Water Whys? CAIRNS

Mobi's Catchment Challenge

@ Saltwater Creek Cairns

THERE'S NO PLACE LIKE OUR PLACE

SECONDARY

Year 7

cairns.qld.gov.au/smartcatchments

Saltwater Creek SMART CATCHMENTS CAIRNS

Cairns REGIONAL COUNCIL

Monitoring the health of waterways

LESSION 2
Teacher's Notes

TIME REQUIRED

45 minutes

KEY LEARNING OUTCOMES

- It is not always easy to tell if our waterways are healthy.
- Students can identify contaminants in waterways and what a heathly mesurment is.

EQUIPMENT

For Teachers:	For Each Student:
• Computer with access to a projector	• 1 x Lesson 2 resource document per student • 1 x Live Data record document A - per student (from Lesson 1)

PREPARATION

Log on to cairns.qld.gov.au/smartcatchments/education

- Load Mobi's Catchment Challenge – **Activity 1**
- Load Smart Catchments – **LIVE DATA**

LESSON STEPS

1. Engage: 10 mins

Stand-up/sit-down: Ask students to stand up if the following statement applies to them.

I have broken a bone: Call on a couple of students to share on their experience. What bone did they break? How did they know it was broken and when did they know it was fixed?

I have had a temperature: What does 'having a temperature' tell us about someone health?

Can you tell if you have a temperature by looking at someone?

I have had a blood test: Ask students why having a blood test is necessary?

I have been to the doctor and had my blood pressure tested: Ask a student to share their experience? What do Doctors learn about a patient from checking blood pressure.

I have had a doctor check inside my ears: What are doctors looking for when they do this?

The health of a person is not always easy to determine, just by looking and the same applies to waterways.

Scientists can determine the health of waterways by taking various readings or 'parameters'. In this lesson we will learn what these parameters are, what a healthy reading is and how our actions can impact on these readings.

2. Explore: 20 mins

Log on to **Smart Catchments: Online Activity 1 (Link)** and begin.

Demonstrate to students how to click on the dials and view information about each of the monitoring dials parameters. Students record this information in

Activity 2.1.

3. Explain: 5 mins

Human actions can have positive and negative impacts on our waterways and affect the quality and health of our water ways. Positive actions improve the water quality – negative actions reduce the water quality

4. Elaborate: 10 mins

Have students Think /Pair/Share ways human activities may impact on water quality in a catchment and complete **Activity 2.2**.

This information is contained in the online activity and has to be read before moving on in the activity.

5. Evaluate: 5 mins

Bring up the Smart Catchments Live data and have students record the current readings in their **LIVE DATA RECORD (document A).**

Student Resource 2

MONITORING THE HEALTH OF CATCHMENTS

Name: .....

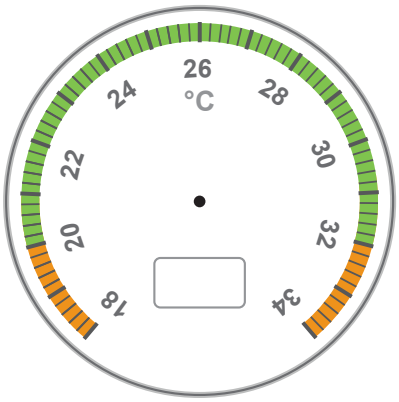
Date: .....

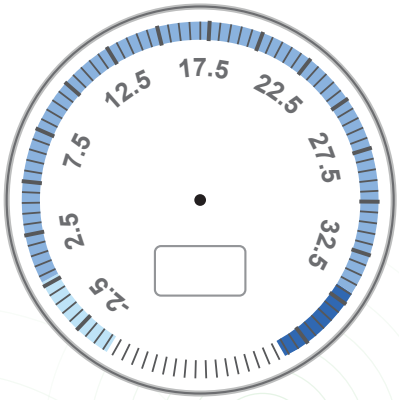
Now that you know what a catchment is, how can you tell if it is healthy?

