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Re: CSMRI Site Remedial Investigation/Feasibility Study and Proposed Plan - Comments

Dear Mr. Havelick:

This letter presents the comments of Amax Chemical Company, Amax Lead Company, Amax Metals Recovery, Inc., ASARCO Incorporated, Amoco Oil, Amoco Production Company, Amoco Research Center, BP America, Inc., BP Amoco PLC, Inc., Chemetall Foote Corporation, Climax Uranium Company, Cotter Corporation, Cyprus Amax Minerals Company, Cyprus Foote Mineral Co., Cyprus Mines Corporation, Cyprus-Climax Metals Co. d/b/a Climax Molybdenum Company, Elf Aquitaine, Inc., ExxonMobil Corporation, Florida Crushed Stone Company, Industrial Minera Mexico, S.A., Inspiration Consolidated Copper Company, Phelps Dodge Corporation, Phelps Dodge Exploration, Terra Industries, Inc., and Western Nuclear, Inc. (the "Commenters") to the Remedial Investigation/Feasibility Study and Proposed Plan ("RI/FS" and "Proposed Plan") for the Colorado School of Mines Research Institute Site ("CSMRI Site" or "Site") issued on January 21, 2004 by New Horizons Environmental Consultants, Inc ("New Horizons") for the Colorado School of Mines ("School"). On behalf of the Commenters, we appreciate the opportunity to provide these comments and hope to continue to work in a constructive and mutually beneficial way with the School in order that the School can complete the CSMRI Site remediation in a protective, efficient, and least-cost manner. In addition to certain general observations about the RI/FS and Proposed Plan, we have arranged our comments in the following categories: Background Analysis, Soils Classification, Groundwater Investigation, Risk Assessment, and Costs.

I. General Observations

The Commenters generally support an off-site disposal remedy, as adopted by the School in its Proposed Plan. However, as discussed in more detail below, the Commenters find that the background analysis and numerous aspects of the risk assessment are fundamentally flawed. Moreover, the Commenters have some concern that the cost projections are based upon a soil classification analysis that may not be acceptable to the Colorado Department of Public Health and Environment ("CDPHE").

The selection of the combination of overly conservative "background" values, overly conservative risk assessment scenarios, the overly conservative application of models to evaluated exposures, the predominant focus on residential uses, and similar overly conservative assumptions throughout the RI/FS skew the results, make it appear biased to the off-site alternative from the outset, and reduce the credibility of the document. Much of the compounded conservatism is not necessary either, in order to support an off-Site remedy selection. However, the combination of these factors does have a significant impact on the volume of soil to be treated or removed from the Site (which skews the analysis of every treatment alternative and the costs of all alternatives). The result is also that the RI/FS exaggerates the volume to be removed, perhaps by as much as 5,000 cubic yards, which could be nearly ½ or 50% of the soil volume to be removed from the Site.

Conversely, conclusions reached in the RI/FS about soil classification could result in an under-estimate of the costs of the preferred alternative. Nevertheless, the Commenters note that the costs should be capped at less than $2,000,000.00 in view of the prior proposal from Cotter Corporation, MFG Inc. d.b.a. Shepherd Miller and Frontier Environmental Services, Inc., dated March 29, 2002 that would have performed the functional equivalent of the Proposed Plan, at a cost not to exceed $1,198,293.00.

II. Background Analysis

The selected background locations are flawed.

The selected background for comparative purposes should be that which is undisturbed and similar to the physical, chemical, geological, radiological and biological characteristics of the site under investigation. With regard to radioactivity, the radioactivity present in the background reference area would be ideally the same as the investigation survey unit, had it never been contaminated.

In the RI/FS, New Horizons chose a background location where the A soil horizon had been removed by human disturbance, thus invalidating the true background condition. Locations

for the data collected to define background conditions during this RI are presented on Figure 3-2 of the RI/FS. On page 4-2, the report states that these gamma readings were collected from the Louviers Alluvium, claiming that this geological unit best represents the background conditions for the Site. However, as shown on Figure 2-3 (Area Surficial/Bedrock Geologic Map) the Louviers Alluvium (Unit Qlo on the map) is located by the football field, but not at the locations of background readings shown on Figure 3-2.

Furthermore, comparing the locations for background with Figure 2-3, the geological map, shows that the background locations are represented by an artificial fill (unit af on the map). The artificial fill, which likely represents materials transported to the Site from another site, does not represent background radiation conditions for the Site. Therefore, the background data generated by this RI should not be used to define background radiation levels.

