LOVE my BEACH | Education pack

Water savers

Background

Living in the North West we are no stranger to wet summers and even wetter winters. 2012 was one of the wettest summers on record. But where does all the rain water go?

It flows into drains and puts a huge strain on our sewage systems and wastewater treatment/sewage works. Combined Sewer Overflows (CSOs) are connected to our combined sewerage system and are used to release what's in the pipes when the drainage system fills up during heavy rain.

When it rains, the amount of water going through a combined sewerage system increases dramatically and can be more than the pipes can manage. If nothing was done, the surplus sewage would burst out of manholes in the street or flood into houses! To avoid this, the sewers are equipped with CSOs that let out the excess sewage, which is highly diluted with rainwater, into rivers or the sea.

70% of the sewerage systems in England and Wales work in this way. To completely rebuild the existing sewerage system to have sewage in one set of pipes and rainwater in another would be very expensive and would cause major disruption.

Cities and towns have lots of hard surfaces that cannot soak up rain water. When rain hits roofs, pavements, car parks and roads, it quickly runs off into sewers, seas, rivers and lakes, often causing flooding and carrying pollution washed from the land with it.

As more and more land has been developed and covered with hard surfaces our sewers have become overloaded and cannot cope meaning the CSOs operate more frequently.

There are things we can do to stop some of the water getting into the sewerage system so that CSOs don't overflow as often. Making more green space in our towns and cities can really help. These areas called SUDS (Sustainable Drainage Systems) aim to copy natural drainage systems - they hold back the water and/or allow the water to

slowly soak away into the ground and can also treat the water making it cleaner too! Great examples of using less water at home include: not running the tap when brushing your teeth; having a shower instead of a bath; using washing up water to water plants.

A water butt in the garden is a simple SUD and way to store water for the garden in the warm weather and capturing the rain means less goes into the sewer system. Having fewer hard surfaces and more green space is really important. Grass, plants and trees in your garden also soak up rain water. You could plant drought resistant plants, use water saving granules especially in hanging baskets and pots, use a drip feeder (for example cut the top off a plastic bottle and invert it so the section where the cap was sits in the soil then fill with water).

Aims

- Children understand why it is important to use less water and how this helps the beach
- Children understand where rain water goes when it rains heavily and how the system struggles to cope with the extra water
- Children take the message home to collect rain in their garden and use it to water the garden in warm weather
- Children understand the benefits of SUDS and know how buildings and hard surfaces affect the environment. They appreciate that they can make an impact on the environment and that small changes can add up to make a BIG difference!

Curriculum links

- **Science** where rain water goes and how green spaces can absorb rain water. What happens to water that isn't absorbed into the land.
- **Maths** measure rainfall and use a graph to show the results. Work out average rainfall over a week / month. Compare and contrast what happens to water that falls on different surfaces.
- **Design and technology** design your own water catcher. Encourage children to do a water audit at home and in school. Develop and implement a water saving plan for your school. Design a SUDS scheme.

- **Citizenship** get involved with a local in bloom group or grow plants at school using rainwater caught in a bucket or water butt to catch the water and reuse.
- **Geography/ History** look at old and present day maps of an area near you. Compare and contrast the areas of green space and hard surfaces/developed areas over time.

Soak it up!

This is an outdoor experiment: fill a container with water and pour it onto an area covered by a hard surface. Ask the children to describe and record what happens to the water.

Use the same container to pour the same volume of water on to an area or grass and/or soil. Ask the children to describe and record what happens to the water.

Water audit and SUDS survey

Encourage children to do a school water audit. How much water is being used? Make your own school water saving plan and monitor how it works. Do a survey of the school grounds - what happens to rainwater at school? Draw a plan showing where and how you could use SUDS at school to help the environment.

Word buster: 'SUDS' (Sustainable Drainage Systems) aim to copy natural drainage systems - they hold back the water and/or allow the water to slowly soak away into the ground and can also treat the water making it cleaner too!

Cars or plants?

