

# SUPERFUND

## ACCOMPLISHMENTS REPORT

FY2021



**OLEM** OFFICE OF LAND AND  
EMERGENCY MANAGEMENT



# TABLE OF CONTENTS

click on the topics below to jump to any section



- 1 Introduction to Superfund
- 2 The Year in Review
- 11 Community Involvement
- 13 Superfund Redevelopment
- 15 Protection of Public Health and the Environment
- 23 Tribal Partners
- 25 Federal Facilities
- 27 Superfund Enforcement
- 29 Emergency Management
- 34 Innovations in Science and Technology



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at any point in the report, click on this icon to return to this page



# WELCOME

We are honored to share with you this most recent set of accomplishments from the Superfund program. As you'll read in this report, the Superfund program is hard at work to better protect all communities, especially the most vulnerable communities.

Superfund restores contaminated land, and in that way, is about not only cleanup of sites but transformation for communities and the people who live there. Through the Superfund Redevelopment Program, EPA supports communities' reuse of former Superfund sites for diverse purposes, such as parks, business hubs, shopping districts, neighborhoods, energy facilities and wildlife habitat. On pages 13 and 14, we've detailed just a few stories of transformation out of the 47 reuse-related projects started or completed in fiscal year 2021.

Pivotal to both the long-term protectiveness and success of Superfund cleanups and redevelopment is ensuring Superfund remedies are resilient to climate change effects. On pages 9 and 10, you can read about how Superfund's cleanup process incorporates climate change considerations and how cleanup innovations reduce EPA's carbon footprint and lead to more environmentally sustainable remedies.

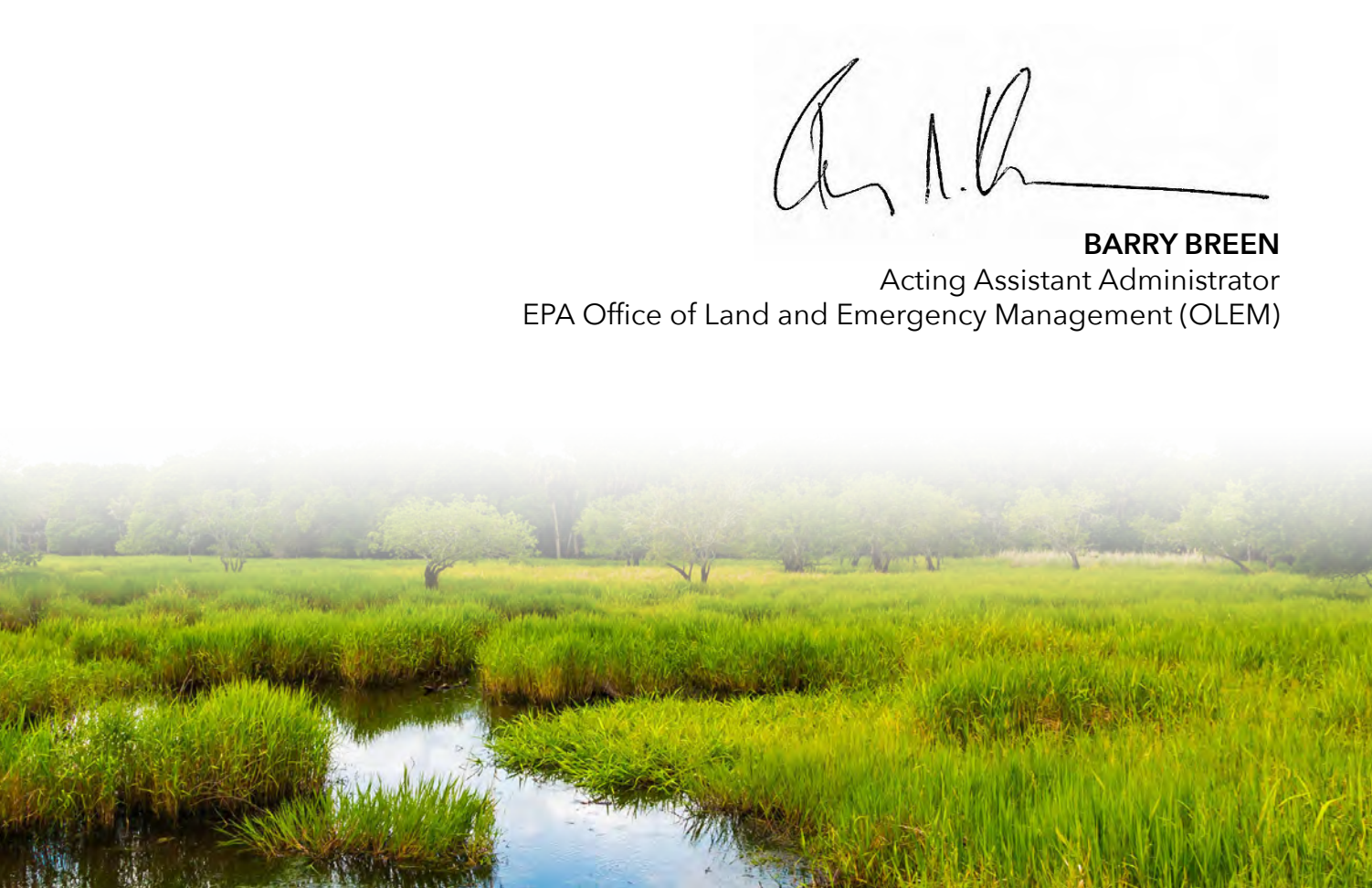
Fiscal year 2022 is already off to a historic start with the passage of the Bipartisan Infrastructure Law, which provided \$3.5 billion in funding for the Superfund remedial program. With this funding, EPA is already initiating work on backlogged remedial construction projects and accelerating cleanups at National Priorities List (NPL) sites.

While there's still much work to be done, we are proud of the progress we have made. We're happy to share highlights of our successes through this annual report, and will continue working with colleagues to ensure that all Americans live and work in healthy, vibrant places.



**BARRY BREEN**

Acting Assistant Administrator  
EPA Office of Land and Emergency Management (OLEM)



# 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.

Superfund cleanups provide significant human 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) 2021, more than 1,000 federal and non-federal Superfund sites support new and ongoing uses. These sites:



Support more than **10,200** businesses.



Host more than **246,000** employees.



Generate more than **\$18.6 billion** in annual employment income.

The Superfund removal program conducts emergency and short-term responses when contamination poses an immediate 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.



Nationally, one in four Americans lives within 3 miles of a site on the Superfund program's National Priorities List.



