THE PHILEX MINE TAILINGS SPILL OF 2012:
AN INDEPENDENT FACT-FINDING MISSION REPORT

The Catholic Bishops Conference of the Philippines – National Secretariat for Social Action, Justice and Peace (CBCP-NASSA) * Climate Change Congress of the Philippines (CCCP)* Philippine Misereor Partnership Inc. (PMPI) and it Northern Luzon Cluster * Peace Foundation, Inc. * Pambansang Kaisahan ng mga Magbubukid ng Pilipinas (PKMP) * Katribu Indigenous Peoples’ Partylist * Cordillera Peoples Alliance (CPA) * Caritas Baguio *
Community Volunteer Missioners (CVM)

September 16-17, 2012
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A. BACKGROUND AND CONTEXT OF THE FACT FINDING MISSION

Provincial Profile of Benguet. ¹

Benguet is a landlocked province of the Philippines in the Cordillera Administrative Region in Luzon. Its capital is La Trinidad and borders, clockwise from the south, Pangasinan, La Union, Ilocos Sur, Mountain Province, Ifugao, and Nueva Vizcaya. Baguio, a popular tourist destination in the country, is located in the interior of the province, however, the city is independent of the province.

Based on the May 2010 census², Benguet has a total population of 403,494, which makes it the most populous province in the region. This figure is up by 16,296 from 313,833 persons recorded in the 1995 census, giving an annual growth rate of 1.09% during the 5-year period—much, much lower than the national average of 2.43%. If this growth rate were maintained, Benguet would double its population in approximately 64 years. The province registered 63,123 households, an increase of 4,588 households over the 1990 figure. This gave an average household size of 5.2 persons, a little higher than the national average of 4.99.

Benguet is the homeland of several tribes, collectively referred to as the Igorot. Two of them, the Ibaloi in the southeast and the Kankana-ey in the northwest, are the dominant tribes of Benguet. In the 2000 census, 43% of the household population were Kankana-ey. About 29.2% were Ibaloi and 13.4% were Ilocano. Other ethnic groups included Ikalahan (3.7%) and Tagalog (2.4%).

Economy of Benguet

Agriculture, mining, and tourism are the major industries in Benguet. Because of its temperate climate and high altitude, Benguet is an ideal place for producing vegetables. Benguet is often called the Salad Bowl of the Philippines. During February 2007, Benguet suffered crop damage due to freezing temperatures in the area, reaching as low as 5 degrees Celsius and even lower in some areas, and important crops like cabbages were damaged. Major crops include potatoes, Baguio beans, peas, strawberries, cabbage, lettuce, and carrots. Other agricultural-related activities are monggo processing, fruit preservation, peanut brittle manufacturing, broom making, basket weaving, and flower growing. Apisang (scientific name: Pittosporum resiniferum), a plant endemic to the Philippines, is also being grown in Kapangan and Kibungan towns as a potential alternative source of fuel and energy, rivaling the overhyped jatropha biofuel plant.

Mining is a major industry of Benguet, which is one of the country's leading gold producers. The Benguet Corporation, one of the Philippines' largest diversified conglomerates was founded to exploit mines in Benguet Province. Other mineral deposits are silver, copper, pyrite, and limestone. Silversmithing is a large industry in Benguet, and many entrepreneurs sell silver works at lower prices in Baguio City, compared to Manila. The mining firms contribute to about 98% of the province's export revenue. In 2006 alone revenues from mining reached a stunning four billion pesos, and yet this figure comes from just two - the Lepanto Consolidated Mining Corporation and Philex Mines - of the many mining firms operating in the province. Nevertheless, the province's mining vigor has never translated into better quality of life of the Benguet people, simply because a bulk of the mining firm's taxes are not paid directly to the province and its share of an already small national share of the firms’ revenues is small. The two mining corporations,

¹ http://en.wikipedia.org/wiki/Benguet
² http://www.nscb.gov.ph/ru_car/fnf_benguet.htm
like many others around the country, have principal offices in the City of Makati, a set-up that makes Makati the prime mining tax beneficiary.\(^3\)

Added to the mining and vegetable farming, manufacturing is likewise a major economic activity in the province. Loom weaving which is a traditional art has been transformed into a major industry and ranks as one of the top exports of the province.

Knitting, fruit processing, bamboo craft, metal craft, wood carving, and tigergrass craft are just some of the industries currently found in Benguet. However, based on resources, the province holds great potentials for ore processing, silk fibercraft, rootcrops processing, mushroom processing and strawberry processing.

Like the rest of the Cordillera provinces, Benguet is a major tourist destination in the Philippines. Its picturesque landscape, unique culture, warm people and temperate climate all contribute to it being a favorite among tourists. As such, tourists-related industries such as handicrafts, restaurants and inns have been very viable enterprises. Among the 26 tourist spots that are must-see for the tourists are the Kabayan Mummies; Ambuklao and Binga Dams, the major sources of hydro power in Luzon; La Trinidad Valley; Timbac Caves; and, Mt. Pulag, the second highest mountain in the country. Various hot springs, waterfalls and caves are just some of the natural wonders that continue to attract visitors to the area.

With these natural resources and its proximity to Baguio City and the lowland provinces, Benguet has great potential for economic growth. Today, the province of Benguet still holds claim as the "Salad Bowl of the Philippines" because of its considerable production of upland vegetables

**Philex Mining Corporation Profile**
Philex Mining Corporation (PMC) and subsidiaries are organized into two main business groupings: the mining business under Philex Mining Corporation, and the energy and hydrocarbon business under Philex Petroleum Corporation. Philex Mining Corporation was incorporated in the Philippines in 1955 and listed in the Philippine Stock Exchange on November 23, 1956. The Company, Philex Gold Philippines, Inc. (PGPI, a wholly-owned subsidiary through a holding company and incorporated in the Philippines), and Silangan Mindanao Exploration Co., Inc. (SMECI, a wholly-owned subsidiary through a holding company and PGPI and incorporated in the Philippines) and its subsidiary, Silangan Mindanao Mining Co., Inc. (SMMC), are primarily engaged in large-scale exploration, development and utilization of mineral resources. The Company operates the Padcal Mine in Benguet. PGPI operated the Bulawan mine in Negros Occidental until the second quarter of 2002. SMECI, through SMMC, owns the Silangan Project covering the Boyongan and Bayugo deposits in Surigao, which are currently under pre-feasibility stage. \(^4\)

**Philex Padcal Operations\(^5\)**
The Padcal Mine, which Philex has been operating since 1958, is the first underground block cave operation in the Far East. The mine produces copper concentrates containing copper, gold and silver. A majority of the copper concentrates are shipped to Saganoseki, Japan for smelting by Pan

\(^3\) http://en.wikipedia.org/wiki/Benguet
Pacific Copper Company Limited, a joint venture company between Nippon Mining Co. Ltd. and Mitsui Mining and Smelting Co. Ltd.

