting on Stewardship with members from nine DOE site SSABs attending.

2000

- Removal of radioactive sludge from a series of underground gunite tanks at ORNL is completed.
- Records of Decision are issued for the Melton Valley Watershed and Bear Creek Valley Watershed.

2001

- Ground is broken for the Environmental Management Waste Management Facility (EMWMF), an on-site CERCLA disposal cell that will handle contaminated waste generated from Oak Ridge Reservation cleanup. The facility would begin accepting waste in 2002.

2002

- DOE announces that the Oak Ridge Reservation will be cleaned up on an accelerated schedule, with high-risk areas to be addressed first. Areas covered in the Melton Valley Record of Decision are scheduled to be remediated by 2006, East Tennessee Technology Park by 2008, and the Balance of Reservation by 2015.
- The DOE Information Center opens, consolidating the services of the DOE EM Information Resource Center and the DOE Public Reading Room.
- Records of Decision are issued for Bethel Valley Watershed and Upper East Fork Poplar Creek sediments.

2003

- Bechtel Jacobs Company LLC is selected to implement DOE's accelerated cleanup plan.
- Transuranic Waste Processing Facility is constructed.
- All spent nuclear fuel is shipped from the Oak Ridge Reservation to various locations for safe disposal.
- Excavation of the K-1070-A Burial Ground at East Tennessee Technology Park (ETTP) is completed.
- Record of Decision is issued for ETTP Zone 1 soil remediation.

History of the Oak Ridge EM Program (continued)

2004

- Shipments begin of more than 6,000 depleted uranium hexafluoride cylinders from ETTP to Portsmouth, Ohio, for disposition.
- ETTP Scrap Waste Removal Project begins work on removing approximately 47,000 tons of scrap metal from the site.
- Cleanup of Atomic City Auto Parts is completed. The site was used as a coal distribution center by the Manhattan Project.
- Transuranic Waste Processing Facility begins operation.

2005

- Remediation of Blair Quarry is completed. The quarry was created in the early 1940s by excavating into McKinney Ridge. The rock material was used to support construction of the K-25 Site. It was later used for open burning of trash and debris.
- Numerous buildings at ETTP, including the former cafeteria (K-1002) and medical facility (K-1003), are demolished as part of the ETTP Decontamination and Decommissioning Project.
- Phase 1 of David Witherspoon Inc. 901 Site cleanup, which included building decontamination, demolition, and debris removal, is completed. The site previously received scrap radioactive and hazardous materials from federal operations in Oak Ridge.
- Construction begins on a haul road from ETTP to EMWMF so that wastes generated in the cleanup of ETTP can be shipped to the disposal facility without traveling on public roadways.
- Record of Decision is issued for cleanup of the Zone 2 portion of ETTP, which includes the area within the main fence of the plant.
- Expansion of EMWMF (Cells 3 and 4) is completed, adding 800,000 yds^3 of disposal capacity.
- Four office buildings totaling 200,000 ft^2 are transferred to Community Reuse Organization of East Tennessee (CROET).
- Bechtel Jacobs Company achieves the first major milestone of its Accelerated Cleanup contract with DOE: disposal of low-level and mixed legacy waste from the Oak Ridge Reservation.
- Site Specific Advisory Board celebrates 10-year anniversary.
- Building 3019 Project at ORNL is transferred to EM program.

2006

- The ETTP-to-EMWMF haul road opens.
- Building K-29, one of the large gaseous diffusion buildings, is demolished and debris removed.
- Melton Valley remediation is completed. Activities include cleanup and containment of various storage areas that accepted waste from ORNL operations. This achievement marks the successful completion of Bechtel Jacobs Company's second major Accelerated Cleanup milestone.
- Demolition of several facilities in the laboratory and main plant area of ETTP is completed as part of the ETTP Decontamination and Decommissioning Project.
- Project personnel completes shipment off-site of the last of the 6,000 depleted uranium hexafluoride cylinders located at ETTP.
- Site Specific Advisory Board receives national Citizens Excellence in Community Involvement Award.
- Two office buildings totalling 93,000 ft^2 are transferred to the CROET.

History of the Oak Ridge EM Program (continued)

2007

- Demolition of Building K-1401, a 500,000-square-foot former maintenance facility in the center of ETTP, is completed.
- Demolition of K-1320, an office building at ETTP, is completed.
- Demolition of the K-1501 ETTP Steam Plant facility is completed. The 2.5-year project, which involved 42,000 labor hours and more than 12 million pounds of waste shipped, concludes with no accidents.
- The haul road project, which connects ETTP to EMWMF, receives a Best in Class Pollution Prevention Award from DOE Headquarters Office of Environmental Management.
- Expansion of EMWMF (Cells 3 and 4) is completed, adding 800,000 yds^3 of disposal capacity.
- Parcels ED-5 and ED-7, totalling 23 acres, are transferred to CROET.

2008

- ETTP Fire Station is transferred to the City of Oak Ridge.
- The last of the nuclear fuel is removed from its storage tank at the Molten Salt Reactor Experiment.
- Field work at the Witherspoon 1630 Site in South Knoxville is completed.
- Demolition of Building K-1401, a former maintenance facility at ETTP, is completed.
- Demolition of the K-25 Building west wing begins.

2009

- $755 million is provided to DOE Oak Ridge Office for cleanup projects under the American Recovery and Reinvestment Act.
- The TSCA Incinerator is shut down, completing 18 years of service in which 35 million pounds of wastes were treated.
- Demolition of Building K-1035, a 48,000 ft^2 former instrument shop, is completed.
- Recontouring and restoration activities are initiated for three contaminated ETTP ponds.
- CROET begins construction of two “spec” buildings at ETTP for prospective private tenants.

2010

- Demolition of the K-25 Building west wing is completed and demolition debris is removed.
- Tie line isolation of the K-33 Building is completed in preparation for demolition.
- Various streets at ETTP are transferred to the City of Oak Ridge and renamed.

History of the Oak Ridge EM Program (continued)

2011

- Demolition of the K-25 Building's east wing begins.
- URS | CH2M Oak Ridge LLC (UCOR) becomes the prime cleanup contractor for the DOE Oak Ridge Reservation, replacing Bechtel Jacobs Company.
- Reindustrialization Program leases 282 acres to the Community Reuse Organization of East Tennessee as part of DOE's effort to convert ETTP into a private sector industrial park. Recontouring and restoration activities are initiated for three contaminated ETTP ponds.
- Demolition is completed on the K-33 Building at ETTP.
- Cleanup of the Old Salvage Yard at the Y-12 Complex is completed.

2012

- Demolition of the K-25 Building's east wing is completed, with the exception of a small portion on the southernmost end that is contaminated with technetium-99.
- Demolition begins on the K-25 Building's north end.
- Tank W-1A, the main source of groundwater contamination at ORNL, is removed.
- Mercury reduction efforts begin at the Y-12 Complex.
- Removal of legacy materials from Isotope Row at ORNL is completed.
- Cask Processing Enclosure is completed at the Transuranic Waste Processing Center.

2013

- Demolition of the K-25 Building's north end is completed.
- A second solar array, constructed by Vis Solis LLC on CROET property, is constructed at ETTP.
- Six NaF traps, the highest risk components still remaining, are removed from the K-27 Building.
- The conceptual design of the water mercury treatment facility at Y-12 is completed.

2014

- Demolition of the K-25 Building completed.
- Demolition begins on the K-31 Building.
- More than 3,500 cubic meters of legacy wastes disposed.
- Roof repairs completed on Alpha 4 building at Y-12.

History of the Oak Ridge EM Program (continued)

2015

- New 1 megawatt solar array opens at ETTP under a partnership between Restoration Services Inc. and Vis Solis Inc.
- DOE submits a revised draft of the Remedial Investigation/Feasibility Study for a proposed new CERCLA landfill that will supplement the existing waste repository.
- Demolition of the K-31 Building completed.
- Radioactive components removed from Building 3042 at ORNL, a former reactor research facility.

2016

- Demolition of the K-27 Building completed.
- Preliminary design completed for the Outfall 200 Mercury Treatment Facility.
- EMWMF logs its 14th year without a lost workday away case.
- Process pipe removal begins at Alpha -4 Building at the Y-12 Complex.

2017

- Crews begin cleaning Alpha 4 COLEX equipment at Y-12 for demolition and removal.
- Risk reduction work conducted at ORNL's Building 3026 and Building 7500.
- Half of ORNL's Uranium-233 inventory disposed through Direct Disposition Campaign.
- Demolition of Buildings K-731, K-732, K-832, K-832-H, K-1203 completed at ETTP.
- Shipments of transuranic waste resume to WIPP for permanent disposal.
- Groundbreaking begins for Mercury Treatment Facility at Y-12.

2018

- Demolition of two high-risk Biology Complex facilities (Building 9743-2 and 9770-2) completed at Y-12.
- Demolition of the Central Neutralization Facility completed at ETTP.
- Demoltion of the TSCA Incinerator completed at ETTP.
- Demolition of K-633 Test Loop Facility completed at ETTP.
- Mercury removal completed at Y-12's Alpha 4 west end COLEX facilities.

History of the Oak Ridge EM Program (continued)

2019

- Demolition of the K-1037 building completed at ETTP.
- K-29 building slab removed.
- Demolition underway on final two process buildings in the Poplar Creek area of ETTP.
- Construction begins on K-25 History Center.
- Processing begins on low-dose inventory of U-233 using gloveboxes
- Construction begins on the Outfall 200 Mercury Treatment Facility at Y-12

2020

- Completed demolition on the K-1200 Centrifuge Complex at ETTP
- Completed demolition on K-1600 at ETTP
- Finished all demolition at ETTP, achieving Vision 2020 and becoming world's first site to remove a former uranium enrichment complex
- Began demolition on Building 9210 at Y-12's Biology Complex
- Opened the K-25 History Center

2021

- Completed final demolition in Y-12's Biology Complex, Building 9207
- Completed processing low-dose inventory of U-233
- Demolished Radiological Development Lab's West Cell Bank at ORNL
- Demolished the Tritium Target Preparation Facility at ORNL

History of the Oak Ridge EM Program (continued)

2022

- Began processing high-dose inventory of U-233 using hot cells
- Awarded United Cleanup Oak Ridge (UCOR) 10-year Oak Ridge Reservation Cleanup Contract
- Completed demolition on the Bulk Shielding Reactor at ORNL
- Completed demolition on the Criticality Experiment Laboratory at Y-12
- Finished construction of the Sludge Processing Mock Test Facility
- Signed the final Record of Decision for the Environmental Management Disposal Facility

2023

- Completed demolition on the Low Intensity Test Reactor at ORNL
- Began early site prep for the Environmental Management Disposal Facility
- Transferred 376-acre former Powerhouse Area for economic development at ETTP
- Broke ground on the K-25 Viewing Platform

EAST TENNESSEE TECHNOLOGY PARK

OREM
Oak Ridge Office of Environmental Management

FACT: The 2,200-acre East Tennessee Technology Park (ETTP) operated Manhattan Project and Cold War–era uranium enrichment facilities for more than 40 years. The site, which began as a scientific marvel in 1943, became a legacy of contaminated buildings, soil, and groundwater after it was closed in 1987.

CHALLENGE: Restoring the environment required extensive cleanup and building demolition. Without the Oak Ridge environmental cleanup program, risks would remain that prevent new development and economic growth regionally.

SOLUTION: The Oak Ridge Office of Environmental Management (OREM) coordinates the safe and efficient cleanup of ETTP, preparing the land for redevelopment. As cleanup occurs, the land is transferred to the private sector with the ultimate goal of transforming the site into a thriving, privately owned multi-use industrial park. OREM completed all building demolition in 2020. OREM will complete soil remediation in 2024, and it is scheduled to implement any needed groundwater remedies by 2026.

OREM accomplishments at the East Tennessee Technology Park

More than
500 Facilities Demolished

1,600+ Acres
transferred for private sector use

3,000 Acres
placed in conservation easement

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ENERGY.GOV/OREM

January 2024

EAST TENNESSEE TECHNOLOGY PARK

Reindustrialization & Historic Preservation

OREM's goal for ETTP is to eliminate risks to human health and the environment, make clean land available for economic development, and preserve the international historical significance of the site.

PRESERVATION

An historic preservation agreement honors the 12,000 workers within the former K-25 complex (ETTP) who discovered the technological and scientific advancements that changed the course of the world during World War II and the Cold War. Under the agreement, OREM constructed and opened the K-25 History Center in 2020 with more than 250 original artifacts, interactive exhibits, and access to nearly 1,000 oral histories from the site's early workers. Construction is also underway on the K-25 Viewing Platform that will help visits understand the size and scope of the site. It is scheduled to open in 2025.

REINDUSTRIALIZATION

As OREM completes cleanup projects at ETTP, the reindustrialization program works to transfer buildings and land to the private sector. The goal is to fully convert the site into a privately-owned multi-use industrial park. ETTP is currently home to manufacturing, warehousing, and office space. ETTP boasts many offerings to potential industry searching for a new location including a well-maintained road system, railroad line, electrical transmission lines, emergency services, barge access, close proximity to two interstates, sidewalks, parking, and utilities.

ETTP IS HOME TO 20 BUSINESSES, WITH MORE TO COME IN THE YEARS AHEAD

OREM has transferred more than 1,600 acres from federal ownership for economic development, and another 100 acres are scheduled for transfer in 2024. Those efforts have helped attract new business and industry that are investing millions of dollars and creating high paying jobs.

Originally, ETTP began as an enrichment site that supported defense missions. Today, that history has come full circle with the site becoming the nation's hub for next generation nuclear companies that will advance carbon free energy. Kairos Power is investing $100 million to build a demonstration reactor on the footprint of a former uranium enrichment facility. The company is scheduled to begin construction in 2024. Ultra Safe Nuclear Corporation has also located to ETTP.

Triso-X announced a plan to invest $400 million to build a nuclear fuel facility at the adjacent Horizon Center on former federal land, and the Tennessee Valley Authority has announced its plans to build a small modular reactor next to ETTP in 2027.

Groundwater

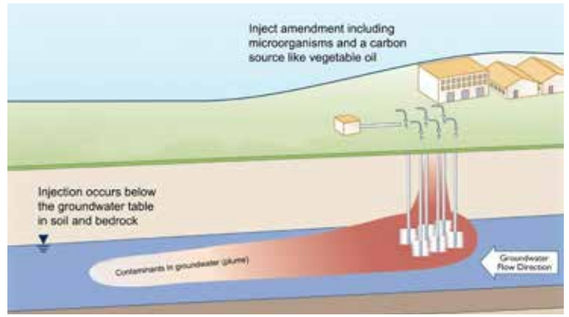
While final remedies for the protection of groundwater at ETTP have not been determined, several early actions have been proposed. These priorities allow cleanup to progress while final decisions are being determined.

Main Plant Area

The Proposed Plan for an Interim Record of Decision for Groundwater in the Main Plant Area at the East Tennessee Technology Park, Oak Ridge, Tennessee identifies enhanced in situ bioremediation (EISB) as DOE's preferred alternative to remediate six specific areas of groundwater in the Main Plant Area of the East Tennessee Technology Park. EISB is a method that involves using microorganisms to reduce contamination levels in these specific areas of groundwater. For these six areas, workers have excavated, or will excavate, the primary sources of contamination, as specified in the Record of Decision for Soil, Buried Waste, and Subsurface Structure Actions in Zone 2, East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2161&D2). The Proposed Plan proposes to follow that soil excavation work with active treatment of the residual contamination that remains below the groundwater table. Land use controls described in the East Tennessee Technology Park Administrative Watershed Remedial Action Report Comprehensive Monitoring Plan, Oak Ridge, Tennessee (DOE/OR/01-2477&D4) will continue under the Interim Record of Decision for Groundwater in the Main Plant Area at the East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2949).

K-31/K-33 Area

The Proposed Plan for the Record of Decision for Groundwater in the K-31/K-33 Area at the East Tennessee Technology Park, Oak Ridge, Tennessee identifies monitored natural attenuation and land use controls as DOE's preferred alternative to remediate contaminated groundwater in the K-31/K-33 Area of the East Tennessee Technology Park. Monitored natural attenuation is a groundwater remediation approach that relies on natural processes to reduce the concentrations of contaminants in groundwater. It was the method selected to address groundwater contaminated with metals, primarily chromium and nickel, detected in concentrations above drinking water standards. Overall contaminant concentrations have been trending downward since the late 1980s, and there are no current exposure pathways that affect human health or the environment. Land use controls will be implemented to prohibit groundwater use and notify future landowners concerning the presence of contaminated groundwater.



SOIL AND GROUNDWATER

East Tennessee Technology Park | Oak Ridge, TN

The Final Chapter of Cleanup at the East Tennessee Technology Park

January 2024

The Final Chapter

■ – Building demolished

The completion of major cleanup at the East Tennessee Technology Park (a.k.a. Vision 2020) marked a monumental environmental stewardship achievement for the Oak Ridge Reservation.

With all major facilities demolished, ETTP's final chapter begins.

As remaining contaminated soils are removed and remedies to protect groundwater are solidified, the Department of Energy's vision for the site comes into focus.

After decades of national service, ETTP's restored footprint is being returned to the community—emerging as new businesses, clean energy generation, greenspaces, and the 409th National Historical Park.

Soils

For final soil cleanup at ETTP, crews characterized the soil to identify contaminants, and are excavating the contaminated soil and replacing it with clean fill.

In Summer 2021, DOE and its cleanup contractor, UCOR, completed removal of all contaminated soils in Zone 1 per the Zone 1 Interim Record of Decision (ROD). The Zone 1 Final ROD will address the K-770 Fly Ash Pile (coal ash from power generation) and is the only area/action included in this ROD.

In Zone 2, work is nearing completion. In the remaining EUs, remedial actions are ongoing and will wrap up in 2024. Primary contaminants of concern are radionuclides from uranium processing and chemical solvents used in industrial processes.

The cleanup footprint is divided into two main areas.

- Zone 1 encompasses 1,400 acres bordering the site center
- Zone 2 includes an 800-acre footprint in the center of the site that housed the large uranium enrichment process buildings

To effectively manage and execute soil cleanup, zones are further divided into Exposure Units (EUs).

Power of Partnerships

Working together, Federal Facility Agreement partners—the Department of Energy, the Environmental Protection Agency, and the Tennessee Department of Environment and Conservation—will achieve final cleanup of the East Tennessee Technology Park. Through a Regulatory Partnership Framework, FFA partners, along with cleanup contractor, UCOR, meet regularly to discuss issues impacting cleanup and courses of action to resolutions. This collaborative effort to restore ETTP protects people and the environment and makes land available for beneficial reuse.

CLEANUP PRIORITIES FOR THE OAK RIDGE NATIONAL LABORATORY

OREM
Oak Ridge Office of Environmental Management

FACT: Oak Ridge National Laboratory (ORNL) is the largest science and energy national laboratory in the Department of Energy (DOE) system, performing research to find solutions to some of our country's most compelling energy and security problems. The site was first established to produce and separate plutonium for the Manhattan Project. These efforts, and other research over the decades, helped protect and advance our nation but resulted in contamination of ORNL's facilities and the environment.

CHALLENGE: Amid ORNL's modern facilities are a number of inactive, deteriorating, and contaminated buildings and stockpiles of legacy waste that pose potential risks to human health and the environment. They are costly to maintain in a safe and stable condition. The Oak Ridge Office of Environmental Management (OREM) must conduct cleanup and remediation activities while minimizing impacts to ongoing research missions at ORNL.

SOLUTION: OREM is coordinating the safe and efficient cleanup of the ORNL site – including building demolition, waste treatment and disposal, and soil and water remediation. This work eliminates risks, and it clears land for ORNL to conduct future research missions that can usher in the next big discovery.

CLEANUP GOALS

Completing cleanup efforts at ORNL will protect human health and the environment, reduce facility and maintenance costs, and modernize one of DOE's most valuable assets.

Treat, remove and dispose of legacy materials and waste

Demolish more than 200 excess facilities (30+ are high risk)

Remediate contaminated soil, water and infrastructure

Modernize ORNL to enable future science and energy missions

U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

ENERGY.GOV/OREM

January 2024

CLEANUP PRIORITIES FOR THE OAK RIDGE NATIONAL LABORATORY

CLEANUP PROJECTS

FACILITY DECOMMISSIONING AND DEMOLITION (D&D)

OREM expects to take down more than 200 structures at ORNL, including more than 30 that are categorized as high risk. These projects will enhance safety, modernize the site, and open land for future research missions.

ADDRESSING EXCESS CONTAMINATED FACILITIES

Major cleanup operations are underway to transform ORNL's central campus area. It is the oldest area at ORNL and houses many of the original structures built in the 1940s – 1960s, including former research reactors and isotope production labs. Crews are already making visible impacts at the site by taking down two former reactor facilities over the past year – the Bulk Shielding Reactor and Low Intensity Test Reactor. They are also deactivating numerous other facilities, including the Graphite Reactor support facilities, Isotope Row facilities, Oak Ridge Research Reactor, and the final Building 3026 hot cell. Together, these projects are paving the way for the next wave of demolitions that will remove risks and clear land for research missions at DOE's largest multi-program national laboratory.

REMOVING INVENTORY OF HIGHLY ENRICHED FISSLE MATERIAL

OREM has removed more than half of the inventory of uranium-233 stored in ORNL's Building 3019, which is the oldest operating nuclear facility in the world. This project is our highest cleanup priority at ORNL. The remaining material requires processing and downblending to convert it into a disposal-ready form, and that work is underway.

OREM completed the direct disposition campaign in 2017, which identified items that could support ongoing missions and disposing other containers as waste. From 2019 – 2021, employees downblended an inventory of low-dose material in gloveboxes for disposal. In 2022, employees began processing the high-dose inventory in hot cells for disposal, and that work is scheduled to continue through the late 2020s. Through a partnership with TerraPower, employees are also able to extract and provide rare nuclear isotopes during their processing operations for next-generation cancer treatment research.

CLEANUP PRIORITIES FOR THE Y-12 NATIONAL SECURITY COMPLEX

OREM
Oak Ridge Office of Environmental Management

FACT: Y-12 National Security Complex (Y-12) plays a key role in strengthening our country's national security by retrieving and storing nuclear materials, fueling the country's naval reactors, and reducing global threats. Formerly, Y-12 operated uranium enrichment and lithium separation facilities during the Manhattan Project and Cold War–era that protected our country but resulted in contamination of its facilities and the environment.

CHALLENGE: Contaminated and deteriorating facilities on the Y-12 site pose potential risks to employees and the environment, and they are costly to maintain. The Oak Ridge Office of Environmental Management (OREM) must conduct large-scale cleanup and remediation activities while minimizing impacts to ongoing national security missions at Y-12.

SOLUTION: OREM is coordinating the safe and efficient cleanup of the Y-12 site — including building demolition and soil and water remediation. This enables Y-12 to continue its national defense missions, achieve a smaller, modernized footprint, and create a safer environment for employees and the community.

CLEANUP GOALS

Completing cleanup efforts at Y-12 will protect human health and the environment, reduce facility and maintenance costs, and support future missions.

Remove and dispose of legacy materials and waste

Demolish more than 80 excess facilities (25+ are high risk)

Address mercury in the soil and water

Modernize Y-12's footprint

U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

ENERGY.GOV/OREM

January 2024

CLEANUP PRIORITIES FOR THE Y-12 NATIONAL SECURITY COMPLEX

CLEANUP PROJECTS

FACILITY DECOMMISSIONING AND DEMOLITION (D&D)

OREM is expected to remove nearly 80 structures at Y-12 in the decades ahead, including more than 25 that are categorized as high risk. Three buildings will be decontaminated/deactivated and kept for historical preservation, while the remaining buildings will be demolished to remove risks, enable modernization, and open land for important missions.

ADDRESSING EXCESS CONTAMINATED FACILITIES

OREM is setting the stage for the next wave of demolitions with several deactivation projects at Y-12. The next big demolition projects will remove two Manhattan Project-era enrichment facilities, Alpha-2 and Beta-1, that have a combined footprint of more than half a million square feet.

Once two crucial infrastructure projects are completed – the Mercury Treatment Facility construction project and West End Protected Area Reduction project – OREM will be able to address the largest and highest risk structures at Y-12. Those facilities include Alpha-4, Alpha-5, and Beta-4. Crews have performed projects to retrieve mercury and deactivate old equipment outside of Alpha-4 to prepare it for future cleanup. Those efforts captured nearly 15,000 pounds of mercury and prevented a large release into the environment.

WATER TREATMENT

Construction of the Outfall 200 Mercury Treatment Facility is underway and moving forward. This vital piece of infrastructure is the linchpin for OREM's cleanup strategy at Y-12. It is designed to safeguard against mercury releases in the Upper East Fork Poplar Creek during demolition of Y-12's large, deteriorated, mercury-contaminated facilities and subsequent soil remediation. When operational the facility will be able to treat up to 3,000 gallons of water per minute and help the site meet regulatory limits in compliance with EPA and State of Tennessee requirements.

CHANGING THE LANDSCAPE

OREM's demolition projects are altering Y-12's skyline, removing hazards, and enabling modernization. In 2021, OREM finished removing the 11 structures that comprised the Biology Complex. That project cleared away vacant, deteriorating buildings and opened 18 acres for NNSA to construct its new Lithium Processing Facility. In 2022, crews tore down the former Criticality Experiment Laboratory, another high-risk excess contaminated facility.

Now, teams are preparing large Manhattan Project-era uranium enrichment buildings for demolition. Workers recently completed major deactivation inside Alpha-2, a multi-story facility spanning nearly 325,000 square feet. The building is co-located with other active facilities at Y-12, requiring utilities to be rerouted prior to demolition. Demolition is scheduled to begin in 2024. Deactivation is also underway at Beta-1, and demolition is expected to begin on that facility in 2026.

MERCURY TREATMENT FACILITY
AT THE Y-12 NATIONAL SECURITY COMPLEX

OREM
Oak Ridge Office of Environmental Management

FACT: More than 20 million pounds of mercury were used at the Y-12 National Security Complex (Y-12) during the 1950s and early 1960s, when Y-12 used enormous quantities of the metal to process lithium. Approximately 700,000 pounds are suspected to have been released in the buildings and surrounding environment.

CHALLENGE: The Upper East Fork Poplar Creek leaves the Y-12 plant and winds through the City of Oak Ridge, carrying mercury from the plant at levels above Clean Water Act standards for fish consumption. The risk lies in eating fish from the creek, not from drinking the water.

SOLUTION: The Oak Ridge Office of Environmental Management (OREM) is constructing a water treatment facility at the Y-12 site. The treatment facility is a key component of the mercury remediation strategy at Y-12 and will help reduce mercury releases into the Upper East Fork Poplar Creek. It will also serve as an important control measure during cleanup of the site.

Y-12 Mercury Treatment Facility

PAVES WAY FOR MEANINGFUL CLEANUP

When operational, the facility will limit and control potential mercury releases as crews demolish massive mercury-contaminated Manhattan Project and Cold War-era buildings and address the soil beneath them.

FACILITY DESIGN

The project encompasses two components at two locations: a headworks facility and a treatment plant connected by a 3,200-foot-long transfer pipeline.

The headworks facility will capture creek flow on the west end of Y-12, store excess stormwater collected during large rainfalls, remove grit, and pump water via the pipeline to the treatment plant on the east side of Y-12. Design parameters include a treatment capacity of 3,000 gallons per minute, a stormwater capture rate of 40,000 gallons per minute, and 2 million gallons of stormwater storage capacity.

