

Hudson Valley Landfill Biofilters Project Quarterly Status Update

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Climate Action Planning Manager
August 20, 2025



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Agenda

- Project Background
- Project Update
- MOU
- Next Steps



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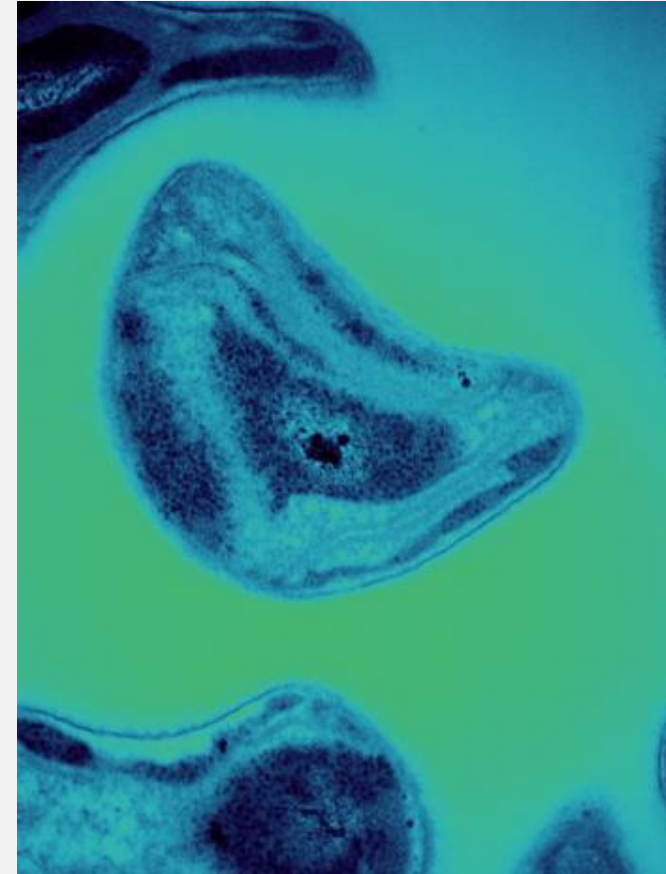
Project Background



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Biofilter Solution

- Cost-effective and low maintenance solution
- Biofilter microorganisms called methanotrophs break down methane emissions converting them into energy or other relatively harmless byproducts.
- Reduce methane and other common pollutants, such as volatile organic compounds (VOCs), hydrogen sulfide and ammonia and mitigate foul odors.
- Natural and environmentally friendly

