**Year 9 AEP Earth Sciences**

**Field Work Assignment**

**Draw and interpret the geology of the hill on which the school is built.**

“The present is a key to the past” (James Hutton, 18th century Geologist) - natural processes we see happening today (e.g. volcanoes, erosion, formation of sand dunes) also happened throughout geological history.

**Planning for Field Work**

1. You will need a plain piece of A4 paper, a sharp pencil and an eraser.
2. Walk quietly to the field site.
3. Keep away from the edge of the road cutting.

**At the Field site**

1. On your paper draw the North arrow to show the direction of North.
2. Use most of the area of the paper to draw the features in the road cutting. We will first have a discussion about what you observe.
3. Draw a scale, or a figure of a person to give an idea of scale.
4. We will discuss the interpretation of the road cutting. You will need to recall the geological history from the first lesson.
5. Use the dropper bottle of acid to place a few drops on the rock material. Describe your observations. Explain the implications.
6. Use the trowel to collect some weathered rock material. Place the sample in your white paper bag.
7. Note on the bag your names, the date, the site.

**Interpretation of the East Street road cutting.**

You will need to recall the geological history and use your time-line from the first lesson.

Take a screen shot from Google Maps to show the location of this cutting and add it to your document.

<https://maps.google.com.au/>

**Description of the geology of the road cutting**

1. Describe the dominant features of the rock face in the road cutting.
2. Your geological drawing of the rock cutting described two main regions; a horizontally layered region and a cross-bedded region. Estimate the height of both the horizontally layered and the cross-bedded regions.
3. Estimate the depth below the road of the cross-bedded region.
4. Describe any weathering that you observed.

**Explanation of the geology of the road cutting.**

1. Describe how sand dunes are formed.
2. Use your drawing with its North arrow to suggest how the features in the rock cutting were formed.
3. What processes have helped the sand become the rock that we see today?
4. Explain why pats of the rock face have been “bricked in”

**Analysing sand from different areas around Perth gives us clues to their formation;**

“From where they were weathered?” and “How they were eroded?”

**★Observing weathered material from the outcrop on East Street.**

Place a pinch of your collected sample on a petri dish and observe beneath a binocular microscope.

**★Geological drawing**

1. Write a heading – describe the area from where you collected the sample.
2. Make a neat drawing of the different types grains that you see. Use a sharp pencil.
3. Draw a scale bar next to your drawing.
4. Describe the colours and lustres of the grains.
5. Note if you observe any shell or coral material.
6. Using the properties of minerals that you have observed previously, make a prediction as to the name of the minerals in the sand.
7. Carefully place a drop of acid on the sand grains and observe beneath the microscope. write your observations. Include a description of
   1. the sand before the acid was added
   2. what happens with the acid
   3. what the sand looks like after a few minutes
   4. note any grains that do not appear to have changed. (Note: when “nothing happens” it can be a clue to the nature of the substance being tested)

**Interpretation of the Chemical Reaction**

1. Describe the chemical reaction you observed. During your chemistry unit you studied this reaction.
2. Recall this reaction and write a word equation.
3. Write a balanced chemical equation for this reaction.

**★Interpretation of the rock material**

From your observations and chemical tests that you conducted describe the type of material that is found in these ancient sand dunes.

**Extension Analysis**

Use the samples of sand from the Swan River, Nedlands and Rottnest Island.

Repeat the starred steps from above.**★**