

**U.S. Forest Service Mining Needs Assessment Trip Report
October 6-18, 2014; Georgia**

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10/11/2014; Manganese mine site



10/11/2014; Manganese high wall failure



10/11/2014; Manganese mine site



10/11/2014; Sand mine site



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I. ACKNOWLEDGEMENTS

With gratitude, we would like to acknowledge the contributions from representatives of CENN and the Ministry of Environment and Natural Resources Protection (MoENRP) for their time and thoughtful conversations over the two week period we were in Georgia. They provided invaluable assistance in explaining the current procedures and discussing the environmental issues related to the exploration, mining and processing activities in Georgia.

II. BACKGROUND

A. Trip Purpose:

The U.S. Forest Service (USFS) was invited by the Caucasus Environmental NGO Network (CENN) and the Ministry of Environment and Natural Resource Protection (MoENRP) of Georgia to provide assistance in identifying ways to improve management of mineral resources and strengthen environmental protection during exploration and mining activities. Work to improve mining management in Georgia is especially timely as the country works to bring its environmental practices in closer alignment with EU requirements

In March 2014, USFS provided an overview of sustainable mining management practices in the U.S. and a training session on management of major mine projects to MoENRP employees. In fall 2014, we were requested to provide a more in-depth assessment of the current mining governance practices in Georgia and provide recommendations where processes could be improved. This report seeks to document the observations and recommendations resulting from the assessment conducted in October 2014.

B. USFS Experience in Mineral Resource Management:

The USFS manages more than 78,000,000 hectares of federal land on 154 individual National Forests. Under a national minerals policy, this management includes reviewing, approving and administering/inspecting exploration, mining and processing activities conducted by private companies within the National Forests. These environmentally responsible mineral activities are conducted in hundreds of locations, and in 2011 produced more than \$6.2 billion worth of minerals. The USFS is required to ensure that these activities comply with Federal mineral laws and regulations, as well as Federal environmental laws and regulations. Except for certain small scale activities of limited scope and impact, most large surface disturbing exploration and mining operations must have an environmental analysis and be *pre-approved* in a Plan of Operation before any construction or operation may begin.

III. SCOPE OF WORK AND ITINERARY

A. Objectives:

- *Provide a description of current processes used in Georgia to administer mining activities for ongoing projects, issue licenses for new developments, and ensure rehabilitation once mining is completed*
- *Identify gaps and provide recommendations for improvement*
- *Identify areas for potential future cooperation on mining between MoENRP and USFS*

B. Prior to travel to Georgia documents reviewed included:

- The Law of Georgia on Licenses and Permits;
- The Law of Georgia on Environmental Impact Permit;
- Resolution N136 dated 2005 and pertaining to procedures related to terms and conditions of issuance of licenses;
- Order No 1-1/480 dated 2008 pertaining to holding auctions for issuance of user licenses;
- Order No 13 dated 2013 pertaining to regulation of EIA;
- Trip Report produced by U.S. Forest Service (retired) geologist Michael Burnside from his visit to Georgia in March, 2014.

C. During/After travel to Georgia documents reviewed included:

- Example of a mining License;
- Example of a mining Order;
- Resolution of the Government of Georgia #424 – Reclamation of topsoil;
- Example of an EIA for a mine processing operation;
- Maps from a reclamation plan for a mine production site.

D. Itinerary:

Tuesday, October 7

An orientation was provided on mining management institutions and processes in Georgia from CENN and also from a specialist familiar with mining governance in Georgia.

Wednesday, October 8

Presentations and group discussion were held with representatives from the different agencies and departments of MoENRP. The National Environmental Agency (NEA of MoENRP) also gave a presentation and overview of the Auction and License issuance process they currently use.