The Padcal Mine is under 12 mineral holdings with an aggregate 95 hectares in Benguet Province, which are subject to royalty agreements with claim owners. Exploration activities in Padcal and vicinity were pursued in three areas in 2011 – in Sto. Tomas II ore body below 773ML; in Bumolo, and in Southwest prospects. The Sto. Tomas II ore body below 773ML is covered by MPSA 276-2009-CAR. The Bumolo and Southwest prospects are within MPSA 156-2000-CAR.

Two other prospects – Clifton and Bumolo 2 that were lined up for investigation in 2011 did not materialize. The social license for Clifton continued to be stalled as the communities raised new demands and the National Commission on Indigenous Peoples (NCIP) suspended the Free and Prior Informed Consent (FPIC) pending the issuance of a new guideline. Bumolo 2, located northeast of the Sto. Tomas II ore body, similarly became inaccessible to the exploration team because of overlapping claims among surface owners. Only limited stream sediment sampling in a small area outside of the known target was allowed.

Preparatory drives for the development of drawpoints at 798-ML will start on year 2012 while commissioning of drawpoints will start by 2014 and scheduled to be completed by 2018. Production in this mining level is projected to start by second half of 2014 up to the end of mine life on year 2020.6

**The Philex Spill and the Fact Finding Mission**7

The Department of Environment and Natural Resources (DENR) through its Mines and Geosciences Bureau (MGB), has suspended the mining operations of Philex Mining Corp. at. Padcal, Tuba, Benguet until such time that the integrity and safety of its Tailings Pond Number 3 (TP3) has been assured. DENR Secretary Ramon J. P. Paje said that the suspension order, which was issued on August 2, 2012, remains in effect as of today. The discharge of water and sediments came from one of the two underground tunnels that drains water from the penstock of Tailings Pond no. 3 (TP3).

According to MGB Director Leo Jasareno, Philex has three tailings ponds, but only Tailings Pond number 3 is actively used. The two other ponds have been decommissioned and rehabilitated as forest areas. Secretary Paje said that the DENR-MGB has completed its initial assessment of the situation, including the impact of the water and sediment discharge to the river system in the surrounding areas. The ocular inspection done by the MGB and the Environmental Management Bureau (EMB) initially found that the San Roque Power Dam has not been affected by the discharge. Laboratory analyses of water samples are continuing. The dam is situated at about 30 kilometers downstream of Agno River from its convergence with Balog River. The drain tunnels of Philex discharge their water load into the Balog River that, in turn, runs for about 2.5 kilometers to converge with Agno River.

Secretary Paje said that the DENR is now looking into any violations of the mining and environmental laws and regulations that may have been committed by Philex. Director Jasareno

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described the penstock as a hollow elongated structure built within a tailings pond, with sidewalls or stopboards, but open at the top where overflow water of the said pond enters and drains to the drainage tunnel below it. This, therefore, serves to prevent water from accumulating excessively in a tailings pond. The initial investigation showed that portions of the stopboards might have been displaced by hydrostatic pressure brought about by the unusually heavy rains in the area for the last two weeks, according to Director Jasareno.

B. THE FACT FINDING MISSION

The Climate Change Congress of the Philippines (CCCP) and the National Secretariat for Social Action, Justice and Peace (NASSA) of the Catholic Bishops Conference of the Philippines (CBCP) organized a Fact-Finding Mission (FFM) on the Philex Mining spill. The FFM is an independent, third party mission that aims to gather first-hand information on the impacts of the Philex mining spill. Specifically, it aims to:

1. Validate news reports on the impacts of the Philex spills to the people and the communities
2. Gather regional and national government scientific studies and policies pertaining to the aftermath of the mining spill; and
3. Help identify major problems, concerns and recommendations to address the situation.

The Philex FFM was conducted last September 16-17, 2012. It is composed of national and local Church and Civil Society Organization (CSO) representatives. Outcomes of the FFM will be presented to government agencies and other stakeholders for appropriate action.

The following are the Philex FFM members: The Catholic Bishops Conference of the Philippines – National Secretariat for Social Action, Justice and Peace (CBCP-NASSA), the Climate Change Congress of the Philippines (CCCP), the Philippine Misereor Partnership Inc. (PMPI) and its Northern Luzon Cluster, the Peace Foundation, Inc, the Pambansang Kaisahan ng mga Magbubukid ng Pilipinas (PKMP), the Katribu Indigenous Peoples’ Partylist, the Cordillera Peoples Alliance (CPA), Caritas Baguio, and the Community Volunteers Missioners (CVM).

C. THE FACT-FINDING MISSION REPORT
First day: 16 September, 2012

I. Interview with Hon. Eddie Amuasen, Chairman of Barangay Ampucao, Itogon, Benguet Province

Chairman Amuasen is a three-term elected barangay official. He was elected into office from 1994 to 2007, 2007 to 2010, and 2010 to the present. He is a member of the Mine Rehabilitation Fund Committee (MRFC). He is also the chairperson of the Barangay Disaster Risk Reduction Management Council (BDRRMC).

Barangay Ampucao is one of the largest barangays of Benguet Province in terms of land area. It has a population of 12,220 (2005 census). People in the barangay depend on fishing and gold panning for their income and livelihood. Out of the 2,000 workers employed by Philex, about 100 are from the locality.
Chairman Amuasen reported three sitios affected by the mining spill: sitios Calaguian, Tayum and Pangbasan, and claimed that around 30 families were affected. He believes there are toxic chemicals involved, but not many families are affected by it.

According to the chairman, heavy and incessant rains caused the collapse of the TP3. Sitio Pangbasan residents reported damages to property such as damaged houses and plastic water pipes, their fishing boats flowed into the river, the drowned goats and livestock. Copies of damage reports are available with the Municipal Disaster Risk Reduction Council (MDRRC). There are no reports of health effects of the spill.

He learned about the spill on August 2 from the community and from Philex, and went with the governor of Benguet to visit the site. They saw mine tailing wastes that went from Balog River to the San Roque Dam. He was informed that about 6M metric tons of mining wastes were discharged during the first spill. He said that the TP3 collapsed again after 2 days of plugging. They kept trying to plug the hole but were unsuccessful. Even heavy equipment like bulldozers were thrown into the TP3 to plug the hole, but just went through the big hole and were found in the river. He recalled the water pressure to be “very strong, with the strong rush of murky water with explosions, big trees flown and the murky water as high as a mountain.” As of the time of the interview, there were no more news of spill.