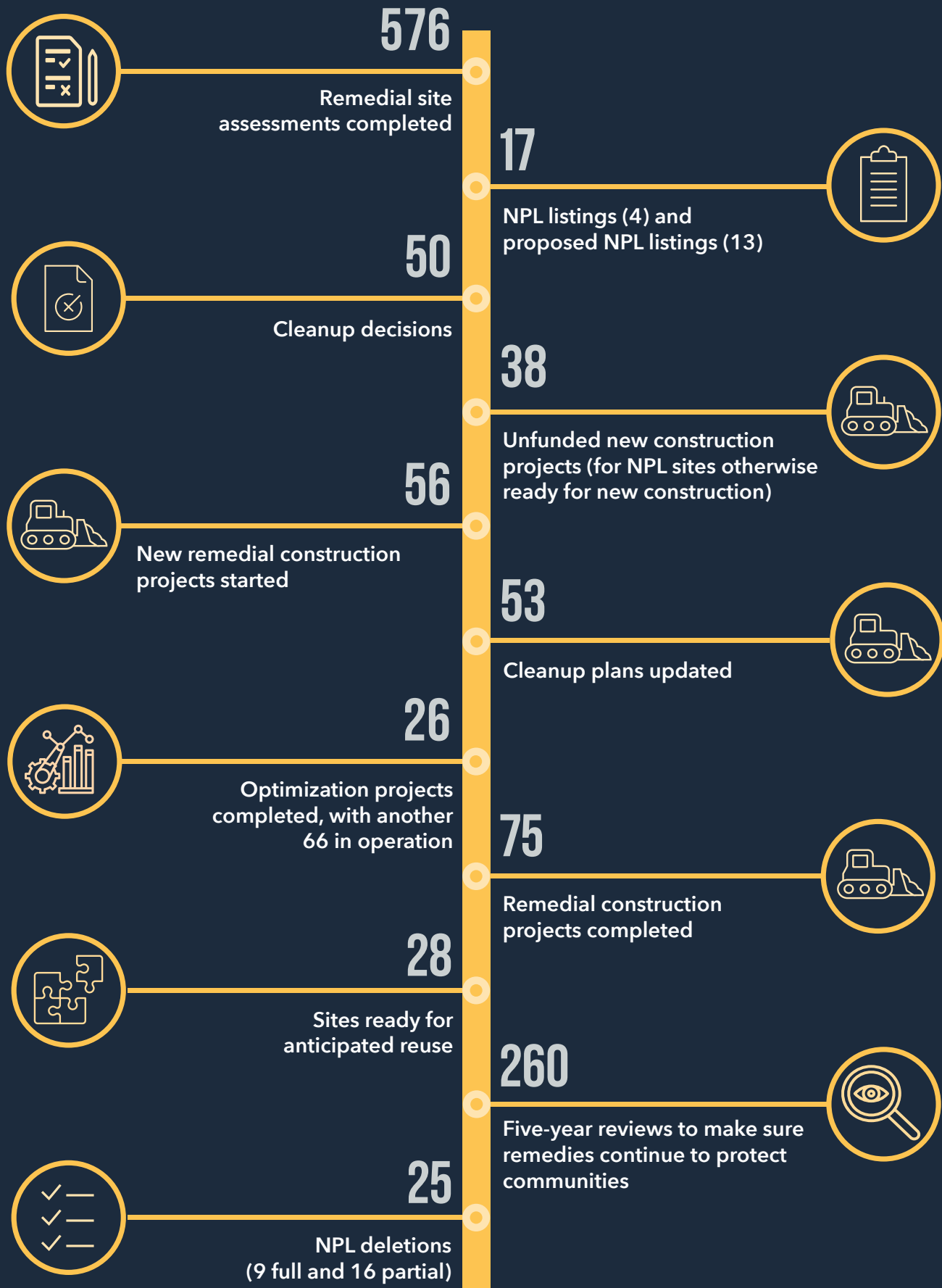


# THE YEAR IN REVIEW: FISCAL YEAR 2021





# FISCAL YEAR 2021: BY THE NUMBERS



## ADDRESSING IMMINENT THREATS



**186** Removal actions completed

## PROTECTING HEALTH AND ECOSYSTEMS



**13** sites where EPA completed actions to control human exposure risk



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

## FUNDING SUPERFUND WORK



About **\$1.9** billion from private parties to clean up sites



About **\$217** million disbursed or obligated from special accounts for site work

## FUNDING STATE SUPERFUND WORK



About **\$63.3** million to states to clean up NPL sites

# ADVANCING ENVIRONMENTAL JUSTICE AT SUPERFUND SITES

The Superfund program protects thousands of rural and urban communities across the United States by cleaning up the nation's most contaminated lands. Around 73 million people live within 3 miles of a Superfund site, in communities more overburdened by other environmental stressors when compared to the general population.

No community deserves to have contamination near where they live, work and play. EPA's Superfund program integrates environmental justice considerations throughout the cleanup process and provides resources through its comprehensive community involvement program to ensure communities can participate meaningfully in the decision-making process.

EPA's Superfund Redevelopment Program helps facilitate equitable site redevelopment while supporting community-specific land uses responsive to the needs and priorities of individual communities.

In 2021, the Biden-Harris Administration published Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad," and Executive Order 13985, "Advancing Racial Equity and Support for Underserved Communities Through the Federal Government." The two orders challenged federal agencies to develop strategies to better support and protect communities in greatest need.

As part of Executive Order 14008, Superfund was selected to participate in the White House Justice40 Initiative, a pilot program for determining how federal investments might be made such that 40% of those investments' overall benefits flow to disadvantaged communities.

Superfund's draft Justice40 Plan included:

Enhancing Superfund's existing community involvement and redevelopment programs.



Building the capacities of state and tribal partners to engage in the Superfund process.

Working more collaboratively across EPA and other federal agencies to clean up sites.



Participating in national engagement calls to hear directly from communities about how to better implement initiative actions.







Superfund also contributed to EPA's Office of Land and Emergency Management's Environmental Justice Action Plan by identifying strategies to incorporate environmental justice considerations into programmatic efforts and increase community engagement.

The Biden-Harris Administration's environmental justice emphasis bolstered coordination between EPA and the U.S. Department of Housing and Urban Development (HUD), accelerating efforts to address contamination at HUD-assisted housing. In 2021, EPA launched a new methodology, using Superfund site boundaries to identify HUD-assisted housing within Superfund sites more accurately. This approach improved EPA and HUD's ability to take action at those properties and help ensure residents are protected and well informed about site-related contamination on HUD-assisted housing properties.

**Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.**





# ENVIRONMENTAL JUSTICE IN ACTION



## **Protecting Communities from Consuming Contaminated Seafood** *Baltimore, Maryland*

EPA proposed listing the Bear Creek Sediment site on the NPL in 2021. The creek is used for recreation activities as well as fishing and crabbing. EPA supported the Maryland Department of the Environment's decision to issue fish consumption advisories for the Patapsco River and the Baltimore Harbor watersheds for 10 fish species and the blue crab due to heavy metal, oil and grease contamination caused by discharges from the former Bethlehem Steel plant.

## **Making Significant Progress to Protect Human Health from Heavy Metals** *Pueblo, Colorado*

EPA improved the health of residents in 326 homes near the Colorado Smelter Superfund site (below) by reducing their potential exposure to contamination after soil sampling and heavy metal contamination cleanup resumed at the site.



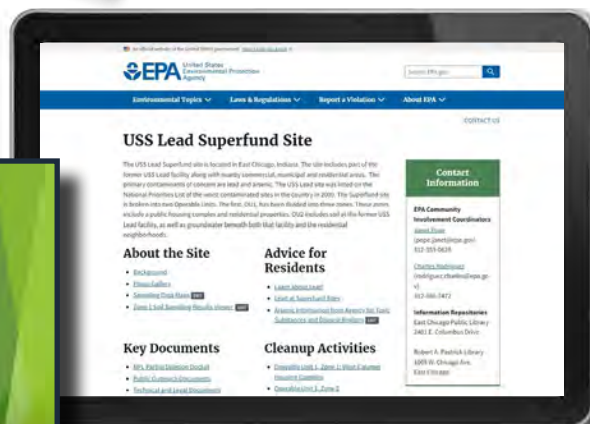


## Providing Comprehensive Resources, Keeping Communities Well Informed Chicago, Illinois

EPA completed the USS Lead Superfund site's cleanup of 510 residential properties in Zone 2 and two non-residential properties in Zone 3.

In addition, EPA took extra steps to be responsive to community concerns by developing several unique resources so community members could remain engaged and involved.

- EPA created a dedicated website for community members to access the most current site information (bottom right). The site includes links to EPA, the Indiana Department of Environmental Management, the Agency for Toxic Substances and Disease Registry (ATSDR), and the city of East Chicago's websites.
- EPA developed a multilingual (English and Spanish) USS Lead newsletter (below), which includes information on cleanup progress, planned work and lead mitigation advice.
- EPA produced a video to explain the Superfund program's five-year review process and identify ways community members can be part of the activities (bottom left).



# ENSURING CLIMATE RESILIENCY AT SUPERFUND SITES

As extreme weather events become commonplace, the impacts of climate change are being felt in communities across the country. The Superfund program continues to adapt cleanup approaches to ensure remedies remain protective of human health and the environment.

## **Building Climate Considerations into Superfund's Cleanup Process**

As part of the amended Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), i.e., the Superfund law, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), Superfund must consider the potential for extreme weather impacts when determining the best cleanup approach at Superfund sites. In addition, Superfund law requires five-year reviews of remedies at cleaned-up sites to evaluate climate resiliency based on new information, such as changes in long-term weather patterns and sea-level rise.

In June 2021, Superfund issued a memorandum reiterating EPA's commitment to considering climate change throughout the cleanup process. It also reemphasized the need to consider a remedy's adaptive capacity to tolerate more volatile weather events.

## **Designing Greener Cleanups to Adapt to and Mitigate Climate Change *Southington, Connecticut***

EPA worked with the Solvents Recovery Service of New England, Inc. (SRSNE) Potentially Responsible Party (PRP) Group and the Connecticut Department of Energy and Environmental Protection to implement a remedy that includes nature-based solutions at the 46-acre SRSNE Superfund site. The remedy involves construction and maintenance of a soil and sediment cap and reestablishment of native plant communities near the Quinnipiac River (below, left), which flows into Long Island Sound. The restored vegetation along the riverbanks and in upland areas helps replenish local and regional ecosystems, including fish and wildlife habitat. The site's extensive vegetation also helps mitigate and adapt to climate change by removing carbon dioxide (a greenhouse gas) from the atmosphere and alleviating flooding and associated soil erosion.







The site's stormwater management approach used both green and gray infrastructures to control stormwater from Hurricane Ida, which made landfall in August 2021. Vegetated swales (narrow plant-lined channels) processed stormwater shed from the soil and sediment cap and runoff from impervious surfaces and built structures. The runoff went to an infiltration gallery (a constructed subsurface drainage system) capable of storing 1,600 cubic feet of water. In other upland areas, rock-lined channels captured stormwater and carried it by way of land gradients to wetlands along the Quinnipiac River.

