6-1-2005

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Preliminary Proposal for the Content Requirements of the Environmental Impact Assessment Report of the Rosia Montana Mining Project.

The Environmental Impact Assessment documentation should include the following additional information and data beyond the criteria laid down in Annex 2 of Regulation No. 863 of 26.09.2002 of the Romanian Ministry of Waters and Environmental Protection:

Financial Assurance.

-specific details regarding any measures agreed to between Rosia Montana Gold Corporation, S.A. (RMGC) and the Romanian government regarding financial assurance measures necessary to guarantee that all promised long-term environmental and socioeconomic activities are, in fact, completed following mine closure.

-include a scenario guaranteeing the availability of financial resources necessary to pay the expenses of mine closure in the event that the mine closes unexpectedly. Reasons for such closure might include unforeseen production problems, unexpected increases in production costs, bankruptcy, etc.

-describe the specific methods that will be employed to calculate estimates of funds necessary to fulfill the promised, long-term post-closure activities. This discussion should also specify what specific parties will make the estimate calculations, what assumptions were employed, what parties will hold the funds, and what will be the terms for returning the financial assurance funds.

-financial assurance discussions should include requirements to fund long-term operation of an *active* water treatment plant, for many years after closure (in addition to funding for operation of passive and semi-passive treatment options). Such discussions should include detailed analyses showing the present and expected volumes of water to be treated, together with the anticipated capital and operation and maintenance costs (O&M) per year. Funding for long-term environmental monitoring should also be described in detail.

-sources and amounts of post-closure funding necessary to operate and maintain the various infrastructure and facilities being built by RMGC, such as clinics, water treatment plants, schools, roads, etc.---or their expected fates following mine closure.

Baseline Monitoring.
-detailed tables summarizing the specific chemical constituents, frequency, sampling dates, and laboratories employed for all baseline environmental data that have been and will be conducted. Such data should have been collected for at least one year prior to commencing any significant site activities.

-tables summarizing all of the baseline data on water quality (surface and ground water), soils chemistry, aquatic biology, stream sediments, air quality data that have already been collected, by sampling location, together with appropriate maps. These tables should present statistical summaries, including, as a minimum, sample location designation, constituent name, number of samples collected, minimum, maximum, mean, median.

-baseline and operational **air monitoring** data that include **arsenic and mercury**, in addition to the other constituents listed in the Project Presentation Report (PPR).

-**baseline water quality monitoring**, both surface and ground water, that include, as a minimum, the following constituents:
metals / metalloids: aluminum, antimony, arsenic, barium, boron, cadmium, copper, chromium, cobalt, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc;
major ions and nonmetals: calcium, magnesium, potassium, sodium, sulfate, nitrate, ammonia, organic nitrogen, chloride, fluoride, total phosphorus, total alkalinity and alkalinity parameters; total dissolved solids, total suspended solids, turbidity, cation-anion balances;
cyanide and related breakdown compounds: cyanate, thiocyanate, metal-cyanide complexes, total cyanide, WAD cyanide;
radioactivity: uranium(elemental), gross alpha and beta;
organic compounds: total organic carbon, oil and grease, gasoline and diesel-range organic (GRO and DRO) compounds, volatile and semi-volatile organic compounds (VOCs);
field measurements: pH, specific conductance, temperature, dissolved oxygen.

The concentrations of the constituents listed above should be summarized statistically in tables, with the individual analyses presented in the appendices.

-baseline water ***flow*** measurements should be made at all significant project sites and regional surface water sampling locations, monthly, for at least the first year prior to commencement of any project construction activity. Flow measurements and associated water quality sampling should also be conducted at the most environmentally-significant sites during **storm events**. Baseline data should include tabular summaries of storm event flow and water quality data.

-baseline **load** calculations should be summarized statistically in tabular form, in a manner similar to the summaries for the baseline water quality concentration data discussed previously.

-baseline report sections should present **site-specific precipitation and evaporation** data, collected monthly for at least one year prior to project initiation. Such site-specific data should be integrated into all analyses of rainfall-runoff and flood calculations.

-ground water monitoring wells and piezometers should be sited and sampled / measured, during baseline phases, both upgradient and downgradient (hydraulic gradient) from all sources of potential contamination---even before such facilities have been constructed. These facilities include: the waste rock piles, tailings impoundment (TMF), ore stockpiles, process facilities, any other waste facilities. The monitoring wells / piezometers should be cited in such a manner that they will not be removed or destroyed by future project activities, and will provide long-term, historical data.

-springs and seeps should be sampled and evaluated using methods similar to the evaluation methods for other ground water resources, during baseline, operational and post-closure phases.

-provide summary tables of the well / piezometer completion and development details, and descriptions of the methods used. All such monitoring sites should be located clearly on site maps showing their relationships to important operations features and facilities.