Data comparisons to the previous URS work may not be valid.

The RI/FS argues that the previous background determination for radionuclides does not represent the site conditions. In particular, studies conducted by URS in 2000 and 2002 reported gamma radiation backgrounds of 13,728 cpm and 18,740 cpm, based on measurements taken at the base of Lookout Mountain, located west of the site, and in Chimney Gulch, at the west boundary of the site, respectively. These sets of data are more representative of background than the data collected from the artificial fill unit.

In addition, New Horizons chose to measure gamma background with a shielded probe. Because it is not clear whether the URS group used similar shielding, the elevated gamma readings obtained by URS may only be elevated by virtue of the fact that their measurement methodology did not include measurement probe shielding. As a result, comparison to previous URS work may be invalid and misleading given the possibility that an "apples and oranges" comparison was applied. Because background is so critical to risk determination and remedial analyses, this issue needs further clarification and/or study.

For purposes of determining background of Americium-241 and expected fallout concentrations for Plutonium-238 and –239, New Horizons did not even mention the presence or absence of the A horizon soils on-Site (*see*, p. 4-7 of the RI/FS). Nor was New Horizons concerned about comparing Site conditions to the background study done for the Rocky Flats Environmental Technology Site, located many miles to the north of the Site, as compared with the background locations selected by URS that are directly adjacent to or within approximately ½ mile of the Site and in geologic formations found on or underlying the Site. These inconsistencies further reduce the credibility of New Horizon's rejection of the URS background analyses.

The Resulting Volume of Soil to be Removed from the Site is Exaggerated.

Definition of background values for contaminants of concern ("COCs") is not just an academic exercise. Improperly-derived background levels may significantly impact the risk calculations and volume of materials that require remediation for all alternatives but Alternative 1. For example:

- The URS studies showed that 94-96 percent of the site would be below background, based on its background levels of 13,728 cpm and 18,740 cpm average gamma readings;
- The RI/FS indicates that only 21 percent of the site would be at or below background (4,092 cpm).

Applying URS background levels would reduce the volume of radioactive materials requiring remediation by as much as 25 percent, as well as remediation costs for Alternatives 2 through 5. For example, based on a preliminary calculation, costs for Alternative 5A could be as low as $2M.[1]

III. The Proposed Soils Classification May Not Be Approved By CDPHE, But Directly Affects the RI/FS Cost Analysis

The Commenters have previously communicated their thoughts and concerns about the New Horizon's soil classification analysis and, therefore, do not repeat those comments in detail here. For example, the current regulatory framework would initially preclude disposal of solid waste materials in Colorado Subtitle D Landfills when the materials exhibit gross alpha activity in excess of 40 pCi/g. The data indicates that some of the CSMRI material will exceed this limitation. The soil classification issue is one that must be resolved between the School and CDPHE. Yet, it will have a material impact on both the 5A and 5B alternatives analysis and the associated cost projections. If the soil classification proposed by New Horizons is not accepted by CDPHE, the School will need to re-evaluate all alternatives and resubmit the alternatives for public comment.

[1] These conclusions assume that the URS and New Horizon background readings were recorded in the same way, with appropriate shielding and equipment calibration. Deviations from established protocols or differences in data acquisition methods could significantly affect the ability to accurately compare the respective readings.

IV. Groundwater Investigation

The groundwater investigation is incomplete.

The New Horizons work finds that groundwater is an important driver in the remedy selection process, relying upon the 30 ppb drinking water standard for uranium as a basis for comparison. In addition, the investigation suggests that site groundwater drains to Clear Creek and that recharge of the local groundwater by means of the foundation excavation depression may have caused down gradient impact.

Reliance on the drinking water standard alone results in an incomplete analysis. The drinking water standard would primarily apply to water provided by a water purveyor and not necessarily the quality of water in the aquifer. The investigation should also consider the narrative standard for the local groundwater system and the stream standard applicable to Clear Creek with respect to water quality standards. If the 30 ppb drinking water standard for uranium is to apply, then this must be supported by risk analyses. Because on-Site drinking water cannot be realistically provided from the local aquifer (i.e. a well permit can not be issued, drinking water is provided by the City of Golden, and the wells on-Site demonstrated insufficient recharge to provide the necessary volume to serve as a drinking water source), the theorized on-Site local risk cannot be supported. Accordingly, this standard is not directly applicable as a comparative standard for onsite conditions.

