

# **BUTTE PRIORITY SOILS OPERABLE UNIT PROPOSED PLAN**

## ***CITIZENS TECHNICAL ENVIRONMENTAL COMMITTEE* POSITION PAPER**

**March 14, 2005**

### **1.0 INTRODUCTION**

The Citizens Technical Environmental Committee (CTEC) is pleased to present these comments on the Superfund Program Cleanup Proposal for the Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site prepared by EPA and herein referred to as the 'Proposed Plan'. CTEC's position is based on a thorough understanding of the Superfund process, technical review of literally hundreds of technical documents developed for the Butte Priority Soils Operable Unit (BPSOU) over a two decade period, and attendance at dozens of technical meetings. CTEC presents its position from a holistic perspective in terms of how the operable units of the Silver Bow Creek and Clark Fork River NPL sites affect each other. The BPSOU is the headwaters for these NPL sites and remedial actions at the BPSOU directly affect downstream water quality and fishery / aquatic life health.

CTEC's underpinning philosophical values emphasize objective analysis, scientifically defensible solutions and practical recommendations that protect human health and the environment. CTEC requests that the EPA consider these recommendations in light of these factors.

### **2.0 BPSOU OVERVIEW**

The BPSOU is by far the most complex operable unit within the Superfund NPL sites stretching from Butte and Anaconda to Missoula. Not only are multiple media impacted by historic mining operations, but Montana's fourth largest city is superimposed on the BPSOU boundary. Literally dozens of removal actions have been completed over the last 15 years to mitigate exposure to lead and arsenic. Superfund cleanup of Butte is

especially complex because the work must be undertaken in the midst of a populated community.

***HEADWATERS FIRST!** : The health and vitality of the Upper Clark Fork River Basin must begin with a first-rate Superfund cleanup of Butte and Silver Bow Creek.*

The BPSOU sits at the *headwaters* of the biggest river in Montana making a first rate cleanup of the BPSOU necessary to provide assurance that cleanup will protect the Clark Fork River and Superfund sites downstream that are concurrently undergoing remediation. Ultimately, the success of the Superfund remediation efforts at Silver Bow Creek, Warm Springs Ponds, and the Clark Fork River depends on remediation of the major sources of contamination up-river at the BPSOU. There is reason for major concern that if cleanup of the BPSOU is insufficient, the health and well being of humans and their environment is at risk for many miles downstream.

The Superfund process and cleanup in Butte has been many years in the making and the average citizen often does not understand many of the Superfund issues because of the technical nature of the cleanup effort. To add to this confusion, approaches to cleanup at the Butte Priority Soils have been hotly debated by various entities leading to a situation where the public is forced to decide whom to believe. CTEC hopes that the development of the final plan for the BPSOU will turn a new page in the history of the Superfund process for Butte. The time is now for the various stakeholders in the Superfund process to work together with the people of Butte and the Upper Clark Fork to determine and implement an acceptable cleanup of past mining and smelting waste.

### **3.0 CTEC POSITION ON THE BPSOU PROPOSED PLAN**

Sections 4.0 and 5.0 of this document presents CTEC comments that reflect community concerns and needs, the final goal of protecting human health and the environment, and restoring beneficial use to impacted lands and waters. The comments described below show that CTEC and the Butte citizens we represent are concerned that the Preferred Alternative described in the Proposed Plan does not sufficiently meet the

Superfund evaluation criteria laid out in CERCLA law. Specifically, CTEC believes that the Proposed Plan has inadequacies meeting the following criteria: 1) overall protection of human health and the environment 2) long-term effectiveness and permanence, and 3) reduction of toxicity, mobility, or volume through treatment. CTEC is also concerned about the level of community and State acceptance of the Proposed Plan. The Proposed Plan in its present form seems to reflect primary consideration of the criteria 1) cost, and 2) short-term effectiveness. CTEC believes that it is short-sited to place immediate cost and effectiveness ahead of long-term costs and effectiveness at the BPSOU.

CTEC feels that the complete remedy in Butte will take an extended period of time but will need to show a high degree of permanence. The community of Butte will be affected by the adequacy of the BPSOU cleanup for many hundreds of years, making permanence of the remedy exceptionally important. Additionally, the long-term costs of operation, maintenance, and treatment incurred by the Proposed Plan in its present form will in time surpass the costs that would be incurred by implementing appropriate remedies today. CTEC therefore believes that an appropriate cleanup for the BPSOU will take actions to remove wastes where reasonable and appropriate options for removal exist, but also provide a **perpetual** and sufficient fund for maintenance of wastes left in place.

In these comments, CTEC intends to suggest that many aspects of the Proposed Plan could lead to an acceptable cleanup at the BPSOU. However, CTEC contends that the Proposed Plan in its present form has various deficiencies needing revision. Therefore, CTEC contends that **a revised Proposed Plan is needed that incorporates the following suggestions.**

#### **4.0 GENERAL COMMENTS**

The following are general comments on the BPSOU Proposed Plan. General comments describe issues and problems pertaining to the entire document, large components of the document, or the technical approach used to develop the Proposed Plan.