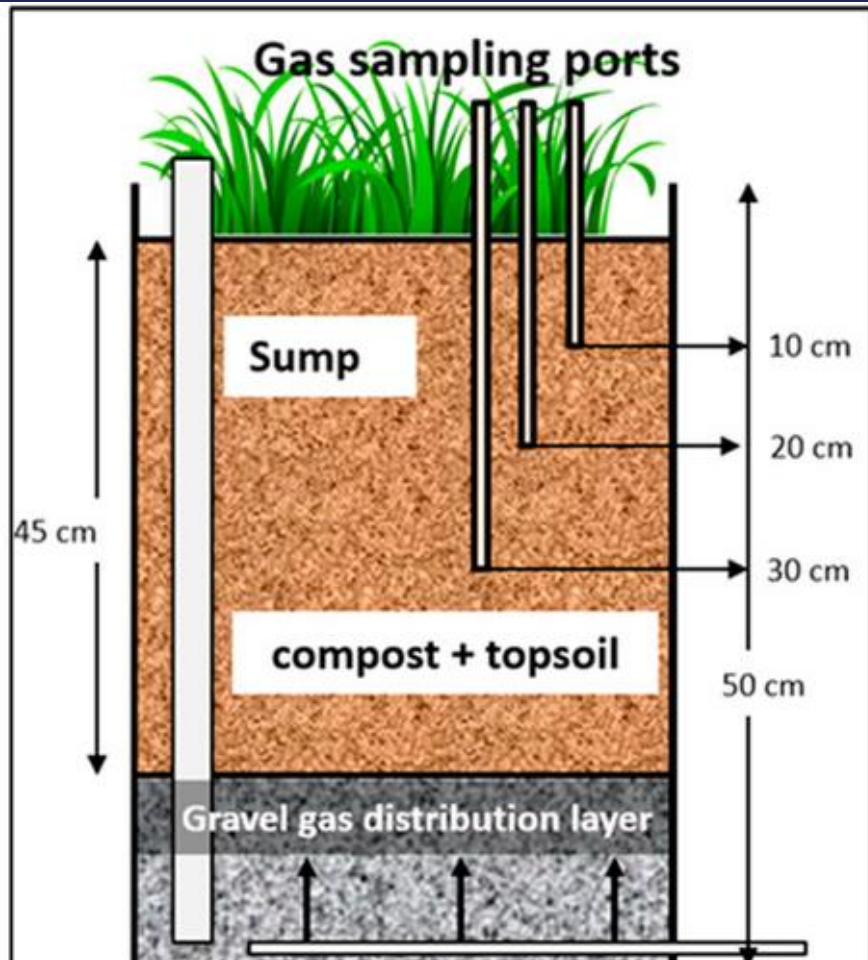


Credit: Oak Ridge National Laboratory



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Biofilter Solution



3 Steps

- The contaminated gas stream enters the biofilter through a porous layer, such as gravel.
- The gas then permeates through the biofilter medium, which is usually compost or soil.
- The treated gas exits the biofilter after methane and other contaminants are reduced.

Key Success Factors

- Humidity
- Temperature
- Oxygen levels / Oxidation



Biofilter Solutions



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Biofilter Design Examples



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Biofilter Design



Factors influencing biofilter design include:

- Methane concentration/volume
- Vent size, dimensions, layout and distribution
- Landfill topography and space availability
- Media type
- Environmental factors
- Cost

Jefferson County, Washington, US



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Big Picture Plan

Phase 1: Preparation and Implementation Planning

Phase 2: Landfill Gas Monitoring (pre-biofilter implementation)

Phase 3: Biofilter Installation

Phase 4: Landfill Gas Monitoring (post-biofilter implementation)



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Project Update



Phase 1 Work Completed (Spring/Summer 2025)

- Met with all relevant DEC project managers
- Collected data from municipalities and their consultants (in process)
- Completed site visits to all participating landfills
- Hired Data QA Consultant – **GeoSyntec**
- Hired Environmental Scientist - **Sehrish Asghar**
- Signed MOUs with participating municipalities (in process)
- Draft flyer created by NJIT (New Jersey Institute of Technology)
- Partnered with DEC on methane research (Eddy Covariance method)



HVRC Landfill Biofilters Team - Updates



Eleanor Peck
HVRC - Deputy Director

Project stewardship



Mary Lambert
HVRC - Climate Action Planning
Manager

Project Management



Sehrish Asghar **NEW**
HVRC - Environmental Scientist

Project operations and monitoring



Peter Bannister & Team **NEW**
GeoSyntec / B&B Engineers & Geologists

Quality assurance and technical support

Consultant

TBD – 2026
Biofilters Design/Implementation Consultant

Design and implementation.

Consultant

TBD – 2027-2028
Pollinators Consultant

Pollinator plantings design and implementation.



