

## What to expect when the project is complete

When construction of the North Mercer/Enatai Sewer Upgrade project is finished, odor control systems will be mostly hidden. Almost all of the equipment will be underground and out of sight. At the North Mercer Pump Station, above-ground equipment will be behind screens; the exhaust vent may be taller than the screens, but it will be designed to blend in with the pump station buildings. At all other odor control sites, the only visible structures above ground will be exhaust vents, electrical control cabinets, and hatches flush with the ground that provide access to the equipment below.

The only noise generated by the odor control facilities will be from the fans for the activated carbon scrubbers. At the underground scrubbers along the conveyance system, the fans will be in the underground vault with rest of the equipment and will have silencers on their exhausts. The fan at the North Mercer Pump Station will be above-ground in a sound-reducing enclosure and will have a silencer on its exhaust as well.

Maintenance crews will need to check and replace the carbon beds on odor control units once or twice a year, depending on needs. When replacement is needed, crews will bring in large trucks to clean out the old carbon. Maintenance work will be short and infrequent.

With the planned odor control facilities, equipment will work around the clock to minimize odors from escaping the sewer system into the surrounding community.

## What's Next

Final design of the project is now underway. Our team is working with the cities of Mercer Island, Bellevue, and other regulatory agencies to coordinate efforts, obtain permits, and ensure a smooth transition to construction.

Between now and the start of construction, our team will be in your community sharing information so neighbors know what to expect during construction and beyond. Here is what you can expect from us this year:

- Attendance at community events
- Project newsletters, fact sheets, and field work notifications

- Monthly project web updates
- Online and in-person open houses in the fall
- Briefings for interested community groups

We are committed to being a good neighbor during construction. We will share information about construction on our website, in project emails, and through posted information at the park.

We are always available to talk to you and your neighbors at small group meetings, in living rooms, and at stops along the future pipeline. Just let us know!

## NORTH MERCER ISLAND/ENATAI Sewer Upgrade Project

### Talk to us! Questions? Concerns? Contact the project team:

Contact Kristine Cramer at 206-477-5415 or [kristine.cramer@kingcounty.gov](mailto:kristine.cramer@kingcounty.gov) OR Bibiana Ocheke-Ameh at 206-477-5604 or [bibiana.ocheke-ameh@kingcounty.gov](mailto:bibiana.ocheke-ameh@kingcounty.gov)

Sign up for text alerts. Text KING MERCERSEWER to 468-311.

Visit the project Web page at [www.kingcounty.gov/MercerEnataiSewer](http://www.kingcounty.gov/MercerEnataiSewer)



Alternative formats available  
206-477-5371 or TTY replay: 711



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## NORTH MERCER ISLAND/ENATAI Sewer Upgrade Project

### Odor Control: Taking Steps to Stop the Stink What's Happening... and Why

This fact sheet explains what causes sewer odors, the best technologies for controlling them, and the specific odor-control plans in place for the North Mercer/Enatai project.

Modern sewer systems are generally well designed to contain sewage odors. Pipes and associated equipment are mostly sealed to prevent the escape of sewer gases. However, on a long system like the planned new North Mercer/Enatai sewer pipeline, there are certain points along the way where it's more likely for sewer odors to be generated and released into the atmosphere.

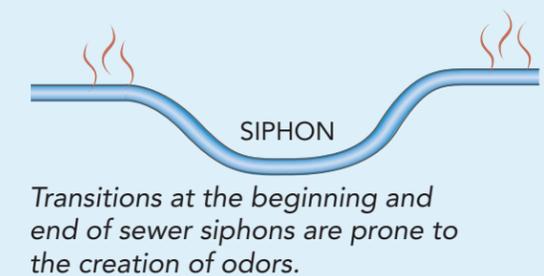
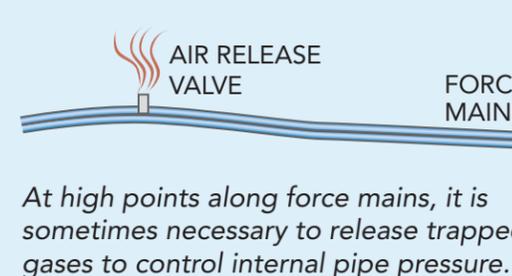
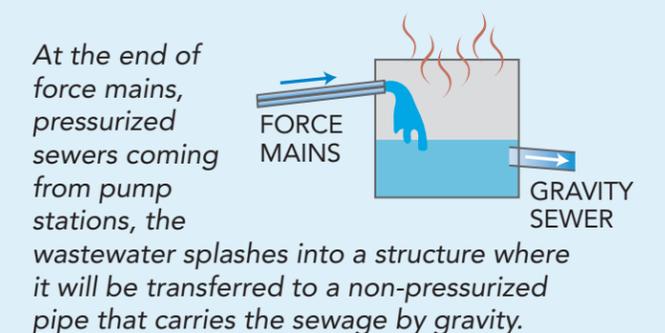
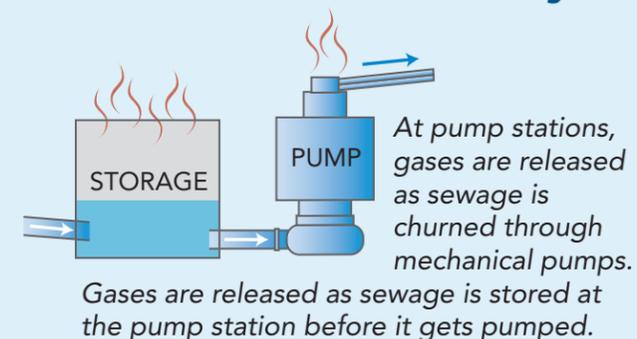
Although we can't guarantee that there will be no odors in the system, King County is committed to minimizing sewer smells to the maximum extent possible. Being a good neighbor by controlling odors is part of the normal operation of our facilities. We continuously monitor our pipes, pump stations, and treatment plants for odors, and we take steps to keep them in check.