He said that toxic wastes can be seen in the dried and poisoned plants, trees and branches where effluents flowed. Mining wastes include sand and minerals. Mutant tilapia were found in the pond; they looked different, with big head and small body, which the workers eat.

He narrated that the mining spill has negative effects on the livelihood of the people who mainly depend on fishing and gold panning in the river.

Fishermen have stopped fishing since August 2, 2012 due to the heavy contamination of the Balog river. They also cannot fish in farther areas because it is already beyond their fishing boundary.

Workers of Philex are also affected. Although regular workers continue to receive wages, casual workers are no longer paid.

Philex contributes around PhP 6M per quarter to the revenue collections of the municipalities of Itogon and Tuba, but only two quarters of taxes reportedly reach them.

With respect to the Philex response to the accident, he said that Philex’s Social Development Management Program (SDMP) should be incorporated in the Barangay development program, meaning relief should not be given directly to the people. Otherwise, the barangay chairman is generally satisfied with their work in the community.

He believes there is no adequate response yet from the government. The barangay distributed relief goods to the Pangbasan residents although it is not within their jurisdiction but because they are nearer their barangay. He learned that Philex also distributed some goods once or twice.
To monitor the situation, there is a Multi-Partite/ Stakeholders Monitoring Team (MMT) but it seems there are no technical experts in the team to monitor the situation effectively. They are dependent on the MGB and the DENR to assess and decide on the situation.

The barangay chairman does now know the details of the Philex Environmental Compliance Certificate (ECC) and referred the FFM team to the MGB.

There is the issue of transparency: even the barangay chairman and TV5 (owned by owner of Philex) are not allowed to enter the compound. Initially, the barangay chairman was also not given reports. Only after saying that many people are asking him questions about the spill and he wanted to provide them with information from official reports, that he was provided with the MGB report.

He narrated that the company has records of mining incidents in the past. The TP1 and TP2 are now decommissioned. They collapsed in the 1980s and 1990s, respectively. He also recalled that there was a spill at TP3 about 2 or 3 years ago. A sinkhole was reportedly found, but it was contained and plugged. The volume was small and he is not aware of any official report about it. He believed it is the concern of the DENR, not the LGU. People then were not so affected. He said that there are laws that regulate these matters since the time of the Marcos administration but implementation have not been strict.

**Major concerns cited by chairman Amuasen are as follows:**

1. Due to the suspension of operations of the Philex, revenue collections of the LGU is expected to be affected. They rely heavily on taxes from Philex; and
2. The livelihood of underground workers, the transportation workers, the fisherfolks, including Philex employees, are affected.

**Major Calls for Philex cited by Chairman Amuasen:**

1. to fix the problem and normalize their operations as soon as possible; and
2. to provide alternative livelihood to the affected fisherfolks.

**Visit to Talnag Community**

The FFM team was not able to visit the community since the access road passes through the Philex Corp. Compound, a national road, and the company security guards barred entry to the compound. All persons in all vehicles, needed to get off and no cameras were allowed beyond the gate. Even when official NASSA and CCCP letters were shown, security guards stated they were not given instruction by the Philex office. Moreover, the person that the FFM team spoke to on the phone has not given his identity and designation.

**Second Day: September 17, 2012**

II. **Continuation of Interviews with Hon. Eddie Amuasen, Barangay Chairman and Hon. Lope J. Milo, Jr, Chairman of Environment Committee**

The barangay officials provided the FFM Team with copies of the photo documentation on the condition of the pond and tailing spill as of August 4, 2012. They have been to the site and have seen the condition there in the middle of August, around the 15th, “wala nang laman halos ang
"dam" (the dam is almost empty) according to Kagawad Lope, chairman of Environment Committee.

On the tailings facility/structure, they said that there are two Penstocks (PS), A & B, which controls the volume of the water flow “sinasala ang tubig na lalabas, naiiwan ang silt sa pamamagitan ng stopper (the water was filtered by the stopper, leaving behind the silt), water being gradually released when water level in the penstocks reaches 623 meters high.” A sketch of the penstocks was shown by the barangay chairman.

The spill is at the bottom/ground, instead of surface release, the tailings, both water and silt spilled in huge volumes through the ground spill; “Dahil sa overcapacity, bumigay and pundasyon ng base ng dam dahil sa bigat ng pressure” (due to overcapacity, the foundation gave way at the base of the dam under great pressure) according to them.

On the request for the MGB report promised to the FFM team who interviewed him the day before, chairman Amuasen said that his staff couldn't find it at the office and instead instructed the team to ask the MGB for a copy. “Sabihin na hihingi kayo ng kopya ng report na katulad nung binigay sa Barangay” (tell them that you are asking for a copy of the report given to the Barangay).

The barangay officials provided the list of households/claimants of damages sustained during the 1st reported spill last August 1, 2012.

III.  Interview with Hon. Nestor D. Domenden, CESO V, Regional Director, BFAR Region 1 in San Fernando, La Union

Regional Director (RD) Domenden clarified that only the San Roque Dam is under the jurisdiction of his office. Moreover, he stated it is “just the fish” and not the “water which is the jurisdiction of DENR.” The Balog Creek and Agno River are under the jurisdiction of the BFAR-CAR Region. Laboratory testing of fish samples is done regularly, on a monthly basis even prior to the Philex spill.

Immediately after the breaching had been reported last August 3, BFAR Region 1 issued a fishing ban sans the testing, as a preventive measure in case fishes are indeed contaminated. The ban was for “collection, gathering and transporting” of fish from the San Roque Dam (SRD).

The first testing done on fish samples after the mine tailings spill was on August 6, 2012. Fish samples for tilapia and carp were taken from a depth of 50 meters in the 3 stations of San Roque Dam: spillway, gitna (middle), and headwaters. Thus, total of 6 samples were submitted for testing. The tests made were for presence of five (5) heavy metals: lead, arsenic, copper, cadmium and mercury. SRPC pays for the monthly regular testing at Ph 12,000/sample. Centrotech, an independent and private laboratory which is accredited by the government does the testing. The result of the testing done last August 6 was released last August 26.

Results showed that traces of heavy metals were found in the fish samples, but “level of toxicity is not harmful for human consumption hence, is allowable.” This was the reason why the fishing ban had to be lifted.
The most recent samples taken and submitted for laboratory test was last/previous week. Results are expected after 10 days. Only pelagic fishes such as the tilapia and carp were tested. There was no testing done on other fish species in the dam such as gurami, catfish, dojo and ulang/shrimps. “Kami ang naglagay ng isda dyan kaya alam namin what fishes are there,” (we put the fish/ species there, so we know) the Regional Director remarked.