Construction progressing on the treatment plant

Construction progressing on the headworks facility.

Mercury-contaminated buildings on the west side of Y-12

REGULATORY COMPLIANCE

This is an essential piece of infrastructure that allows OREM to fulfill its regulatory commitments to reduce mercury levels in the East Fork Poplar Creek, and it is expected to assist in removing existing water and fish consumption restrictions near the site.

Oak Ridge Site Specific Advisory Board

2022 Annual Report

www.energy.gov/orssab
orssab@orem.doe.gov

The East Tennessee Technology Park in Oak Ridge, Tenn. was once a shuttered uranium enrichment complex. EM's cleanup has transformed the site into a multi-use industrial park for the community with private businesses, conservation areas, and a national park.

Contents

Our Mission

The Oak Ridge Site Specific Advisory Board (ORSSAB) is a federally appointed citizens' panel that provides independent recommendations to the Department of Energy's (DOE) Oak Ridge Environmental Management (OREM) Program.

The board provides advice to the DOE EM program regarding environmental restoration, waste management, long-term stewardship, land use, and economic development.

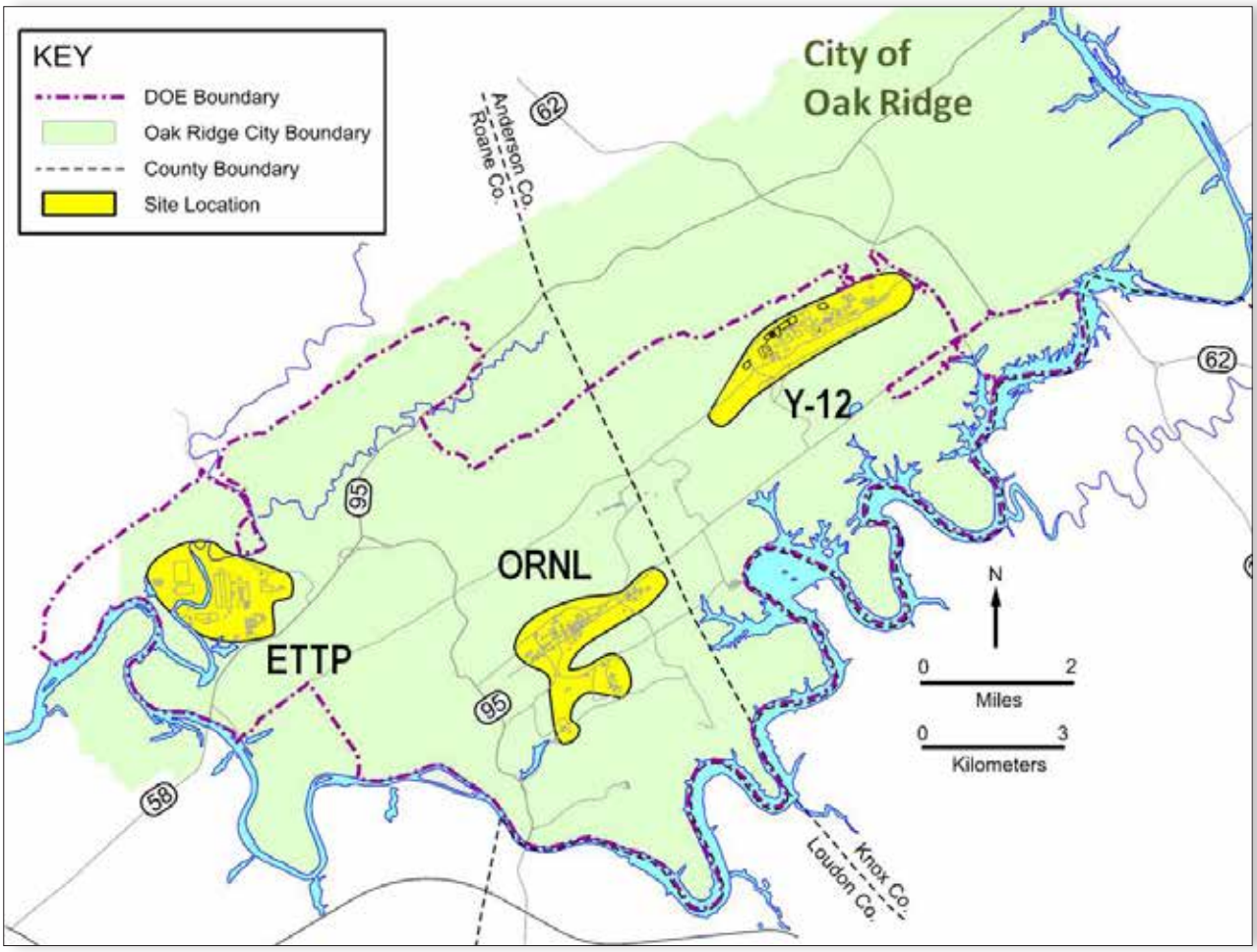
Recommendations regarding environmental justice, health and safety issues, historic preservation, and other concerns may also be developed at the request of the DOE assistant secretary for EM or the OREM manager. ORSSAB is one of eight site specific boards across the nation that comprise the EM SSAB and may also participate in joint recommendations with that organization.

The board is committed to reflecting the concerns of the communities impacted by EM activities on the Oak Ridge Reservation (ORR) and serving as a communications link between the public and relevant government agencies, including local governments.

ORSSAB provides several avenues for the public to learn about and express views on OREM's cleanup work. All board and committee meetings are open to the public and are announced in the Federal Register, newspaper advertisements, on our website, and various social media outlets.

Meetings are held at the DOE Information Center in Oak Ridge at 1 Science.gov Way and may also be attended virtually via Zoom on request. Recordings are uploaded to YouTube at **www.youtube.com/user/ORSSAB**.

The board maintains a web site at **www.energy.gov/orssab**. Information is also available by calling the ORSSAB support office at 865-241-4583 or 865-241-4584 or email us at **orssab@orem.doe.gov**.



Unlike most other DOE facilities, the ORR is almost entirely within the city limits of Oak Ridge. It contains three main facilities: East Tennessee Technology Park, Oak Ridge National Laboratory, and the Y-12 National Security Complex.

ORSSAB was chartered under the Federal Advisory Committee Act in 1995. The board is composed of up to 22 members, chosen to reflect a diversity of gender, race, occupations, views, and interests of persons living near the ORR. Members are appointed by DOE and serve without compensation. Members may serve up to three two-year terms.

At the close of the year, the board consisted of 20 voting members from Anderson, Campbell, Knox, Loudon, Morgan, and Roane counties. More about members who served, including some who exited the board mid-year, can be found in the "Members" section starting **on Page 14**.

Non-voting participants include liaisons from DOE, the U.S. Environmental Protection Agency Region 4 (EPA), and the Tennessee Department of Environment and Conservation (TDEC), which advise the board on their agencies' policies and views.

FY2022 Board Officers

ORSSAB officers for FY2022 were Leon Shields, chair; Amy Jones, vice chair; and Shell Lohmann, secretary. Michael Sharpe was chair of the EM & Stewardship Committee, and Harriett McCurdy was co-chair.

Board Meetings

The board meets the second Wednesday of most months at 6 p.m. in Oak Ridge to hear presentations by EM personnel working on relevant projects, listen to and discuss input from concerned citizens, consider recommendations to DOE, and conduct other business. In October, an annual meeting was held to evaluate the board's work during the year and plan activities for the next year. For 2022, meetings were held virtually via Zoom and as hybrid in-person and through Zoom.

The board conducts its deliberations under ORSSAB bylaws and Robert's Rules of Order and strives to consider all relevant positions in reaching decisions.

Committees

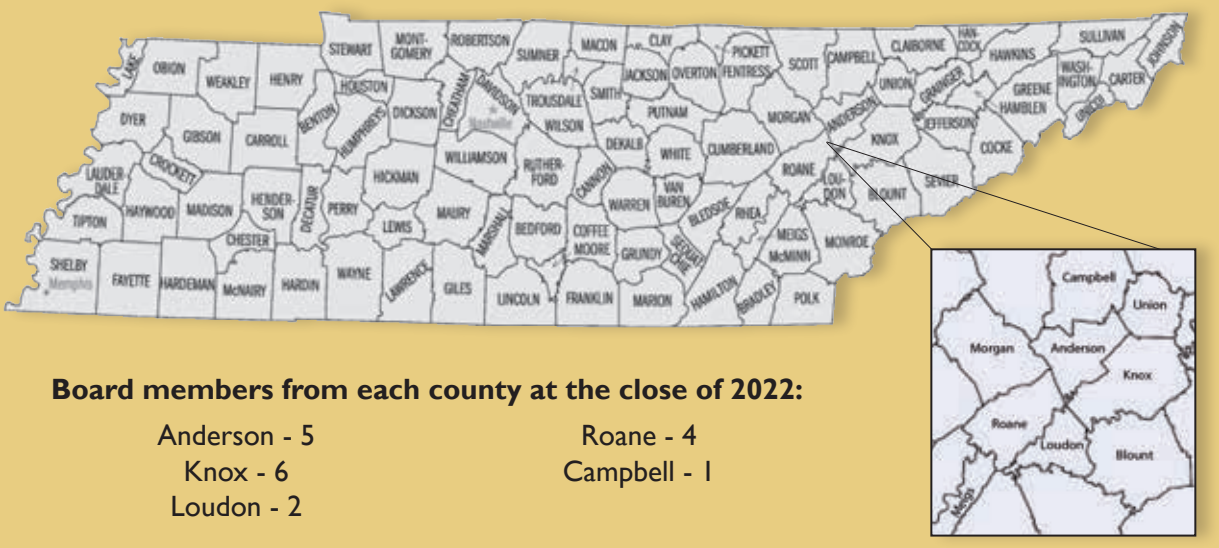
General business is handled at the monthly Executive Committee meeting, which is composed of the elected officers of the board and the chair of the EM & Stewardship Committee. This committee holds general administrative authority to set board agendas, coordinate the work of other committees, and transact business as necessary.

The EM & Stewardship Committee is responsible for monitoring the major cleanup activities on the ORR as well as stewardship requirements for areas of the reservation that have been remediated, but remain contaminated long-term. It originates recommendations to be considered at full board meetings. All board members are part of this committee.

Committees usually meet monthly, and all meetings are open to the public.

The Oak Ridge Site Specific Advisory Board

Representing nine counties in East Tennessee



Board members from each county at the close of 2022:

Anderson - 5
Knox - 6
Loudon - 2
Roane - 4
Campbell - 1

Join the Board

A broad spectrum of backgrounds and viewpoints is desired for board membership; technical expertise is not required. Applications for membership are accepted at any time and are actively solicited through a variety of media during specific recruitment periods.

Residents from the counties affected by DOE operations are encouraged to apply. These counties include Anderson, Blount, Campbell, Knox, Loudon, Meigs, Morgan, Roane, and Union.

Applications may be obtained by emailing the ORSSAB support offices at **orssab@orem.doe.gov** or visiting our website at **www.energy.gov/orssab**.

Abbreviations

CAB	Citizens Advisory Board
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DDFO	Deputy Designated Federal Officer
DOE	U.S. Department of Energy
EM	Environmental Management
EMDF	Environmental Management Disposal Facility
EMWMF	Environmental Management Waste Management Facility
EPA	U.S. Environmental Protection Agency
ETTP	East Tennessee Technology Park
OREM	Oak Ridge Office of Environmental Management
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
ORSSAB	Oak Ridge Site Specific Advisory Board
TDEC	Tennessee Department of Environment and Conservation
TRU	Transuranic
TWPC	Transuranic Waste Processing Center
WIPP	Waste Isolation Pilot Plant
Y-12	Y-12 National Security Complex

The Year's Top News

The beginning, middle and end: An aerial look at the progress of the teardown of the Bulk Shielding Reactor in the central campus of Oak Ridge National Laboratory from start to finish. EM Oak Ridge crews safely completed the demolition ahead of schedule, reducing risks at the laboratory and opening land for reuse at the site.

First-Ever Demolition of a Former Reactor at ORNL

EM crews in 2022 completed the first-ever demolition of a reactor in the central campus area at ORNL.

OREM cleanup contractor UCOR safely took down the Bulk Shielding Reactor, also known as Building 3010.

The Bulk Shielding Reactor complex was built in the 1950s for radiation shielding studies as part of the federal Aircraft Nuclear Propulsion Program. It included a 27-foot-deep reactor pool filled with water to shield the radioactive components contained in the pool. Its mission changed to a general-purpose research reactor in 1963 and was shut down permanently in 1991.

This 27-foot pool in Building 3010 housed irradiated items from the former research reactor.

One of the most important pre-demolition activities involved removing and disposing irradiated components from the reactor pool. After those tasks, workers drained the 130,000 gallons of the water from the pool and sent it to an onsite treatment facility. Then the pool area was decontaminated and filled with a concrete mixture to close it.

Employees with OREM contractor UCOR characterized this pool at Building 3010 prior to demolition.

In addition to stabilizing the reactor pool, workers removed asbestos and other waste from the facility.

The Bulk Shielding Reactor was one of more than a dozen research reactors constructed at ORNL over multiple decades. Each contributed to ORNL's reputation as a world leader in cutting-edge nuclear research and development. The facility was one of 16 inactive research reactors and isotope facilities EM is addressing at ORNL.

EM crews make progress tearing down the former Criticality Experiment Laboratory. The teardown began this past summer after months of deactivation activities.

Former Criticality Experiment Lab at Y-12 Removed

EM crews at Oak Ridge have cleared another excess contaminated facility, opening land for reuse at the Y-12 National Security Complex.

They successfully completed the demolition of the former Criticality Experiment Laboratory after working this past summer to bring down the dilapidated 1940s-era facility, also known as Building 9213.

"Removal of this facility is another sign of our steady progress transforming DOE's Oak Ridge Reservation," said Laura Wilkerson, acting manager for DOE's Oak Ridge Office of EM.

More than 50 percent of the facilities throughout the National Nuclear Security Administration complex, which includes Y-12, are more than 40 years old. The Criticality Experiment Laboratory is one of them.

Built in 1949, the two-story, 24,000-square-foot laboratory was used to conduct experiments with fissile uranium isotopes for nuclear reactor designs. Employees performed more than 9,700 experiments there in its first decade, and the facility later supported the Oak Ridge National Laboratory's High Flux Isotope Reactor program. The building has been closed since 1992.

With the building down, crews are working to remove waste and debris. They expect to move an estimated 525 truckloads of it in coming weeks.

Workers spent significant time deactivating the facility leading up to its teardown. They removed nearly 1,500 linear feet of asbestos-insulated piping, 300 linear feet of process piping and 8,500 square feet of other asbestos-containing material.

Work to demolish the former Criticality Experiment Laboratory began in May, when crews began removing ancillary structures around it.

January

Secretary Granholm Honors Oak Ridge Vision 2020 Project Team With Achievement Award

Oak Ridge before-and-after views: At left is the Oak Ridge Gaseous Diffusion Plant when it was closed in the late 1980s, and at right is a view of the site today, known as the East Tennessee Technology Park.

Energy Secretary Jennifer Granholm honored an EM team from Oak Ridge with the Secretary's Achievement Award during a January virtual ceremony for successfully removing a former uranium enrichment complex — a historic first that cleared 13 million square feet of deteriorated, contaminated structures from the site.

The award honors a group or team of DOE employees and contractors who accomplish significant achievements on behalf of the Department, demonstrating cooperation and teamwork in attaining their goals. The award was given to the Oak Ridge Vision 2020 Project Team based on its achievements from 2020.

Members of the Vision 2020 Project Team include Brad Adams, Gary Chandler, Steve Clemons, Heather Cloar, Jim Daffron, Tracie Jackson, Dan Macias, Dawn Mills, Mike Mills, Mark Posey, Gary Riner, Ken Whittle and Chad York.

The historic feat resulted from Vision 2020, a decades-long effort to clean and transform the former Oak Ridge Gaseous Diffusion Plant, now known ETTP. The site originally produced enriched uranium to power weaponry that ended World War II, and it went on to produce uranium for defense and commercial purposes. Those operations continued until the mid-1980s, and the site was shut down permanently in 1987.

The complex's closure left behind hundreds of contaminated facilities that had to be remediated, demolished and disposed — among them five massive gaseous diffusion enrichment buildings, including the mile-long K-25 Building.

The Vision 2020 Project Team was selected for the prestigious award for what it accomplished in both scale and performance. Crews deactivated and demolished more than 500 deteriorated and contaminated structures — an area that could cover 225 football fields.

EM and cleanup contractor UCOR completed the effort four years ahead of schedule and $80 million under budget, avoiding $500 million in costs to taxpayers.

The team helped transform ETTP from a liability into a community asset that serves as a multi-use industrial hub, national park and conservation area.

Oak Ridge has transferred nearly 1,300 acres of land at ETTP back to the community for economic development, and it recently signed an agreement with the state of Tennessee to transfer 3,500 acres for conservation and recreational reuse. Additionally, EM and UCOR constructed and opened the K-25 History Center and set aside another 100 acres for historic preservation as part of the Manhattan Project National Historical Park.

February

ORNL Molten Salt Reactor Experiment Upgrades Enhance Safety, Save Taxpayer Dollars

EM in February was upgrading a historic reactor at Oak Ridge to keep the facility in a safe mode until its demolition is scheduled.

The improvements to the Molten Salt Reactor Experiment (MSRE) were needed for safe continued operations and will also support the facility's eventual transfer from maintenance to deactivation, which will save approximately $5 million in annual operating costs.

MSRE, located at ORNL, is one of more than 200 facilities in Oak Ridge that no longer support ongoing missions. OREM and its contractor UCOR are tasked with keeping many of these facilities in a safe, stable condition, and together they examine ways to reduce costs without compromising safety as these facilities await deactivation and demolition.

Since MSRE is still classified as an active nuclear facility with a deactivated nuclear reactor, numerous upgrades are

Workers installed a new roof over a portion of the Molten Salt Reactor Experiment to ensure the facility remains safe, protected and in good condition to minimize potential risks.

(Continued on page 7)

needed to keep critical systems safe until the facility is torn down. UCOR has been making upgrades and modifications that minimize maintenance costs, reduce risks of injury and exposure to personnel, provide reliable electric service to key systems, and eventually eliminate the need for personnel to work at the facility.

Tank headspace-gas pressure builds up from fluorine gases in tanks inside the facility. A new continuous purge system, scheduled to begin operation in 2023, will provide safe continuous off-gassing instead of allowing the pressure to build up. This project is also reducing risks by replacing an old reactive gas removal system, which has exceeded its operational life expectancy.

Workers also installed a new roof over a portion of the facility to protect key systems such as the reactor and containment ventilation systems. Additionally, UCOR relocated employees stationed in MSRE to nearby offices to further reduce the possibility of hazards.

Construction of MSRE began in 1962. Test runs began in 1965 using uranium-235 as fuel. The reactor reached full power in 1966. Two years later, scientists added uranium-233 to demonstrate the design's flexibility, making it the first reactor in the world to operate with uranium-233. Famed scientist Glenn Seaborg, discoverer of plutonium and creator of uranium-233, came to ORNL to start the reactor.

The facility was inspired by a short-lived effort to develop a nuclear-powered aircraft in the 1950s. After that initiative was canceled, focus shifted to using MSRE technology to generate electricity. Concerns about long-term uranium supplies made this concept more attractive because of its ability to function as a "breeder," producing more fuel than it consumed.

MSRE was shut down in 1973 in favor of a sodium-cooled fast breeder reactor that was planned for construction - but never built - in Oak Ridge.

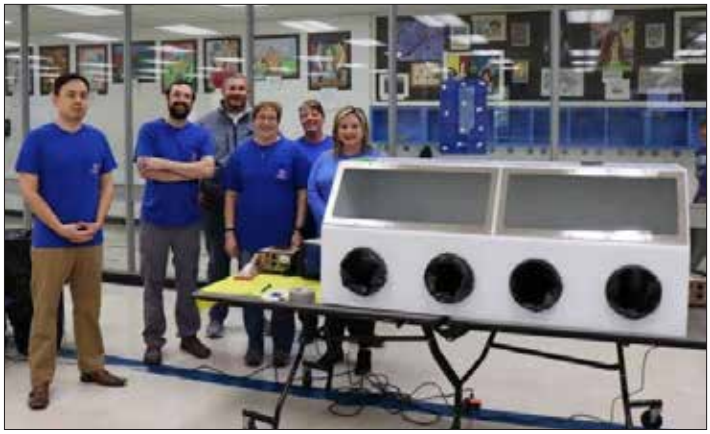
March

Oak Ridge Contractor Highlights EM Cleanup at STEM Night for Local Middle School Students

Employees from OREM contractor Isotek in March supported a local middle school's Science, Technology, Engineering, and Mathematics (STEM) Night, which attracted hundreds of students and their family members.

The annual STEM Night has been a major attraction since Jefferson Middle School began hosting it in 2019. The event increases students' awareness of STEM technologies and careers, and provides hands-on learning activities. It also gives local companies and organizations a unique opportunity to engage with students.

About 500 people attended this year's STEM Night. Isotek was one of more than 20 local groups that set up interactive learning exhibits.



Isotek employees volunteer to support student learning at Jefferson Middle School's annual Science, Technology, Engineering, and Mathematics (STEM) Night.

Isotek's exhibition allowed students to experience how the company's employees conduct processing operations in gloveboxes. Middle school students dressed in protective suits and put their hands in a glovebox designed for practice and training. The experience showed how gloveboxes are used to handle radiological material in a controlled setting.

Isotek also demonstrated how its employees control nuclear material, weigh material and extract rare medical isotopes that support cancer treatment research.

Isotek is responsible for processing, downblending and eliminating the inventory of uranium-233 material stored at ORNL, which is OREM's highest priority at the site. Through a partnership with nuclear innovation company TerraPower, the contractor is also extracting thorium-229 to support cancer treatment research.

April

Crews Continue Progress on COLEX and Mercury Treatment Facility, Eliminating Risks at Y-12

EM crews in April continued progress on key projects eliminating risks at Y-12. Crews prepared the East Column Exchange (COLEX) equipment at Oak Ridge for demolition following deactivation work that involved retrieving mercury from the deteriorating structures to prevent a potential environmental release.

COLEX equipment was installed in 1955 on the east, west and south sides of the massive four-story, 500,000-square-foot Alpha-4 building. The equipment used large amounts of mercury as part of its operations. Although workers drained most of the mercury from the equipment when operations ceased in 1962, recoverable amounts of it remained in aging lines and equipment that had rusted and deteriorated over the decades.

In 2018, EM Oak Ridge contractor UCOR recovered 4.19 tons of mercury before demolishing the West COLEX. By

(Continued on page 8)

The exterior of the column exchange processing structure on the east side of the Alpha-4 facility at the Y-12 National Security Complex. Removing this deteriorated equipment will eliminate risks and move Alpha-4 closer to demolition.

deactivating the East COLEX and performing cleanup work in Alpha 4, UCOR retrieved another 2.3 tons, bringing the total amount of mercury recovered to 6.49 tons.

Construction also progressed on the Mercury Treatment Facility, which is the linchpin for EM's cleanup strategy at Y-12. This vital piece of infrastructure will enable EM to begin demolition on large mercury-contaminated buildings and subsequent soil remediation at Y-12.

The facility will provide a mechanism to capture and safeguard against potential mercury releases into the Upper East Fork Poplar Creek that could occur during cleanup operations. When operational in 2025, the facility will be able to treat up to 3,000 gallons of water per minute.

May

UCOR Transitions to New Cleanup Contract, Focus Shifts to ORNL and Y-12

A new era of cleanup began in May as UCOR undertook the $8.3 billion Oak Ridge Reservation Cleanup Contract.

UCOR has been a familiar name in Oak Ridge since 2011. As an Amentum-led partnership with Jacobs, it successfully closed out the ETTP cleanup contract more than $100 million under budget. Now, with an additional partner, Honeywell, the newly configured UCOR is positioned to continue its successful performance at Y-12 and ORNL.

DOE's Oak Ridge Reservation contains three main sites: Y-12, ORNL, and ETTP (the former Oak Ridge Gaseous Diffusion Plant). The previous UCOR contract focused mainly on cleanup at ETTP, a former uranium enrichment plant that was closed in 1987.

OREM and UCOR achieved the first-ever cleanup of an enrichment complex in 2020 when crews finished all demolition at the site.

The new contract focuses on the removal of unneeded and contaminated buildings at ORNL and Y-12, but it will also continue soil and groundwater remediation efforts at ETTP. Together, ORNL and Y-12 contain DOE's largest inventory of high-risk excess contaminated facilities, and under this contract UCOR will eliminate significant risks by demolishing many of these structures.

Reinforcing this contract, OREM and UCOR signed a partnering agreement this week that details project goals and reinforces a collaborative work arrangement. The agreement focuses on safely delivering beneficial end states—in alignment with stakeholders and with full transparency—with a commitment to sustainability, climate management, environmental justice, and diversity.

June

McCracken Bridge Dedication Ceremony in Oak Ridge Honors Historic Career

Former Oak Ridge cleanup manager Steve McCracken and his wife Pam are shown at a ceremony dedicating the Haul Road bridge in Oak Ridge in McCracken's honor.

Friends, family and former co-workers gathered in June to celebrate with retired Oak Ridge cleanup manager Steve McCracken and to dedicate the bridge he helped build.

McCracken began working in environmental programs with DOE in 1980 until he retired in 2010. Over that span he led major EM cleanup efforts at Oak Ridge as well as sites in Missouri and Ohio. After retiring from DOE, he continued adding to his resume by leading the Tennessee Valley Authority's cleanup of a major coal ash spill.

During his tenure as Oak Ridge's manager, one of his many influential decisions was constructing the private eight-mile Haul Road. That road gives drivers carrying debris from cleanup projects a direct path to disposal facilities without using commercial roads through town. That decision has allowed the Oak Ridge Office of Environmental Management to safely move more than 100,000 truckloads of waste for disposal to date.

McCracken's decision to build the road was instrumental in Oak Ridge completing demolition at ETTP four years

(Continued on page 9)

DOE installed a plaque on the newly named McCracken Bridge to tell the story of the bridge and honor Steve McCracken.

ahead of schedule and avoiding $500 million in costs to taxpayers. It keeps the community safer and helped the site become the first in the world to remove a former enrichment complex.

July

After a two-year pause due to the COVID pandemic, DOE's public bus tour at Oak Ridge officially kicked off a new tour season with a new attraction thanks to OREM.

Tours began running again on July 11 with plans to continue running through November. The program is a longtime staple in the community, helping educate residents and visitors about the site's rich history and current missions. Since it began in 1996, the tour program has attracted tens of thousands of visitors with representation from all 50 states.

The three-and-a-half-hour tour, which departs form the American Museum of Science and Energy (AMSE) allows visitors to see all three DOE sites on the Oak Ridge Reservation, including ORNL, Y-12 and ETTP.

This year's tour was the first to feature the newly constructed K-25 History Center. The facility, an OREM project, opened only weeks before the COVID pandemic began. It offers 250 original artifacts on display. Nearly 1,000 oral histories were collected from former Manhattan Project and Cold War-era workers that museum professionals used to develop the exhibits and interactive galleries inside.

