

WEFTA BOLIVIA VISIT REPORT
MARCH 2011

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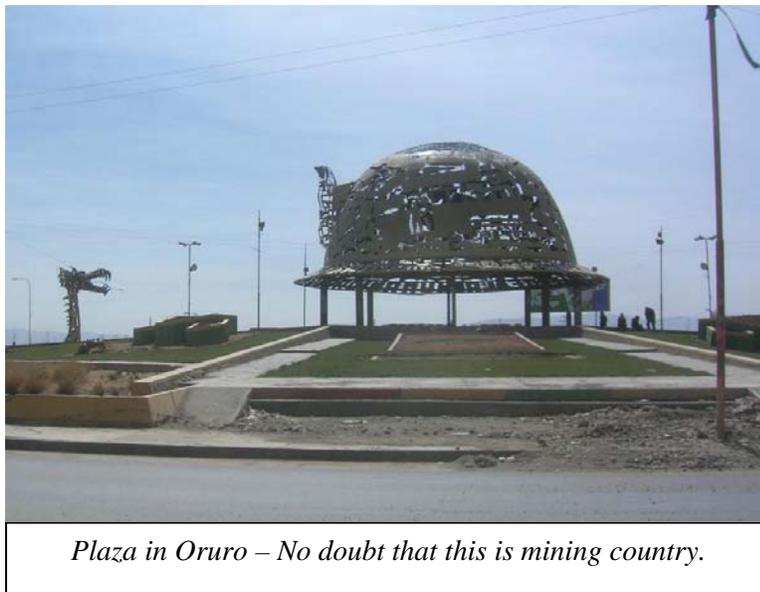
Completed Suma Jayma/WEFTA school wash station in Condoriri (Sept '10 S.J. photo)

I. ORURO-AREA MINING CONTAMINATION (local partners, CEPA & CORIDUP)

A little background info on CEPA and CORIDUP, from Evan Cuthbert's 2010 Huanuni case study write-up:

When CEPA opened in 1995 their main focus was providing education and leadership formation for marginal communities, especially those of indigenous peoples. In their work, they emphasize the value of indigenous knowledge, environmental protection and intercultural respect and dialogue...

In August 2006, CORIDUP was officially founded to organize local communities (over 60+) in the Desaguadero River and Uru Uru and Poopó Lakes Watershed to unify their collective action to address contamination of local waters and lands.



CEPA and CORIDUP very much welcome WEFTA's technical expertise, asking that WEFTA's work be carried out in close coordination with CORIDUP, and that WEFTA be open to collaborating with other sources of external support, such as CATAPI, which is a Belgian NGO with ties to academia there dedicated to providing technical support in environmental issues.

In summary, CEPA/CORIDUP sees technical support from WEFTA being channeled toward two primary efforts, addressing mining contamination from:

- The state-owned Huanuni tin mine
- Two Newmont-owned gold mines

I-A. Huanuni Tin Mine (State-Owned) Downstream Watershed Contamination

Background on Huanuni watershed contamination, from Evan Cuthbert's 2010 Huanuni case study write-up:

There are several mining operations in the Huanuni watershed. Many are small-scale, artisanal mining operations which include anywhere between one and thirty miners. The largest and most problematic is the Posokoni Mine owned by Empresa Minera Huanuni, S.A. (EMH), a subsidiary of the Bolivian state-owned mining company Oruro. This sub-surface mining operation holds one of the largest tin deposits in the world. There are also sizeable quantities of other minerals such as lead, zinc, and silver. Currently, EMH employs approximately five thousand workers at the site. Active mining at Posokoni has been going on since the year 1745.

The minerals are processed at two mills on the shores of the Huanuni River: the Santa Elena mill, located at the mine in Huanuni, and the Machachamarca mill, approximately 25 kilometers downstream.ⁱ Combined, they process approximately 1,400 tons of minerals per day, with the Santa Elena mill processing the bulk – 1,200 tons per day. Neither mill uses tailings ponds to deposit and contain its contaminated tailings after processing. Instead, the operations dump their untreated tailings directly into the Huanuni River...

In response to growing conflict over environmental degradation and public health problems, the Government of Bolivia in 2009 declared an emergency zone in the [Huanuni](#) watershed (a first in Bolivian history).



Widespread Contamination Downstream of Huanuni (Sept '10)

In this Emergency Declaration, specific objectives are outlined for beginning to address the problem. One of these is a short-term tailings retention that is 98% complete according to CORIDUP members, which should serve for 3 to 4 years. Pumping, hoses, etc. have yet to be installed.

