New Country, Same Story:
Review of the Glamis Gold Marlin Project EIA, Guatemala

Marlin Mine Facilities Under Construction

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February 2004

Introduction.

Purpose and Scope. The following report is intended to provide a brief, technical review of the Estudio de Evaluación de Impacto Ambiental y Social and Anexos for the Marlin Project, Guatemala---sometimes referred to as the EIA&S [Montana Exploradora de Guatemala (MEG) June 2003]. Throughout the present report the Marlin EIA&S is referred to as the EIA because it serves the same function as Environmental Impact Assessments (EIAs) internationally and it is compared to such international documents. In addition, the present report discusses some aspects of the public mining-environmental review process in Guatemala, and its relationships to oversight by the Guatemalan government and the International Finance Corporation (IFC). This report does not discuss all aspects of the EIA, but focuses on water and water chemistry-related issues, those issues which normally cause the most serious and expensive, unforeseen, economic impacts and public liabilities at mining sites. It is intended to present viewpoints that are independent of those presented by the mining company, the various Guatemalan government entities, and the various arms of the World Bank.

Unfortunately, some segments of the Guatemalan government and IFC, media and business community have labeled any comments or questions about metal mining or this project that are less-than-positive as **anti-development or even unpatriotic**. Apparently they feel it is preferable to avoid discussing unpleasant realities. This report is an attempt to open a more balanced dialogue on these matters.

The philosophical biases presented herein are neither pro- nor anti-mining. I have often worked for clients with both orientations. **This report is not intended to tell the citizens and regulators what to do.** Rather, it is intended to provide technical assistance to the general public and the Guatemalan government so that better informed decisions can be made and to constructively influence the public review PROCESS. **The ultimate choices, however, must be made by the citizens and their elected representatives. They are the ones who will be personally impacted.**

My participation in these activities was solicited, supported and funded by the Guatemalan NGO, Madre Selva, using very limited funds from: HIVOS (Humanistic Institute for Cooperation with Developing Countries, Holland); IBIS—a Danish NGO; the World Lutheran Church Federation; AIN (Ayuda de la Iglesia Noruega--the Norwegian Church), and the Danish Association for International Development. Nevertheless, the views expressed are mine, and may differ in some instances from those held by Madre Selva, or other portions of civil society.

These brief observations are based on: review of the original Estudio de Evaluación de Impacto Ambiental y Social and Anexos [Montana Exploradora de Guatemala (MEG) June 2003] in both paper and CD formats---hereafter referred to as the EIA; review of a CD version of the EIA and Anexos provided in late November 2004 by the Dirección General de Minería, **which contained material not present in the original EIA**; review of the Trimestral Report and Anexos (CTA, August 2004); discussions with various staff of the Ministry of Energy and Mines, several national non-governmental organizations (NGOs) and local and regional citizens groups, the media, technical consultants, and religious leaders, during the period of November 23 through December 7, 2004.

Numerous requests were made to MEG, in writing and by phone, to arrange both a formal mine site visit and technical discussions of the project and the EIA with company representatives. MEG declined all requests. In fact, a representative of MEG stated that all members of our party *except myself* could visit the mine site! Nevertheless, because the public road passes through part of the site, our party conducted a basic reconnaissance of the area---observing facilities and aspects visible from the public roads---on November 27 and 28, 2004. The following opinions and observations are also based on more than 32 years of applied hydrogeological and geochemical experience, much of it at mining sites throughout the world.

As stated above, most of the conclusions made in this report are based on the information and data made publicly available in the EIA. From experience with dozens of similar mining projects and EIAs,

I am fully aware that mining companies routinely prepare many studies and reports in addition to the EIA documents. However, if these reports were prepared after public release of the EIA, then their findings were not available to the public or the regulators during the public review/consultation process.

Background

Montana Exploradora de Guatemala, S.A. (MEG), a subsidiary of Glamis Gold, Ltd., headquartered in the U.S.A., but operating for business purposes as a Canadian corporation, has begun construction and operation of a combination open-pit/underground gold and silver mine and processing facility using cyanide vat-leach techniques, with heap-leach processing possible in the future. This project, the Marlin Mine, is located in the western Guatemalan highlands about 90 air miles northwest of Guatemala City in the Department of San Marcos. The International Finance Corp. (IFC), the arm of the World Bank which provides funding for private sector projects, has provided a $45 million loan to help develop the project. The site is located in a remote, mountainous region of volcanic rocks and reworked volcanic-derived sediments, at about 2000m elevation, which has very distinct wet and dry seasons and is inhabited mostly by indigenous (Mayan) farmers.

At least one open pit will be excavated to a depth of about 200 meters with underground workings below. It is estimated that approximately 38 million tons of waste rock will be generated. No geochemical or chemical reactivity data are presented for the waste rock. Based on MEG information on expected gold production presented in a recent Guatemalan newspaper graphic entitled “El a, b, c, de la extracción”, one can calculate that the tailings produced by the Marlin Project are expected to total approximately **23 to 27 million tons**. No detailed geochemical data are presented for these massive volumes of tailings waste.

Estimates of the mine life vary between about 10 and 13 years, depending on whether the EIAS or Glamis website is consulted. In most cases, the actual mine life will depend on the future exploration drilling results and the world price of gold and silver.

