SUPERFUND

FY 2020




Annual Accomplishments Report

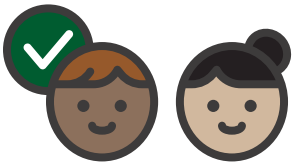
Issued by the Office of Land and Emergency Management

Contents

Introduction to Superfund

EPA's Superfund program is responsible for cleaning up some of the nation's most contaminated land and responding to environmental emergencies and natural disasters.

Superfund cleanups provided significant public health and economic benefits:



20-25% reduction in birth defects among children living near sites.

13-26% reduction in blood-lead levels among children living near sites.

19-24% increase in residential property value within 3 miles of sites after cleanup.

Superfund cleanups also facilitate job creation and enhance local tax bases. At the end of fiscal year (FY) 2020, 632 Superfund sites have been returned to productive use. These sites:

Support more than **9,900** businesses.

Host more than **227,000** employees.

Generate more than **$16 billion** in annual employment income.

The Superfund removal program conducts emergency and shorter-term responses when contamination poses an imminent and substantial threat to human health or the environment.

The Superfund remedial program is responsible for long-term cleanup of contaminated sites.

Accidents, spills, releases and past improper disposal and handling of hazardous materials have resulted in hundreds of contaminated sites in the United States, potentially affecting the health of the thousands of people who live around these sites.

EPA found that **73 million** people live within **3 miles** of a Superfund site.

SUPERFUND TURNS 40

Love Canal in the 1970s – groundwater contamination from more than 80 industrial chemicals began migrating onto people's properties.

The 1970s were an important period for the passage of important environmental laws such as the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act. However, as the "environment decade" came to a close, there was still no law addressing hazardous waste sites.

Love Canal in Niagara Falls, New York, was the first hazardous waste site to gain national notoriety. Newspapers and television chronicled the fear and anger as people learned that 22,000 tons of dangerous chemical wastes buried 30 years earlier had begun to seep into backyards and basements.

President Jimmy Carter signing CERCLA into law.

Public perception of the dangers at Love Canal spurred elected officials to write the first federal legislation to address these sites.

"Quite simply, Love Canal is one of the most appalling environmental tragedies in American history. But that's not the most disturbing fact. What is worse is that it cannot be regarded as an isolated event. It could happen again – anywhere in this country – unless we move expeditiously to prevent it."

– The EPA Journal, 1979

The legislation was called the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or Superfund. CERCLA was enacted on December 11, 1980. It authorized EPA to direct the Superfund cleanup program. The program included effective enforcement to hold waste contributors accountable for cleaning up sites, thus deferring further indiscriminate disposal of hazardous wastes. CERCLA also created a Trust Fund (or "Superfund") to finance emergency responses and cleanups.

"One of the key components in environmental justice is getting people to the table to speak for themselves . . . they need to be in the room where policy is being made."

– Dr. Robert Bullard, often described as the father of environmental justice

The birth of the environmental justice movement in the 1980s influenced how EPA engaged with communities, expanding EPA's ability to ensure that all communities, regardless of race, color, national origin or income had the tools and resources they needed to participate in the Superfund process.

In 1986, Congress strengthened the new law with the Superfund Amendments and Reauthorization Act (SARA), which amended CERCLA and increased the size of the fund, improved public participation, added federal facilities and added new settlement provisions.

For the past 40 years, EPA's Superfund program has worked to fulfill its mission of protecting human health and the environment. The Superfund program has cleaned up thousands of sites across the country, turning abandoned, contaminated industrial sites into parks, landfills into solar farms and former smelters into health clinics, many of which are located in vulnerable, low income and minority communities.

A NEW LAW, NEW CHALLENGES FOR SCIENTISTS AND ENGINEERS

In 1980, when the Superfund program was established, the practice of cleaning up hazardous wastes was brand new. EPA basically started from scratch. Assessing and cleaning up contamination in the soil, under the ground, in groundwater, in surface water and in sediments created a complex challenge for EPA's scientists and engineers.

In the early days, EPA relied extensively on invasive sampling procedures and off-site laboratory capabilities to assess contamination. EPA was limited to digging up the contamination and disposing of it in hazardous waste landfills, burning it, or using cement to solidify and immobilize contaminants to store on site. We pumped large volumes of water from the subsurface and treated the contamination above ground.

EPA now relies on much more efficient and higher-resolution tools to locate contaminants, support decisions and reduce costs. Similarly, cleanup approaches have evolved. At a much greater percentage of sites, EPA can treat contamination in place and apply technologies that destroy or remove complex contaminants.

Today, working closely with communities and our tribal, federal, state and local partners, Superfund continues to strive to innovate, evolve and improve.

SUPERFUND

and the COVID-19 Public Health Emergency

Superfund is well equipped for emergencies. Responding to disasters such as train derailments, hurricanes and domestic terrorist attacks is part of the job. When the COVID-19 public health emergency hit, EPA's emergency management experience empowered site teams to continue mission-critical work despite the unprecedented challenges posed by the pandemic.

After states issued stay-at-home orders across the country, EPA coordinated with federal, state and local partners to continue essential fieldwork following guidance from the Centers for Disease Control and Prevention to keep staff and communities safe. EPA accommodated site work disruptions by modifying field actions, when and where possible, to continue cleanups on schedule.

GETTING SITE WORK DONE

In addition to using enhanced personal protective equipment (PPE), innovative solutions enabled Superfund staff to safely continue fieldwork during the pandemic.

- EPA managed site remediation activities virtually using daily photo and field reports.
- Unmanned aircraft systems (e.g., drones) provided essential site data.
- Separate trailers and facilities for contractors limited COVID-19 exposure pathways.

When COVID-19 restricted EPA's ability to carry out in-person meetings, site teams quickly pivoted from traditional communication methods and reimagined engagement approaches using virtual techniques. Digital videos, which included virtual site tours and essential site information, allowed EPA to establish construction contracts and initiate remedial actions. In some cases, virtual transactions expedited construction schedules since decisions were not delayed by contractor visits.

Technology, such as hand-held infrared cameras, helped sitework continue. This technology enabled EPA to reach otherwise-inaccessible areas to identify likely areas of groundwater contamination at sites such as the Kerr-McGee Chemical Corp. site in Navassa, North Carolina.

In EPA's Southeast Region (Region 4) alone, the Superfund program responded to 22 oil and hazardous substances releases and oversaw time-critical removals at seven Superfund sites from March through September 2020.

EPA also facilitated the efforts of first responders in the fight against COVID-19 by donating several thousand Tyvek® suits and gloves. The equipment helped ensure the first responders were equipped in essential safety gear as they continued their work protecting public health.

ENGAGING WITH COMMUNITIES

EPA site teams successfully adapted in-person community involvement activities for virtual platforms and ensured the continuation of meaningful community engagement at sites through:

- Interactive digital presentations using graphics, Google Earth and site photographs.
- Posting on social media platforms.
- Addressing community members' questions in real time during virtual meetings.
- Using local broadcast stations to facilitate community outreach.

In communities with technology-related barriers, EPA continued engaging residents through:

- Newspaper advertisements.
- Radio announcements.
- Phone calls.
- Voice mailboxes for public inquiries.

Although COVID-19 tested Superfund's capabilities, it also demonstrated EPA's commitment to serving communities and ultimately made Superfund better prepared to protect public health and the environment from future national emergencies.