A solar energy array installed above the soil and sediment cap (previous page, bottom right) also provides electricity to operate the site's groundwater extraction pumps, reducing greenhouse gas emissions associated with using electricity supplied by the local utility. The renewable energy installation also provides a degree of energy independence. Excess power generated by the solar array is fed to the utility grid for electricity purchase credits. The credits are applied on cloudy days when the array cannot meet the full energy demand and grid-supplied electricity is needed for ongoing groundwater extraction.

## **Recognizing Superfund Sites as Renewable Energy Resources** *Joplin, Missouri*

Many Superfund sites are well suited to host renewable energy facilities. These facilities can mitigate the effects of climate change and help communities build energy independence and reduce their carbon footprints.

At the Oronogo-Duenweg Mining Belt Superfund site, EPA coordinated with Liberty Utilities, the area's primary energy company, on a solar farm pilot project. The 12-acre pilot project consists of more than 5,500 bifacial photovoltaic panels and provides solar power for the surrounding area (above). Contamination remains contained on part of the site due to geologic complexities that make it impossible for EPA to remove the toxic waste completely. Therefore, EPA put land-use restrictions in place that ensure the remaining contamination is undisturbed. The solar farm project allows for the meaningful reuse of this otherwise vacant part of the site. In the future, EPA anticipates working with Liberty Utilities to support the planned expansion of the solar farm. The expanded facility will generate 2.25 megawatts of energy and supply power for about 400 homes in the area. Uses and reuses on other parts of the site include residential areas, a park and natural areas, including a lake (below).

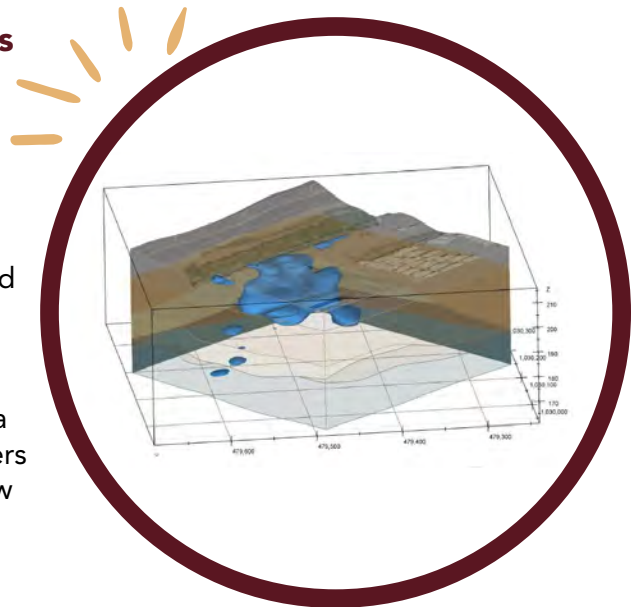


# COMMUNITY INVOLVEMENT

**E**ngaging communities and ensuring that the people affected have a role and voice in the decision-making process for Superfund site cleanups is a critical element of environmental justice and a cornerstone of the Superfund program. Superfund's community involvement program provides resources and opportunities for communities to meaningfully participate in the Superfund process. Community involvement allows EPA to understand, elevate and address the concerns of impacted communities and design better cleanups.

## **EPA Connects with Communities in New Ways** *Chehalis, Washington*

In response to community feedback, EPA hosted a special "show-and-tell" virtual meeting to discuss the innovative groundwater cleanup approach (right and below) at the Hamilton/Labree Roads Contaminated Groundwater Superfund site. The event was well received by its 67 attendees – a notably large number of people for this small community. The interactive meeting featured a short site presentation, a video walkthrough of the groundwater treatment process, live polling, and a robust question-and-answer session. Community members can access the virtual tour online at any time to learn how the cleanup addresses potential risks from groundwater contamination.



## **Recognizing Outstanding Community Leaders**

EPA awarded the 2021 Citizen Excellence in Community Involvement Award to the Eastwick Lower Darby Creek Area (ELDCA) Community Advisory Group (CAG) for its remarkable dedication to its community and its commitment to successful collaboration with EPA. Since its inception just six years ago, the CAG has listened to the community and shared local perspectives with EPA, enabling the Superfund cleanup process to continue with greater community support. The Eastwick Lower Darby Creek community has faced long-standing environmental justice issues due to a history of flooding, toxic dumping and heavy industry in the area spurred by the largest-ever urban renewal project.







The ELDCA CAG continues to meet, listening to the community and sharing local perspectives with EPA.

During the 1950s and 1960s, the Redevelopment Authority of Philadelphia (RDA) displaced over 8,600 people from their homes, and dismantled one of Philadelphia’s only racially integrated communities at that time in the process. Community leaders demonstrated strength, persistence and resilience in overcoming these major obstacles to unite residents in tackling the legacy contamination in their community. The CAG’s dedication and commitment to the community was highlighted in 2020, when the group continued virtual meetings even while dealing with property damage due to flooding from Tropical Storm Isaias. Together, the EPA site team and the CAG have become adept at identifying issues and community needs, and sharing important site information quickly.

### EPA Community Involvement: By the Numbers (FY 2021)



**269,000+**  
People reached



**700+**  
Fact sheets,  
mailings,  
postcards,  
advertisements  
and newsletters  
distributed to  
people living on  
or near Superfund  
sites



**500+**  
Public meetings  
held or attended



**790+**  
Interviews  
conducted with  
community  
members living  
near Superfund  
sites



# SUPERFUND REDEVELOPMENT

**E**PA's Superfund Redevelopment Program supports community revitalization by facilitating the return of sites to beneficial use. Reusing Superfund sites can be transformational, breathing new life into vacant lands and creating new opportunities for communities. Today, many once-blighted properties across the country are now in use for a wide range of purposes, including shopping centers, offices, public parks, wildlife habitat, neighborhoods and renewable energy facilities.

## **Investments Support Revitalization Projects at Colorado Smelter Superfund Site Pueblo, Colorado**

A total of \$400,000 in grants was awarded to local community leaders to implement beneficial redevelopment projects. EPA awarded one grant to the Pueblo Food Project and Steelworkers Center of the West to install garden beds in residential yards on site. The project aims to increase access to healthy, locally grown food for low-income and underserved minority residents who live near the industrial area. The Colorado Health Foundation awarded the second grant to the Pueblo Department of Public Health and Environment to support the city's officially adopted, community-driven revitalization plan. As of June 2021, EPA had completed 70% of soil cleanups, with 30% of dust cleanups complete at residential properties.



## **Designing Greener Cleanups to Adapt Redevelopment of Conroe Creosote Superfund Site Improves Local Economy Conroe, Texas**

Construction of a Home Depot distribution center (below) finished in summer 2021, providing the local economy with jobs, tax revenues and local spending. Due to increased road traffic in the area, the city prioritized funding for a long-anticipated road extension project in support of the redevelopment around the new distribution center. The developer also put in a new rail spur to maximize the site's accessibility.



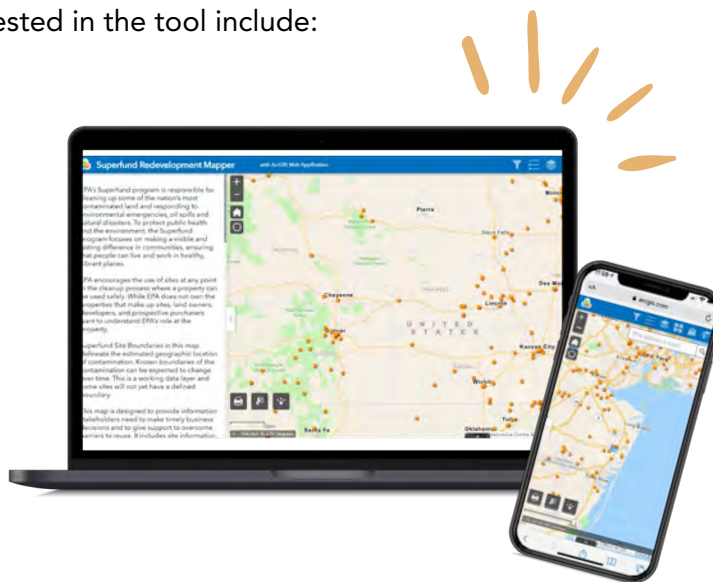


## EPA Launches Tool to Help People Invest in and Boost Economies in Underserved Communities

EPA's new Superfund Redevelopment Mapper significantly bolsters the ability of stakeholders to explore reusing abandoned lands and provide new opportunities for underserved communities on or near formerly contaminated Superfund sites. The GIS-based tool provides users with Superfund site locations and can highlight properties and identify the characteristics of surrounding areas. Any existing GIS layer can be added to the tool, allowing users to evaluate criteria such as income levels, unemployment numbers and land features.

