Government of South Australia
SA Health

WASTEWATER NEWS

A Newsletter for Local Council Officers & Wastewater Practitioners
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WELCOME

Welcome to the August 2008 edition of *Wastewater News*. You can find an electronic version of this document on our website:

www.dh.sa.gov.au/pehs/newsletters.htm#wastewater

NEW STAFF MEMBER

Luke Seidel from the Alexandrina Council has joined our team and is now a fully fledged "seppo"

For the uninitiated, this is defined as a lover of septic systems, fast cars and beer.

Luke has assumed the development role carried out by Neville Pash in the past as well as contributing to all other unit activities. His local government experience is an invaluable asset to the DH.

EHA (SA Branch) Wastewater SIG

The Wastewater SIG convened on the 8th of July for its long awaited first meeting for 2008 with a strong turnout of members. With John Gilbert standing down as SIG convener it was agreed to have Karen Rokicinski (Alexandrina Council) and Luke Seidel (Dept. of Health) as co-conveners. It was also agreed to have Cassie Tuck (Alexandrina Council) and Emily Post (City of Playford) share the role as secretary.

With a new panel of conveners and secretaries the SIG is hoping to become a lot more active. Meetings are planned on a bi-monthly basis and to be held in a central location.

Anyone interested in becoming a member of the Wastewater SIG should contact Karen Rokicinski – karen.rokicinski@alexandrina.sa.gov.au

Training Course for EHOs (Sanitary Plumbing)

The wastewater team at the Department of Health is in the throes of arranging a training course for EHOs on sanitary plumbing and drainage. The course will be run through TAFE SA and will involve a combination of classroom theory, online based theory and field trips. The course will cost approximately $500 per person. We are waiting for the course coordinator to return from long service leave to finalize arrangements and fine tune details of the course.

This course will be an excellent opportunity for new EHOs to gain knowledge in assessing and inspecting sanitary plumbing and drainage and for more experienced EHOs to brush up on their skills. Anyone interesting in attending this course should register their expression of interest with Luke Seidel – luke.seidel@health.sa.gov.au .

Tony Farror has also offered in house training at the Department of Health for any EHOs interesting in learning how to assess applications for onsite wastewater disposal systems, aerobic systems and irrigation areas in accordance with the *Standard for the Construction, Installation and Operation of Septic Tank Systems in South Australia and Supplements A and B*. Anyone interested should contact Tony – tony.farror@health.sa.gov.au

Onsite and Decentralised Sewerage Conference

The Australian Water Association in conjunction with EHA is holding the 2008 Onsite and Decentralised Sewerage Conference at the Benalla Performing Arts and Convention Centre, Benalla, Victoria from the 12th to the 15th of October. The theme of the conference is "Achieving Best Practice by 2012: How Do We Do It?". For further information contact Wayne Caste (AWA) – wcastle@awa.asn.au.

Useful Reference

We have recently become aware of another newsletter which you may find useful for information regarding on site systems published by the US National Environmental Services Centre. It should be noted that some of the articles use standards and quantities etc that are not applicable to SA. The link is as follows:

http://www.nesc.wvu.edu/pipeline.cfm

For Your Information-Floods

The latest Public Health Bulletin contains an article by Nina Allen and Dr David Cunliffe regarding flooding and on site systems. Given the winter conditions presently being experienced we thought it would be worthwhile reprinting it here.

Health risks due to floods and sewage spills

Introduction

Safe water supplies and sanitation are essential for public health. In developed countries such as Australia drinking water and sewerage networks have been established to deliver these services. In areas that are not served by reticulated sewerage systems, sanitation is usually provided by on-site septic tanks, with treated sewage being either discharged within property boundaries or transported to community wastewater systems.

Reticulated sewerage systems are designed to cope with peak flows and moderate levels of groundwater and stormwater ingress. However, during flood events the ingress of stormwater can greatly exceed design capacity.

On-site septic tanks are sized to accept all of the wastewaters from residences and other buildings on the site but have limited protection from flood events that can inundate the tanks or discharge sites.

