

ABSTRACT

A study of the effects of the Alcan Bauxite/Alumina Plant on the Rio Cobre and its tributaries was conducted during the period December 1987 to December 1989. This was done by investigating water and sediment samples at five sampling sites, three located on the Rio Cobre and two on its tributaries. Water samples were collected monthly and analysed for pH, alkalinity, sodium, hardness, aluminum and phosphorus. Daily samples were also taken for one week (beginning 16/1/89). Sediment samples were collected on only three occasions (May and Nov. 1988 and Jan 1989) and analysed for elemental content (17 elements) and organic and carbonate contents. Sequential extraction procedures to determine element speciation were attempted.

The samples were generally analysed in duplicate, error measurements and accuracy were assessed for both water and sediment samples.

The results indicate that the two tributaries are grossly contaminated with the parameters pH, alkalinity, sodium and aluminum (water), high concentrations of these parameters are indicative of contamination from the bauxite industry. The tributaries are also enriched (especially site 4) in

the elements La, Sm, Eu and Dy. High arsenic concentrations were also observed at these sites. The Rio Cobre, although showing higher concentrations downstream, did not show concentrations above that typically encountered in rivers.