



# Executive Summary

## Status of Operations, Maintenance, and Remedial Actions

December 2024 - June 2025

### INTRODUCTION

Since the last report six months ago, the City and County of Denver, Waste Management of Colorado, Inc., and Chemical Waste Management Inc., collectively referred to as the Work Settling Defendants (WSDs) conducted routine operations and maintenance (O&M) activities at and north of the Superfund Site.

### Operations & Maintenance Activities (O&M)

The activities included extracting and treating approximately 8.6 million gallons of groundwater, analyzing 103 samples from 78 monitoring wells, operating the Landfill Gas Extraction system, collecting soil gas samples from 21 probes, maintaining stormwater conveyance ditches, and inspecting and maintaining landfill covers and buffer properties, all in compliance with regulatory requirements.

### AWARDS

The owners and operators of the Lowry Landfill Superfund Site remain steadfast in their commitment to ensure the site remains safe for the surrounding communities. As a result of that commitment, the project continues to be recognized through prestigious awards for its innovative and advanced water and wastewater treatment technologies. From 2020 to 2025, the site has earned Metro Water Recovery's annual Gold Award for achieving 100% compliance with Industrial Pretreatment Requirements – a critical standard for protecting water quality and public health. In 2025, those efforts were further distinguished with the Platinum Award, recognizing five consecutive years of perfect compliance. The Lowry Landfill is a leading example of how long-term environmental stewardship, innovation, and collaboration can deliver lasting benefits for both residents and natural resources.

### Site Plans

- The Waste Management Plan was updated with a new TENORM addendum and was approved by USEPA on February 26, 2025.
- The WTP O&M Manual is being updated to include new computers, software, alarm systems, PLCs, and network upgrades, with submission planned for late 2025. A cyber/site security manual will also be completed in the next reporting period.
- The Stormwater Monitoring Plan was presented to USEPA in early 2025 and is undergoing further revisions for submission in late 2025.

### Voluntary Activities Around the Site

- The WSD's are conducting a Tetrahydrofuran (THF) augmentation study in the water treatment plant to determine if the effectiveness of the biological treatment system can be increased to destroy more 1,4-dioxane and chlorinated solvent mass faster. The study will conclude in late 2025, with findings detailed in a technical memo and discussed in the 2H2025 SSR.
- A voluntary 1,4-Dioxane plume remedy study (bench scale study) to determine if aerobic microbiological destruction is a technology that could be further developed for application at Lowry was completed during the reporting period, a technical memo with the findings was written and shared with USEPA. Based on the success of the study, an extended lab study will be performed in 2026 to confirm 1,4-dioxane degradation rates using impacted groundwater collected from the NBBW and a well north of the NBBW. Details of this study and results will be presented in the second half of SSR in 2026.
- A focused feasibility study is underway to evaluate remedial technologies for addressing low chlorinated solvent concentrations in the PM-11 area and nitrate in the PM-15 area.
- A voluntary pump test at well MW38-758N-277E was approved by the EPA in 2024 and performed in early 2025. The test assessed its suitability as a long-term extraction well for dewatering the MW38 sand channel and enhancing contaminant removal. The pump test concluded the well is unsuitable for long-term use.
- The owners and operators of the Lowry Landfill Superfund Site remain committed to environmental stewardship and sustainability for the surrounding communities through converting all site vehicles to electric power. The first electric vehicle was acquired in 2024 and in September 2025 the site's last fuel truck was traded in for an electric vehicle.

## Area Around the Site

The site is surrounded by landfilling, residential, and commercial areas, with institutional controls in place to prevent contamination impacts.

In September 2024, Civitas, a Colorado-based oil and gas company committed to not drill beneath the Lowry Superfund Site as to protect the Superfund remedy that is in place and operating effectively.

## Community Outreach

As part of the ongoing commitment to transparency and community engagement, the WSDs share all site monitoring data on websites maintained by the USEPA, CDPHE, and WSDs, providing access to documents, videos, and other materials. Updates and community involvement opportunities are ongoing through the USEPA's outreach coordinator. A public meeting, with regulatory agencies, Lowry Trust representatives, and the public, is scheduled for August 28, 2025.

