C. Risks to the environment

Based on DENR-EMB data and Boquiren 2006:66, the rivers or water bodies directly threatened by contaminants from Philex Mines are as follows:

1. Albian Creek: at risk because the creek emanates from the subsidence area of the open pit mine of Philex
2. Sal-angan Creek: at risk because the creek lies along the paths of two non-operational mine tailing ponds (Philex tailings pond 1 and 2)
3. Balog River: at risk because effluents from Philex tailings pond 3 converge with this river
4. Agno River: at risk because the Balog River eventually drains into the Agno River and San Roque Dam

Notes on the water quality of the said creeks and rivers are indicated by the table below:

Table 2. DENR-EMB description on water quality of rivers threatened by Philex

River and Location	Features and water quality
Albian Creek	A tributary of Agno River in Ampucao, Itogon, Benguet. Emanates from the subsidence area of Philex Mining Company and underground water from Level 1170. The creek is nourished by the Bomolo creek and other intermittent creeks converge with the Albian Creek. Water quality: still within the water quality criteria for Class A freshwaters as to pH, DO, and TSS. **Analyses on dissolved metals and total dissolved solids are unavailable.**
Sal-angan Creek	A tributary of Agno River in Ampucao, Itogon, Benguet. Originates from the mountain ridges of Barangay Ampucao; converges with the Albian creek at Sal-angan, Ampucao and discharges into Barangay Dalupirip in Itogon. Within the criteria for Class A as to pH, DO and TSS. The river is along the two non-operational mine tailings dam of the Philex mines: Philex tailing ponds 1 and 2. **Data on total dissolved solids and heavy metals are unavailable**.
Balog River	A tributary of Agno River in Ampucao Itogon, Benguet. A number of creeks upstream converge with this river. Effluents from tailings pond 3 of Philex Mining Company converge with this river and drains into San Roque Dam. Nevertheless, the river is still within the criteria for class A as to pH, DO and TSS. **TDS concentrations of the company's effluents as well as the Balog River, however, are beyond the effluent standards for class A**.
Agno River	Biggest river system in Benguet. Headwaters: Loo River in Buguias and Baayan River in Kabayan, both in Benguet. Meanders through Kabayan, Bokod, and Itogon, all in Benguet, then goes to the province of Pangasinan and finally into the Lingayen Gulf. **The tributaries from Itogon include the Albian and Sal-angan Creeks and Balog River**. Visually clear waters are reported by the DENR-CAR to characterize the main river, including the tributaries. The TSS, TDS, pH, and DO concentrations are reported to conform to the minimum water criteria. Gold panning that affects water turbidity along Ambalanga river are reported by DENR-CAR. There is recognition that the river is not only a source of gold but also of freshwater food. Farming is major livelihood in upstream portion while fishing is a source of livelihood midstream and downstream of the river.

The risks of Philex mine operations can be assessed further if we study the Albian and Sal-angan creeks deeper and identify the aboveground and underground exit points of the creek waters. Hydrology studies will be helpful.

Sal-angan/Banget and Omistic Fishponds

In an attempt to project a positive image on its environmental impact, Philex Mines funded the establishment of fishponds in Sal-angan and Omistic in the Municipality of Itogon, Benguet Province. However, the fishponds are actually not along the path of the active tailings pond 3 but along the path of inactive tailings ponds 1 and 2. Thus, the fishponds are not actually at risk to active mine operations.

Nevertheless, inactive tailing ponds can have heavy metals or underground acid mine drainage. Fishes can ingest the heavy metals and consumption by humans of fishes that ingested heavy metals can result to the bioaccumulation of metals in the human body. On the other hand, there are species of fishes that are resistant to copper toxicity and some of the fish species can have adults that are resistant to the toxicity even if the fish larvae are not.

Figure 50. Decommissioned Philex tailings pond 1 and fishponds
(note similarity of depiction of tailing pond with those in Figures 43 and 47 pages 33 and 35)

To have a deeper understanding of the impact of Philex mining to the environment, we have to assess if the fishpond production at Sal-angan and Omistic (both of Itogon, Benguet Province) are commercially viable, if fish production in the said areas are as high as the fish produced in non-polluted waters, and if fishes from the fishponds do or do not have large quantities of heavy metals in their bodies that can be passed on to humans via "bioaccumulation."

Bioaccumulation is the process that takes place when heavy metals accumulate in the body as humans or organisms that are up in the food chain eat plenty of the fishes and plants or organism in the lower part of the food chain with heavy metals in their bodies (see the March 2009 issue of Environmental Science and Technology Briefs for Citizens in www.engg.ksu.edu).

Figure 51. Tilapia fish pond terraces at Omistic
(source of water unclear if contaminated by Philex tailing pond 1)

Another risk that has to be investigated is the risk posed by the mining method of Philex (see page 28 to 29) that backfills mining site. It is extremely important to study the risks involved with the mining method given that the site of ore is also along a fault line (see page 17).

Meanwhile, Figure __ indicates that Philex believe its greatest impact will be in communities where the mill, tailing ponds, and ore body are located.