Examples of people and organizations interested in the tool include:

- Retail store developers interested in properties near freeways, shipping services or affordable housing for workers.
- Solar facility developers focused on rural locations in proximity to high-voltage power lines and solar potential.
- Local governments identifying communities with a lack of basic services, such as nearby grocery stores and health care centers, or green space and recreation facilities.
- Community redevelopment authorities and other organizations seeking to attract businesses to areas with high unemployment.



The Superfund Redevelopment Mapper helps ensure that Superfund cleanups support the return of properties to beneficial uses that address community needs and priorities. These uses include commercial, industrial and residential areas as well as parks, natural areas and recreation facilities.

### Returning Land to Beneficial Use

Today, more than 1,000 federal and non-federal Superfund sites support new and ongoing uses. As of 2021, EPA collected economic data on 650 non-federal Superfund sites. Below is the economic information for these sites.



**1,000+**  
sites in use



**\$65.8 billion**  
in sales generated



Over the last 11 years  
(2011 to 2021), businesses  
at these sites generated  
at least **\$478 billion**  
(inflation adjusted)  
in sales

# PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

click on the topics below to jump to any section



16 Introduction



21 Superfund Lead Cleanups



23 Tribal Partners



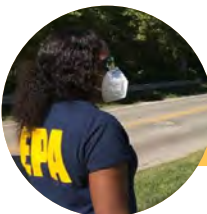
25 Federal Facilities



27 Superfund Enforcement



29 Emergency Management



31 Environmental Response Team



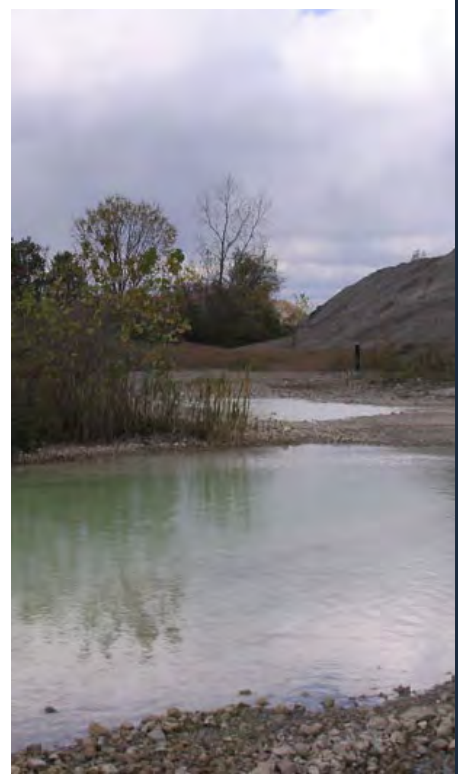




**T**he Superfund program protects human health and the environment by cleaning up hazardous waste and restoring land for beneficial reuse. Superfund cleanups are complex and large in scale, with some sites covering hundreds of miles. Superfund's multi-phase cleanup approach ensures that hazardous waste is addressed so impacted communities can put the legacy of contamination behind them and look forward to the future.

### **Construction of Innovative Remedy Completed at Sharon Steel Corp. Superfund Site Hermitage, Pennsylvania**

After years of rigorous cleanup work, EPA completed an innovative \$12.8 million remedial action project at this former steel manufacturing facility. EPA, in coordination with the U.S. Army Corps of Engineers, removed over 627,000 cubic yards of steel manufacturing waste from a 50-acre area along the Shenango River and used bioremediation strategies such as floodplain restoration and wetland construction to support the remedy's success (below).





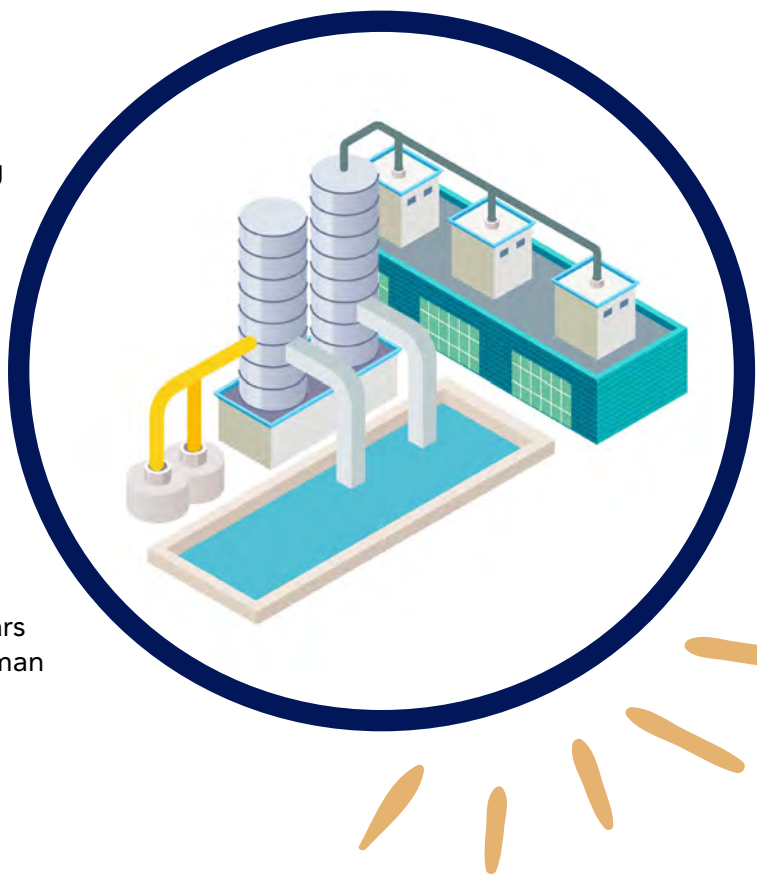


## **Remedy Enhancements Protect Local Drinking Water at Brown & Bryant Superfund Site Arvin, California**

EPA completed an on-site temporary treatment system (above) and evaporation pond to process the site's contaminated groundwater. EPA also began construction of a permanent on-site system to clean contaminated groundwater that was previously sent to off-site treatment facilities, a system that became unreliable due to logistical issues caused by the COVID-19 public health emergency. This innovative solution greatly reduced truck emissions in surrounding communities, which have struggled historically with poor air quality. The new treatment system saves taxpayer money and mitigates risks from storage of contaminated waste. The on-site treatment facility, coupled with EPA's funding to install a new domestic drinking water well in collaboration with the community and the city of Arvin Community Services District, better protects the local water supply.

## **Significant Deletion of Three Adjacent Superfund Sites from the NPL Bloomington, Indiana**

After decades of collaborative cleanup work among local, state and federal partners, EPA deleted the Bennett Stone Quarry, Lemon Lane Landfill and Neal's Landfill Superfund sites from the NPL. Cumulatively, EPA removed 156,000 tons of soil contaminated with polychlorinated biphenyls (PCBs) from the three sites and cleaned billions of gallons of contaminated spring water. The cleanup also involved building a water treatment plant (illustration right) with the capacity to clean 6,000 gallons of PCB-contaminated spring water per minute. The responsible party will continue to operate and maintain water treatment plants at the three sites. EPA will evaluate the sites every five years to make sure the remedies remain protective of human health and the environment.





## Disaster Averted at Abandoned Site Davis, Oklahoma

EPA, supported by the Oklahoma Department of Environmental Quality, averted disaster at an abandoned electroplating facility by removing about 5,000 gallons of liquid hazardous wastes and about 352,000 pounds of cyanide solid wastes (right) and disposing of them at approved disposal facilities. The 12,000-square-foot facility, located near residential communities, was riddled with hazardous wastes, including acids, caustics, oxidizers and flammables in degrading containers. EPA also discovered three containers of krypton-85, a radioactive gas, which, if taken or opened carelessly by a trespasser, could expose a person to dangerous levels of radioactivity. The facility's leaking roof contributed to the already dangerous situation by potentially allowing rainwater to mix with the chemically incompatible substances to create a catastrophic event. If a severe storm with torrential rain had occurred, flood waters could have carried leaked contaminants into a major watershed.



