

# Pine River Progress

## EPA's Update on the Velsicol Site St. Louis, Michigan



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### Learn More About the Cleanup



[www.epa.gov/superfund/  
velsicol-chemical-michigan](http://www.epa.gov/superfund/velsicol-chemical-michigan)



See cleanup-related  
documents at the information  
repository:



T.A. Cutler Memorial Library  
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St. Louis, Michigan

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### INSIDE THIS ISSUE

Update on recent happenings at Velsicol site .....	1
Velsicol Progress Tracker.....	3
Project Spotlight.....	4
Community Corner .....	6
Site Happenings .....	7

## Update on recent happenings at Velsicol site

The U.S. Environmental Protection Agency is continuing cleanup at the former Velsicol Chemical Plant site in St. Louis. This complex site requires multiple cleanup approaches, as you'll learn about on the following pages. One key approach, thermal treatment technology, has been used over the past 4 years to extract contaminants out of the ground by heating the soil and groundwater. This technology has been completed at the former plant site and will now be used at the Velsicol Burn Pit site.

### Excavation at Potential Source Areas 1 and 2

As part of the cleanup activities, two areas on the site will be excavated: Potential Source Areas (or PSA) 1 and 2. These potential source areas are locations where contamination is known to exist and excavation of these two areas will reduce contaminant concentrations.

PSA1 was a former oil storage area. It is located near the fence line. As a result, the installation of shoring was required before excavation could take place. The shoring consists of metal sheet piling and was placed along portions of the southern and eastern site boundary and will not be removed. Installation of the sheet piling into the ground was completed in December 2022. Excavation of PSA1 will begin this spring.

Excavation in PSA2, located north of PSA1, will begin after PSA1 is completed. Pre-excavation activities were completed in December 2022 (soil and groundwater sampling and boundary surveying). The excavated material will be taken off-site

for disposal in an approved landfill. EPA anticipates that the excavation will be completed by fall 2023, and site restoration activities will be finished in 2024.

### Downgradient Vertical Barrier Wall Design

Remedial design activities continue for Operable Unit 1, or OU1. A preliminary design of the downgradient vertical barrier wall was submitted to EPA in December 2022 as part of the overall site remedy described in the Record of Decision. The new barrier wall and other containment systems will prevent contaminants in shallow groundwater from discharging to the Pine River. The downgradient barrier wall will consist of interlocking steel sealed sheet piles, and will be installed outside of the existing slurry wall along the Pine River. The final design will be submitted to, and reviewed by, EPA in summer 2023.



Drilling activities for geotechnical soil sampling and data collection was completed in July 2022. The data will be used for design of the new barrier wall.