There was no sample taken from the deepest part of the dam which is at 130 meters. SRD is 280 meters above sea level.

When asked if laboratory tests were made on the mutant tilapia in some ponds inside the Philex mining compound which indicates effect of longer exposure to chemicals from heavy metals, the RD said that they have not heard of any report about it. They do not know that there are mutant tilapia there.

When asked if BFAR has knowledge, technical information or experience about period of time or how long it takes before full contamination happens after exposure to harmful chemicals, the RD said that he has no personal expertise on that, but BFAR has chemists though who can provide information on that.

**Major Problems and Concerns cited by RD Domenden:**

When asked if he had no apprehension about the effects of the tailings on the fishes in the SRD, the RD admitted “technically, may apprehension ako, I just don't have a strong basis, baka magalit sa akin ang Philex sasabihing ano ang basehan mo”? (technically I have apprehension, but I just don’t have strong basis, and Philex might get angry with me, asking me what is my basis for it.)

When asked if BFAR has data on the volume of fishermen’s daily catch from the SRD, RD said that it was difficult for them to monitor, since there is no common fish landing or market for the fishermen’s catch from the SRD.

The RD also said that in the event of a long term effect of the tailings in the SRD, the fisherfolks who depend on fishing in the SRD, should organize themselves, indicate how much they are earning from there as basis to file a suit/ case against Philex.

The RD said that no monitoring had been done on the downstream fishing communities, and freshwater ponds outside of the SRD itself. Technically he explained that the dam itself is the regulating pond and the re-regulating pond downstream of the SRD is/are re-regulating pond/s. He calls this area as aquaculture area.

He also said that there is a Multi-partite Monitoring Team (MMT) composed of pertinent government agencies, but Philex Company is not part of this. This body meets quarterly. RD claimed that there is convergence or consolidation of each agency's report and/or findings on the breaching incident.

The tailings breaching incident immediately prompted Department level meeting of the Department of Agriculture (DA) to which BFAR and the National Irrigation Authority (NIA) is part, in response to the situation.
Downstream communities include irrigated agricultural lands. No data had been presented/reported as to the effect of the breaching to these agricultural communities, except for NIA order or a shutdown of its irrigation systems in the area as a mitigating measure.

IV. Interview with Hon. Catalino Panganiban, OIC/ Administration and Finance Officer MGB-CAR

As the MGB-CAR Regional Director was in Manila for the DENR budget hearing, the administration and finance officer, Catalino Panganiban attended to the FFM team.

He explained that the mandate of the MGB is regulatory, specifically on the safety of mining operations. The EMB, on the other hand, takes charge of the technical aspects such as water quality. The DENR central office heads the technical evaluation related to the Philex mining spill, thus official technical assessment is available only in the MGB Central Office. The MGB-CAR is tasked to assist the Central Office in the investigation of the mining incident.

Before the mining spill, Philex was regularly monitored monthly and quarterly through the Multi-partite Monitoring Team (MMT) for compliance to safety standards. Philex submits reports monthly and is claimed to be compliant to safety standards by the MGB.

The MGB ordered a stop on the Philex mining operation after the spill.

He said that as the administration and finance officer, he is not capable to respond to questions on the spill, and referred the FFM team to the MGB in the Central Office.

V. Interview with Engineer Nestor Donaal, Chief of Environmental Impact Division; Engineer Alex Luis, Chief of Pollution Control Division; and Atty. Asterio Tolentino, Jr, Legal Officer, DENR-CAR Environment Management Bureau (EMB)

The Environment and Management Bureau (EMB)\(^8\) is the national authority in the Philippines that sets air and water quality standards and monitors ambient and point source pollutants. It manages hazardous and toxic wastes under the Toxic Substances, Hazardous and Nuclear Waste Control Act and implements the Philippine Environmental Impact Assessment (EIA) system.

To promote compliance with environmental standards, EMB has innovated an approach to engage industry and environmental agencies in voluntary self-regulation. Under the Philippine Environmental Partnership Program, the EMB provides a suite of technical and regulatory assistance as an incentive for EMB has also made public participation and transparency key elements of its EIA system, involving affected communities and stakeholders at various stages of project developments to ensure safe, smart, and sustainable development.\(^1\)

Engineer Luis said that in the past, Balog creek is categorized as a Class A river because it was clean. At present, it is very polluted due to the Philex mine tailings discharge. The Philex Mining Corporation reported the spill on August 2, 2012. The EMB issued to the Philex Mining Corporation on August 7, 2012 a Notice of Violation (NOV) of RA 9275 or the Philippine Clean

\(^8\) http://www.emb.gov.ph/portal/PlansandPrograms.aspx
Water Act of 2004 and its Implementing Rules and Regulations (IRR) based on the laboratory analysis of effluents discharged by the Philex Tailings Storage Facility and taken by the DENR-CAR EMB and MGB joint inspectorate team on August 3.\(^9\)

The laboratory analysis indicated the following:

- **Allowable level**: 50 mg/L
- **Penstock A**: 89,710 mg/L
- **Penstock B**: 4,704 mg/L

The NOV remains effective until remedial measures have been implemented and the pollution problems addressed and mitigated and the safety of the mines operations is ensured. The Philex Mining spill case is currently filed before the Pollution Adjudication Board (PAB) headed by the DENR Secretary.

A laboratory test for heavy metals contamination was also conducted, but the office machine was reportedly defective so they sent the sample to DENR-Central Office instead. The staff was not able to reach the central office because they were stranded in the heavy flooding on the road to Manila.

The EMB is part of the Multi-partite/ stakeholder Monitoring Team (MMT) and Mine Rehabilitation Fund Committee (MRFC). Due to the magnitude of the problem, the technical assessment and monitoring team is headed by the DENR - Central Office. The DENR Central Office will provide the public with comprehensive reports on the spill. There is no other mechanism to inform the public on the updates.

They said that mining spills from August 1 to 14 have been estimated at 6M metric tons. The TP3 hole cannot be located by the Philex Mining Corp. Plugging of the hole is on a “trial and error” basis. As to the safety of the TP3 structure, it is more appropriate to ask the MGB. The size of the TP3 tunnel is 15m x 18m, which explains why the heavy equipment thrown into the TP3 to plug the hole just passed through and found their way to the river. They said that the mining spill contaminated the Balog and Agno River and reached the San Roque Dam facility.

They also recalled the Philex Mining Company mining spill in 2004. This is not as severe as the magnitude of the current spill. That time, the Philex Mining Corporation paid PhP1,000 per day in penalty charges. They paid a total of PhP 121,000.00 covering 121 days of spill. Records of cases filed against mining companies regarding mining spills are filed with the Pollution Adjudication Board (PAB).