DOE's public bus tour program at Oak Ridge restarted on July 11 after a two-year pause. Buses depart from the American Museum of Science and Energy for a tour that has attracted tens of thousands of visitors from around the world since 1996.

OREM is currently advancing plans to complete its historic preservation commitments, which includes constructing the K-25 viewing platform and wayside exhibits around the K-25 Building.

Among the other stops, visitors on the bus tour go inside the Graphite Reactor at ORNL. The national historic landmark is a key component of the Manhattan Project National Historical Park. It houses the world's oldest reactor and served as the pilot plant that led to the first production of plutonium.

A rendering of the historic preservation related projects the Oak Ridge Office of Environmental Management is slated to complete at the East Tennessee Technology Park in coming years. The K-25 History Center, right, is already open to visitors.

August

Deputy Energy Secretary Turk Sees Impact, Progress of Partnerships during Oak Ridge Visit

During his visit to Oak Ridge last week, Deputy Energy Secretary David Turk saw firsthand the impact and progress of EM's strong partnerships at Oak Ridge.

Turk visited the Oak Ridge National Laboratory (ORNL) and Y-12 National Security Complex (Y-12), where he learned about the latest developments in scientific research, national security and environmental cleanup missions.

At ORNL, Turk was joined by Deputy Defense Secretary Kathleen Hicks. They celebrated the dedication of Frontier — a supercomputer that is the world's fastest and the first to break into an unprecedented level of computing performance known as exascale, a threshold of a quintillion calculations per second. Turk also learned how researchers are developing more efficient, safe and compact batteries.

Next, Turk traveled to Y-12 and met with National Nuclear Security Administration Principal Deputy Administrator

(Continued on page 10)

Deputy Energy Secretary David Turk, center, tours an area of ORNL containing former research reactors, including the Low Intensity Test Reactor shown in the background.

Frank Rose. Together, they toured production facilities helping keep the nation safe and secure.

At ORNL and Y-12, Turk had the opportunity to see important environmental cleanup projects helping protect the investments at those sites. OREM Acting Manager Laura Wilkerson and UCOR President and CEO Ken Rueter accompanied Turk during the visit. UCOR is EM's cleanup contractor at Oak Ridge.

In addition to eliminating risks and enhancing safety, EM's cleanup projects at ORNL and Y-12 are clearing land to enable modernization and mission growth. That was on display during Turk's Oak Ridge tour.

At ORNL, Turk got an up-close perspective of former research reactors, one of which is only weeks away from being torn down. Demolition begins in September on the Bulk Shielding Reactor, known as Building 3010. Next is the knockdown of the Low Intensity Test Reactor, known as Building 3005, by the end of the year.

Those structures are located in the heart of ORNL, and their demolition will eliminate risks, clear land for research missions and enhance access to the Oak Ridge portion of the Manhattan Project National Historical Park. The park also has locations at the Hanford Site in Washington state and Los Alamos, New Mexico.

While at Y-12, EM leaders discussed large cleanup projects underway and several more on the horizon that will significantly transform the site.

The tour at Y-12 included a stop at the award winning Biology Complex demolition project. In 2021, EM finished taking down that complex's 11 structures covering an 18-acre footprint.

September

Crews Begin Deactivating Alpha-4 Facility at Y-12, Mercury Treatment Facility to Aid Cleanup

EM crews in September began taking the first steps to bring the massive Alpha-4 facility at Y-12 to the cold-and-dark stage, a process in which they remove all utility sources to the building as a precursor to demolition.

This project moves EM closer to addressing one of the largest high-risk buildings at the site. It also marks the third former enrichment facility at Y-12 where EM has initiated deactivation work. Other crews were preparing the Alpha-2 and Beta-1 facilities for teardown.

OREM contractor UCOR began sampling and marking potential hazards and removing combustible materials from Alpha-4 last month. Workers were then due to begin isolating the structure from any potential hazardous energy sources, an early step in the deactivation process.

The four-story Alpha-4 spans more than 500,000 square feet across 13 acre of land. The deactivation and demolition project is challenging not only due to the facility's size, but also its mercury contamination.

The facility was used for uranium separation from 1944 to 1945. A decade later, workers finished installing COLEX equipment on the west, east, and south sides of Alpha-4 for lithium separation, a process requiring large amounts of mercury.

A significant amount of mercury was lost into the equipment, building and surrounding soils during those operations. Mercury cleanup is one of EM's top priorities at Y-12.

A view of the Alpha-4 facility at the Y-12 National Security Complex at Oak Ridge. EM crews are in the early stages of removing all utility sources to the building prior to tearing down the facility.

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Although employees drained the majority of materials from the equipment at Alpha-4 when operations ended in the 1960s, recoverable amounts of mercury remained in aging lines and equipment that had rusted and deteriorated over the decades.

UCOR crews have retrieved more than 6.5 tons of mercury from the COLEX equipment to date, demolished the equipment on the west side of Alpha-4 and finished deactivating the equipment on the east side of the building earlier this year.

Two other pivotal projects are underway that will enable removal of Alpha-4. The first is construction of the Mercury Treatment Facility. The facility will capture and treat mercury releases entering a nearby creek caused by crews and big machinery tearing down Alpha-4 and other large, mercury-contaminated buildings in the area.

Other critical work is the National Nuclear Security Administration's West End Protected Area Reduction Project. That effort is rerouting portions of the high-security area at Y-12 around Alpha-4 and the other mercury-contaminated buildings, allowing enhanced access for cleanup crews and significantly reducing cleanup costs.

Deactivation work at Alpha-4 is expected to continue for several years.

October

OREM Launches U-233 Processing Campaign, Achieving EM 2022 Priority

Workers spent months practicing & preparing before processing the first canister of the high-dose uranium-233 inventory in October.

EM contractor Isotek in October began processing the remaining inventory of U-233 stored at ORNL, attaining a 2022 priority for the cleanup program.

Starting processing operations moves EM closer to achieving its highest cleanup priority at ORNL: safe and secure disposal of the Cold War legacy nuclear material stored in the world's oldest operating nuclear facility, Building 3019.

Crews began the campaign by transferring a canister of U-233 oxide from Building 3019 into an adjacent, newly upgraded hot cell facility for downblending processing.

Using the hot cells, which are heavily shielded rooms, workers are protected from radiation exposure as they handle the radioactive nuclear material. Employees open canisters inside the hot cells, strip the transuranic material — which has a higher atomic number than uranium — from the U-233, and mix it with depleted uranyl nitrate.

This downblending lessens the enrichment of the U-233 material, converting the material into a form safe for transportation and permanent disposal. Downblended uranyl nitrate is solidified onsite and transported off site for disposal.

EM and Isotek's work to safely process this Cold War-era nuclear material will reduce risks and eliminate costs to taxpayers of keeping the material safe and secure in storage.

U-233 was created as an alternative nuclear fuel source in the 1950s and 1960s. However, due to its trace amounts of U-232, a highly unstable radioactive isotope, it was too difficult to use. Eventually, it was sent to ORNL for storage.

EM and Isotek completed an earlier phase of the project in 2021. Together, they successfully finished processing and disposing the low-dose inventory of U-233. That two-year effort eliminated a portion of the site's legacy nuclear material and provided rare nuclear isotopes for next-generation cancer treatment research.

The U-233 processing campaign is expected to continue the next few years. By the end of the campaign, about 90 percent of the original nuclear inventory in Building 3019 will be dispositioned.

November

OREM Transfers Cleared Biology Complex Land, Completing EM 2022 Priorities

OREM in November completed the transfer of the former Biology Complex footprint at Y-12 back to the National Nuclear Security Administration, marking the completion of the goals laid out for the Oak Ridge Reservation in EM's 2022 priorities.

Crews had worked throughout the year to remove building slabs and backfill the area.

The parcel was under the temporary responsibility of OREM for crews to conduct deactivation and demolition, remove building slabs, and address any impacted soil to prepare the 18-acre area for reuse. This land is of particular importance because it's the planned location for the Lithium Processing Facility that will support national security missions.

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Oak Ridge workers spent much of 2022 tearing up and removing building slabs left behind from the Biology Complex demolition, as shown at top.

The Biology Complex, which dates back to the 1940s, was originally comprised of 11 buildings. It was initially constructed for recovering uranium from process streams, but it was later used for research that led to strides in understanding genetics and the effects of radiation.

The complex was shut down in 2002 and later categorized as containing high-risk excess facilities due to their deteriorated structural condition. OREM tore down a number of the facilities in 2010 using American Recovery and Reinvestment Act funds and began demolition on the remaining buildings a decade later.

Those 2020 demolitions included the massive six-story, 255,000-square-foot Building 9207 and the three-story, 65,000-square-foot Building 9210. That work was completed by OREM cleanup contractor UCOR in 2021.

December

Oak Ridge Advances Waste Disposal Facility as Public Outreach Continues

OREM officials reached an important milestone in fall 2022 in preparing for a new onsite disposal facility by signing a record of decision with the EPA and TDEC.

The recently signed document allows OREM and its contractor UCOR to move forward with a final design for the facility and begin activities to prepare for its construction.

The EMDF is key to providing the waste disposal capacity needed to continue cleanup efforts at Y-12 and ORNL. OREM's current waste disposal facility is at 83 percent capacity.

While all high-level radioactive waste is shipped out of state for disposal, OREM needs the new onsite disposal facility for low-level waste, such as soil and building rubble, generated from cleanup projects.

As the EMDF project enters a new phase following the record of decision, OREM is maintaining its commitment to keep the community informed about the project as it progresses. OREM hosted an information session in December as the most recent effort to continue public outreach.

The two-hour open house style event on Dec. 8 featured posters with new information on the next phase of the project, upcoming site preparation activities and the Groundwater Field Demonstration project. That study will help OREM and regulators understand how groundwater well levels adjust, informing the final EMDF design.

Site preparation activities, scheduled to begin in summer 2023, will involve moving roads and utilities and developing an area to support future construction crews. The Groundwater Field Demonstration project is expected to begin late next year.

Top subject matter experts from the project were on hand at the Dec. 8 event to discuss updates and answer questions from attendees.

OREM will continue sharing the latest developments about the project at the next information session scheduled for next summer.

The Dec. 8 event follows two public comment periods, formal meetings, information sessions and numerous presentations since 2018.

OREM's Roger Petrie discusses updates regarding the EMDF during a public poster session at the Scarboro Community Center in Oak Ridge.

Key Issues

In FY 2022, ORSSAB sent one locally generated recommendation to DOE and endorsed two recommendations developed by the chairs of the eight site specific advisory boards.

Full text of the recommendations and responses is available on the ORSSAB website at **energy.gov/orem/listings/orssab-recommendations-responses**.

Recommendations on FY2024 OREM Budget

Each year the U.S. Department of Energy (DOE) Environmental Management (EM) Program develops its budget request for the fiscal year (FY) two years beyond the current year, including requests from DOE field offices to develop the EM Program budget request to the president.

DOE-EM Headquarters typically issues guidelines to the field offices advising them how much funding they should reasonably expect when developing their FY+2 budget requests. The field offices then brief the public, the regulatory agencies, and the respective site-specific advisory boards and seek input from each regarding budget requests.

On March 9, 2022, the OREM program presented on its FY 2024 budget formulation process to ORSSAB. This presentation provided content and discussions that ORSSAB used to draft its recommendations.

In creating its recommendations for the FY 2024 OREM budget, ORSSAB focused on general near-term and long-term cleanup priorities identified by OREM:

- **Closure of ETTP**
  - ◊ Complete remediation of slabs and soils and other activities required to close ETTP and transfer long-term stewardship to Legacy Management
- **Demolish excess contaminated facilities at ORNL and Y-12**
  - ◊ Continue pre-demolition, deactivation, and remediation activities
- **Progress infrastructure to enable cleanup**
  - ◊ Mercury Treatment Facility
  - ◊ New CERCLA waste disposal facility (EMDF)
  - ◊ Continue mercury technology development
- **Disposition ORNL uranium-233 inventory**
  - ◊ Complete uranium-233 direct disposition campaign
  - ◊ Conduct down-blending operations and dispose of remaining uranium-233 inventory
- **Disposition ORNL transuranic waste inventory**
  - ◊ Complete disposition of transuranic debris waste
  - ◊ Complete construction of the Sludge Processing Facility
- **Maintain and operate facilities at ORNL and Y-12**
  - ◊ Continued safe operation of waste disposal and treatment facilities
  - ◊ Continue activities to extend life of aging facilities.

Recommendations

ORSSAB supports OREM's Program Plan and recommends fully funding the activities that are currently supported by that Plan for FY 2024. In addition, ORSSAB has identified the following priorities for Oak Ridge Reservation cleanup.

The board recommends that the FY 2024 OREM budget request reflect adequate funding to maintain or accelerate these projects. In addition, when extra funds from suitable plus-ups and savings become available, we recommend that these funds be targeted for the following projects, in no particular order of priority:

- The expansion of ORNL's Aquatic Ecology Laboratory provides a vital resource to the EM complex. Future requests should continue funding support for research into mercury and methyl-mercury pollution and prioritize designing and testing new and improved remediation technologies.
- Provide adequate funding to construct and operate the urgently needed new onsite disposition facility to allow uninterrupted cleanup progress at Oak Ridge National Laboratory (ORNL) and Y-12 National Security Complex (Y-12).
- Increase funding where possible to ensure the Mercury Treatment Facility meets the operational date of 2025 as presented to the community and ORSSAB. In addition, consider using plus-ups or surplus funds to upgrade equipment and technology that may have improved since the original schedule was developed.
- Provide adequate funds to maintain or upgrade infrastructure
- Complete transfer of all applicable land parcels at ETTP for productive purposes. Continue working with community partners to fully realize the economic development potential of reindustrialization after transfer.

ORSSAB was one of eight SSABs to jointly endorse the following three items. More information about the other boards organized under the EM SSAB umbrella can be found at **energy.gov/emssab**.

Recommendations on the EM SSAB Membership Appointment Process

The work of the EM SSAB is in support of Department of Energy (DOE) programmatic missions focused on environmental cleanup of post-war nuclear and chemical contamination. At each of our respective sites, that work has been substantially and adversely impacted over the course of the past few years, in part, because of the length of time it is now taking to get appointment letters approved for individual Board members to participate. It has hamstrung Board abilities, at each site, to fulfill DOE goals for development and incorporation of public policy advice concerning the nature of cleanup and many other issues. For example, often potential members apply and later withdraw their applications due to extended delays in the appointment process. Boards have had to delay providing advice or recommendations due to a lack of membership, coupled with the loss of Board or Committee chair leadership while they wait for appointment approval. Reduced Board membership has also limited the development of institutional knowledge, so necessary at sites whose cleanup missions will extend decades into the future. In some cases, experienced and informed members are handicapped by a year or longer gap between their terms because they lack the special and immediate access to information on emerging issues that active members receive. More significantly, the extended approval process, which has often resulted in depleted Board rosters, has reduced Board legitimacy, and eroded public confidence in the DOE, including attracting complaints from community organizations and negative media coverage.

Recommendations

The EM SSAB believes that DOE should substantially revise the membership approval process to ensure that the continuity of Board and Committee activities is protected and remains intact such that there is no disruption of stakeholder involvement and input as per each Board's respective chartering agreements and operating rules.

While the larger effort to comprehensively revise the SSAB membership approval process is pursued by the Designated Federal Officer for the EM SSAB and in order to further enable stakeholder participation at their respective sites during this endeavor, the EM SSAB recommends:

1. The membership review and approval process should include all reasonable activities necessary to prevent lapsed memberships. A lapsed membership is defined as: a membership held by a member in good standing whose term has expired but has not reached the six-year limit.

2. The site manager should be empowered to temporarily extend the terms of lapsed members in good standing or to temporarily appoint other qualified members to replace lapsed members until a new membership package is approved.

3. The DOE should publish the review and appointment process and then take feedback from the public and EM SSAB members. The published information should identify which elements are required by the Federal Advisory Committee Act, the General Services Administration, and the EM SSAB charter, and which elements are internal to the DOE, as well as where those DOE policies and procedures can be found

Recommendations on Strategic Vision Stakeholder Communication

On October 7, 2021, the Chairs and Vice-Chairs of the EM Site-Specific Advisory Board (SSAB) passed the following recommendation concerning best practices for stakeholder and community interaction at EM sites. This recommendation was subsequently approved by all eight local boards of the EM SSAB.

The EM SSAB was tasked with identifying EM SSAB expectations and guiding principles to be used as a complex-wide framework for DOE EM's interactions with stakeholders and communities. The process included each board documenting their expectations and suggestions for how DOE EM should interact with local stakeholders and communities to reach EM's 10-year strategic vision. These results from the individual boards were presented at the EM SSAB Chairs Meeting in April 2021.

The EM SSAB then formed a subcommittee to develop a compilation of guiding principles. The EM SSAB recommends that DOE EM consider these important principles when communicating with the public.

EM SSAB Expectations and Guiding Principles for Stakeholder Communication

10 Year Strategic Plan Development:

1. DOE should hold 10 year Strategic Vision public meetings every year, at each site, in order to share the next iteration of programmatic goals, including discussions of successes, roadblocks, course changes, new scopes of cleanup and recognition of potential

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uncertainties. Public tutorial meetings should be held two weeks in advance of the beginning of any formal Public Comment period in order to build a common knowledge base.

2. EM Sites have the commonality of specific, near-term, three to five year, plans. These specific site plans should all trigger public involvement campaigns, outlining yearly updates on their next respective, goals. Site near-term plans should be aligned with 10 year Strategic Plan goals such that near-term plans can be used iteratively to benchmark programmatic progress.

3. Regarding the Strategic Vision, in addition to reducing jargon and allowing for a quicker means of identifying or getting to information pertinent to a specific site, the document needs a better explanation of how the priorities are established. What criteria are used with regard to public health, environmental risks, local economies, cost to complete, land transfers, etc.? Not details for each site, but an overall explanation of the process. This might help people understand why some sites have larger budgets or seem to be more active. Local SSABs are probably knowledgeable about planning for their sites, but each board should have some education on national priorities.

Communication:

1. DOE should put forth a concerted effort to define terminology so that FACA Boards and the public understand what is being considered and asked for, from them, within the decision matrix to be discussed. DOE needs to clearly communicate the boundaries of what is being considered. Additionally, DOE should articulate, in what manner, public policy advice can be successfully received by DOE-EM in order to see it incorporated into DOE's pending decisions. Lastly, DOE must convey how they will respond to public comments.

2. Utilize the strength of the SSAB Board's experiences and longevity by having them help to facilitate public meeting design, timing and locations. DOE-EM SSABs are now long-standing. They are formed from broad representation of the communities they represent and as such have the ability to help DOE regionalize presentations.

3. Evaluation of SSAB effectiveness should be based on several factors. This should include development of, but not limited to, guidance on when and what types of recommendations are needed. Although less objective, evaluative assessments from community stakeholders, DOE, DOE contractors, regulatory personnel and the SSABs themselves should be incorporated.

4. Activities at some sites are long term and have reached the stage where little change is seen during the tenure of a typical SSAB member. Hence, the need for major decisions and recommendations is less or non-existent. Maintaining SSAB member interest is difficult. In this situation, DOE should consider ways to involve the SSABs in less consequential decisions and public outreach. DOE should also consider what types of education might provide a better background for recommendations, decisions, community outreach that will occur in the future.

5. Written communication produced by DOE and the SSABs that is intended for the general public should be reviewed by site Public Affairs to verify that the use of jargon or uncommon terminology is understandable to a non-technical audience.

Public Involvement:

1. DOE should embrace the tenet that institutional knowledge and transparency in all aspects of the cleanup program is an essential component of building informed, useful and supportive public policy advice from the SSAB Boards, Tribes and the public. By engaging the public early and often, DOE can utilize the SSAB Boards and their operating structures such that they help prepare future generations of Board members and the public for informed engagement.

2. DOE should support STEM program development for local schools and colleges with curriculum development. Efforts should include supporting development of trained people for trade-focused careers.

3. DOE should actively provide opportunities for informational engagement and coordinate with the EM SSAB meeting schedule to the extent possible.

4. DOE should hold public tutorial meetings in order to share DOE interactions with regulatory bodies and formally convened scientific panels. Building a collective, scientific basis for remediation pathway development that incorporates informed public policy recommendations should be the goal.

5. SSAB membership should be consistent in reflecting community educational levels, proximity, racial and cultural diversity, and income levels. An exact mirror of the community is not necessarily beneficial. Interest and commitment are most important. Including actual stakeholders affected by public health or environmental risks or community economic and political factors is more important than simply looking at the community demographics. Also, having people that can contribute to SSAB decisions because of experience, education, and connections in the community is important. One criterion that should be emphasized is a member's willingness and ability to communicate with the general public.

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6. Introductory training for new board members appears to be inconsistent. Site tours and in-person instruction should be required. These should be supplemented by online or other virtual resources. In addition to DOE and/or contractor personnel, current SSAB members should be involved in the tours and training. Introductory training can be spread out over time, but should be separate from SSAB meetings. A more formal schedule of when new SSAB members are added should be established to allow for a better introductory training schedule and to reduce the need for continual repetition of information that has already been addressed by longer term SSAB members.

7. Because of COVID, virtual meetings have become routine. Although these meetings allow for participation of people geographically distant or with health issues, they are not as effective regarding communication within and between SSAB, DOE, regulatory personnel, DOE contractors, and the general public. Virtual meetings allow for a lessened commitment among participants. SSAB in-person meetings should be prioritized, with hybrid meetings as needed.

Risk Communication:

1. DOE should address the Boards and the public on how risk assessments affect prioritization and decision making.

2. Training should be provided to Board members on communications surrounding high-profile or sensitive issues.

Recommendations on Outreach

The EM SSAB understands that successful completion of the DOE-EM mission must include a significant community, public and stakeholder outreach. While DOE-EM has been engaging in public outreach from the beginning we believe that the effectiveness can be improved by any of several different approaches described in this document taking into consideration the complexity and uniqueness of each of the cleanup sites managed by DOE-EM.

Because of the challenges represented by the complexity and variety of sites with correspondingly different cleanup schedules, we are presenting a suite of potential activities that can be implemented by DOE EM and the SSABs at each of the sites but are applicable to all sites in some form. Individual site-specific advisory boards are in the perfect position to help develop and recommend implementation strategies because of our inherent connections within our respective communities. Advisory board involvement on DOE EM outreach would help by providing advice related to specific targeted areas based on feedback from actual communities and individuals who live near or are potentially impacted by site activities.

Recommendations

We recommend that the individual site managers/designees and their advisory boards work together to discuss and determine which activities best suit their circumstances and respond to public needs. The detail, depth, and implementation plan should result from this collaborative effort. The following thematic areas of improvement were agreed upon by the Chair Public Outreach Committee and are offered as recommendations to DOE EM, as well as some specific recommendations within each thematic area.

1. Develop an optimal design and platform for virtual and hybrid meetings and make the most of virtual opportunities. Not only does this allow us to make the most of the change that COVID-19 brought to the world but allows access by members of the public that might not be able to travel to SSAB meetings.

    ◊ Utilize social media to quickly disseminate important information to the public, State and local governments, and stakeholders.

2. Maintain efforts for in-person outreach.

    ◊ Make site tours for board members a requisite, and include the public, stakeholder groups, and the media whenever possible.

    ◊ Utilize local museums to house displays for preserving site history or virtual museums to tell the story of the site using online format that can be accessed at any time.

3. Outreach should be a mechanism for effective two-way communication between DOE-EM and the general public. DOE-EM outreach should seek to increase (1) the general public's awareness and understanding of DOE-EM activities as well as (2) actionable feedback from the general public regarding past, current, and future DOE-EM activities.

    ◊ Engage the public early and often. Have interactive conversations with the public that allow the public to ask questions and get answers about complex subjects.

    ◊ Share how public input has shaped or influenced cleanup decisions.

    ◊ Ensure open and transparent decision making.

    ◊ Promote success and planning ahead by incorporating and educating the public on strategic vision plans that cover at least the next 10 years.

4. Continue to support and improve informational outreach products to engage the public.

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- ◊ Utilize existing digital media outlets (i.e., YouTube channels, papers, blogs, and newsletters) to broadcast timely information about current events and upcoming activities at a site.
- ◊ Create videos, animations, and diagrams to use at public presentations or posted on websites to present engaging content the public would be interested in.
- ◊ Create a listing of historical articles and books relevant to each site that could be accessed through each site's website. Consider providing hyperlinks for the public to view these documents. EM sites provide databases or libraries of the technical reports produced for EM cleanup actions. The aforementioned historical articles and books would not duplicate the EM libraries but rather provide information that is less scientifically complex and technical for interested but perhaps less informed members of the public.
- ◊ Messaging regarding the cleanup of environmental impacts from nuclear development and research at the sites should be prioritized and increased relative to other, non-cleanup messaging.

5. Continue seeking ways to support and improve the impact of DOE's Site Specific Advisory Boards
   - ◊ Educate/inform the public, stakeholders, local and state officials and other appropriate entities on the purpose and responsibilities of the SSAB/ CAB Boards in membership, through news releases, speaker presentations, social media, newsletters and other communication methods. When new leadership has been selected or new members have joined the Board, also announce the changes using similar methods as previously mentioned.
   - ◊ When DOE-EM officials visit EM sites, plan an opportunity to visit informally with local SSAB /CAB Board members in order to develop a relationship with its membership and to show that they are valued.
6. Facilitate and support cross-site sharing of activities and public outreach resources. Outreach efforts should be informed and motivated by relevant professional expertise and related quantitative and qualitative metrics. To ensure ongoing progress, outreach efforts should be reviewed periodically by recognized experts in the field of government public outreach, and the outreach efforts should be adjusted as appropriate.

Members & Liaisons

Atilio Anzelotti

Atilio Anzelotti is a senior scientist with PETNET Solutions and a resident of Oak Ridge. He would bring a unique perspective to the board as he has dual citizenship (US and Venezuela). His B.S. and M.S. degrees in chemistry were received in Venezuela from the University of Los Andes and the Venezuelan Institute for Scientific Research, respectively. He received a Ph.D. in chemistry from Virginia Commonwealth University. Mr. Anzelotti is active in the community and is a member of the American Chemical Society and the Oak Ridge Environmental Quality Board. He is interested in environmental and public health issues.

Kris Bartolomew

Kris Bartolomew is the owner of Turn Key Plumbing and Construction, a small family-owned business. He has a high school education and completed some college courses, but instead went on to receive licensures related to his trade. Those include general contractor (BC-b(sm), plumbing/mechanical (CMC-A), and subsurface sewage installer licenses. He is interested in environmental and public health issues. He lives in Lenoir City.

Mary Butler

Mary Butler is a former staff pharmacist with Aurora Pharmacy. She received a B.S. in pharmacy from the University of Wisconsin. She retired to Rockwood in 2020 and is eager to engage in the community here as she was previously active in several organizations in her native Wisconsin. Accordingly, Ms. Butler is interested in civic and educational issues.

Paul Dill

Paul Dill retired in 2018 as a project manager with Project Enhancement Corp. He received a B.S. in industrial engineering/technology management from Roger Williams University and an M.A. in psychology from Ashford University. Mr. Dill also earned a Master Project Manager certification from the American Academy of Project Management. He is currently an associate member of the American Psychological Association and a member of the Society for Personality and Social Psychology. Mr. Dill lives in Oliver Springs, which includes portions of Anderson, Roane, and Morgan counties. He is interested in environmental and public health issues.

