

SURFACE MINE RECLAMATION NEEDS IN MONGOLIA'S SELENGA WATERSHED¹

A Jalsrai², R. Baigalmaa, and S. E. Williams

Abstract. Mongolia is a high-latitude, relatively high altitude, arid to semi-arid country that is rich in fossil fuels (especially coal), precious metals (e.g. gold, copper, tungsten, lead, and zinc) and some non-metals (phosphorus). Coal mining is mostly via open pit whereas gold is mostly via placer methods. Both of these mining activities disturb large surface areas such as at the Baganuur Coal Mine (140 KM NE of Ulaanbaatar) and the Zamaar Gold Mining District (180 to 200 KM W of Ulaanbaatar). Mongolia, a democratic republic since 1990, has environmental laws that address reclamation and toxic contaminants. However, these are compromised not only by lack of enforcement but also by absence of studies that address how reclamation or its absence fits into the long-term sustainability of the largely grazing based agro-ecosystems that are the center-pieces of Mongolia's agricultural economy. This paper presents analysis of overburden materials from several mine areas described above as well as information about pre-disturbance soils, handling of surface soils during mining, impacts to the ecological potential of mined sites, and impacts to intensive and extensive agriculture. There is also a brief description of reclamation technological and enforcement needs in Mongolia to bring about successful reclamation of mined areas. It is notable that the Zamaar district as well as numerous other metal and coal mines is in the Selenga River watershed in north central Mongolia. Mine generated materials are hypothesized to compromise water quality in the Selenga watershed. The Selenga River is the major water source to Lake Baikal, the largest volume lake of fresh water in the world, just across the border from Mongolia in Russia. Information addressing this hypothesis displayed in this paper fails to support the null hypothesis (that mine generated materials are not compromising Selenga River water quality).

Additional Key Words: Baganuur Coal Mine, Zamaar Gold Mining District, Lake Baikal.

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² Ariunaa Jalsrai is Technical Manager, Senior Mycologist; EmlabP&K Test of America; Cherry Hill, NJ 08003; and Senior Scientist, Dept. of Microbial Synthesis, Institute of Biology, Mongolian Academy of Sciences (MAS), Ulaanbaatar, Mongolia.; R. Baigalmaa is with The Institute of Chemistry and Chemical Technology, MAS, Ulaanbaatar. Stephen E. Williams is Professor, Department of Renewable Resources, College of Agriculture, University of Wyoming, Laramie, Wyoming, USA. 82071.