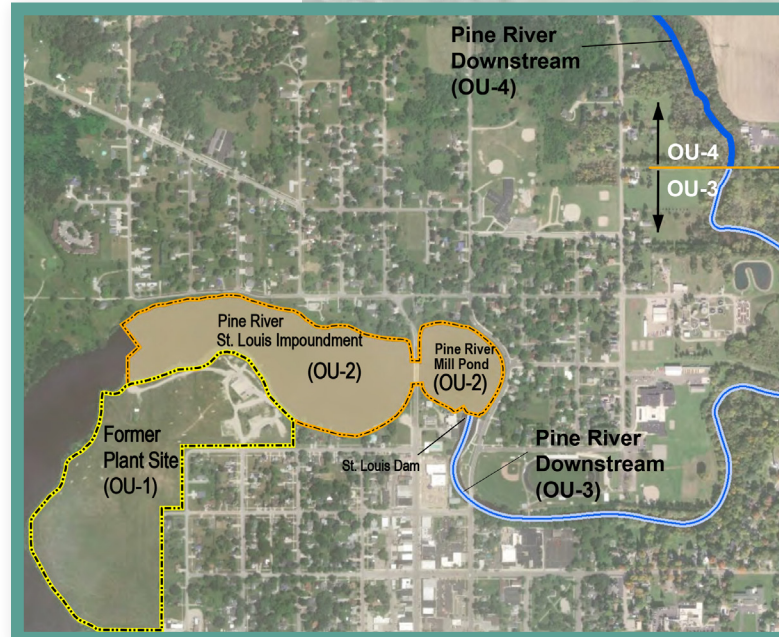
## Pine River Downstream

EPA issued a proposed plan to clean up OU3. The location of OU3 begins at the St. Louis Dam and stretches approximately 1.5 miles downstream within the Pine River and includes sediment, riverbanks, and four floodplains adjacent to the river. The proposed plan included excavating floodplain and riverbank soil contaminated with dichlorodiphenyl trichloroethane (DDT) and disposing of the soil at an approved landfill. The floodplains will be backfilled with clean soil to the existing grade and revegetated with native plants. The riverbank will be stabilized to prevent further erosion. The proposed plan for OU3 was presented to the community in July 2022. Comments were received, and a Record of Decision was signed on October 6, 2022. Pre-design sampling will begin this spring and the design is expected to be completed by the end of 2023. Cleanup activities are scheduled to begin in 2024.

OU4 extends from the edge of OU3 in the Pine River to the Chippewa River. The final sampling event for Phase 2 of the carbon amendment study was conducted in October 2022. The sampling event included collecting soil and worms for laboratory analysis. The objective of the carbon amendment study is to evaluate the use of granulated activated carbon to remove

contaminants in the environment. This binding process is known as adsorption. There is solid evidence that carbon is effective at adsorbing contaminants like DDT, but additional studies are necessary to ensure this work over the long term. By adsorbing these contaminants, the carbon reduces the ability of the contaminants to affect plants and animals. This process is called a reduction in contaminant bioavailability.

Alma College is performing supporting work for the study using Solid-Phase Micro-Extraction, which is a specialized test that can indicate the extent to which these contaminants are available in soil to plants and animals. This testing will help scientists understand to what degree the carbon reduces the bioavailability of contaminants. The evaluation of the second phase of the carbon amendment study will be completed in spring 2023. Additional studies are planned for summer 2023 and include additional



carbon amendment studies, ecological sampling, fish tissue sampling and floodplain/streambank sampling. This information will be used in the development of Remedial Investigation/Feasibility Study reports.