Fiscal Year 2020: The Year in Review

658
Remedial site assessments completed
453 (68%) developed by states, across 42 states and tribal lands

111
Cleanup decisions
55 new and 56 amended

67
New remedial construction projects started

15
Optimization projects completed with another 31 underway

34
Sites ready for anticipated reuse

27
NPL deletions
(14 full and 13 partial)

17
NPL listings (8) and proposed NPL listings (9)

38
Unfunded new construction projects (for NPL sites otherwise ready for new construction)

443
Remedial construction projects where EPA and other project leads conducted construction or provided oversight

91
Remedial construction projects completed

293
Five-year reviews, including 30 at federal facility sites, to make sure remedies continue to protect communities

Addressing Imminent Threats

197 Removal actions completed

Protecting Health and Ecosystems

20 sites where EPA completed actions to control human exposure risk

9 sites where EPA controlled contaminated groundwater through engineered remedies or natural processes

Funding Superfund Work

About **$636** million from private parties to clean up sites

About **$258** million disbursed or obligated from special accounts for site work

Funding State Superfund Work

About **$54** million to states to clean up NPL sites

PROTECTION

of Public Health and the Environment

In FY 2020, EPA's Superfund program made significant progress cleaning up contaminated land, groundwater and sediment.

Placing Sites on the National Priorities List (NPL)

EPA works collaboratively with states to investigate sites to determine whether they warrant further investigation and/or cleanup. If this is the case, EPA turns first to other authorities, including state, tribal or federal authorities, to determine their ability to clean them up. When other authorities cannot clean up a site, EPA assesses whether the site qualifies for the NPL using a scoring system called the Hazard Ranking System (HRS). If a site scores 28.5 or higher on the HRS, EPA adds it to the NPL, the nation's list of the most serious uncontrolled abandoned releases of contamination.

Far-Reaching Impacts of Orange County North Basin Site on Public Health

Orange County, California

Investigations and sampling are ongoing at the Orange County North Basin site.

EPA added the Orange County North Basin site to the NPL on September 1, 2020, to prevent further migration of contaminated groundwater into the area's principal aquifer and to remediate groundwater contaminated above drinking water standards. The groundwater plume, contaminated with chlorinated solvents and other contaminants, covers about 5 square miles in the basin, a critical water resource for the 2.4 million residents in 22 cities.

While the contaminated groundwater plume threatens Orange County water supplies, all drinking water currently being provided by local water utilities meets federal standards and state drinking water standards.

Fast, Step-by-Step Progress at the Arsenic Mine Site

Kent, New York

EPA added the Arsenic Mine site, encompassing 10 residential properties, to the NPL in November 2019 to protect residents from exposure to arsenic-contaminated soil. EPA then moved forward with an "early action," which involves offers to purchase certain contaminated properties and permanently relocate affected residents.

Until the residents are permanently relocated or cleanup finishes, EPA will conduct periodic inspections and mitigate exposures by maintaining barriers to contaminated soils in high-use areas and by taking other measures.

Entrance to the Arsenic Mine.

The Arsenic Mine site made it onto the NPL via a rarely used CERCLA provision. In April 2019, the Agency for Toxic Substances and Disease Registry issued an urgent health advisory recommending that EPA take actions to mitigate residents' exposure to contamination and implement a long-term cleanup. The health advisory allowed EPA to add the site to the NPL without completing HRS scoring and ranking.

Discovery then Action, before a Site Is on the NPL – Blades Groundwater Site

Sussex County, Delaware

EPA added the site to the NPL in September 2020 to address groundwater contamination affecting the main drinking water source in the Blades, Delaware area. Sampling by EPA and the Delaware Department of Natural Resources and Environmental Control (DNREC) found three municipal and seven domestic wells are contaminated with per- and polyfluoroalkyl substances (PFAS) above EPA's provisional health advisory level. These municipal water supplies serve about 1,600 people and private wells serve another 150 people.

A coordinated response effort followed. EPA immediately led residential well assessments to determine if PFAS have impacted any residential wells near the former chrome-plating facility. At the same time, DNREC coordinated response actions to provide the town of Blades with an alternate source of safe drinking water. In spring 2018, DNREC and the town of Blades installed a treatment system on the public wells to mitigate the PFAS contamination. DNREC also installed treatment systems on eight affected residential wells.

Transforming Sites for the Future

Stories of Progress and Transformation at Superfund Sites

After 22 Years, Soil Cleanup Completion at Vigor Portion of Harbor Island Site | Seattle, Washington

Cleanup of the Vigor (formerly Todd) Shipyard portion of the Harbor Island Superfund site finished, assuring the protection of Puget Sound's surface water quality. Releases from the former oil company's tank farms contaminated the soils. The Vigor shipyard later purchased the land.

Under EPA oversight, shipyard operators removed more than 300,000 gallons of floating petroleum product using vacuum-enhanced extraction. The product was disposed of off site. Groundwater monitoring has not identified any contamination that could reach surface water.

Large Public Works Project at Durham Meadows Site to Provide Clean Water to Hundreds | Durham, Connecticut

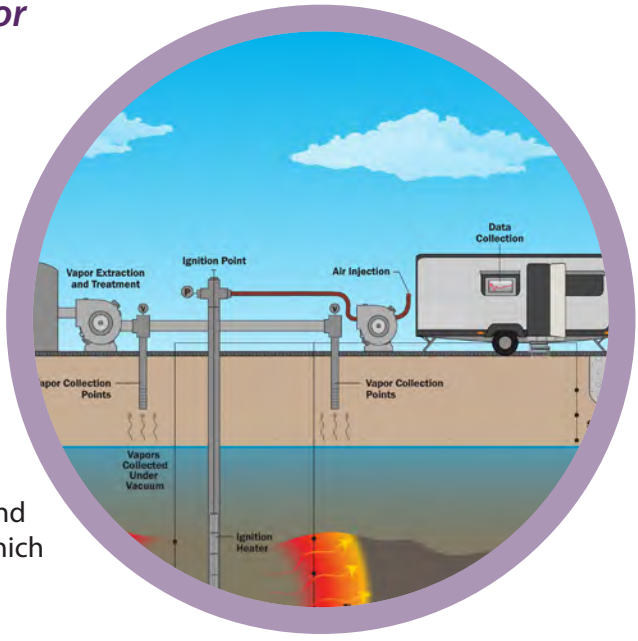
EPA, supported by the U.S. Army Corps of Engineers, will soon wrap up a second construction season – having completed much of the Durham waterline installation on or ahead of schedule. Roughly 28,000 of the anticipated 30,000 linear feet of water line are in place. The private wells currently in use require treatment. In some cases, residents rely solely on bottled water.

The project makes good on a 2005 cleanup decision to provide a clean, safe, potable water supply to residents, business owners and area schools. The undertaking of such a large public works project required EPA to expertly navigate state and local requirements and address concerns regarding the storage tank location.

During their respective operating histories, the Durham Manufacturing Company and the Merriam Manufacturing Company used various chlorinated solvents, most notably trichloroethene (TCE). The companies' past disposal practices contaminated wells at over 50 locations, requiring the installation of carbon treatment systems as a temporary solution.

Innovative, Final Cleanup Decision for Quendall Terminals Site Along Lake Washington | Renton, Washington

EPA issued its final cleanup decision for the Quendall Terminals Superfund site. This former creosote manufacturing facility offers a prime location for redevelopment; it is the largest undeveloped waterfront parcel on Lake Washington. Past releases of coal tars and creosote contaminated about 22 acres of soil and groundwater and about 29 acres of lake sediments.



The remedy includes an innovative approach using in-situ underground smoldering combustion and collection of combustion byproducts in areas with high subsurface concentrations of creosote and coal tar. EPA estimates that the cleanup will cost about $100 million, which includes the cost of monitoring the remedy's effectiveness.