However, because downstream water uses do include drinking water from both groundwater wells and the stream, this standard should be considered with regard to the Site's impacts on those offsite uses. The stream has not been sampled to determine impact (in fact the report suggests at page 3-9 that, due to stream volume and mixing, the CSMRI impact in Clear Creek may not be measurable) and offsite (and down gradient) groundwater quality in local wells in excess of the standard has not been established.

Groundwater transport of lead is over-estimated.

The RI indicates that lead mobility and transport were modeled as described under the groundwater modeling section. However, the RI acknowledges that the groundwater modeling was imprecise. As a result, assumptions concerning potential transport of lead via groundwater should be reviewed to ensure that the inclusion of this pathway does not overestimate risk. Specifically, the assumption that lead would cause excessive health risk is not supported. As a result of these considerations, it is not possible to verify the correctness or adequacy of the lead modeling.

Projected groundwater impacts are over-estimated.

Though the RI reports a deposition layer found in test pits and borings throughout the Site, this depositional activity was not taken into account with the RI/FS's conclusions that groundwater is a driver for purposes of remedy selection. The depositional layer is described by New Horizons as showing "precipitation of iron and other metals – including radionuclides" (RI/FS Section 4.1.3, page 4.4). Yet, no natural removal of radionuclides, lead or other metals is assumed the RI/FS discussions about Site impacts to groundwater, though, as noted above, these purported impacts were never measured in Clear Creek or at other downstream locations.

The sampling points adjacent to the settling impoundment skew groundwater data in an unrealistically conservative manner. As noted by New Horizons in Section 8.0, the Detailed Analysis of Alternatives, at page 8-27, "[t]ypically there is a time delay prior to noticeable decreases in ground-water activities or concentrations after the removal operations have been completed (natural attenuation)." Accordingly, it is likely that groundwater monitoring data in the vicinity of the settling impoundment is still showing the residual effect of the source materials that have now been removed from the area.

Furthermore, key Site characteristics that would bear on groundwater mobility and contaminant transport are not taken into account in projecting offsite groundwater impacts. Specifically, clay layers are noted throughout the Site (*see*, page 2-8), but are not taken into account as potential natural barriers to groundwater contaminant transport. The very slow recharge rates of several of the monitoring wells showing low groundwater production was not factored in, either. Specifically, New Horizons stated that the groundwater velocities were not determined. RI/FS, Section 2.5, page 2-11.

In addition, the Site's inclusion within the city limits of the City of Golden is not factored in. Note is made that Clear Creek is used as a drinking water source, with Golden's diversion point upstream of the Site.[2] However, no mention is made of the fact that Golden provides drinking water for its citizens such that potable water from a well on-Site would not be allowed within the Golden city limits. Moreover, the drinking water provided by Golden is treated before delivery to its citizens, through a number of processes that would precipitate metals, including radionuclides. Finally, the RI/FS did not explore the use of institutional controls for management of groundwater issues.

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[2] The Commenters acknowledge that other communities divert water for domestic purposes downstream of the Site, but note that they, too, would treat the water prior to its consumption.

V. The Risk Assessment Is Fundamentally Flawed

Inappropriate Exposure Scenarios Were Selected

Volumes of material to be remediated, involving either on- or off-site disposal alternatives, are determined based upon the Derived Concentration Guidance Levels ("DCGL") calculated from the RESRAD model (ANL 2001). The DCGLs (clean-up levels) and the potential health risks associated with the radioactive soils at the CSMRI site are sensitive to the accurate selection of the Site's future use scenarios and assessment of complete exposure pathways.

The subsistence farmer scenario is invalid.

The RI/FS applied the "subsistence farmer scenario" as the future use for the CSMRI site. The RI/FS justifies this selection by citing the guidelines contained in the U.S. Army Corps of Engineer's *White Paper: Using RESRAD in a CERCLA Radiological Risk Assessment* (USACE 2002). The White Paper states that the subsistence farmer scenario is often the most conservative plausible receptor in a radiological risk assessment (page 3-7). However, based upon site-specific conditions, the White Paper notes that residential, industrial and recreational user scenarios may be justifiable (page 2-7).