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Site Visits



New Paltz

Bethel



Hurley

North East

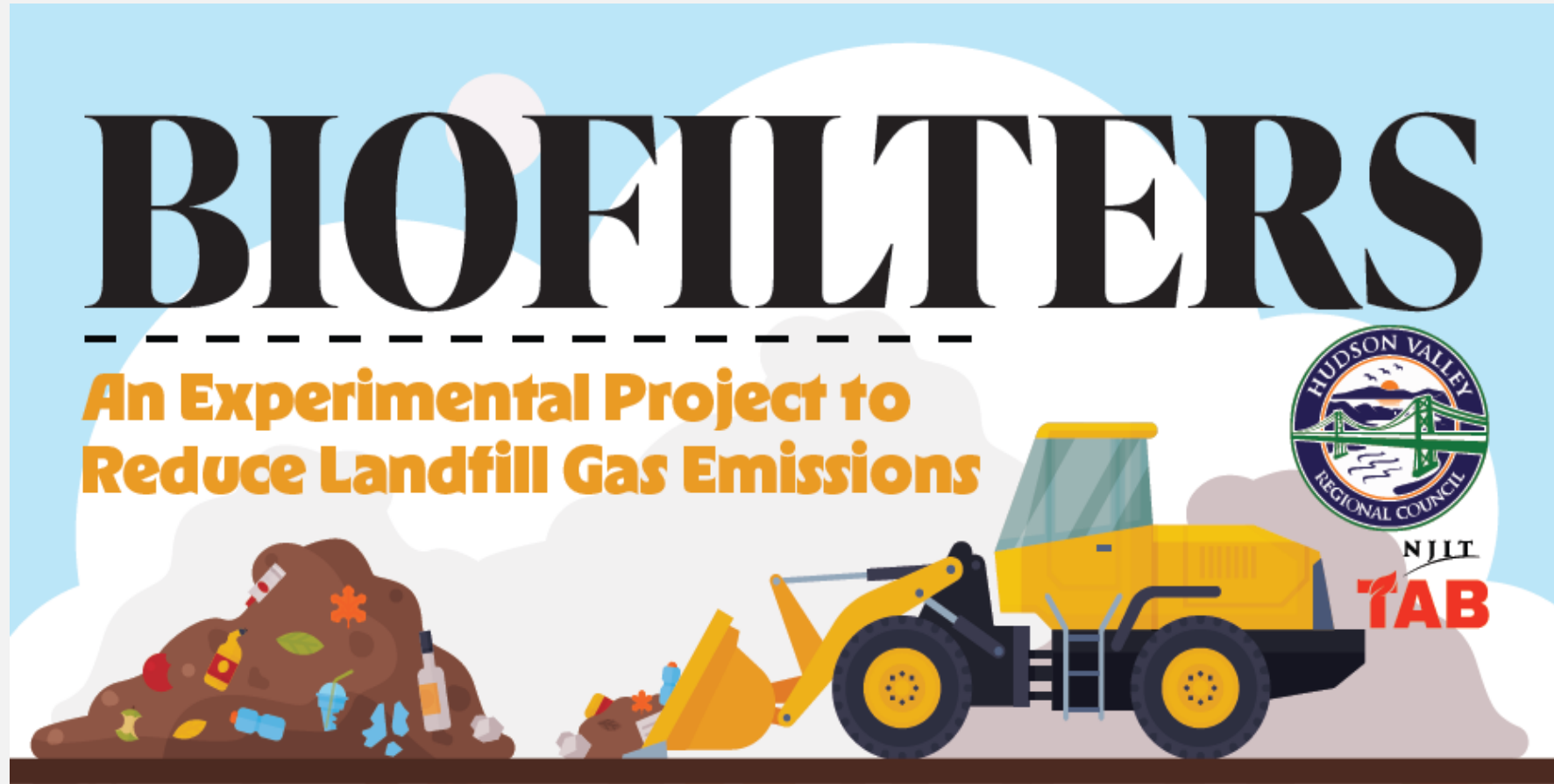


Site Visits

- 14 landfill sites visited: access, methane vent count, structure, condition, topography, physical structures, and environmental factors.
- 3 landfills already have solar arrays (Beacon, Bethel and Wallkill)
- Landfills range in size from roughly 5-30 acres (smallest: Town of Mamaroneck, largest: Dutchess County)
- Vents range from 2-10 feet high with differing vent styles and quality.



Education and Outreach



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Education and Outreach

+ A Call to Action +

The USEPA estimates that over 50% of typical household garbage can be composted instead of thrown into the landfill—those are your food scraps, yard waste, and paper products. Composting is a different breakdown process that releases fewer greenhouse gases. Composting also decreases pollution, improves air quality, and enriches our soil.