Consolidating Waste to Eliminate Exposure and Save Millions at the Raymark Industries Site | Stratford, Connecticut

After decades of discussion with the town of Stratford about the final disposition of 100,000 cubic yards of waste from the former Raymark Industries Superfund site – located at 26 commercial and municipal properties throughout the town – EPA, supported by the U.S. Army Corps of Engineers, sent the first shipment of waste to a local property for consolidation and disposal.

Consolidating waste "in town" saves taxpayers $200 million in transportation costs and reduces waste transportation risks. Under the final 2016 cleanup decision, EPA and the state of Connecticut are investing $95 million to eliminate exposures in the community and to repair the harm resulting from more than 70 years of dumping.

Raymark Industries operated on site from 1919 to 1989. Manufacturing waste was historically disposed of as fill at the facility. Over time, the facility also disposed of waste at a minimum of 46 residential properties and at many other commercial, recreational and municipal properties in Stamford. Several wetland areas near the Housatonic River were also filled in with waste from the facility. The waste contained PCBs, asbestos, lead and copper.

Cleanup Expected to Return Fish Dinners to the Table – Donna Reservoir and Canal System Site | Donna, Texas

EPA completed a challenging cleanup on time and under budget despite the COVID-19 public health emergency. About 25,000 tons of contaminated sediment were excavated from the Donna canal system in south Texas near the U.S. border with Mexico. The sediment contains polychlorinated biphenyls (PCBs), which accumulate in fish tissue and are a health risk for people who eat fish from the canal. By collecting sediment and fish tissue samples for the next four years, EPA will continue to assess the impact of sediment remediation activities.

Lead Exposure at Superfund Sites: Protecting Public Health

Cleaning up Residential Yards in the South

Birmingham, Alabama, Chattanooga, Tennessee, and Atlanta, Georgia

By working closely with community members, EPA cleaned up 171 residential properties with lead contamination at the 35th Avenue site in Birmingham, Alabama, the Southside Chattanooga site in Chattanooga, Tennessee, and the Westside Atlanta site in Atlanta, Georgia. Waste produced over decades by nearby industrial facilities was used as fill or topsoil for these residential communities.

Before | During | After

To get permission to sample residents' yards, EPA reached out to more than 3,500 people via letters and door-to-door contact. EPA posted newspaper and radio advertisements, posted videos on its websites and used social media to let people know about EPA's effort to request permission to sample yards and to inform residents about reducing their lead exposure. EPA also coordinated with school districts to test the soil in school playgrounds and local parks.

EPA REDUCES HUMAN HEALTH EXPOSURE TO LEAD IN THE MIDWEST

Lead is a concern at many Superfund sites in EPA Region 7 as a result of historic and ongoing lead mining and ore processing in Missouri, Kansas and Nebraska.

FY 2020 progress:

800 residential properties cleaned up

400,000 cubic yards of lead-contaminated soil cleaned up

360,000 homes provided with alternative sources of drinking water, such as bottled or filtered water

Cleanup includes stabilizing and capping of mine waste to remove ongoing sources of contamination, providing alternate drinking water, and cleaning up hundreds of residential properties and public areas where exposures threaten the public and children.

EPA coordinates with local tribes to protect traditional harvesting practices such as clam digging, during cleanup work.

Addressing the Cultural Needs of the Muckleshoot and Suquamish Indian Tribes at the Lockheed West Seattle Site

Seattle, Washington

EPA and the Lockheed Martin Corporation successfully coordinated with tribal partners to reduce disruptions in tribal fishing in the area of the site. The industrial site, located at the confluence of the West Waterway and Elliott Bay, includes part of the tribes' traditional fishing areas. In these areas, the tribes harvest salmon, clams and other seafood.

To minimize interference with tribal fishing, EPA periodically stopped dredging and other field activities during the tribes' high-value Chinook salmon fishing season. When disruptions were unavoidable, Lockheed Martin compensated the tribes.

Tribal partners were essential in providing information critical to the site's risk assessment. The tribes ensured accurate estimation of tribal exposures (accounting for tribal collection of clams, net fishing and the consumption of seafood by adults and children) and that cleanup levels were based on estimated health risks for seafood consumption and not just sediment exposure scenarios.

CREDIT: All photos on this page are courtesy of THE SQUAMISH TRIBE, suquamish.nsn.us

COMMUNITY INVOLVEMENT

Building Strong Collaborative Foundations for Success

Communities play a key role in the Superfund process, and they are valuable partners in helping EPA make better cleanup decisions and in leading the way for redevelopment opportunities. Over the past 40 years, EPA's Superfund Community Involvement program has evolved to include a robust variety of opportunities for communities to engage and to be actively involved in the decision-making process. Building a strong foundation for communities to participate in the Superfund process helps ensure better cleanup decisions and lays the groundwork for site redevelopment, enabling beneficial uses that communities can enjoy for generations.

GETTING RISK COMMUNICATION RIGHT

In 2019, as part of an agency-wide effort to improve how we communicate environmental risks, EPA released *Getting Risk Communication Right: Helping Communities Plan at Superfund Sites*. Through this effort, EPA launched an implementation plan to enhance risk communications activities during the post-construction phase of Superfund cleanups.

Post-construction presents unique communication challenges. Once sites are cleaned up, EPA may become less visible and maintaining relationships with the community becomes more challenging. The implementation plan identifies potential risk communication challenges at 10 Superfund sites and provides a framework for planning risk communications goals. The project provided an opportunity for the Superfund program to review its approaches for communicating risk effectively and to identify areas for improvement. A final report summarizing the plan's findings is scheduled for release in 2021.

COMMUNITY INVOLVEMENT IN THE TIME OF COVID-19

Although COVID-19 restricted EPA's ability to carry out in-person meetings and other outreach events, site teams quickly pivoted from traditional communication methods and reimagined their engagement approaches using virtual techniques.

COMMUNITY INVOLVEMENT BY THE NUMBERS

EPA's community involvement coordinators (CICs) did remarkable work in FY 2020:

570+ public meetings held or attended

1,200+ interviews conducted with community members living near Superfund sites

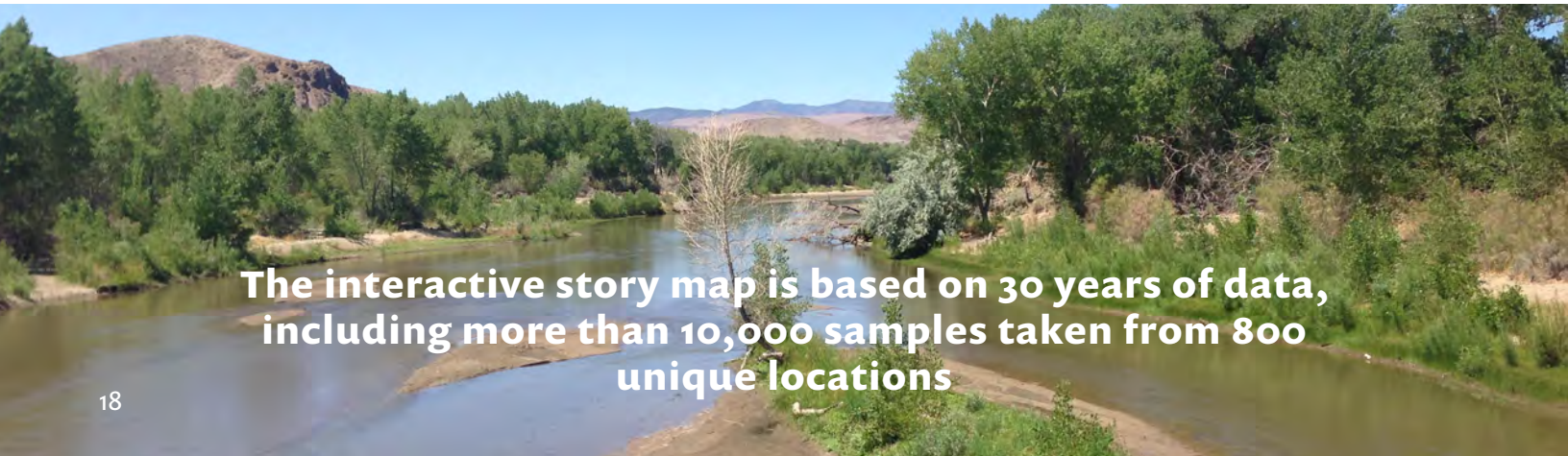
750+ fact sheets, mailings, postcards, advertisements and newsletters distributed, reaching more than 259,000 people living near Superfund sites