There is no justification for using the subsistence farmer scenario and, as noted earlier, its application seriously undermines the credibility of the RI/FS. It is a worst-case scenario that is wholly unsupported by the facts, risk assessment policy, and the appropriate remediation standards for the Site. In order for a subsistence farmer to be appropriately considered at the Creekside Site at least two conditions must be satisfied. First, the land must be properly zoned for this use and, in addition, the farmer would need to obtain either surface water from Clear Creek or from the adjacent aquifer by means of drilling a well. In this instance, the property is not currently zoned for agricultural use and, as such, a zoning change would be needed to accommodate the farmland use. Regarding water availability, the facility does not hold a water right to Clear Creek for this agricultural purpose (precluding Clear Creek water use) and the property consists of less than the 35 acres, foreclosing the issuance of a well permit by the State Engineer. In addition, as noted above, water currently is and should be assumed to continue to be provided by the City of Golden, obviating the need for use of an on-Site drinking water well.

The property carries a zoning designation R-3 from the City of Golden allowing for institutional uses, including multiple dwelling units, group homes, room and board houses, schools and libraries. These potential future use scenarios along with property value estimates were presented in an appraisal report prepared by DYCO Real Estate, Inc. (*CSMRI Site Northwest of the Intersection at 12th Street and Birch Street Golden, Colorado DYCO # 324*-03) (DYCO, 2003).

DYCO reported that the neighborhood near the site is predominately residential, with commercial retail development along primary streets, and bordered on two sides by college athletic fields. DYCO assessed the property values and developed estimates based upon current market conditions using the following two hypothetical conditions:

- The Site had never been contaminated and was available for development to its "highest and best use" (e.g., high-density residential development, specifically 120 condominium units for students); and
- The contaminants were contained on the Site and the property would receive a "Restricted Use" designation from the CDPHE (e.g., open space/park and/or recreational fields).

Notably, these conditions did not include agricultural or farming development in assessing future Site use. Given DYCO's analysis of property usage, current and likely future Site zoning, and limitations on water use, it is clearly unreasonable to assume that the Site would be used for subsistence farming.

Additionally, the DCGLs derived by applying the RESRAD subsistence farmer scenario are inappropriate for the Site. Based on the subsistence farmer scenario, the RI/FS uses 0.84 pCi/g Ra-226 as a DCGL (based on 15 mrem/yr dose) (see the tables on pages 8-21 and 8-27). This number, however, is less than the background for the Site. Using a more realistic conservative residential scenario in the RESRAD model, the DCGLs for Ra-226 would be much higher. With this scenario, based on RESRAD input parameters and assuming completeness of exposure pathways, the Ra-226 DCGL may range up to 11.5 pCi/g. The DCGL for a recreational use scenario is 120 pCi/g Ra-226 (see pages 8-21 and 8-27 of the RI/FS).

Under a residential scenario, the estimated volumes of material requiring remediation would range from a low of 1,000 cy to a high of 7,500 cy. Therefore, using a residential scenario would decrease the remedial costs for all alternatives except for Alternative 1. For example, a preliminary cost estimate for Alternative 5 would range from $970,000 to less than $2 million.

"Completed" Exposure Pathways are Identified Erroneously

The RESRAD model for the RI/FS, using the subsistence farmer scenario, assumed that the following exposure pathways are complete:

- External gamma;
- Inhalation (excluding Radon);
- Plant ingestion;

- Meat ingestion;
- Milk ingestion;
- Aquatic foods (e.g., fish);
- Drinking water (from groundwater);
- Soil ingestion; and
- Radon.

The RI/FS also states that groundwater is a major pathway and a driver of the Site alternatives based on the Site's proximity to Clear Creek and on an apparent increase in uranium concentrations in a downgradient monitoring well (page 1-1 of the RI/FS). However, there are no data in the RI to support this statement; indeed, data reported in the RI indicate the opposite.

Elevated uranium levels (up to 79 µg/L), reportedly obtained from sampling Well CSMRI-04, are not related to the current Site conditions. Uranium results reported for this well may be attributable to its location with respect to the former tailing pond. Contrary to the report's statements, the historical data presented in the RI clearly indicate that the uranium levels reported for this well are not increasing.

In addition, there are no hydrologic data presented to show that the groundwater exposure pathway is complete. Based upon the field observations described in the RI, most of the Site wells require a few days to recover, which indicates low hydraulic conductivities and well yields. If the well yields for the CSMRI wells are less than 150 gpd, then, in accordance with 40 CFR 192.11(e), these wells cannot be used for drinking water or agricultural use (e.g., irrigation). Under these conditions, the groundwater pathway would not be complete. Removing the groundwater pathway from the calculations would cause the DCGLs, even for the subsistence farmer scenario, to be higher than predicted in the RI/FS. Therefore, the RESRAD model for the proper exposure scenario(s) should be re-evaluated without the drinking water and agricultural use pathways.