- 4.1 **CTEC is concerned that Superfund remediation in Silver Bow Creek and Warm Springs Ponds is at risk of impairment by contamination leaving**

**the BPSOU. The ROD should state a specific contingency plan for protecting downstream water quality and Superfund remediation efforts:** The Proposed Plan states (pg 24, bullet 8) that heavy metals and arsenic are present in reconstructed portions of Silver Bow Creek with the highest concentrations upstream. NRDP monitoring data for 2004 supports this with evidence that waste sources within the Metro Storm Drain and Lower Area One are recontaminating portions of Silver Bow Creek. The existence of contamination in the remediated Silver Bow Creek channel shows that the SBC-SST OU is vulnerable to recontamination from upstream areas in the BPSOU. The engineering and design of groundwater capture and treatment systems, waste removal actions, and storm water runoff remediation in the BPSOU has to be sufficient that post-remedy contamination is not allowed to leave the BPSOU. CTEC is concerned that the preferred alternative for groundwater capture combined with the lack of contaminant source removal at LAO and MSD may not achieve sufficient capture of contaminated groundwater. CTEC is additionally concerned that the phased storm water approach needs to be engineered for large storm/flood events prior to these events occurring. The ROD must put specific contingency plans in place in the event that either surface or groundwater is providing mobilization of contaminants out of the BPSOU. CTEC recommends the following:

- 4.1.1 A network of monitoring wells needs to be established below and west of LAO to establish that contaminated groundwater is not leaving the BPSOU and causing impairment of Silver Bow Creek. Multi-level nested monitoring wells should be completed both within the alluvial and bedrock aquifers. Wells should be used for assessing aquifer properties and movement of contaminants in both alluvial and bedrock aquifer systems.
- 4.1.2 The Proposed Plan suggests contingency plans for LAO and MSD groundwater contamination including capture and extraction will be developed. CTEC agrees that groundwater capture and

extraction should be developed into an acceptable contingency plan.

4.1.3 The Proposed Plan suggests the contingency plan for surface water remediation will include lime treatment or in-stream flow augmentation. CTEC states in Specific Comment number 5.19 below that flow augmentation does reduce contaminant loads to downstream areas and should not be used as a method for achieving surface water ARARs. CTEC recommends that more aggressive treatment of source areas needs to be the first line of action in any contingency plan; lime treatment of surface water runoff is an acceptable last resort for the contingency plan.

4.2 **Alternatives in the Proposed Plan need to be broken down and evaluated individually to ensure selection of the most suitable alternative for individual components of the remedy:** The Proposed Plan organizes Comprehensive Alternatives for the BPSOU by selectively assigning Metro Storm Drain Alternatives to Site-wide alternatives. This classification of alternatives artificially reduces the cleanup options available and limits the ability to choose a remedy tailored to the individual components of the BPSOU. The options for cleanup at the BPSOU should be broken down by site and/or topic and each set of site-specific alternatives should be evaluated individually. For example, options for remediation of groundwater contamination at the MSD should only be weighed against other options for groundwater at the MSD. As another example, options for remediation of storm water runoff over the entire BPSOU should only be weighed against other storm water options. The artificial organization of cleanup alternatives in the Proposed Plan is **not** in the interest of finding the best remedy for the BPSOU. Additionally, the Proposed Plan lumps 4 different Metro Storm Drain Alternatives into one Comprehensive Alternative. These Metro Storm Drain Alternatives need to be evaluated individually not lumped into one alternative that is systematically discredited. CTEC recommends that a

revised Proposed Plan include flexibility in combining alternatives for remediation.

- 4.3 **Alternatives that call for more intensive removal should not be ranked lower for the criteria ‘protection of human health and the environment’.** CTEC agrees that there is risk associated with hazardous waste removal and transportation. However, CTEC believes that those who work in waste excavation and transportation understand the risks that their job entails and that adequate safety plans have been implemented. CTEC maintains that construction and transportation workers prefer having jobs to the alternative, the absence of job risk and underemployment. We therefore feel it is inappropriate to lower an alternatives ranking for the criteria ‘protection of human health and the environment’ due to worker safety. CTEC contends that all alternatives for cleanup at the BPSOU can be performed in a manner which provides a high level of worker safety.
- 4.4 **The data and analyses used to support leaving waste in place in the alluvial aquifer at the Metro Storm Drain are flawed. CTEC asserts that the remedy must remove all buried waste in the MSD with the exception of waste under private properties (MSD alternative 5b).** Available information on the MSD alluvial aquifer is insufficient to determine that removal of wastes will not recover the aquifer to beneficial uses. More importantly, analyses need to be developed to determine under a waste removal action how long it would take for surface water in the MSD channel to meet standards without treatment. CTEC believes that the conceptual model used in the Focused Feasibility Study of the Metro Storm Drain and the evaluation of remedial alternatives spawned from it is flawed. CTEC further believes that the 1990 Draft Final Silver Bow Creek CERCLA Phase II Remedial Investigation Data Summary Area I Operable Unit: Volumes I and II does not provide the analysis necessary to show that a waste-in-place solution for the MSD is appropriate. CTEC agrees with the Montana Bureau of Mines and Geology analysis suggesting that the aquifer will recover within a reasonable time. A groundwater contaminant modeling investigation of the