### Sewer Project Overview

King County is upgrading three miles of sewer pipeline across north Mercer Island and south Bellevue. It's a big project that's been years in the making and will involve years of construction. Some of the work will be in heavily used public spaces, and some will be in residential areas. The end product will provide great public benefit, but the work to get there will involve inconveniences to residents and users of public spaces.

We are committed to keeping you informed about what's happening and why, in order to minimize impacts on the community. This is one of a series of fact sheets that explain the North Mercer/Enatai Sewer Upgrade Project and what the public should expect—during construction and after the work is done.

### Locations in treatment system where odors can be generated



King County responds immediately to citizen complaints about odors. If you smell something, call us on our 24-hour hotline: 206-263-1760

## How does odor control work?

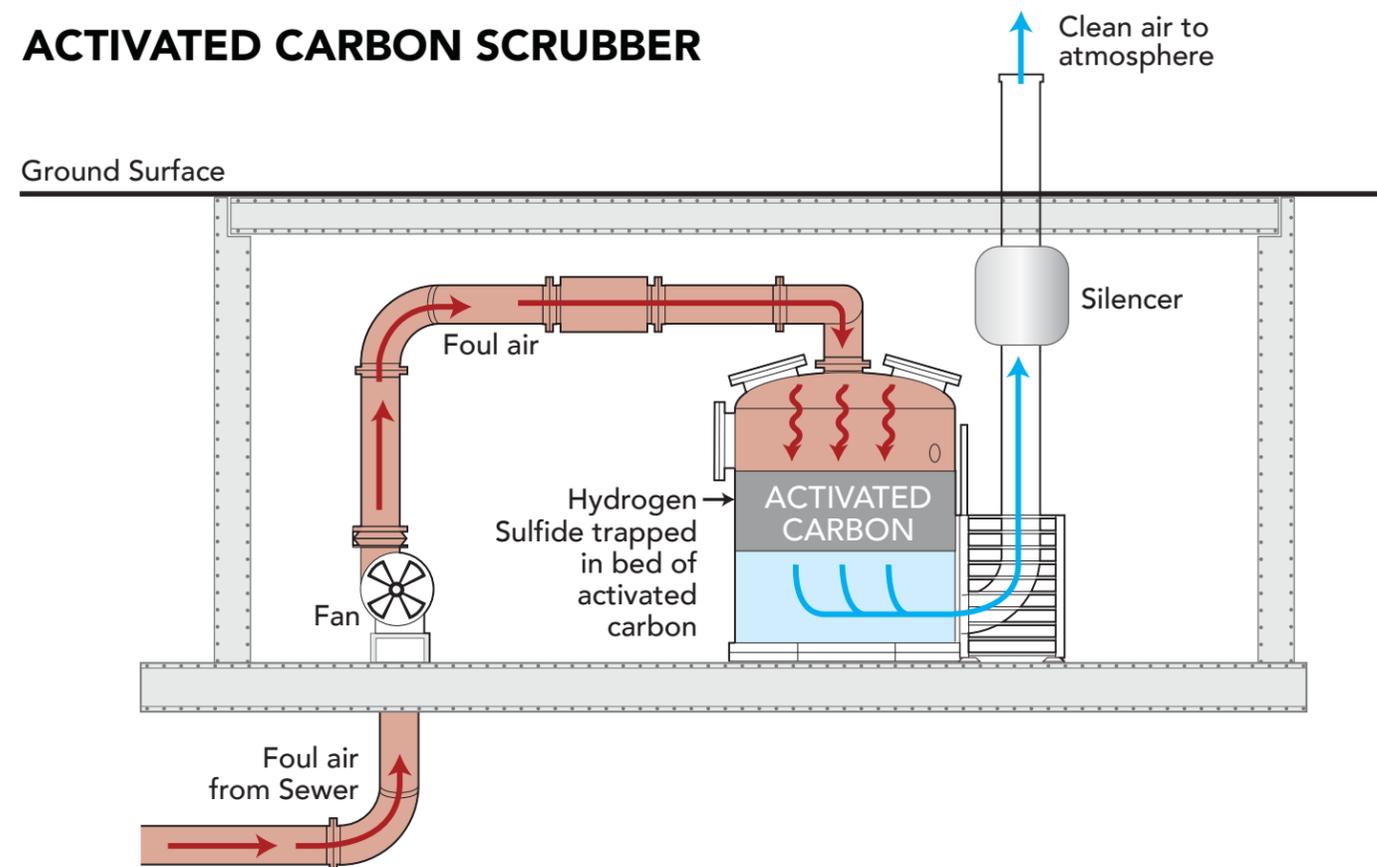
Sewer odor control methods are all about keeping smelly hydrogen sulfide away from neighboring noses (see the sidebar for an explanation about hydrogen sulfide). These methods fall into two general approaches:

- Adding chemicals or biological enzymes at certain points in our pipeline network to control the amounts of hydrogen sulfide in the wastewater (this is called “liquid-phase” odor control).
- Installing odor scrubbers to capture the hydrogen sulfide as soon as it leaves the wastewater and keep it from spreading through the air (this is called “vapor-phase” odor control).

The overall odor-control approach for the upgraded North Mercer/Enatai Interceptor system relies on both of these methods, specifically including the following:

- **Bioxide injection (liquid phase)**—A patented solution called Bioxide, which contains a chemical called nitrate, is added to the wastewater stream. Some bacteria in the wastewater can use the added nitrate to react with the smelly hydrogen sulfide and turn it into non-smelly compounds (sulfate, water, nitrogen and hydrogen).
- **Activated carbon scrubbers (vapor phase)**—A fan draws foul air out of the sewer and forces it through a bed of carbon granules (see the illustration at right). The smelly hydrogen sulfide attaches to the carbon, and clean air is vented to the atmosphere.
- **Passive carbon canisters (vapor phase)**—Passive carbon canisters work essentially the same as activated carbon scrubbers, but they are placed where the sewer gas is naturally escaping to the atmosphere, so there is no need for a fan system to draw the air through the carbon.

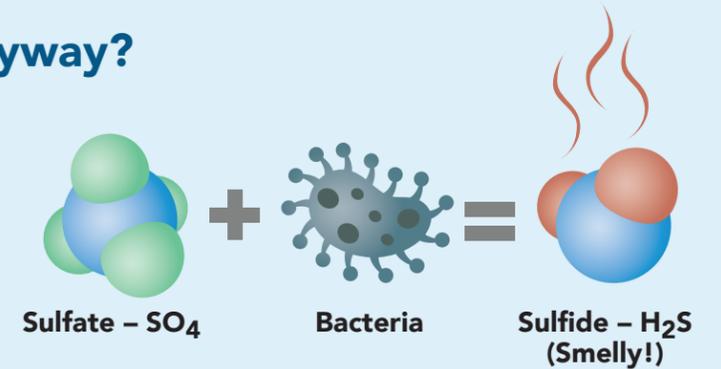
### ACTIVATED CARBON SCRUBBER



## Why Does Sewage Stink, Anyway?

Everybody knows that sewage smells bad. But why? What are those odors, and where are they coming from?

In a sewage collection system like the North Mercer/Enatai Interceptor system, the answer is more complicated than you might imagine. It's all about bacteria and their need for oxygen.



In closed sewer systems, oxygen in the wastewater can be very limited. In low-oxygen conditions, some kinds of bacteria are able to get the oxygen they need from a material called sulfate. Sulfate is common in waters all around the world, and it consists of sulfur and oxygen. When specialized bacteria use the oxygen from sulfate, it happens through a chemical reaction that leaves the leftover sulfur combined with hydrogen, in a new molecule called hydrogen sulfide. This is the problem.

To put it bluntly: hydrogen sulfide stinks. People say it smells like rotten eggs (in fact, it's the chemical that makes rotten eggs smell the way they do), and it's the primary source of unpleasant smells from sewage.

This chemical doesn't dissolve well in water, so anywhere the collection system gets contact with open air, the hydrogen sulfide comes out of the water and into the atmosphere. There it quickly spreads—to the annoyance of any nearby nose.

## What's the odor-control plan for this project?

We need odor control where different types of pipes connect. These are the locations where we will install permanent odor control units.

