



Colorado Department
of Public Health
and Environment

Lowry Landfill Superfund Site Update Announcement

September 2013

For More Information

If you have additional
questions, please contact:

U.S. EPA

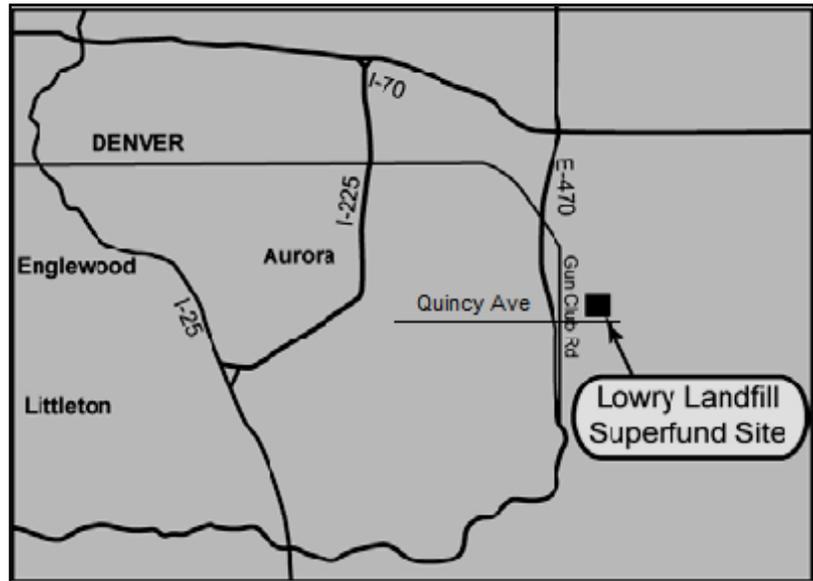
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The Lowry Landfill Superfund Site is located near the intersection of Quincy Avenue and Gun Club Road in Arapahoe County, Colo., 15 miles southeast of the City and County of Denver and 2 miles east of Aurora.

In 1984, the U.S. Environmental Protection Agency (EPA) declared the 507-acre Lowry Landfill to be a Superfund site. Since then, EPA, the Colorado Department of Public Health and Environment (CDPHE), City and County of Denver and Waste Management have worked to contain contaminated groundwater that has the potential to migrate off-site. The ongoing potential for off site groundwater contaminant migration makes it necessary to operate, maintain and monitor a combination of active groundwater extraction features and passive groundwater diversion features well into the future. Ongoing monitoring at the point of compliance boundaries is necessary to establish whether or not regulatory requirements are being met and to affirm the remedy is protective.

Placing Lowry Landfill on its National Priorities List (NPL) under the federal remediation program (otherwise known as Superfund) allowed EPA access to federal funding to investigate environmental problems related to the site. The Superfund designation also allowed EPA to compel the parties responsible for the contamination to manage and perform the selected remedy. **The purpose of this announcement is to update the community on progress at Lowry Landfill. It details site background, site-wide remedy, what to expect next, and provides resources where more detailed site information can be obtained.**

Site Background

Beginning in the 1970s, EPA and other parties began investigating the site because of complaints from nearby residents about odors, disposal practices and health concerns.

In 1980, Lowry Landfill restricted its operations to municipal waste disposal. In 1990, landfill operations stopped to allow site remedial activities to proceed without interference.

Selecting the Site Remedy

After investigating the extent of contamination at the site, evaluating the potential risks the site posed to human health and the environment, and considering various strategies for cleaning up the site, EPA and CDPHE signed a Record of Decision (ROD) on March 10, 1994.

The ROD for Lowry Landfill is designed to protect the surrounding environment by preventing contaminants from moving off the site, preventing uncontaminated groundwater from coming onto the site, and preventing human exposure to landfill gas, waste-pit liquids and contaminated groundwater.

The site-wide remedy uses containment, collection, treatment and monitoring to address contamination at the site. It also includes deed restrictions and environmental covenants to restrict land and groundwater uses. The ROD requires that appropriate contingency measures be implemented if performance standards are not met.

Contaminated groundwater is collected and treated on site. Contaminated seepage and surface water are contained by a drainage and underground collection system. Landfill gas is contained through active collection and thermal treatment at an on-site gas-to-energy plant.

The remedy involves utilization of underground barrier walls (slurry walls) and groundwater collection systems to contain and transfer highly-contaminated groundwater to an onsite water treatment plant where it is treated before being discharged to a sanitary sewer system. Additionally, the remedy includes extraction of non-aqueous phase liquids from the three waste pits located outside of the landfill mass, and collection and conversion of landfill gas to provide an alternative energy source.

The use of landfill gas at the site is a component of EPA's Landfill Methane Outreach Program. The power plant, constructed in 2008, uses landfill gas to fuel four internal combustion engines that generate electricity

that is then made available to a local utility company. The resultant 3.2 megawatts of electrical power is enough to supply approximately 3,000 households.