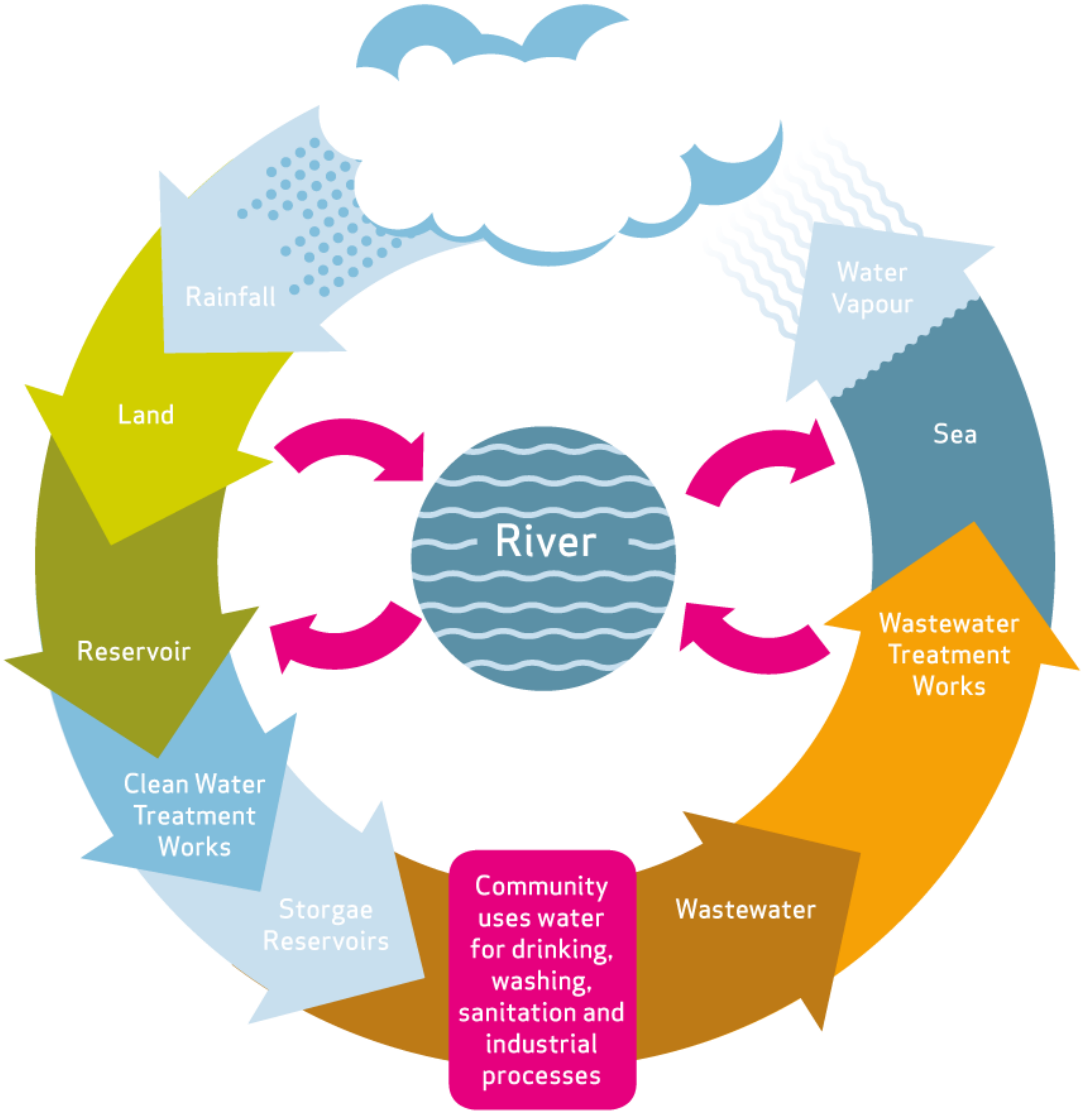
Ask the children to look at the houses close to where they live. How many houses have made their front garden into a car parking space? If many of the front gardens now have hard surfaces how will this affect rain water and the environment? Ask the children to consider what changes could be made to help the environment?

The Water Cycle

This information was kindly provided by our partner, United Utilities! Thanks ☺

Carefully study the water cycle below. Imagine you are a water molecule in a drop of rain.