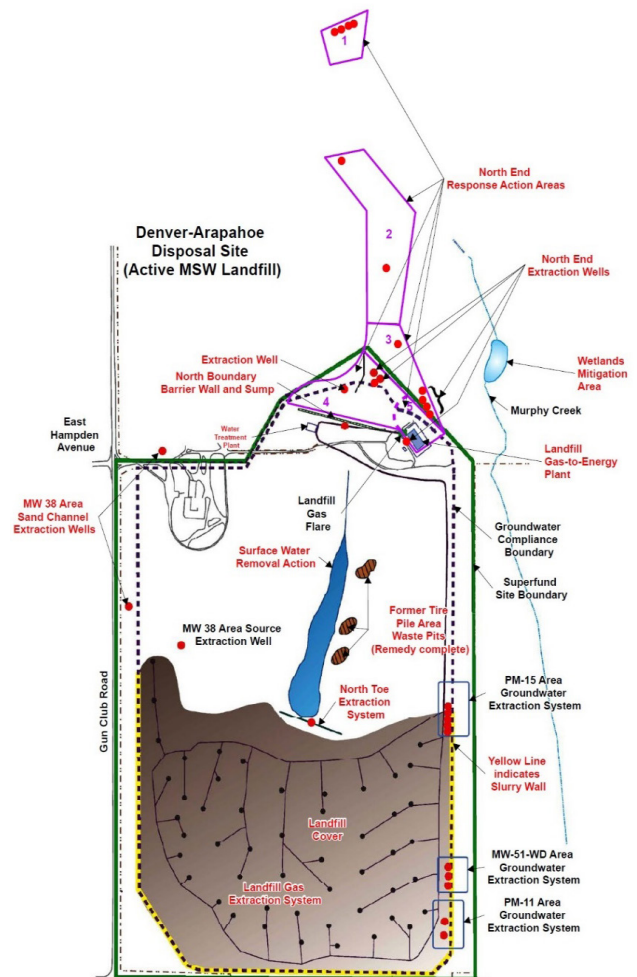
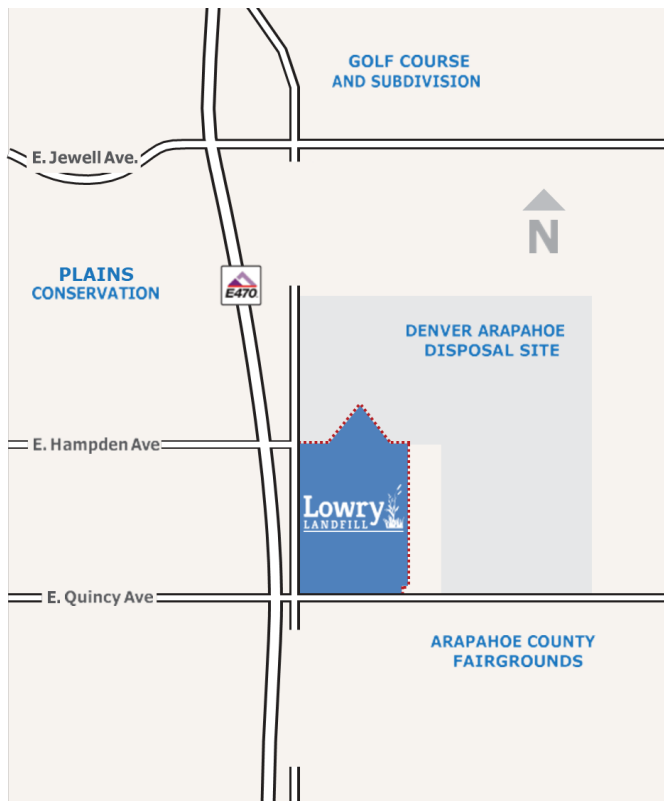
## Water Treatment Plant (WTP) Upgrades

A plan was developed and was executed to upgrade WTP computers, software, alarm notification system, and the main programmable logic controller (PLC) to modern standards to enhance WTP processes and cyber security. By late 2025, the project reporting phase, including updates to the O&M manual and a new cyber/site security manual, will be completed.

## Fifth Five Year Review Conclusion

The EPA concluded that the remedy at the Site is protective of human health and the environment.

## LOCATION & CONTAINMENT REMEDY MAPS



Note:  
Red Labels  
Denote Remedy Components

## GROUNDWATER MONITORING

More than 500 monitoring wells extending into both shallow and deep aquifers have been installed within and outside the site to ensure that environmental resources and the community continues to be protected. Well and infrastructure inspections are a routine and critical part of the Lowry monitoring program and are conducted daily. Data shows that the monitoring system continues to be effective.

