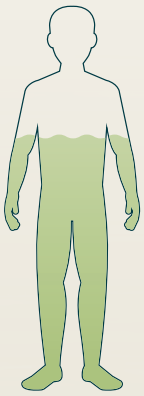
WATER IS AMAZING!
THE SOURCE OF ALL LIFE...



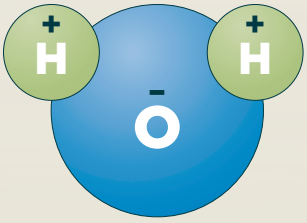
All living things depend on water. Where there is water, there is life. Where water is scarce or is polluted, things struggle to survive.

In fact, most living things are mostly made up of water. We humans are about 65% water, with our brains about 75% water, our blood 83% water and our lungs 90% water!

Properties of Water

Clean water is colourless, tasteless and has no smell. Boring? Simple? Wrong! Water has some amazing properties that make it different from any other substance on Earth, and explain why it is so important and basic to life.

Water is a molecule made of two hydrogen atoms attached to an oxygen atom in a 'bent' or boomerang shape. That's why it's called H_2O. (It is quite remarkable that these two highly volatile gases, when they get together, form such a stable liquid which is the basis of all life.)



It is this shape, with its electrical polarity, which gives water many of its special qualities.

Water dissolves more substances than any other liquid, which is why it is called the 'universal solvent'. This means that, wherever it goes, either through the environment or through our bodies, it carries with it different chemicals, minerals and nutrients.

Water molecules tend to stick together in drops, creating 'surface tension' and 'capillary action' which allows water and its dissolved substances to defy gravity and move through the roots of plants and tiny blood vessels. Water virtually forces its way into other materials due to its 'stickiness', which amongst other things allows it to cling to particles of soil, allowing plants to grow.

In plants and animals, the combination of these special qualities of water allow food (in the form of carbohydrates and proteins) to be transported from place to place, and waste products to be carried out of the organism.

Water also absorbs a lot of heat before it gets hot, and when it evaporates it cools down the things around it. That means that it helps regulate the temperature of plants and animals, and on a large scale helps control the climate.

Values of Water

So, thinking about our place around here, enough clean water is essential for:

- **Health of ecosystems on the land**

All the different types of forests, grasslands and heathlands and the animals and plants that live in them need water to live.

- **Health of aquatic ecosystems**

Wetlands, streams, rivers and the animals and plants that live in them depend on a healthy water supply.

- **Human health**

We need clean water to drink, cook with, and bathe in.

Water is also important to humans in many other ways:

- **Recreation**

We enjoy using water for swimming, surfing, white water rafting, sailing, canoeing and fishing. We use water in our gardens to grow plants and to fill our bird-baths. We go for walks and picnic on beaches, and beside rivers and creeks. We have long, hot baths.

- **Agriculture**

We use water to grow our food in our own small-scale vegie gardens, and in large-scale crops (eg, sugarcane, macadamia and fruit orchards) and livestock (eg, dairy and beef cattle).

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Fisheries (catching fish and other seafood from rivers, lakes and the ocean) and aquaculture (fish farming in ponds on the land) are clearly dependent upon water. Water is also used to grow many of our clothing needs (eg, cotton) and livestock (eg, sheep for wool, cattle for leather).

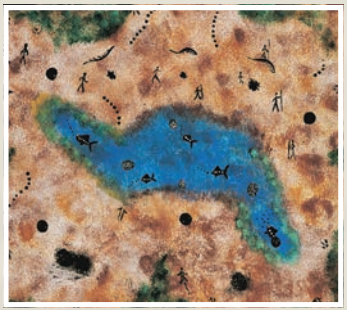
- **Industry and Commerce**

Industries use water in many ways. Some use water in the finished products (eg, soft drinks, food) or as an ingredient along the way (eg, concrete, paper). Other industries use water for cleaning (eg, washing up in restaurants, washing down factory floors) and heating and cooling workplaces (eg, air conditioning). Electricity is generated by the creation of steam (by heating water with burning fuel) or by hydroelectric schemes (using the energy gravity pushing water). Most of the water used by industry is for cooling needed in manufacturing processes (eg, refining oil, making steel and paper). All businesses use water in one way or another (even if it is just for making coffee in the office tearoom).

- **Beauty**

Places with water, especially flowing water, have 'aesthetic value'. Looking at them and listening to them helps us feel relaxed and energized. We are drawn to visit them. We put paintings of the sea and posters of waterfalls on our walls. Lookouts are designed to feature views over water, and the price of houses with water views reflects the value we place on them.

- **Cultural and Spiritual Significance**



Water can have different meanings for each of us. In most cultures, however, water has a 'sacred value' (eg, 'holy water', wells and springs marked with shrines). As this Widjabul painting shows, local Aboriginal people see the waterways and waterholes as an important source of life. They are where wildlife and human life are concentrated.

Scarcity of Water

Although the Earth is 70% covered by water, and is sometimes called 'the blue planet', less than 1/10,000 of 1% of this is available as rivers and streams which humans can use. While right here at Emigrant Creek Dam, we are in a rainforested area with a high rainfall, Australia is the driest continent in the world. Droughts are a regular occurrence and should not be considered 'the exception to the rule'. They are a natural part of life in our country, and natural ecosystems have evolved to deal with these conditions.

Floods are also a natural occurrence that natural ecosystems have adapted to. As a society and culture that has recently arrived from Europe and other parts of the world, we have tended to 'expect' a stable climate and a steady supply of water to be provided for our needs. This is not reasonable.

We need to make sure that we do not 'take water for granted' and imagine that it is an infinite, or even predictable resource. Water, for our uses and for the needs of other land and freshwater-based organisms and ecosystems, can be scarce. It is very precious.

Our use of water needs to be carefully managed in order to make sure that this water stays clean and is shared between all these different values and needs.

(Sources: Powledge, F. (1982) Water: The Nature, Uses and Future of Our Most Precious and Abused Resource. Farrar Straus Giroux: New York; US Geological Survey web-site; World Book Encyclopedia (2001); Australian Water Association (2002) We All Use Water education kit)

TRY THIS!

Learn with your...

"Think of all the different ways you need water in your life. Now think about other people, animals and places that you care about. How do they need water in their life?"

"Try to imagine what it would be like if Emigrant Creek Dam was completely empty. What would that mean to you? How would you feel about that?"

"If you have a water bottle with you, take a drink of water and really taste it in your mouth, feel it slide down your throat as you swallow. Imagine it moving through your body as blood, in your lungs and in your brain, and through your digestive system and excretory system. Can you feel yourself two-thirds full of water?"

Learning objective: *To understand the special nature of water and its function for life on earth. To provide a personal experience and sense of connection with water as a substance, and with its importance.*

For further information contact:

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