

# **WEST JASPER PLACE/SHERWOOD**

## **Public Information Session**

### **September 15, 2015**

#### **ODOUR/H<sub>2</sub>S GENERAL INFO**

##### **1. What causes sewer odours?**

Sewer odours are mainly caused by hydrogen sulfide (H<sub>2</sub>S) gas from sewer systems. H<sub>2</sub>S has a rotten egg smell and can be detected at very low concentrations (about 0.01 ppm). H<sub>2</sub>S is not a health concern at these levels.

##### **2. How is H<sub>2</sub>S gas created?**

H<sub>2</sub>S is formed when organic matter decomposes in conditions without oxygen. Bacteria in the sewer reacts with sulfates present in organic waste. Temperature, pH levels, flow rate and turbulence convert dissolved H<sub>2</sub>S into a gas, which is what we smell.

##### **3. Why does H<sub>2</sub>S exist at the 151 Street & 99 Ave Location**

Several sanitary trunk lines merge at this location and because of this, the turbulence at this intersection is significantly high, which can cause H<sub>2</sub>S to develop.

In addition, sewer construction exposes the sewer system to open air, resulting in stronger odours.

##### **4. Have there been a lot of odour issues in this area?**

The City relies on residents reporting sewer odours to 311 to understand the severity of sewer odours throughout the city. Based on the information provided by residents to 311, there are many known problem areas, including West Jasper Place.

##### **5. Why might I notice odour more at night?**

Sewer odours may be more noticeable at night because the sewage isn't moving as fast, since there is less waste entering the sewer in the evening. Lower flows mean the chemical reactions in the waste which create H<sub>2</sub>S have more time to take place.

Also lower flow rates allow the sediment to grow on the sewer floor and create more area for bacteria to live and grow.

#### **6. Does the smell change depending on the weather?**

Yes, the smell can be affected by the temperature. Higher temperatures result in lower levels of dissolved oxygen, creating low oxygen environments and therefore more H<sub>2</sub>S.

#### **7. Are there things that impact the strength of odour?**

There are many things that affect the strength of the sewer odour that is released, such as:

- amount of sewer air that is released through the sewer shaft
- wind speed, which can impact air flows
- concentration of gasses in the sewer air. The concentration can be affected by natural processes that take place as waste decomposes.
- rain events
- overall temperature

### **ODOUR/H<sub>2</sub>S MONITORING AND MANAGEMENT**

#### **8. What are some of the ways to manage H<sub>2</sub>S ?**

Possible methods to reduce H<sub>2</sub>S include non-toxic chemical treatment, air scrubbers, biofilters, air vents, flaps, retrofitting drop structures, and sealing manhole openings.

#### **9. What is the chemical Bioxide that is injected and is it harmful?**

Bioxide is Calcium Nitrate Tetrahydrate (Ca(NO<sub>3</sub>)<sub>2</sub>·4H<sub>2</sub>O). Bioxide solution is environmentally safe. It contains no hazardous substances as defined by the CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) on the list of reportable quantities set by the OSHA (Occupational Safety and Health Administration's) hazard communication standard.

**10. Do you monitor H<sub>2</sub>S on a continuous basis?**

City workers regularly monitor H<sub>2</sub>S both inside and at the top of the shaft when on site. On August 26, the City installed a H<sub>2</sub>S monitor above ground, approximately 19 feet from the shaft to collect ambient data in the environment. This monitor has been active 24/7 since installation and measures data every five minutes. We are currently downloading the data daily from Monday-Friday.

**151 ST & 99 AVE REHABILITATION PROJECT****11. Is this project delayed?**

The project is proceeding as scheduled. Phase I of the Sanitary System rehabilitation is expected to be completed in Spring 2016.

**12. What is the City currently doing to reduce odours at the 151 Street and 99 Ave site?**

Bioxide is continuously being injected into the sewer upstream of the problem location in order to reduce the production of H<sub>2</sub>S. An air scrubber is also in place.

On August 26, 2015, the City sealed the sewer at the bottom of the shaft with a concrete cap to reduce the odour in this location until construction resumes in October.

**13. Why did it take so long to seal the shaft?**

The City was taking other actions to reduce odours prior to construction including injecting Bioxide into the tunnel. City crews covered the shaft with a tarp to minimize the release of H<sub>2</sub>S after working hours. After construction was postponed due to risk of rain, an air scrubber was also put into place.

These are steps we normally take to reduce odour. However, due to the level of concern with the odour, and the uncommon work stoppage at the site, the City discussed further possible reduction methods and determined the shaft could be sealed temporarily until construction resumes.

**14. How will the City reduce odour during construction?**

When construction resumes, the City plans to take the following action:

- Continue to inject Bioxide into the system to minimize H<sub>2</sub>S in the trunk sewer;
- Cover the shaft after work hours
- Use of additional air scrubbers at critical locations

**15. What are the alternatives to using a shaft at 151 Street & 99 Avenue?**

Due to the nature of the existing sewer system, there is not an alternative location outside of the West Jasper Place neighbourhood that can be used to continue work on the trunk sewer.

**16. Is trunk sewer failure common?**

Trunk sewer failure is not common in Edmonton. Since the trunks are so deep and made of concrete, rebar, clay bricks, and other sturdy materials, there are very few things that can cause a trunk to collapse. Corrosion of the pipe walls appears to be the main cause of trunk sewer deterioration. The City has begun prioritizing the sewer trunk inspections so as to repair any others found in poor condition.

**17. What is the sewer infrastructure condition citywide and in this neighborhood?**

In general, sewer infrastructure in new neighbourhoods is in better condition than in the mature neighbourhoods. The City renews sewer pipes 600mm in diameter or smaller in mature neighbourhoods at a rate of approximately five to seven neighbourhoods per year. Drainage Neighbourhood Renewal occurred in West Jasper Place in 2010; therefore, the condition of the local sewer system in West Jasper Place is generally good, even though the trunk line needs immediate rehabilitation.