Thomas Geissberger

Thomas Geissberger is a recent college graduate who works at the Knoxville Area Rescue Mission and was previously employed as a team director for the Tennessee Clean Water Network nonprofit since 2019. He graduated with a B.S. in Geology and Environmental Studies from the University of Tennessee in 2020 and received an A.A. in General Studies from Pellissippi State Community College. He is a member of the Phi Sigma Theta National Honor Society and Phi Kappa Phi Honor Society, completed the tnAchieves Program, and was selected for the Oak Ride Associated Universities Higher Education Research Experience Program during his time as a student. He is interested in environmental and public health issues and lives in Knoxville.

Rosario Gonzalez

Rosario Gonzalez is a returning board member who served from 2016 through 2018. She recently retired as cafeteria manager of St. Mary's Catholic Church Cafeteria in Oak Ridge. She completed her secondary education in Mexico and received her GED from Pellissippi State. She lives in Oak Ridge and is interested in environmental and minority issues.

Chris Hampel

Chris Hampel owns and operates a small business, Pressure Washing Solutions, which he formed in 2016. He previously worked at Energy Solutions, which is a contractor to DOE in Oak Ridge. He has a high school education and trade skill training related to his work experience. He is interested in minority and business issues. He lives in Kingston.

Lorna Hollowell

Lorna Hollowell has served as the assistant director of education and development in the Office of Equity and Diversity at the University of Tennessee, Knoxville since September 2019. She holds an M.S. in education from the University of Minnesota, Duluth and a B.S. in Organizational Management from Oakland City University. She is currently pursuing a Ph.D. in Higher Education Administration from the University of Tennessee and expects to graduate in 2026. She is interested in educational issues and minority issues. She lives in Knoxville.

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Amy Jones

Amy Jones is the national business manager of InvoPeo, a workers' compensation and payroll service, and she is also a licensed insurance agent for Madison Insurance Group and a real estate agent at Stephenson Realty & Auction. She also owned her own business, Double J Enterprises of TN, in Rocky Top, Tennessee until mid-2018. A high school graduate, Amy has also received her real estate license and insurance license. She is active in a variety of community organizations, including serving as vice chair for: the Anderson County Republican Party, the Anderson County Headstart Policy Council, and Chairman for the State of Tennessee Order of Amaranth Diabetes Charity. She is a committeewoman on the State Executive Committee for the Tennessee Republican Party, chair of the Women's Ministry Banquet at Main Street Baptist, and president of two groups in the Order of the Eastern Star. Amy is interested in environmental and economic development issues. She lives in Briceville.

Noah Keebler

Noah Keebler is a nuclear electronics technician with Ametek, which is a manufacturer of electronic instruments and electromechanical devices. Prior to that he was a radiological instrumentation specialist with Perma-fix Environmental Services. Mr. Keebler received an A.S. in Electrical Engineering from Roane State Community College. He holds a certification in Instrumentation from Ludlum Measurements and several other work-related certifications. Noah has Occupational Safety and Health Administration training, electrical safety experience and radiation worker training and is a member of the East Tennessee Chapter of the Health Physics Society. He has an interest in environmental issues. He lives in Knoxville.

Shell Lohmann

Michelle (Shell) Lohmann is the human resources director for U.S. Cellular. Previously, she was the program manager for the University Recruiting and Graduate Education Programs for Oak Ridge National Laboratory/University of Tennessee in Knoxville. Shell is a member of the United Way of Greater Knoxville and has an interest in labor and environmental issues. A high school graduate, Shell lives in Lenoir City.

Greg Malone

Gregory (Greg) Malone is retired medical products development consultant. He operated Malone & Associates independent consulting firm until 2018. He received a B.S. in engineering with a welding and manufacturing concentration from The Ohio State University. He is a member of the Oak Ridge Sportsmen's Association and a volunteer for the Great Smoky Mountains National Park. He is interested in environmental and economic development issues. He lives in Rockwood.

Mike Mark

Michael (Mike) Mark is a former first responder and hazmat professional. He earned a high school diploma and has many certifications related to his career. He lives in Harriman and is interested in environmental and economic development issues.

Thomas McCormick

Thomas McCormick is the city manager for the Town of Oliver Springs, which includes portions of Anderson, Roane, and Morgan counties. He received a B.S. in political science from Middle Tennessee State University. He also has numerous certifications from the State of Tennessee, including as a water and wastewater treatment plant operator. He lives in Oliver Springs and is interested in city/county government and environmental issues.

Harriett McCurdy

Ann (Harriett) McCurdy retired in 2014 after more than 40 years as a teacher for middle- and high-school students both in the United States and abroad, with a focus on the sciences. Most recently she served as a teacher of science and biology for grades 6-10 at Yangon Academy in Yangon, Myanmar. Prior to that, she taught a variety of science courses and environmental studies courses in China, Morocco, Kuwait, and Ecuador. Harriett received an M.A. in teaching biology and her teaching certificate from Washington University and a B.A. in biology from Earlham College. She is president of the Oak Ridge League of Women Voters and a member of Tennessee Citizens for Wilderness Planning, which is dedicated to achieving and perpetuating protection of natural lands and waters by means of public ownership, legislation, or cooperation of the private sector with a focus on the Cumberland and Appalachian regions of Tennessee. Harriett lives in Oak Ridge and is interested in educational and environmental issues.

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Marité Pérez

Marité Pérez is a mortgage loan officer at First Community Mortgage. Previously, she worked with Latin and Haitian communities in the Dominican Republic as a Community Economic Development Advisor through the Peace Corps. She has also worked a Business Development Manager for a solar firm. Marité is a volunteer with Centro Hispano of East Tennessee, which promotes empowerment and civic participation of the multicultural community. She has a B.A. in International Affairs/International Business from Florida State University and an M.B.A. in Global Social Sustainable Enterprise from Colorado State University. Marité lives in Knoxville.

Georgette Samaras

Georgette Samaras is director of community outreach for the local hospital system Covenant Health. She has also served as an adjunct instructor of Psychology at Pellissippi State Technical Community College since mid-2018. She is pursuing a Doctorate in Educational Leadership and Organizational Development, received an M.S. in Behavioral Psychology from Walden University, and a B.S. in Molecular, Cellular, and Developmental Psychology from the University of Colorado. She is also a certified mind-body instructor through the Center for Mind Body Medicine. She is a volunteer with the USA Track and Field Federation and the Cancer Support Community. She is interested in environmental issue and lives in Clinton.

Michael Sharpe

Michael Sharpe is a SharePoint administrator and performs other technology- and web-based tasks for Oak Ridge Associated Universities, which manages the Oak Ridge Institute for Science and Education for DOE. It provides science, education, workforce development, and health services that include some OREM areas such as decontamination verifications to support cleanup. He received a B.S. in business administration from Tusculum University and an A.S. in computer programming from ITT Technical Institute. He is interested in civic and environmental issues and lives in Lenoir City.

Leon Shields

Leon Shields is the supervisor for field operations for the Lenoir City Utilities Board. He is also the owner of Instructional Concepts, which provides training in industrial, public, and private application of firearms, explosives, vehicle extrication, and rescue operations. He is a firearms instructor/deputy for the Loudon County Sheriff's Office, an instructor/third party examiner for the State of Tennessee, a firefighter director with Loudon County Fire Rescue, Chairman of the Lenoir City Planning Commission/Board of Zoning Appeals, a Commissioner with the Lenoir City Housing Authority/Rural Development, and a Commissioner with the Loudon County Regional Planning Commission. A high school graduate, Leon is a member of a number of civic organizations, including the Boys and Girls Clubs of Tennessee Valley, Lenoir City High School Technical Advisory Board, the local chamber of commerce, and others. Leon lives in Lenoir City and has an interest in civic issues.

Bonnie Shoemaker

Bonnie Shoemaker retired in 2008 after 34 years at the DOE East Tennessee Technology Park and ORNL working in a variety of capacities, including chemical laboratory analyst, environmental compliance specialist, plant shift superintendent, emergency management specialist, and engineering technician. She is the recipient of two awards for operations and technical support in environmental compliance and emergency management. Bonnie received her B.S. in Biology from UT. She has an interest in environmental and public health issues. Bonnie lives in Clinton. She was appointed to the board in June 2017.

Fred Swindler

Fredric (Fred) Swindler retired as a vice president and consultant for quality assurance and regulatory affairs with IsoRay Medical, Inc. in Richland, Washington. He was previously employed as a vice president for quality assurance and regulatory affairs with two other medical manufacturing companies. Fred received a B.S. in Biomedical Engineering from Rose Hulman Institute of Technology in Terre Haute, Indiana, and an M.B.A. from the University of Evansville, Indiana. He is a senior member of the American Society for Quality and has an interest in environmental and public health issues. Fred lives in Rockwood.

(Continued on page 21)

John Tapp

John Tapp is a civil and environmental engineer with nearly 50 years of experience in all areas of environmental protection and restoration, including private and public utility management, civil and environmental engineering, strategic planning, budgeting, and project development. John has recently worked as a Technical Assistance Consultant for FEMA in the water and wastewater field with deployments to the US Virgin Islands and the California Camp Wildfire. Prior work included HDR-ICA Engineering, where he provided consulting in a broad range of areas, including environmental permitting and interaction with state and federal regulatory agencies, and work with the Kentucky Infrastructure Authority, where he managed the statewide planning effort for the Authority. He spent the majority of his career as a founding partner in Commonwealth Technology, an environmental and engineering consulting firm, and previously worked with the Kentucky Division of Water, the EPA, and the U.S. Public Health Service. John received his B.S. and M.S. degrees in Civil Engineering and his Ph.D. in Agricultural Engineering from the University of Kentucky. He has published more than 50 publications and papers. John has an interest in environmental and economic development issues. He is a member and past president of the Kentucky-Tennessee Water Environment Association, and a member of the Water Environment Federation, the Karns Community Club, and the Enhance Powell Committee. John lives in Powell.

Thomas Tuck

Thomas Tuck is a banking executive with TNBank. He served as president of the bank since 1995 and in March of 2020 transitioned to part-time employment as part of a leadership transition/retirement. He received a B.S. in business and marketing from the University of Tennessee and is a Certified Banker through the School of Banking of the South. He is a member of boards of directors for local organizations including the Oak Ridge Chamber of Commerce, Oak Ridge Heritage & Preservation Association, and the East Tennessee Economic Council. He is a member of the Y-12 Community Relations Council. He is interested in civic issues and economic development. He lives in Knoxville.

Rudy Weigel

Rudolf (Rudy) Weigel is a retired industrial hygienist who most recently worked for Concurrent Technologies Corporation in Arlington, Virginia, conducting industrial hygiene surveys at various Army installations in support of the Army Public Health Command until 2015. From 2002 to 2011 he served as a senior industrial hygienist/safety and health representative with Bechtel Jacobs Company in Oak Ridge. His 36-year career has included work as a bioenvironmental engineer, environmental scientist, and hazardous waste program coordinator. Rudy received a B.S. in Occupational Health and Safety from Utah State University, and an M.S. from East Tennessee State University. He was a member of the American Conference of Governmental Industrial Hygienists. He has an interest in environmental and decontamination and decommissioning issues. Rudy lives in Oak Ridge.

Zachary Wilkins

Zachary Wilkins is a senior industrial hygiene technician with Value Added Solutions, which provides professional services to support the cleanup and reindustrialization efforts at Oak Ridge. He received an A.S. in environmental health from Roane State Community College. He is interested in environmental issues and lives in Wartburg.

Agency Liaisons

These individuals serve as points of contact between the board and their respective agencies. A DOE liaison must be present at all board meetings. TDEC and EPA liaisons are often on hand to contribute to discussion and answer board member questions.

Laura Wilkerson

Laura Wilkerson is the Acting Manager of the Department of Energy's Oak Ridge Office of Environmental Management (OREM). She was selected to this position in October 2021. She is responsible for safely executing the environmental cleanup of the 32,400-acre Oak Ridge Reservation.

David Adler

David Adler served as the Deputy Designated Federal Officer for ORSSAB through his retirement at the end of March 2022. He was the director of the Quality and Mission Support Division for OREM.

Melyssa Noe

Melyssa Noe took over as the board's Deputy Designated Federal Officer in April 2022. Previously, she served as the board's Alternate Deputy Designated Federal Officer. She is branch chief of program support in the Quality and Mission Support Division for OREM.

Roger Petrie

Roger Petrie serves as the board's Alternate Deputy Designated Federal Officer. He is the Federal Facility Agreement Project Manager for OREM.

Samantha Urquhart-Foster, EPA

Samantha Urquhart-Foster represents the Environmental Protection Agency. She is part of the Superfund Division in the agency's Region 4 Office, which covers the Southeast.

Kristof Czartoryski TDEC

Kristof Czartoryski is an environmental consultant with the Tennessee Department of Environment and Conservation. He is part of the agency's Division of Remediation in Oak Ridge.

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

Oak Ridge Sets Pace of Cleanup Nationwide

Oak Ridge Office of Environmental Management has completed 40% of all federal facility remedial actions in the U.S. Environmental Protection Agency's Region 4 since 2018. These tasks are eliminating risks to the environment. Workers are pictured conducting soil remediation projects at the East Tennessee Technology Park. That work is scheduled for completion next year.

Recent figures from the U.S. Environmental Protection Agency (EPA) show the Oak Ridge Office of Environmental Management (OREM) and its contractors are conducting cleanup at a rate leading the nation among federal facility sites.

Government-sponsored environmental cleanup in the United States extends far beyond DOE's 15 active EM cleanup sites. It also includes scores of U.S. Department of Defense sites, and those overseen by other federal agencies, such as the U.S. Department of Interior.

There are 175 federal facilities, or sites, on the Superfund National Priorities List where cleanup is needed across the country. Those sites require cleanup tasks, known as remedial actions, which can range from tearing down buildings to digging up contaminated soil and treating groundwater plumes.

Remedial action completions are an important national target for EPA, and they are reported to Congress annually.

The latest reports show that from fiscal years 2018 to 2022, OREM accounted for 13 percent of all completed federal facility remedial actions in the U.S., and 40 percent of all completed actions in EPA's Region 4, which includes Tennessee, Alabama, Florida, Georgia, Kentucky, North Carolina and South Carolina.

EPA's Region 4 includes 20 federal facilities located at EM's Oak Ridge, Savannah River and Paducah sites, in addition to 17 military bases.

"Remedial actions can vary in size and complexity across different federal facilities, but even with those considerations, these figures highlight a special focus and diligence from our employees that set us apart," said OREM Manager Jay Mullis. "Their approach continues to reinforce our reputation as a site where federal investments lead to visible progress and enhanced safety."

Crews in Oak Ridge were the first in the world to remove a former uranium enrichment complex that operated during the Manhattan Project and Cold War. That effort, completed at the East Tennessee Technology Park (ETTP) in 2020, involved removing more than 500 buildings with a total footprint that could cover 225 football fields.

Today, workers are in the final stages of removing all contaminated soil at ETTP. They're also taking down old reactors at the Oak Ridge National Laboratory (ORNL) and preparing former enrichment facilities for demolition at Y-12.

(See Cleanup on page 5

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IN THIS ISSUE

Reservation Update

Large machinery, known as a soil screener, removes rocks to ensure the construction of the Landfill V expansion meets clay liner requirements. The Landfill V expansion project is on schedule to be completed by the end of the year.

Crews Kick Off Landfill Expansion Project

OREM lead cleanup contractor, UCOR, has started constructing the final permitted cell in Landfill V.

Landfill V is part of the Oak Ridge Reservation Landfills, which accept sanitary, industrial and construction waste generated from cleanup across the site.

With an expansion of five acres of land, Landfill V will provide almost half a million cubic yards of disposal space to support ongoing cleanup at the Y-12 National Security Complex and Oak Ridge National Laboratory. That equates to approximately 50,000 dump truck loads of added capacity.

The Oak Ridge Reservation Landfills have seen a 170 percent increase in waste receipts over the last five years. That rise is due in large part to the amount of soil being received from OREM remediation projects at East Tennessee Technology Park, which are all slated for completion next year.

The new landfill cell being constructed ensures on-site disposal availability. Expanding Landfill V's disposal capacity also will extend the life of the Environmental Management Waste Management Facility (EMWMF), an important on-site disposal facility for low-level waste.

OREM disposes of sanitary, industrial and construction waste in Landfill V, while sending low-level contaminated waste to EMWMF. These complimentary efforts ensure space at EMWMF is used efficiently.

The expansion effort underway is being implemented under a UCOR-issued small business subcontract using a Tennessee Department of Environment and Conservation (TDEC)-approved design.

UCOR, TDEC and an independent quality assurance company are providing oversight, reviews and independent testing.

CTI and Associates, Inc. is a small business supporting the effort.

The landfill expansion is on schedule to be completed by the end of the year.

OREM has also started early site preparations for its Environmental Management Disposal Facility. That facility, which is slated to begin operations in the late 2020s, will provide an additional 2.2 million cubic yards of waste disposal capacity for low-level contaminated waste.

OREM Crews Prepare Y-12 Facility for Teardown

OREM and UCOR recently completed major deactivation efforts at the multi-story former uranium enrichment facility spanning nearly 325,000 square feet. The work had begun in 2020.

EM's deactivation and demolition (D&D) work at Oak Ridge presents unique challenges amid ongoing missions at Y-12. Alpha-2 is co-located with other active facilities at Y-12, requiring utilities to be rerouted prior to demolition. UCOR has been working closely with Y-12 management and operations contractor Consolidated Nuclear Security (CNS) on that task.

A precursor to demolition, deactivation is the process of placing an excess facility into a stable condition to minimize existing risks and protect workers, the public and the environment.

Before the Alpha-2 demolition begins next year, workers must deactivate the basement and reroute nearby utilities. UCOR is helping CNS create a design for the rerouting, which will also enable demolition of the Old Steam Plant at Y-12. EM crews finished preparing the plant for teardown in 2021.

Deactivation at Alpha-2 included clearing asbestos-contaminated piping, removing floor and ceiling tiles and draining oil from equipment. To date, crews have disposed of nearly 3,000 cubic yards of waste and removed 280,000 pounds of lead-shielding blocks.

UCOR is on schedule to begin demolition in the spring.

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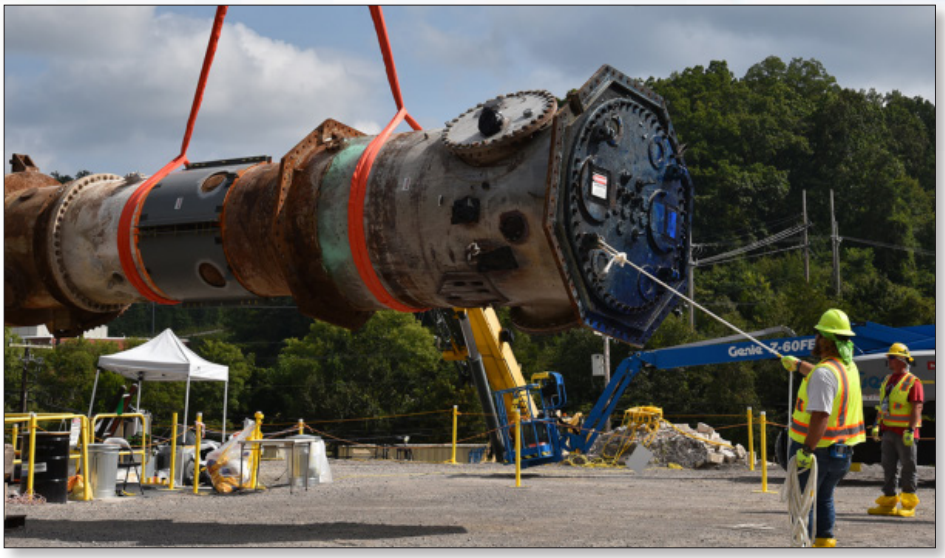
STAFF

Editor: Shelley Kimel

Writer: Sara McManamy-Johnson

Review Board: Amy Jones, Harriett McCurdy, Melyssa Noe, Michael Sharpe, Ben Williams



In the final step of the Low Intensity Test Reactor demolition project, a crane raised the 37,600-pound reactor structure from its housing, placing the 30-foot-long reactor vessel in a specialized carbon metal container for shipment for disposal.

Crews Demolish Low Intensity Test Reactor at ORNL

OREM and cleanup contractor UCOR have safely completed demolition of the Low Intensity Test Reactor at Oak Ridge National Laboratory (ORNL), checking off a second EM 2023 priority at the site in as many months.

This latest successful teardown also marks the second reactor EM crews have taken down in ORNL's central campus over the past year, following the removal of the Bulk Shielding Reactor last fall.

Scan the above QR code with your smartphone to watch video of the demolition on YouTube.

The Low Intensity Test Reactor, also known as Building 3005, was built in 1949 as a criticality testing facility that used highly enriched fuel with water as a coolant. It operated until 1968.

Teardown of the three-story facility began in March, when crews removed the outer structure and various ancillary facilities. Next, workers used a high-reach crane to remove a trolley and bridge crane from the building. They then removed precast cement slabs and shield blocks to access and address the main reactor structure.

Once the slabs and shield blocks were removed, crews used a crane to raise the 37,600-pound reactor structure out of its housing. They placed the 30-foot-long reactor in a specialized carbon metal container for shipment for disposal.

In total, the demolition project produced more than 1.1 million pounds of waste. Workers will ship the reactor to an approved waste disposition site within a few weeks.

In the final step of the Low Intensity Test Reactor demolition project, a crane raised the 37,600-pound reactor structure from its housing, placing the 30-foot-long facility in a specialized carbon metal container for shipment for disposal.

Crews Clear Water from Building Set for Demolition

EM crews recently removed more than 1 million gallons of water from the basement of the Beta-1 building at Y-12.

OREM cleanup contractor UCOR is ridding the building's basement of water as it prepared the Manhattan Project-era building for eventual demolition.

In previous years, sump pumps failed, causing groundwater to fill the basement.

Workers removed this significant volume of water in 42 working days, with approximately 450,000 additional gallons of water still needing to be pumped from the basement as cleanup progresses.

The Beta-1 building was constructed in 1944 to enrich uranium during World War II. It was later converted to laboratory space for fusion-energy technology.

Demolition of the massive structure will eliminate old, unused infrastructure and open land to support future DOE missions.

To complete the work safely, UCOR built a water treatment skid outside the facility. The skid uses micron bag filters and carbon vessels to filter the water to meet stringent water quality standards. After treatment, the water is discharged.

Deactivation of the building will continue in the above-grade areas before progressing into the basement areas when they're pumped dry.

A worker lowers a hose to pump water from the basement area of the Beta-1 facility. Crews pumped 1 million gallons over the 42 work days.

Advocate

OREM Breaks Ground on EM Disposal Facility

Taking part in the Environmental Management Disposal Facility groundbreaking last week, from left, were Steve Arnette, president, Critical Mission Solutions Business, Jacobs; Mark Whitney, president, National Security, Amentum; Wade Creswell, county executive, Roane County; Brent Booker, Laborers' International Union of North America; Kevin Adkisson, North America's Building Trades Unions; Jeaneanne Gettle, acting regional administrator, U.S. Environmental Protection Agency; Randy McNally, Tennessee lieutenant governor; David Salyers, Tennessee Department of Environment and Conservation commissioner; Ken Rueter, president and CEO, UCOR; Jay Mullis, manager, Oak Ridge Office of Environmental Management; Chuck Fleischmann, U.S. representative; and William "Ike" White, EM senior advisor.

National, state, and local leaders joined OREM and its lead cleanup contractor, United Cleanup Oak Ridge (UCOR), this summer to celebrate the groundbreaking for the Environmental Management Disposal Facility (EMDF).

The $550-million project will provide a new onsite disposal facility that is essential for OREM and UCOR to maintain environmental cleanup momentum at the Y-12 National Security Complex (Y-12) and the Oak Ridge National Laboratory (ORNL). Cleanup projects at those sites are eliminating old, dilapidated facilities and clearing land that is being reused to support scientific research and national security missions.

OREM's current onsite disposal facility is nearing full capacity after 20 years of safe operations; however, hundreds of buildings still require demolition at Y-12 and ORNL. The Environmental Management Disposal Facility will provide the capacity needed for OREM to complete cleanup at those sites.

Dignitaries and officials at the event held in August included U.S. Representative Chuck Fleischmann, Lt. Governor Randy McNally, Senior Advisor for the Office of Environmental Management Ike White, U.S. Environmental Protection Agency (EPA) Acting Regional Administrator Jeaneanne Gettle, Tennessee Department of Environment and Conservation (TDEC) Commissioner David Salyers, OREM Manager Jay Mullis, and UCOR President and CEO Ken Rueter.

"As the leader for the cleanup program for the Department of Energy, I very much feel the responsibility that we have to address the legacy of the past", said Ike White, Senior Advisor for DOE's Office of Environmental Management. "This facility is an incredibly important part of making sure we can continue to do that here, and the teams doing cleanup in Oak Ridge are some of the best in the country."

In his remarks, U.S. Representative Chuck Fleischmann also discussed the importance of the project.

"Because of what we are doing here today, legacy cleanup will continue in Oak Ridge for the next 30 or 40 years until it's complete", said Fleischmann, "That means that Oak Ridge National Laboratory will be able to take down excess facilities. That means that our friends at NNSA will be able to do the critical work on our nuclear arsenal to keep our country safe."

DOE is complying with all federal and state requirements, and it is also incorporating numerous engineering features into the facility's design, under the oversight of EPA and TDEC, to ensure the waste remains isolated from the environment. Additionally, DOE will continue sending all highly contaminated waste out of state for disposal.

This week's event marked the start of early site preparation for the facility. The project will be conducted in three phases, and it is scheduled for completion in 2029.

Phase 1: Early site preparation includes moving utilities and rerouting portions of Bear Creek Road and the Haul Road.

Phase 2: The groundwater field

(See Groundbreaking on page 5)

OREM Welcomes New Staff

OREM welcomed Abby Newberry in April as a general engineer in Program Support branch of the Quality and Mission Support Division (QMSD).

Newberry's role will include assisting ORSSAB's deputy designated federal officer (DDFO), as well as helping with groundwater and soil remediation at ETTP, Y-12, and ORNL. She will also support National Environmental Policy Act (NEPA) compliance and sustainability efforts for the Oak Ridge Reservation.

Newberry was born in Knoxville, and grew up in the Athens, Tenn., area.

Abby Newberry

She holds a bachelor's degree from the University of Tennessee at Knoxville in chemical engineering, with a concentration in biomolecular studies.

Before joining OREM, Newberry spent two years doing coatings research and development at Eastman Chemical Company and a year doing quality analysis checks on chlorine, caustic, and bleach products in the private sector.

OREM welcomed **Leah Alexander** in September as a general engineer as part of the EM Pathways Recent Graduates Program.

Leah Alexander

A native of Maryville, Alexander graduated with a bachelor's degreee in biomedical engineering from University of Tennessee, Knoxville, in May.

Alexander's role will include supporting Integrated Project Teams, developing or performing assessments and perfomance evaluations, readiness reviews, and improvement initiatives. Her role will also include supporting QMSD activities, as well as other activities related to the Federal Facilities Agreement, ORSSAB, groundwater, and reindustrialization.

Cleanup

(Continued from page 1)

Together these projects are eliminating hazards and opening land for reuse. Cleaned land at ETTP is transferred to the community for economic development, and it is helping support expanding research and national security missions at ORNL and the Y-12 National Security Complex (Y-12).

