Comments on Public Release Draft Remedial Investigation Report
Lava Cap Mine Superfund Site
Nevada County, California
Volume 1

Prepared by CH2M Hill, Inc., for the US EPA Region IX
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Comments Submitted by
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In November 2001 the US EPA Region IX released a "Public Release Draft" Remedial Investigation (RI) Report for the Lava Cap Mine Superfund site. This is an update of the initial draft that was reviewed last July.

Overall, it is found that the US EPA has addressed a number of the errors and issues of concern raised by the reviewer, Dr. G. Fred Lee, on the initial draft of the Lava Cap Mine Remedial Investigation report. However, there are some significant deficiencies that have not been addressed. Since the US EPA did not provide responses to the comments that were provided to it on its initial draft, it is unclear at this time whether the Agency plans to ignore these initial comments and proceed with the Lava Cap Mine RI/FS without giving adequate attention to the public's interests. Since a number of key issues have not been addressed by the US EPA in its revised Remedial Investigation and Human Health Risk Assessment, the initial set of comments dated June 25, 2001, are incorporated by reference into these comments, where they provide additional details on why the Agency's approach is inappropriate in selected areas. Those comments are available from www.gfredlee.com.

The US EPA should provide specific responses to the California Department of Toxic Substances Control's detailed comments dated August 23, 2001. The approach adopted by the Agency of selectively making revisions without indicating the changes made or the reasons why changes were not made, is inappropriate and contrary to the public's interests.

Issues of Concern

Current Monitoring Program. Last August a draft monitoring program was made available for review. As of November, the US EPA has not provided the revised monitoring program which considers the comments made by various reviewers.

At several locations, mention is made that there has been inadequate air sampling during periods of high wind when the dust would be the greatest. This is an issue that must be addressed in the current sampling, which should take place probably next summer.

Thus far, there has been inadequate attention given to evaluating the potential impact of the tailings that have reached Rollins Reservoir on reservoir water quality.

Specific Comments

Specific comments on issues of concern in this RI Public Release Draft are presented below.

On pageES-5 of the Executive Summary, under the last bulleted item, no mention is made of Rollins Reservoir. There is no doubt that Rollins Reservoir has received tailings from the Lava Cap Mine. Thus far, there has been inadequate investigation of the impact of these tailings and any liquid discharges from the Lava Cap Mine on water quality in Rollins Reservoir.

On page ES-8, Table ES-2, as commented previously, presenting the average, minimum and maximum does not provide adequate characterization of the data. There is need to include at least some information on the central tendency of the data, such as the standard deviation.

On page ES-9, first line states, *"... concentrations fluctuate with the volume of water discharged."* Volume is not a correct term, since it does not carry with it a connotation of the time over which the volume occurs. It should be the rate of discharge.

On page ES-9, in the third paragraph under "Mine Area," states, *"... nearly 150 times greater than the EPA PRG."* Whenever statements of this type are made, the PRG value should be listed in parentheses so that the reviewer knows what values are being used.

On page ES-11, first paragraph, third line mentions the 1997 flood event leading to the discharge of tailings downstream of the Lost Lake Dam. While not mentioned in this RI, there can be little doubt that tailings discharges past the Lost Lake Dam have been occurring since the tailings were first being discharged to Lost Lake. This is not something that only occurred in 1997, but has been occurring over the years. These occurrences lead to pollution of Rollins Reservoir and downstream that must be more thoroughly investigated than has been done thus far.

Page ES-12, under "Ongoing Remedial Investigation Activities," the first bulleted item, "Routine Quarterly Monitoring," is mentioned for *" ... groundwater (monitoring wells and residential wells) ..."* An indication should be given as to how long the US EPA plans to continue this monitoring. The monitoring of residential wells and key monitoring wells should be continued for as long as there is an upgradient source of arsenic and other constituents derived from the Lava Cap Mine.

Page ES-13, in the last dashed item, *"Broader analyses of groundwater chemistry,"* the word "chemistry" is misused. It should be "chemical characteristics." Chemistry involves studying reactions that occur in groundwater. This is not what is being done.