The Denver Arapahoe Disposal Site (DADS), which is adjacent to the Lowry Landfill, is operational and still accepts waste from a large portion of Denver and surrounding areas. DADS is a separate, municipal solid waste facility and is not included as part of the remedial action related to the Lowry Landfill Superfund Site.

Reviewing the Remedy

EPA requires proactive monitoring programs to review the status of the remedy at the Lowry Landfill. An ongoing monitoring program at the site ensures compliance with performance standards as defined in the ROD.

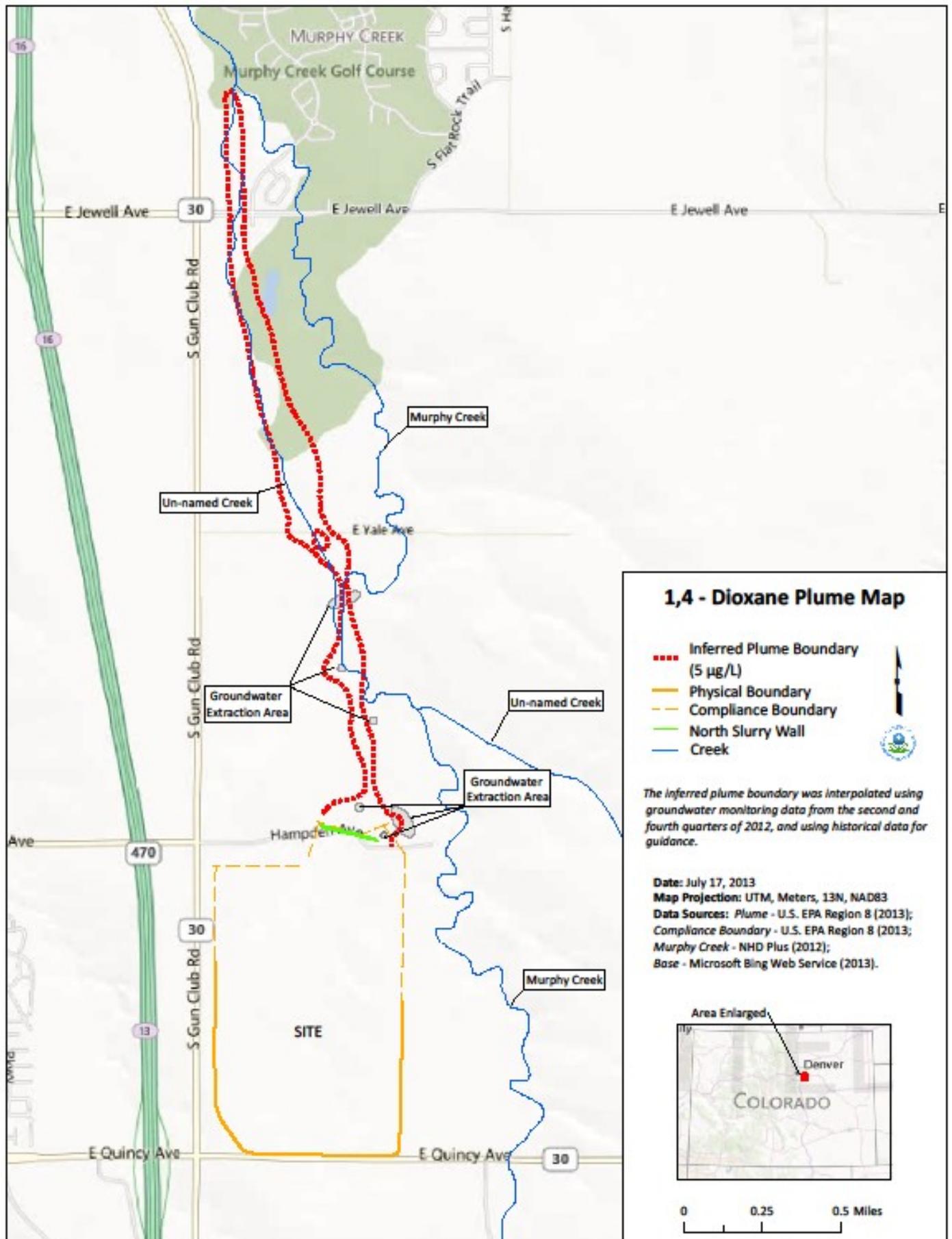
EPA reviews site data and performs comprehensive reviews of the remedy every five years to ensure that the remedy is functioning as intended and remains protective of human health and the environment. The most recent five-year review inspection was completed at the site in September 2012. The remedy was determined to be functioning as intended and protective of human health and the environment.

A copy of the 2012 five-year review report, detailing the findings from the inspection, is available to the public. (See "Where can I get more information?" on page 4 of this announcement to find out how to obtain a copy of the report as well as other information related to the Lowry Landfill Superfund Site.)