"Regional and national data show OREM has an incredibly high-performing Superfund cleanup program," said Cathy Amoroso, EPA Region 4 Superfund Division manager for DOE coordination. "Oak Ridge's numbers showcase how our teams are working together through complex issues and producing tangible successes that are resulting in meaningful risk reductions for nearby residents."

Since 1995, the Oak Ridge Site Specific Advisory Board (ORSSAB) has been part of that team, providing stakeholder input on OREM's remedial actions, final use and long-term stewardship, and historic preservation at local DOE sites. Board members – all unpaid volunteers and most with no prior expertise in the topic – have devoted thousands of hours of time to offer thoughtful recommendations to DOE, and that work continues today.

This year alone, board members have participated in industry conferences such as RadWaste Summit 2.0 in Las Vegas, Nev., the National Brownfields Training Conference in Detroit, Mich., and the National Cleanup Workshop in Washington, D.C., gaining additional insights into the cleanup process and new developments and then bringing those insights back to share with other board members to better inform future recommendations.

Additionally, board members participated in the most recent Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Five-Year Review. The five-year, multi-agency review is designed to determine if remedies that have been implemented continue to protect human health and the environment. Required by CERCLA, the review covers the three DOE sites in Oak Ridge — ETTP, ORNL, and Y-12.

The board meets the second Wednesday of most months at 6 p.m. at the DOE Information Center, 1 Science.gov Way in Oak Ridge. Meetings of the board and its committees are open to the public.

Groundbreaking

(Continued from page 4)

demonstration study will help OREM confirm modeling of how groundwater levels will adjust when construction begins. This phase will capture data for two years and inform the facility's final design.

Phase 3: Balance of construction includes completing the final design and constructing the first two disposal cells. There will be four total disposal cells.

"I made a commitment to you—our stakeholders, our community, our client, our labor brothers and sisters—that we would be standing here today because of how important this is and that what you saw happen at the East Tennessee Technology Park would then be eclipsed by what we will see take place at Y-12 and ORNL," said UCOR President and CEO Ken Rueter.

Recent Recommendations

Recommendation 255: Recommendations on Groundwater Remedy Selections in the Main Plant and K-31/K-33 Areas at ETTP

As a result of past research and industrial activities on the Oak Ridge Reservation (ORR), groundwater beneath several areas of the reservation has become contaminated. Groundwater investigations have been done on and adjacent to the ORR since the 1980s. OREM, in partnership with regulators at the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC), used findings from groundwater research, sampling, and analysis over the decades to develop a groundwater strategy document (DOE/OR/01-2628). Several strategy objectives were identified to guide the path forward for groundwater remediation on the ORR and these strategies were integrated into the Federal Facility Agreement (FFA), which sets milestones for cleanup actions on the ORR.

Early actions were taken in the 1990s for off-site contamination and high-risk/high-priority releases. In the 2000s, Watershed Interim Records of Decision (RODs) were signed to address contaminant sources and building demolition projects.

In 2020, OREM completed removal of all contaminated and unneeded buildings at East Tennessee Technology Park (ETTP) as part of the Vision 2020 project, with soil remedial actions slated for completion within the following year. Now, the site will be the focus of the first large-scale decisions on groundwater for the Oak Ridge Reservation (ORR).

ETTP is divided into three sections for groundwater remediation planning. One section is the Main Plant Area, which encompasses most of the operations area at the former enrichment complex. Another section is the area where the large K-31 and K-33 uranium enrichment buildings once stood. The third section is called Zone 1, which is the area immediately surrounding the Main Plant and K-31 and K-33 areas.

The Proposed Plan for an Interim ROD for Groundwater in the Main Plant Area at ETTP (DOE/OR/01-2921&D2/R1) was released for public input in January 2023. The scope covered by the Proposed Plan includes six areas of groundwater contamination (i.e., groundwater plumes) within the Main Plant Area. These areas are located below the water table in the unconsolidated weathered soil/rock and bedrock zones.

The Proposed Plan for the Record of Decision for Groundwater in the K-31/K-33 Area (DOE/OR/01-2922&D2) was released for public input in March 2023.

The proposed plans describe the alternatives analyzed, identify the preferred alternative for each respective area, and explain the rationale for each preferred alternative.

DOE accepted public comments on both proposed plans, with comments accepted on the Main Plant Area plan from April 5, 2023, through May 19, 2023, and on the K-31/K-33 Area plan from April 26, 2023, through June 12, 2023.

ORSSAB has been interested in the status of groundwater on and around the ORR for several years, and during that time OREM and contractor experts have provided several presentations on groundwater conditions. Most recently, Regulatory Affairs Specialist and FFA Projects Manager Roger Petrie presented board members with information on groundwater at ETTP on May 10, 2023, and June 14, 2023, with the presentations covering the Main Plant Area proposed plan and the K-31/K-33 Area proposed plan, respectively.

ORSSAB members also toured groundwater sites at ETTP on June 6, 2023, and the EM & Stewardship Committee had detailed discussions on May 24, 2023, and June 28, 2023.

Recommendations

Main Plant Area

Based on previous positive outcomes using enhanced in-situ bioremediation and its relatively low cost, ORSSAB supports its selection as the preferred alternative as detailed in the "Proposed Plan for an Interim Record of Decision for Groundwater in the Main Plant Area at the East Tennessee Technology Park, Oak Ridge, Tennessee" – dated January 2023. However, our concerns remain about the predictive positive outcomes being complicated by the uniquely complex hydrogeology in the area combined with additional contaminants of concern within the six targeted TCE plumes. Therefore, ORSSAB recommends the following after the first significant injection:

1. In addition to monitoring the six treated plumes, monitor downgradient and around those plumes to determine if the contaminants have migrated.
2. Monitor the microorganisms to evaluate continued viability.
3. Report the results of monitoring and evaluation to ORSSAB once this information is available.

K-31/K-33 Area

Based on information presented showing that the forces of nature appear to be lowering concentrations of contaminants in the K31/K33 area to acceptable levels, ORSSAB supports the selected alternative of monitored natural attenuation along with land use controls in this area.

EM SSAB Chairs Recommendations on Recommendations

According to the EM SSAB charter (Section 3), the EM SSAB provides EM senior management "with advice and recommendations concerning issues affecting the EM program." The EM SSAB has made at least 10 recommendations to DOE since 2018, often at the request of DOE. The recommendation process includes three parts: (1) the EM SSAB recommendation, (2) the DOE response to the recommendation, and (3) the final policy action or implementation of the recommendation by DOE. While parts (1) and (2) are well recognized (e.g., in public postings on the EM SSAB website and responses distributed to local Boards), it is part (3), implementation, that makes EM SSAB recommendations meaningful and the recommendation process an effective use of time and other resources, those of both EM SSAB members and DOE.

It is important to review the implementation of recommendations for several reasons:

1. **Ensuring accountability:** Recommendation implementation reviews help ensure that DOE is held accountable for the advice it requests and/or receives from its volunteer Board members. By examining whether recommendations have been implemented as written, EM SSAB can assess how its efforts are valued and identify areas where further deliberations and recommendations are needed.
2. **Improving effectiveness:** Recommendation reviews provide an opportunity to assess whether recommended activities are working as intended and identify areas for im-provement. By examining the results of recommendation implementation, EM SSAB and DOE can make adjustments to recommended activities to ensure they achieve their intended goals.
3. **Enhancing transparency:** Reviews of recommendation implementation increase trans-parency by providing a clear understanding of how recommendations are being imple-mented and the outcomes they are producing. This transparency is critical for building trust in DOE and ensuring that the public has confidence in DOE and its clean-up activities.
4. **Promoting learning:** Recommendation implementation reviews provide an opportunity for EM SSAB and DOE to learn from their experiences and identify best practices for making and implementing recommendations. By sharing these best practices, EM SSAB and DOE can promote more effective and efficient recommendation making and implementation in the future.

Recommendations

1. DOE provide clear and publicly accessible information regarding implementation of EM SSAB Chairs recommendations for the last five years. In addition to a clear statement about im-plementation status (e.g., "Implementation of the recommendation is complete (or "ongoing", "suspended", or "discontinued"), the information should include an explanation of any devia-tions from the DOE response to the recommendation.
2. DOE report to the EM SSAB at least annually a summary of the status of all EM SSAB Chairs recommendation items and any recommendation action item completed during the re-porting period.

Join ORSSAB for a Discussion on Assuring Waste Disposal Capacity

6 p.m. Wednesday, February 14
1 Science.gov Way and
Virtually via Zoom

OREM is in the planning stages for a new waste disposal facility on the Oak Ridge Reservation known as EMDF. It will replace a nearlyfull facility and allow OREM to complete its cleanup mission.

Join us to hear the latest on project design, and how the new facility will allow future cleanup of ORNL and Y-12.

Questions? Want to attend virtually? Contact us at 865-241-4584 or orssab@orem.doe.gov

Advocate
Oak Ridge Site Specific Advisory Board
October 2023

ORSSAB Board Member Recruitment Kicks off Soon

ORSSAB is seeking new board members to take open seats in 2024. OREM appreciates advice from a broad spectrum of those who live or work in the area. All adult residents of the multicounty area surrounding Oak Ridge are encouraged to apply.

The board generally draws from Anderson, Blount, Campbell, Knox, Loudon, Meigs, Morgan, Roane and Union counties, but may also consider other locations. Applications are available on the board's website, www.energy.gov/orssab, and can be requested by phone or email.

Board membership will take some time — two or three hours in months the board meets, and there are opportunities for exclusive site tours or educational travel occasionally, which can vary in their time commitments.

Recommendations from the board have shaped the final form of projects like recreational green spaces and trails at the Heritage Center and ETTP, among others. Both the American Museum of Science and Energy and its new counterpart, the K-25 History Center, had board input. The board historically weighed in on the land transfer program that now helps bring employers like Kairos Power and Ultra Safe Nuclear Corp. to Oak Ridge.

Whether you were born and raised in the area or recently decided to call East Tennessee home, we invite you to join us as we continue to contribute.

Want even more information? A detailed guide and much of the new member training packet are available online and staff can answer questions at orssab@orem.doe.gov or 865-241-4584.

Scan the above QR code with your smartphone for more information.

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 – United Cleanup Oak Ridge
Y-12 – Y-12 National Security Complex

UPCOMING MEETINGS

Meetings are 6 p.m. at 1 Science.gov Way, Oak Ridge & virtually via Zoom. Email orssab@orem.doe.gov to attend virtually.

Board: Full Board Monthly Meeting, February 14, 2024
EM & Stewardship Committee: November 29, 2023

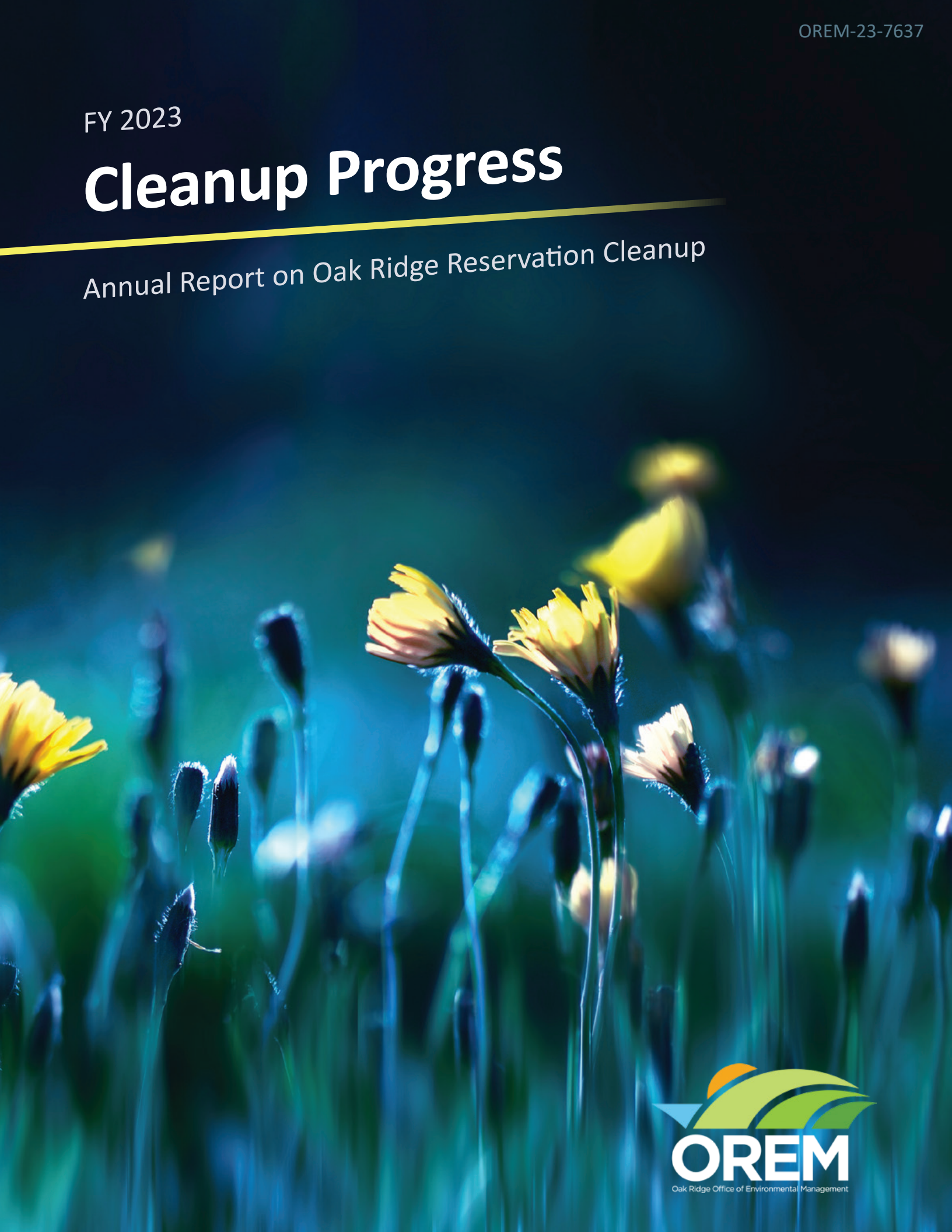
Oak Ridge Site Specific Advisory Board
P.O. Box 2001, EM-90
Oak Ridge, Tennessee 37831
www.energy.gov/ORSSAB
orssab@orem.doe.gov

OREM-23-7637

FY 2023

Cleanup Progress

Annual Report on Oak Ridge Reservation Cleanup



OREM
Oak Ridge Office of Environmental Management

Message from the Manager

DOE Oak Ridge Office of Environmental Management

To the Oak Ridge Regional Community:

We're proud to report that 2023 marked another year of significant progress across the Oak Ridge Reservation. The U.S. Department of Energy's Oak Ridge Office of Environmental Management (OREM) and our contractors continued transformative work at all three sites, and we are strengthening partnerships that are key to our future success.

Crews were busy demolishing excess contaminated facilities at Oak Ridge National Laboratory (ORNL). They removed the Low Intensity Test Reactor at ORNL, achieving the second reactor teardown in the span of a year. Projects like this are clearing away high-risk buildings that have been shut down for decades, and they are also opening up land that can support future research missions.

Many more buildings are being prepared for near-term demolition. These projects will continue changing the landscape at ORNL and the Y-12 National Security Complex (Y-12). Teams have prepared Y-12's Alpha-2 facility for demolition next year. Its removal takes away an old, dilapidated Manhattan Project-era enrichment facility. Other teams are busy deactivating the Beta-1 and Alpha-4 facilities at Y-12 and the Oak Ridge Research Reactor, Isotope Row facilities, Building 3026 Hot Cell, and Graphite Reactor support facilities at ORNL.

OREM is also steadily eliminating Oak Ridge's inventory of nuclear waste. Every month, we are reducing Oak Ridge's inventory of transuranic waste with shipments to the Waste Isolation Pilot Plant in New Mexico.

Employees are also busy processing and disposing of the inventory of uranium-233 stored at ORNL. As part of an innovative public-private partnership, the U-233 disposition project is extracting medical isotopes that are supporting next-generation cancer treatment research.

We pushed forward two crucial infrastructure projects in 2023. OREM broke ground on the Environmental Management Disposal Facility this summer. With our current onsite disposal facility nearing full capacity, this project is essential to maintaining our momentum at ORNL and Y-12. Construction is also progressing on the Mercury Treatment Facility at Y-12. Teams are finishing the framework on the treatment plant, and they've finished the foundation and begun major installations on the headworks facility. When operational, this facility will allow us to begin addressing Y-12's large, mercury-contaminated facilities and sources of mercury in the soil by protecting against releases into the nearby creek.

Finally, we're nearing the end of our cleanup mission at the East Tennessee Technology Park (ETTP). With crews set to finish excavating contaminated soil from the site next year, the spotlight is turning to groundwater. Planning took a major step forward this year when the U.S. Environmental Protection Agency and Tennessee Department of Environment and Conservation approved our proposed plans for addressing groundwater at the site. Those plans help us chart our path to complete cleanup there and achieve our ultimate vision of transforming ETTP into a multi-use industrial center, national park, and conservation area for the community.

We are incredibly grateful for the support and involvement we enjoy from the Oak Ridge community, and we are committed to keeping our local partners and stakeholders informed about our work. Above all, we are focused on performing our mission safely and ensuring we conduct our projects in a manner that is responsible to taxpayers by completing them on time and on budget. Thank you for your role in helping advance cleanup, and we look forward to another productive year ahead.

Jay Mullis

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UCOR
United Cleanup Oak Ridge LLC

This report was produced by UCOR, DOE's Environmental Management contractor for the Oak Ridge Reservation.

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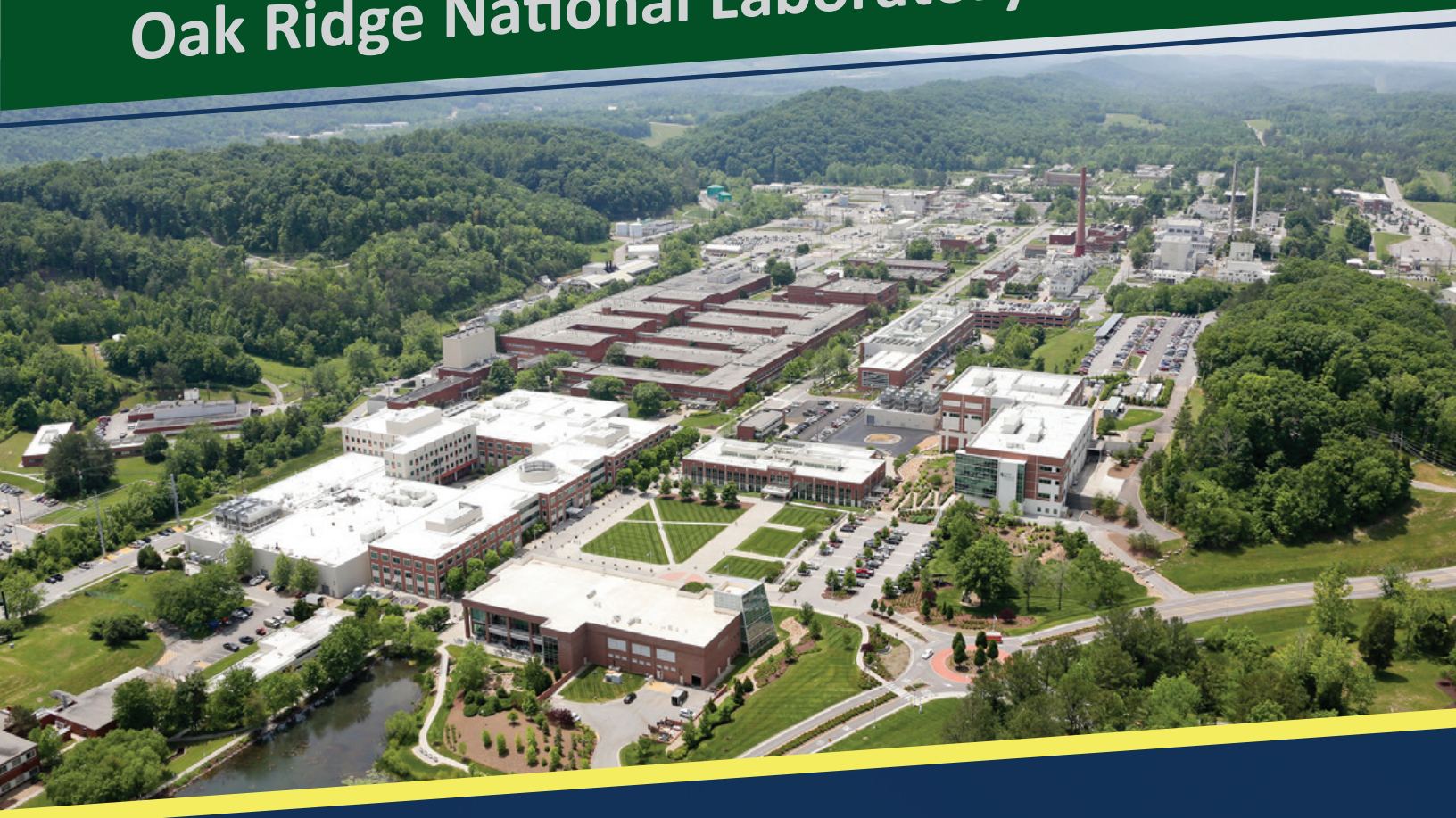
Introduction

In Fiscal Year (FY) 2023, a great deal of cleanup progress took place across the Oak Ridge Reservation. Cleanup at the Oak Ridge National Laboratory advanced significantly with demolition of a second reactor at the site, continuing efforts to remove unneeded facilities and free up valuable space for continuing science missions. At the Y-12 National Security Complex, deactivation of several facilities was underway, preparing those facilities for eventual demolition. Soil remediation activities continued at East Tennessee Technology Park as that work is nearing completion. That work is moving forward the site's transformation to a multi-use industrial center, national park, and recreational area.

The Oak Ridge Reservation has played key roles in our nation's defense and energy research. However, past operations during the Manhattan Project and Cold War-era created legacies that require environmental cleanup and placed areas of the reservation on the U.S. Environmental Protection Agency's (EPA) National Priorities List, which includes sites nationwide that require cleanup under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). These areas on the Oak Ridge Reservation have been clearly defined, and OREM is working to clean and restore them under a partnership with the EPA and the Tennessee Department of Environment and Conservation (TDEC).

Together, through the support provided by contractors, labor, Congress, and state and local officials, OREM is enhancing safety, removing barriers to economic development, and enabling vital missions in science, energy, and national security.

Oak Ridge National Laboratory



The Oak Ridge National Laboratory is DOE's largest multi-program national laboratory that conducts cutting-edge research in energy, materials and chemical sciences, nuclear science, and supercomputing. However, the site also houses numerous old, contaminated buildings and forms of waste from previous research and operations in past decades.


Link-Belt

Demolition of second ORNL reactor completed

OREM cleanup contractor UCOR began demolishing the Low Intensity Test Reactor (LITR) (Building 3005) in February 2023. Demolition of this facility marked the second demolition of a reactor at ORNL after the Bulk Shielding Reactor was demolished the previous year.

The reactor site posed unique challenges, including working within a very small footprint and managing boundaries with facilities in close proximity. The demolition produced more than 1.1 million pounds of waste, which had to be sorted, tested, analyzed, and reduced before being disposed of at an onsite disposal facility, or segregated and packaged for offsite disposal.

When demolition of the outer structure was completed, the massive reactor structure (35,600 pounds and 30 feet long) was pulled from its housing and placed in a custom-made carbon metal container for eventual shipment.

Before demolition

The 30-foot long reactor structure being lifted out of its housing to be placed in a storage container

The carbon metal container used to transport the reactor weighed 20,000 pounds. It was designed and built to meet the reactor's oversized width and height. The container includes a removable top to accommodate the loading of the reactor.

Built in 1949, the LITR was one of the first research reactors used as a test facility for the Materials Testing Reactor. It was also used for mock-ups for criticality testing, which used highly enriched fuel with water as a coolant and moderator. It ceased operations in 1968.

The reactor site after demolition (right) and the reactor structure being loaded into a special container for storage and shipment (below)

Component removal a key focus for 3042 reactor

Preparing the Oak Ridge Research Reactor (Building 3042) for demolition was a key focus in FY 2023. Much of that preparation included removing components from the reactor pool. This work comes nearly a decade after employees first began work in the building following discovery of water seepage from the reactor pool. To address the issue, workers placed concrete shielding and containment panels over the pool, drained it, and injected a fixative to keep contamination in place.

A bright green color added to the fixative helped crews confirm that the fixative covered the entire pool's surface. However, when water was added in the pool to begin deactivation efforts, the dye leached into the water and greatly reduced visibility in the pool.

Crews responded by developing an ultraviolet light and hydrogen peroxide treatment skid that eliminated the green dye and cleared the pool, providing visibility to conduct deactivation tasks.

At the end of the fiscal year, crews were advancing deactivation by removing irradiated items from the reactor pool and segmenting and packaging the items in waste containers for eventual disposal.

The top segment of the reactor structure was cut off, packaged, and removed from the building

Highly irradiated component removed from hot cell

Workers completed a big task involving a small item by safely removing a highly irradiated segment of wire roughly the size of a straightened-out paper clip from a cleanup project at ORNL.

The wire — only 3 to 4 inches in length — presented major challenges as crews cleaned out the East Cell Bank to get it ready for demolition next year. The hot cell structure is the last remaining component of the former Radioisotope Development Laboratory, also known as Building 3026.

The first challenge entailed locating and identifying the exact source of the elevated radioactive readings. Workers were operating through an opening atop the hot cell structure, approximately 25 feet from the floor where debris was located.

With other debris scattered in the room, searching for the segment of wire was like trying to find a needle in a haystack. Once the wire was located, the next challenge was retrieving it.

The project team considered multiple options for safely packaging the radiological source to protect personnel during waste packaging, transportation, and disposal. Workers safely removed the component using a long-reach tool and placed it in a concrete-shielded, 85-gallon drum. The drum was filled with cement and placed in a specialized container to be shipped for disposal.

The roof of the hot cell was lifted to allow access into the structure

Graphite Reactor facilities being prepared for demo

Three support facilities associated with the Oak Ridge Graphite Reactor (OGR) are being prepared for demolition. These facilities include the filter house (Building 3002), the fan house (Building 3003), and the exhaust stack (Building 3018).

At the end of the fiscal year, the deactivation team had removed filters in two of the four filter cells and was over 50 percent complete in the third filter cell. In addition, the deactivation team was developing a process to remove the canal water and sludge in the filter house.

The filter house was built in 1948 to filter air from the air-cooled reactor prior to exhaust through the fan house and adjacent stack. This work will enable demolition to begin next year.

Deactivation underway on Isotope Row

Deactivation activities continued in FY 2023 along ORNL Isotope Row, which consists of buildings and structures constructed in the 1950s through 1960s for processing radioisotopes.

Deactivation activities included removing contaminated materials and hazardous waste such as transite duct, laboratory hoods, glove boxes, ventilation exhaust pipes, process drains, and lead.

At the Radioisotope Production Lab-B (Building 3029), crews removed the last of the rooftop HEPA filters from the filter housing. When in operation, the filters provided final filtration for the local ventilation exhaust from the building. Workers sampled, characterized, and safely disposed of the filters.