Page 1-9, fifth paragraph discusses the fact that a dam was built on Little Greenhorn Creek to stop tailings from polluting waters of the Bear River. This indicates that there were substantial tailings transported downstream of what is now Lost Lake, and that there is need to do a more intensive review of downstream potential impacts.

Page 2-5, third paragraph refers to the use of crest gages to estimate peak discharges. There will be need in the stormwater monitoring to actually gage discharge to estimate total loads transported during a stormwater runoff event.

Table 3-1 needs to have a downgradient station in Rollins Reservoir.

Page 3-13, in section 3.3 Reference Areas Fieldwork, I would add the word "known" in the first sentence: *"The known contaminants of concern ..."* There is still inadequate investigation of organics to be able to rule out that there is no organic contamination of the site.

Page 3-35, I would like to see the US EPA/contractor provide a discussion in the remedial investigation report on their assessment of the adequacy of the sampling program that has been conducted thus far relative to defining the areas where there is potential harm to public health and the environment.

Page 4-6, second paragraph states, *"The EPA Region IX PRG values are conservative."* As I pointed out previously, that statement is not true with respect to constituents that tend to bioaccumulate in fish which are a threat to those who use the fish as food. PRGs do not include the bioaccumulation pathway.

On page 4-16, third paragraph mentions the 50 µg/L MCL for arsenic. A general discussion should be presented in this report about how the US EPA has decided to lower the MCL to 10 µg/L, and how even at 10 µg/L, this is still a very significant human health risk compared to risk levels that are used in groundwater cleanup. It is questionable whether the 10 µg/L MCL for arsenic should be used in cleanup at the Lava Cap Mine site, since this is a "pollution" situation, where the economics that drove the 10 µg/L drinking water MCL for public water supplies are not applicable.

Page 5-4, second paragraph, it is possible to estimate the ionic strength of a water based on electrical conductivity measurements. There are a number of developed relationships that work reasonably well for many waters.

Page 5-4, under "Organic matter content," the total organic carbon and dissolved organic carbon in the sample should be analyzed to estimate the total organic carbon content.

Page 5-4, last paragraph states, *"Many wells in the study area have elevated dissolved iron (greater than 1 mg/L), indicating at least slightly reducing conditions."* It is not possible to make this statement about "slightly reducing" versus at the transition between oxic and anoxic conditions.

Page 5-5, second paragraph under 5.2.1 Surface Water, misuses the term "chemistry" again. It should be "general chemical characteristics," rather than "chemistry."

Page 5-7, in the third paragraph, the second line discusses *"... in equilibrium with iron hydroxides."* There is no equilibrium with iron hydroxides. Iron hydroxides are continuously changing in character.

Page 5-7, last paragraph discusses a residential well that is less than the 50 µg/L current arsenic MCL, but well above the 10 µg/L limit that the US EPA has proposed to adopt. This issue needs to be discussed.

The conclusion to this section was deficient in failing to mention that stormwater runoff monitoring has not, thus far, been done, and will need to be done to characterize transport from areas where tailings are now located, downstream during runoff events.

Comments on
Public Release Draft Human Health Risk Assessment for the
Lava Cap Mine Superfund Site, Nevada County, California
Prepared for the US Environmental Protection Agency, Region IX by
CH2M Hill, Inc.
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Page 1-1 of the Introduction, in the third paragraph, mention is made that this Human Health Risk Assessment (HHRA) considers areas *"...along Clipper Creek (CC) below Lost Lake."* As discussed previously and herein, there is need to expand this Risk Assessment to include data further downstream on Clipper Creek, all the way to and through Rollins Reservoir. There can be little doubt that Rollins Reservoir has received substantial amounts of tailings over the years. As of yet, this situation has not been adequately investigated.

Page 3-1, under section 3.1.1 "Sampling Upgradient of the Lava Cap Mine (Reference Area 1)," because of the inadequate sampling that has been done thus far to characterize the exposure of people and wildlife to airborne pollutants, it is not possible to adequately define the human health risk associated with the Lava Cap Mine. As pointed out previously, it will be important to sample air in reference areas and areas that could be influenced by Lava Cap Mine tailings sources during times of considerable wind intensity.