MSD alluvial aquifer performed by or passing review of the MBMG should be considered a requisite for any waste-in-place solution. Unless a modeling investigation shows that the alluvial aquifer will not recover contaminants should be removed. CTEC maintains that given the current understanding of the aquifer the safe and conservative alternative for remediation at the MSD is alternative 5b.

4.5 **Relevant documents were not available in the administrative record file during the public comment period. The public must have access to all relevant information and the omission of important documents obstructs the public's right to this information.** NCP law (40CFR300.805) calls for establishment of a copy of the administrative record file at or near the Butte Area/Silver Bow Creek Superfund site. The Proposed Plan (pp52) lists the Montana Tech Library as one local repository for the administrative record file. CTEC found that during the public comment period the Montana Tech Library repository did not have copies of the Risk Assessments listed as key documents on page 4-5 of the Proposed Plan. NCP law (40CFR300.800) states that the EPA must “ensure that the administrative record includes all documents that form the basis for the selection of the response action.” CTEC has spoken with local citizens who are frustrated that they cannot find the BPSOU documents that they need to assess the Proposed Plan. The Montana Tech Library repository provides a location for the administrative record file that people can access during their free-time after work, and where people who have a negative perception of EPA guidance at the BPSOU can access information outside of an EPA office. CTEC contends that the Montana Tech Library repository should have all relevant documents and EPA’s failure to maintain an appropriate record at the Montana Tech Library obstructs the public’s right to information necessary to assess the Proposed Plan.

4.6 **The Proposed Plan cost estimates for alternatives that remove buried waste in the Metro Storm Drain are inflated. The MSD cost estimates need to be revised with estimates substantiated by estimates from**

**independent sources. Alternatives for waste removal at the MSD need to be re-evaluated given a revised cost estimate.** The State and other stakeholders have made public evidence that cost estimates for removal of buried waste at the MSD are artificially high. CTEC agrees with cost estimates developed by the State of Montana NRDP. In the Proposed Plan and Focused Feasibility Study of the Metro Storm Drain (FFS) cost estimates are one of the main criteria used to discredit removal options for the MSD. The FFS states that removal cost estimates are provided by Atlantic Richfield. ARCO is the principal PRP at the BPSOU and relying on ARCO cost estimates in evaluation of the alternatives for the BPSOU represents a conflict of interest and is **not** in the interest of providing an objective evaluation of the alternatives. Additionally, review of the FFS Attachment D ‘Cost Documentation’ shows that the high end of the excavation and backfill estimates provided by Atlantic Richfield are used in the cost estimates. Cost estimates for the MSD need to be revised with estimates from additional contractors who are independent of the Superfund process. CTEC recommends that average/mean values of unit cost rates be used in a revised cost estimate for MSD removal options not the high end of the range as is done in the FFS. Revised cost estimates should also reflect options for limiting backfill of excavated sites. After cost estimates are revised, all remedial alternatives for the MSD including options that limit backfilling need to be reevaluated.

- 4.7 **The proposed solid media action level for lead (Pb) of 1200 mg/kg in a residential setting needs to be lower to protect Butte children from soil and dust contamination.** CTEC has compared the lead action level to national lead standards in the Toxic Substance Control Act (TSCA) for comparison of EPA’s derived lead risk hazard for Butte to national hazard analyses. The TSCA standard is 1200 mg/kg for *outdoor areas* outside of children play areas. The TSCA standard for residential yard play areas is 400 mg/kg. The Proposed Plan does not offer a lower action level for lead in play areas. CTEC is concerned that the omission of lead RGs specific to areas

that children use places Butte children at an elevated risk of lead exposure. CTEC understands that CERCLA states that site-specific lead RGs are required for Superfund but finds it difficult to understand why an action level that is 3 times the national TSCA standard is appropriate for Butte children. The fact that Butte children are living in a Superfund site and are exposed to lead in many areas of their environment makes the use of any exposure scenario wherein Butte children intake less lead than the national average extremely suspect. This fact is clearly stated in EPA OSWER Directive #9200.4-27P: “As a result, other factors being equal, the risks attributable to soil will generally be higher in the presence of elevated lead exposures from other sources”. CTEC contends that exposure scenarios for the EPA Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) used to develop lead RGs needs to be conservatively parameterized to ensure protection of Butte children from lead poisoning. CTEC recommends that final lead RGs be developed which consider the following:

- Direct ingestion of lead paint by children. Lead paint ingestion should be considered a critical source of exposure given Butte’s old housing stock. CTEC recommends that final RGs be developed by using information available on lead paint ingestion from areas with a similar percentage of old housing stock and/or with a comparable occurrence of deteriorated or exposed lead paint that a child can ingest.
- The Baseline Risk Assessment for Lead (CDM, 1994) shows that average lead concentration in Butte drinking water is 1.7 times the national average based on 147 residential tap water samples within the BPSOU. Final RGs should be developed considering site-specific lead concentrations in drinking water.
- Airborne lead concentrations used in the BPSOU IEUBK model are national averages and are based on the default assumption that indoor airborne lead concentration is 30% of outdoor airborne lead concentration. This assumption ignores indoor sources of lead in Butte that may contribute to elevated airborne lead concentration such as contaminated

dust and outdoor lead sources that may be transported by wind such as waste and soil in which elevated lead concentrations remain. Site-specific indoor and outdoor airborne lead concentrations should be measured under typical conditions of particulate emission and included in the IEUBK model.

- Appropriate lead RGs can be developed that consider the eventual remediation of lead based paint hazard, lead in drinking water, and airborne lead if it can be determined that the PRP will fund components of the lead abatement program to address these exposure pathways in all residences within a 10-year timeframe.
- The studies of bioavailability of lead in soil to children use rats and pigs for comparison to human bioavailability. CTEC is concerned that these studies which use animals may not accurately assess human lead uptake. The rat and pig studies determine that lead in Butte soil is 1/3<sup>rd</sup> as bioavailable as the IEUBK default lead bioavailability. The 10% and 12% bioavailability parameters used in the RAs need to be supported by comparison to bioavailability determined from scientific studies performed in other areas to show that these are conservative estimates of bioavailability from soil. If further data is not provided that adequately supports the low bioavailability parameter used for Butte soils, CTEC recommends use of the default bioavailability factor in developing final RGs.
- The bioavailability studies involved exposing animals to mixtures of Butte soils. EPA Superfund guidance OSWER directive #9355.4-12 in the section titled Implementation - Mining-related sites states, “for mining-related sites *without* significant past smelting/mill activity, this interim directive encourages further research for characterizing the potential impact of particle size and speciation on soil bioavailability.” CTEC contends that it is an oversight of the bioavailability studies to consider only soil exposure when much of the lead exposure in Butte is a result of past smelter and mill activity. CTEC recommends that further

bioavailability studies are needed that address bioavailability to dust from smelter and mill sources. If further data is not provided that adequately supports the low bioavailability parameter used for Butte dust, CTEC recommends use of the default bioavailability factor in developing final RGs.

4.8 **Use of the same lead (Pb) action level for indoor dust action level for lead (Pb) as derived for outdoor soil is not supported by scientific analysis.**

The proposed action levels for indoor dust are the same as the lead action levels determined appropriate for outdoor soil. There is potentially more risk with having contaminated dust coming out of cracks in the wall in a child's bedroom than in exposure to outdoor dirt. The TSCA defines different national standards for outdoor dust and dirt than for indoor dust and it is unclear why EPA proposes it is protective in Butte for indoor lead action levels to mimic outdoor levels. CTEC contends that lead RGs for indoor dust should be developed independently from RGs for outdoor soil.

4.9 **The proposed solid media action level for arsenic (As) of 250 mg/kg in a residential setting needs to be lower to protect citizens from soil and dust contamination in their homes.**

The Proposed Plan states that the RG for arsenic in residential solid media of 250 mg/kg represents a 1 in 10,000 cancer risk. This is the highest cancer risk of the 3 arsenic action levels considered by EPA. CTEC contends that the selection of the least protective RG for arsenic by EPA further puts the health of Butte citizens at risk. Arsenic RGs should be developed so that not one of the 34,400 Butte residents has an elevated risk of cancer from arsenic exposure. CTEC recommends that EPA perform analysis of a histogram of Butte residential arsenic levels in soil to determine an appropriate natural break in arsenic concentration distribution that will provide for a cancer risk of approximately 1 in 100,000.