HEPA filter hood removal in Building 3030, Isotope Row

Workers inspect structural integrity of 3039 stack

To ensure the structural integrity of the 250-foot-tall Gaseous Waste System's 3039 Stack, workers performed a physical inspection of the stack. Originally constructed in 1949, the stack is still actively used to provide facility off-gas and cell ventilation for ORNL.

In recent years, inspections were conducted by drones to avoid having employees climb the towering structure. Information from the aerial photos indicated a repair could be needed, and DOE determined that a full physical stack inspection was necessary.

The inspection climb began in February 2023 using a permanently installed platform 50 feet above ground. Stack inspectors installed structural bands around the exterior of the stack along with ladder sections and a safety system for worker safety. As a result of the inspection, crews outlined repairs that are needed to ensure the stack continues to operate for at least 10 more years.

Piping replacement underway at Building 3608

An $18 million project to replace piping and valves at Building 3608 made significant progress in FY 2023.

The project involves replacing existing old piping with new stainless steel piping and valves. It also includes removing out-of-service items such as old granular activated carbon tanks and backwash system pumps, and installing two tanker unloading stations.

When complete in 2024, the replaced piping will make the system more efficient and reliable and will help avoid the possibility of disrupting ongoing ORNL operations.

Pipe replacement at Building 3608

Purge system at MSRE nearing completion

The Molten Salt Reactor Experiment (MSRE), a test reactor, operated at ORNL from June 1965 until December 1969. Upgrade of the drain tank off-gassing system is required to keep this critical system safe until the facility is demolished. Accordingly, installation of the MSRE Continuous Purge System, which will allow continual off-gassing of the salt drain tanks, is nearing completion. Crews installed various pieces of equipment and sections of piping. Additional components will be installed to enable the fabrication and installation of the interface and wall mount enclosures.

Project installation work is set to be completed in early FY 2024, followed by readiness assessments.

A worker performing inspection ascends the 3039 stack

The MSRE Feasibility Study (FS) is underway to develop remedial alternatives for the MSRE facility. This FS evaluates risk associated with potential future release of contaminants from groundwater to the nearby creek. In FY 2023, nondestructive assay (NDA) measurements were conducted for nuclide identification and quantification in the MSRE High Bay and in cells below the MSRE facility (including cold trap cell, fuel processing cell, charcoal bed cell, and fuel drain tank cell). Additionally, groundwater geophysical data are being incorporated into an MSRE groundwater transport model from 14 groundwater wells installed around the MSRE footprint.

U-233 processing underway

After completing facility upgrades and in-depth safety planning in 2022, OREM and its contractor, Isotek, conducted significant processing operations on the remaining inventory of uranium-233 (U-233) stored at ORNL. OREM and Isotek are tasked with eliminating the U-233 inventory stored at ORNL because it presents risks and is costly to keep safe and secure. The effort to process and dispose of the remaining high-dose U-233 is OREM's highest priority at ORNL.

U-233 is a manufactured isotope created as an alternative nuclear fuel source in the 1950s, but it proved to be unviable. The nation's inventory of uranium-233 was later sent to ORNL for long-term storage.

OREM finished disposing of approximately half of the U-233 inventory in 2017, while the remaining material requires processing and downblending to convert it into a form for safe shipment and disposal. Conducting those operations involves the use of heavily shielded rooms, known as hot cells, to keep employees safe as they process the high-dose material. With the hot cell upgrades complete, employees have processed more than 50 canisters of U-233 since the campaign began.

The current phase of the project, using hot cells, has enabled Isotek to enhance productivity by processing larger amounts of U-233, and it also allows employees to extract more medical isotopes than the previous phase that used glove boxes.

A private nuclear innovation company, TerraPower, approached Isotek with a plan for the company's employees to extract rare medical isotopes from this material before it is prepared for disposal. That plan is now being carried out, and the medical isotopes are powering treatments called targeted alpha therapy in trials.

Isotek is extracting thorium-229 from the U-233 for TerraPower, which then uses the material to create the actinium-225 needed for targeted alpha therapy. TerraPower recently announced a collaboration agreement with Cardinal Health to produce and distribute actinium-225 to help extend the reach and impact of this effort. Through this public-private partnership, up to 100 times more doses of next-generation cancer treatments will be available annually than are currently available worldwide. That translates to half a million doses annually.

Workers process the first canister of U-233 after facility upgrades

Y-12 National Security Complex

The Y-12 National Security Complex is a premier manufacturing facility dedicated to protecting our nation. Y-12 helps ensure a safe and reliable nuclear weapons deterrent. The site also retrieves and stores nuclear materials from around the world, fuels the nation's naval reactors, and performs highly skilled, specialized manufacturing for government agencies and private-sector entities.

Biology Complex site transferred

EM's steady work removing old, contaminated structures is paving the way for new uses of land, including a site where the National Nuclear Security Administration (NNSA) recently hosted a groundbreaking ceremony for its new Lithium Processing Facility.

OREM and UCOR finished a project in November 2022 that opened the 18-acre area at Y-12 for the NNSA facility. Crews had cleared away the former Biology Complex comprised of 11 structures dating back to the 1940s.

Lithium Processing Facility groundbreaking

This success story in reuse of land once used for the Manhattan Project and Cold War demonstrates that OREM and UCOR are achieving more than risk reduction through their cleanup. They're opening space to support important missions.

NNSA and Consolidated Nuclear Security held a groundbreaking that marked the beginning of site preparation for the construction project.

The new 245,000-square-foot facility will feature updated technology, increase processing capacity, and make the work environment safer for employees. Construction is forecasted to begin in mid-2025, with completion projected in the early 2030s.

Today, nearly 60% percent of NNSA's facilities are more than 40 years old, with many dating to the Manhattan Project. OREM and UCOR are changing that with numerous projects already underway to continue the transformation and enable modernization at Y-12.

A portion of the Biology Complex during demolition (above) and the cleared site (left), where the new Lithium Processing Facility will be located

Work continues on Mercury Treatment Facility

Progress continued on construction of the Outfall 200 Mercury Treatment Facility. The facility is the linchpin for OREM's cleanup strategy at Y-12. This vital piece of infrastructure will open the door for demolition of Y-12's large, deteriorated, mercury-contaminated facilities and subsequent soil remediation by providing a mechanism to limit potential mercury releases into the Upper East Fork Poplar Creek.

At the headworks site, the first lift concrete walls are complete on both major structures: the storm flow pump station and the grit flow chamber. The second lift walls were in progress at the end of the fiscal year with rebar and formwork being installed. Backfill of the excavation is also in process. A total of 1,800 yards of concrete have been placed with 200 tons of rebar installed.

At the treatment site, work continues with construction of a 500,000-gallon equalization tank.

All underground piping has been installed and tested. Chemical storage tanks are onsite and stored on location and the clarifier plates are installed. Painting of concrete surfaces and structural steel is progressing.

When operational, the facility will be able to treat 3,000 gallons of water per minute and help DOE meet regulatory limits in compliance with EPA and state of Tennessee requirements.

Mercury Treatment Facility construction

Deactivation continues on processing facilities

Workers perform sampling activities inside the Alpha-2 Building

Deactivation activities continued at three large former uranium processing facilities throughout FY 2023. Those facilities— Alpha-2, Alpha-4, and Beta-1—were home to the historic calutron (mass spectrometer) racetracks used for separating isotopes of uranium.

Alpha-2: The three-story Alpha-2 facility (Building 9201-2) is approximately 320,000 gross square feet. In FY 2023, crews conducted activities to remove a variety of contaminants. Approximately 4,500 gallons of water were drained from the facility's demineralized water system, and 280,000 pounds of lead-shielding blocks were removed from the second floor of the facility. All deactivation activities were completed in the aboveground floors in 2023. In the basement, workers recovered 113 pounds of elemental mercury. The building is set for demolition starting in 2024.

Beta-1: Beta-1 (Building 9204-1) is a two-story building with approximately 210,500 gross square feet. Deactivation activities continued at Beta-1 in the above-ground floors similar to Alpha-2. Most of the deactivation in the upper floors was completed in 2023, and the small amount remaining will be completed early in FY 2024. In the basement, crews have worked to remove, treat, and discharge more than 1 million gallons of water using a special water treatment skid system, which filters water through micron bag filters and carbon vessels inside the unit to successfully achieve water quality standards needed for discharge. Once the

Deactivation activities in the Beta-1 Building

water is removed, the basement can be accessed for deactivation in 2024.

Alpha-4: During 2023, workers began preparing Alpha-4 (Building 9201-4), a four-story facility with 600,000-square-feet, for deactivation. Alpha-4 is one of Y-12's larger high-risk facilities, with elemental mercury contaminating much of the structure. Like Alpha-2 and Beta-1, Alpha-4 was used to enrich uranium. After the electromagnetic separation process was abandoned, Column Exchange processing structures were added to the outside of the facility to perform a new method of processing, which required substantial quantities of mercury. As part of preparing for building deactivation, workers have been sampling asbestos-containing material, performing utility isolations to bring the building to cold and dark status, and characterizing more than 400 legacy drums.

Slab removal completed at demolished lab site

Workers have finished removing the slab at the former Criticality Experiment Laboratory at Y-12. OREM and UCOR demolished the structure in 2022.

The Criticality Experiment Laboratory was constructed in 1949 and was used to conduct experiments and collect reactor physics data while in operation from 1950 to 1987.

The facility was permanently shut down in 1992, with the exception of limited use for training exercises. The area is planned to be used as a storage/laydown area to support other Y-12 projects.

Criticality Experiment Laboratory before demolition (above) and the cleared site (below)

New cleanup technologies being evaluated

OREM and cleanup contractor UCOR are exploring technology development efforts to address both mercury and other types of cleanup on the Oak Ridge Reservation.

At ORNL's Aquatic Ecology Laboratory, significant progress was made in the following areas:

- Conducted experiments testing several manganese oxide compounds to reduce methylmercury production in sediments in anaerobic environments.
- Explored whether closely related species accumulate mercury and methylmercury at similar rates.
- Collected LiDAR—multispectral, thermal, sub-canopy true color imagery—and many instream field measurements for >1 km of Bear Creek and continued analysis of LiDAR data and field deployment of sorbents.
- Completed acute toxicity tests of mercury on Daphnia magna (a typical water flea) to aid experimental designs for follow-up sorbent toxicity and efficacy experiment in collaboration with soil and groundwater with higher concentrations of mercury and an additional sorbent.
- Submitted manuscript on bioaccumulation of mercury into Corbicula (clams) to *Environmental Science and Pollution Research*.

The planned remodeling of the Technology Demonstration Facility (formerly the Disposal Area Remedial Action, or DARA, facility) was underway in FY 2023 and expected to be completed by late 2024.

Mercury technology advancements that were explored in FY 2023 include the following:

- Working to gain an understanding of mercury waste management in accordance with the Environmental Management Disposal Facility Record of Decision to ensure that certain mercury mitigation technologies will yield material that meets the waste acceptance criteria.
- Exploring acid washing to remove mercury-contaminated scale, rust, and sludge from mercury-impacted systems.
- Investigating possible alternate methods for scanning and characterizing waste shipping packages with NDA-type technology.
- Working with Environmental Alternatives Inc. and UCOR to identify mercury sorbent material(s) for use in waste packaging to mitigate mercury vapor generation and prevent liquid mercury accumulation during shipment.

Robotic technology applications are also explored on the Oak Ridge Reservation. UCOR performed a mock test using a mechanical arm system that will support hot cell characterization in the Fission Product Development Lab (Building 3517) at ORNL. The mechanical arm will be lowered into the 3517 hot cells and used to record video footage, collect real time dose rates, and retrieve surface contamination data. Once lowered into the cell, the arm spins the tool slowly to retrieve data while keeping operators at a safe distance.

Collaborating with Savannah River National Laboratory and UCOR, OREM is exploring the use of exoskeletons at Oak Ridge for craft labor functions to reduce work-related injuries. OREM is also collaborating with Florida International University, Sandia National Laboratory, and UCOR to explore the use of autonomous field-deployable characterization and mapping systems to automate routine field characterization of mercury and beryllium contamination.

Testing the mechanical arm planned for use at Building 3517

East Tennessee Technology Park

The former Oak Ridge Gaseous Diffusion Plant began operations during World War II as part of the Manhattan Project. Its original mission was to produce enriched uranium for use in atomic weapons. The 2,200-acre plant was shut down permanently in 1987. All building demolition was completed in 2020 and remedial actions are now underway, facilitating the site's transformation into a multi-use industrial park.

What is an Exposure Unit, or EU?

To facilitate cleanup at ETTP, the site was divided into varying-sized parcels, called Exposure Units (EUs). Remediation activities are conducted per EU.

All remedial activities are focused on Zone 2, the 800-acre main plant portion of the site. Zone 1, which is completed, encompassed 1,400 acres surrounding the Main Plant Area.

First-of-a-kind remediation used on Poplar Creek mudflat

UCOR teamed with Sevenson Environmental Services (SES) to perform remediation of the EU-19 mudflat as part of a time-critical removal action.

The mudflat is located at the end of a ditch that empties into Poplar Creek and was contaminated during past site operations. Access to the mudflat was not possible from the land side of EU-19 without removing almost an acre of wooded creek bank and up to 8,000 cubic yards of soil.

Given the difficulty of accessing the site, UCOR engaged with SES to perform a first-of-its-kind for ETTP remediation from a floating work platform positioned in Poplar Creek. Excavation, soil packaging, and site restoration of the mudflat soils were completed. The containers of soil were removed from the work platform for characterization and disposal. An impermeable barrier was installed over the excavated area and the entire area was covered in riprap.

A crane is lifting a barge to be placed in the water and used to remediate the EU-19 mudflat

Rail shipment of hazardous EU-21 waste saves time, money

Approximately 3,100 cubic yards of the soil in EU-21, the area inside the U-shaped footprint of the former K-25 Building, contained hazardous waste from manufacturing and industrial operations and required offsite disposal.

Due to constraints in the U.S. supply chain affecting specialized containers to ship soil, this loading operation posed a significant challenge.

UCOR partnered with Perma-Fix Environmental Services, Inc., to ship the soil by rail instead. Overall, the effort reduced the schedule for packaging and disposal of the soil by six months and freed resources to perform additional remedial action scope at ETTP.

Workers prepare to load waste for rail shipment

Soil remediation at ETTP nearing completion

Soil remediation at ETTP is nearing completion. Regulatory agencies have identified and approved all required remedial actions necessary to address soil cleanup.

Several years of characterization, data analysis, delineation, and modeling have resulted in the identification of numerous contaminated areas at ETTP that are now in the final stages of cleanup. Remediation efforts are being performed to eliminate hazards at the site and pave the way for future industrial use.

A revised Final Record of Decision for Zone 1 Soils was submitted to the regulatory agencies, which recommended no further action.

Remedial action accomplishments in FY 2023 include the following:

- EU-13: Completed soil and concrete remedial actions associated with a radiologically contaminated release from a tie line adjacent to the former K-631 Surge and Waste Facility. Site restoration activities included placing clean fill topped with gravel to stabilize the site.
- EU-16: Completed soil remedial actions at the former K-1064 Salvage Material Yard, the K-1064-H area, and a radiologically contaminated hot spot. Site restoration activities included placing soil fill and hydroseeding the area to stabilize the site. Crews also completed a remedial action to remove historical waste materials and contaminated soil at the former K-1064 North Trash Slope located along the bank of Poplar Creek. Site restoration activities included placing large stone (riprap) fill to stabilize the site.

Excavation activities at EU-13

Transite removal activity at EU-17 (above) and the completed site (right)

- EU-17: Completed a remedial action to remove exposed transite pieces (material made using asbestos) that were historically disposed and located along the banks of Poplar Creek. Site restoration activities included placing large stone fill to stabilize the site.
- EU-38: Completed a soil remedial action at the former K-1417-B Drum Storage Yard. Site restoration activities included placing clean fill topped with gravel to stabilize the site. Crews also started a remedial action to remove sediment from sumps at the K-1417-A Concrete Block Casting Facility.
- EU-39: Started a remedial action to remove contaminated soil from the footprint of the K-1420 Equipment Decontamination Facilities.

In addition to the ongoing soil remediation efforts, additional remaining media (surface water and sediment) across both Zones 1 and 2 are being evaluated. Onsite ponds and streams associated with site activities are being characterized. Sites currently being evaluated include the K-1007-P ponds (along Highway 58), K-901 Pond, K-720 Slough, K-770 Embayment, Oxbow Lake, the K-720 Beaver Ponds, (near the Powerhouse Greenway Trail), and Mitchell Branch.

Focus shifting to groundwater at ETTP

OREM and UCOR have shifted to soil and groundwater remediation at ETTP in the homestretch of a cleanup that took down more than 500 aging, contaminated structures.

With crews set to finish excavating and removing contaminated soil from the site in 2024, the spotlight is turning to groundwater.

ETTP is divided into three sections for groundwater remediation planning. One section is the Main Plant Area, which encompasses most of the operations area at the former enrichment complex.

Another section is the area where the large K-31 and K-33 uranium enrichment buildings once stood. The third section is called Zone 1, which is the area immediately surrounding the Main Plant and K-31/ K-33 area.

Planning took a major step forward recently when the U.S. Environmental Protection Agency and Tennessee Department of Environment and Conservation approved OREM's proposed plans for addressing groundwater in the Main Plant and K-31 and K-33 areas.

OREM hosted two public meetings this year to discuss the preferred approach for groundwater remediation at ETTP. The meetings provided an opportunity to explain the planned work at the site and for attendees to share comments.

The preferred approach for groundwater remediation in the Main Plant Area is a process called enhanced in situ bioremediation. A widely used technology for treating contaminated waste, it involves injecting microorganisms and a carbon source, such as

Excavation in the main plant area

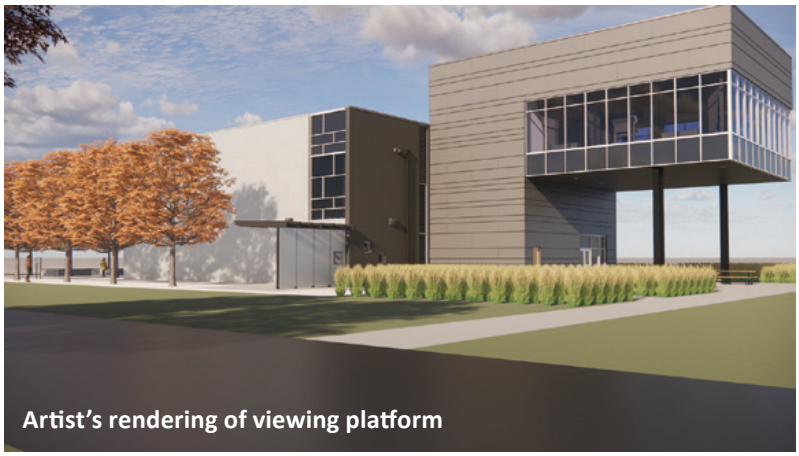
vegetable oil, into the ground. The microorganisms reduce or detoxify the contaminants.

For the K-31/K-33 area, OREM is proposing a process called monitored natural attenuation along with land use controls. Monitored natural attenuation relies on natural processes that reduce contaminant concentrations in groundwater. Using this process as the remedial action involves monitoring groundwater conditions with land use controls, limiting potential exposures.

The proposed remedies for Zone 1 and associated public involvement opportunities will be announced later.

Groundbreaking held for K-25 Viewing Platform

A groundbreaking was held for a viewing platform that will provide an expansive view of the historic K-25 Building footprint. The facility is being constructed by the U.S. Army Corps of Engineers using contractor Geiger Brothers Inc. to manage construction.


Artist's rendering of viewing platform

The K-25 Building was once the largest in the world, covering more than 44 acres. The national historic preservation site design includes visual indicators at each corner of the former building to illustrate the original dimensions and height of the structure. The viewing platform, to be completed in 2025, will be located near the K-25 History Center and will include 10-foot-tall wraparound glass windows and exhibits that provide quick facts and visuals related to the historic importance of the K-25 Building.

Reindustrialization spurring economic development

The Reindustrialization program maintained progress in 2023 by continuing partnerships and planning for the transfer of remediated land and remaining infrastructure at ETTP to public or private ownership and the economic benefit of the community. The former DOE K-25 uranium enrichment complex is currently in conversion to a multi-use industrial park that includes manufacturing, clean energy, national historic preservation, and conservation with public access to natural areas. Accounting for committed land transfers to date, only a few hundred acres of the approximately 2,200 original acres remain for final transfer. The vision for the park continues to be realized.

During FY 2023, the Reindustrialization team advanced the regulatory review of almost 500 acres of remediated land in transfer packages. This land includes the former K-1037 Steam Plant and Toxic Substances Control Act Incinerator package, the former Powerhouse Area, the former K-732 Switchyard, and multiple parcels intended for development of a new municipal airport. Upon regulatory approval, transfer packages are submitted for department and congressional approvals, which finalizes the process to release the land for new businesses and economic growth opportunities.

The Oak Ridge community continues to develop a reputation as an area known for clean energy and next-generation nuclear power industries. In 2023, Tennessee Governor Bill Lee issued an Executive Order to Advance Nuclear Energy Innovation and Investment, thereby positioning Tennessee as a national leader, and created the Nuclear Energy Advisory Council to formalize an implementation strategy that could build upon recent progress in Oak Ridge and Knoxville. Members include prominent Oak Ridge scientists, policy makers, and business professionals working together to evaluate future possibilities. Clean energy and new nuclear businesses currently developing in the area include TRISO-X, Ultra Safe Nuclear Corporation, Kairos Power, and the Tennessee Valley Authority. The area is expected to attract additional companies needed to support these industries.

Oak Ridge continues to pave the way for successful reindustrialization of federal land, enabling new and exciting clean energy and nuclear innovations that will positively impact the community and the nation.

ETTP

Waste Management

Wastes generated from cleanup activities on the Oak Ridge Reservation are addressed in a variety of ways. Most of the volume is disposed onsite in the Environmental Management Waste Management Facility or the Oak Ridge Reservation Landfills. However, the highly contaminated material is shipped offsite. Wastewater is treated at various facilities on the Oak Ridge Reservation.

Onsite facilities handling most cleanup wastes

Most of the waste generated during FY 2023 cleanup activities in Oak Ridge went to disposal facilities on the Oak Ridge Reservation—namely, the Environmental Management Waste Management Facility (EMWMF) and the Oak Ridge Reservation Landfills (ORRL). These disposal facilities are owned by DOE and operated/maintained by UCOR. They have been vital to cleanup progress and success, enabling OREM to accomplish more cleanup by avoiding costly and unnecessary cross-country shipments.

EMWMF only receives low-level radioactive and hazardous waste meeting specific criteria. The waste is mostly soil and building debris. In FY 2023, EMWMF received 5,221 waste shipments from cleanup projects at ETTP, ORNL, and Y-12, plus 84 clean fill shipments for maintenance of the enhanced operational cover and construction of access roads and dump ramps. The EMWMF landfill has a design capacity of 2.331 million cubic yards and is now 85 percent filled.

EMWMF generated 14.71 million gallons of landfill wastewater in FY 2023. Approximately 3.53 million gallons of leachate (water that enters the leachate collection system) was transported by tanker to the ORNL Liquid and Gaseous Waste Operations (LGWO) for treatment and release. Approximately 11.18 million gallons of contact water (water that contacts waste but does not enter the leachate collection system) was released to Bear Creek after laboratory analysis verified it met all regulatory limits and discharge standards.

ORRL accepts sanitary/industrial waste and construction/demolition debris. In FY 2023, these three active landfills received 6,629 waste shipments, totaling 92,991 cubic yards of waste.

ORRL also manages non-regulated leachate. In FY 2023, ORRL compliantly discharged 3.7 million gallons of leachate from the three active landfills to the Y-12 sanitary sewer system.

Work continued with regulatory agencies on seep mitigations for Sanitary Landfill II (a closed landfill) and active Landfill VII. Repairs at Landfill VII included developing and implementing a minor modification approved by the regulators that allowed landfill operations to remove approximately 1,164,000 gallons of leachate trapped inside of Landfill VII for an extended period of time. This water was transferred to the Landfill V leachate facility for discharge.

In FY 2023, ORRL continued improvements for all sediment and erosion controls. These measures included upgrading drainage features, which significantly reduces the amount of sediment released from these landfills. Tennessee Department of Environment and Conservation inspections in FY 2023 noted excellent sediment and erosion controls with no areas of concern or violations. CDL-V area 5 expansion was constructed to a 95 percent completion level during this fiscal year.

Wastewater treatment helps facilitate cleanup

Each year, activities on the Oak Ridge Reservation generate millions of gallons of wastewater that must be treated to remove oil, chemicals, radiological constituents, and other contaminants.

At Y-12, wastewater and groundwater generated from production and cleanup activities are treated. The site provided safe and compliant treatment of approximately 51 million gallons of wastewater and groundwater during FY 2023.

At ORNL, the Liquid and Gaseous Waste Operations plant treated approximately 114 million gallons of wastewater in FY 2023. In addition, the liquid low-level waste system at ORNL received approximately 117,000 gallons for treatment.

The ORNL 3039 Stack Facility treated 0.81 billion cubic meters of gaseous waste. These waste treatment activities supported both OREM and DOE Office of Science mission activities.

Ground broken for new disposal facility

A groundbreaking ceremony for the Environmental Management Disposal Facility (EMDF) was held on August 2, 2023. Attendees included U.S. Congressman Chuck Fleischmann, OREM Manager Jay Mullis, UCOR President and CEO Ken Rueter, contractor executives, other local elected officials, senior leadership from EPA and TDEC, and representatives from the U.S. laborers and operators unions.

Fieldwork for the early site preparation activities began after the groundbreaking. This work included rerouting portions of Bear Creek Road and the Haul Road, and development of other support areas.

EMDF is needed to handle waste generated from ORNL and Y-12 cleanup now that EMWMF is nearing capacity.

OREM continues to work with EPA and TDEC on regulatory documents for the EMDF landfill. The Early Site Preparation (ESP) Remedial Design Report/ Remedial Action Work Plan was approved in June 2023 and the Groundwater Field Demonstration Remedial Design Work Plan/Remedial Action Work Plan was prepared and reviewed in 2023 with approval in October 2023.

OREM continued to monitor 31 groundwater wells at the selected site for the disposal facility, measuring and recording water levels and groundwater characteristic data for the entire year.

EMDF site

TWPC focusing on TRU legacy difficult waste

The Transuranic Waste Processing Center (TWPC) focused on the critical readiness actions for several categories of difficult wastes that present operational and safety challenges within the legacy transuranic (TRU) inventory. It also continued processing, certifying, and shipping the legacy TRU waste inventory in FY 2023. The facility has completed processing of 99 percent of the contact-handled (CH) TRU and 98 percent of the remote-handled (RH) TRU legacy wastes within the processing milestones of the Site Treatment Plan for Mixed Wastes on the DOE Oak Ridge Reservation. CH TRU certification and shipments continue, resulting in 91 percent of the CH TRU waste and 76 percent of the RH TRU waste shipped to offsite disposal.

TWPC completed critical actions associated with readiness preparation to commission new waste processing capabilities at TWPC for high activity oxide wastes and wastes requiring special treatment to meet Waste Isolation Pilot Plant (WIPP) acceptance criteria. TWPC continued processing the legacy Nuclear Fuel Services waste (1.9 cubic meters) and by-product wastes from TRU waste processing (12.8 cubic meters).