-provide maps summarizing the results of all baseline hydrogeologic analysis. These would include water-level maps, ground water flow direction maps, ground-water quality maps, fracture analysis / lineament maps. Such report sections should also include descriptions, graphs and maps of aquifer testing, short and long-term, together with descriptions of the test interactions between ground water, underground workings, pits, surface waters, etc.

-a detailed **water balance** using actual **site-specific data**, with specific descriptions of how the data were collected and the assumptions used.

-present and describe the unit **water prices** RMGC pays, or will pay, for the use of both surface and ground water. If RMGC utilizes water at no cost for the commodity, this should be clearly stated.

-present a discussion of baseline **human health monitoring**, and the extent to which such monitoring will continue during the operational and post-closure phases.

Environmental Monitoring—Operational Phases / Post-Closure.

-conduct environmental monitoring during all operational and post-closure phases, that collects data at the same sites and for the same parameters, as a minimum, as are described above for the baseline monitoring. These EIA

sections should include detailed descriptions of sample collection and handling procedures, together with quality assurance and quality control procedures (**QA/QC**). Routine precision data should be based on statistically-valid sampling programs, which require more split samples than simple duplicates.

-a list of specific **water quality** parameters to be monitored following closure. Describe what specific **criteria** will be used to determine whether the new mine / processing operations have created contamination in addition to the pre-existing, historical **contamination**.

-describe in detail the types and amounts of **explosives and fuels and greases** that will be used. In addition, the EIA should discuss the processes and concentrations of chemical byproducts released into the environment (waters, soils, air) as a result of the use of these explosives and fuels.

-tabulate the specific types and amounts of **chemicals and process reagents** that will be used throughout the mine and processing facility. Commercial reagents should described by their chemical name or chemical components, not simply by some generic or trade name. Such tabulations should also describe the toxicity of these compounds to humans and aquatic life, or should state where no detailed testing information is available.

-site baseline **environmental toxicity testing** data and discussions. Such discussions should include the types and durations of tests performed, test organisms used, detailed descriptions of the effluent solutions utilized, and names of the specific labs performing the tests.

EIA and Related Process Issues.

-describe the specific processes RMGC has employed to verify that it has obtained the “social license” or permission to operate this proposed facility from the impacted population. The methods employed should be described, both qualitatively and quantitatively. State the extent to which citizens have had or will have the option to decline to sell or transfer their property to RMGC.

-present specific details describing the methods by which environmental and socioeconomic regulations and agreements at the Rosia Montana site will be ***enforced***, and describe which agencies will be responsible for such enforcement. This section should also discuss the means by which civil society can enlist the assistance of these regulatory agencies in the event that problems are noted.

-present discussions and data on baseline **costs** to the general public of Rosia Montana area **land and water**. Similar data should be collected and analyzed throughout the life of the operation to document long-term changes in prices of water, electricity, gas, land, and other staple products used.

-present evaluations of the **cumulative impacts** to regional water resources (and other resources) in the event that this project is expanded or several additional mining projects become operational within the area (i.e. RMGC's Bucium Project, or the mining projects developed by European Goldfields, etc.).

-the document should discuss the specific activities RMGC will undertake to allow civil society **timely access to reports and data**, and to participate in environmental and socioeconomic monitoring.

-should describe the general contents of the Pre-Feasibility and Feasibility Studies performed for RMGC, and should also describe how and where civil society can review copies of these important documents.

-describe the methods by which the Romanian government will **audit the gold and silver production** from the Rosia Montana mine, so that accurate **payment of taxes and royalties** can be assured. Such descriptions should detail which agencies will be responsible, and what methods will be used to ensure that funds collected from RMGC will actually return to the local, impacted areas.

-describe the methods that RMGC will use to conduct **"independent"** environmental, socioeconomic, and engineering studies. Discussions should include the methods and criteria for selecting, compensating and overseeing the "independent" experts, and should discuss the provisions employed to assure access to all significant data and reports, together with freedom in report preparation.

-describe the social, environmental and economic impacts of the proposed project on neighboring protected sites such as the Apuseni National Park.

-include an independent audit of the mineral resource estimates, conducted by a certified company that is technically and financially independent of RMGC.

-describe provisions whereby the interested public will have free and unhindered access to all agreements between RMGC and the Romanian government until the present.

-compare the various environmental quality criteria utilized in this RMGC project (such as water discharge criteria) with those employed at similar gold mine projects in Canada, the U.S.A, or Western Europe / Scandinavia.

Technological Processes.

-EIA sections describing mining processes should include figures showing each **open pit** in both plan (map) view and **cross section**, with scales so that both actual elevations and pit depths can be readily determined. Such figures should also show the approximate positions of oxide, mixed and sulfide-rich ores---

especially in cross section, and the positions and of boreholes used to evaluate subsurface geochemistry.