## Five-Year Review

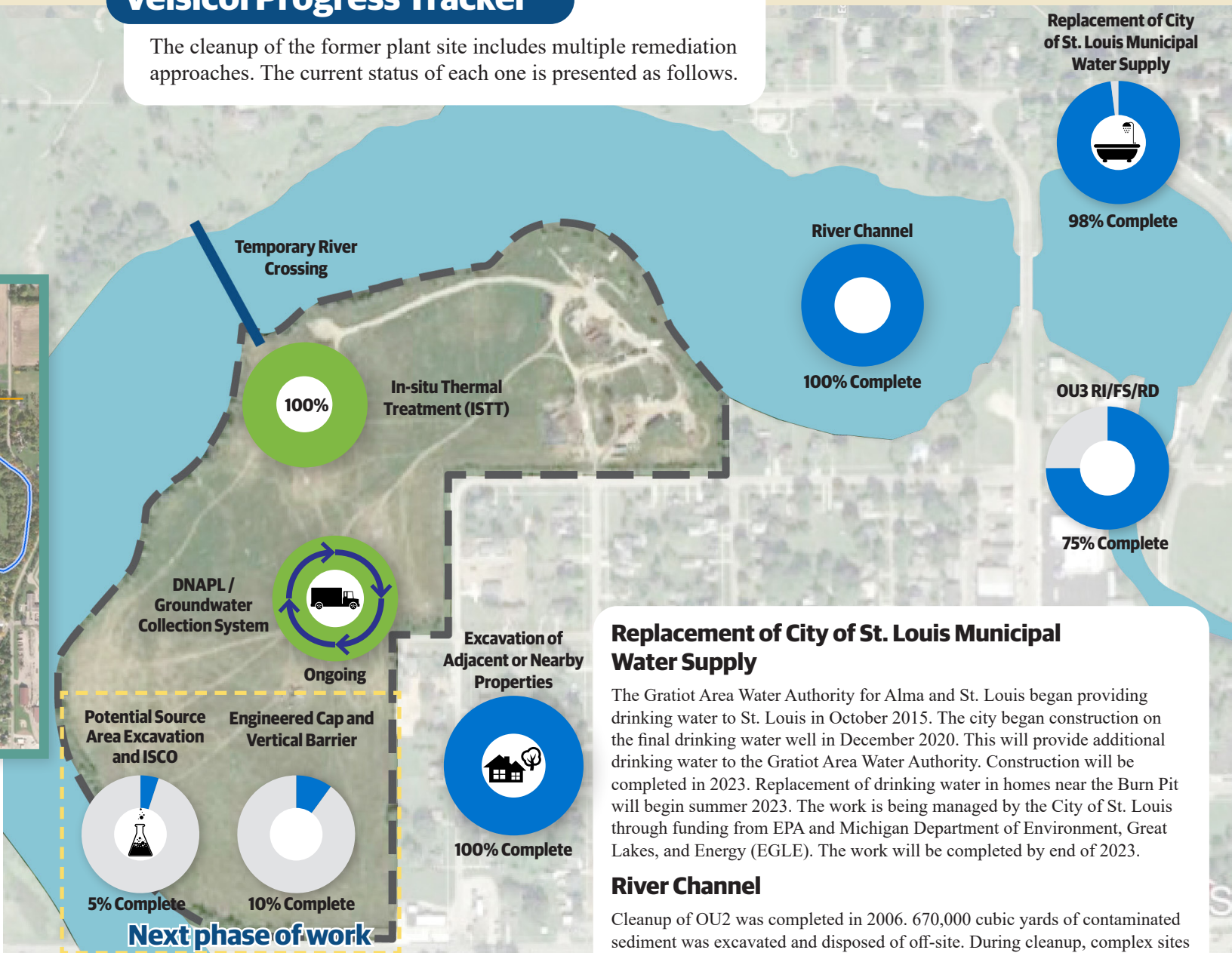
EPA completed the sixth Five-Year Review of the Velsicol site in August 2022. EPA worked with a facilitator from the Consensus Building Institute, a non-profit organization specializing in citizen engagement, to speak with area residents as part of the Five-Year Review process. Information provided during the interviews was reflected in the Five-Year Review and is also being used to update EPA's Community Involvement Plan for the site by spring 2023.

The Five-Year Review concluded that the remedy at OU1 is expected to be protective once all the remedy components are completed. The review also concluded that the remedy at OU2 continues to be protective of human health and the environment in the short-term. However, for the remedy to be effective in the long term in OU2, a long-term monitoring plan for DDT levels in fish tissue and sediment needs to be developed for the site and executed. In addition, an Institutional Control Implementation and Assurance Plan needs to be developed and implemented. Finally, the review determined that site-wide the remedy is expected to be protective once the remaining remedy components are completed.



# Velsicol Progress Tracker

The cleanup of the former plant site includes multiple remediation approaches. The current status of each one is presented as follows.



## Replacement of City of St. Louis Municipal Water Supply

The Gratiot Area Water Authority for Alma and St. Louis began providing drinking water to St. Louis in October 2015. The city began construction on the final drinking water well in December 2020. This will provide additional drinking water to the Gratiot Area Water Authority. Construction will be completed in 2023. Replacement of drinking water in homes near the Burn Pit will begin summer 2023. The work is being managed by the City of St. Louis through funding from EPA and Michigan Department of Environment, Great Lakes, and Energy (EGLE). The work will be completed by end of 2023.

## River Channel

Cleanup of OU2 was completed in 2006. 670,000 cubic yards of contaminated sediment was excavated and disposed of off-site. During cleanup, complex sites may be divided into several distinct areas to make the response more efficient. These areas are called operable units, or OUs.

