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Sarah Reeves
CA Department of Conservation, Office of Mine Reclamation

Sarah, As a follow-up to the presentation made by D. Towell of CH2Hill (the US EPA contractor) at the July 14 AML Forum meeting on the Lava Cap Mine Superfund Site investigation/remediation, I wish to bring to the attention of the AML group previous discussions of this issue by Dr. Anne Jones-Lee and me. During the period 2001-2004 we served as US EPA-supported Technical Assistance Grant (TAG) advisors to the public, through the South Yuba River Citizens League (SYRCL), on the adequacy of this site's investigation and remediation as developed/implemented by the US EPA Region IX. As TAG public advisors we were not constrained by the US EPA Superfund site guidance in conducting a Superfund site investigation and remediation; rather, our approach to the review of the site review was to consider all aspects of the potential impacts of existing hazardous chemicals that are proposed to be left at the site after "remediation." While we were TAG advisors, we developed a series of reports on the adequacy of the Lava Cap site investigation and proposed remediation as compared with what would be required for full protection of public health and environmental quality. Those reports are available on our website, www.gfredlee.com, in the Hazardous Chemical Site section, Lava Cap Mine subsection, located at <http://www.gfredlee.com/phazchem2.htm#lava>. Included in those reports is the comprehensive paper:

Lee, G.F., and Jones-Lee, A., "Occurrence of Public Health and Environmental Hazards and Potential Remediation of Arsenic-Containing Soils, Sediments, Surface Water and Groundwater at the Lava Cap Mine NPL Superfund Site in Nevada County, California," Proc. Fifth International Conference on Arsenic Exposure and Health Effects, San Diego, CA, July 2002, Society for Environmental Geochemistry and Health, Elsevier Science, Inc., pp. 79-91 (2003).

http://www.gfredlee.com/HazChemSites/arsenic_07-2002.pdf

One of the issues that was raised by a member of the audience at the July 14 AML Forum meeting was the US EPA drinking water standard for arsenic. As Towell indicated, the US EPA's 10 µg/L drinking water MCL is being used as the cleanup objective for waters at the Lava Cap site. However, those familiar with the approach used by the US EPA for establishing that MCL - and as discussed in our Lava Cap site remediation reports and in the professional paper cited below, the US EPA MCL for arsenic is not a typical cancer-risk-based value of achieving a cancer risk of 1×10^{-6} such as that used for many other hazardous chemicals. The US EPA (2005) human health risk concentration is 0.018 µg/L for a risk based criteria for cancer risk of one cancer in million people consuming 2 liters of water per day over lifetime (70 years). The 10 µg/L MCL represents a significant increase in acquiring cancer from drinking water with this

level of arsenic of 10 µg/L. Rather, that MCL incorporates a considerable amount of political influence; the Agency knowingly adopted that MCL value even though the cancer risk associated with it is more than 500 times the normal risk-based concentration, in order to avoid requiring domestic water utilities to treat water to the levels necessary to meet true risk-based concentrations.

Lee, G. F., and Jones-Lee, A., "Issues in Monitoring Hazardous Chemicals in Stormwater Runoff/Discharges from Superfund and Other Hazardous Chemical Sites," *Journ. Remediation* 20(2):115-127 Spring (2010).

<http://www.gfredlee.com/HazChemSites/MonitoringHazChemSW.pdf>

One of the remediation issues at the Lava Cap site that needs more comprehensive review is the US EPA's use of landfill caps over existing waste piles and the potential use of on-site landfills for managing hazardous chemicals. As part of developing remediation plans for sites, the US EPA allows/adopts on-site landfilling/capping as a "remediation" measure. However, as discussed in the paper referenced below, that approach is not protective of public health or the environment for as long as the wastes in the capped pile or the landfill present a threat to public health and the environment. This is a result of the inevitable deterioration of the caps and liners used today.

Lee, G. F. and Jones-Lee, A., "Superfund Site Remediation by Landfilling - Overview of Landfill Design, Operation, Closure and Postclosure Care Issues," Published in *Remediation* 14(3):65-91, Summer (2004).

<http://www.gfredlee.com/HazChemSites/LFoverviewremediation.pdf>

The inevitable failure of caps and liners incorporated into today's Subtitle D landfills is discussed in:

Lee, G. F., and Jones-Lee, A., "Flawed Technology of Subtitle D Landfilling of Municipal Solid Waste," Report of G. Fred Lee & Associates, El Macero, CA, December (2004). Updated June (2010).

<http://www.gfredlee.com/Landfills/SubtitleDFlawedTechnPap.pdf>

The US EPA's approach to Lava Cap, and some other Superfund sites, is to establish a remediation approach that relieves the Agency of responsibility for the site as soon as possible and passes responsibility on to state agencies to deal with the long-term remediation issues associated with the residual wastes at the site.

The TAG for the Lava Cap site was not renewed by SYRCL because of a dispute between the US EPA and SYRCL's former executive director concerning the amount of indirect costs that the US EPA allows on TAG compared to the amount that SYRCL wanted in order to administer the grant. The US EPA established the policy that the amount of indirect costs allowed for administration of TAG is limited in order to provide the maximum amount of funds to benefit the public in having a TAG advisor available to assist the public in evaluating the adequacy of site investigation/remediation. That approach has been commonly accepted by TAG recipients across the country. However, as a result of that administrative dispute between SYRCL and the

US EPA, the TAG did not get renewed and there has been no independent technical assistance available to the public on the Lava Cap site investigation/remediation since the spring of 2004.

If there are questions on these issues, please contact me.

G. Fred Lee