Finally, because of apparent low well yields, the report claims that aquifer characteristics could not be determined by aquifer testing. This statement is incorrect and the hydraulic properties of the groundwater zone, including hydraulic conductivities, transmissivities, well yields and groundwater velocities, can be obtained by conducting slug tests (i.e., rising head tests).

Because of the deficiencies in the subsistence farmer scenario, as noted above, the ingestion pathways for milk and meat should also be eliminated. The RESRAD model for the proper exposure scenario(s) should be re-evaluated excluding these exposure pathways.

The RI/FS Used Erroneous RESRAD Input Parameters

Determination of the DCGLs, and therefore the soil volumes requiring remediation, are sensitive to the input parameters selected for the RESRAD model. The following parameters are discussed below:

- Dose Limits;
- Mass Loading for Inhalation; and
- Distribution Coefficients.

The RI/FS applied inappropriate, overly conservative dose limits.

To derive the DCGLs presented in the RI/FS, RESRAD input indicates a dose limit of 15 mrem/yr. This dose limit is less than the Nuclear Regulatory Commission (NRC) guideline of 25 mrem/yr and produces a lower DCGL than does the use of 15 mrem/yr. For example, with application of the recommended 25 mrem/yr dose limit, under the subsistence farmer scenario, the 0.84 pCi/g Ra-226 DCGL for 15 mrem/yr would be increased by 67 percent to 1.4 pCi/g Ra-226. Similarly, under the recreational scenario, the Ra-226 DCGL would increase by 58 percent, or from 120 pCi/g to 190 pCi/g. Clearly, use of this lower dose limit produces risk results that increase the volume of material to be remediated.

For no apparent reason, the mass loading parameter for inhalation was tripled, invalidating the RESRAD result.

The parameter used to estimate mass loading for inhalation is listed in the RESRAD guidance applied in this RI and is indicated as being relatively sensitive. For the calculations presented in the RI, this parameter value was tripled beyond the level recommended in the guidance. Therefore, reducing this factor would likely reduce the risk calculated on the basis of dust inhalation.

Site-specific distribution coefficients should have been used.

Application of site-specific distribution coefficients, or K_d values, improves the ability to predict the potential for transport and/or exposure via either soil or groundwater pathways. However, default K_d values were reportedly used for the three isotopes modeled in the RI (RESRAD Appendix Table II, page 5). The default K_d values should be reviewed and, absent a showing that default values meet site-specific conditions, the default values should not be used. Groundwater and risk modeling should be re-evaluated to obtain more accurate estimates of potential risk.

Improper Lead Modeling Assumptions Were Applied

Lack of detail in the RI prevents comprehensive understanding or review of the lead modeling and does not support the conclusion that lead poses an unacceptable risk to human health or the environment. Issues relevant to lead risk are:

- Future Use;
- Bioavailability;
- Blood Lead Concentrations; and
- Groundwater Transport.

Conclusions about lead impacts are highly sensitive to future use scenarios.

As shown on page 6-16 of the RI/FS, lead appears to contribute to risk only in the subsistence farmer scenario. However, the lead calculations and results described in the RI/FS are insufficient to assess the basis for the risk described in this scenario. Also, the uptake mechanism that drove the lead risk in the subsistence farmer scenario is unclear. Additionally, it is not apparent that the same mechanism would necessarily apply in a residential scenario where college students may reside rather than lead-sensitive receptors such as small children or pregnant women.[3] The lead definition cited for residential property, suggesting that sensitive receptors are present (page 6-12), is not applicable to the CSMRI site evaluation.

Bioavailability of Site lead has not been established.

Although lead bioavailability is critical in determining toxicity and whether or not lead poses a human health risk, the bioavailability assumptions used in the RI appear to be defaults based upon various models that may not be applicable to the Site. For example, while the RI/FS suggests that the lead present in CSMRI soils resulted solely from the past management and tests of various ores, ores may not be the only lead source. Similarly, ores may not contain lead in soluble forms. Site-specific factors, such as dietary lead intake, dirt ingestion rates and bioavailability of lead compounds present at the Site should be considered for Site-specific lead risk assessments (Guidance Manual for the Integrated Exposure Uptake Biokinetic Model for Lead in Children [IEUBK], EPA/540/R-93/081, U.S. EPA, 1994).