## Pine River Downstream

A feasibility study was completed in 2020 for OU3. EPA issued a proposed plan to cleanup OU3 in July 2022 and a Record of Decision was signed in October. Remedial design activities will start in early 2023. Phase 2 of the carbon amendment study is underway with anticipated completion in 2023.

## In-situ Thermal Treatment

In-situ thermal Treatment, or ISTT, is the process of removing harmful chemicals from soil using heat. ISTT for Area 1 was completed in November 2018.

ISTT for Area 2 Phase 1 was completed in September 2020. ISTT for Area 2 Phase 2 was completed in January 2022. Operation of these ISTT systems removed approximately 381,000 pounds of contaminants from the site.

## DNAPL / Groundwater Collection System

Approximately 20,000 gallons of contaminated groundwater from the site are removed weekly and shipped off-site for treatment. This is a continuing operation.

## Potential Source Area Excavation and ISCO

Two potential source areas are scheduled for excavation in 2023. A sheet pile wall has been installed to support removal from one of the excavation areas. Approximately 75,000 cubic yards of soil will be removed from these two source areas, with off-site disposal.

The other two potential source areas will be evaluated in 2023 for treatment with in-situ chemical oxidation, or ISCO, which will be used to lower chemical concentrations found in soil and groundwater.

## Engineered Cap and Vertical Barrier

A cap will be installed over the entire site to eliminate direct contact threat and prevent infiltration. A vertical barrier will be installed to decrease the potential of contaminants directly discharging to the Pine River. Design of the downgradient vertical wall is in progress.