Thursday-Friday, October 9-10

Individual meetings were held with and additional documents requested and received from the representatives of the following agencies of the MoENRP:

- MoENRP-NEA- Geology Department
- MoENRP-NEA- Licensing Department
- MoENRP-Land and Mineral Resources Protection Department
- MoENRP-Supervision Department (Inspectorate)
- MoENRP-Environmental Impact Assessment Department

Saturday, October 11

Field trip with CENN staff to an active sand mine in Sachkhere municipality, village of Kveda Orghul. We toured the sand mine and spoke with the owner. We also visited the community of Tchiatura and toured the Manganese mining district.

Sunday, October 12

Prepared preliminary report; developed preliminary observations and recommendations.

Monday, October 13

Discussed preliminary observations and recommendations with CENN and presented recommendations to representatives of the various agencies of the MoENRP.

Tuesday, October 14

Re-work recommendations and observations based on input.

Wednesday-Thursday, October 15-16

Observe a meeting held to discuss environmental audit of RMG mine. Conducted 1.5 day training for NGO and civil society organizations from Armenia, Georgia and Azerbaijan on mining management and environmental protection measures used at modern mines.

Friday, October 17

Separate out-briefs, meetings and discussions of future steps with:
CENN; NEA leadership; Heads of the Departments of Land & Mineral Resources, Supervision/Inspectorate, and EIA.

IV. OVERVIEW OF CURRENT INSTITUTIONAL FRAMEWORK and MINING MANAGEMENT PROCESSES

A. Institutional Structure:

A number of different agencies, all within the MoENRP, have a role in managing mining projects in Georgia. These include the National Environmental Agency (NEA), which has a Geology Department and a Licensing Department. The Geology Department has the primary technical responsibility for managing the Country's mineral resources, including estimating and quantifying mineral reserves and participating in the licensing process. The Licensing Department has the primary responsibility for conducting the auction and issuing licenses which grant the right to mine Georgian mineral resources.

Also within MoENRP are three other Departments involved in mineral resource projects including:

*Land and Mineral Resources Protection Department (Land and Minerals Department) – responsible for minerals policy and review and adoption of reclamation plans.

*Environmental Impact Assessment (EIA) Department – oversees the environmental review for proposed projects for mineral processing – and issues a permit approving such activity.

*Supervision Department (Inspectorate) – oversees field activities once a License or Permit is issued; these are the on-the-ground mineral inspectors and environmental protection specialists who enforce the terms and conditions of the License and Permit.

B. Overview of Licensing, Permitting and Inspecting Mineral and Reclamation Activities

1. Geology Department has historic mineral resource data and inventory information it uses to manage the mineral resources of Georgia. These archives are used during the auction and licensing process.
2. Private companies nominate lands for auction to obtain a Mineral License.
3. Before advertising an auction, the Geology Department prepares a “Geo-Information” packet which contains mineral deposit information as to quantity and quality; the packet specifies the mining method; and identifies issues related to roads or local municipalities.
4. A company will bid on the mineral license which is up for auction and the License Department selects the successful bidder, who will receive the License and Order (which contains the Geo-Information packet). Generally there are only 1-2 bidders, according to the License Department.
5. The License and Order¹ issued by NEA is the controlling document for exploration and extraction activities. In addition to the Geo-Information packet, the Order includes a

1. ¹ The License and Order process applies to both metal and non-metal mineral projects.

very general requirement that the license holder comply with other laws, including environmental protection laws; however few specifics are usually listed.

6. Activities conducted under a License and Order are required to be described in an operating plan. The company must produce an operating plan and have it on the mining site available for inspection. Currently there is no requirement that the operating plan is submitted to MoENRP. Moreover, there is no input from MoENRP on the operating plan nor are these documents reviewed or approved before a company begins work.
7. There is no requirement for an Environmental Impact Assessment (EIA) to be done for exploration or mining/extraction projects in Georgia. Processing operations, such as cyanide heap leach and mineral processing mills, however, must submit an EIA and obtain a Permit before beginning these activities. In cases where an EIA is required, unlike the U.S. model where an EIA is conducted or contracted for by the government, it is the company that writes (or contracts the writing) of an EIA.