A New Way to Tell the Story at the Carson River Mercury Site

Dayton, Nevada

The Carson River Mercury Superfund site spans 330 square miles, covering five western Nevada counties. Its vast size meant that EPA had to find innovative ways to communicate the site's potential health risks, and especially how to prevent exposure to mercury contamination.

Using an interactive digital story map, community members can look up their addresses to locate how far away their properties are from mercury contamination and at what levels the mercury is present. The story map also provides information about the site's history and cleanup status, including health advisories due to mercury contamination in fish. The interactive story map is based on 30 years of data, including more than 10,000 samples taken from 800 unique locations, which allows community members to interact with the data in an informative and understandable format.



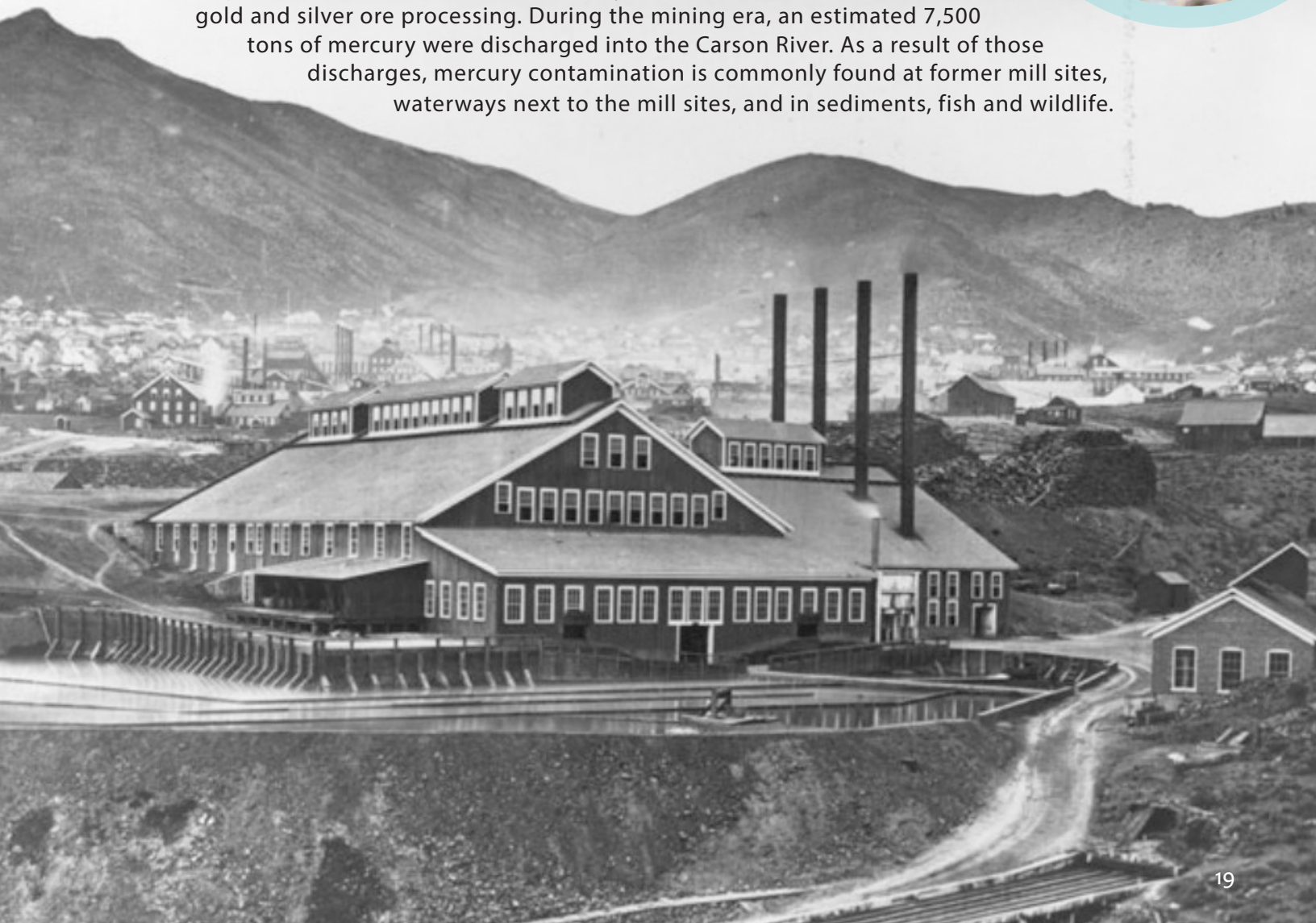
The interactive story map is based on 30 years of data, including more than 10,000 samples taken from 800 unique locations

In addition to the story map, EPA collaborated with the Nevada Division of Environmental Protection to release a five-year risk communication strategy to discourage people from eating mercury-contaminated fish in the Carson-River watershed. The strategy includes:

- Reviewing and clarifying current fish advisories with the state of Nevada.
- Ensuring risk communication is consistent across federal and state environmental agencies.
- Improving access to online information, including social media.
- Expanding and diversifying advisory signs.
- Reevaluating fish stocking and commercial fish permitting practices.
- Establishing relationships with local social networks to share fish advisory information.

Health officials, wildlife biologists, local business owners and community members helped design the strategy, with support from EPA's Technical Assistance Services for Communities (TASC) program.

Contamination at the Carson River Mercury site is a legacy of the Comstock mining era of the late 1800s, when mercury was imported to the area for gold and silver ore processing. During the mining era, an estimated 7,500 tons of mercury were discharged into the Carson River. As a result of those discharges, mercury contamination is commonly found at former mill sites, waterways next to the mill sites, and in sediments, fish and wildlife.



Working Together Creates Job Opportunities for San Gabriel Valley Residents

Los Angeles, California

EPA celebrated 20 graduates from the Superfund Job Training Initiative (SuperJTI), a job-readiness program that provides training and employment opportunities for people in communities affected by Superfund sites.

Working in partnership with other local entities, EPA recruited students and conducted the training over 13 weeks. The training consisted of classroom instruction and hands-on exercises. Graduates earned certificates in Water Distribution and Treatment, Work Readiness, CPR/First Aid, and 40-hr Hazardous Waste Operations and Emergency Response. The SuperJTI program provides graduates with the necessary skills to work on a broad range of projects in environmental remediation, water treatment, construction and Superfund site cleanup.

Honoring Community Advocacy

EPA gave this year's Superfund Excellence in Community Involvement Award to Sandy Wynn-Stelt for her enduring commitment to community advocacy and engagement at the Wolverine World Wide Tannery Superfund site in Kent County, Michigan.