**Major Concerns and Recommendations cited by the EMB officials are as follows:**

1. For Philex to plug the hole in the TP3 and clean up the contaminated and polluted rivers and environment. There is also the problem on where to dump the collected mining wastes;

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\(^9\) Notice of Violation and Laboratory Tests on Philex Water samples conducted on August 7, 2012 by the DENR CAR EMB Regional Office, Baguio City
2. There is need for more technical support for the regional office to be able to undertake effective monitoring of mining companies which have their own technical staff and resources; and

3. For the MMT and MRFC to be convened more regularly/immediately to comprehensively update and decide on the problems at hand.

VI. Interview with Hon. Oscar Camantiles, Mayor of the Municipality of Itogon

Mayor Camantiles is a member of the MMT and MRFC, as well as the chairperson of the Municipal Disaster Risk Reduction and Management Council (MDRRMC). He was informed of the Philex mining spill by community residents, but did not receive any reports from the mining company. He is working with the communities to investigate, but they could only pass through the San Roque dam facility because the security is very tight and they are not allowed entry through the Philex main gate.

Last June 9, 2012, the municipality of Itogon ordered a stop in the construction of eight structures by the mining company. Municipal Engineer Charlie Gayaso issued Notices of Illegal Construction for the repairs of bunk houses at the Eastern Saddle in Ampucao; illegal construction of oil separators near the Bomolo tunnel and vehicular bridge; illegal construction of a conveyor belt, mill building field office, a Penstock at dam 3; installation of piping systems for Tailing Pond 2 and 3; and excavation spillways at TP 2 and 3 all in Ampucao. The order indicated that the Philex violated the National Building Code and advised the company to “immediately stop all illegal construction of structures and activities in their premises.”

Mayor Camantiles also repeatedly asked Philex Mining Corporation to pay accumulated business taxes balance since 2002. For 2011 alone, Php148,134,354.82 in business tax balance including surcharge has been issued, while Php158,138,210.44 is the estimated balance for mayor’s permit fee on copper/silver/gold mining operation. The company has refused to pay the municipality citing the settlement of boundary disputes between the municipalities of Itogon and Tuba as a requisite for payment of taxes.

Mayor Camantiles said the boundary disputes issue is not a substantive reason for Philex not to pay its taxes because the company’s operation is not affected by the boundary dispute. He also cited a Memorandum of Agreement (MOA) with Tuba town agreeing to share equally on the taxes to be paid by Philex.

The MPSA and ECC are the only permits secured by the Philex. The Mayor remarked that after the EMB issued the ECC, the company proceeded with the construction of TP3 even without securing other required permits and clearance from the local government. Past Itogon administrations

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10 Status of Philex Building Structures and Payment of taxes as prepared by the Office of Itogon Municipal Engineer’s Office, July, 9, 2012
11 According to Sunstar <http://www.sunstar.com.ph/baguio/local-news/2012/07/17/itogon-stops-philex-mine-s-constructions-232380>, the municipality has accounted for P542,277,452.94 in payments due which Philex is likewise contesting pending a reassessment.
12 Amended Notice of Local Business Tax for FY2011, dated 24 August 2012
13 Unnumbered bill, 3 Jul 2012
have not pursued the issue of Philex’s non-compliance to safety, construction and building permits and tax obligations.

There was also a move from the Philex to divide the Municipal Council on the issue of taxation, but the Mayor was able to convince them that the move to collect and ensure safety standards are important and legitimate. The Council eventually sided with the Mayor. He is also aware that some groups are considering to file the Writ of Kalikasan against the company.

Lastly, he said that mining is not sustainable because minerals will be depleted and mining companies will be gone. There is a need to develop long-term sustainable development plans and there are many projects being planned for eco-tourism that depends on the unpaid revenues/taxes.

**Major Concerns cited by Mayor Camantiles:**

1. Philex needs to stop the spillage and clean up the environment and water systems it contaminated. The company should also provide compensation for damages to affected families;
2. BFAR lifted the fishing ban but dead fishes floated in the Balog and Agno rivers. There is a need for continued laboratory tests on the toxicity of the waters in the rivers. People are not aware that it is a partial fishing ban only;
3. The DENR issued an ECC to the Philex even when it has not complied with necessary safety and other requirements from the local government of Itogon. For example, TPs 1, 2 and 3 do not have the permits from the LGU;
4. The mining operation is located in a watershed but did not secure clearance from the Protected Area Management Board (PAMB);
5. The Memorandum of Agreement (MOA) between Philex and the San Roque Power Corporation (SRPC) should be reviewed to seek the reason behind the construction of Tailing Ponds just above and very proximate to the San Roque Dam;
6. Water quality of the rivers and its toxicity and safety should be checked;
7. Ensure strict compliance of the Philex to all safety and all requirements before operations will be allowed to resume. There is also a need to clarify on the basis of DENR computation of penalty charges to be paid by Philex;

VII. **Interview with Mr. Tommy Valdez, Vice President for Social Responsibility, San Roque Power Corporation (SRPC) and Mr. Virgilio Garcia, Principal Hydrologist, National Power Corporation (NAPOCOR)**

The interview was conducted primarily with Mr. Tommy Valdez, with Mr. Virgilio Garcia joining the Fact Finding Team at the later part of the interview.

Mr. Valdez related the measures that SRPC took in relation with the Philex mining spill. They conducted ocular inspection and monitoring with the DENR Offices, namely Environmental and Management Bureau (EMB) and Mines and Geosciences Bureau (MGB), right after the incident.

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14 It was later clarified with the MGB that issuance of ECC is not dependent on the local government, however, it would be a violation of the ECC if the construction proceeded without securing other requirements.
15 It was clarified that although PAMB gives clearance to projects in protected areas, if the location is in a proclaimed watershed, mining should not have been allowed.
SRPC is tasked to monitor water quality and sediment as provided in the Environmental Compliance Certificate (ECC). The reports of four monitoring episodes are now with the DENR.

The tests on water samples noted the discoloration more specifically in confluence area of Agno and Balog River, where water was evidently murky. Mr. Valdez confirmed the high level of TSS (total suspended solid) that passed through the power turbines. He also informed the team that there was no finding yet as to the contamination of water with toxic chemicals such as mercury, cyanide and lead. However, on August 22, 2012, SRPC recommended to Philex Mining Corporation (PMC) to undertake regular monitoring of water samples, along with the clearing of debris. They think that monitoring activities should be done by a multi-stakeholder team to ensure transparency. They still do not know the long-term effects of the spill but fishes tested for toxicity were declared safe for human consumption by the BFAR.