## The Superfund Program in Action: FY 2021 Outcomes



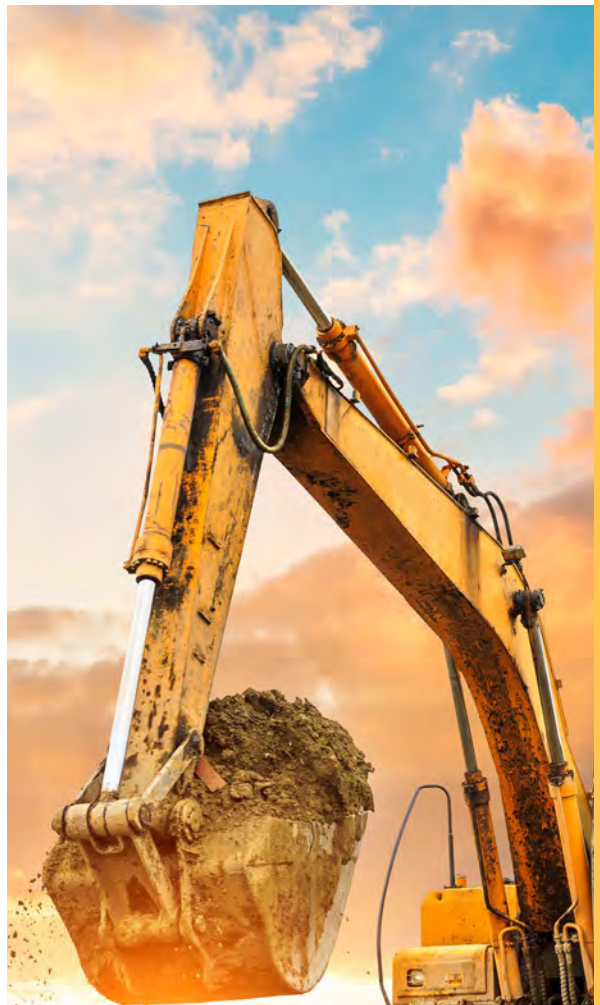
**8 Superfund sites achieved  
EPA's construction  
completion milestone**

**\*Over \$232 million  
obligated for pre-  
construction site work, such  
as site assessments and  
investigations, selection  
and design of cleanup  
plans, and support for  
state, tribal, community  
involvement and other  
activities**



**\*Over \$392 million  
obligated for construction  
and post-construction  
projects**

**1,235 Superfund  
sites with groundwater  
mitigation under control**



\*The approximate amount includes obligated appropriated funds, state cost-share contributions and potentially responsible party settlement resources.

# THE NATIONAL PRIORITIES LIST (NPL)

The NPL includes the nation's most serious uncontrolled or abandoned releases of contamination; it serves as the basis for prioritizing Superfund cleanup funding and enforcement actions. EPA proposes sites for listing on the NPL based on a scientific determination of risks to people and the environment consistent with CERCLA and the NCP.

## **Addressing Groundwater Concerns** *Billings, Montana*

EPA added the Billings PCE Superfund site to the NPL to address groundwater contamination and indoor air quality concerns posing a potential risk to public health at residential and commercial properties. The site consists of a contaminant plume in shallow groundwater from historical industrial pollution. The contamination extends several miles under a mixed-use area near Billings. The contaminants of concern include tetrachloroethylene, or PCE, among other chlorinated solvents from area laundry businesses. Isolated pockets of petroleum hydrocarbons from leaking underground storage tank facilities also exist.



## **Tackling Heavy Metal Contamination** *Franklinville, New Jersey*

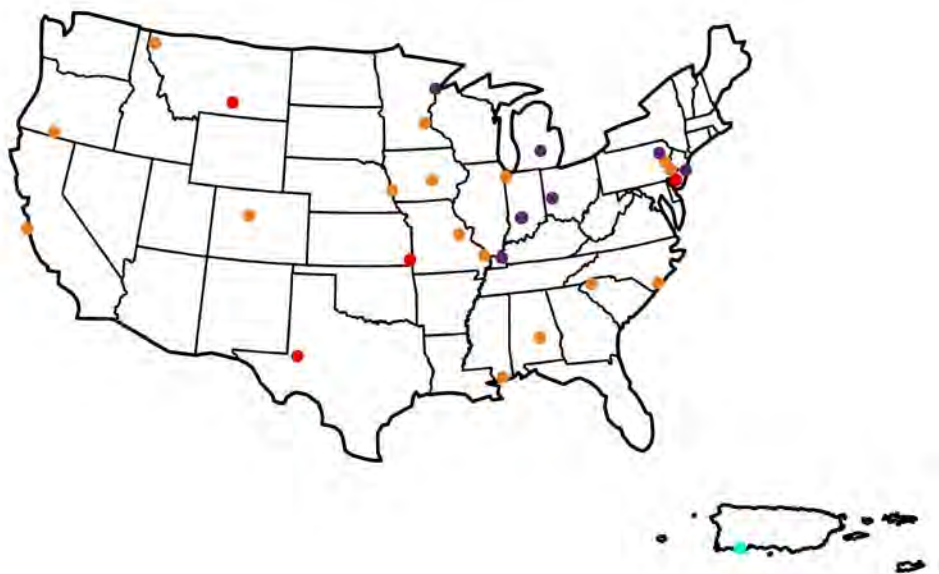
EPA based its addition of the Pioneer Metal Finishing, Inc., facility to the NPL on contamination found in the soil and sediments on and around the site. These contaminants pose a potential risk to recreational areas downstream beyond the site, such as Timothy Lake and Union Lake Wildlife Management Area. Both locations are used for swimming, fishing, boating, and observing bald eagles and osprey (below). Recently, EPA began a remedial investigation and feasibility study to define the nature and extent of contamination, assess the risk to human health and the environment, and develop a cleanup strategy.





# NPL SITE PROPOSALS, ADDITIONS AND DELETIONS (FY 2021)

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.



## PROPOSED

Ochoa Fertilizer Co | (Guanica, Puerto Rico)

## PARTIALLY DELETED

Chemfax, Inc. | (Gulfport, Mississippi)

Eagle Mine | (Minturn, Colorado)

Fort Ord | (Marina, California)

Kerr-Mcgee Chemical Corp - Navassa | (Navassa, North Carolina)

Lake Sandy Jo (M&M Landfill) | (Gary, Indiana)

Libby Asbestos Site | (Libby, Montana)

Midwest Manufacturing/North Farm | (Kellogg, Iowa)

Missouri Electric Works | (Cape Girardeau, Missouri)

North Penn - Area 6 | (Lansdale, Pennsylvania)

North Ridge Estates | (Klamath Falls, Oregon)

Omaha Lead | (Omaha, Nebraska)

Palmerton Zinc Pile | (Palmerton, Pennsylvania)

Riverfront | (New Haven, Missouri)

South Minneapolis Residential Soil Contamination | (Minneapolis, Minnesota)

T.H. Agriculture & Nutrition Co. (Montgomery Plant) | (Montgomery, Alabama)

US Finishing/Cone Mills | (Greenville, South Carolina)

## DELETED

Airco | (Calvert City, Kentucky)

Arrowhead Refinery Co. | (Hermantown, Minnesota)

Barrels, Inc. | (Lansing, Michigan)

Bennett Stone Quarry | (Bloomington, Indiana)

Butler Mine Tunnel | (Pittston Township, Pennsylvania)

Lemon Lane Landfill | (Bloomington, Indiana)

Neal's Landfill (Bloomington) | (Bloomington, Indiana)

Reich Farms | (Pleasant Plains, New Jersey)

United Scrap Lead Co., Inc. | (Troy, Ohio)

## ADDED

Billings PCE | (Billings, Montana)

Cherokee Zinc - Weir Smelter | (Weir, Kansas)

Northwest Odessa Groundwater | (Odessa, Texas)

Pioneer Metal Finishing Inc | (Franklinville, New Jersey)

# SUPERFUND LEAD CLEANUPS



**P**rotecting communities from environmental health hazards, such as lead contamination, remains a top priority for EPA. Lead, a naturally occurring element, can be harmful to humans (particularly children) when ingested or inhaled. Over time, lead has become a common environmental contaminant at Superfund sites across the country. EPA Regions have responded accordingly. For example, EPA Region 5 completed the cleanup of 587 residential properties for lead and other contaminants in FY 2021.

**150** **properties cleaned up** at the DePue/New Jersey Zinc/Mobil Chemical Superfund site in Depue, Illinois.

**52** **properties cleaned up** at the Old American Zinc Plant Superfund site in Fairmont City, Illinois.

**85** **properties cleaned up** at the Matthiessen & Hegeler Zinc Company Superfund site in La Salle, Illinois.

**300** **properties cleaned up** at the Jacobsville Neighborhood Soil Contamination Superfund site in Evansville, Indiana (left).