Sandy was compelled to act after learning her home sits directly across from the tannery's contaminated waste dump. This former disposal site polluted groundwater with PFAS and tests found that Sandy's drinking well water tested high for PFAS contamination.

Sandy began hosting weekly neighborhood meetings and forging relationships with EPA site staff and the Michigan Department of Environment, Great Lakes, and Energy. Ultimately, she became a liaison between the agencies and affected residents and played a key role in forming and leading the local Community Advisory Group (CAG). Sandy ensured the CAG represented the community's diverse interests and that views were heard and accounted for in the cleanup decision-making process.

Through her measured leadership and respectful dialogue, Sandy channeled community tension into productive conversations, leaving both sides feeling heard and understood. Her invaluable contributions as a community advocate extend beyond Michigan to Washington D.C., where she testified in front of Congress on the site's profound impact on residents and their livelihoods.

EMERGENCY MANAGEMENT AND ENVIRONMENTAL RESPONSE

Addressing Imminent Threats to Public Health and the Environment

EPA's Office of Emergency Management and EPA's Office of Superfund Remediation and Technology Innovation work together to respond to, prepare for and prevent environmental emergencies.

Hurricanes Hanna, Laura and Sally

Prior to the storms' landfall, EPA assessed the readiness of the states and tribes in each storm's projected path. Ahead of and during the storms, EPA coordinated public messaging on a range of topics, including air quality, drinking water, mold and building debris, and generator safety, as well as the conditions at major industrial facilities, and securing of Superfund sites.

This year, in response to the EPA Office of Inspector General's recommendations after Hurricane Harvey in 2017, EPA improved risk communications with disadvantaged communities before and during natural disaster responses. In preparation for the 2020 hurricane season, EPA Region 6 enhanced protocols to: (1) inform people in advance of the developing situation; (2) provide outreach with real-time updates about information on the ground; and (3) relay community concerns back to the responders. These were tested with a tabletop exercise, successfully implemented during the hurricanes, and are now built into EPA Region 6's emergency preparedness processes. During Hurricane Laura, the Texas Commission on Environmental Quality (TCEQ) identified vulnerable communities for increased air monitoring. These communities helped prioritize on-site air monitoring.

EPA's Environmental Response Team performed ambient air monitoring next to petrochemical facilities and refineries using the trace atmospheric gas analyzer mobile laboratory during the aftermath of Hurricane Laura.

Wildfires in California and Oregon

In response to unprecedented wildfires in both states, EPA removed household hazardous waste from almost 5,000 properties in over 15 counties. Waste included propane tanks, ammunition, oil, gasoline, paint, solvents, pesticides, fuel, batteries, bulk asbestos and other combustible items. Removing this waste ensured that potentially dangerous materials were properly handled and disposed of and helped protect workers slated to begin removing ash and debris during the second phase of the cleanup.

To protect water quality, sensitive fish and wildlife habitat, EPA Region 10 stabilized banks, controlled erosion and removed fire debris on 226 riverfront properties along seven vulnerable rivers. Critical technical assistance was also provided to protect drinking water systems throughout the affected area.

Flooding Response at the Lower Darby Creek Area Superfund Site

Darby Township, Pennsylvania

Due to Tropical Storm Isaias, flooding from creeks next to the site was extensive in parts of the Eastwick Neighborhood. Some homes were inundated with 2 to 6 feet of water and 20 to 30 homes were evacuated. As soon as flood waters subsided, EPA collected samples from the flood waters and creeks and remediated residential properties. No site-related contamination was present. EPA repaired portions of the cap and stormwater management features at the landfill and addressed erosion issues in previously cleaned-up residential yards.

During and after the storm, EPA:

- Sent weekly flood response and landfill construction updates via text message and email using the RedFlag mass notification system to 225 recipients.
- Distributed a fact sheet via the CAG.
- Hosted a meeting with the community.

EPA participates in a special task force in response to Eastwick flooding with Philadelphia Councilman Kenyatta Johnson, the U.S. Army Corps of Engineers, the Federal Emergency Management Agency, the Pennsylvania Department of Environmental Protection, local, state and federal elected officials, and members of the community.

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

EPA's Environmental Response Team

EPA's Environmental Response Team (ERT) provides a wide scope of technical and logistical assistance, including field support, technical advice and training. It is a special team recognized in the National Oil and Hazardous Substances Pollution Contingency Plan.

Real-Time Air Surveillance of the Union Pacific Train Spill

Tempe, Arizona

On July 28, 2020, a Union Pacific Railroad train derailed while crossing the rail bridge over Tempe Town Lake, an impoundment on the Salt River, in Tempe, Arizona. The train caught fire and the southern section of the railroad bridge collapsed. Three tank cars fell to the ground below the bridge as it collapsed. Two were 23,000-gallon rail cars containing cyclohexanone, a flammable solvent. The derailed cars containing hazardous materials were not involved in the fire. However, one leaked an unknown amount of the solvent onto the ground by the water's edge.

ERT assisted by setting up a comprehensive air surveillance system for continuous observation of air conditions during the emergency response to protect the community and on-site responders. EPA's VIPER telemetry system was tied into EPA's online map viewer, allowing for real-time transmission and sharing of monitoring data to inform EPA and our response partners. Air monitoring equipment included sensors for detecting volatile organic compounds (VOCs), oxygen and carbon monoxide. Particulates were also monitored upwind and downwind during the removal of the derailed cars. Additional sampling was done for metals and asbestos in air and sediment contamination.

Ground-level view of the Union Pacific Railroad train derailment.

Unique Design to Redirect Salmon-bearing Stream at the Hamilton/Labree Roads Groundwater Contamination Site

Chehalis, Washington

EPA's ERT provided support to EPA Region 10 with a design plan to reconstruct and relocate a salmon-bearing stream. The relocation was necessary because the stream needed to be insulated from the heat of a thermal treatment zone, which is part of the site's remedy. The stream's location between two high-traffic roads and its flow rates that vary between summer (low flow) and winter (high flow) created additional design challenges.

FEDERAL FACILITIES

Making Progress at the Largest Superfund Sites

From nuclear weapons plants and military bases to landfills and fuel distribution stations, the U.S. government operates thousands of federal facilities across the country. Federal facility NPL sites can encompass challenges like complex groundwater contamination, munitions, radiological waste and contaminants of emerging concern such as PFAS.

Ensuring Clean and Safe Drinking Water for Communities at the JPL (NASA) Site

Pasadena, California

The National Aeronautics and Space Administration's (NASA's) Jet Propulsion Lab (JPL), working with EPA, the state of California and the local authorities, achieved "construction completion" of groundwater treatment systems serving 184,000 consumers, putting in place controls to ensure nearby communities receive clean drinking water.

The U.S. Army established the 176-acre facility, which the army operated between the 1930s and the 1950s. NASA took jurisdiction over the lab in 1958. Historical operations at JPL used hazardous substances, including chlorinated solvents, solid rocket fuel propellants, sulfuric acid, Freon™, mercury and other chemicals. The chemicals were disposed of in on-site seepage pits, waste pits and surface water points across the facility.

Partnering at Nansemond Ordnance Depot Accelerates Cleanup, Facilitates Waterfront Park and other Development

Suffolk, Virginia

EPA, the U.S. Army Corps of Engineers, and the Virginia Department of Environmental Quality, along with private entities, collaborated to identify redevelopment timelines and expedite cleanup at the 975-acre former Nansemond Ordnance Depot. This extensive coordination led to the investigation and removal of 6,200 munitions items and 200,000 pounds of munitions. Plans for the site include a waterfront park for public access and mixed-use commercial, industrial and residential development.