WEFTA’s potential role: To visit this facility and see if its construction is adequate to meet stated goals. Note: To date, CEPA has not been able to obtain a copy of the project design, although they think they may be able to do so.

A permanent tailings retention facility is being planned, although resistance from a nearby local rural community is being encountered slowing down the land acquisition process.

WEFTA’s potential role: To provide technical input toward design/construction of facility, perhaps in the form of review/comment of design documents under the overall umbrella of CEPA/CORIDUP’s social oversight of the Huanuni mining reclamation effort.

The European Union is providing significant funding in seven downstream municipal jurisdictions, to be complemented by local and regional govt funding (30%) to improve access for water supply and irrigation purposes and other related projects. 36 projects have been identified for the first round of funding.

WEFTA’s potential role: CORIDUP members also asked WEFTA to consider supporting them in their efforts to prepare project design proposals for safe water supply projects, necessary to seek funding for implementation. This would be similar to the work WEFTA is supporting in the northern Bolivian Altiplano being carried out by Suma Jayma. (and which SJ may be able to help out with).



Construction of Temporary Tailings Holding Facility Located Just Upstream of Huanuni Tin Mine (Sept '10)

I-B. Environmental Audit of Newmont Gold Mines

In 1982 Inti Raymi (Newmont) began extracting gold at its open pit mine, Kori Kollo “Golden Mountain”. Since October 2003 a closure and rehabilitation process is being deployed. In 2005 Inti Raymi started a second mining project, Kori Chaka “Golden Bridge”, a goldmine which is located in the urban zone of Oruro.

CORIDUP which represents 60+ downstream communities is demanding an external environmental audit of the Inti Raymi mines and their downstream impacts. CORIDUP explained that they have very little confidence in the Inti Raymi mine’s internal environmental audit, based off of deceptive practices and stall tactics in the past. For that reason, CEPA/CORIDUP are carrying out an external environmental audit in coordination with the public university of Oruro, including the sampling of soil and water for analysis.

WEFTA’s potential role: Review Inti Raymi’s draft environmental audits, its Kori Kollo mine closing plan, CEPA’s earlier review comments and assist with the independent environmental audit. Need technical assistance from WEFTA to help understand what is a technically viable mine closure & reclamation plan for these open-pit gold mines employing the use of cyanide. Assist CEPA in implementing the alternative, independent environmental audit planned to be completed by August of this year.



Newmont Open Pit Gold Mine Evaporation Ponds (Sept '10)

I-C. Meeting Minutes from Visit with CEPA/CORIDUP

Though the following is more detail than normally included in a country report, I figured it might be useful as WEFTA begins this new relationship with CEPA/CORIDUP in the months and years ahead.

I traveled to the City of Oruro (located about 3 hours from El Alto-La Paz; 4 hours from Cochabamba by major highway; buses from El Alto leave hourly and cost around \$5) to

meet with members of CEPA/CORIDUP for a couple hours. We were about ten people, including:

- Gilberto Pauwels, Director of CEPA and Belgian Oblate Brother,
- Felix Laime, president of CORIDUP,
- Limbert Sanchez, CEPA formation lead (and member with whom we spent most of our time last September for the CRS case study prepared by Evan Cuthbert),
- Clemente Paco, legal advisor to CEPA,
- Two CATAPA volunteers from Belgium, Thomas Van Humbeeck and Hannah, (both of whom also speak English and Spanish; Thomas is a recently graduated mining engineer); More info on CATAPA at <http://www.catapa.be/en>.
- Jaime Caichoca, an agricultural engineer working with the environmental social-justice team of CEPA
- Maria Rafael, secretary of CORIDUP
- Johnny Terrazas, member of CEPA

Prior to the visit, I had forwarded to CEPA Spanish translations of:

- Evan Cuthbert's Huanuni case study prepared for CRS in late 2010,
- Scott McKittrick's letter expressing his desire to help and his resume with over 20 years of mining reclamation experience
- WEFTA 2-page summary

All of these documents helped the leadership of CEPA/CORIDUP understand that WEFTA was a reliable, trustworthy organization in general, and in particular, that members like Scott could provide them with very much needed technical expertise in helping address the significant mining contamination throughout the Oruro area.