The Glamis Gold website states that the combined open pit and underground mine will produce approximately 2.1 million ounces of gold and 29.2 million ounces of silver. **Annual production** will be about 190,000 ounces of gold (225,000 ounces of gold equivalent) **annually** at a projected total cash cost of $101 per ounce. By comparison, the total cash costs for Newmont Mining Corp.’s Nevada (USA) gold operations were $235 per ounce in 2003.
[http://www.newmont.com/en/operations/nthamerica/nevada/index.asp]

EIA: Technical Details

This EIA fails to discuss many of the most fundamental issues that concern the public, issues which must be generally understood by both the citizens and government regulators prior to approving such a project. These questions/topics include:

- What are the amounts of water available in the project area---both surface and ground water? The water-related section of an adequately-constructed EIA is normally based on detailed surface water, ground water and water quality studies, which are then summarized in the EIA. Such studies should include details on well completion and development information, aquifer test results, stream flow measurements and development of a detailed water balance.

- What are the likely impacts to the flows in the Rio Tzala and neighboring wells and springs from the extraction of ground water in well MW-9 and other extraction wells? MW-9 is the main water supply well for the mine. Similar studies normally present detailed analyses of surface water-ground water interactions, based on long-term pumping tests.

- What is the detailed location and three-dimensional relationships of any wells used to extract water from nearby rivers, such as the Tzala and Cuilco? No such fundamental information is given.

- **What is the chemical composition of the ore, the waste rock and the tailings?** No such information is presented in this EIA, and it is routinely presented in comparable mine EIAs around the world. Such data is especially important to evaluating the potential for contamination and making monitoring decisions.

- What is the realistic probability that acid rock drainage (ARD) will be generated in the wastes and pit walls? The EIA fails to present any geochemical test data on the reactivity of these geologic materials. More fundamentally, it is neither credible nor useful to simply state that the potential for generating acid drainage is low (EIA, pg. 3-24, 3-32, 6-72, 6-74). Given the local geology, the proposed underground mining methods and proposed processing methods (vat leach with INCO cyanide destruction), the gold and silver recovery percentages (EIA, pg. 7-7) and selected comments of the Directorate of Mines staff, it is obvious that much of the rock to be mined contains significant concentrations of sulfide minerals. In fact, the Glamis Annual Information Form, a document informing potential investors required by the U.S. government, states on page 29 that much of the rock is sulfide rich [Glamis Gold Annual Information Form, March 31, 2003, U.S. Securities and Exchange Commission, EDGAR Database: http://www.sec.gov/Archives/edgar/data/782819/000094523403000171/o09429aexv1.htm]

Thus, it is obvious that, contrary to the conclusions stated in the EIA, the chances of developing acid rock drainage are, in fact, high.

- What are the pre-operational, baseline environmental conditions? This should include quantitative, statistically-reliable summaries of water quality and quantity, aquatic biology, soils chemistry, etc. Analytical results from a few individual samples are of little or no value when it comes to demonstrating, in the future, that changes in water quality have occurred.

Baseline chemical data from soils/sediments, waste rock, tailings, and waters in areas near (and down-gradient from) the proposed mining and processing facilities need to be collected. Such samples need to be analyzed for a broad range of inorganic and organic compounds---much broader than the few parameters included in the Marlin samples included in the EIA or the Trimestral Report (CTA, Aug. 2004). Such analyses should include, as a minimum: field and lab pH, specific conductance, water temperature, together with total determinations (and in some cases dissolved determinations of) of: aluminum, antimony, arsenic, barium, cadmium, copper, chromium, cobalt, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc, calcium, magnesium, sodium and potassium, sulfate, nitrate, ammonia, boron, phosphorus, fluoride, chloride, and natural radioactive constituents (uranium, thorium, potassium-40, gross alpha and beta, in general), cyanide and related breakdown compounds (metal-cyanide complexes, cyanate, thiocyanate, organic carbon, oils and greases, together with a comprehensive scan for organic compounds.

- How much precipitation routinely falls in the specific site area? This information is crucial for constructing a reliable site water balance, for making engineering decisions on potential flood magnitudes, for designing structures, and ***needs to be based on site specific data***.

The EIA suggests that the local precipitation *may be* 1000 mm per year, but this guess is based on data from a location that is at least 50 to 60 km away from the mine site (EIA, pg. 5-97). There is no reason to accept that these precipitation figures are representative of the Marlin mine site. Normally, such site specific data have been collected **prior** to release of an EIA.

- What are the realistic chances that the site will be subject to significant seismic events? It is totally misleading to evaluate only the last 19 years of record, and then generalize by saying that the **risks are low to very low** (EIA, pg. 4-9, 4-11, 8-2). The short period evaluated in the EIA totally neglects considering any seismic records from 1976, a period of extremely destructive Guatemalan earthquakes.