4.10 **The Proposed Plan does not describe how water treatment with lime will ensure that ARARs are met. The ROD must provide assurance that discharge from water treatment operation complies with all ARARs**

**including arsenic standards.** CTEC understands that Atlantic Richfield supports an expansion of the lagoon treatment system for treatment of LAO and MSD alluvial groundwater. Reliable proof needs to be provided that groundwater treatment with lime in a lagoon will reduce arsenic to below water quality criteria. Neither EPA nor Atlantic Richfield has published data showing the ability to treat expected arsenic loads with lime in a lagoon. Lime treatment of Silver Bow Creek water at Warm Springs Ponds has led to a situation where arsenic exceeded ARARs 68% of the time during 2004. CTEC has suggested in General Comment 4.1 above that a contingency plan is needed in the event that the chosen treatment method is unable to meet ARARs. CTEC is concerned that water treatment with lime in a lagoon may cause conditions favorable for biological release of arsenic. CTEC maintains that biological release of arsenic in an artificial constructed wetland setting is not natural and it must be stipulated in the ROD that if biological release of arsenic causes exceedence of water quality standards then it is a violation of ARARs. CTEC is not specifically against groundwater treatment in an expanded lagoon setting; however, as stated above, CTEC maintains that all discharge from a treatment lagoon must meet ARARs under all environmental and hydrologic conditions encountered.

- 4.11 **Stronger assurances are needed that funding will be in place for operation and maintenance of the chosen remedy in perpetuity.** Given that the nature of the BPSOU remedy is tending towards waste in place and perpetual treatment of contaminated water it will be essential that funding come from a non-diminishing fund. CTEC is concerned that deliberations to date have considered funding for too short of a duration and that the issue of who will pay for ongoing operation and maintenance after 100 years is undetermined. CTEC asserts that the Proposed Plan should delineate what operation and maintenance costs are estimated to be. CTEC recommends careful consideration for possible maintenance and operation needs and establishment of a non-diminishing trust fund. Waste in place solutions must

not be a temporary solution that succumbs to lack of maintenance past the short-term future.

- 4.12 **CTEC supports the proposal for an improved lead abatement program if the program will perform a comprehensive testing of all Butte residences in a 3-year timeframe and if abatement of contaminated dust is performed in all areas of the home affected by contaminated dust.** CTEC believes that any lead abatement program for the BPSOU must involve a plan for efficient and comprehensive testing to determine where lead hazards exist so that lead hazards can be quickly remediated. The people of Butte have lived for too long in the metal and arsenic laden soot of past smelter smoke fallout. CTEC contends that all areas of residences in which the property owner consents to sampling and remediation and in which people are exposed to contaminants must be cleaned of hazardous dirt and dust within a time frame of ten years. CTEC explains below in Specific Comment number 5.3 that pathways of exposure exist to contaminated dust in non-living space including attic dust and dust that emanates from cracks in walls and ceilings. Resources must be made available if homeowners request remediation of non-living space dust. CTEC recommends that indoor dust RGs must be applied to non-living space dust. CTEC is concerned that current deliberations discuss funding the lead abatement program for only 30 years. CTEC contends that it must not be expected that all homes in Butte containing contaminated dust will be remediated or remodeled within 30 years. The ROD and Consent Decree must secure funds to pay for the removal of contaminated dust beyond 30 years. The ROD should further stipulate that if a residence tests positive for hazardous dust and the homeowner declines remediation or for other reasons the home is not remediated in a reasonable time then a lead hazard disclosure must be made upon renting, leasing, or selling the property.
- 4.13 **The use of the phrase “attic dust” should be descriptive only and the ROD must specify that all contaminated residential dust to which there is exposure must be removed.** CTEC suggests that the use of terms such as

“attic dust” and “house dust” be for descriptive use only. However, the dust abatement program must remove all forms of residential contaminated dust caused by past mining and smelting activity. CTEC contends that use of the term “contaminated dust” is appropriate to encapsulate all forms of hazardous dust found in Butte residences.

- 4.14 **Past and future response actions must use cap and reclamation engineering that ensures long-term stability and success of waste in place remediation.** CTEC is concerned that the Butte Reclamation Evaluation System (BRES) will be used as an alternative to reclamation engineering that is self-sustaining. CTEC maintains that any cap or reclamation design that requires routine maintenance in perpetuity is likely to become a contaminant source or exposure pathway at some point in the future. CTEC recommends that BRES must be used in combination with engineering designs that will stand up to future land uses and disturbance. An evaluation of past and future failures and weaknesses of reclaimed areas should be undertaken before commencement of reclamation actions implemented under the final plan and with each 5-year review so that future reclamation as well as renovation of existing caps can benefit from engineering improvements. Engineering improvements must be tailored to avoid deficiencies identified in the cap/reclamation evaluation process such that future reclamation/maintenance/renovation actions are engineered to be self-sustaining.

## **5.0 SPECIFIC COMMENTS**

The following are specific comments on the BPSOU Proposed Plan. Specific comments refer to sentences, paragraphs, or pages in the document where CTEC recommends that specific changes be addressed in a revised Proposed Plan.