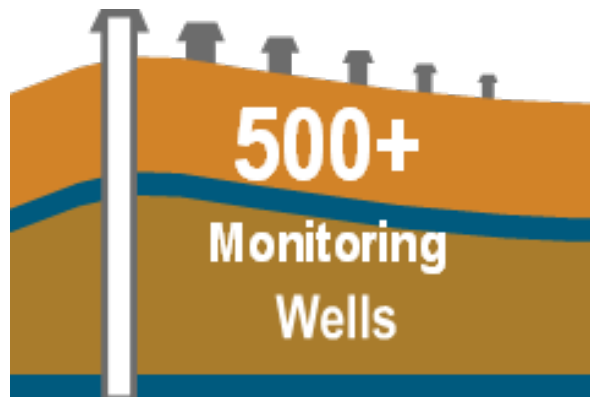


Water Treatment

1,440,253 gallons per month

In compliance with discharge standards

A 2021 evaluation confirmed remedial systems are effective, with the slurry wall containing contamination inside the eastern, southern, and western limits of the landfill as designed. The North Toe Extraction System, which collects and pumps water to the treatment plant at approximately 0.45 gallons per minute, continues to capture the most contaminated groundwater emanating from the landfill. The 960-foot long North Boundary Barrier Wall (NBBW) located at the north end of the site is the most significant groundwater extraction feature, removing on average 9.5 gallons per minute, preventing contamination from migrating offsite.



**SITE CROSS SECTION**

Groundwater extraction in the MW38 area also halts potential contaminant migration. Vertical migration monitoring shows no contamination in deeper aquifers, and of the 60 compliance wells that are monitored for 29 chemicals, 52 wells in compliance or potentially in compliance, and 8 wells, are out of compliance, potentially out of compliance, or indeterminant for chemicals such as 1,4-dioxane, PCE, nitrate, nitrite, and chloroform. The 8 wells that are out of, or potentially out of, compliance are being addressed by supplemental groundwater extraction and the conveyance of contaminated water to the treatment plant and monitoring, as discussed above. This method has proven to be effective at stopping groundwater flow in these areas and reducing chemical concentrations.



### 1,4-dioxane

- Synthetic industrial chemical sometimes added to solvents to prolong their useful life
- Used in some consumer products such as cosmetics, deodorants, soaps, toothpaste, anti-freeze & paint
- Site groundwater standard = 0.9 ppb

## FACTORS AFFECTING CONTAMINANTS IN GROUNDWATER

### 1,4-dioxane and the North End

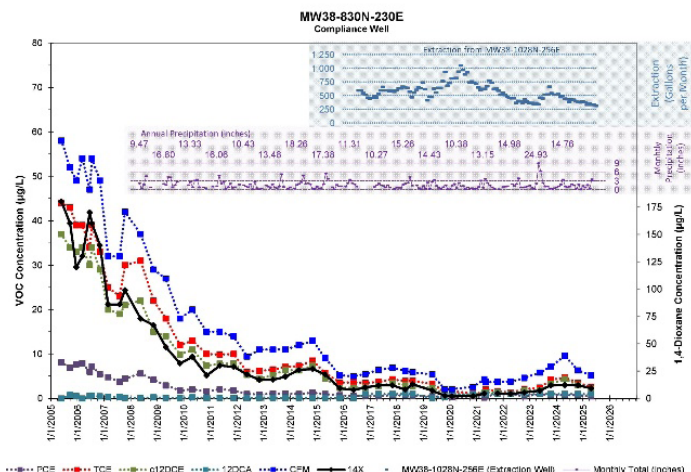
In 2005, the Colorado Water Quality Control Commission set a groundwater standard for 1,4-dioxane, later revised to 0.35 ppb. Due to matrix effects and natural groundwater quality, a site-specific standard of 0.9 ppb was established for Lowry Landfill, with annual reviews. Response actions have reduced 1,4-dioxane levels in the North End Area, with 34 (87%) of the 39 monitored wells showing declining trends and 5 (13%) showing no trend. The 2022 Five-Year Review confirmed no impact on residential areas, completed exposure pathways and no risk to people or the environment. Groundwater extraction and monitoring continue to lower concentrations and prevent plume migration. More details, including a plume animation of the North End, are available at [www.lowrylandfillinfo.com](http://www.lowrylandfillinfo.com).