Describe your journey through the water cycle.
Don't forget that you will end up where you began!



Make a rain gauge

This information was kindly provided by our partner, United Utilities! Thanks ☺

Make a rain gauge to find out how much rain falls in your area. To use the rain gauge properly you must take measurements at the same time each day.

You will need:

- An empty, clean, plastic drinks bottle
- A pair of scissors or a knife
- A measuring cylinder
- A ruler

1. Carefully cut through the top of the drinks bottle and turn the top part upside down to make a funnel. An adult might help you with the cutting… (fig 1)
2. Find an open space of ground in your school or garden, away from trees and buildings. Dig a small hole to stand your rain gauge in.
3. Check the rain gauge each day and pour any water into a container and measure the depth with a ruler. (fig 2).

Fig.1

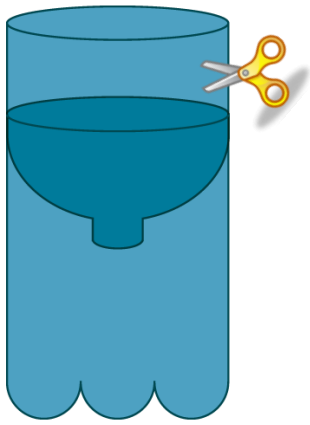
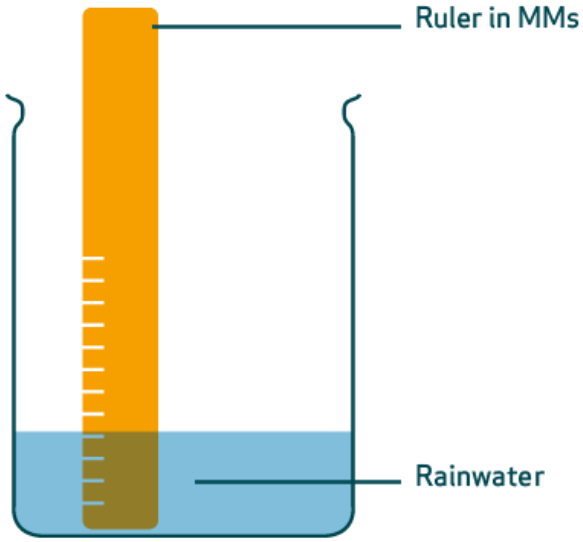
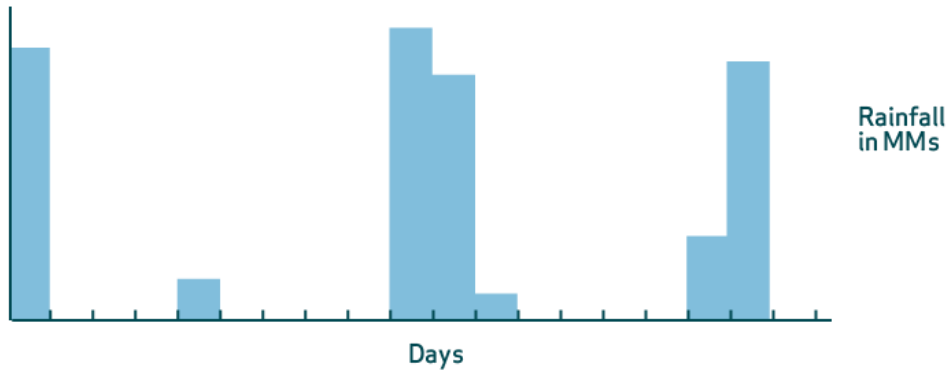


Fig.2



4. Write down how much rain has fallen each day.
5. Design a chart to record your measurements on. (fig 3).

Fig. 3 Rainfall Chart



6. After a week, or a month, check your total rainfall.
7. How would you decide which days are “wet” and which “dry”?

Sometimes, the monthly rainfall can be found in newspapers or a local meteorological station has this information. Check your results with theirs. Or you could get in touch with another school and see how the rainfall is different.

Or maybe even in another country!

More great stuff...

http://www.unitedutilities.com/_common/thirdparty/education/uu-education-teachers-pack.pdf