- Are leachates from the exposed waste rock or tailings toxic to aquatic organisms, if released? No relevant geochemical or toxicity testing results have been presented. Numerous statements imply that these leachates are harmless to aquatic organisms, which is simply not true. For example, statements about how rapidly cyanide degrades are totally disingenuous and incorrect (EIA, pg. 8-23, 8-26). On pg. 9-2, the EIA states that leachates from waste rock are not toxic (to aquatic organisms?) because they have not been treated with cyanide! Such a statement indicates that the authors have no understanding of the pervasive tendency for waste rock to contaminate surface and ground waters with inorganic pollutants such as metals. Furthermore, it is misleading to refer to waste rock as *esteriles,* because such wastes at similar mine sites around the world are well known to contain significant concentrations of many potentially toxic trace metals and other chemical contaminants, especially where the rocks contain significant amounts of sulfide minerals.

- What is the detailed chemical composition of effluents from the INCO cyanide decontamination process, and are such effluents toxic to local aquatic organisms? In fact, such treated effluents from similar plants around the world are often still toxic, due to the remaining cyanide-decomposition products, remnant metals, and other contaminants (Moran 2001, 2002). Most similar pre-operational projects would have conducted feasibility studies that generate test tailings and associated effluents. No such data are presented, yet the EIA claims that no significant impacts are anticipated (EIA, pg. 3-50).

The tailings impoundment will be unlined (email correspondence from J. M. Swetye, IFC, to R.E. Moran, Jan. 7, 2005). That is, it will have no under-seal or liner. According to both the IFC and Montana (email above), selected areas in the underlying rock have been pressure grouted, down-gradient of the tailings dam and along the sides, in an attempt to minimize any tailings leakage.

The IFC states in its Non-Technical Summary of the Marlin Project (2004) that: “Lining the tailings dams is not an option at Marlin due to the mountainous setting of the region.” [See:http://ifcln001.worldbank.org/ifcext/spiwebsite1.nsf/0/60b8beb20d6bdc7285256e610054690a?OpenDocument]

In fact, most modern tailings impoundments constructed in developed countries are constructed with some form of liner, and they are often constructed in mountainous terrain. Who developed the argument that an unlined tailings impoundment would be acceptable---the mining company or the IFC?

It is unreasonable to assume that, despite all these engineering efforts, that this tailings dam will not develop some degree of contaminated leakage over the long-term. In fact, it is common knowledge within mining engineering circles that all engineered structures, lined or unlined, leak to some degree. Thus, to justify the risks associated with constructing an unlined tailings impoundment, it is imperative that detailed hydraulic testing and water quality monitoring should have been conducted immediately downgradient of the proposed impoundment. As part of these efforts, permanent downgradient monitoring wells should have been constructed, developed and sampled prior to the construction of the tailings impoundment. These wells would continue to be monitored during active mine operations and for many years after mine closure. Such wells would be monitored for many contaminants, including those mobile constituents most indicative of mine contamination, such as sulfate and nitrate. Testing and baseline results should have been presented in the EIA. No such data or detailed discussion was presented.

Long-term is not simply a decade or two. The tailings wastes will remain on the site forever---long after any funds are available to provide site maintenance.

- If unexpected environmental impacts occur after mine closure, who will pay for them and with what funds? The EIA makes no mention of any aspects of financial assurance requirements for MEG. Sra. Carolina Roca, Vice Minister of Energy and Mines told us that MEG has agreed to provide Q 2.8 million for some form of financial assurance bond to cover unexpected costs, presumably for environmental impacts. However, Q 2.8 M (approximately $350,000) would be insignificant if a long-term acid drainage problem were to develop. Such problems have **cost tens to hundreds of millions of dollars** to remediate when operation of an active water treatment plant has been required.

Following mine closure, who will pay for the continued operation and maintenance of the public facilities that MEG and IFC say are being constructed or augmented at the site, such as water supplies and treatment systems, schools, roads, health clinic, etc.? **Once the mine closes, the funding to operate and maintain such activities ceases.**

As noted above, some private discussions about the funding of unforeseen events have obviously taken place between MEG and the government. However, the details of such discussions have not been made public in the EIA or any other readily-available public location.

In summary, this EIA discusses some possible minor project impacts in very simplistic and optimistic ways, but it fails to describe in a realistic manner, the truly significant and costly potential environmental impacts that frequently result at similar, modern mining projects. Thus, the technical information on which the Guatemalan governmental agencies based their project approval was totally inadequate.

EIA: Process Details

Why is an EIA prepared for large, publicly-sensitive projects? So that the public and regulators can be informed about the potentially-significant impacts---environmental, social, economic, etc. In addition, an EIA theoretically serves as the beginning of a *process of dialogue* between the company, regulators and civil society concerning the degree to which impacts are acceptable or unacceptable, and it discusses the approaches that will be employed to minimize or prevent impacts.

While EIAs often focus on technical and legal details, it is frequently these public processes of dialogue that matter most to civil society. The citizens want to be adequately consulted in this process.

Unfortunately, civil society in much of the world often does not trust the conclusions presented in EIAs, especially those involving the extractive industries, such as mining. One of the pivotal reasons for this mistrust is that the mining companies are allowed to choose, direct and pay the consultants who prepare the EIAs. Essentially all of the technical data, opinions, and predictions in such documents come from the company-paid consultants. As a result, most metal mining EIAs are notorious for presenting overly optimistic discussions of future impacts. Mining is not alone when it comes to public mistrust of published information. Citizens in developed countries have recently voiced similar mistrust with the “independence” of reporting in the financial markets, public accounting, and food and drugs industries.