-provide summary tables of all **geochemical sampling / testing** data for ore, waste rock, and tailings, with each material summarized separately. Such tables should represent statistical summaries, so that one can readily determine the number of samples utilized, minimum and maximum concentrations, mean and median concentrations. This should be done for: whole rock analyses, acid-base accounting samples (ABA), kinetic test data, and any other form of leach testing data provided. The EIA should specifically demonstrate that the ore and tailings do not contain elemental uranium or other sources of natural radioactivity.

-describe the details of all geochemical sampling / testing approaches employed, including mention of whether individual or composite samples were employed, pre-analysis sample preparation, lixiviants used, duration of tests, sub-sample handling and preservation, where appropriate. State the names and locations of the labs utilized. Individual sampling / testing data sheets should be provided in the appendices.

-document and summarize examples of open-pit gold / metal mines that have had their pits backfilled and the resulting **long-term pit lake and ground water quality** associated with such efforts. Such descriptions should compare only those sites with **sulfide-rich ores**, and should present the number of years the mine operated and the number of years since closure.

-document and summarize examples of open-pit gold / metal operations mining **sulfide-rich ores** that have installed **active water treatment plants**, and where successful post-closure reclamation allowed the water treatment plants to be closed. Such discussions should involve only examples where long-term success (probably about 10 years or more, post-closure) can be verified.

-document, describe and summarize examples of open-pit gold / metal operations mining **sulfide-rich ores** that have successfully met water quality discharge standards using **passive treatment technologies**. Examples should be limited to those having long-term, post-closure experience.

Water Treatment Issues.

-summarize, in tabular form, the water quality parameters that will be measured / determined in the effluents, and the acceptable water quality concentrations for treated waters discharged from the treatment plant. State whether these are legally-negotiated criteria / standards. Describe the effluent discharge criteria / standards for both operational and post-closure periods. Provide water treatment testing data from the various Feasibility reports.

-provide tabular comparisons of the Rosia Montana treated water discharge criteria and comparable criteria / standards utilized in Western Europe, Canada, the U.S.A., and by the World Bank / IFC.

-descriptions of water treatment should include discussions of which **beneficial uses** are expected for the treated waters.

-discuss and define the ***loads* of *total* chemical constituents** (those measured by analysis of **unfiltered** samples) described above (see baseline monitoring comments), which are expected to be released in effluents from the **water treatment plant.**

Cyanide Issues.

-describe the specific procedures that will be employed by RMGC in the event of an accidental **cyanide spill** into surface waters / ground waters, and or onto other surface environments. In addition, describe which party will be financially responsible for damages resulting from such spills.

-present test data (from Feasibility or other studies) showing the detailed **chemical concentrations of tailings** effluents (waters and solids) resulting from the **INCO treatment** of Rosia Montana ores. Such data should include most of the parameters listed above for baseline water quality monitoring. Compare these test concentrations to international water quality criteria.

-demonstrate by means of **toxicity testing** that discharged waters (whole effluents) are not toxic to aquatic organisms, regardless of the WAD cyanide concentrations determined in effluent samples.

-describe the detailed methods and procedures used for transporting and handling cyanide.

Reference

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Dr. Robert Moran has more than thirty-two years of domestic and international experience in conducting and managing water quality, geochemical and hydrogeologic work for private investors, industrial clients, tribal and citizens groups, NGO's, law firms, and governmental agencies at all levels. Much of his technical expertise involves the quality and geochemistry of natural and contaminated waters and sediments as related to mining, nuclear fuel cycle sites, industrial development, geothermal resources, hazardous wastes, and water supply development. In addition, Dr. Moran has significant experience in the application of remote sensing to natural resource issues, development of resource policy, and litigation support. He has often taught courses to technical and general audiences, and has given expert testimony on numerous occasions. Countries worked in include: Australia, Greece, Mali, Senegal, Guinea, Gambia, Ghana, South Africa, Oman, Pakistan, Kazakhstan, Kyrgyzstan, Argentina, Chile, Guatemala, Honduras, Mexico, Peru, Canada, Great Britain, United States.

EDUCATION

University of Texas, Austin: Ph.D., Geological Sciences, 1974
San Francisco State College: B.A., Zoology, 1966

PROFESSIONAL HISTORY

Moran and Associates, President, 1983 to 1992; 1996 to present
Michael-Moran Assoc., LLC, Partner, 2004 to present
Woodward-Clyde Consultants, Senior Consulting Geochemist, 1992 to 1996
Gibbs and Hill, Inc., Senior Hydrogeologist, 1981 to 1983
Envirologic Systems, Inc., Senior Hydrogeologist/Geochemist, 1980 to 1981
Tetra Tech Int'l. / Sultanate of Oman, Senior Hydrogeologist, 1979 to 1980
Science Applications, Inc., Geochemist/Hydrologist, 1978 to 1979
U.S. Geological Survey, Water Resources Division, Hydrologist/Geochemist, 1972 to 1978
Texas Bureau of Economic Geology, Research Scientist Assistant, 1970 to 1971

LANGUAGES

English, Spanish