# Project Spotlight

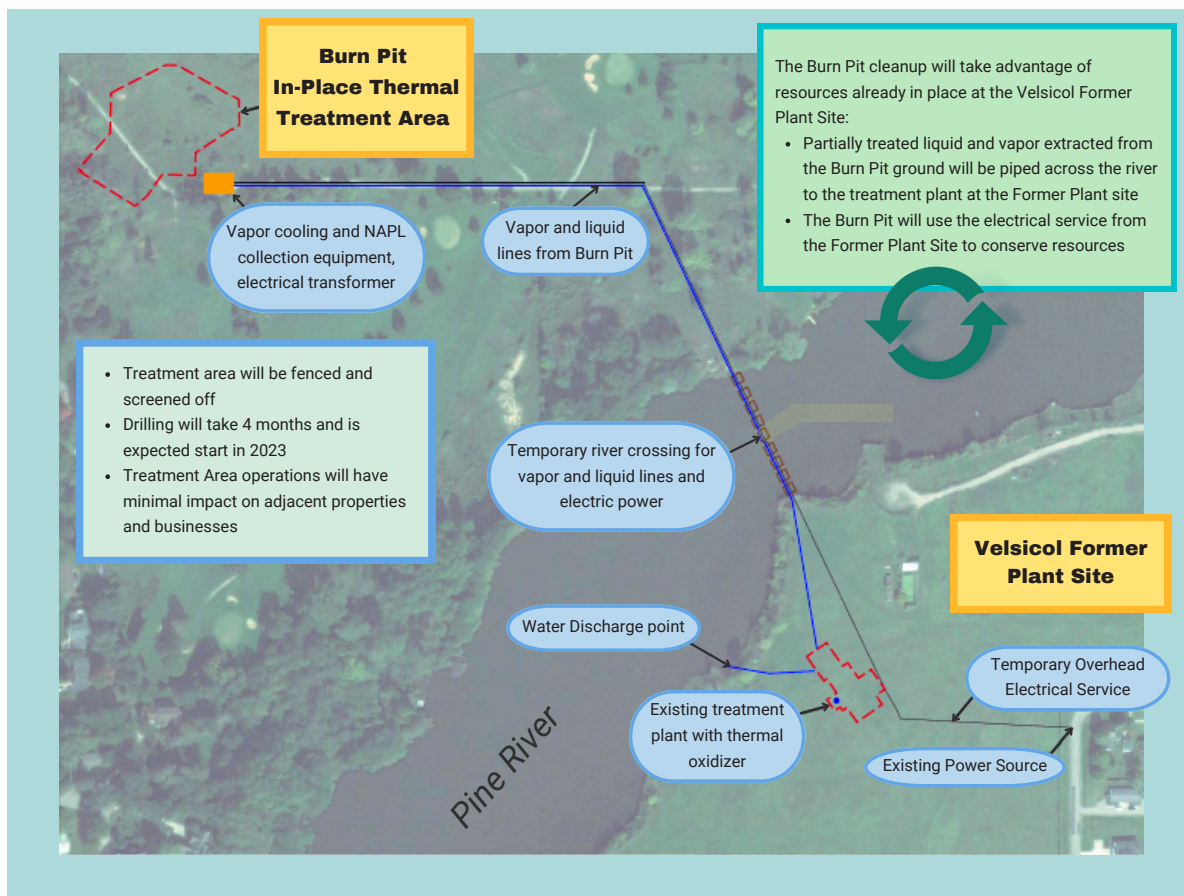
## Velsicol Burn Pit

### New Funding for the Burn Pit Cleanup

Cleanup of the Velsicol Burn Pit Superfund site is moving forward with funding from the 2021 Bipartisan Infrastructure Law, or BIL. Over the past three decades, EPA has spent over \$200 million on cleanups associated with the former Velsicol Chemical Plant in St. Louis. EPA used those funds to remove and dispose of 750,000 tons of DDT-contaminated sediment from the Pine River, complete the residential soil cleanup of 111 properties, and complete 3 phases of in-place thermal treatment to extract underground contamination. EPA will now apply that experience to the Velsicol Burn Pit site. The 5-acre site is located across the river from the former plant site and site preparation design plans were completed in 2019. Now, using the BIL funding, EPA and its contractors are ready to update the design and begin work this year on the Burn Pit cleanup.

### Origins of the Burn Pit

From 1956 to 1970, Velsicol Chemical transported and burned industrial solid and liquid wastes on the land that was known as the “burn pit.” In 1983, Velsicol Chemical excavated nearly 68,000 cubic yards of contaminated soil at the Burn Pit and placed the material at the former plant site. However, contamination at the Burn Pit remained, including ash and debris piles and contaminants below the ground. EGLE has conducted several investigations of the Burn Pit, so much is known of the extent of the remaining material. In consultation with EGLE, the Burn Pit site was separated from the former plant site in 2010 and designated as its own Superfund site. This allowed EPA to leverage the Superfund regulatory process to find the most effective cleanup approach.





## How The Cleanup Will Work

Most of the pollutants are in the form of oil-like substances, called non-aqueous phase liquids, known as NAPL, and are located beneath the surface. In addition to the NAPL, other contaminants effecting groundwater and soil include 1,2-dibromo-3-chloropropane, polybrominated biphenyl, hexabromobiphenyl, DDT, benzene, and 1,2 dichloroethane. EPA will use a couple of cleanup approaches to remove these contaminants from the environment. One approach is the removal of debris and ash piles to be disposed of at an approved off-site facility. A second approach is to use in-place thermal treatment, the same technology EPA used at the former plant site to remove an estimated 150,000 pounds of underground contamination. The thermal treatment process will involve drilling and installing heating rods into the ground, which use electricity to heat the ground to the boiling point of water. Vapor, NAPL and groundwater will be collected, and vapor and groundwater will be treated at the treatment facility built on the former plant site (see map, page 4).

The work also includes completing an extension of the St. Louis municipal water supply system to the nearby

neighborhoods still using residential drinking water wells to make sure there is continued access to clean drinking water now and into the future.

## Next Steps

Work is scheduled to begin this year and is expected to take about 28 months to complete. EPA will oversee construction and operations prioritizing minimal disruption to the surrounding community and businesses. Work and related truck traffic are expected to take place during routine business hours. Drilling for the thermal treatment will be conducted first and take about four months. A temporary bridge will be built to support system utilities and piping to transport extracted vapor and groundwater from the Burn Pit site to the treatment system across the river. NAPL will be separated from groundwater on the Burn Pit side of the river and not cross the Pine River. This bridge will also bring electricity from the former plant site to the Burn Pit.