A similar situation exists with respect to sampling of reference areas and downstream Lava Cap Mine-influenced areas during stormwater runoff situations. Sampling of reference areas during runoff situations and downstream must be done several times each year for several years in order to properly characterize the transport, and therefore the hazards, that exist associated with runoff from the Lava Cap Mine area.

A similar problem occurs on page 3-2, in the second and third paragraphs regarding sampling monitoring wells, which were not adequately constructed and developed, and therefore contained particulates, which confuses the interpretation of the data. It will be important for the US EPA to set up monitoring wells that properly sample the groundwaters without bias due to particulates. As discussed in the initial comments, filtration of the groundwaters does not eliminate this bias, it just introduces another uninterpretable factor in the results.

Page 3-2, section 3.1.2 "Sampling Clipper Creek and Above the Confluence with Little Clipper Creek," a paragraph needs to be added to this section regarding establishing a reference area for Rollins Reservoir. The characteristics of Rollins Reservoir need to be evaluated to determine where the tailings that have entered the reservoir are likely to have been deposited, and whether these tailings are now influencing the water quality characteristics of the reservoir.

Page 3-2, section 3.2 "Source Area Sampling" should mention that the source area sampling was not done to specifically target stormwater runoff event transport of constituents from the mine area. This sampling will have to be done in the future to characterize this situation.

On page 3-3, under 3.3 “Mine Area Sampling,” the sampling of airborne tailings needs to be done under high-wind conditions.

On page 3-5, under 3.5.2 “Exposure Unit 2,” sampling should be done on the interstitial waters in Lost Lake sediments to determine what the equilibrium condition for arsenic is in these waters, relative to the concentrations in the sediments.

Page 4-3 considers the soil ingestion rates for adults and children, which are low compared to what could readily occur, especially for children. As I have pointed out previously, calculations based on a pica child should be included in the Human Health Risk Assessment.

Page 5-4 continues to discuss the exposure of children to lead relative to the 10 µg/dL acceptable criteria. That value is not necessarily acceptable for some children, and concentrations less than that amount can be damaging to children’s health.

Additional discussion of these issues is provided in my initial comments to the US EPA on its April 2001 draft of this document.

Comments on Public Release Draft Ecological Risk Assessment for Lava Cap Mine Superfund Site

Prepared by CH2M Hill, Inc., for the US EPA Region IX
November 2001

The US EPA has largely ignored the comments submitted to the Agency on August 20, 2001, regarding the significant deficiencies in some aspects of the draft Ecological Risk Assessment prepared by the Agency's contractor, CH2M Hill, Inc. Many of the comments submitted last August are equally applicable to the November 2001 Public Release Draft of the Ecological Risk Assessment. Rather than repeat these same comments, the August 20, 2001, comments are incorporated by reference as part of these comments. The August 20, 2001, comments are available at www.gfredlee.com. The approach that the Agency is taking with respect to addressing comments by other agencies and the public on deficiencies in the Lava Cap Mine Superfund site investigation could ultimately lead to major confrontations between the public and the Agency over appropriate remediation goals.

On page 3-10, I am highly disappointed to see that the US EPA Region IX is persisting with using the MacDonald, *et al.*, values as a means of estimating the potential significance of chemical constituents in sediments. This is contrary to the US EPA's draft position that was promulgated in July 2000, entitled "Draft Implementation Framework for the Use of Equilibrium Partitioning Sediment Guidelines." As discussed previously, these values are well-known to be unreliable for this purpose. I am also concerned that issues that were raised regarding deficiencies in the initial draft were not discussed in this final version. As I have discussed previously, much of the discussion in the Ecological Risk Assessment concerning chemical constituents' impacts on aquatic and terrestrial life is based on inadequate, and well-known to be unreliable, information.

Page 5-2, section 5.1.2 "Benthic Invertebrates," persists with a technically invalid approach of claiming that there is some validity to the sediment quality guidelines developed by Ingersoll, *et al.*, Long and Morgan, Long, *et al.*, etc., as well as those of MacDonald. These are contrived values, where there is no cause and effect. They are obviously fundamentally flawed and should not be used for any purpose.