- 5.1 **Pg 4&5, all bullets, section ‘Investigations’:** This section of the Proposed Plan lists key documents with detailed information about the BPSOU. However, the titles of the documents listed are abbreviated making it difficult for the public to locate the document that EPA is referring to. For example,

the Proposed Plan lists the document ‘Final Phase II Remedial Investigation Report’. The actual title of this document is ‘Butte Priority Soils Operable unit, Silver Bow Creek/Butte Area Superfund Site, Phase II Remedial Investigation Report’. If a person searches the Montana Tech library catalog (listed as the local document repository) using the Proposed Plan listed title they will not find the document. Additionally, if the Proposed Plan listed title is used for a keyword search in the MTech library catalog, the catalog returns an overwhelming number of remedial investigations, and the Butte Priority Soils RI is lost somewhere within the 6978 entries that qualify that keyword. This is easily confusing for the public and violates the public’s right to “sufficient information as may be necessary to provide a reasonable explanation of the proposed plan and alternative proposals considered” as defined under Title 42, chapter 103, section 9617 of CERCLA law. CTEC suggests that the Proposed Plan need to make site information as easily accessible to the public as possible. All relevant documents should have proper reference and all relevant documents should be available at the MTech Library repository.

- 5.2 **Pg 13, section ‘Granite Mountain Memorial Area’:** The Proposed Plan states that air monitoring is being conducted to ensure that Granite Mountain Memorial visitors are not being exposed to hazardous airborne contaminants. CTEC asserts that air monitoring at the Granite Mountain Memorial must specifically include air sampling at the visitor stand as well as other visitor features that are constructed in the future. Air sampling must be performed in a manner that captures what visitors are breathing (ie: at mouth/nose height on a windy day). Background air monitoring outside of the areas that visitors use will not adequately report the levels of contaminants that the public is breathing at the memorial.
- 5.3 **Pg 14, 3<sup>rd</sup> paragraph, section ‘Residential Soil, Indoor Dust, and Attic Dust’ and Pg 23, section ‘Walkerville Outdoor Soil and Indoor Dust’:** The Proposed Plan suggests that there is not a complete exposure pathway, except in unusual circumstances for attic dust. CTEC believes that members

of the public who have come forward and reported instances of acute exposure to attic dust are proof that a complete exposure pathway exists to attic dust. CTEC disagrees that there is anything unusual about a homeowner, renter, or other occupant using an attic and contends that the danger of acute exposure exists. Additionally, the danger exists that contaminated dust will be tracked from attics and crawl spaces into living space when these areas are accessed. Butte citizens have also described that contaminated dust from within walls and attics will enter the living space of a residence through cracks in walls and ceilings. CTEC therefore recommends that reference to a complete exposure pathway for attic dust and other non-living space contaminated dust must be identified in a revised Proposed Plan as well as all future BPSOU documents that address exposure pathways to contaminated dust.

- 5.4 **Pg 16, 6<sup>th</sup> paragraph, section ‘Metro Storm Drain’:** In this section, it is stated that contaminants discharging to the channel in lower MSD are leachate primarily from the Diggings East and North Side Tailings and that leachate from the Parrott Tailings is expected to take at least 200 years to reach lower MSD. CTEC and the Montana Bureau of Mines and Geology have provided substantiated evidence that travel times within the MSD alluvial aquifer are considerably faster than EPA region 8 estimates. Additionally, EPA’s Ground Water Technical Support Center in a Memorandum to the EPA Region 8 Montana Office concerning review of the Metro Storm Drain Focused Feasibility Study (FFS) states, “The Parrott Tailings are not the only source that provides contaminants to the ground water system, although they may be the most predominant source.” The Memorandum also states that the MSD alluvial aquifer is highly heterogeneous and likely contains “more highly transmissive zones”. CTEC, the State of Montana, MBMG, and the EPA Ground Water Technical Support Center are in consensus that the Parrott Tailings are the major source of contamination to groundwater which discharges to the MSD channel. Additionally, there is consensus that the contaminant travel time estimates

dictated by the FFS are much too slow. It is misleading to include the above statements concerning slow transport of Parrott Tailings leachate and to suggest that the Parrott is not affecting surface water quality in the MSD. In fact, the information from the sources stated above provides further support for removal of the Parrott Tailings. Therefore, CTEC asserts that references to the Parrott Tailings not being a major source of contamination to MSD are false and references to the contaminant travel times identified in the FFS need to be removed from the Proposed Plan.

- 5.5 **Pg 17, 2<sup>nd</sup> paragraph, section ‘Principal Threat Wastes’:** It is stated that EPA does not believe that any of the remaining wastes within the OU constitute highly toxic and mobile “principal threat wastes”. It is explained in comment number 5.3 above that contaminated dust is both highly toxic and mobile. CTEC contends that contaminated indoor dust in all areas of a residence constitutes a principal threat waste and believes that dust should be listed in this section of the Proposed Plan.
- 5.6 **Pg 19, 2<sup>nd</sup> bullet, section ‘Warm Springs Ponds OUs’:** The text states that RODs for the WSP were signed in 1990 and 1992. However, actions performed at WSP are *interim remedial actions* performed under an Interim ROD. Despite the positive review given to WSP in the Proposed Plan, the WSP effluent continued to exceed arsenic ARARs 68% of the time in 2004. Arsenic exceedences are due in part to loading of arsenic from upstream sources in the Silver Bow Creek Stream Side Tailings and Butte Priority Soils OUs. It would be correct to inform the public that the final remedy and ROD for WSP will reflect the success of upstream cleanup at the BPSOU and SBCSST OUs. CTEC believes that cleanup of the Butte Area/Silver Bow Creek Superfund OUs needs to be accomplished with the goal of eventually eliminating the need for treatment at WSP. The Proposed Plan should state that the final remedy for WSP and possibility for reducing the need to treat Silver Bow Creek water at WSP is dependent on the efficacy of cleanup at BPSOU.