The work site will be separated from the adjacent golf course, which will remain open throughout the cleanup. Fencing will be in place around the Burn Pit extraction area for security and tall netting will be erected to block errant golf balls and obscure views of operations.

## Introducing new EPA staff

### Jennifer Knoepfle, Remedial Project Manager

Last year, Jennifer joined EPA's Velsicol project team to lead the cleanup of the Burn Pit Site. She has an extensive education from several respected institutions, most recently getting her PhD in Earth and Environmental Sciences from the University of Illinois in Chicago. Her doctoral course work even included several exciting trips to Antarctica to study the biogeochemistry under ice-covered lakes! Prior to joining EPA, Jennifer worked in environmental consulting, where she supported EPA Superfund site cleanups and emergency response for 17 years. Jennifer grew up in a suburb outside of Philadelphia, but her education took her coast-to-coast, earning degrees at University of Delaware and University of Washington.

Though Jennifer currently lives near Chicago for work and raises her three boys with her geologist husband, the outdoors enthusiast says Michigan is her favorite state. Her kids in 4th, 7th, and 8th grade stir up a lot of chaos, so to manage that energy, they often go hiking and camping. Her family loves visiting Warren Dunes

State Park in southwest Michigan. Along with the outdoors, Jennifer enjoys painting, drawing and photography. Every month, she volunteers at her fourth grader's elementary school to lead art classes.

### Karen Chen, Community Involvement Coordinator

Karen is one of several new Community Involvement Coordinators who have recently joined EPA's Region 5 Office in Chicago and has been assigned to work with current Community Involvement Coordinator, Diane Russell, to assist with community engagement at the Burn Pit. Karen recently graduated from Carleton College in Minnesota with a Bachelor's in Environmental Studies. During senior year, she gained experience as a climate adaptation intern with EPA Region 10 in the Pacific Northwest. She plans to continue following her interests in environmental justice and sustainability. Karen now lives with her boyfriend Rob, three delightful gray cats, one charming orange cat, and a mischievous parrot in her hometown of Milwaukee, Wisconsin. Her pastimes include decorating, thrifting, drawing faces, watching anime and the Great British Bake Off, and bonding with her cats.



# Community Corner

## The PBB Disaster at 50: A Conference To Commemorate & Learn From the Poisoning Of Michigan

In 1973, Michigan Chemical Company accidentally shipped a flame retardant, polybrominated biphenyl, or PBB, to a livestock feed mill, where it was mixed into animal feed. Despite the destruction of over 30,000 contaminated animals and food products, PBB entered the human food supply exposing an estimated 8.5 million Michiganders. Impacts of this event, one of the largest exposure events in American history, continue to this day.

The 3-day conference planned for May 18-20, will commemorate the 50th anniversary of Michigan's PBB disaster by bringing together scientists, artists, policy makers, and community members to explore the history and legacy of this large-scale contamination. Through this multidisciplinary experience, organizers hope to bring the critical lessons of the disaster back into public discussion and consciousness that will further inspire continued action to address long-term environmental and human health outcomes.

Events will take place at Alma College, Alma with options for virtual participation. Visit the conference website at [tinyurl.com/PBB50thEvent](https://tinyurl.com/PBB50thEvent) for more details including scheduled events and speakers.

This conference is funded by a Humanities Grant from the Michigan Humanities Council and generous support from Alma College, Emory University's Rollins School of Public Health and the Michigan PBB Registry, Central Michigan University, The Pine River Superfund Citizen Task Force, the PBB Community Advisory Board, and U.S. Environmental Protection Agency Region 5 Superfund Program.

In addition, U.S. Environmental Protection Agency anticipates awarding funds through the Environmental Justice Small Grants program to help with the education, outreach, website and documentary.