Monumental Demolition and Cleanup Makes Way for New Development at the East Tennessee Technology Park (ETTP)

Oak Ridge, Tennessee

The U.S. Department of Energy completed a decades-long effort to convert the Oak Ridge Gaseous Diffusion Plant, a former uranium enrichment facility, into a multi-use industrial park. The site is part of the Oak Ridge Reservation, which was established in 1943 as part of the Manhattan Project. The gaseous diffusion plant, closed in 1987, is one of five uranium enrichment buildings.

ETTP Demolition and Conversion

13 million square feet of buildings removed

1,200 acres of land ready for economic development

3,000 acres set aside for community recreational use conservation.

$500 million saved in project costs and reduced environmental liabilities

Dozens of innovative solutions completed four years ahead of schedule

SUPERFUND ENFORCEMENT

Spurring Cleanups, Saving Taxpayer Money

EPA's Superfund enforcement program finds the companies or people responsible for contamination at sites and negotiates with or orders them to do the cleanups themselves, or to pay for the cleanup work done by another party (e.g., EPA, state agencies or other parties). By holding responsible parties accountable for cleanup, the Agency facilitates cleanup work while also preserving taxpayer dollars and scarce Superfund Trust Fund resources to address truly abandoned and orphaned sites. EPA's Superfund enforcement program also works with prospective purchasers to facilitate the cleanup and reuse of contaminated sites.

FY 2020 EPA Enforcement Work

90 settlements and orders totaling $702.8 million, including $438,000 from redevelopers

$111.7 million billed to PRPs for oversight costs

100% of sites with negotiations lasting greater than one year were addressed. Effort resulted in settlement negotiations with combined value estimated to be more than $167 million.

Cleanup Order and Settlement Agreements Get Cleanup Underway at the Gowanus Canal Site

Brooklyn, New York

EPA completed work on 10 enforcement actions valued at $175 million for cleanup work and payment of the Agency's past costs. Responsible parties will perform dredging and capping of contaminated sediments within the 100-foot-wide, 1.8-mile-long Gowanus Canal, as well as upgrading canal bulkheads to support the dredging and capping.

The enforcement instruments related to the dredging and capping cleanup work includes a unilateral administrative order valued at $125 million and eight settlement agreements valued at $40 million. One additional agreement is for payment of $10 million to the Agency for its past cleanup costs.

The cleanup work will continue to benefit redevelopment underway in the commercial and residential areas next to the canal.

Third-Party Settlement Agreement Will Spur Redevelopment at Conroe Creosoting Site

Conroe, Texas

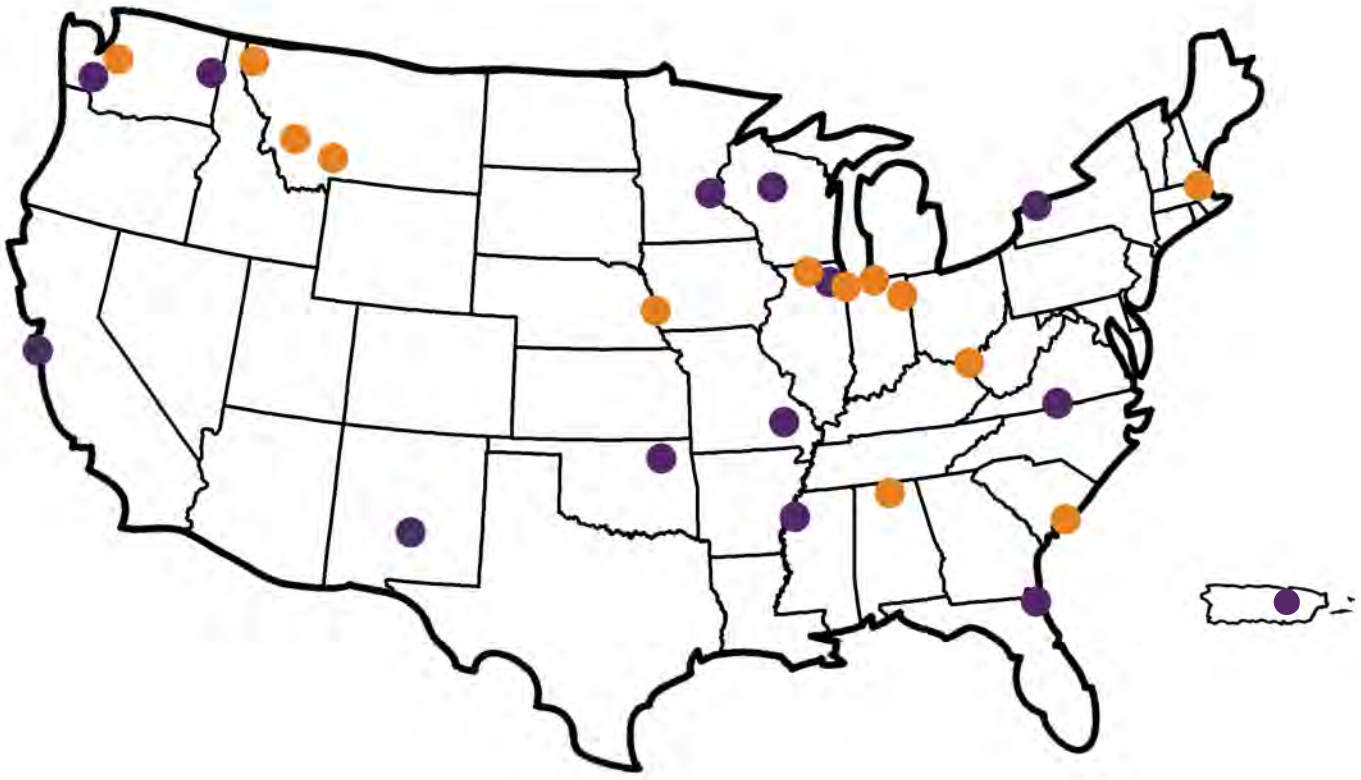
EPA, the U.S. Department of Justice, and TCEQ completed a Bona Fide Prospective Purchaser (BFPP) agreement with Conroe Logistics Center, LLC (CLC) regarding its purchase of part of the former wood-treating facility. Under the agreement, CLC commits to performing some of the cleanup work and will then put the property back into beneficial use.

CLC's redevelopment plans include construction of a large distribution building that will provide many benefits to the community, including the creation of permanent and temporary jobs and the generation of tax revenues.

Since the inception of the Superfund program, over **9,531** Superfund enforcement instruments have been finalized, addressing contamination at **3,876** sites across the country. The estimated value of private-party commitments to clean up sites is about **$38.9** billion. Cost recovery settlements total more than **$7.4** billion, for a combined total of over **$46.3** billion.

NPL SITE PROPOSALS, ADDITIONS AND DELETIONS

Deleting sites from the NPL announces to communities and signals to potential developers and financial institutions that cleanup is complete. EPA may delete a site from the NPL if it determines no further response action is required to protect human health or the environment.