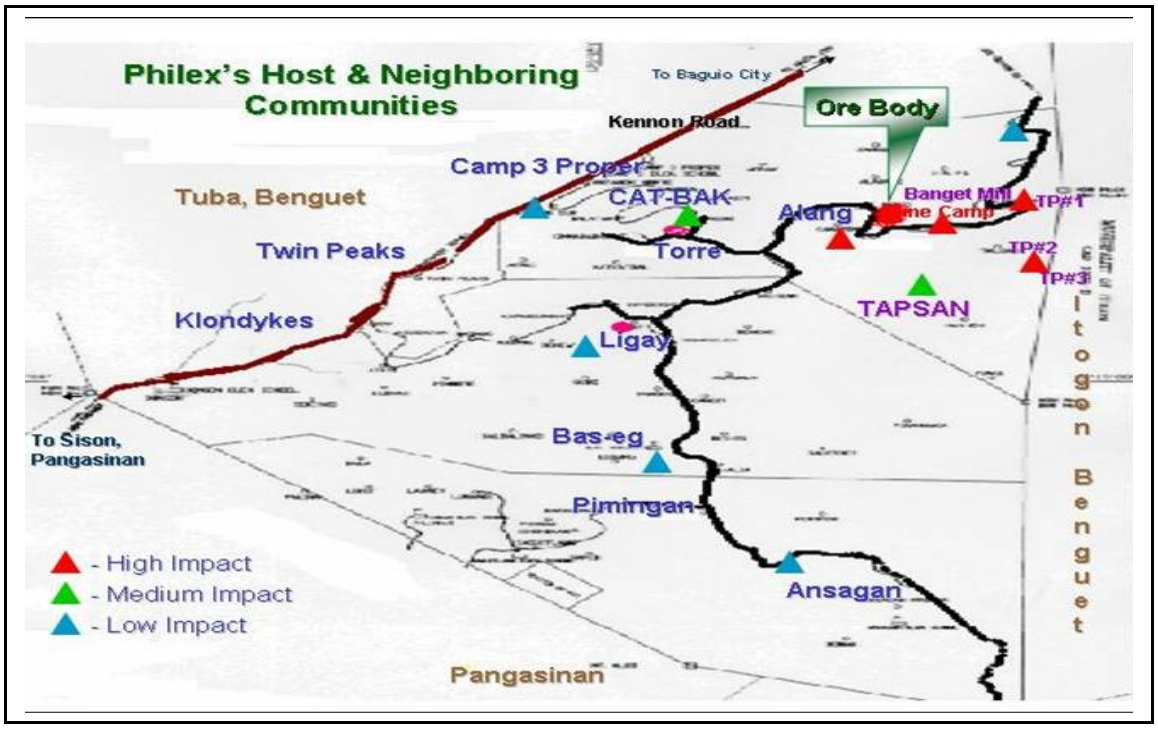

Figure 52. Philex Mining Corporation and company perception of its own impact

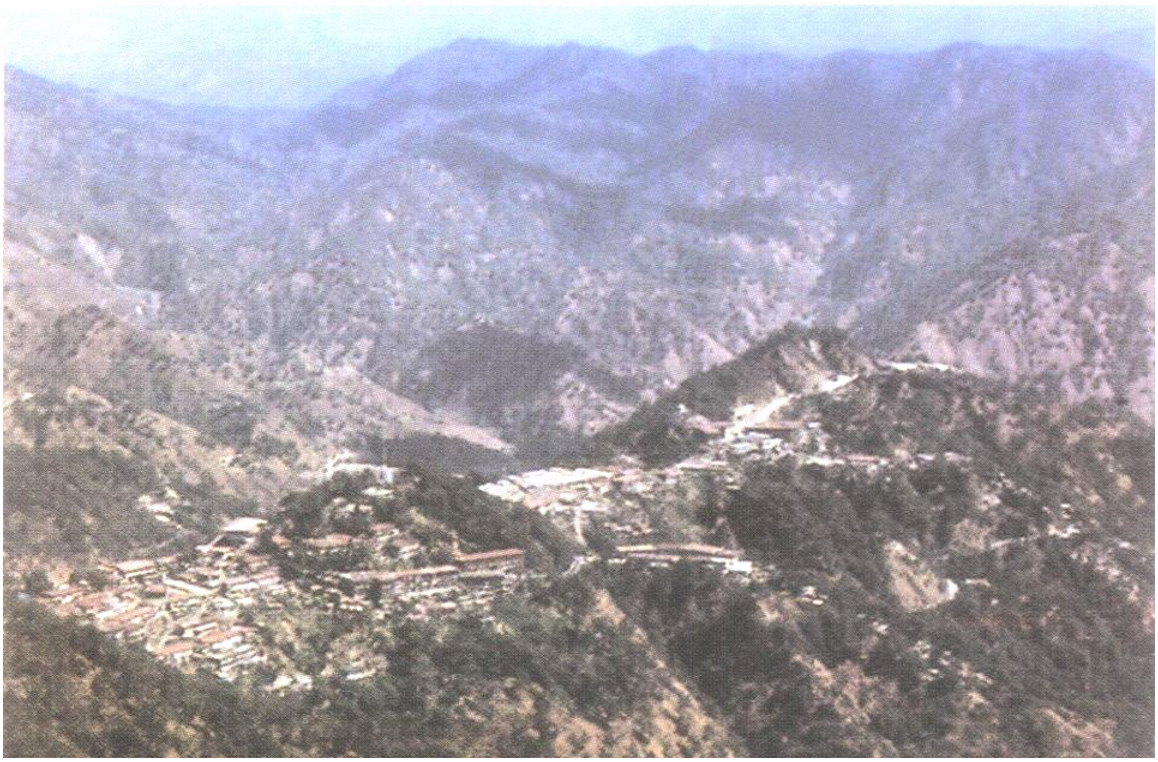

Figure 53. A view on the Philex facilities and host community (source: Philex Mines Corporation)