As this report is being written, the international media is filled with mining-related articles describing citizens groups in numerous countries (Guatemala, Peru, Turkey, Indonesia, Romania, Ghana, etc.) that are irate because they felt inadequately consulted and/or unfairly treated in the consultation process, and later. [see http://www.denverpost.com/Stories/0,1413,36~33~2594109,00.html http://www.denverpost.com/Stories/0,1413,36~34165~2592207,00.html

http://www.nytimes.com/2004/12/02/international/asia/02newmont.html?adxnnl=1&oref=login&adxnnlx=1101996331-IstwtLND7fBwyBOUrnWmAA

Most pertinently, during early December 2004—January 2005, disturbances developed in Guatemala directly focused on citizen complaints related to the Marlin Project. These have led to intervention by the military and the death of at least one campesino. For example, see: Un muerto y 20 heridos en disturbios en Sololá Se enfrentan policías y vecinos por paso de equipo minero: http://www.prensalibre.com/pl/2005/enero/12/105342.html

It is beyond the scope of this report to speculate about the sources of these disturbances, which clearly involve many causes. Nevertheless, complaints about the lack of adequate and unbiased public consultation, and the perception that the local citizens have not "gotten a good deal" seem to be factors.

In such a tense and mistrustful setting, it is imperative that any EIA clearly summarizes the most important details in simple language, and that this information is readily available to the public---especially the local citizens. In the case of the Marlin Project, the main volume of the Marlin Project EIA, is 540 pages long. Including the annexes, it is almost 2000 pages long, and cost roughly $100 to photocopy. Such a huge and costly document is hardly accessible to *campesinos*. Unfortunately, it is not organized in a way that would allow the public to readily access important details. For example, much of the information is presented in Anexos 13.1 A thru 13.1 I, but all of these anexos, confusingly, have exactly the same title! Most importantly, this EIA simply fails to provide some of the most basic technical details needed to answer fundamental questions—as is discussed above.

The exact extent to which this EIA was "made public" is unclear. Nevertheless, while visiting the project region, I heard numerous complaints that the details were not adequately explained in public meetings, that citizens had never seen a copy of the EIA, and most importantly, that company representatives stated publicly that no significant negative impacts could be expected. The same benign messages were conveyed in their media advertising. Clearly, the technical details discussed above were not reasonably and fairly presented in the written EIA. **My review of the *process* details together with the unacceptable technical contents of the EIA indicate that the various regulatory agencies had probably made up their minds that the project should be approved, prior to any significant technical review.**

The IFC (email of Jan. 7, 2005 from J.M. Swetye, IFC, to R.E. Moran) states very forcefully that, **"there were in fact three successive disclosure/comment periods over what ended up being a 9-month period."** I can only accept that this is essentially correct. However, the significantly-flawed information presented in the EIA suggests that these were very biased disclosure/comment periods.

IFC Roles

As mentioned above, the International Finance Corp. (IFC), the arm of the World Bank Group (WBG) which provides loans for private projects, has committed to provide a loan of $45 million for the Marlin Project. Because the IFC is a financial backer of this project, the project becomes "associated" with the reputation of the IFC/WBG, and is expected to voluntarily follow various WBG guidance and oversight. At numerous points within the Marlin EIA it is stated that the project will comply with these and other WBG/IFC guidelines. Such assurances are supposed to instill confidence with respect to the quality of the project operations and future site remediation. However, the generally poor quality of this EIA is testimony to the lack of adequate technical/environmental oversight that the IFC has given to the preparation of this document.

The IFC's Environmental Health and Safety Guidelines for Precious Minerals Mining (Draft) provide further insight into the weakness of this claim of World Bank compliance. [available at:

http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_draftmining/$FILE/PMM_Guidelines_DRAFT_019_Final+for+Comments_.pdf]

For example, Table 1 within these Guidelines presents effluent concentration limits for mines. Although these guidelines are still in draft form, many of these IFC/WBG guidelines are, in fact, *much weaker* than comparable guidelines and standards promulgated by other regulatory authorities. **T*able 1 of the present report* is a summary of these IFC guidelines as compared to some comparable U.S. and Canadian Water Quality standards and guidelines.** Note that there are no IFC guidelines for several contaminants such as aluminum, antimony, uranium, ammonia, nitrate, chloride, and thallium---while the U.S. and Canadian documents do contain recommended limits for these constituents.

Aside from being potentially toxic to aquatic organisms, several of these missing constituents, such as chloride, nitrate, ammonia---together with sulfate---are exceptionally useful as standard indicators of mine contamination. These constituents are very mobile, thus act as useful "fingerprints" of mine contamination---yet they are not listed within the IFC guidelines.

Other toxic constituents, such as arsenic, cadmium and lead, are listed within the IFC Precious Minerals Mining guidelines, but the acceptable effluent concentrations are much higher than would be allowable in either the U.S. or Canada. For example, the IFC guideline for arsenic in a mine effluent is 0.1 mg/L, while the Canadian guideline for either drinking water or aquatic life is only 0.005 mg/L. That is, the arsenic concentration allowable in an IFC-funded mine project effluent might be 20 times that acceptable in Canadian fish-bearing streams.