Deleted NPL sites

American Crossarm & Conduit Co. (Chehalis, Washington)
Annapolis Lead Mine (Annapolis, Missouri)
Cimarron Mining Corp. (Carrizozo, New Mexico)
Dupage County Landfill/Blackwell Forest (Warrenville, Illinois)
Fairfax St. Wood Treaters (Jacksonville, Florida)
First Piedmont Corp. Rock Quarry (Route 719) (Pittsylvania County, Virginia)
FMC Corp. (Dublin Road Landfill) (Shelby, New York)
Fridley Commons Park Well Field (Fridley, Minnesota)
Hormigas Ground Water Plume (Caguas, Puerto Rico)
JASCO Chemical Corp. (Mountain View, California)
Northside Landfill (Spokane, Washington)
Red Panther Chemical Company (Clarksdale, Mississippi)
Scrap Processing Co., Inc. (Medford, Wisconsin)
Tulsa Fuel and Manufacturing (Collinsville, Oklahoma)

Partially deleted NPL sites

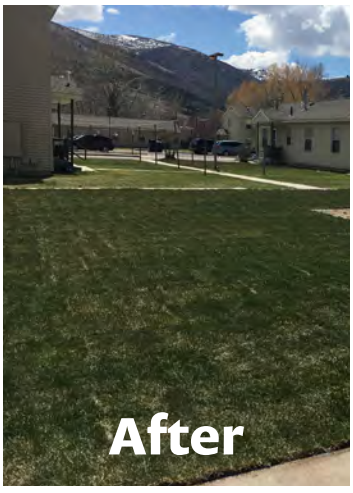
Allied Chemical & Ironton Coke (Ironton, Ohio)
Anaconda Co. Smelter (Anaconda, Montana)
Douglass Road/Uniroyal Inc., Landfill (Mishawaka, Indiana)
Fort Wayne Reduction Dump (Fort Wayne, Indiana)
Idaho Pole, Co. (Bozeman, Montana)
Industri-Plex (Woburn, Massachusetts)
Libby Asbestos Site (Libby, Montana)
Maccalloy Corp. (Charleston, South Carolina)
Omaha Lead (Omaha, Nebraska)
Queen City Farms (Maple Valley, Washington)
Redstone Arsenal U.S. Army/NASA (Huntsville, Alabama)
Southeast Rockford Ground Water Contamination (Rockford, Illinois)
U.S. Smelter and Lead Refinery, Inc. (East Chicago, Indiana)

CREDIT: NORA SAKS / MONTANA PUBLIC RADIO

Deleting Portions of the Anaconda Co. Smelter Site Clears Way for Hotel Development

Anaconda, Montana

EPA partially deleted three parts of the site from the NPL after completing cleanup and putting development guidelines in place to allow the site's reuse. These properties host the county's class III landfill and recycling center. Since the partial deletion, a ground-breaking ceremony was held for the community's newest development, a $10 million hotel and conference center.



Fairfax Street Wood Treaters Site – Nine-Month Expedited Cleanup Leads to Deletion

Jacksonville, Florida

To protect young children living and attending school nearby, EPA's accelerated its cleanup work at the site, which led to its deletion from the NPL in about nine months – two full years ahead of schedule.

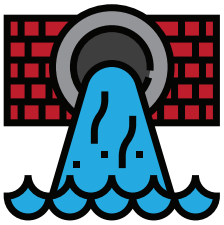
The site, once a wood-treating facility whose operations used the preservative chromated copper arsenate, is surrounded by a community with environmental justice concerns and cumulative negative environmental impacts. The cleanup remediated 12.5 acres of the site and 51 residential properties, and removed 60,000 tons of contaminated soil and 300,000 gallons of contaminated water.

Key factors supporting the site's successful cleanup included:

- Strategies that incorporated incremental outcomes from the cleanup and accounted for evolving site conditions.
- EPA's partnership with Florida Department of Environmental Protection throughout the cleanup, which allowed for early action at the elementary school next to the site to prevent children's exposure to contaminated soil on the playground.
- Training through EPA's Superfund Job Training Initiative provided 13 local residents with new job skills and employment opportunities.
- Regular and consistent engagement with the community, which built trust and facilitated cleanup. EPA hosted nine availability sessions, mailed out over 4,000 fact sheets and responded to calls received on the dedicated local phone line.

12.5 acres and **51** residential properties remediated

60,000 tons of contaminated soil removed



300,000 gallons of contaminated water removed

SUPERFUND REDEVELOPMENT

Returning Land to Beneficial Use

Today, about 1,000 Superfund sites support new and ongoing uses. As of 2020, EPA collected economic data on 632 of these Superfund sites. Below is information on the data for these 632 sites.

9,900
businesses operating

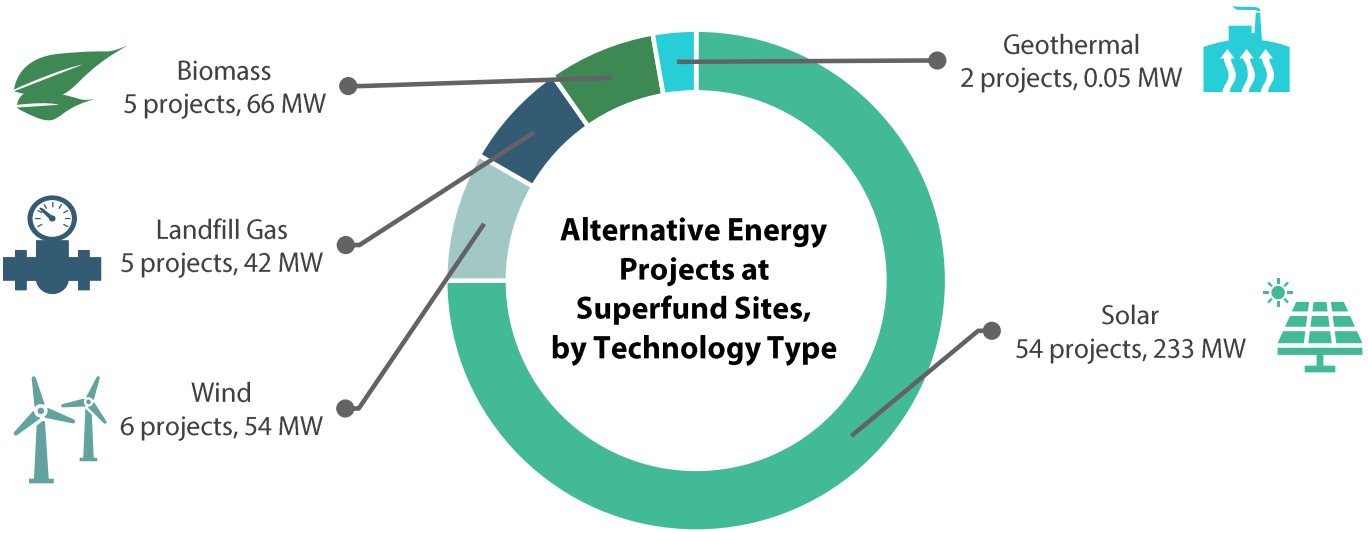
$63.3
billion in sales generated by businesses