Based on the sample we reviewed, the operating Plan and EIA are usually written as a joint document (again a practice that differs from the U.S. model). The EIA once produced is subject to public notice and review by the Independent Commission of Technical Experts, which is organized by the MoENRP's EIA Department, but consists of independent specialists who volunteer to serve on the Commission. The Commission identifies environmental impacts and develops environmental protection measures and operating standards as Permit conditions. The Commission has 20 days to perform this work. Negotiations, if needed with the Company, occur after the Commission has conducted their review. Following that, the Permit is issued by the EIA Department.

8. There is a separate regulation that requires a Reclamation Plan for exploration, extraction and processing activities that "disturb the soil". These are submitted independently to the Land and Minerals Department and are often not tied to an operating plan so there is little site specific information included. They must be "adopted" by the Land and Minerals Department.
9. The Supervision Department (Inspectorate) is responsible for monitoring and enforcing compliance with the License, Order, Reclamation Plan as well as the EIA Permit (for processing operations).
10. Flowcharts describing the role of various Departments are attached as Exhibit A.

V. OBSERVATIONS

A. Summary

We found that there are a number of differences between Georgian management of mines and the U.S. model. Some of these differences are to be expected based on the different economic, historical and institutional contexts of the two countries. There are, however, areas where we believe the U.S. experience could provide useful examples for improvement – primarily where governance functions that ensure environmental, health, and safety safeguards in U.S. and European regulations do not appear to function in the current Georgian minerals management.

Compared to the system the USFS uses, we found that the procedures used in Georgia do not provide a rigorous technical review of proposed or ongoing mineral activities such as exploration, mining (hereafter called “extraction”) or processing, nor is there a comprehensive review of the environmental effects of a proposed mineral project. Some of the aspects where changes are needed are already recognized by the Georgian government and MoENRP is currently moving forward to propose new legislation and other modifications. We note these efforts where we are aware of them.

B. Specific Observations

Below are some of the key areas where we feel improvement may be needed:

Environmental Impact Assessment (EIA) Requirement for Exploration and Extraction

Currently as mentioned above an EIA is not required for mineral exploration or extraction activities. An EIA is only required where mineral processing will take place. Of course, exploration and extraction projects should also be subjected to environmental review before rights are granted to a company, and this is the case in the U.S. and other developed countries. The MoENRP recognizes this need, and there is an effort to draft legislation that would require mineral extraction and exploration to also undergo environmental review and approval.

Currently, of the three phases of activities (exploration, extraction, processing) the system to approve processing operations is the most complete as it requires an environmental review, as well as an actual “approval” via the EIA Permit. (See process above for a more detailed description of the current EIA process for processing activities). However, though the current description of the EIA process sounds thorough, it is not sufficient to identify and resolve complex technical issues such as air emissions at large processing facilities/factories/smelters, prediction or treatment of acid rock drainage or cyanide destruction methods at heap leach pads. Based on review of existing EIA documents, there are also complex surface and groundwater quality issues that are not being adequately evaluated. The requirements, time frames and technical qualifications of reviewers should be strengthened in order to bring this

process up to International standards. Moreover, the USFS conducts all environmental reviews and establishes protection measures BEFORE any approval decision. In the Georgian system, while a Permit must be issued, the Company already holds the License & Order.

The Licensing Process: Whose job is it to Safeguard Human and Environmental Safety?

We did not observe a consistent process to approve exploration, extraction or processing operations. Answers could not be provided for some questions that were asked – particularly about how the MoENRP exercised the responsibility to protect public health and safety. In discussions with the NEA Geology Department, they carefully explained their role in preparing the Geo-Information Packet and how they use historic and archived data about the mineral deposit. However, we was not able to determine if specific, performance based construction, operation, public safety or environmental standards were routinely required and if so, which department was responsible for developing these standards and making sure they were included in the License and Order.