Page 5 of the IFC Guidance document (July 2004) describes the types of waste characterization testing that should be done to assess whether mine wastes will eventually form acid mine drainage. Unfortunately, as stated above, no such testing for the Marlin geologic materials is made public in the EIA. One is forced to ask, did the IFC technical staff review these crucial EIA details prior to recommending approval of this project to their Board of Directors?

One could continue discussing the weaknesses of these guidelines for an entire document, **but the unavoidable conclusion is that IFC-funded mine projects in developing countries are held to much weaker environmental standards than are those in developed countries.**

Extractive Industries Review/IFC Roles

In 2001, civil society represented by a consortium of international non-governmental organizations (NGOs) pressed the World Bank Group (WBG) president, James Wolfensohn for a review of the Bank's involvement in the Extractive Industries sector, which includes mining. Civil society had become very critical of the WBG's role in lending to and oversight of these industries, and they "wanted to be consulted and recognized as equal partners in development, especially in extractive industries that deplete nonrenewable extractive resources and have negative impacts on affected communities and resettled indigenous people." [Quote from Extractive Industries Review Final Report, vol. 1, Dr. Emil Salim; http://www.worldbank.org/ogmc/files/eirreport/volume1english.pdf]

As a consequence, the WBG set up the Extractive Industries Review (EIR), a two-year, interactive process to evaluate the Bank's involvement in this sector, which evaluated past successes and failures, and made recommendations for future Bank practices. In the fall of 2003, I was appointed to the Advisory Board of the EIR, which assisted Dr. Emil Salim in preparing the Final EIR report.

The Final EIR report was submitted to the WBG at the beginning of 2004. The WBG chose to accept only selected recommendations made in the EIR report. However, some of the more important recommendations the WBG chose to accept are summarized below:

1. "The sequencing of our activities in EI (Extractive Industries) will be based upon governance capacity and risks. **Where we make judgments in favor of involvement we will disclose our rationale. For significant projects we will require risks to be mitigated."**

2. "The Bank Group will **require revenue transparency as a condition for new investments in EI."**

3. "We will establish **independent monitoring mechanisms for our largest projects."**

4. "The Bank Group will **only support extractive industry projects that have the broad support of affected communities."**

The entire EIR Management Response report [World Bank Group Management Response to the Final Report of the Extractive Industries Review; September 17, 2004], in Spanish, can found at: http://www.worldbank.org/ogmc/files/eirreport/eirmgmtresponsefinalspanish.pdf

The Marlin Project is the first major IFC-funded mining project approved following the release of the EIR final report. Thus the WBG statements above are especially relevant to this process. Clearly, many in Guatemalan civil society feel that the Marlin public consultation process did not comply with these EIR "promises".

It is also informative to read statements made during the IFC Board of Directors meeting, June 3, 2004 concerning the Marlin Project. Some of the more relevant comments from this IFC Board meeting include:

1. The U.S. Executive Director abstained from voting on the project due to violation of the Pelosi Amendment, which requires EIAs be published 120 days prior to Board consideration of a project – both in country and to the board.

2. Board members expressed concern that the $261 million project would create only 160 long-term jobs and suggested that IFC consider other opportunities with greater development impact.

3. Some board members expressed **concern that the IFC was relying on information from the sponsor** to refute [NGO] allegations, and suggested IFC conduct its own investigation and **be in a position to cite a more visibly independent assessment.**

4. Several speakers expressed concern that the EIR report "posed a potential reputational risk to IFC, and urged IFC to be cognizant of the fact that the Board's decision making would be scrutinized even more thoroughly than usual." The Director whose constituency includes Guatemala said that **he did not expect the EIR to have any significant effect on the project** in the short-term. [Source: Summary of Discussion at the Meeting of the Board of Directors of IFC, June, 3, 2004, 7pg; IFC Corporate Secretary.]

Given the nature of these IFC Board comments, it is ironic to read the recent, January, 28, 2005, IFC comments relating to the Marlin Project posted on the internet [see discussion at: http://www.worldbank.org/ogmc/ifcminingglamisgold.htm]. The IFC makes clear they feel that essentially all criticism, social and technical, has been unjustified. The wording also makes clear that the IFC is both a lender and financial promoter of the project---that is an interested party, not a disinterested, independent arbiter.

Conclusions

1-The Marlin Project EIA fails to provide some of the most basic technical details needed to answer fundamental questions. **This EIA would not be acceptable to regulatory agencies in most developed countries, specifically the European Union countries, the U.S.A., and Canada.**

This conclusion is made blatantly clear by comparing the technical details in the Marlin EIA with those contained in the EIS (a U.S. document with the same function as an EIA) for the Imperial Project in southern California, a proposed gold project also owned by Montana's parent company, Glamis Gold [see http://www.ca.blm.gov/elcentro/imperial_project.html].

The technical details presented for the Imperial Project were much more extensive than those presented in the Marlin EIA. For example, the Imperial Project EIS contains extensive data on rock geochemistry, baseline water quality, well completion data, aquifer testing, site rainfall, etc. This report provides essentially all of the basic information lacking in the Marlin EIA.

