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FROM SEAFLOOR TO HILLTOP: LAND AND MARINE RECLAMATION AT ISLAND COPPER

by Ron Hillis

Introduction

"Seafloor to Hilltop" covers several different ecological systems. In the next 40 to 60 minutes, Laura and Ian will present some of the work that has been done at Island Copper to document the impacts from our large scale mining operation.

The Island Copper Mine is located on the north end of Vancouver Island, on the north shore of Rupert Inlet, 15 km south of Port Hardy. The ultimate dimensions of the single open pit will be over 2 km long, I km wide and will descend 317 metres below sea level. The total area of disturbance, including all dumps and the mine, will be 676 hectares. The pit, the beach dump and the land dump (including the plant facilities) represent one-third each of the total disturbance.

In 1983, 165,000 tons per day of waste and ore were removed from the pit. The mining technique used is a conventional truck and shovel operation. The rock is drilled, blasted and loaded aboard haul trucks for transport to one of the waste dumps, or to our crusher for processing.

30% of the material removed from the pit is copper and molybdenum ore. The material is conveyed from the crusher into large grinding mills. The ore is reduced to a size where the majority of minerals are liberated from the waste. With the aid of reagents, the valuable minerals are separated from the gangue by froth flotation. The copper concentrate is dried and loaded aboard our own ship for transport overseas. The mill tailings, under permit from the provincial government, is discharged by a submarine outfall into Rupert Inlet.

During the life of the mine, Island Copper personnel have monitored the effects of the waste disposal into Rupert Inlet and adjoining waters. This monitoring has been done using physical, chemical and biological oceanographic techniques. Also, most of the major natural streams and man-made drainages have been sampled and tested by a group of six full-time environmental staff.

During the monitoring studies, it has been observed that the tailings, which have been deposited on the sea floor, have been colonized by many types of benthic organisms. In fact, the Polychaete worms actually use the tailings to build their protective casing — as shown in this slide, by the light and dark banding. Laura has been studying this colonizing process and will now present some of the details of her work.