The TP3 is 2.5 kilometers away from the Agno River, when measured with its winding creek flowing downstream. However, with straight aerial calculation, TP3 is only 1.2 km in its distance to the Agno River, which flows through 16 km stretch to the dam. The San Roque is a multi-purpose dam, which functions as supplier of water to the main irrigation system, serving around 16,000 hectares in the seven towns of Pangasinan. The dam has auxiliary function as source of hydro-power.

The San Roque Dam\textsuperscript{16} operated under San Roque Multipurpose Project (SRMP) is a 200 meters tall, 1.2 kilometer long embankment dam on the Agno River. It spans the municipalities of San Manuel and San Nicolas, Pangasinan. The dam impounds a reservoir with a surface area of about 12.8 square kilometers extending North into the municipality of Itogon. Each wet season, the run-off is stored for later release via water turbines to generate power and irrigate crops. The river originates in the Cordillera Mountains, initially flows from north to south, divides into several channels in the flat central plain of Luzon, and meanders westerly through the provinces of Pangasinan and Tarlac before emptying into the Lingayen Gulf.

The power plant has a maximum power generation of 411 megawatts, and it has a contracted capacity of 95 megawatts, supplying power to Luzon Grid. In 2010, National Power Corporation (NAPOCOR) sold the power marketing franchise to Strategic Power Development Corporation (SPDC), owned as subsidiary by San Miguel Corporation.

During the tailings spill, Mr. Garcia claimed that water for the irrigation was not affected because they were able to close the irrigation waterways. However, since the water level was increasing, they needed to open the water drainage to the Agno River. At this point, the team asked about the possibility of the tailings going all the way to the Lingayen Gulf, since the Agno River flows down through several municipalities in Pangasinan and finds its way directly to the gulf. They say it will take some time before actual damage can be determined. But another perceived major impact of the mining spill is the build-up of sediments in San Roque Dam.

They attributed the major cause of dam break to the incessant and heavy rains, as the PMC always explains. They confirmed the story that PMC tried to stop the tailings spill by dropping old mining trucks near the perceived hole or breakage to contain the spill. But the trucks just passed through to the other side of the dam, proving that the crack is just too big.

\textsuperscript{16} http://en.wikipedia.org/wiki/San_Roque_Dam_%28Philippines%29
They still have no conclusive data as to the amount of tailings discharged by the TP3 to the dam - they just reiterated what they hear from Philex that it was around 6M metric tons, but there was no recent data yet. They also pointed out that a long time ago, Agno River was considerably deep. But now, it is silted due to mining and soil erosion. This has a long-term adverse effect on fishing harvests.

**Major Recommendations of experts and FFM team:**

1. There should be regular monitoring of the water quality, with samples coming from the different areas of San Roque Dam to determine level of pollution and toxicity. The monitoring team should not only be inter-agency, but must involve stakeholder communities and third party, technical experts and the media or civil society organization to ensure transparency;
2. The bathymetric survey scheduled to be conducted in the coming year should be done now to ascertain the build-up of sediments in the dam; and
3. Impact studies should be conducted, particularly on the irrigation system and the downstream communities where the tailings flow from San Roque dam to the Agno River and into the provinces of Pangasinan and Tarlac to Lingayen Gulf.

**VIII. Interview and discussion with Pangbasan residents in the presence of SRPC and Philex Community Relations people**

There are around 45 families living near the mouth of the juncture of Balog and Agno River. It is populated by Indigenous Peoples (IP) community in Sitio Pangbasan, part of Barangay Dalupirip in the Municipality of Itogon, Benguet.

The IPs are typically shy and the interview was conducted through their leader, Alipio Lictag, who also heads the Pangbasan Goldpanners and Fisherfolks Livelihood Association. He spoke as representative of the community, with the members of the community present around us to do the validation.

The presence of two Community Relations (ComRel) officer from PMC while doing the interview was another constraint. People could not freely speak their mind, all the more when the representatives of the mining company were just around. The ComRel Officers were deployed by PMC right after the spill incident to do liaison work with the affected community.

The community is not aware of the status of the tailings, its volume or its impacts. The water level is still very high and the smell of the water is uncommon. Their drinking water source is from the mountain spring and they say it is not affected. The TP3 is approximately 14 kilometers away from them. There is a police perimeter fence from the entrance to the TP3. The community is under tight watch by Philex personnel who watch the area using telescopes.

The people described their livelihood to be dependent on fishing and gold panning. During the months of June to December, when the water level is high, they engage in fishing. While during the months of January to May, when water level is low, they engage in small scale gold panning.
For gold panning, the average of production is 1/gram/day per team or family. Gold panning is done by Pangbasan residents and also people coming from Pangasinan, Nueva Ecija and Nueva Viscaya. Most outside panners enter the premises by trekking through the mountains. They are prohibited by SRDC from panning along the mountain slope but are allowed to do gold panning in the riverbed.

For fishing, the average fish catch is 25 kilos every 2 days for tilapia and 75 kilos /week for eel. Since the spill, fish catch decreased significantly. Tilapia catch is now down to 6 kilos every two days, while in areas near the mouth of Balog river, they cannot catch any fish anymore. This resulted in deprivation of livelihood opportunities particularly for this community near the mouth of creek where the tailing spill was concentrated.

The company, PMC, delivered relief goods to the community right after the incident. The local government of Itogon did the same. However, since their livelihood base is not yet rehabilitated, they remain in a very vulnerable situation as to their capacity to sustain the basic needs of their families. They cannot do gold panning because of the tailing siltation. Also, their fish catch has decreased drastically due to tailings spill. NASSA, as part Church ministry for emergency response, arranged to supplement the delivery of relief goods for the affected families17.

The community submitted a list of their damaged properties to Philex due to tailings spill. PMC representatives claimed that compensation to damages are already being processed and will be ready to be granted to them in time.

There is a plan to rehabilitate the Balog River by manual dredging, with people from the community to be hired as workers. Members of the community are looking forward to finding work to sustain their livelihood.

Major Concerns and Recommendations of the community residents, experts and FFM team:

1. Disrupted livelihood opportunities of the community in Pangbasan should be addressed by providing alternative sources of income, and by rehabilitating their economic base - the river system.
2. Tests and on-going monitoring should be done to measure the water toxicity level and the impact of mine tailings on health and ecosystems within the San Roque Dam reservoir and the fisherfolk communities.
3. Costs for the abovementioned recommendations should be covered by Philex Mining Corp., under its social responsibility program/ requirement.18

17 NASSA delivered 10 sacks of rice and 10 boxes of assorted canned goods to the community on 27 September 2012.
18 Comment asserted by MGB Director at a meeting after the FFM.
D. CONCLUSIONS AND RECOMMENDATIONS

Based on the outcomes of focus group discussions, key informant interviews and technical assessment of FFM scientists, the following major conclusions were drawn:

1. **The integrity and safety of the TP3 structure is questionable.** Engineer Virgilio Aniceto noted that the Tailings Pond 3 was commissioned in 1992. With a lifespan of 18-20 years, it should have been decommissioned as early as 2010, especially because the dam crest went beyond the permitted elevation of 600 meters above sea level.

