



Mineralogy of shore sediment and seawater-suspended material from Hawley Beach.

by R. S. Bottrill

Abstract

Fine-grained sediment found on shore and suspended in seawater at Hawley Beach, thought to be pollution, was analysed. The material was found to be carbonate-rich, and probably largely derived from the continental shelf during storm activity.

INTRODUCTION AND SAMPLE DESCRIPTIONS

Five samples were collected by a Mr Paul Pearton of the Latrobe Council, at Hawley Beach, near Wesley Vale, on 3 November 1988 in connection with a possible pollution problem. Sample details are:

Sample No.	Description	Time
1	Sea water, just offshore, Hawley Beach	1.15 pm
2	As above, but more suspended solids	1.15 pm
3	As above	3.15 pm
4	Scrapings from settled material on top of beach and between low and high tide lines	1.00 pm
5	As above	1.00 pm

RESULTS

The bulk samples were analysed by X-ray diffractometry and the results are shown below in Table 1. The bulk of the samples consist of typical beach sand components: quartz, feldspar, and shell grit (calcite and aragonite), although the shell grit is unusually abundant. The first three samples had insufficient clay and fine silt to permit effective separation

and testing of a clay fraction. Samples four and five still had little clay but a $-305\mu\text{m}$ fraction (clay and fine silt) was sedimented off and tested separately. The samples were still low in normal clay minerals, but surprisingly rich in calcite. These 'clay' analyses are shown in the last two columns in Table 1.

Ferric hydroxide, generated by Tioxide at Burnie, was suspected but not detected, and the colour suggests that it is a very minor component, if present at all. Clay filler used in the Wesley Vale Board Mills was also suspected, but while the kaolinite present may indeed derive in part from there, it cannot be proven, and the very low clay content suggests that it is certainly not the problem in any case.

DISCUSSION

The sediments are basically a mixture of beach sand and carbonates (fine shell grit), with only a trace of clay minerals. These carbonates probably derive from recycling of marine sediment from the continental shelf which, in this area, may have over 30% carbonate (Davies and Hudson, 1987). Stormy weather around the time of sampling was probably responsible for reworking this material into suspension and carrying it into shore. Very little of the material is likely to derive from anthropogenic sources.

REFERENCES

DAVIES, J. L.; HUDSON, J. P. 1987. Sources of shore sediment on the north coast of Tasmania. *Pap. Proc. R. Soc. Tasm.* 121:137-152.

[6 December 1988]

Table 1. Mineralogy of sediments from Hawley Beach

Sample Lab. No.	1 883976	2 883977	3 883978	4 883979	5 883980	4 (<30 μm) 883979	5 (<30 μm) 883980
Quartz	M	M	M	M	M	A	A
Calcite	M	M	M	M	M	M	M
Aragonite	A	A	A	A	A	A	A
Feldspar	-	T	A	A	T	-	-
Kaolinite	T	T	-	-	-	A	A
Mica/Illite	-	-	-	-	T	A	A

M = major; A = accessory; T = trace