## Lead Cleanups Continue at the Matteo & Sons, Inc. Superfund Site Thorofare, New Jersey

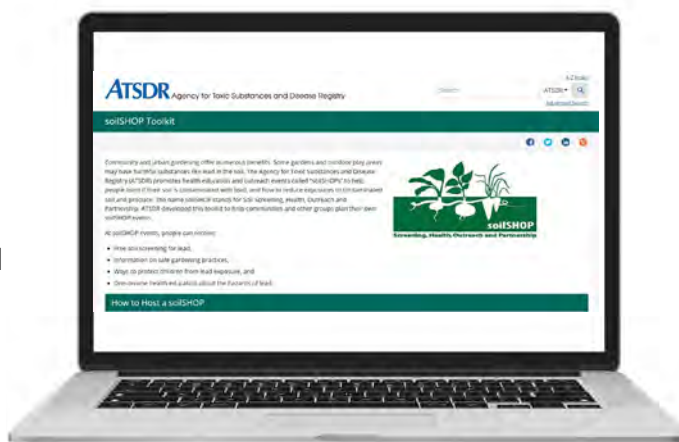
To ensure the health and safety of residents and staff during the COVID-19 public health emergency, EPA modified cleanup methods to continue removing lead-contaminated soil and battery waste on and under residential homes (above). The modifications allowed cleanup to be completed at 21 of the 24 contaminated properties in 2021.

## Innovative soilSHOP Program Serves More Community Members Through Adapted Virtual Program EPA Region 4

Due to pandemic restrictions, EPA, in collaboration with the Georgia Department of Health, ATSDR and Emory University, successfully adapted the in-person Soil Screening, Health, Outreach and Partnership (soilSHOP) program to a virtual platform to continue helping local communities learn about lead contamination in soil. Unrestricted by in-person capacity limits, the virtual program allowed more community members to participate. The workshop included an EPA partner-hosted website with educational resources about lead in soil. EPA hosted public meetings about lead-contaminated soil. EPA partners encouraged attendees to collect and submit samples for screening.

## Updated Model Ensure Cleanups Are More Protective of Children's Health

EPA updated the Integrated Exposure Uptake Biokinetic (IEUBK) Model to better understand a child's risk of increased blood lead levels at a site and to design more protective cleanups for the most vulnerable populations. The model can predict whether a child would eventually experience adverse health effects based on their cumulative exposure to lead from various sources such as soil, dust, water, air and food. The updated IEUBK Model replaces old science with the latest data to provide more accurate assessments. The model is a critical resource for EPA site teams who use the tool to determine the most protective cleanup approaches at sites where lead is the primary contaminant of concern.





# TRIBAL PARTNERS

**T**ribal governments play a key role in Superfund cleanups on tribal lands. EPA works closely with tribal partners to ensure Superfund cleanups are mindful of tribal land uses and sensitive to culturally significant areas.

## **Cleanup Work Supports Return of Important Tribal Lands to Passamaquoddy Tribe *Meddybemps, Maine***

EPA supported the anticipated return of cleaned-up parts of the Eastern Surplus Superfund site to the Passamaquoddy Tribe by the state of Maine. The site encompasses a historic tribal fishing village and was the location of a former army surplus and salvage business whose operations resulted in contaminated soil and groundwater. EPA has also worked with the Downeast Salmon Federation on the removal of a former powerhouse structure and stabilization of the Dennys River next to the site. The construction project will greatly improve fish passage (bottom right) for Alewife, a culturally significant resource for the Passamaquoddy Tribe, while furthering the efforts of the international St. Croix River watershed restoration collaboration. EPA has worked with the Passamaquoddy Tribe as key partners in the cleanup decision-making process since EPA took over cleanup efforts in 1986 .







## **Successful Collaboration with Quapaw Nation and Oklahoma Department of Environmental Quality Ensures Integrity of Cleanup at the Tar Creek Superfund Site**

### ***Ottawa County, Oklahoma***

EPA partnered with the Quapaw Nation and the Oklahoma Department of Environmental Quality (ODEQ) on several construction projects at the site that resulted in the removal of nearly 700,000 tons of mine waste. The Quapaw Nation provided critical input during the cleanup process that allowed EPA and ODEQ to understand potential contamination risk exposures resulting from how tribal members traditionally use land that overlaps with the site. Additionally, the Quapaw Nation Environmental Office collected data to support ongoing cleanup projects and participated in the review process for potential cleanup strategies. This cooperative approach among EPA, ODEQ and the Quapaw Nation ensures that cleanup actions will be protective for all communities located at the site.





# FEDERAL FACILITIES

**E**PA oversees the cleanup of hundreds of federal facilities listed on the NPL and proposed for listing on the NPL. Federal facilities are among the largest Superfund sites. They present unique challenges such as complex groundwater contamination, munitions, radiological waste and contaminants of emerging concern.

In 2020, EPA's Federal Facilities Program conducted an economic analysis of 45 federal facility Superfund sites. The 2020 analysis is an update and expansion of earlier research efforts to provide current, reliable business-related information for a subset of federal facility Superfund sites in reuse and continued use. The analysis' findings included:



**2,000+**

**Businesses located  
at the sites**



**\$11 billion**

**Annual sales  
generated**



**189k**

**People employed**



**\$14 billion**

**Annual employment  
income**

## Virtual Trainings Support Stronger Partnerships With Tribal Partners During Cleanups

Superfund's Federal Facilities Program provided a live virtual training on the use of its GIS web tools at the 2021 Tribal Lands and Environment Forum. This training enabled tribal partners to identify federal facility sites more easily and engage on federal cleanups that affect tribal lands. The training featured a tutorial on the Cleanups at Federal Facilities Mapping Application Tool, which can be used to learn cleanup details at each site and other related information.

The training also included an overview of the federal facility cleanup process under Superfund and the roles of federal agencies and tribal governments within that context. The training was offered in response to feedback from the Tribal Waste and Response Steering Committee (TWRSC) during its meeting with EPA's Federal Facilities Restoration and Reuse Office as well as TWRSC's 2021 priorities document.





## Four Sites Receive the Federal Facility National Excellence in Site Reuse Award

Superfund's Federal Facilities Program recognized four sites with the Federal Facility National Excellence in Site Reuse Award. The award celebrates the significant accomplishments of federal agencies, states, tribes, local partners and developers in restoring and reusing contaminated land at federal facilities. The 2021 award winners are:

### Rocky Flats U.S. – Department of Energy Golden, Colorado

This site was originally a nuclear weapons production facility during the Cold War. It is now a 5,200-acre federally protected wildlife refuge.



### Former Griffiss Air Force Base – U.S. Air Force Rome, New York

Griffiss Air Force Base closed in 1995. It has since transformed into a 3,600-acre business district that is home to more than 72 companies that employ nearly 6,000 people.



### Naval Air Station Key West – U.S. Navy Key West, Florida

The former Naval Air Station Key West was redeveloped into public recreation areas and over 300 affordable housing and assisted living units.



### Las Colonias Park – U.S. Department of Energy Grand Junction, Colorado

The former uranium processing facility is now a city-owned park that includes a 15-acre business zone and 5,000-seat amphitheater, among other public amenities.



## FEDERAL FACILITIES: BY THE NUMBERS (FY 2021)

15

Remedial action  
project starts



46

Five-year reviews



32

Remedial action  
project completions



# SUPERFUND ENFORCEMENT

**S**uperfund's Enforcement program preserves taxpayer money by pursuing those responsible for a site's contamination and compelling them to either clean up the site or pay for the site's cleanup. This saves Superfund valuable resources that can then be directed to orphaned and abandoned sites.

## **Multiple Parties to Clean Up Groundwater Contamination at Montrose Chemical and Del Amo Superfund sites**

Three September 2021 consent decrees between EPA and Montrose Chemical Corporation, Bayer CropScience Inc., TFCF America Inc., and Stauffer Management Company LLC, require the companies to pay for and clean up contaminated groundwater at the Montrose Chemical Corp. Superfund (below left) and the Del Amo Superfund sites (below right) in Los Angeles County, California. The work, valued at \$77.6 million, will improve community health and drinking water sources. The companies will also investigate potential contamination of the historical stormwater pathway from the Montrose Chemical Corp. site. Another company, JCI Jones Chemicals Inc., will participate in the groundwater cleanup work as well. Soil and groundwater at the two sites are contaminated with hazardous chemicals from the manufacturing of synthetic rubber and the pesticide dichloro-diphenyl-trichloroethane (DDT), which impacted the surrounding communities in southern Los Angeles County.

Overall, the communities near the former manufacturing facilities are heavily impacted and burdened by current and past industrial businesses surrounding the area and poor air quality. Residents in these neighborhoods have health and environmental justice concerns. Throughout the negotiation process, EPA Region 9 worked to address community concerns, including conducting a vapor intrusion study and other activities to address environmental risks resulting from contamination at the sites. The cleanup work resulting from these three settlement agreements, particularly to protect nearby communities' drinking water resources, reflects the Agency's focus to actively protect human health and the environment while negotiating with the responsible parties to perform the work.