TWPC completed limited processing operations for 1 cubic meter of legacy CH TRU waste. TWPC completed certification and shipment of 159 cubic meters of TRU waste for disposal at WIPP, 72.5 cubic meters of LLW for disposal at Nevada National Security Site, and 1.8 cubic meters of hazardous/universal waste for treatment and disposal, eliminating 855 containers of the stored inventory.

Workers prepare waste for shipment

Continued monitoring measures protectiveness

OREM continued to implement its groundwater strategy for the Oak Ridge Reservation in FY 2023. The *Melton Valley/Bethel Valley Exit Pathway Phase 1 Remedial Investigation Completion Report for the U.S. Department of Energy Oak Ridge Site, Oak Ridge, Tennessee* (DOE/OR/01-2953&D1) was submitted for regulatory reviews in August 2023. The report describes the installation of three new deep exit pathway wells in west ORNL along the Clinch River and one year of quarterly groundwater and surface water monitoring to determine whether there are site-related contaminants in groundwater at the ORR property boundary at ORNL. All detected constituents were below screening levels; however, continued groundwater monitoring was recommended in synchronization with sampling the Melton Valley exit pathway and offsite monitoring wells as a best management practice.

Early in FY 2022, the Federal Facility Agreement parties agreed that five-year reviews would be performed annually at related administrative watersheds rather than covering the entire Reservation every five years. The objective of the five-year review is to evaluate the success of completed CERCLA remedial actions in protecting human health and the environment. In July 2023, the *2023 CERCLA Five-Year Review for the East Tennessee Technology Park Administrative Watershed and the Clinch River/Poplar Creek and Lower Watts Bar Reservoir Operable Units on the U.S. Department of Energy Oak Ridge Site, Oak Ridge, Tennessee* (DOE/OR/01-2947&D1) was submitted for regulatory review. Also in FY 2023, OREM completed planning meetings for the upcoming 2024 CERCLA Five-Year Review for Upper East Fork Poplar Creek, Chestnut Ridge, Lower East Fork Poplar Creek, and South Campus Facility.

Public Involvement

The public is involved in cleanup decisions made by DOE. To keep the public informed, DOE provides information through a variety of outlets, including tours, meetings, briefings, conferences, media outreach, fact sheets, public notices, websites, social media, and various publications.

Energycast wins national award of excellence

In the first year of producing its groundbreaking monthly news show, "Energycast Oak Ridge," OREM took home a national award recognizing excellence in storytelling and public outreach.

"We've been really pleased with the interest and response to this newscast, and our team is actively working on some exciting ideas to continue strengthening the show as we kick off its second year," said Ben Williams, OREM public affairs specialist.

OREM's communications team won a 2023 Hometown Media Award in the government activities independent producer category. The awards were established to honor and promote community media, community radio, and local cable programs distributed on public, educational, and governmental access cable television channels.

Videographers Dylan Seiber and Cameron Jacobs record Energycast anchor Summer Dashe conducting an interview

"Energycast Oak Ridge" premiered on May 22, 2022, with the goal of showcasing the full scope and local impact of the cleanup mission in a new way—a news show. It airs on community television channels in 24 counties across eastern and middle Tennessee, including two of the state's largest cities, Nashville and Knoxville.

Public meetings held on ETTP groundwater

Two public meetings were held in FY 2023 regarding groundwater remediation at ETTP.

OREM presented information on the proposed plans for remedial actions for the ETTP Main Plant Area and for the K-31/K-33 area.

For the main plant area, enhanced in situ bioremediation was identified as DOE's preferred alternative to remediation of six specific areas of groundwater. This method involved using microorganisms to reduce contamination levels in these specific areas of groundwater.

For K-31/K-33, monitored natural attenuation and land use controls were identified as DOE's preferred alternative for remediation of contaminated groundwater in the area. It was the method selected to address groundwater contaminated with metals, primarily chromium and nickel, detected

OREM Regulatory Affairs Specialist Roger Petrie discusses groundwater remediation plans

in concentrations above drinking water standards. Overall contaminant concentrations have been trending downward since the late 1980s. There are no current exposure pathways that affect human health or the environment.

Advisory board provides public input on DOE cleanup activities

The Oak Ridge Site Specific Advisory Board (ORSSAB) is a federally chartered volunteer citizens panel that provides independent advice and recommendations to OREM. ORSSAB meetings provide DOE and regulators at the U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) with a forum to communicate with and understand stakeholders' perspectives. Because all meetings are open to the public, it also serves as a venue for members of the community to express their views or ask questions.

In 2023, the board issued a recommendation on the site's budget request and a recommendation on groundwater remedies for ETTP. It discussed ongoing development of the planned new onsite waste disposal facility, EMDF. Since 1995, ORSSAB has provided nearly 300 recommendations to OREM on all important aspects of the cleanup program, such as land use and reindustrialization; stewardship; cleanup standards, activities and budgets; and waste management. Every major record of decision (ROD) developed under OREM has had heavy SSAB involvement, and none of the final RODs have been at odds with majority SSAB opinions.

ORSSAB meets the second Wednesday of most months at 6 p.m. in Oak Ridge and virtually through Zoom. The board also has two standing committees. All meetings are open to the public and feature comment periods. Meeting videos are also posted to the board's YouTube channel, www.youtube.com/user/ORSSAB. Staff members also maintain an active social media presence at www.facebook.com/ORSSAB and publish a weekly email newsletter and a quarterly print and electronic publication, the Advocate. More information about the board and its activities is available at www.energy.gov/orssab or email questions to staff at orssab@orem.doe.gov.

ORSSAB members

Board takes advantage of educational opportunities

Board members this year were active in attending a variety of events that enabled them to learn more about the EM cleanup program.

This year's twice-yearly Chairs meeting took place in Washington, DC, allowing board officers to meet with EM Headquarters leadership directly and share feedback on local projects as well as discuss the overall cleanup mission. EM leaders William "Ike" White and Jeff Avery met directly with the board.

Other members traveled to a variety of conferences dedicated to environmental management, cleanup, and long-term stewardship. These opportunities allow members to bring back knowledge to improve their service to OREM. This year, the board sent representatives to the Waste Management Symposia in Phoenix, Arizona; the Radwaste Summit in Las Vegas; the National Brownfields Conference; and the National Cleanup Workshop.

Locally, members participated in meetings and tours related to OREM's Five Year Review Process, which allows it and partner agencies to assess the effectiveness of current remedies in protecting human health and the environment. Being able to contribute to these discussions allows ORSSAB to see how OREM and regulators operate in the field and gain a better understanding of topics presented at board meetings.

Websites for Additional Information

DOE OREM Public Information
(865) 574-4912
www.energy.gov/orem

Oak Ridge Site Specific Advisory Board
(865) 241-4583, (865) 241-4584
1-800-382-6938
www.energy.gov/orssab

Tennessee Department of Environment and Conservation–DOE Oversight Office
(865) 481-0995
https://tdec.tn.gov/

U.S. Environmental Protection Agency
Region 4
1-800-241-1754
www.epa.gov/aboutepa/about-epa-region-4-southeast

Commonly Used Acronyms

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
DOE	U.S. Department of Energy
EM	Environmental Management
EMDF	Environmental Management Disposal Facility
EMWMF	Environmental Management Waste Management Facility
EPA	U.S. Environmental Protection Agency
ETTP	East Tennessee Technology Park
EU	Exposure Unit
FFA	Federal Facility Agreement
FY	Fiscal Year
LGWO	Liquid and Gaseous Waste Operations
LLW	Low-Level Waste
MSRE	Molten Salt Reactor Experiment
NNSA	National Nuclear Security Administration
OREM	Oak Ridge Office of Environmental Management
ORNL	Oak Ridge National Laboratory
ORRL	Oak Ridge Reservation Landfills
ORSSAB	Oak Ridge Site Specific Advisory Board
ROD	Record of Decision
TDEC	Tennessee Department of Environment and Conservation
TRU	Transuranic
TWPC	Transuranic Waste Processing Center
U-233	Uranium-233
WIPP	Waste Isolation Pilot Plant
Y-12	Y-12 National Security Complex

DOE Information Center

The DOE Information Center is located at the Office of Scientific and Technical Information, Building 1916 – T1, 1 Science.gov Way, Oak Ridge, Tennessee 37831; Email: doeic@science.doe.gov; Hours: 8 a.m. to 5 p.m., Monday – Friday; http://doeic.science.energy.gov; Phone: (865) 241-4780

Commonly Used Terms

CERCLA

CERCLA: The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) established prohibitions and requirements concerning closed and abandoned hazardous waste sites, provided for liability of persons responsible for hazardous waste releases at these sites, and established a trust fund to provide cleanup when no responsible party could be identified. The law, which governs cleanup operations on the Oak Ridge Reservation, authorizes two kinds of response actions: short-term removal actions, where actions may be taken to address releases or threatened releases requiring prompt response, and long-term remedial actions, which permanently and significantly reduce the dangers associated with releases or threats of releases. Long-term actions can be conducted at sites on the U.S. Environmental Protection Agency's National Priorities List, a listing of the nation's most hazardous waste sites. The Oak Ridge Reservation was added to that list in 1989.

FFA

Federal Facility Agreement: CERCLA requires an agreement between state and federal entities to guide cleanup work at CERCLA sites. For OREM, the parties of this agreement, called a Federal Facility Agreement, are DOE, the U.S. Environmental Protection Agency, and the Tennessee Department of Environment and Conservation. The Federal Facility Agreement for Oak Ridge was initiated in January 1992.

RmA

Removal Actions: Some cleanup activities on the Oak Ridge Reservation are conducted as Removal Actions under CERCLA. These actions provide an important method for moving sites more quickly through the CERCLA process. When a site presents a relatively time-sensitive, non-complex problem that can and should be addressed, a Removal Action would be warranted.

RA

Remedial Actions: Remedial actions are long-term response actions that seek to permanently and significantly reduce the risks associated with the release or threat of release of hazardous substances.

RI/FS

Remedial Investigation/Feasibility Study: The purpose of the remedial investigation/feasibility study (RI/FS) is to assess site conditions and evaluate alternatives to the extent necessary to select a remedy. Developing and conducting an RI/FS generally includes the following activities: project scoping, data collection, risk assessments, treatability studies, and analysis of alternatives. The scope and timing of these activities should be tailored to the nature and complexity of the problem and the response alternatives being considered.

ROD

Record of Decision: Under the CERCLA process, a Record of Decision (ROD) formally documents the selection of a preferred cleanup method after a series of steps, including an RI/FS. A preferred cleanup alternative is selected and presented to the public for comment in a Proposed Plan. EPA, the state, and the lead agency then select a remedy and document it in the ROD.

Fiscal Year: The 2023 fiscal year spans from Oct. 1, 2022, to Sept. 30, 2023.

For more information, please contact
the DOE Oak Ridge Public Affairs Office at (865) 574-4912.

OREM

Oak Ridge Office of Environmental Management

PROGRAM PLAN

FY 2022 to 2032

BIANNUAL UPDATE - FALL 2022

CONTINUING PROGRESS.
RESTORING THE ENVIRONMENT.
ENABLING MISSIONS.

U.S. DEPARTMENT OF ENERGY

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A MESSAGE FROM THE MANAGER

Dear colleagues and stakeholders:

We are excited to share our newest program plan that provides employees a clear course for 2022-2032. The release of this plan marks nearly a decade since we issued our previous plan. That document unveiled major cleanup goals for the Department of Energy's (DOE) Oak Ridge Office of Environmental Management (OREM) that guided our decisions and facilitated clear expectations for our employees and contractors. Now, we are implementing an updated list of goals for the years ahead with the same purpose in mind.

Similar to the previous plan, we are again establishing four ambitious cleanup goals that provide our workforce a uniform vision to strive toward. The goals, objectives, and performance measures listed in this document give more details about the specific projects slated for completion over the next 10 years. They are a fixed target for employees to pursue, and they serve as a measurable method to gauge and track our performance.

We will update this program plan every two years for stakeholders to learn about our progress and how we are using the tax investments we receive from Congress. Each update will highlight how our employees are reducing risks, improving safety, and removing barriers to new missions and economic opportunities in Oak Ridge.

This program plan takes OREM through 2032. During that span, we will complete cleanup at the East Tennessee Technology Park (ETTP) and accomplish major transformation at Oak Ridge National Laboratory (ORNL) and the Y-12 National Security Complex (Y-12). By the end of this edition, we are slated to complete all cleanup and transfers at ETTP, eliminate all the uranium-233 inventory and debris transuranic waste at ORNL, clear away numerous former reactors and labs in ORNL's central campus, and begin the teardown of massive high-risk buildings at Y-12.

You will see many new projects listed in this new edition, and we are up to the challenge. Our leadership team does a tremendous job identifying and proactively planning for new opportunities. We also boast highly qualified and committed employees, strong community and contractor partners, and a clearly defined vision for the future. Together, these elements make Oak Ridge a special and unique site that is setting the standard for excellence within DOE's Environmental Management complex.

As I look at what we have accomplished in recent years, I am eager to witness the ongoing transformation and new opportunities created for the Department and local community by our mission. As we work to achieve the goals listed in this plan, our Congressional delegation is providing exceptional support, and our employees and contractors are using those investments effectively to accomplish the most meaningful and impactful cleanup possible across the site.

Jay Mullis
Manager

OUR MISSION

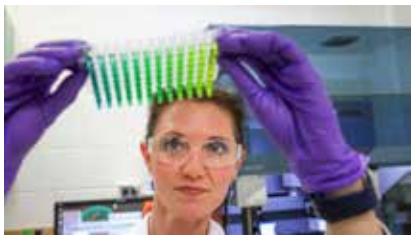
The U.S. Department of Energy's (DOE) Oak Ridge Reservation occupies more than 32,000 acres within Anderson and Roane counties in East Tennessee. Three sites lie within its borders—they include the Y-12 National Security Complex (Y-12), Oak Ridge National Laboratory (ORNL), and East Tennessee Technology Park (ETTP).

DOE's Oak Ridge Office of Environmental Management (OREM) has cleanup responsibilities at all three of these sites. Its efforts are removing risks and hazards, enhancing safety, opening land for re-development, and modernizing campuses to enable important science and energy research and national security missions. To accomplish these outcomes, OREM's mission is three-fold.

PROTECT THE REGION'S HEALTH AND ENVIRONMENT

Our work enhances the health and safety of the region. At Y-12, we are tearing down deteriorated buildings and constructing infrastructure and advancing research to remove sources of mercury contamination from the environment. At ORNL, we are demolishing contaminated facilities, eliminating waste inventories, and removing radiological risks. Finally, at ETTP, we are in the final stages of addressing areas with impacted soil and groundwater.

ENABLE DOE'S NATIONAL SECURITY AND SCIENCE MISSIONS ONSITE



We are actively demolishing excess and contaminated buildings at Y-12. These projects are clearing land for the National Nuclear Security Administration to build new facilities that support important national security missions. Our cleanup at ORNL is removing dilapidated facilities and radiological risks to open land for DOE's Office of Science to continue advancing its world-leading research.

MAKE CLEAN LAND AVAILABLE FOR FUTURE USE

At ETTP, our work has transformed the former enrichment site into a multi-use industrial center, national park, and conservation area. We have successfully cleared away all of previous facilities and transferred 1,300 acres to the community for economic development that is attracting new investments and businesses to the region. We have also set aside more than 3,000 acres for conservation and recreational use.

CORE VALUES

The leadership and employees in OREM adhere to a set of core values that have proven invaluable as we conduct and accomplish challenging cleanup across the three major cleanup sites. These values provide a clear standard that guide our workforce and contributes to the organization's successful operations and oversight.

The safety and security of our employees, local residents, and the environment is our highest priority

Our results will demonstrate accountability and value for taxpayers' investment

We will value and utilize the diversity, experience, and skills of our people

We will pursue innovation and continuous improvement in every aspect of our operations

We will promote openness, collaboration, and teamwork with our stakeholders

THE 10-YEAR PROGRAM PLAN

This plan builds on the successes our program has accomplished since it was formed in 1989. Over the decades, we have made incredible progress remediating contaminated soil and groundwater and demolishing radioactively contaminated facilities across the Oak Ridge Reservation (see Cleanup Accomplishments on page 11).

Contamination areas that once threatened the environment have been contained through early actions and institutional controls. Through the years, we have also removed radioactive and hazardous wastes and portions of nuclear material inventories that could pose risks to the public or DOE's ongoing missions.

This plan outlines our approach from fiscal year 2022-2032 to continue removing contaminated facilities, reducing waste inventories, and addressing impacted soil and groundwater on the Oak Ridge Reservation in a safe and cost effective manner. This work is protecting human and environmental health and ushering in a future with new opportunities for DOE, the City of Oak Ridge, and the region.

HISTORY AND BACKGROUND

The U. S. Army Corps of Engineers began acquiring land, in the area that became Oak Ridge, in October 1942 for the Manhattan Project. By March 1943, 56,000 acres were sealed behind fences and major industrial facilities were under construction.

The K-25, S-50, and Y-12 plants were all built to explore different methods to enrich uranium, while the X-10 site was established as a pilot plant for the Graphite Reactor and to explore how to produce plutonium. Throughout the following decades the three major sites— K-25 (present day ETTP), X-10 (present day ORNL), and Y-12— purified isotopes, conducted research, built weapons, and created environmental legacies that OREM is now cleaning and removing.

Above Left: East Tennessee Technology Park
Above: Oak Ridge National Laboratory
Left: Y-12 National Security Complex

EAST TENNESSEE TECHNOLOGY PARK

The K-25 plant was constructed during the Manhattan Project to enrich uranium for the first atomic weapon using the gaseous diffusion process. Due to the success of this technique, the original plant was expanded during the Cold War and employed 12,000 workers. At its peak, the site contained five enormous uranium enrichment facilities—K-25, K-27, K-29, K-31, and K-33— and hundreds of support facilities. DOE ceased all gaseous diffusion operations at the K-25 plant in 1987.

Environmental cleanup to address the deteriorating facilities and environmental hazards created during decades of uranium enrichment began shortly thereafter. In addition to conducting much needed cleanup, DOE pursued a vision to convert the site into a private industrial park by transferring land and infrastructure back to the community. The site was renamed the East Tennessee Technology Park in 1997. OREM has completed the demolition of all excess facilities and is in the final phase of completing cleanup at ETTP. Work remaining includes completing soil and groundwater remediation, transferring cleaned land to the community, and transitioning the site to long term stewardship.

QUICK FACTS

Site manager: Office of Environmental Management and the Community Reuse Organization of East Tennessee

Size: 2,200 acres

Cleanup priority: Complete soil and groundwater remediation, transfer remaining federal land to the community for beneficial reuse, and transition site to long term stewardship.

EM value-added: The cleaned site offers an abundance of flat real estate and robust infrastructure to attract large industry to the region. The EM program constructed a history center that tells ETTP's rich history for people visiting the Manhattan Project National Historical Park site, with more historic preservation facilities planned in the coming years. OREM also created a 3,000-acre conservation easement adjacent to ETTP that protects wildlife and provides residents with nature-friendly trails.

Y-12 NATIONAL SECURITY COMPLEX

Y-12 was built during the Manhattan Project to enrich uranium for the first atomic weapon that ended World War II. After World War II, the site provided lithium separation and key components for the thermonuclear weapons that helped end the Cold War.

Today, the Y-12 National Security Complex is managed by NNSA. Y-12 is responsible for maintaining the safety, security, and effectiveness of the U.S. nuclear weapons stockpile, and its employees have extensive expertise in machining, handling, and protection of radiological materials. Y-12 is responsible for surveillance testing, which determines how weapons in the active stockpile are aging, and it is also charged with dismantlement, which involves separating components of retired weapons and recovering their nuclear materials. Safe and secure storage occurs throughout all these processes.

In addition, Y-12 works with other federal agencies to secure vulnerable nuclear materials internationally. Through NNSA's Global Threat Reduction Initiative, employees safely secure materials and transport them to Y-12 for ultimate storage or disposition. Finally, Y-12 provides highly enriched uranium to fuel reactors in the Navy's nuclear-powered aircraft carriers and submarines.

QUICK FACTS

Site manager: National Nuclear Security Administration

Size: 811 acres

Cleanup priority: Construct infrastructure to support mercury cleanup, remove large excess contaminated facilities, and address sources of mercury in the environment.

EM value-added: Removing mercury laden facilities and remediating soils and surface/groundwater eliminates risks, enhances safety, and opens land for modernization of one of DOE's most important national security sites.

OAK RIDGE NATIONAL LABORATORY

ORNL dates back to the Manhattan project, when it was previously known as X-10. Its first mission was to develop and test the experimental Graphite Reactor, which went critical in March 1944. It was also used as a pilot test facility for plutonium production.

13 reactors were designed and built onsite that developed numerous nuclear material reprocessing methods. In the 1960's, research into genetics and the biological effects of radiation were added to the site's mission. In the 1970's, ORNL began ecological and biological research of the impacts of nuclear power plants on the environment. During the 1980s and 1990s, the mission grew to encompass alternative energy and Strategic Defense Initiative research.

Today, ORNL is a state-of-the-art research complex at the forefront of supercomputing, advanced manufacturing, materials research, neutron science, clean energy, and national security that is managed by Office of Science.

QUICK FACTS

Site manager: Office of Science

Size: 4,400 acres

Cleanup priority: Removing radiologically and chemically contaminated facilities and eliminating inventory of uranium-233 and transuranic waste.

EM value-added: Removing inventories of nuclear waste and deteriorated and contaminated facilities will eliminate risks, enhance safety, and open land for further modernization of one of DOE's most important science institutions.

REGULATORY FRAMEWORK

As a result of legacy contamination from past operations, in 1989, the U.S. Environmental Protection Agency (EPA) placed the Oak Ridge Reservation on the National Priorities List. The list names national priorities where there are known or threatened releases of hazardous substances (Since then, OREM performed extensive sampling that showed more than 19,000 of the 32,000 acres are clean, and they were eliminated from the list.).

In 1989, DOE responded by establishing the Office of EM to oversee cleanup of hazardous materials at its facilities located across the U.S. Three years later, DOE, EPA, and the Tennessee Department of Environment and Conservation (TDEC), signed the Federal Facility Agreement, which establishes the guidelines and milestones for cleanup in Oak Ridge in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and other laws.

This tri-party agreement provides a checks and balances system to ensure the cleanup in Oak Ridge is prioritized and conducted in a way that best protects human health and the environment in the region. Members of each organization communicate and collaborate regularly as we plan and execute projects.

In recent years, we helped establish a new regulatory partnership framework with EPA, TDEC, and UCOR that has already accelerated multiple cleanup projects. The framework is designed to aid decision-making and approvals needed to conduct cleanup operations at ETTP, ORNL, and Y-12. Management representatives serve on a leadership team and an emerging issues team that help reach resolution on issues unresolved on the staff level. The framework also includes project management representatives who serve on a project team. These teams are working to resolve regulatory challenges and improve communication so the agencies can make protective, timely cleanup decisions.

CLEANUP ACCOMPLISHMENTS

We have made significant progress cleaning up the Oak Ridge Reservation. While the transformation is ongoing, it is important to acknowledge the magnitude of the work that OREM has already accomplished. Since the EM program's inception, hundreds of facilities have been removed, environmental legacy sites have been remediated, and infrastructure to treat, process, and dispose of waste has been constructed.

Demolishing old, contaminated facilities

Our efforts have removed hundreds of facilities across ETTP, Y-12, and ORNL. We became the first site in the world to remove a former enrichment complex, which involved removing nearly 500 structures spanning a total footprint of 13 million square feet. Now, the trained, experienced crews responsible for this historic accomplishment are busy deactivating and demolishing excess contaminated facilities at Y-12 and ORNL. We anticipate removing nearly 400 structures at those sites in the years ahead.

Waste treatment and removal

We have constructed and upgraded numerous waste treatment systems and facilities focused on removing legacy contamination and keeping sites safe. The TSCA Incinerator treated 35 million pounds of waste before it was taken down. The ORNL Liquid and Gaseous Waste Treatment System treats millions of gallons of process wastewater and over a billion cubic meters of gaseous waste annually. Additionally, we have removed half of the uranium-233 inventory stored at ORNL and started hot cell operations to process the remaining material. We have processed 98% of the legacy transuranic debris waste and are continuing to ship processed waste to WIPP.

Risk reduction

We have addressed and eliminated major hazards across the Oak Ridge Reservation including removing 7,000 cylinders of depleted uranium hexafluoride, emptying waste storage tanks, shipping all spent nuclear fuel offsite, excavating the greatest source of groundwater contamination at ORNL, and clearing contaminated scrap yards.

Addressing mercury

We have reduced offsite mercury migration from Y-12 and are actively investigating technologies that can effectively remove it from the environment. Our projects have eliminated some of the mercury sources from mercury contaminated tanks and facilities, cleaned storm drain systems, excavated contaminated soil, dredged sediments, re-routed and removed old process piping, and extracted more than 6.5 tons of mercury from old equipment. We are also constructing an onsite mercury treatment system that will capture and treat mercury contaminated water originating and mobilizing from major mercury cleanup areas at Y-12.

Groundwater monitoring and treatment

The safety of human health and the environment is our top priority. One of the ways we ensure that continues is through supporting groundwater protection for Oak Ridge. Our projects have addressed necessary groundwater actions, treated millions of gallons of water, and installed a vast collection of monitoring wells across the Oak Ridge Reservation to ensure safety and inform plume modeling for remedial action decisions.

Innovative transportation

We constructed a dedicated road on DOE land to transport waste from cleanup sites to our onsite disposal facilities. This road prevents the potential for traffic accidents or spills on public highways. More than 200,000 truckloads have been diverted from local roadways. We have also developed advanced tracking systems to identify the location and contents of each truck while they are in transit.

Reindustrialization and economic development

We were the first DOE site to launch a reindustrialization program. To date, we have transferred nearly 1,300 acres, 14 buildings, along with roadways, electrical, water and sewer systems, and emergency services. These transfers have saved taxpayers millions of dollars, and they are attracting hundreds of millions of dollars in new economic development which is creating new jobs for the region.

Public involvement and input

Since 1995, the Oak Ridge Site Specific Advisory Board has provided independent advice and recommendations to our cleanup program. The federally appointed citizens' advisory panel is comprised of 22 members that reflect the diversity of the region, and their active engagement and insight is invaluable as we formulate cleanup strategies and decisions. OREM will continue conducting robust outreach efforts and seek public input and involvement with major CERCLA-related cleanup decisions. We have also increased STEM outreach in the community, local schools, and colleges nationwide highlighting and promoting our mission and career opportunities. OREM recently launched a monthly news program that airs in 23 counties across the state.

Regulatory Decisions

Oak Ridge set the model for environmental regulatory collaboration, and those efforts have led to numerous key decisions and documents that allowed cleanup to advance across the reservation. Those decisions are allowing for the completion of soil cleanup at ETTP and the start of cleanup at ORNL and Y-12. We will continue strengthening our relationship with EPA and TDEC to complete the remaining decisions and documents required to support ETTP site closure and final remediation at ORNL and Y-12.

BALANCING PRIORITIES

We have a portfolio of projects designed to complete cleanup at ETTP, Y-12, and ORNL. All three portfolios are integrated into a single plan that balances risks from the perspectives of DOE, regulators, and stakeholders.