Moreover, the current system makes it difficult to determine if operators are complying with terms of the License & Order. Based on evaluation, interviews and my personal field observations, inspections cannot be successful to protect the environment without improving the license and permit issuance system. The License & Order is the document controlling ground level activities and because there are few or no measureable performance standards required, it is not sufficient to ensure MoENRP can protect natural resources and the environment or ensure reclamation is completed. Generic statements such as “must comply with water quality protection laws” is impossible to implement or measure and leaves the Inspector few enforcement options to protect environmental issues during exploration, mining or processing.

Perceived Lack of Continuity between Departments

In discussions with NEA and MoENRP technical and policy specialists, there appears a lack of continuity between departments. Various departments share some responsibility for exploration, extraction and processing projects but there are not clearly defined roles. This produces certain gaps and lack of consistency. For example, the Land and Mineral Resources Department is responsible for reviewing and accepting reclamation plans, but it is not clear how that process works. It appears that reclamation plans are routinely submitted after operations have begun and these plans may not be closely tied to the actual operating plan (how can you approve reclamation when you have not seen the operating plan?). Also, the Supervision Department is charged with field administration of approved Licenses and Permits and it appears that they do not always receive a copy of the Operating Plan so it is extremely difficult and non-productive to try to inspect an activity in which they have to obtain the Operating Plan

from the Company, after they are on site. There also seems to be fairly little communication or feedback between NEA which creates the requirements to be followed and prepares the License and Order, and the Supervision/Inspectorate which is responsible for enforcing environmental compliance.

No Review or Approval of an Operating Plan

Once the License & Order are issued, it is our understanding that the Order does not include a requirement that the Operating Plan be submitted by the Company for prior approval.

According to the Supervision department, all on-site inspections are within their authority. This department must inspect and administer the actual operations. There is no requirement for the Company to submit the operating plan for prior approval and often, the field inspector first sees the operating plan when they visit the site.

Inspections

We understand that an inspection is performed if the department receives a public complaint, but the MoENRP must also guarantee compliance or use enforcement measures to successfully protect the environment, public health and safety without activist public engagement. Moreover, the Supervision department has a very small workforce in need of training and resources. The project becomes entirely the responsibility of Supervision once the License & Order or the EIA Permit is issued. An additional problem for the Supervision Department is that the License and Order are so general with regard to any “requirements”, it makes inspections very difficult when trying to determine if the operation is protecting the environment.

Reclamation of Legacy and Current Mine Operations

A reclamation plan is required by regulation, but it is unknown how successful MoENRP is at achieving results on the ground. There appears to be only minimal correlation between the operating plan and the required reclamation of those activities. Additionally, at several of our meetings, the issue of abandoned legacy mine sites was discussed, but there was no clear message about which Department is responsible for inventorying and cleaning up these sites. Questions were asked by the Department representatives, about paying for such clean ups and post mine reclamation and we briefly discussed how this is done in the U.S.

VI. RECOMMENDATIONS

There are a variety of steps forward to improve and modernize the Georgian process so that it provides economic development through the creation of wealth and jobs in the mining and mineral processing sectors, but does so in a way that is environmentally responsible and sustainable over the long term. Improvements will both increase environmental protection during exploration, extraction and processing activities and provide more efficient and less wasteful utilization of Georgia's mineral resource wealth through better management.

The recommendations are summarized into two categories:

Legal and regulatory framework: changes and modernization of the license/permitting system;

Capacity building and technology transfer: the ability to identify and require best available technology and internationally accepted mining industry practices.