2- **Negative environmental impacts** are likely to be considerably more significant than those discussed in the Marlin EIA. Based on experience at numerous similar mine sites, the most significant impacts are likely to be:

- **Increased competition for water.** Given the very large quantities of water required for the Marlin Project, the mine operations will compete with other agricultural, domestic, etc. users for the available water supplies. While the EIA speculates that there is an adequate local supply of water, no site specific data are presented. My field observations suggest that these increased demands for water could certainly aggravate competition for water, especially during the dry months when surface water and natural spring flows are greatly reduced. No evidence is presented that the local citizens have the capacity to store significant quantities of excess water during the rainy months. Such increased competition is likely to increase the related costs of land and water. **At present, mine operations in Guatemala are not required to pay for the use of the water itself.**

- **Likely degradation of local surface and ground water quality.** Based on the information discussed previously, it is clear that much of the rock to be mined contains significant concentrations of sulfide mineralization. Worldwide experience with such mineralized rocks at hundreds of sites indicates that there is a very high likelihood that acid rock drainage will develop within the mine workings, the pit walls, the waste rock, and the tailings. These conclusions are substantiated by an industry-funded study of sulfide-rich sites from throughout North America (Todd and Struhsacker, 1997). Yes, Montana may be able to mitigate and control most of these impacts during the years of active operation, but concerns for acid rock drainage are truly long-term issues, which may not become obvious until many years after the mine has closed.

3- The EIA fails to reasonably consider the **cumulative impacts** to water resources that are likely to develop if additional mining concessions are approved within this region. Obviously it is difficult to evaluate such scenarios before the other projects have been approved. However, it is equally unreasonable to totally avoid discussing this issue given the primary importance of water resources in a predominantly agricultural region. As a result, the impacts from each future mine project will be evaluated separately, and their cumulative impacts will not be fairly or adequately considered.

4- **Financial assurance** issues are not discussed in the EIA, and have not been discussed realistically in the associated public processes. As stated above, these issues have obviously been discussed to some extent between MEG and the Guatemalan government, but such details have not been made public. Most EIAs are overly-optimistic when they discuss future impacts and their associated costs. Repetto (2004) presents an informative evaluation of several metal mine sites owned by North American companies, and the tendency to underreport the actual environmental liabilities at these sites, and the consequences for mine stock investors.

It is one thing to say that there will be no significant impacts regarding water, water quality, etc., but actual experience shows that “unforeseen” impacts occur at metal mining sites more often than not. Often these impacts occur after the mine has closed and no company funds are available to pay for remediation or clean-up.

Because no realistic financial assurance measures have been made public with respect to the Marlin Project, it is likely that either public funds will be needed to pay for future “unforeseen” consequences, or, more likely, the local citizens will simply be forced to live with the negative consequences. **Comparable projects in the U.S.A. and Canada are required to provide funds necessary to pay for such unforeseen impacts, prior to project initiation.** This approach is similar to the need for individuals or corporations to purchase insurance. In that vein, it is informative to read the wording of Glamis Gold’s Annual Information Form, page 15, regarding limitations of Insurance Coverage, **which is included in Appendix 1.0 of this report** and is contained on Glamis’s website.

5- **Independent Studies.** As a general rule, populations near metal mine sites in developing countries **do not trust** the project information (environmental, social, economic, etc.) provided by the companies or their consultants. Likewise, they generally **do not trust** their local and national regulatory agencies to support them in better understanding the technical issues. The level of such mistrust in the Marlin Project region seems to be at least that severe. As a result, it seems only intelligent and pragmatic to suggest that confidence might be gained if some “independent” environmental and socioeconomic studies were conducted. Such studies could be performed by knowledgeable parties that were **truly financially and politically independent** of both the mining company and the government. Realistically, it is most likely that this would require the selection of a team of experts suitable to the company, the government and civil society.

6- **Role of Civil Society.** The pervasive civil mistrust of both the processes and the sources of data could be defused by encouraging and requiring the involvement of selected representatives of civil society in the monitoring and oversight of mining environmental and social monitoring activities.

7- The Marlin Project, like most similar projects, will produce both **“winners and losers”**. To gain a reasonable understanding of the project consequences, it is important to identify, specifically, who these winners and losers are likely to be. It is much less useful to make sweeping generalizations stating that everyone, including Guatemala, will benefit from this project. This EIA and many of the public pronouncements of the company suggest that there will be no losers. This project is similar in most characteristics to numerous other gold mining projects in the developing world. If experience gained at those projects is any guide, the majority of the “losers”, those receiving most of the negative impacts, will be concentrated in a relatively small radius around the mine.

If the local populations feel that they have been **adequately and fairly informed** about these consequences, and if they perceive that they have been **adequately compensated** for the overall impacts to their lives, then such a project is likely to proceed with general public support. The present Marlin Project EIA and related public disclosure processes have fallen short of these criteria.