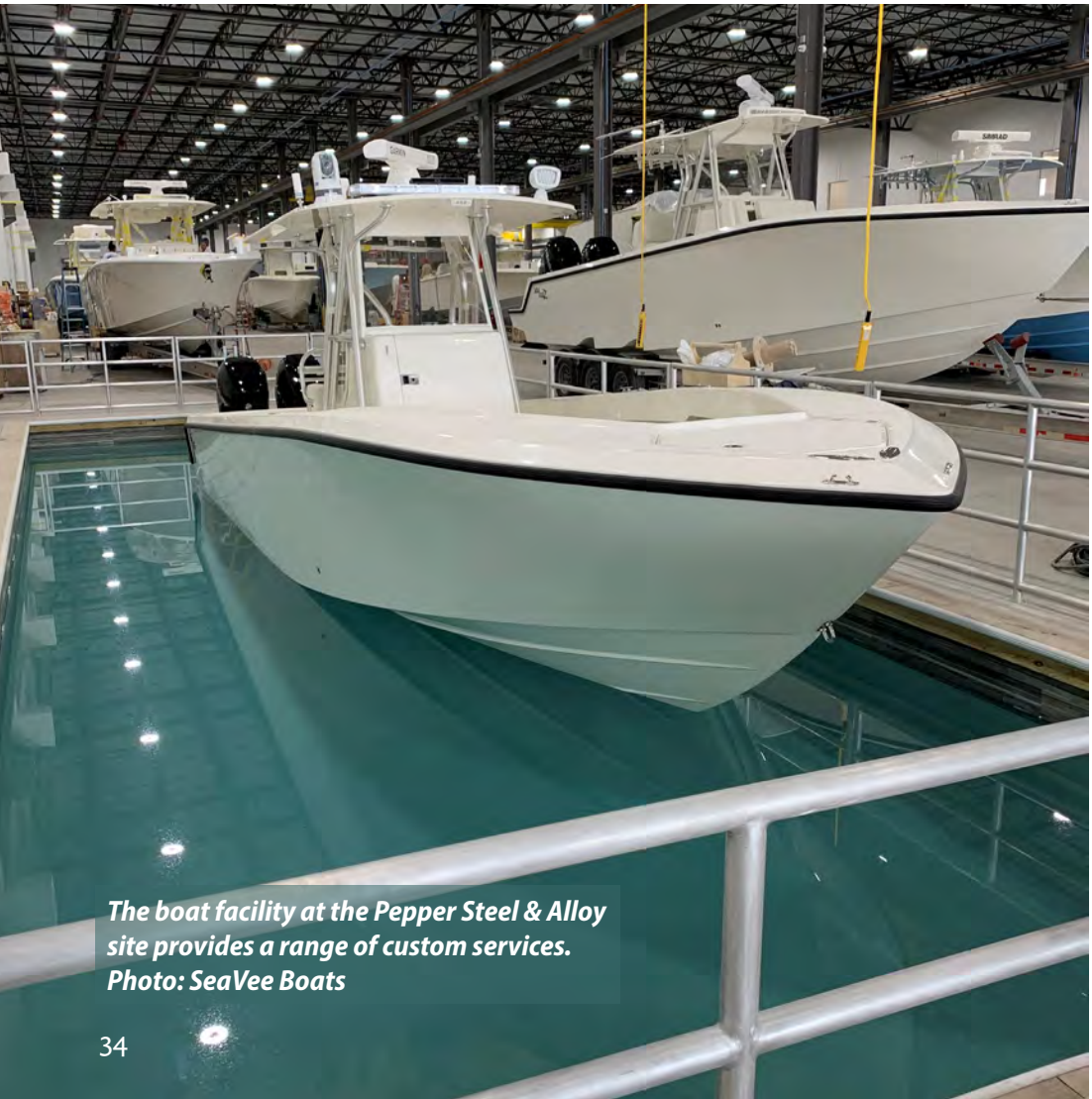
227,000
people employed

$16.3
billion in income earned by employees

$394
billion in sales generated in the last decade

Superfund Sites Redeveloped for Alternative Energy Generation





The boat facility at the Pepper Steel & Alloy site provides a range of custom services. Photo: SeaVee Boats

A Rising Tide Lifts All Boats – Literally – at the Pepper Steel & Alloy Site

Medley, Florida

This 25-acre area, a dumping ground for a variety of industrial businesses for 20 years, sat vacant after cleanup. In 2004, EPA started worked with stakeholders to identify uses compatible with the remedy that would benefit the community. EPA also worked with a local company on an agreement to address liability concerns. The efforts paid off. Several companies purchased site parcels for redevelopment Mostly recently, in January 2020, a 220,000-square-foot custom boat manufacturing and sales facility opened at the site, adding 100 jobs to the local economy.

Transforming a Blighted Site into a Golf Training Center for Inner-City Youth and Pollinator and Bird Habitat at the Carter Carburetor Site | St. Louis, Missouri

The Boys & Girls Clubs of Greater St. Louis has long stood in the shadow of this Superfund site. Industrial operations on site over decades resulted in PCB and TCE contamination. Prior to EPA's cleanup, the site was the subject of significant community concern about potential exposures to area children and residents.

Now that the site's remedy is in place, the community can move forward with redeveloping the property as a community asset. An agreement to transfer ownership of the cleaned-up site to the Boys & Girls Clubs of Greater St. Louis will facilitate the development of a golf training facility for youth on the property. The organization will partner with a local nonprofit to develop the facility. EPA is also helping the City of St. Louis Land Reutilization Authority restore pollinator and bird habitat on part of the site.

Redevelopment of 500-Acre South Bay Asbestos Site into a Vibrant Office Park, Trails and Open Space
San Jose, California

Once the location of two landfills, which accepted asbestos-containing materials from a manufacturing plant for over three decades, redevelopment at this cleaned-up site now provides economic, recreational and social benefits to the community.

In April 2019, the corporate headquarters of Hewlett Packard Enterprise opened on the property, employing over 1,000 people. The new facility includes sports fields, a gym, cafeteria and an open roof-top area.

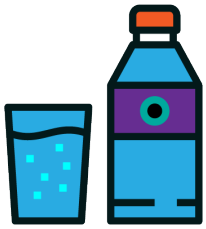
Many factors associated with cleaning up sites inspire the spirit of innovation in the Superfund program, including the challenges of addressing complicated sites, new complexities requiring new cleanup solutions, advances in science, and the quest for more efficient, effective and timely cleanups.

INNOVATIONS IN SCIENCE AND TECHNOLOGY

3D-Visualization Gives Window to What's Beneath the Surface at the Summitville Mine Site | Rio Grande County, Colorado

Using cutting-edge software, EPA collaborated with the Colorado Department of Public Health and Environment on a 3D digital model that allowed site staff to visualize subsurface conditions, including elevated levels of contamination, and make more informed – and more effective – cleanup decisions.

The software combined large environmental and geospatial data sets to generate a 3D model that illustrated the underground mine's infrastructure, geology and heavy metals distribution in the site's groundwater and surface water. The model highlighted geologic faults and groundwater seeps that may act as potential pathways for heavy metals and acidic groundwater to enter an adjacent stream.



Bedrock Investigation Key to Protecting Drinking Water Wells at Hidden Lane Landfill Superfund Site

Sterling, Virginia

EPA used innovative technologies to conduct a high-resolution bedrock investigation at the site. The effort improved understanding of the site's geology and contaminant mass distribution, leading to more comprehensive cleanup decisions.

The investigation consisted of drilling and collecting rock cores that were analyzed in an on-site laboratory for VOCs using the Core Discrete Fracture Network Approach (CoreDFN™). CoreDFN™ enabled EPA to evaluate and interpret the distribution of contaminants in the bedrock that have affected the aquifer, which is the area's drinking water source.

EPA also analyzed rock samples at an off-site laboratory using high-frequency computerized tomography (CT), three-dimensional dual-energy CT, and thin-section geological analysis, which provided a detailed 2D and 3D picture of the material making up the site's underlying bedrock.

Technology Using Millions of Pounds of Steam Extracts Contaminants and Protects Groundwater at the Beede Waste Oil Site

Plaistow, New Hampshire

EPA, in partnership with the site's PRPs, successfully used steam enhanced extraction (SEE) to recover more than 400,000 pounds of contaminants. The use of about 95 million pounds of steam led to achievement of the site-specific soil cleanup criteria. SEE involves injecting steam deep into the subsurface to remove contaminants that had infiltrated through surficial soils and migrated deep into the ground. EPA's Office of Research and Development provided extensive technical support for this technology's use and operation.

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

EPA 904/R21/001 | May 2021

https://www.epa.gov/superfund