### MW38 Sand Channel

Remedial actions in the MW38 sand channel have successfully contained groundwater and reduced contaminant levels. Groundwater is pumped to maintain inward flow, preventing offsite migration, and the extracted water is treated and disposed of. Since pumping began in May 2005, 1,4-dioxane levels have decreased by 98.2%. Chloroform and trichloroethene concentrations increased after late 2022 and 2023 precipitation. They continued to increase in the first half of 2024 but have decreased or stabilized in the second half of 2024 and first half of 2025.

### Nitrate in the NBBW Area

Two wells near the site's northern boundary exceed the nitrate standard in areas of historical sewage sludge land



## At Lowry

Extraction and treatment continue to decrease concentrations

### North End Area: 39 Wells

**87%**

show declining concentrations

**13%**

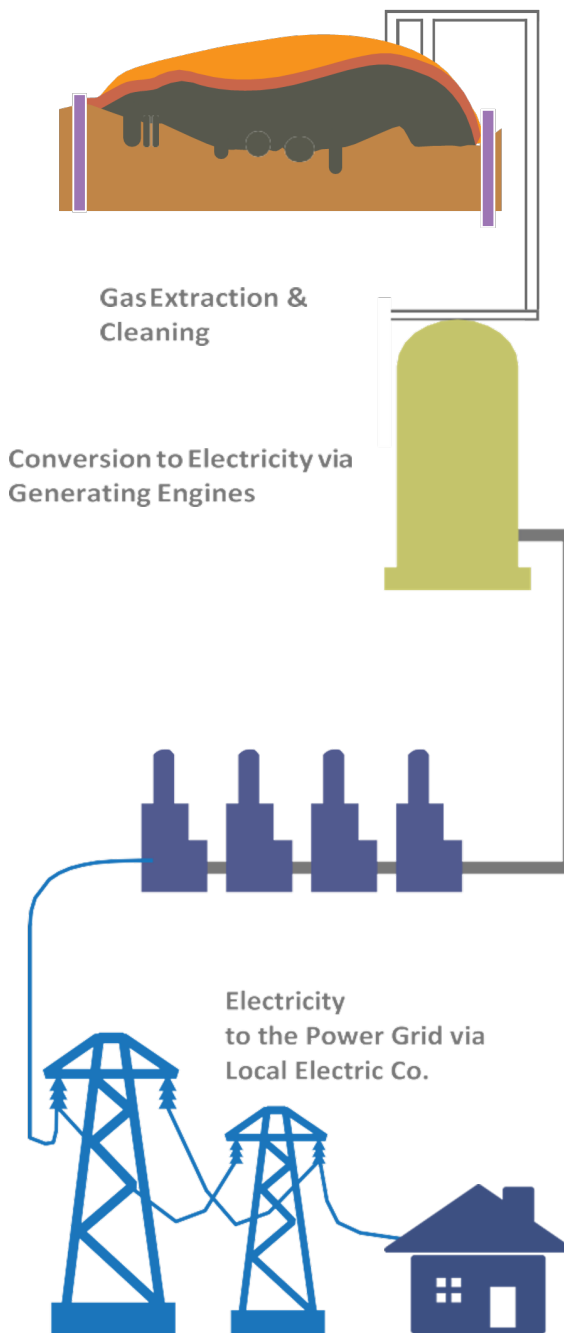
remain flat

### MW38 Channel

**98.2%**

Reduction of 1,4 dioxane since May 2005

## GAS TO ENERGY PROCESS



farming. Significant off-site nitrate migration above the standard is unlikely, and monitoring continues. Groundwater extraction from North End wells further prevents potential migration.

## WATER TREATMENT PLANT

WTP treats 1.44 million gallons of contaminated groundwater monthly, using microbiological processes, advanced oxidation, and ion exchange to remove over 93% of organic compounds and reduce molybdenum by 92%. Pretreated water is sent to a public wastewater facility, ensuring safe chemical levels, minimal environmental impact, and compliance with discharge standards.

## LANDFILL GAS REMEDY

Landfill gas, primarily methane, naturally forms as organic waste decomposes in low-oxygen conditions. The site's landfill gas extraction and treatment system removes 5,000 tons of methane annually, equal to taking 22,000 cars off the road. Since 2008, the on-site power plant has used this gas to fuel four engines, generating electricity for 2,500– 3,000 households.

## LANDFILL COVER

The former landfill is covered by 4 to 12 feet of compacted clay and soil, which minimizes groundwater contamination by preventing rain and snow infiltration. The landfill cap is routinely monitored for settlement or other issues. No cap settlement areas were identified during the monitoring period covered by this report.