### **Did You Know?**

Since the inception of the Superfund program, 9,529 Superfund enforcement instruments have been finalized, addressing contamination at 3,903 sites across the country. The estimated value of private and federal party commitments to clean up sites is about \$40.9 billion and the cost recovery total is more than \$7.5 billion, for a combined total of almost \$48.4 billion.





## Cleanup of PCB-contaminated Sediments in Kalamazoo River

A December 2020 Consent Decree between EPA and NCR Corp., valued at \$226 million (additional value to the natural resource trustees and State of Michigan brings the total to \$245 million), requires the company to clean up PCB-contaminated sediment and fund future cleanup costs at the Allied Paper Inc./Portage Creek/Kalamazoo River Superfund site, along with natural resource damage claims and past costs. This cleanup will result in stable banks (below) that no longer contribute contamination to the river, allow fish passage and enable recreational access across 41 miles of the river, significantly increasing recreational activities (above) throughout multiple communities once the project is completed. NCR Corp. will spend about \$135.7 million cleaning up about 15 miles of the Kalamazoo River.



**88 settlements**  
totaling **\$2 billion**,  
including **\$16.8**  
million from developers

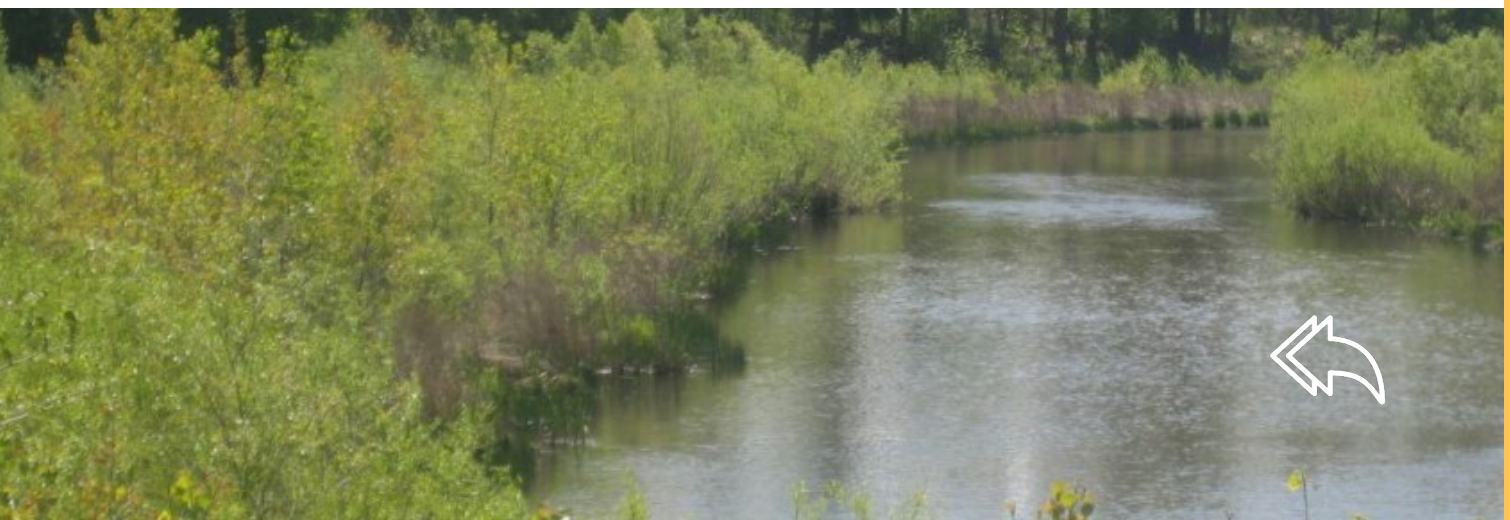


**\$95.5 million**  
billed to PRPs for  
oversight costs



**5 sites with**  
negotiations lasting  
greater than a year  
were addressed

Efforts resulted in  
settlement agreements  
with a combined value  
of **\$113.5 million**



# EMERGENCY MANAGEMENT

**E**PA's emergency management program protects human health and the environment by responding to large-scale national emergencies such as oil spills, chemical, biological and radiological releases. The program also supports local response teams as needed during emergencies.

## Historic Winter Storms in Texas

In February 2021, Winter Storms Uri and Viola brought freezing precipitation, record-breaking cold temperatures and life-threatening conditions across much of Texas. The extreme weather made travel dangerous and caused drinking water facilities across the state to lose power or pipe pressure. The compounding severity of the Winter Storms compelled EPA to activate the Regional Emergency Operations Center (REOC), part of the Agency's National Approach to Response (NAR) that ensures the Agency's coordinated response to nationally significant incidents. EPA received \$2.54 million in mission assignment funding from the Federal Emergency Management Agency (FEMA) to assist the state of Texas with analyzing drinking water samples (below left) for contamination and to provide mobile drinking water labs across the state. In addition, weather-related power outages caused petrochemical facilities along the Texas Gulf Coast to shut down. As these facilities regained power after the storm, concerns grew about air emissions. EPA deployed its Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft to monitor for hazardous emissions at chemical facilities and nearby communities.

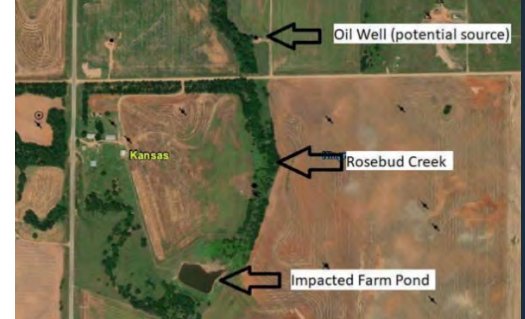
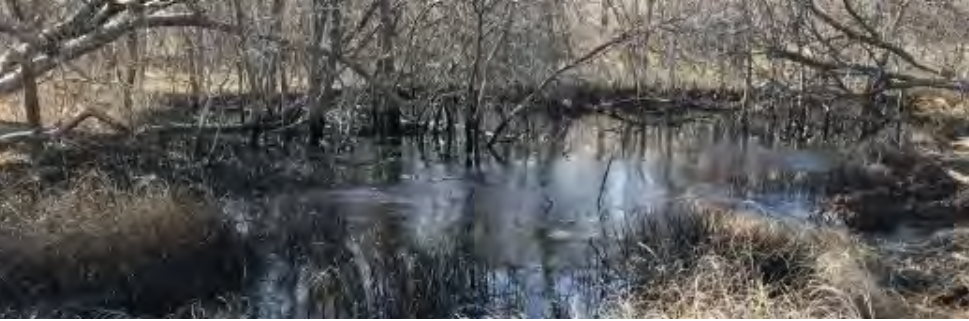
## EPA Responds to Two Train Derailments in Iowa

Effective coordination among EPA, responsible parties, the Regional Response Team and local responders ensured quick containment of potentially catastrophic releases of hazardous materials and oil from two train derailments. The first train derailment, in Sibley, Iowa, involved 16 cars known to contain hazardous materials. Local officials evacuated a 5-mile radius around the site and deployed booms and constructed dams along the adjacent creek. A release of potassium hydroxide and hydrochloric acid occurred. Cars containing asphalt and gasoline were also in the derailment and caused a fire.

The second train derailment occurred after flood waters washed out a bridge in New Hampton, Iowa (below right). EPA responded to reports of six locomotives and eight to 10 railcars that submerged in floodwater and released diesel fuel. In addition, one of five railroad cars carrying anhydrous ammonia – a toxic gas primarily used as a fertilizer – was punctured, resulting in a catastrophic release of the tank car's contents. Local authorities evacuated a 1.7-mile radius around the scene of the wreck.







For both responses, EPA worked closely with the Iowa Department of Natural Resources and the county's emergency response team to address community concerns regarding sampling plans, air monitoring and disposal of hazardous substances. Response team members worked closely with the rail industry to ensure the cleanup continued as quickly and safely as possible to minimize the impact on the local community and the environment .

## Oil Spill in Kansas

EPA and the Kansas Corporation Commission (KCC) responded to a reported 20,000-gallon crude oil spill Kingman County, Kansas. EPA recovered 252,420 gallons of wastewater and 20,328 gallons of spilled oil (above). EPA also installed site mitigation tools to collect residual oil on site. KCC was integral during the response, providing expert knowledge and technical assistance. After EPA determined there was no longer a threat to a navigable waterway, KCC took lead over site maintenance until cleanup work finished.