- 5.7 **Pg 20, 1<sup>st</sup> paragraph, section ‘Summary of Site Risks’:** It states in the Proposed Plan that site risk assessments quantified current and potential human health risk from indoor dust. In contrast to this, no comprehensive indoor dust testing has been undertaken for the entire BPSOU. CTEC contends that EPA has not determined the extent of the contaminated dust problem or adequately characterized the risk. CTEC suggests that the Proposed Plan omit the mention of indoor dust in this paragraph and add “additional information that reflects that future and expeditious characterization of contaminated dust will be used to quantify current and potential health risks”.
- 5.8 **Pg 20, 5<sup>th</sup> paragraph, section ‘Exposure Pathways’:** The Proposed Plan states that wind erosion is a primary way that mining and ore processing waste are mobilized. On pg 17, section ‘Air’, the Proposed Plan states that unreclaimed source areas are never a significant source of particulate matter emissions. These two statements are in contradiction. CTEC suggests that wind erosion of source areas be clarified.
- 5.9 **Pg 21, 3<sup>rd</sup> bullet, section ‘Exposure Pathways-Human’:** Contaminated dust needs to be added to the primary exposure pathway dermal exposure. A Montana Standard article on 11/29/2004 titled “Anaconda Homeowner Finds Danger Lurking in the Attic” reports that a homeowner was acutely exposed by dermal contact to attic dust contaminated by past smelter emissions. CTEC considers similar exposure scenarios to contaminated dust probable in Butte.
- 5.10 **Pg 22, 6<sup>th</sup> paragraph, section ‘Human Health Risk’ and pg 27, 1<sup>st</sup> paragraph, section ‘Soils-Proposed RGs’:** The lead PRGs described in the Proposed Plan are stated to be a lead concentration which would result in a no more than 5% probability of an individual child exceeding a blood lead level of 10 ug/dL. CTEC has provided evidence in General Comment numbers 4.7 and 4.8 above that the lead RG for the BPSOU is not protective of children’s health. CTEC contends that lead RGs need to be made more conservative of human safety and any further mention of the current RG of 1200 mg/kg for

solid media in a residential setting needs to be clearly stated that it is *EPA's preliminary estimate* of a level which would result in a no more than 5% probability of an individual child exceeding a blood lead level of 10 ug/dL.

- 5.11 **Pg 22, 6<sup>th</sup> paragraph, section 'Human Health Risk'**: The Proposed Plan PRG for arsenic in solid media of 250 mg/kg represents a 1 in 10,000 cancer risk. CTEC suggests in General Comment number 4.9 that arsenic action levels should be lower to provide for lower cancer risks.
- 5.12 **Pg 23, 5<sup>th</sup> paragraph, section 'Walkerville Outdoor Soil and Indoor Dust'**: The Proposed Plan states that cancer risks from exposure to arsenic in outdoor soil and indoor dust were within EPA's acceptable range. There is no reference in this section to what EPA's acceptable range of cancer risk is or justification for that range. Cancer risks need to be made clear to the reader when they are addressed in the Proposed Plan.
- 5.13 **Pg 27, 1<sup>st</sup> bullet, section 'Soils-Proposed RAOs'**: The Proposed Plan states that one RAO is to prevent exposure to contaminated waste under reasonable anticipated future land uses. CTEC believes that "reasonable anticipated future land uses" needs to be clarified to include redevelopment options including community accessible open space, construction of buildings, parks, roads, and revegetation with native species including woody vegetation and trees.
- 5.14 **Pg 27, 5<sup>th</sup> bullet, section 'Soils-Proposed RAOs'**: The Proposed Plan lists as a RAO, "remediate contaminated solid media to the extent that it will not result in an unacceptable risk to human health". CTEC contends that exposure to contaminated dust is an unacceptable risk, exposure pathways to dust exist and are proven by example, and all indoor dust must be remediated by removal.
- 5.15 **Pg 28, 1<sup>st</sup> paragraph, section 'Soils-Proposed RGs'**: The Proposed Plan states that previously established residential action levels for arsenic and lead determined for residential yards were determined to be protective for exposure to indoor dust. However, neither explanation nor reference is given to substantiate using the same outdoor soil lead and arsenic action levels for

indoor dust. CTEC contends that it is not scientifically supported to suggest that there is no difference in contamination exposure to humans between sources in yard soil and indoor dust. CTEC believes that derivation of the indoor dust lead and arsenic levels needs to be explained, not simply stated as “were determined to be protective”.