*Child playing (and snacking) in Mining Tailings at Huanuni
(Sept '10)*

Additional Notes from the Meeting:

A key role being embraced by CEPA/CORIDUP is to provide what's called "control social" en Spanish, or civil society oversight of the various actions being implemented. In order that their findings carry more weight, CEPA/CORIDUP often collaborate with the local public university or when possible with regional government entities. They pressure the different levels of government to commit to public funding of projects to carry out the course of action articulated in the Presidential Supreme Decree No. 0335, "Declaration of Environmental Emergency Zone," dated October 21, 2009.

Additional areas of concern are the lack of urban sewers in the City of Oruro, as well as the acidification of runoff from the San José mine located within the city limits of Oruro.

The meeting ended with a very heartfelt request by members of CORIDUP – they wanted to know if there really is reason to have hope that their watershed can be restored, "from contaminated wasteland to renewed life." If so, they wondered how long it might take if reclamation efforts are implemented correctly. Perhaps with WEFTA's initial visit, some brief slides in a powerpoint of past successful mining reclamation efforts in the US might help provide some insights, and continued hope.

The first step they all agreed was to get WEFTA's mining reclamation specialists to Oruro as soon as possible, for as long of a visit as possible.

I-D. In-Country Coordination Contacts & Next Steps for WEFTA

Thomas Van Humbeeck is a mining engineer from Belgium who has been volunteering with CEPA for some time. He is quite familiar with the Newmont mining situation, having helped review and comment on the mining company's environmental audit. He speaks English and Spanish, and would be a great contact with whom Scott could begin coordinating.

Gilberto, director of CEPA, has asked that WEFTA coordinate primarily with Thomas (Thomasvanhumbeeck@hotmail.com; 591-71109269) and Jaime Caichoca, the agricultural engineer with CEPA (CaichocaJC@yahoo.com, 591-74131313). Note: Thomas will be leaving Bolivia in September 2011. Ideally a WEFTA visit could be arranged before then, as the CEPA/CORIDUP members put it, "please buy a ticket for tomorrow to come on down." Thomas has also offered his services to WEFTA in translating on-site and in written communications. He and Hannah are part of CATAPA; for more info see their website at www.catapa.be

Hannah with CATAPA will be in country through June 2011, as well as professor from the University of Syracuse, "Tomás II" who is investigating the issue of water from a social sciences perspective.

Jason Obergfell, Maryknoll Lay Missioner and Civil Engineer based out of Cochabamba, has expressed his willingness to support WEFTA in this endeavor. In addition to being in-country, Jason can help with WEFTA mining reclamation specialists who could use a hand with Spanish. (591) 72717463; obies12000@hotmail.com

I-E. Other L.A. Mining Contamination Contacts:

In Southern Peru, Maryknoll Sister Patricia Ryan works with grassroots organizations engaged in similar demands of mining operations. Given WEFTA's prior work in this geographical region, mining reclamation technical support might very well be welcomed there as well. Contact: pryanmm@mail.softhome.net.

Barbara Fraser, former Maryknoll lay-missioner and free-lance journalist based out of Lima for many years has done much investigative reporting of mining operations in Peru and beyond. She could be a great source in getting up to speed on the multiple facets of the challenges being faced by downstream communities. Contact: bfraserm@gmail.com.

Evan Cuthbert, now living in Massachusetts, is very familiar with the Huanuni situation and contacts with the L.A. Mining Observation network can be tapped as well. Contact: evanandsue@yahoo.com



Huanuni Milling Facility with Tailings Discharged to adjacent Riverbed (Sept '10)

II. RURAL ALTIPLANO WATER SUPPLY PROJECTS (local partner, Suma Jayma)

Machacamarca (near completion)

Suma Jayma and the community of Machacamarca are anxiously awaiting the final phase of WEFTA funding to complete this project. It was communicated that WEFTA intended to send the funding as soon as donated funds arrived, with the hope being prior to the end of April. This will allow final completion of various project details, as well as the chlorination equipment, training and chlorine. Suma Jayma will contract Don Lucio, to teach at least 8 members of the Palcoco, Machacamarca and Viruyo drinking water committees how to properly mix and dose chlorine solutions at the chlorinator above the 100 cubic meter tank (2 – 50 m³ chambers). Lucio is in charge of chlorination of the nearby city of Batallas water system, and will accompany the Machacamarca/Palcoco system for three months while training the staff. Health and hygiene chats will be given as well by staff of the local health clinics along with Lucio, who worked with Suma Jayma in years past as a trainer. A final delivery of tools will be made as well to the Machacamarca Drinking Water Committee upon project completion.