Predicted blood lead concentrations are below levels of concern and were likely conservatively reported in the RI/FS.

[3] The Commenters acknowledge that married student housing could present sensitive receptor issues, however.

The RI reports that the EPA IEUBK model was used to predict potential blood lead (PbB) concentrations, resulting in predicted blood lead concentrations well below current guidelines. These predicted concentrations are likely to be even more protective, given that college-age students rather than more sensitive children, would be the future site residents.

Although the IEUBK modeling results were not included, the RI reports predicted blood lead concentrations of only 3.4 µg/dL. This value is well below the current level of concern, which is 10.0 µg/dL. In addition, the IEUBK modeling was used to predict the potential blood levels, based upon the assumption that the lead exposure would affect children under seven years of age. Therefore, this assumption would not be reasonable if the future residents were college-age students living in condominiums, as projected by the Site appraisers, DYCO.

A number of the other standard pathways for exposure would also not be present at the Site. One of the largest nationally recognized lead exposure concerns is lead-based paint in older housing stock, that is pre-1970's housing that used lead-based paint. Exposure to lead-based paint would not be possible at the Site because any residential scenario would be a future scenario for which lead-based paint would not be legally allowed or even available. Similarly, lead in pipes resulting in ingestion exposure would not be legally possible. Accordingly, the application of the IEUBK model, assuming default values were used for these exposures, would significantly over-estimated Site lead exposures.

VI. The Cost Analysis Should be Refined

The Commenters have serious concerns that many of the RI/FS assumptions will not be borne out and will have dramatic effects on cost estimates. Specifically, if the School does not re-evaluate the background and risk assessment analyses as suggested in these comments, a higher volume of soil will require more costly (i.e., not sanitary landfill) disposal. The re-evaluations proposed in these Comments are not only legally and technically sound, but will result in reductions in volumes of soil required to be removed and disposed of offsite and in concomitant reductions in costs for the Proposed Plan. If the School fails to incorporate changes in response to these comments, the Proposed Plan will be significantly more expensive than projected in the RI/FS. In particular, the Commenters have noted the importance of CDPHE's acceptance of New Horizon's soil classification analysis on Site remediation costs.

The Commenters believe that the School should be highly motivated to act reasonably and reduce costs where the outcome is protective and legally sound. The School had an opportunity to have the Site fully remediated, including removal of the impacted soil and other remedy elements contemplated by the Proposed Plan, for under $2,000,000. *See*, March 29, 2002,

Cotter Corporation, MFG Inc. d.b.a. Shepherd Miller, and Frontier Environmental Services, Inc. Technical Proposal and Cost Proposal to the Colorado School of Mines ("Technical Proposal"), submitted in response to the January 22, 2002 CSMRI Site Environmental Assessment and Response, Request for Proposals. The Technical Proposal established the market rate for completion of the remedy as contemplated by the Proposed Plan. The Technical Proposal also included concrete removal and disposal, site characterization, and other work performed by New Horizons for the RI/FS at an increased cost over the Technical Proposal. Thus, it appears that the School has already paid more than it should have to accomplish results achieved to date and is projected to pay more than it should for completion of a protective remedy. The School should be the sole party to bear any of these excessive costs.

VII. Conclusions

The Proposed Plan for off-site removal and disposal of contaminated soils is an appropriate remedy and is supported by the Commenters, as it will allow the unrestricted use of the Site desired by the School and area neighbors, as reported in the RI/FS. However, numerous aspects of the RI/FS analysis leading to the selection of the Proposed Plan are flawed, factually unsupported or in error. Groundwater contamination is not a significant remedy driver, contrary to numerous statements in the RI/FS. Projected exposures, both from soil contaminants and groundwater, are greatly exaggerated as a result of a compounded application of overly conservative assumptions in the RI/FS analysis, model selection, selection of model input parameters, and model application. This series of deficiencies leads to the conclusion that excessive volumes of soil must be treated or removed from the Site. The Commenters recommend that the School give serious consideration to a re-evaluation of these key issues because The School will face significant challenges for incurring remedy implementation costs in excess of $2,000,000.

The Commenters all appreciate the opportunity to evaluate the RI/FS and Proposed Plan and are willing to continue to work with the School to better ensure that the School can implement a protective, efficient and least-cost remedy for the Site.

Sincerely,

Carolyn L. McIntosh
On Behalf of the Commenters

cc: Maki Iatrides
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