Groundwater Containment Remedy

The groundwater containment remedy is protective of human health because humans are not exposed to unacceptable groundwater contaminant concentrations at or in the vicinity of the site. Monitoring performed between 2003 and 2006 detected the organic chemical 1,4-dioxane and nitrates in shallow monitoring wells due north of the north boundary barrier wall. 1,4-dioxane was detected in groundwater as far as 2.4 miles north of the barrier wall.

EPA evaluated the health risk associated with public exposure to these chemicals at the concentrations detected and found no significant health risk associated with either surface water or groundwater.



1,4-Dioxane Plume Map

To minimize the potential for additional offsite contaminant migration, EPA required the responsible parties implement an extraction and treatment response action immediately north of the site. To that end, several groundwater extraction wells in the area of the plume are currently removing contaminated groundwater which is then treated at the on-site water treatment plant. The response action is on-going and appears to be effective in reducing 1,4-dioxane concentrations in the plume in the groundwater plume.

In 2008, EPA issued a fact sheet indicating that the chemical 1,4-dioxane found in shallow groundwater north of the Lowry Superfund Site does not pose a health threat because:

- The shallow groundwater is not used for drinking water;
- Nearby domestic wells have been sampled and do not contain 1,4-dioxane. These wells are hundreds of feet deep and do not extract water from the shallow groundwater;
- The contaminated groundwater is not located under or immediately adjacent to any existing Murphy Creek subdivision residences. It is on the west edge of the Murphy Creek Golf Course;
- Even if future homes were built directly above the plume, 1,4-dioxane in groundwater does not evaporate and move through soil into buildings; and
- Aurora drinking water is not connected to the surface water in Murphy Creek, or to the contaminated groundwater.

Additional Resources

As regulators, EPA and CDPHE have primary responsibility for ensuring the effectiveness of the remedy and providing updates to the public on the progress of the cleanup. Other resources are also available where information can be obtained about the site, including from the following:

The Tri-County Health Department serves residents of Arapahoe, Adams and Douglas counties with information related to public health and environmental concerns.

EPA awards Technical Assistance Grants (TAGs) to citizen groups to help them understand and be involved with site-related decisions. A TAG has been awarded to Citizens for Lowry Landfill Environmental Action Now (CLLEAN).

Additionally, during every five-year review, Community Involvement Coordinators from EPA and CDPHE interview citizens, city and county officials,

responsible party representatives, homeowners and homeowner association officials in the area for their opinion and impressions of the work performed.

Recently Completed Activities

September 2012 – EPA completed the third five-year review (FYR) of the Lowry Landfill site. Documented in the report were recommendations and follow-up actions for issues that needed to be addressed but did not, at the time, impact the protectiveness of the remedy. The remedy was determined to be protective of human health and the environment.

November 2012 – EPA completed a follow-up inspection in response to findings from the September 2012 FYR which identified shallow animal borings and surface settling along the lower edges of the landfill cap.

August 2013 – EPA completed an addendum to update the Lowry Landfill Site Community Involvement Plan (CIP). One of the main goals of the CIP is to ensure the public has access to accurate and timely information needed to understand the project as it moves forward.

August 2013 – Construction activities are underway to make repairs to the landfill cap. This action is in response to the November 2012 inspection that identified shallow animal borings and surface settling at the cap. According to the WSDs, all repairs should be completed by the end of Autumn 2013.

What Happens Next?

Today, the multiple components that make up the remedy are in place and certified as construction complete by EPA. The site is currently in “operation and maintenance” mode, meaning the monitoring and treatment of groundwater will continue into the foreseeable future and landfill gas treatment will continue until it is no longer generated at quantities that need to be controlled.

The 1,4-dioxane groundwater response action is on-going and will continue to address mitigation/response actions at the northern boundary of the site.

EPA will continue to conduct mandatory five-year reviews to ensure that containment actions are protective of human health and working as intended.

Any future use of the site will be required to be compatible with the remedy, comply with environmental covenants and meet all related land use restrictions.

Where can I get more information?

Information about the Lowry Landfill Superfund Site is available on the following EPA and CDPHE websites:

- www2.epa.gov/region8/lowry-landfill
- www.colorado.gov/cs/Satellite/CDPHE-HM/CBON/1251615995308

Information Repositories for the Lowry Landfill Superfund Site:

EPA Superfund Records Center
1595 Wynkoop St.
Denver, CO 80202-1129
303-312-6473

Aurora Central Public Library
14949 E. Alameda Dr.
Aurora, CO 80002
303-340-2290

Other Information Sources:

Colorado Department of Public Health and Environment,
Hazardous Materials and Waste Management Division
Records Center
4300 Cherry Creek Drive South, B-215
Denver, CO 80246
303-692-3331

Tri-County Health Department
6162 S. Willow Dr., Suite 100
Greenwood Village, CO 80111
303-220-9200
www.tchd.org

Waste Management of Colorado
Steve Richtel, Area Director
Closed Sites Management Group
2400 W. Union Ave.
Englewood, CO 80110
303-914-1434

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City and County of Denver and Waste Management
Lowry Landfill Information Website:
www.lowrylandfillinfo.com

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