A. **Legal and Regulatory Framework-Fundamental Changes to Improve Environmental Protection During Mining Activities**

1. Develop a simplified vision and a **national minerals policy statement** which brings together the basic goals of MoENRP with respect to mineral resource management and environmental protection. A "mineral policy" statement that provides consistency in program management help set the long term direction of management of the mineral resource. At a minimum, four key policy statements should include: 1) Responsibility of Georgian government in minerals management; 2) Commitment to approving mineral projects that meet international environmental principles; 3) Requirement of reclamation plans and the return of the land to other productive uses – post mining; 4) Dedication to maintaining a trained and qualified workforce capable of successfully protecting public health, safety and the environment while managing mineral projects.
2. **Revise the EIA law** and process to fully address environmental impacts from projects encompassing all phases of a mineral project, from exploration through reclamation and closure. Options include possible amendments to "*The Law of Georgia on Environmental Impact Permit*" or "*Order No. 31*" or a new Statute that replaces earlier versions and provides a more comprehensive approach and includes involvement of interested parties and members of the public. International standards for a thorough and complete environmental review should be included in the new legislation. This environmental review and approval **MUST** precede approval of the project in the operating plan. For processing operations, the operating plan should not be combined with the environmental document. This would allow more flexibility in making

technical changes to the operating plan (how the project is conducted) which could then be subject to the independent environmental review process. All environmental reviews should result in a description of environmental impacts to be expected as well as required terms and conditions which reduce the negative environmental effects.

3. **Update, revise or replace the current mining statute, “The Law of Georgia on Licenses and Permits”** to bring the regulatory framework in line with current practices of Western Countries where minerals is an important economic contributor. Bringing a consistent regulatory standard in line with programs of other countries could increase efficiency and may result in an increase in the number of Western companies interested in working in Georgia. Companies require consistency and transparency in the “*permitting process*” in order to make major investments in long term projects. A more robust and consistent authorization process is needed. The License system could remain, but if so, it should be conditioned on a full review and approval of the operating and reclamation plans and environmental protection measures before the License or Permit can be exercised.
4. The current **Reclamation Law** appears to primarily address topsoil disturbances and this does not meet the needs of complex and modern exploration and extraction operations which also must be required to fully reclaim impacts to visual quality, wildlife, water quality, mining and other solid waste management, hazardous materials handling and other environmental issues associated with approved mineral projects. Additionally, most Western countries require a **bond or financial guarantee** for full performance and completion of reclamation responsibilities to protect the Government from inheriting un-reclaimed abandoned mine sites. This practice should be reviewed and considered for adoption in Georgia.

B. Legal and Regulatory Framework - Short Term Actions to Improve Current System

While longer term solutions are being developed, there are immediate steps that can be taken to improve the way extraction and processing operations are licensed, permitted and conducted. These include the following:

1. **Increase transparency of the License process** and provide a clear description for the public and Companies. This information would benefit new Companies who may be interested in participating in the auction process as well as municipalities or the local public who may have site specific information for certain project areas (such as a water source used for drinking water). A flowchart of the entire License process could be produced as a pamphlet or made available on the Internet.

2. As part of a transparent process, issued Licenses & Orders should be **available for public review**. If there is confidential or proprietary Company data, that should be redacted before release of the License & Order.
3. **Identify important geologic conditions** during development of the Geo-Information packet and include these in the Auction. These should include site specific technical data and details sufficient to protect public health and safety when designing the operating plan. These may include conditions such as seismic frequency and intensity; landslide and slope stability; size and frequency of major flood events; public drinking water supplies; potential for stockpiled waste rock to generate Acid Rock Drainage; mineralogy of the deposit. These factors are critical information for companies who bid on the auction and who will later include these factors in their operating plan details.
4. **Identify design criteria** to be included in the Geo-Information packet that will be required in the License & Order to protect public health and safety during a minerals project. Technical design criteria should include items such as high-wall set-backs and timing restrictions for blasting near populated areas; requirements for the abandonment of exploration drill holes that encounter groundwater during drilling; storage of topsoil to be used during reclamation; protection of the water quality of seeps and springs identified in the Geology field review; etc. Without site specific design and operating criteria, operators are left to “mine as they go”. Requirements are needed to prevent large excavations in areas that do not contain mineral resources or from excessive stripping which produces large quantities of overburden waste material.
5. **Revise the License & Order documents** to incorporate site-specific and required conditions to protect public health and safety. At present, it appears that mostly there are only general conditions in the Order (e.g. “Must comply with the Water Code”), except for a few that are specified in the Geo-Information packet. Companies participating in the Auction should be notified of operating restrictions and required design criteria so they can prepare their Operating Plan accordingly. This will also be a great help to the Supervision Department inspectors, as well as the company, by clarifying the requirements it must meet to be compliant.
6. **Revise the License & Order documents** to include a requirement that the Operating Plan include a site specific **reclamation plan** and that these are reviewed and approved before activities begin on the ground. All new projects should be subject to a requirement that the reclamation plan is submitted within 90 days of receiving the license/permit or an initial Plan submitted with the auction bid.

