

B1. Acid Sulfate Soils

Acid Sulfate Soils (ASS) is the name given to soils and sediments containing iron sulfides, the most common being Pyrite. The term ASS includes both actual ASS and potential ASS. When these soils are disturbed and exposed to air, they oxidise and produce sulfuric acid, iron precipitates, and concentrations of dissolved heavy metals such as aluminium, iron and arsenic.

ASS are not a problem when they are left undisturbed with permanent groundwater levels. Naturally occurring iron sulfides are generally found in a layer of waterlogged soil or sediment and are benign in their natural state.

Characteristics of ASS and Potential ASS

- have pH less than 4;
- contain oxidised iron sulfides;
- vary in texture; and
- often contain jarosite (yellow mottle produced as a by-product of the oxidation process).

Potential ASS:

- often have a pH close to neutral (6.5-7.5);
- contain unoxidised iron sulfides;
- usually soft and sticky and saturated with water;
- usually gel like muds but can include wet sands and gravels; and
- have potential to produce acid if exposed to oxygen.

The DEC's Contaminated Sites Branch deals with ASS issues in WA, providing advice to community groups, local government, consultants and developers on investigating and managing ASS.

Additionally, the Western Australian Planning Commission (WAPC) has released an Acid Sulfate Soils Planning Guidelines available on the WAPC website:

<http://www.wapc.wa.gov.au/Publications/default.aspx>

Further Information

ASS occur throughout Australia. 30% of them are located in coastal WA. The areas currently considered to be most at risk of disturbance of ASS are depicted in either of the following databases (WAPC, 2009):

- the Department of Environment and Conservation's (DEC) Geographic Atlas available on the DEC website:
http://portal.environment.wa.gov.au/portal/page?_pageid=53,34347&_dad=portal&_schema=PORTAL
Also available on this site is DEC's Policy Position – ASS and the Contaminated Sites Act 2003; and
- Landgate's Shared Land Information Platform's (SLIP) - WA Atlas Map Viewer available at: www.walis.wa.gov.au/SLIP