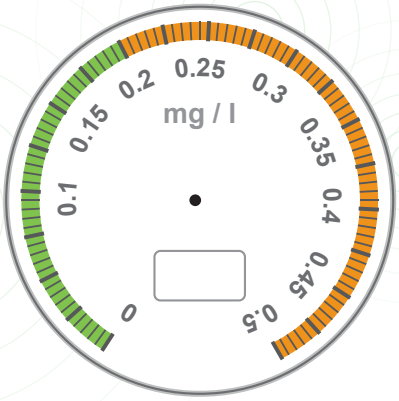
When you get sick, a doctor will conduct a number of tests that help to predict how healthy or unhealthy you are. For example, a doctor might take an observation of how you look, then take your weight, monitor your breathing, listen to your heart, check your blood pressure and take your temperature. Sometimes doctors may even take a sample of your blood and send it away for further analysis. The results of these tests help to predict how healthy you are overall.

Scientists do the same to monitor the health of the waterways. **The Smart Catchments project** is using SMART sensors placed in Saltwater Creek to and these are sending readings directly to the Gauging Station, which we can then see LIVE on line. This is important so that if any concerns are raised about the health of the creek, they can be responded to promptly.

Let's take a look at the dials to see what is being monitored.







Temperature

1. What is a healthy/normal temperature range for Saltwater Creek? .....

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2. What might happen if the water temperature is higher than normal for a long period of time? .....

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Salinity

3. Salinity is a measure of what? .....

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4. What affects salinity levels in Saltwater Creek .....

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Nitrate

5. What is a normal nitrate level for Saltwater Creek? .....

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6. How can nitrate enter waterways? .....

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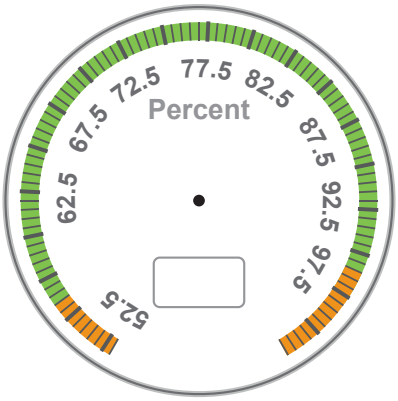

Dissolved Oxygen

7. What is a healthy dissolved oxygen range for Saltwater Creek?.....

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8. What can happen if dissolved oxygen levels are constantly below 56%?.....

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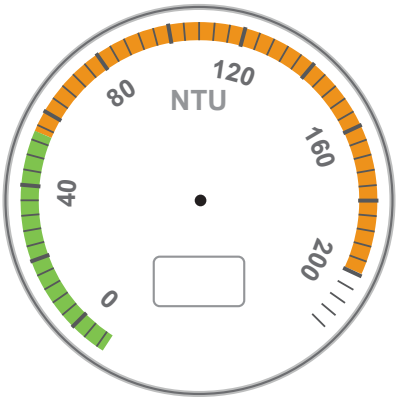

Turbidity

9. What does the turbidity reading tell us and what will the water look like?.....

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10. What other parameters (readings) are affected when turbidity is high (above 54) ?.....

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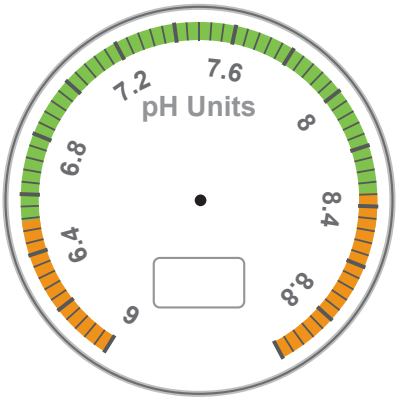

pH

11. What is a neutral pH measurement?.....

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12. What can changing levels of pH tell us?

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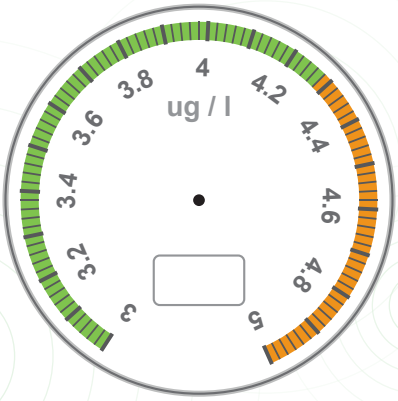

Chlorophyll – a

13. What is Chlorophyll - a?.....

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14. What is a healthy Chlorophyll – a measurement?

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15. What happens when there are higher than average concentrations of Chlorophyll-a in waterways?.....

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