7. Many of the mineral related Licenses issued are for **sand and gravel** resources. Many issues similar to the poly-metallic projects likely occur with sand and gravel projects and we recommend investigating how these projects are designed and conducted so as to protect public health and safety and environmental conditions. USFS manages hundreds of quarries in which environmental review is required and we would be happy to provide examples of documents governing those projects.
8. Investigate and clarify MoENRP authority with respect to **a Company selling its license to another Company**. How will/does Georgia protect public health and safety once a license is sold to a new Company? How are the design criteria and environmental protection measures, which may be placed in the Order, enforced with the new Company?

C. Capacity Building and Technology Transfer

1. **Identify within MoENRP the department that will be responsible for conducting a technical review and approval of the Operating Plan** to ensure it includes the design criteria for public health and safety and the requirements in the Geo-Information packet and publicized during the Auction. Provide written guidance and protocols to be used when reviewing license applications, operating and reclamation plans. Additional personnel may need to be hired by the MoENRP to handle this new task.
2. If MoENRP has authority, the **environmental review process should be conducted for all mineral projects**, not just processing operations. If a formal EIA process is not possible, then an internal review with various experts (geology, water, engineering) should be formalized and conducted before approving the Operating Plan. Provide written guidance and protocols to be used when evaluated environmental impacts.
3. **Develop an inventory of abandoned mine sites contributing pollution to Georgia environment and natural resources**. Purpose of a simplified inventory is to identify existing and operating mine/processing facilities currently needing pollution control. Prioritize the list of sites based on impacts to water and air quality or other pressing environmental issues on site. Model the inventory after existing databases in place for abandoned and legacy mines.
4. **Pollution Prevention and Control**: MoENRP should initiate dialogue with all operating companies about the need for **environmental audit** to identify current known pollution

issues. Approach all operating companies holding License & Order in Georgia. Use the environmental audit process to bring best practices and modern technology and environmental monitoring, to the Georgian mining industry.

5. If process changes are made, **employee training** should be conducted to ensure new procedures and processes are well understood and implemented.
6. If needed, **rigorous field inspection training** should be conducted for employees who routinely conduct mine site visits and enforce License & Order requirements. Also, training and templates for creating inspection checklists could be very useful.
7. There is a need for **technical training for MoENRP personnel on modern mining and processing (milling) methods used in developed countries**. Modern and commonly used techniques, tools and milling reagents (such as non-toxic exploration drilling fluids) are prevalent in operations and in reclamation and closure activities. Monitoring and treatment options for pit lake water quality are a complex issue, but various techniques and treatment options could be shared. Development of these new methods and products has occurred over the last 10-15 years and there is a need to bring information about these modern Western practices into Georgia to be incorporated into mineral projects.

I thank you again for sharing information with me about the unique and challenging mining situation in Georgia. I look forward to further collaboration with you to identify effective best management practices which will help protect the health and safety of the environment and the people of Georgia while continuing to manage the mineral wealth of your Country.

Very Truly Yours,

Ruth Seeger