## EPA Deploys ASPECT to Support Emergency Response to Hurricane Ida

In August 2021, Hurricane Ida made landfall and severely affected several states. EPA coordinated with federal, state, tribal and local partners to assess Superfund, oil and chemical facility sites in four states most severely hit by the storm. In addition, EPA deployed its ASPECT aircraft, mobile drinking water labs and technical experts to support impacted communities. ASPECT spent 56 hours screening for hazardous chemical releases from 62 state-identified facilities during six flight days. ASPECT also spent 12 hours surveying six 8-by-8-mile grids using its unique stand-off infrared oil detection technology to assess for new or continuing oil releases. EPA issued three fuel waivers to alleviate fuel and crude oil shortages caused by the storm.



**ASPECT completed 13 mission days spanning three geographic locations and 23 regions, totaling about 90 hours of flight time over 10,000 miles of total flight distance. The data gathered by ASPECT's flights were shared daily with the Texas Commission on Environmental Quality to determine where resources were needed most.**

# ENVIRONMENTAL RESPONSE TEAM



**E**PA's Environmental Response Team (ERT) provides technical and logistical expertise for a full range of emergency response actions, including unusual or complex emergency incidents. Their expert knowledge and range of advanced data collection tools ensures efficient responses to and cleanups of releases of hazardous wastes.

## **EPA's Swift Response to Uncontrolled Hazardous Waste Releases Protects Human Health**

ERT supported Region 2's response to significant hazardous gas releases from Limetree Bay Refining, LLC in St. Croix in the U.S. Virgin Islands. ERT installed five air monitoring stations equipped with continuous high-resolution gas monitors for detecting hydrogen sulfide and sulfur dioxide at strategic locations throughout the community. Each monitoring station was also equipped with EPA's VIPER telemetry system, which was tied into EPA's online map viewer, allowing for real-time data sharing to inform EPA and response partners about the most current air quality conditions as well as to allow for data management. ERT also facilitated alarm confirmations and notifications to relevant EPA staff and cooperating agencies when hazardous gas concentrations exceeded site-specific levels of concern.



## **Advanced Technology Allowed for a Quicker, More Collaborative Assessment of West Virginia Ordnance (U.S. Army) site Point Pleasant, West Virginia**

ERT's use of a combined Membrane Interface Probe and Hydraulic Profiling Tool (MiHPT) enabled site teams to assess the 60-acre site in less than three weeks. This process previously took years, with traditional groundwater investigations that relied heavily on much slower off-site analysis of monitoring well samples. MiHPT technology allowed site teams to delineate potential sources of trichloroethylene (TCE) in real time. TCE is a synthetic chemical degreaser that was used during PVC resin production at the site's former manufacturing facility. To expedite the project and reduce oversight costs, ERT used two separate MiHPT rigs and a third rig to retrieve soil cores for laboratory analysis at select locations. All data were posted in real time on EPA's GIS Enterprise System for immediate viewing and input by project stakeholders. The project team met twice a week to review data collected by the MiHPT and solicit stakeholder input while the field effort was still underway. These real-time technologies and collaborative approaches built highly effective teams, synergetic relationships and fast, reliable results.







## Real-time Air Monitoring Provides Confidence That Residences Are Not Affected After Gasoline Leak

ERT provided technical support to EPA Region 5 at the Flat Rock, Michigan Gasoline Release site, where hundreds of residents were concerned about gasoline odors detected in their neighborhoods. Gasoline was released into the sewer system upstream of these communities. ERT used the Trace Atmospheric Gas Analyzer (TAGA) mobile laboratory to monitor for gasoline-related compounds, including benzene, a known carcinogen. The TAGA mobile laboratory analyzed residential and school indoor air, local outdoor air and sewer gas. The results provided key data for local health departments to determine if conditions were acceptable for residents to be able to remain in their homes.





## **ERT Supported Cleanup of Critical Watershed at the Union Pacific Railroad North Dunsmuir Railyard Oil Spill Site**

### ***Dunsmuir, California***

ERT, in conjunction with the California State Water Resources Control Board, the California Department of Fish and Wildlife, EPA Region 9 and Union Pacific Railroad (the responsible party), supported the implementation of an interim remedy to reduce oil seepage into the Upper Sacramento River, an essential watershed and wildlife habitat in the state. Past use of the site for railroad operations (left), diesel fueling and storage for locomotives resulted in the release of unknown quantities of oil and diesel fuel that has since migrated into the soil and shallow groundwater. ERT collaborated with their response partners to provide technical oversight as the responsible party implemented several remedies to collect oil and prevent further contamination, including:

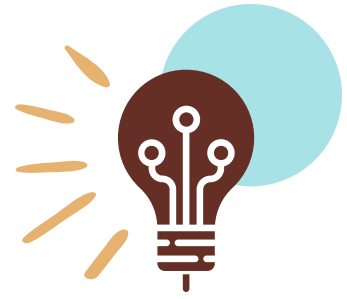
- Installing oil-absorbing materials next to the site to capture oil in areas of known seeps.
- Adding gravel-filled sacks and oil-retention booms to slow the flow of water in work areas in the fast-moving river (below left).
- Removing about 2 feet of contaminated gravel and cobbles from the riverbed and replacing it with oil-absorbent materials, including gravels and manufactured fabrics.

To further contain the contamination and minimize its downstream transport, ERT and response partners ensured that the responsible party also installed absorbent materials to capture oil released during cleanup excavations.





# INNOVATIONS IN SCIENCE AND TECHNOLOGY



**A**dvanced technologies enable site teams to identify and cleanup contamination at a site more efficiently and effectively. The Superfund program relies on and seeks out the latest remedial tools and resources to improve and accelerate cleanups.

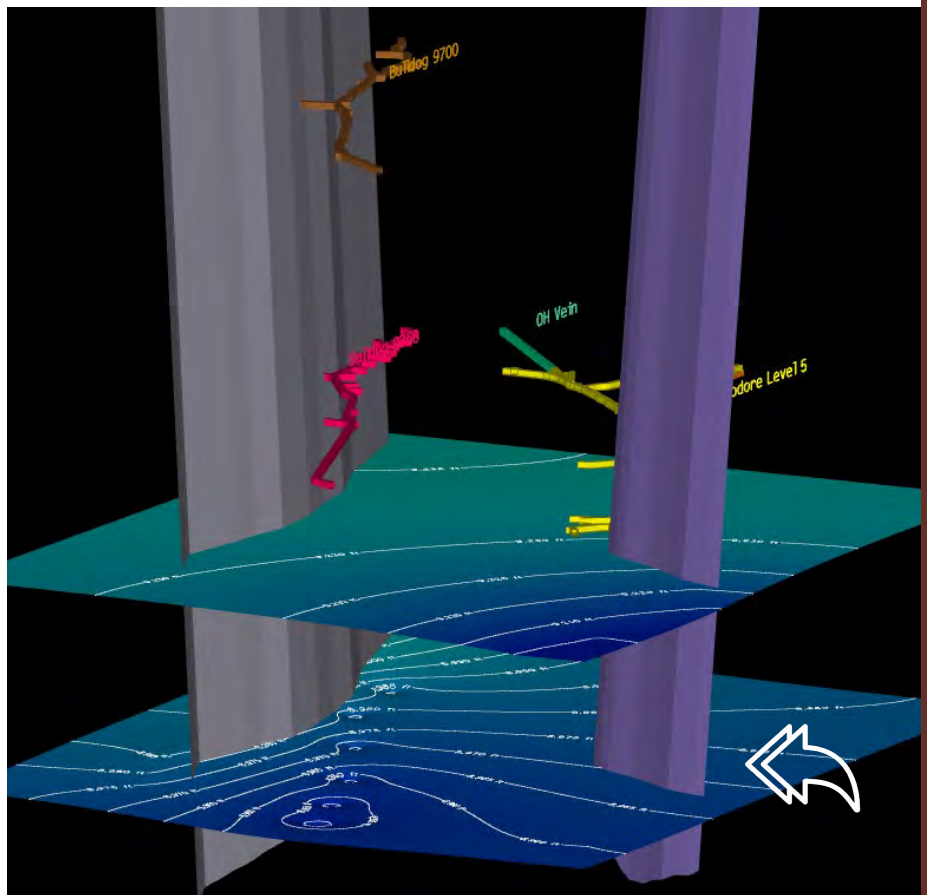
## 3-D Visualization Improves Cleanup Process

EPA, the Colorado Department of Public Health and Environment (CDPHE), and the Colorado Division of Reclamation, Mining, and Safety (DRMS) created a 3-D visualization (below right) of underground mine infrastructure at the Nelson Tunnel/Commodore Waste Rock Pile Superfund site (below left). Using advanced computer software, 3-D visualization combines large sets of environmental and geospatial data from multiple sources to generate a 3-D picture of a site's subsurface.

The 3-D picture enables EPA to:

- Better understand where contamination may be located related to geologic structures.
- More effectively control the source of contamination.
- Make better cleanup decisions.
- Use resources more efficiently.

The 3-D model supported alternative cleanup approaches and informed the planning of future site investigations.





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