The Philex Mining area of operation is also criss-crossed by fault lines. The most notable of the fault lines are the Albian and Sta. Fe faults. Thus, it is not surprising for Philex gold and/or copper production to be associated with geo-hazard risks vis-à-vis volcanic or earthquake activity. This already occurred during the Philex mining accident in 1992, when the foundation of the TP2 collapsed and reportedly discharged 80,000 metric tons of mine wastes, affecting large tracts of prime agricultural lands in Pangasinan. This led to the payment of damages to the provincial treasury of Pangasinan and the consequent construction of TP3.

2. **The 2012 Philex Mine Tailings Spill is Massive.** Dr. Esteban C. Godilano, CCCP resident scientist declared that the Philex Mines Tailing spillage is massive. The MGB estimate was 20.6M metric tons, which is 1,300% higher than the Marcopper accident in Boac, Marinduque of 1.6M metric tons. After 10 years of the accident, the Boac River is still dead. Recent studies showed that coastal sediments near the river outflow contains high amount of copper, manganese, lead and zinc.

3. **Claim of Biodegradable Mine tailings is questioned.** In a six-page report dated August 8, Reynold Yabes, Philex Mill Division chief, stressed that the chemicals used in processing of ore were biodegradable, saying that the amount of the reagents carried with the tailings during actual operations were “extremely small or negligible.” Yabes also noted in his report that Philex uses a collector or sodium isobutyl xanthate (SIBX) at concentration of 0.002 percent weight, dowfroth and/or nasfroth frothers at 0.000535 percent wt., and the natural chemical lime at 0.0682 percent wt. as regulators of pH, which tells of the acidity level in water, in its flotation process.19

Negligible? The question is, “How much kg of the reagents are used for every ton of ore they are processing?” Thus this is very critical. Philex reported tonnage mined in 2011 totalled 9.49 million tonnes, and 9.36 million tonnes in 2012.20 With the DENR estimate of 163 M metric tonnes of tailings in TP3, this figure can be multiplied to the amount of reagents to get the approximate reagents loadings in TP3, the resulting figure will not anymore be negligible.

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Aside from the reagents used, Philex or DENR need to disclose the associated heavy metals in the Padcal production. This is very important. If they do not, it is assumed the other heavy metal effluents include lead, arsenic, cadmium, mercury, sulphur, etc.

Engineer Aniceto and Dr. Godilano raised the issue of toxicity and hazards posed by the Philex mine tailings. The question is reinforced in the Material Safety Data Sheet of Sodium isobutyl Xanthate solution that follows:  

**Hazards identification.** Classified as Hazardous, according to ASCC Criteria Risk Phrases. Contact with acids liberates toxic gas. It is harmful, there is danger of serious damage to health by prolonged exposure through inhalation.

**Toxicological Information.** Health Hazard Toxic - irritant. This product has the potential to cause adverse health effects.

**Ecological Information.** Environment-Xanthates hydrolyse (react with water) readily. If discharged to waterways, xanthates may persist for several days, slowly in the neutral environment. Bioaccumulation is unlikely. Highly toxic to aquatic life. May form complexes with heavy metals, increasing their uptake, i.e. fish may accumulate heavy metals more readily.

**Disposal Considerations.** Waste Disposal for small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For larger amounts, contact the manufacturer for additional information. Prevent contamination of drains or waterways as aquatic life may be threatened and environmental damage may result.

In fact, an FFM photo of TPI that was decommissioned in 1981 and declared a forested area reveals negligible vegetation and the area remaining to be unproductive and a wasteland.

4. **Loss of Fishing and Mining Grounds and the consequent loss of incomes and safe source of food and water.** Residents of barangay Pangbasan, Dalupirip reported damages caused by an overflow in TP3. The barangay council and the MDRRMC reported damages to property that includes fish traps, water pumps and panning equipment. Lost livestock includes goats while crop damage includes damaged trees and root crops.

The MGB declared that anything discharged through Agno River goes to San Roque Dam in San Manuel, Pangasinan. The Balog and Agno River are heavily polluted. Fishers and residents complain of lost fishing and mining grounds, of foregone earnings and the loss of safe food and water source.

There is also the concern over the safety of the fishcatch in the SRD. Only pelagic fishes such as the Tilapia and Carp were tested safe for human consumption during the first spill.

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21[http://www.slideshare.net/guest9f85d0/msds-sodium-isobutyl-xanthate-sol](http://www.slideshare.net/guest9f85d0/msds-sodium-isobutyl-xanthate-sol). As lifted from the Materials Safety Data Sheet prepared by Coogee Chemical, CNR of Patterson and Kwinana Beach Roads, WA Australia. Other MSDS on sodium isobutyl xanthate yields similar result.
No testing was done on other fish species in the dam. FFM members learned that different fish species caught in the SRD are being sold to nearby market and communities.

5. **Exposure to health and weather and toxic hazards of mine workers and community residents doing the clean-up operations.** Having to handle toxic chemicals and mine tailings during the rainy season, workers and community volunteers for the clean-up are exposed to health, weather and toxic hazards. Philex clean-up of the environment is premised on non-toxic contaminants.

6. **Philex non-compliance of securing safety permits and payment of taxes to the LGUs.** The Philex Mining Corporation proceeded with their constructions (e.g. are TP1, 2 and 3) after being issued with the ECC, without securing the necessary building and safety permits and the payment of accumulated taxes to the LGUs.

7. **SRD becoming a TP4 for Philex Mine Tailings and threatening downstream farming and fishing communities.** According to Sec Paje, discoloration from Balog Creek leads to Agno River, then to San Roque Dam becomes less severe from the point of origin. This is due to the dam's dead storage. All the silts and mine tailings will go there.

The SRD virtually becomes a TP4 for Philex Mining Corporation. The heavy siltation will have its toll on the lifespan of the SRD and to its major functions.

Also, dams have the potential to create an environment within the impounded waters that may increase dissolved concentrations of chemicals known to be highly metal-laden. Mine effluents in the SRD released to the Agno River drains to Lingayen Gulf. Agno River is 290 kilometers from Mount Data in Benguet and Mountain Province down to the river delta in Lingayen, Pangasinan. One of its branches goes to Tarlac province. Pangasinan and Tarlac are major rice and fish producing provinces. The SRD will have to be dredged and cleaned to restore its capacities and environment safety.