A few comments directed toward WEFTA from the Machacamarca families during the area-wide meeting in Palcoco:

“We feel so proud to have household tapstands in our homes.”

“We responded with our labor, with a spirit of collaboration”

“We are very satisfied.”

“Again, thank you.”



Suma Jayma/WEFTA Completed Tapstands in Machacamarca for approximately 200 families (March '11)

Viruyo (proposed)

Existing distribution system previously fed by submersible pump into elevated storage tank lasted less than a year before pump failure. Viruyo has been dedicating its budgeted municipal funds in recent years to help in the municipal purchase of principal water mains benefiting both Machacamarcas and Palcoco. In exchange, these two communities allowed for Viruyo, which is located just to the east of Machacamarcas, to tie in to their principal main. However, portions of the Viruyo distribution system are made of non-pressure rated polyethylene tubing, as well as are all household connections with unprotected hose bibs for approximately 40 families. The Suma Jayma proposal would replace these with PVC and install permanent concrete tapstands in each household.



Visiting the Community of Viruyo, located adjacent to Machacamarcas. Its water supply restored with tie-in to Palcoco-Machacamarcas System with proposed upgrades to household connections awaiting funding (March '11)

Palcoco (proposed)

Years ago, Suma Jayma prepared a design study for the 250 family community of Palcoco (located just upstream of Machacamarcas on the principal highway). Based off that study, the Municipality of Pucarani spent 173,000 Bs. (or about \$25,000 U.S.) to provide PVC piping for a complete renewal of the community distribution system. The intent of the community members is to install the distribution system piping by the end of July 2011.

The community is requesting Suma Jayma and WEFTA's participation for domestic services (up to two bars of 1/2" pvc per family) and concrete household tapstands, to

benefit the 250 families living in Palcoco. Given the scope and cost of this project, Suma Jayma has identified it as one of the lower priorities for funding requests of WEFTA in 2011 given that many other communities have been waiting longer.



Break Pressure Tank under Construction above Palcoco-Machacamarca Distribution Systems (Sept '10)

Extension of Principal Supply Main Serving Palcoco, Machacamarca & Viruyo

All three communities, Palcoco, Machacamarca and Viruyo, along with a potential fourth community of Jonko K'olla, will have their water supply source improved in the coming years thanks to efforts by the local municipal government of Pucarani in coordination with other Bolivian government agencies. The current water supply take from the irrigation ditch will be replaced with one tied into a reservoir at the base of the Andean snow-caps, approximately 15 kilometers away in 8" pvc piping (the gov't is budgeting approximately 4 millions Bs for this, or approximately half a million dollars U.S.). 3 kilometers of this route has already been installed. There may be additional communities connected to this regional rural water supply effort. WEFTA's and Suma Jayma's support in the early years with improving the distribution network for these close to 500 families in Machacamarca (near completion) and Palcoco and Viruyo (proposed projects) was a catalyst for garnering significant additional public funding to extend the supply.

Comanche Chico (proposed)

I met with the project lead for the community of Comanche Chico, Don Antonio Amorruga A. He recalled with much joy the May 2010 visit of WEFTA Engineer, Kari Edenfield. Their community water supply system has been on hold over the past year awaiting project funding – this is one of the top priority SJ projects being presented to WEFTA. The municipality of Comanche has provided \$15,650 in construction materials, which has covered the cost of the tanks and principal mains. A disperse community of 39

families, the lengthy household service lines and tapstands along with some river crossings are awaiting this funding. Braulio Rojas of SJ explained that Don Antonio is a committed community leader, coming by SJ's office monthly to check on when the project can be completed. For this reason, after completion of Machacamarcá, this is the next highest community water supply project priority for Suma Jayma, followed closely by Viruyo.

Another similar project being proposed in the Comanche area is the Huanocollo water system, which WEFTA engineer Kari Edenfield had the opportunity to visit last year.

Suma Jayma Priorities for 2011

In March 2011, Suma Jayma sent a list of proposed projects, prioritized for WEFTA's consideration of funding. Most of these have been described above. Their hope would be able to complete most of them in 2011, while realizing that WEFTA funding is limited.

Among the proposed projects include three community hand pump projects in the Batallas area, 31 families in Cullucachi (2nd phase), 22 families in Munaypata and 21 families in Titin Jawira (2nd phase).