The Marlin Project is a classic example of a foreign mining company going to a developing country with weak governmental oversight and little practical experience with hard rock mining, initiating project activities without adequately consulting and informing the public, thereby inciting and mobilizing environmental and socioeconomic opposition—and dividing the neighboring communities and much of Guatemalan society. To be sure, during the operational life of the mine (the short-term), there will be winners and losers as this project goes forward, but the information provided to the public in the EIAS and company advertising have failed to realistically present the likely negative aspects and associated costs, which will impact the long-term---decades and possibly centuries following mine closure.

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Appendix 1.0 Glamis Financial Reports---Excerpts.

Environmental risks [from pg. 13, Annual Information Form]

Mining operations have inherent risks and liabilities associated with pollution of the environment and the disposal of waste products occurring as a result of mineral exploration and production. Laws and regulations involving the protection and remediation of the environment and the governmental policies for implementation of such laws and regulations are constantly changing and are generally becoming more restrictive. The Company has made, and expects to make in the future, significant expenditures to comply with such laws and regulations. The Company cannot give any assurance that notwithstanding its precautions and history of activities, environmental pollution will not materially and adversely affect its financial condition and its results from operations.

The Company's current production is from open-pit mining and heap leach processing. The Company's standard open-pit mining techniques have been designed to comply with reclamation requirements imposed by regulatory authorities. Such authorities generally require a mining company to return sites to safely-contoured slopes, but usually do not require backfilling of excavated areas. The Company generally is required to mitigate long-term environmental impacts by stabilizing, contouring, reshaping and re-vegetating various portions of a site once mining and processing are completed. Reclamation efforts generally must be conducted in accordance with detailed plans, which have been reviewed and approved by the appropriate regulatory agencies. Heap leaching is done with a dilute cyanide solution held within a closed circuit, which includes the leach pads and surface holding ponds. Leakage of heap leaching solutions could cause environmental damage. The old milling operations at the Company's Dee and Marigold mines have tailing impoundments that have known leakage as detected by monitoring wells. The Company does not believe that local groundwater resources have been affected and the Company has undertaken remediation efforts as approved by the Nevada Department of Environmental Protection.

During the year ended December 31, 2002, the Company had 20 small reportable releases (hydraulic oil and process solutions) at its operations. In all cases the appropriate authorities were notified, clean-up was undertaken immediately, and no contamination of ground or surface waters occurred. Measures, including procedural changes and education, were taken to prevent re-occurrence of the incidents. No further action is expected with respect to any of the occurrences.

Insurance coverage [from pg. 15, Glamis Annual Information Form]

The mining industry is subject to significant risks that could result in damage to, or destruction of, mineral properties or producing facilities, personal injury or death, environmental damage, delays in mining and monetary losses and possible legal liability.

The Company's policies of insurance may not provide sufficient coverage for losses related to these or other risks. The Company's insurance does not cover all risks that may result in loss or damage and may not be adequate to reimburse the Company for all losses sustained. In addition, the Company does not have coverage for many environmental losses. The occurrence of losses or damage not covered by insurance could have a material and adverse effect on the Company's cash flows, results of operation and financial condition.

Mineralization [from pg. 29, Glamis Annual Information Form]

The Marlin deposit was first discovered in 1998. The mineralization occurs in a Tertiary age, quartz-adularia epithermal system. This mineralization lies on the eastern portion of a two kilometer east-west trending vein system. Approximately one fifth of the mineralization found to date is oxide. The remaining is transition and sulfide. Since acquisition, the Company has been aggressively exploring the Marlin Main Zone and the Southeast extension and has expanded the mineral resource to over

4.0 million gold-equivalent ounces. As of January 11, 2003, the Company had drilled and received new analytical assay data on 227 reverse circulation and diamond drill holes (32,695 meters), bringing the total number of drill holes available for a mineral resource estimate to 300 reverse circulation and diamond drill holes (40,300 meters) and delineating a resource of 4.0 million gold-equivalent ounces. No proven and probable mineral reserve estimates have been completed for the Marlin Project at this time.

Financing Arrangements [from pg. 11, Glamis Gold, Second Quarter 2004 Report]

On June 30, 2004, the Company signed a loan agreement with International Finance Corporation, a division of the World Bank. The facility provides for up to $45.0 million in funding for development of the Company's Marlin Project in Guatemala. The facility is available for drawdown until December 31, 2005, with any funds drawn repayable over the subsequent three years at a LIBOR-based interest rate. The facility is secured by a pledge of the Company's shares in the related Guatemalan subsidiaries. As at June 30, 2004, there were no amounts outstanding under the facility.