In November 2005 a flood event in Adelaide caused overflows from the metropolitan sewerage system and inundation of septic tanks in the Virginia area north of Adelaide. This event is used as a practical example to illustrate the impacts of, and responses to, flood events.

Sewerage systems

Sewage overflows and spills caused by infrastructure or power failures during normal weather conditions can represent significant health risks, prompting the issuing of public warnings to avoid contact with affected areas and receiving waters. Depending on the volume of the spill and the characteristics of the receiving waters, warnings can stay in place for up to 7 days to enable dissipation of water and die-off of sewage-borne pathogens to occur. Where spills occur into buildings or homes, there are standard protocols to ensure that health risks are minimised.

Flood events represent a different challenge. Overflows can occur through ingress of large volumes of floodwaters into sewerage systems, or from damaged infrastructure caused by impacts such as road and land subsidence. Sewerage systems are designed to cope with peak sewage flows and certain amounts of groundwater and stormwater ingress. The amount of ingress allowed is typically based on an understanding of system and catchment characteristics. However, design capability does not extend to dealing with flood events.

In November 2005 very heavy rain in Adelaide followed reasonable winter and above-average spring rains. This meant that the ground had limited soakage capacity and there was a large amount of surface water run-off. A number of metropolitan water reservoirs overflowed.

In general, the overflows of stormwater into the sewerage system during flooding rains may spill back into the stormwater system and then into drains and receiving waters including streams, rivers and the sea.

While this situation is less than desirable, the additional public health risk caused by overflows is generally low providing the overflow stops as soon as the stormwater ingress subsides. In large storm and flood events, overflows comprise sewage diluted with relatively large volumes of stormwater. In addition, receiving streams already contain very large volumes of fast-moving stormwater. Large stormwater flows associated with flood events contain high levels of physical and biological contamination from the urban catchment, including large amounts of debris, plant material, rubbish and animal waste.

The greatest risks to public health presented by flood-associated stormwater flows, with or without sewage overflows, are due to the physical conditions. Deaths are caused by exposure to high velocity stormwater flows. The additional microbial risk presented by sewage overflows is likely to be low and difficult to detect. The overflow will represent a very small proportion of total flow in a stream of stormwater which will already contain substantial levels of microbial contamination. Even in the absence of sewage overflows, SA Health has standing advice that turbid stormwater associated with rain events is not suitable for primary contact recreational activities.

The exceptions to this assessment are if sewage flows continue after stormwater ingress subsides or if damaged infrastructure is not repaired or isolated immediately. This requires that any blockages to sewerage systems caused by debris are removed and that any physical damage to sewers caused by road or other land subsidence is repaired immediately.

Modern sewerage systems include flow monitoring and remote alarm technologies that can detect high water levels and major overflows from the system, as well as impacts from flood events. In the November 2005 floods, removal of debris and blockages and repairs to infrastructure were completed rapidly. Damage to sewage treatment plants can take longer to repair. Most plants are protected against flood events but storages, lagoons and discharge channels may be threatened by the combination of local floodwaters and ingress of stormwater into sewerage systems.

If lagoons or channels are damaged, emergency repairs and remedial action will be required to prevent continued uncontrolled release of sewage after the flood subsides and to restore the effective operation of treatment plants.

Because functioning sewerage systems and treatment plants are essential to maintaining public health, major water utilities such as SA Water and United Water have contingency plans in place to deal with overflows, blockages and damage to infrastructure. There are also communication protocols to ensure that overflows and spills are reported to SA Health and the EPA so that, where necessary, warnings can be issued.

Septic Tanks

Properties which are not serviced by a reticulated sewerage system will have on-site wastewater disposal systems such as septic tanks. These systems typically collect wastewater from individual properties, and treat and dispose of (or reuse) the wastewater onto land within the property boundary. Septic tank systems therefore present a number of different issues compared to sewerage systems during flood events.