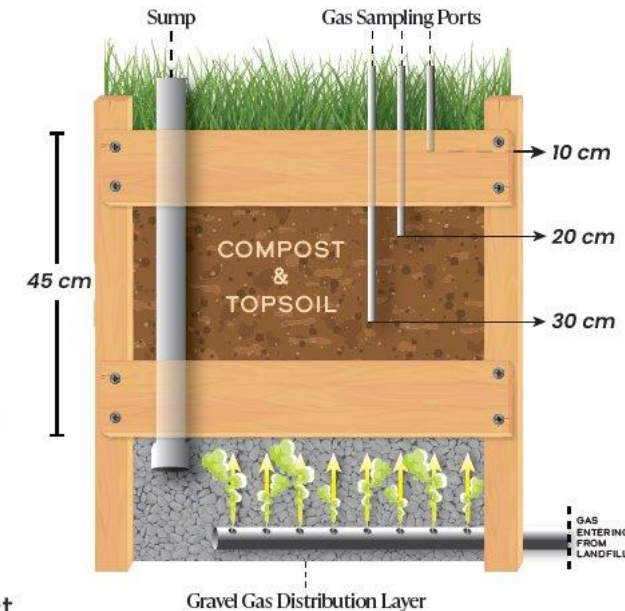
At times, this rubric comprises four principles, each beginning with the letter 'R,' starting with 'Refuse.' So, you should not only use less but also refuse unnecessary purchases.

See here: <https://bit.ly/4rs-refuse-reuse-reduce-recycle>



An Experimental Solution

HVRC received a \$3 million grant from the US Environmental Protection Agency's (USEPA) Climate Pollution Reduction Grant Program to implement a sustainable, low-maintenance solution for landfill methane: biofilters. This engineered system relies on naturally occurring microorganisms to break down methane. Landfill gas is vented through packed beds that resemble raised flower beds, filled with porous materials like wood chips or compost. As the methane flows through the bed, molecules diffuse into a moist biofilm where the microorganisms consume and oxidize the methane. This low-tech, sustainable approach will be implemented—along with robust monitoring and data collection—at 14 closed landfills across the Hudson Valley through 2029.



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MOU



HVRC Responsibilities

- Manage contractual grant requirements as determined by the US EPA, including honoring any and all contractual agreements entered into with consultants under contract with HVRC for implementation of the Project.
- Measure on a monthly basis the methane and other landfill gas concentrations and velocity flowing from municipal landfill, utilizing equipment and methods approved by NYS DEC and US EPA.
- Calculate greenhouse gas emissions from municipal landfill.
- Sub-contract with consultants to design and build Project biofilters.



HVRC Responsibilities

- Work with NYS DEC to ensure biofilters are approved for use on municipal landfill.
- Manage the solar feasibility and battery storage report deliverables, where applicable.
- Manage the planting of native pollinators, where applicable.
- Restore the landfill vents to their original function at the conclusion of the Project, if the Municipality chooses to discontinue use of the biofilters.



Municipal Responsibilities

- Provide site access.
- Allow the installation of biofilters on the closed landfill.
 - Site plan or schematic officially approved by the Municipality.
 - All biofilter designs shall be reviewed and certified by a New York State-licensed engineer. (HVRC to take lead)
 - All biofilter designs shall be submitted to NYS DEC prior to implementation. (HVRC to take lead)
- Authorize HVRC staff and/or its designated consultants to perform reasonable modifications to existing LFG venting infrastructure as necessary.



Municipal Responsibilities

- Assist in the planning and promotion of at least one public education event.
- Maintain biofilters Post-Project (optional).
 - Periodic replenishment (approximately every five years) of organic biofilter media (e.g., mulch or compost).
 - Routine repair or replacement of structural elements.



Optional Municipal Responsibilities

- Agree to a solar feasibility study completed for landfill.
- Agree to allow native pollinator plantings installed on the perimeter of landfill -- outside of the capped area.



Next Steps



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Next Steps for HVRC – Phases 1 & 2

- Present to or update municipal legislatures on the landfill biofilters project.
- Secure signed MOUs from all participants.
- Determine and purchase monitoring equipment.
- Conduct baseline methane emissions measurements.
- Submit year 1 annual report to EPA.
- Issue RFP and select consultant for design of biofilters.



Next Steps for Municipality – Phases 1 & 2

- Present or update local legislature on HVRC's landfill biofilters project.

NOTE: let HVRC know if you would like us to present on your behalf!
(On zoom or in person)

- Send HVRC a signed MOU.
- Locate your landfill's Site Management Plan or Post-Closure Maintenance and Monitoring Manual (PCMMM)
- Provide HVRC any relevant research and data related to your landfill (from municipality and/or landfill consultants).



Thank you for your partnership and support!

[CPRG](https://hudsonvalleyregionalcouncil.org/cprglandfills) Landfill Biofilters Project Web Site
<https://hudsonvalleyregionalcouncil.org/cprglandfills>

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