8. **Weak technical capabilities and coordination** among LGUs and agencies to undertake effective monitoring of mining operations and to address mining accidents. Laboratory tests, technical personnel and budget support need to be increased.

**Major Recommendations:**

1. There is a need for an immediate and impartial investigation on the impacts of the spill to the watershed, the people and the impact communities:
   a. Technical assessment on the structural safety of the TP3 given its terminal life span and vulnerabilities to climate change and geo-hazards. The status of TP1 and TP2 should also be reviewed for strong compliance to rehabilitation of its environment;
   b. Regular and continuing laboratory testing for water, fish and environment quality and for heavy metals contamination of the **TP3, Balog River, Agno River and the SRD.** Bathymetric survey on the collapsed TP3 and the SRD needs to be immediately undertaken; and
c. Conduct impact studies on rice farms, irrigation system and the downstream communities where the mine tailings flow from San Roque Dam to Agno River and to the provinces of Pangasinan and Tarlac.

2. Provide immediate relief, livelihood assistance and compensation to affected families for damage to properties, crops, livestock, animals and foregone incomes. Ensure easy access, safety and coordination of affected communities to the government and CSO. Organize fishers and affected communities to participate in assessment and planning for relief and rehabilitation work.

3. Need to further enhance capabilities of local communities, LGUs and local agencies to undertake monitoring and technical assessment of mining operations and to address mining accidents in the areas. There should be strong inter-agency and CSO coordination. There should also be capacity building on community disaster preparedness and management.

4. Need to ensure compliance with environment standards and to local government clearances and payment of due taxes to Itogon and Tuba municipalities.

5. Undertake clean up and rehabilitation of the entire impact and watershed area. Ensure massive information dissemination and safety measures for persons and volunteers who will engage in the clean-up, reforestation and rehabilitation of the areas.
### E. LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>BDRRMC</td>
<td>Barangay Disaster Risk Reduction Management Council</td>
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<tr>
<td>CBCP</td>
<td>Catholic Bishops Conference of the Philippines</td>
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<tr>
<td>CCCP</td>
<td>Climate Change Congress of the Philippines</td>
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<td>CPA</td>
<td>Cordillera Peoples Alliance</td>
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<td>Civil Society Organization</td>
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<td>Environmental Management Bureau</td>
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<td>Fact-Finding Mission</td>
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<td>Mines and Geosciences Bureau</td>
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<td>National Power Corporation</td>
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<td>National Commission on Indigenous Peoples</td>
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<td>National Irrigation Authority</td>
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<td>Pollution Adjudication Board</td>
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<td>Protected Area Management Board</td>
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<td>TP3</td>
<td>Tailings Pond no. 3</td>
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## E. FFM PARTICIPANTS BACKGROUND

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<tr>
<th>NAME</th>
<th>Occupation/ Designation /Organization</th>
<th>DISCIPLINE</th>
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</thead>
<tbody>
<tr>
<td>Andrew WEYGAN</td>
<td>Executive Director, PMPI-NL</td>
<td>Research, writing</td>
</tr>
<tr>
<td>William TODCOR</td>
<td>Board of Trustee, CVM</td>
<td>Research</td>
</tr>
<tr>
<td>Hector KAWIG</td>
<td>Community worker/ volunteer</td>
<td>Arts/ Math/ Research</td>
</tr>
<tr>
<td>Keidy TRANSFIGURACION</td>
<td>Youth Coordinator, Katribu Party</td>
<td>Video, photo documentation, community organizing</td>
</tr>
<tr>
<td>Shakey Jane SANNADAN</td>
<td>Caritas Baguio</td>
<td>Case worker, community worker</td>
</tr>
<tr>
<td>Bestang Sarah DEKDEKEN</td>
<td>Regional Secretariat, Public Information Officer, CPA</td>
<td>Documentation</td>
</tr>
<tr>
<td>Fr Edu GARIGUEZ</td>
<td>Executive Secretary, NASSA</td>
<td>Anthropology/ Theology/ Eco-philosophy</td>
</tr>
<tr>
<td>Santi MERO</td>
<td>Deputy Secretary General/ Convenor</td>
<td>Community organizing</td>
</tr>
<tr>
<td>Dennis ABUTON</td>
<td>Project Officer, Peace Foundation</td>
<td>Development worker, Commerce, Economics</td>
</tr>
<tr>
<td>Pris SALADAGA</td>
<td>Program Officer, PMPI</td>
<td>Social Work, Conflict studies, Economist, development worker</td>
</tr>
<tr>
<td>Merietta PARAGAS</td>
<td>CEO, PMPI-NL</td>
<td>Economist</td>
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<tr>
<td>Yolanda ESGUERRA</td>
<td>National Coordinator, PMPI</td>
<td>Sociology, Organizational Development</td>
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<tr>
<td>Virgilio ANICETO</td>
<td>Katribu Party/ Team scientist</td>
<td>Technical/ Geodetic and Civil Engineer/ Pastor</td>
</tr>
<tr>
<td>Eduardo MORA</td>
<td>Chairman/ Board Member, PKMP</td>
<td>Organizer</td>
</tr>
<tr>
<td>Linda NOCHE</td>
<td>Advocacy Coordinator, NASSA</td>
<td>Interdisciplinary, advocacy</td>
</tr>
<tr>
<td>Belinda FORMANES</td>
<td>Secretary General, Climate Change Congress of the Philippines (CCCP)</td>
<td>Chemistry, Community Organizing, Community Development</td>
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FFM Team briefing in Baguio.

Discussion with Barangay Chairman Amuasen (seated) of Ampucao.

TP1, decommissioned in 1981.

Waiting outside Philex compound to enter Talnag community.
Interview with OIC Panganiban, Admin and Finance Officer of Mines and Geosciences Bureau (MGB).

Interview with (right to left) Atty. Tolentino, Engr. Luis and Engr. Donaal of the Environmental Management Bureau (EMB).

The mouth of Balog River going directly to San Roque Dam. The river is still silted with tailings.

(left to right) Discussion with the affected community at Sitio Pangbasan, Dalupirip, in Itogon; meeting with San Roque Power Corp; and NAPOCOR.
Visit to (left) and interview (right) with Mayor Camantiles (seated on the left) of the Municipality of Itogon, Benguet.

Unsuccessful reforestation at TP1 site, after 3 decades.

Juncture of Balog & Agno River.
San Roque Dam river stretch.
Assessment after visits.