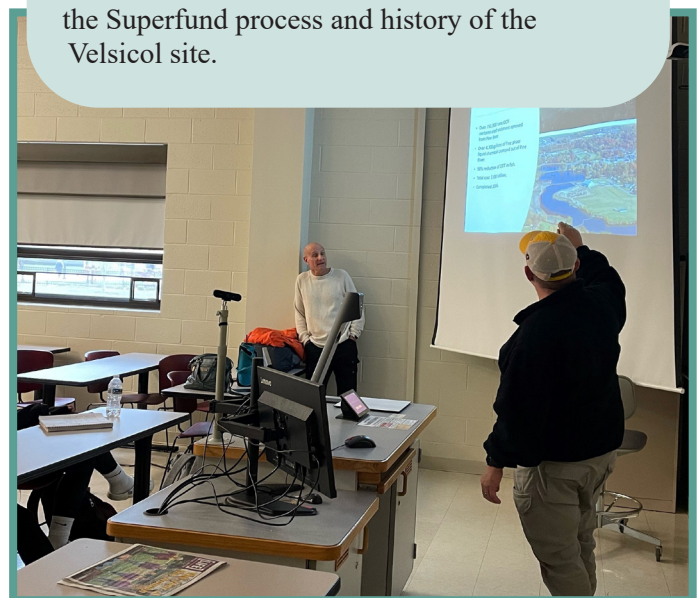


### Site tours

The Central Michigan University Hydrogeology class toured the Velsicol site in December 2022. Tours will be available to the public throughout 2023.

### Presentation to Central Michigan University

EPA and Jacobs presented to Central Michigan University students in fall 2022. Topics of discussion included an introduction to the Superfund process and history of the Velsicol site.



Presentation at Alma College



# Site Happenings

## Duke Good Retires

Duke Good, a Jacobs employee, recently retired. Duke moved to St. Louis in 2014 and worked at the Velsicol site for eight years. He performed construction oversight duties, collected field data to help EPA adhere to permit requirements, and conducted repairs and maintenance on the site's groundwater trench collection system and any broken equipment onsite. Duke's favorite part of his job, however, was face-to-face contact with residents especially during the residential cleanup phase of the project.

Prior to working for Jacobs, Duke spent 22 years in the United States Marine Corps, which he says made him the man he is today. He plays the guitar, is a comedian and videographer, and he loves Western movies.

Duke's future plans include moving to Tennessee or West Virginia area and building a house in the country to live with his wife and his adopted cat that he named Dog.

We wish Duke a happy retirement!



"I am happy for Duke as he enters the next phase of his life. His appetite for work was unlimited and his work approaches and safety mindfulness served as an outstanding example to junior staff. He always had a smile on his face and was a joy to work with. All of the project staff will miss Duke very much!" – Scott Pratt, Jacobs Project Manager

Velsicol was again the site for lighting off fireworks during 4th of July activities.



Halloween tradition continued this year with Velsicol team members handing out candy to trick or treaters.



## Where to find more information:



Velsicol websites:

[www.epa.gov/superfund/velsicol-chemical-michigan](http://www.epa.gov/superfund/velsicol-chemical-michigan)

[www.epa.gov/superfund/velsicol-burnpit](http://www.epa.gov/superfund/velsicol-burnpit)



Sign up on EPA's List Serve to have site information and updates emailed to you. Go to the Velsicol website, and click on **Stay Updated, Get Involved.**



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## INSIDE THIS ISSUE

Update on recent happenings at Velsicol site .....	1
Velsicol Progress Tracker.....	3
Project Spotlight.....	4
Community Corner .....	6
Site Happenings .....	7

## About this Publication

*Pine River Progress is a biannual newsletter that covers topics related to EPA's cleanup of the Velsicol Superfund site. We welcome feedback and ideas for future articles. If you would like to receive a copy of this newsletter, please contact EPA Community Involvement Coordinator, Diane Russell at [russell.diane@epa.gov](mailto:russell.diane@epa.gov) or call 989-395-3493 9:30 a.m. to 5:30 p.m., weekdays.*



Sheet pile wall being installed. See page 1 for more information.

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