INTERNATIONAL WATER QUALITY GUIDELINES

Parameters	Units	WHO Guidelines[1]	IFC Precious Minerals[2]	World Bank Guidelines[3]	US EPA	US EPA Aq. Life[5]		Canada Agricultural[6]		Canada[7]	Canada[8]
		Drink. Water	Mine Effluents	Open pit mining	Drinking Water[4]	Acute	Chronic	Irrig.	Livest.	Drinking Water	Freshwater Aq. Life
pH	Units	6.5 -8.5	6.0-9.0	6.0-9.0	6.5-8.5	6.5	9			6.5-8.5	6.5-9.0
TDS	mg/l	1000			500			500-3500	3000	500	
Tot Susp Solids	mg/l		50	50							
Turbidity	NTU	5									
COD	mg/l		250	250							
Bioch Ox Dem	mg/l		50	50							
Oil + Grease	mg/l	10	10								
Total N	mg/l		10	10							
Total Phos	mg/l		2	2							
Sodium	mg/l	200								200	
Chloride	mg/l				250			100-700		250	
Cl, tot res	mg/l					0.019	0.011				
Sulfate	mg/l				250				1000		
Sulfide	mg/l		1	1			0.002				
Nitrate	mg/l	50			10 (as N)				100	10 (N)	13
Nitrite	mg/l									1	
Ammonia (as N)	mg/l					0.002 to 0.325	0.032 to 0.049				0.019
Fluoride	mg/l		20	20	4.0 (2.0)			1.0	1.0-2.0	1.5	0.12
Aluminum	mg/l				0.05-0.2	0.75	0.087	5.0	5.0	0.1	0.005-0.1
Antimony	mg/l				0.006					0.006	
Arsenic	mg/l	0.01	0.1	0.1	0.05 (0.01)	0.34	0.15	0.10	0.025	0.005	0.005

Parameters	Units	WHO Guidelines[1]	IFC Precious Minerals[2]	World Bank Guidelines[3]	US EPA	US EPA Aq. Life[5]		Canada Agricultural[6]		Canada[7]	Canada[8]
		Drink. Water	Mine Effluents	Open pit mining	Drinking Water[4]	Acute	Chronic	Irrig.	Livest.	Drinking Water	Freshwater Aq. Life
Boron	mg/l									5	
Cadmium	mg/l	0.003	0.1	0.1	0.005	0.002	0.00025	0.0051	0.08	0.005	0.000017
Chromium, hex	mg/l	0.05	0.1	0.1		0.016	0.011	0.008	0.050		0.001
Chromium (tot)	mg/l				0.1					0.05	
Copper	mg/l	2	0.5	0.5	1.3 (1.0)	0.013	0.009	0.2--1.0	0.5-5.0	1	0.002-0.004
Iron (tot)	mg/l		3.5	3.5	0.3		1	5		< 0.3	0.3
Lead	mg/l	0.01	0.1	0.1	0.015	0.065 0.025	0.0025	0.20	0.10	0.01	0.001--0.007
Manganese	mg/l				0.05				0.2	<0.05	
Mercury	mg/l	0.001	0.01	0.01	0.002	0.0014	0.00077		0.003	0.001	0.000026
Molybdenum	µg/L							10-50	500		73
Nickel	mg/l	0.02	0.5	0.5		0.47	0.052	0.2	1.0		0.025-0.15
Selenium	mg/l		0.1	0.1	0.05		0.005	0.02-.05	0.05	0.01	0.001
Silver	mg/l		0.5	0.5	0.1	0.0032	0.0019				0.0001
Thallium	mg/l				0.002						0.0008
Uranium	µg/L				30			0.01	0.2	20	
Zinc	mg/l	3	2	2	5	0.12 0.12	0.12	1.0-5.0	50.0	5	0.03
Alpha, Gross	picoCi/L				15						
Radium	picoCi/L				5						

Parameters	Units	WHO Guidelines [1]	IFC Precious Minerals[2]	World Bank Guidelines[3]	US EPA	US EPA Aq. Life[5]		Canada Agricultural[6]		Canada[7]	Canada[8]
		Drink. Water	Mine Effluents	Open pit mining	Drinking Water[4]	Acute	Chronic	Irrig.	Livest.	Drinking Water	Freshwater Aq. Life
Cyanide (total)	mg/l		2 (0.20)	1		0.022	0.0052			0.2	0.005
Cyanide (free)	mg/l	0.07		0.1	0.2						
Cyanide WAD	mg/l		0.5 (0.05)	0.5							
Chlor, tot resid	mg/l		0.2	0.2							
Phenols	mg/l		0.5	0.5							0.004
Fecal Coliform	MPN/100ml		400	400						< 5	100
Tot Colif.										< 5	1000
Temp (increase)			<3ºC	<3 C							
Salinity (change)			<20%	< 20 %							

Footnotes:

[1] World Health Organization, 1996—Drinking Water guidelines.
[2] IFC Environmental Health and Safety Guidelines for Precious Metals Mining (Draft) July 2004
[3] World Bank General Env.-Proc. Wastewater discharges to surface waters: Pollution Prevention and Abatement Handbook, July 1998:
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Arsenic standard in ( ) becomes effective January 2006.
[5] US EPA Water Quality Criteria for Aquatic Life—acute(Ac)and chronic(Chr): http://www.epa.gov/OST/standards/index.html#criteria
Due to space limitations, A=acute, and C=chronic.
[5] US EPA, 2002, National Recommended Water Quality Criteria: 2002. EPA-822-R-02-047
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and Livestock (Livest.): http://www2.ec.gc.ca/ceqg-rcqe/agrtbl_e.doc Due to space limitations, I=irrigation, and L= livestock.
[7] Canadian Environmental Quality Guidelines, Dec. 2004, Summary Table: http://www.ccme.ca/assets/pdf/e1_062.pdf
[8] Canadian Council of Ministers of the Environment, 2003, Canadian Water Quality Guidelines for the Protection of Aquatic Life.
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