Suma Jayma/WEFTA Cullachi 1st Phase Family Hand Pumps Completed; 2nd Phase Awaiting Funding (July '10 SJ photo)

Water Well Drilling Rig & Machining Equipment Piece

Momentum is growing around equipping and training Suma Jayma staff with a used truck-mounted drilling rig (or trailer mounted if truck-mounted is unable to be disassembled for shipment in a shipping container). If WEFTA members know of a small rig in good shape capable of drilling 300-400', please pass on the word. Steven Nasche, a mission trip leader from the North Texas area (from my hometown of Muenster, TX where quite a few local oil and water drilling companies are based) is motivated to seek support for people willing to help make this happen. All the better if this effort could be coupled with support from WEFTA. Shipping and customs expenses were investigated while in Bolivia – on the entry into country customs, taxes, etc., there's approximately 19% of value requiring to be paid. Unfortunately, there are no exemptions for charities working in country. Shipping quotes were received; it appears the best bet would be to arrange from the States for exporting from the US to the north of Chile (Arica or Iquique), if not all the way to La Paz, and then looking to see which is less expensive for the final leg up the mountain. The official steps to be taken have been outlined by the Aduana (Bolivian customs office, with payments made securely through designated bank accounts).

If able to obtain a drilling rig for Suma Jayma and ship by container, we may also want to take advantage to obtain and ship a used machining equipment piece. A former volunteer with Suma Jayma, Eric Nilan who has substantial machine shop experience will help SJ review used machines on-line. A unit is expected to cost around \$1000 +/- . Jaime Rosa of SJ has quite a bit of experience, theory and work in machining from his earlier training in La Paz. He explained that this would be an essential tool to make the fabrication of certain parts of the hand pumps and valves/pistons quicker, as well as safer than their current process. Suma Jayma makes all their hand pumps from scratch.

Mutual Goal – Helping Suma Jayma become more Self-Sustaining

1. WEFTA's commitment to human resource strengthening, through Jaime's civil engineering studies. He is approximately half way through his degree program.
2. Well drilling. Bolivian government is committing itself to contribute up to 300,000 Bs. (\$43,000) annually per local government for water supply, irrigation and food security purposes. SJ has had various requests from local gov't's for this well drilling service, which could in addition to helping remote communities be a source for self-sustaining funding. Subsurface data was provided to SJ from JICA which is available on CD.
3. Delegation visits. Since the trip to Bolivia, I've spoken with a rotary club member and church minister who might participate in work service delegations hosted by Suma Jayma; in addition to their own costs, they could raise the needed funds for one of the proposed Suma Jayma projects.
4. Also, some hope that UNITAS will once again begin funding a handful of small SJ projects in mid-2011.

5. While in Bolivia, SJ met with a group called “Bridges to Prosperity” which works with remote communities to build pedestrian bridges. This is an expertise SJ could also develop in coordination with Bridges to Prosperity and widen their services (and sources of funding.)

Goal is to reduce Suma Jayma’s dependence on WEFTA for project funding. Since they have no full-time funding for their overhead costs, if there are no projects, the institution stumbles. With a successful drilling program, SJ could maintain itself on its own. WEFTA would continue to have a reliable local partner, but one that is less dependent on WEFTA for its ongoing water projects.



Basilia and Braulio Rojas, and Jaime Rosa and family with their mother. Braulio and Jaime are the director and technical coordinator for Suma Jayma (March '11)

III. LA “YAPA”:

1. Met with Victor Rico, director of EPSAS which is the public water utility serving El Alto – La Paz. EPSAS and the Tarrant Regional Water District (Fort Worth) are seeking to form a technical exchange between the two public water utilities, both serving approximately 2 million people. The two water entities intend to carry out the collaborative effort under the Global Water Operators Program sponsored by UN Habitat, which facilitates public-public partnerships between major water utilities in the north and south.

Four focus areas were identified by EPSAS at this time which TRWD has significant experience

- Cathodic protection of major transmission lines,
- Reservoir yield calculations,
- Improvements to SCADA and
- Reduction of “non-revenue” water (macro metering, major leak and clandestine connection identification, etc.)

Another area was identified by EPSAS, requiring hydrogeological specialists to help determine the characteristics of the altiplano aquifer; however TRWD is solely a surface water supplier and has little experience in this area. Perhaps some WEFTA members might be able to lend a hand with this?



Time to pack up and Visit Bolivia!