We have successfully completed most of the cleanup scope at ETTP. The priority at ETTP is to complete remaining soil and groundwater remediation and activities that facilitate the site's transition to private ownership. Completing these efforts will allow the community to reuse the site for economic development, historic preservation, and conservation, leaving a small amount of acreage for long term stewardship.

Now that we are in the final stages of completing ETTP's cleanup, we have shifted our focus to the cleanup of Y-12 and ORNL. The hazards and challenges at Y-12 and ORNL are different than those we faced at ETTP. While EM is the landlord of ETTP, with full control over the site, we are only a tenant at Y-12 and ORNL. Crews had space and flexibility with cleanup projects at ETTP due to its open footprint and absence of enduring DOE missions at that site; however, crews must maneuver in smaller, confined footprints at Y-12 and ORNL as they conduct cleanup activities in close proximity to ongoing research and national security missions. It is also important to note that workers are addressing different hazards at each site—mercury at Y-12, radiological contamination at ORNL, and previously uranium at ETTP.

Our priority at Y-12 is the demolition of excess buildings and remediation of underlying soils and groundwater that are contaminated with mercury. Mercury continues to migrate into the Upper East Fork Poplar Creek, which enters public water at the site boundary. We are funding research and executing projects that will reduce mercury migration into waterways and address its sources.

Our priority at ORNL is the disposition of U-233 material and legacy transuranic waste, the demolition of excess facilities, and remediation of underlying soils and groundwater that have nuclear and radiological contamination from years of isotope production and reactor research.

OREM uses the following criteria to prioritize its work within the constraints of annual appropriations across three sites that have different hazards and operating conditions:

1. **Eliminate any offsite releases**
2. **Prevent contamination from traveling offsite**
3. **Address sources of onsite contamination**
4. **Demolish aged, contaminated facilities**
5. **Address soil, groundwater, and surface water**

CHALLENGES AND CONSIDERATIONS

Oak Ridge has unique cleanup challenges. The Oak Ridge Reservation has three major cleanup sites, each owned by different programs with different operational histories, risks, physical, chemical and radiological hazards, footprints and ongoing missions.

- More than 500,000 people live within a 30-mile radius of our cleanup, and the entire Oak Ridge Reservation is within the Oak Ridge city limits.
- Oak Ridge receives one of the highest annual rainfall levels of any site within the Environmental Management complex. It also has shallow groundwater capable of carrying contaminants into local waterways.
- The Department's largest inventory of high-risk excess contaminated facilities is at Y-12 and ORNL. These buildings present different hazards than crews experienced at ETTP.
- Since EM is a tenant at Y-12 and ORNL, EM work at these sites must be coordinated with the Office of Science and NNSA landlords.
- Cleanup at Y-12 and ORNL is conducted on confined footprints in close proximity to important ongoing research and national security missions. EM must ensure cleanup does not impact those missions.
- We must balance myriad risks and meet regulatory requirements across three sites within the constraints of Congressional appropriations while engaging a diverse group of stakeholders with differing priorities and expectations.

Above Left: *Satellite view of the Oak Ridge Reservation.* ***Top Right:*** *Anticipated cleanup scope at ORNL (labeled in red).*
Lower Right: *Anticipated cleanup scope at Y-12 (labeled in red)*

OUR GOALS

This section of the plan focuses on the next 10 years, 2022 to 2032. The timeline on the following pages highlights our major planned accomplishments during that span that will set us on a course to complete OREM's mission by 2047. We have established four goals, eight objectives, and numerous performance measures that will help us track our progress over the next decade. These goals and measures are explained in more detail in the next section.

Goal 1: Complete ETTP cleanup and transition site to long-term stewardship

Objective 1: Complete all remedial actions consistent with CERCLA agreements

Objective 2: Complete reindustrialization, conservation, and historic preservation activities and transition site to long term stewardship

Goal 2: Reduce radiological risks at ORNL

Objective 1: Disposition uranium-233 inventory

Objective 2: Deactivate and demolish excess contaminated facilities in central campus

Objective 3: Disposition legacy transuranic waste inventory

Goal 3: Reduce environmental risks at Y-12

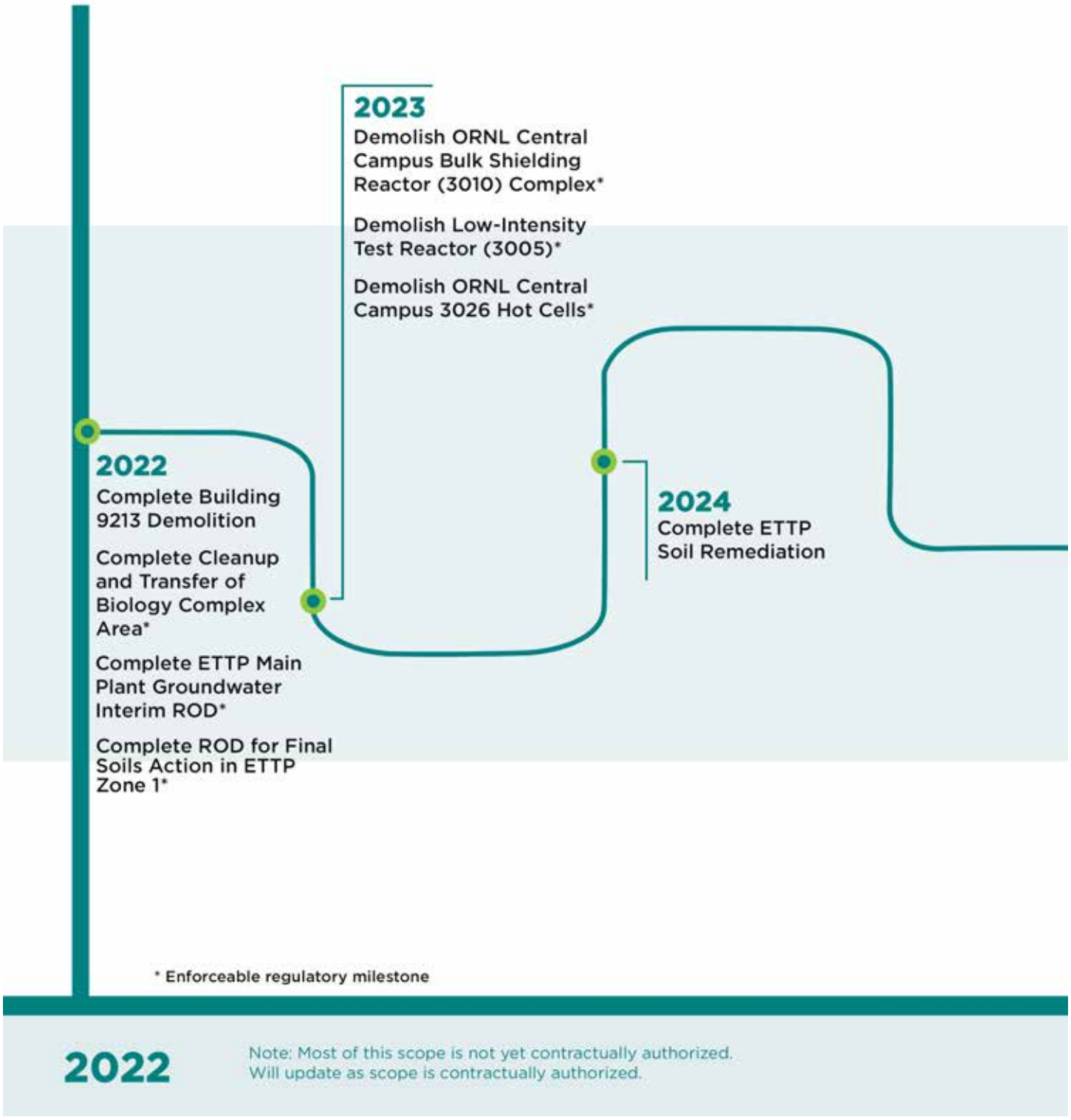
Objective 1: Deactivate and demolish high-risk excess contaminated facilities at Y-12

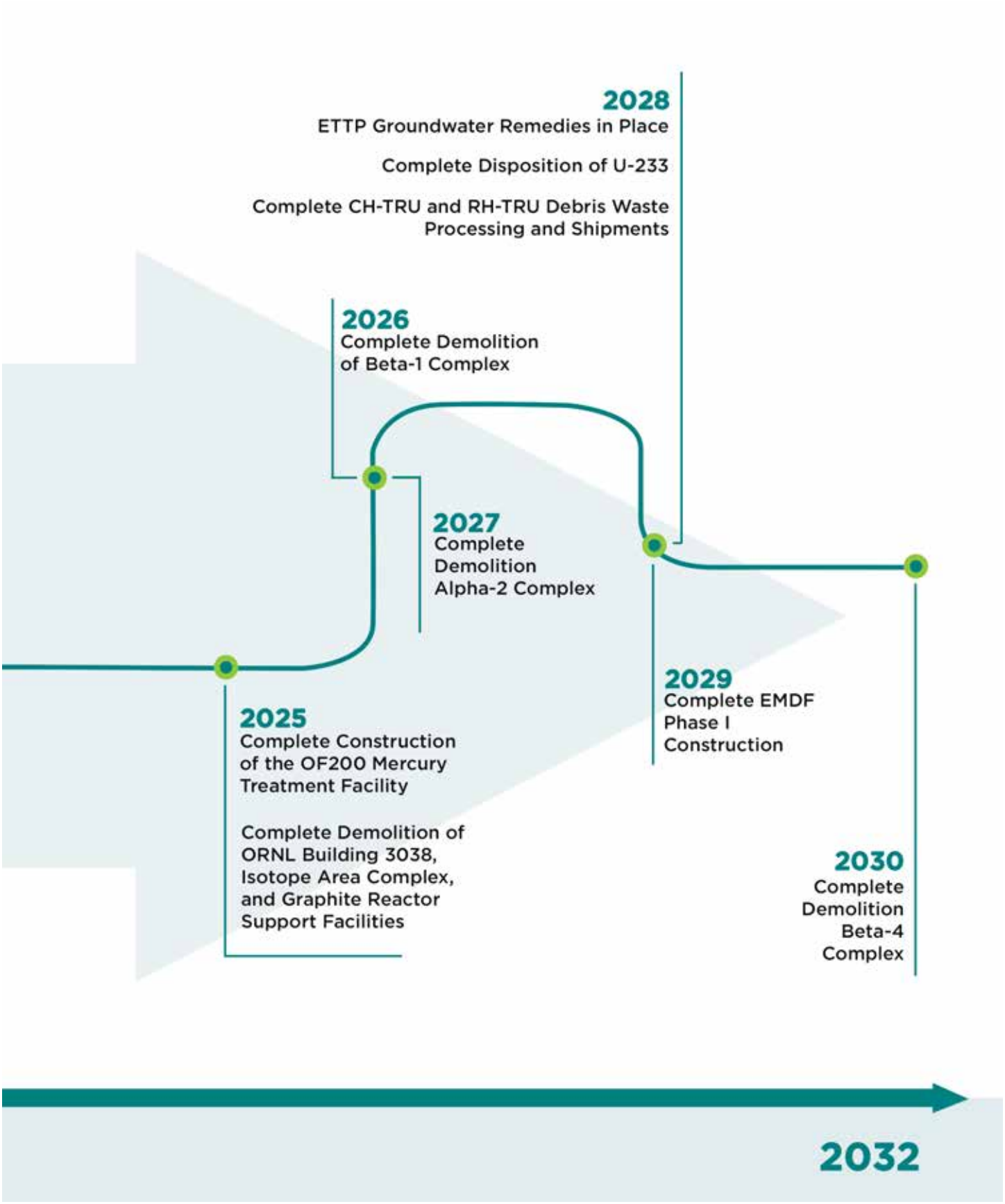
Objective 2: Build infrastructure and advance research to support mercury cleanup

Goal 4: Ensure adequate onsite waste disposal capacity to support remaining cleanup

Objective 1: Build and operate EMDF

Decade Timeline 2022-2032




2028
ETTP Groundwater Remedies in Place
Complete Disposition of U-233
Complete CH-TRU and RH-TRU Debris Waste Processing and Shipments
2026
Complete Demolition of Beta-1 Complex
2027
Complete Demolition Alpha-2 Complex
2025
Complete Construction of the OF200 Mercury Treatment Facility
Complete Demolition of ORNL Building 3038, Isotope Area Complex, and Graphite Reactor Support Facilities
2029
Complete EMDF Phase I Construction
2030
Complete Demolition Beta-4 Complex
2032

PROGRESS ON THE ROAD TO 2032

GOAL 1: COMPLETE ETTP CLEANUP AND TRANSITION SITE TO LONG-TERM STEWARDSHIP

Objective 1: Complete all remedial actions consistent with CERCLA agreements

PERFORMANCE MEASURES:

- ☐ Complete soil remediation
- ☐ Complete regulatory agreements for groundwater
- ☐ Implement groundwater remedies

While all demolition is complete at ETTP, we must complete soil and groundwater remediation to finish our work under CERCLA at ETTP. Crews are working steadily to remediate remaining areas of soil contamination across the site. A major remaining soil remediation project to clean up a trichloroethylene (TCE) contaminated area in the middle of the Building K-25 footprint is underway. This project spans an acre, and workers are excavating down nearly 40 feet in some areas to remove all the impacted soil. Completing this project and all other remaining soil remediation projects will eliminate risks and help facilitate future plans to transform the building's footprint into a commemorative site as part of the Manhattan Project National Historical Park. OREM plans to complete all soil remediation projects at ETTP in 2024.

OREM continues to work with the EPA and State of Tennessee to complete necessary Records of Decision for groundwater remedies at ETTP by 2026. Those decisions will provide direction to implement preferred methods to address impacted groundwater by 2028 and ensure the community remains protected.

Objective 2: Complete reindustrialization, conservation, and historic preservation activities and transition to long term stewardship

PERFORMANCE MEASURES:

- ☐ Complete all activities to preserve the historical significance of K-25
- ☐ Transfer all applicable economic development parcels to the community
- ☐ Transfer all applicable conservation parcels to the State of Tennessee
- ☐ Complete closure activities and transition to long-term stewardship

OREM's vision to transform the former enrichment complex into a multi-use industrial center, national park, and conservation area is within reach. We have transferred 1,300 acres for economic development, constructed a history center, and signed an agreement to transfer nearly 3,500 acres of scenic East Tennessee land to the Tennessee Wildlife Resources Agency for conservation and recreational uses.

We are continuing efforts to complete our commitments listed in the multi-party agreement to preserve the historical significance of K-25, which includes constructing the K-25 Viewing Platform and wayside exhibits. This work, planned for completion in 2024, will help share the site's rich history to future generations.

OREM is also intently focused on transforming the site into an economic engine for the region. Our reindustrialization efforts are giving new life to infrastructure and land that are no longer needed by DOE by transferring them to the community and the City of Oak Ridge.

Since our reindustrialization efforts began, more than 20 businesses have located at ETTP. With major cleanup complete, the development potential is more apparent, and the large parcels of available land have attracted significant private investments. Kairos Power, Triso-X, Carbon Rivers, and Ultra Safe Nuclear Corporation have all recently announced plans to invest a combined $600 million to construct new facilities at the site, and these companies will generate hundreds of new jobs for the region in the years ahead. OREM is working to transfer another 600 acres at ETTP for economic development in the coming years.

OREM is scheduled to complete its cleanup, economic transfers, and closure activities in 2028, and transition to long-term stewardship activities in 2029. That will mark the end of decades of cleanup at the site and achieves the Department's largest ever completed remediation effort.

GOAL 2: REDUCE RADIOLOGICAL RISKS AT ORNL

Objective 1: Disposition uranium-233 inventory stored at ORNL

PERFORMANCE MEASURES:

- ☒ Complete facility upgrades necessary to begin processing operations in Building 2026
- ☐ Downblend and disposition all remaining U-233 inventory
- ☐ Transition Building 2026 and 3019 for decommissioning and deactivation

While approximately half of the U-233 inventory stored at ORNL was able to be disposed of without processing, the remaining material requires processing to convert it into a form that can be shipped and disposed offsite. Eliminating this material is OREM's highest priority at ORNL since it drives the security posture at the site.

This campaign recently took a major step forward. With facility upgrades complete in Building 2026 and procedures reviewed and approved, employees began processing the remaining U-233 inventory in hot cells in October 2022. Processing and disposition of the remaining material is expected to be completed by 2028.

The removal of the U-233 inventory from ORNL will save significant annual funds dedicated to keeping the material safe and secure, reduce the security posture of ORNL, and allow OREM to decommission and deactivate Building 3019, which is the oldest operating nuclear facility in the world.

This project is also benefiting the medical field. Employees are extracting medical isotopes as they process the material that are supporting next generation cancer treatment research.

Objective 2: Deactivate and demolish excess contaminated facilities in ORNL's central campus

PERFORMANCE MEASURES:

- ☐ Demolish Building 3026 Hot Cells
- ☐ Demolish Low Intensity Test Reactor (Building 3005)
- ☒ Demolish Bulk Shielding Reactor (Building 3010)
- ☐ Demolish Oak Ridge Research Reactor (Building 3042)
- ☐ Demolish Graphite Reactor support facilities (Buildings 3002, 3003, 3018)
- ☐ Demolish Radioisotope Laboratory (Building 3038)
- ☐ Demolish Isotope Area Facilities (Buildings 3029, 3030, 3031, 3032, 3033, 3033A, 3034, 3036, 3093, and 3118)

ORNL is DOE's largest multi-program national laboratory, and it is one of the nation's most important research assets. While researchers there are conducting world-leading research in modern facilities on the east and west ends of campus, there are numerous deteriorated and contaminated former research reactors and excess isotope production facilities in the heart of the ORNL campus that date back to the 1950s.

OREM is tasked with safely deactivating and tearing down these facilities without impacting nearby science missions. Crews are already making significant progress characterizing and deactivating more than a dozen excess contaminated facilities at ORNL.

Demolition on the Bulk Shielding Reactor is now complete, and work is underway to prepare the Low Intensity Test Reactor, Oak Ridge Research Reactor and Building 3026's final hot cell for near-term demolition. Together, these projects eliminate risks at the site, clear land for future research missions, and enhance access to the Graphite Reactor – which is a component of the Manhattan Project National Historical Park. Crews will then turn their focus to demolish Isotope Row facilities, Building 3038, and Graphite Reactor support facilities.

Objective 3: Disposition legacy transuranic waste inventory

PERFORMANCE MEASURE:

- ☐ Complete processing of legacy remote-handled and contact-handled debris transuranic waste
- ☐ Complete shipping legacy remote-handled and contact-handled debris transuranic waste to the Waste Isolate Pilot Plant
- ☐ Complete testing using the Mock Test Sludge Processing Facility

Dispositioning the legacy transuranic debris waste is an important component of Oak Ridge's cleanup mission. The legacy transuranic debris waste will be processed at the Transuranic Waste Processing Center located at ORNL. We are in the final stages of processing and certifying the remaining two percent of Oak Ridge's inventory of legacy debris contract-handled and remote-handled transuranic waste. The processed and certified transuranic waste is steadily being shipped out of state for disposal at the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. Those shipments are expected to be complete in 2028.

There are also 400,000 gallons of transuranic sludges stored in underground tanks at ORNL. Our commitment to regulators is to remove all of this waste from Oak Ridge. First, however, we need a facility and equipment capable of extracting the sludges and processing them into a solid form for disposal as low-level waste.

We are in the process of testing critical technology elements at a Mock Test Facility to gather the data necessary to complete the final design of the Sludge Processing Facility. That facility will enable us to convert the waste from sludge into a solid form for permanent disposal.

The Mock Test Facility will focus on mobilization and pump and instrumentation measurement technologies. Advanced pump technologies are needed to pull the sludge wastes out of their storage tanks for processing. The instrumentation measurement technologies will inform operators what material is moving through the pumps, including its contents and density, to assist with processing needs.

Construction of the Mock Test Facility is complete, and testing operations are expected to be completed by 2025.

GOAL 3: REDUCE ENVIRONMENTAL RISKS AT Y-12

Objective 1: Deactivate and demolish high-risk excess contaminated facilities at Y-12

PERFORMANCE MEASURE:

- ☒ Demolish Old Criticality Experiment Lab (Building 9213)
- ☐ Remediate and turnover footprint of Biology Complex to NNSA
- ☐ Demolish Alpha 2 Complex
- ☐ Demolish Beta-1 Complex
- ☐ Demolish Beta-4 Complex

Crews have already begun demolition preparation efforts in Beta-1, Alpha-2 and Alpha-4, former Manhattan Project-era enrichment facilities. These excess contaminated structures pose risks at the site and stand on land that can be reused to support national security missions in the future.

Crews have cleaned out the old, rusted, mercury-contaminated Column Exchange (COLEX) equipment on the exterior of Alpha-4. This activity retrieved 6.5 tons of mercury and reduced a major threat to the environment. Crews have also tested decontamination methods to clean old mercury process piping and field tested a newly developed fogging fixative and application process aimed at controlling mercury vapors during future deactivation and demolition projects at Y-12. Technologies like these will be essential as we continue tackling the heavily mercury contaminated buildings Alpha-4, Alpha-5, and Beta-4.

Cleanup of Alpha 5 and Beta 4 are dependent on NNSA's West End Protected Area Reduction Project. That project will reroute portions of the high-security area around Y-12's mercury-contaminated buildings, allowing access for cleanup crews without having to ingress and egress through a high-security area.

Objective 2: Build infrastructure and advance research to support mercury cleanup

PERFORMANCE MEASURE:

- ☐ Complete construction and begin operations of the Outfall 200 Mercury Treatment Facility
- ☐ Support technology development for future mercury cleanup

The Mercury Treatment Facility is designed to treat up to 3,000 gallons of surface water per minute and store 2 million gallons of excess stormwater. It will be comprised of two components at two locations — a headworks facility and a treatment plant— connected by a pipeline nearly a mile long. The headworks facility will capture creek flow, store excess stormwater collected during large rainfalls, remove grit, and pump water through the pipeline to the treatment plant. The treated water will then flow back into the creek. Construction on the treatment facility and extensive soil excavation at the headworks facility is underway.

Mercury cleanup at Y-12 is one of OREM's highest priorities, and our ongoing research is positioning us for future success. We developed a Comprehensive Mercury Technology Development Plan and a Strategic Plan that serves as a roadmap for what must occur to complete the mercury cleanup at the site. This plan includes supporting research at ORNL's Aquatic Ecology Laboratory. Researchers there are expanding our understanding of mercury in the environment, advancing technology development, and identifying solutions for future remediation of the East Fork Poplar Creek.

We recently completed an expansion of the Aquatic Ecology Laboratory that enables new research capabilities. The expansion allows actual mercury-contaminated water from local streams to flow through the facility so researchers can test mercury removal technologies in a real-life setting. This first-of-a-kind capability will help researchers discover which technologies will offer the most effective remediation results. This research is helping us gain a deeper understanding of the local environment and find new tools that will be more effective in addressing the complex mercury challenge at Y-12.

GOAL 4: ENSURE ADEQUATE ONSITE WASTE DISPOSAL CAPACITY TO SUPPORT REMAINING CLEANUP

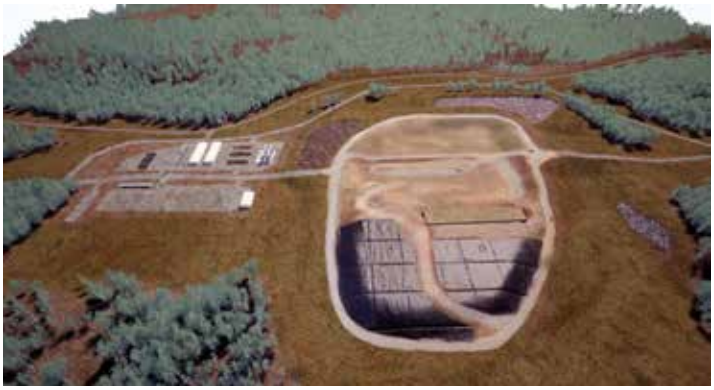
Objective 1: Build and operate EMDF

PERFORMANCE MEASURES:

- ☒ Finalize Record for Decision for EMDF
- ☐ Finalize design for EMDF
- ☐ Construct first phase of EMDF

The Environmental Management Waste Management Facility, Oak Ridge's current onsite CERCLA disposal facility, is more than 80% full, and it is expected to reach its full capacity in the late 2020's. OREM needs another low-level onsite disposal facility, known as the Environmental Management Disposal Facility, to provide the disposal capacity required to complete cleanup at Y-12 and ORNL. This project is vital to the success of the other projects and goals listed in this Program Plan. The Environmental Management Disposal Facility will provide the infrastructure to enable the cost effective and efficient cleanup of Y-12 and ORNL.

We have worked collaboratively with the EPA and the State of Tennessee and engaged the public on our data based and science-driven approach that ensures a safe and protective design for the proposed engineered disposal facility. DOE, EPA, and the State signed a final Record of Decision in September 2022 that allows us to finalize the facility's design and begin site prep activities.



A LOOK TOWARD THE FUTURE

While our cleanup is scheduled to continue through 2047, completing the goals identified in this plan will significantly alter the landscape across the Oak Ridge Reservation and create impactful opportunities for the community.

By 2032, we will have completed all cleanup at ETTP and achieved our vision of transforming the former uranium enrichment site into a multi-use industrial center, historic park, and conservation area. Major changes will also be visible at ORNL and Y-12. Crews will clear away many of the old reactors and labs in ORNL's central campus to make room for expanding research missions. At Y-12, infrastructure will be completed that allows us to address sources of mercury contamination, and workers will be in the midst of taking down some of largest high-risk buildings at the site.

We will also achieve major progress toward eliminating inventories of nuclear material and waste currently stored at the site. Employees will finish processing and dispositioning the inventory of uranium-233 stored at the world's oldest operating nuclear facility located at ORNL. Also, we will have completed the processing and removal of all legacy transuranic debris waste from Oak Ridge.

Our contributions are transforming the site by removing barriers to economic development, eliminating risks, and opening land for important ongoing missions that are benefiting our nation. Every day, we are working toward our vision of a clean, modernized Oak Ridge that is poised to provide solutions to the nation's pressing needs.

OREM
Oak Ridge Office of Environmental Management

Federal Building
200 Administration Road
Oak Ridge, TN 37830

Phone: (865) 576-0742

energy.gov/orem

Fall 2022

Additional Training and Research

- ORSSAB Meeting Recordings are available online at www.youtube.com/user/ORSSAB
- Training videos and a digital version of this orientation manual are available online at www.energy.gov/orem/orssab-new-member-education

  1. EM Complex Overview and Long-term Stewardship of Contaminated Areas on the Oak Ridge Reservation
  2. Risk Training Workshop – July 2008
  3. Federal Advisory Committee Act Presentation

- The DOE Information Center's current collection has more than 40,000 documents consisting of technical reports and historical materials that relate to DOE operations. These include the Administrative Record, Freedom of Information Act requested records, National Environmental Policy Act, and other publicly accessible documents. The DOE Information Center provides public access to the Oak Ridge Reservation's Administrative Record under the Comprehensive Environmental Response, Compensation, and Liability Act.

  To search DOEIC's online catalog or to request a record, visit https://doeic.science.gov/

- ORSSAB meeting materials, including meeting packets, minutes, prior Recommendations, and more, are available online at www.energy.gov/orssab