

MONITORING AND ASSESSING THE SUDBURY, ONTARIO, CANADA, LAND RECLAMATION PROGRAMME¹

by

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Abstract. Since 1978, over 2700 ha of acid metal-contaminated land in the Sudbury region have been treated with limestone (5-10 t/ha); fertilizer, 5-20-20 or 6-24-24 (350-400 kg/ha) and 25-45 kg/ha of a grass-legume seed mixture. In selected locations, over 1/2 million bare root nursery stock trees, including both conifers and hardwoods, have been planted into the grass sward. A comprehensive monitoring program operating since 1979 has followed the changes in the biotic and soil components of the developing ecosystem. Vegetation cover in treated areas has remained in the 15-25% range. However, there has been a tendency for grass cover to decrease and percent cover of herbs and woody plants to increase over time. Most prominent of the 20 colonizing species are willow (Salix spp.), White Birch (Betula papyrifera) and, especially, Trembling Aspen (Populus tremuloides). There has also been an increase in the cover and vigor of the legumes which has assisted tree growth. Surface soil pH has increased from 3.15 - 4.5, before treatment, to 4.5 - 5.5 following treatment, and has stabilized at these post-treatment values. Vegetation in treated areas shows some elevation of toxic metal levels, but not to amounts considered harmful to growth. Numbers of insects, birds and small mammals have increased since 1979. These results indicate that one of the prime goals of the program, namely the restoration of self-sustaining 'natural' ecosystem, is occurring.

ADDITIONAL KEY WORDS: Revegetation, industrially-stressed ecosystem, colonization, vegetation performance, copper, nickel.

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