- 5.16 **Pg 28, 4<sup>th</sup> bullet, section ‘Surface Water-Proposed RAOs’:** It is stated that an RAO is to ensure that point source discharges from any water treatment facility will meet ARARs. More data/information is needed in the Proposed Plan to explain how the remedy will ensure that ARARs are met in surface water. As explained in general comment number 4.10, CTEC is concerned that lime treatment will not meet ARARs for arsenic.
- 5.17 **Pg 31, 1<sup>st</sup> paragraph, section ‘Integration of Past Response Actions’:** It is stated that further details on ICs will be provided in the ROD. CTEC maintains that institutional controls are a major consideration in any proposal for cleanup at the BPSOU and details on ICs should be available in the Proposed Plan so that citizens can adequately judge them. ICs will affect private property rights and the public has a right to be informed of proposed or impending ICs. The public needs to have information available on proposed ICs that will allow comparison of remedial alternatives involving more intensive removal actions with options involving perpetual maintenance and ICs.
- 5.18 **Pg 36, table ‘Evaluation of Alternatives’:** CTEC does not concur with the characterization of long-term effectiveness and permanence. CTEC believes that alternatives that call for source waste removal, including removal of buried waste in the MSD, should score higher for this criterion.
- 5.19 **Pg 45, bullet 2, section ‘Surface Water Components’ and Pg 46, section ‘In-Stream Flow Augmentation’:** The Proposed Plan suggests that flow augmentation will be used to supplement BMPs to achieve surface water ARARs. Flow augmentation does nothing to stop the loading of contaminants that may impair downstream remediation efforts including Silver Bow Creek and Warm Springs Ponds. It should be clearly stated in the

Proposed Plan so that the public can easily understand the proposal that flow augmentation means dilution with clean water. CTEC contends that clean water supplies are one of the most critical resources in the Clark Fork River Basin and should not be used to dilute contaminated runoff. CTEC believes that sources of contamination at BPSOU must be remediated through removal or effective capping measures and BMPs so that water that runs off of Butte Hill meets ARARs without dilution.

- 5.20 **Pg 45, section ‘BMPs Approach for Storm Water’:** The proposed phased approach for storm water runoff must be implemented within a time frame of 5-10 years. Source remediation actions must be implemented that will account for calculated maximum runoff events. CTEC is concerned that the phased approach will take too long to achieve remediation goals. BMPs and other actions implemented as part of the phased approach must not be designed to only control contaminant runoff from current drought conditions and absence of major storm events. Instead, BMPs and source area remediation must be engineered to control anticipated 100-year and larger runoff events so that BMPs and storm water runoff infrastructure are in place when these events occur. Additionally, ARARs for surface water must be met expediently (months to several years, not decades) to provide for protection of downstream water quality and Superfund remediation activities.
- 5.21 **Pg 45, bullet 1, section ‘BMPs Approach for Storm Water’:** CTEC recommends the addition of visual inspection for contaminant source areas to the surface water monitoring program. It is CTEC’s experience that contaminant source areas including waste areas and slickens or metallic salts can be visually found in storm water channels and floodways within BPSOU. CTEC recommends that identification and remediation of these easily observed source areas occurs as phase 1 of the phased storm water approach.
- 5.22 **Pg 44, 2<sup>nd</sup> paragraph, section ‘Residential Areas’:** CTEC is concerned that EPA is not being conservative in the identification of pathways of exposure to contaminated indoor dust. CTEC maintains that pathways of exposure to attic dust do exist and dust may enter living spaces through cracks in walls

and ceilings as explained in Specific Comment number 5.3 above. Owners should not have to wait for remodeling if an exposure exists. The final remedy and any lead abatement program must allow for immediate cleanup of contaminated dust in all attics. Additionally, the program must expeditiously remove or provide effective barrier to exposure to contaminated dust in walls if there are cracks or other mechanisms by which dust may enter the living space.

- 5.23 **Pg 50, 1<sup>st</sup> paragraph, section ‘Residential Areas’:** The reference to “house dust” in this section should be clarified to explain that it is smelter/mining related contaminated dust.
- 5.24 **Pg 51, 5<sup>th</sup> bullet, section ‘Groundwater’:** It should be explained in the Proposed Plan how owners of groundwater rights within the proposed groundwater control area will be compensated. CTEC has explained in Specific Comment number 5.17 the importance of the public understanding proposed ICs. CTEC maintains there must be a program in which effected groundwater rights are replaced with a no-cost hookup to city water or other external water supply. Additionally, the program should subsidize the cost of replacement such that people are not paying in excess of the cost of pumping the existing groundwater supply for the replacement supply.