In South Australia a septic tank and effluent disposal system should be located on land situated above the level of a 10-year return period flood event. Effluent disposal systems rely on evapotranspiration and percolation of effluent through the soil profile. During a flood event, the soils will become saturated and prevent these disposal mechanisms. In turn, effluent will remain in the septic tank and may cause overflow onto surrounding areas or into the dwelling, and ingress of floodwaters into the system will further exacerbate the problem. In these events the best strategy is to minimise inputs to the system by reducing water use within the home.

In extreme cases the rising watertable may cause certain types of tanks to become buoyant and dislodged from the ground. This may occur during the cleanup stage after a flood, when the tank is being pumped clear of effluent, floodwaters, debris and silt. Other issues include ingress of silt and debris into the septic tank and effluent disposal area, compaction of saturated soils at the disposal site and damage to electrical equipment.

Of immediate concern during a flood event is the protection of public and environmental health. Damage to septic systems during a flood event may require provision of temporary accommodation or ablution facilities. In some cases chemical or portable toilets may be the only alternative where inundation prevents use of land-based wastewater systems. Overflows during this time cause potential health concerns through contamination of water supplies and food sources such as vegetable gardens.

The most recent flood event in an area serviced with septic tanks occurred at Virginia, north of Adelaide, in November 2005. Over 130 septic systems were inspected for damage, with approximately 100 found to be inundated. The local council coordinated a dewatering program conducted by SES personnel to ensure the septic systems and effluent disposal areas could function effectively. Approximately 30 properties were completely inundated by floodwaters and required full dewatering prior to pump-out of septic tanks. Only a few residents were evacuated to a temporary shelter.

The potential for contamination of floodwaters, bores and other inundated areas with effluent caused a significant public health risk. Staff and volunteers working in affected areas were required to have appropriate vaccinations and follow necessary hygiene procedures. Public health advice was also issued by the local council on general hygiene principles and water conservation techniques to minimise the risk of overflows from septic tanks.

Conclusions

Flood events can cause sewage overflows and damage to reticulated sewerage systems and on-site septic tanks. The additional microbial health risk during a flood event is low because contamination in overflows is diluted by very high volumes of stormwater. The major impact is damage caused to infrastructure. Repairs need to be instituted to ensure that systems function effectively and basic sanitary needs are restored.

References

1. Tips for safe and healthy fun in the water. http://www.dh.sa.gov.au//pehs/PDF-files/beach-brochure-jan04.pdf
2. South Australian Health Commission. Waste control systems: Standard for the construction, installation and operation of septic tank systems in South Australia. SAHC Code, 1995.
3. US Environment Protection Agency. Septic systems – What to do after the flood. http://www.epa.gov/cvibin/
4. Smith GJ. Floods: An environmental health practitioner's emergency management guide. National Environmental Health Forum Monographs Counter Disaster Series No. 1, 1999.

Wastewater Treatment System New Product Approvals

New wastewater products approved for installation in South Australia are:

Greywater Diversion Devices

Smartpit Greywater Diversion System

This system caters for flows discharging from laundry and bathroom. It consists of a 700 x 550 x 700 polyethylene sump equipped with 2 stainless steel mesh filters, a purge pump and an irrigation pump. The resultant diverted greywater is irrigated via a sub surface drip system manufactured by Netafim.

Bilby Aqua Recycler Greywater Diversion System

This greywater diverter system accepts greywater from shower, bathroom tap, laundry and washing machine. The excess greywater entering the system gets diverted to sewer. It consists of a 45 L capacity stainless steel tank, a 0.7 mm stainless steel inline filter and a suitable pump.

The reuse of greywater is by pressurised subsurface irrigation only. The irrigation system is to be in accordance with the manufacturer's and engineer's instructions.

Pump Sumps

RI Industries Reinforced Concrete Pump Sump and Increment Risers

This unit has an operating capacity of 650 L and has a maximum increment riser height of 1200 mm.

Environment One Corporation Pressure Sewer Unit Model 2010ip 800 x 2100:

This is a pump sump for collecting and pumping wastewater from a property to a discharge point. It consists of a 600 L capacity sump made of rotationally moulded polyethylene tank, lid, inspection cover and a suitable pump

Contact us

For any further information regarding newsletter content or to raise issues/ provide feedback, please contact us:

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