DEPARTMENT OF JUSTICE
NATURAL RESOURCE DAMAGE PROGRAM

AUSTIN KNUDSEN
ATTORNEY GENERAL

1720 9TH AVENUE

STATE OF MONTANA

(406) 444-0205 (OFFICE)
(406) 444-0236 (FAX)

PO BOX 201425
HELENA, MONTANA 59620-1425

May 5, 2022

Mr. Nikia Greene
Remedial Project Manager
U.S. EPA Region 8 Montana Office Federal Office Building, Suite 3200
10 W. 15th St.
Helena, MT 59626

Ms. Erin Agee, Senior Assistant Regional Counsel
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202

**RE: NRDP Comments on EPA's Draft Screening-Level Ecological Risk Assessment and Baseline Ecological Risk Assessment Work Plan for West Side Soils Operable Unit**

Dear Mr. Greene and Ms. Agee:

The Natural Resource Damage Program (NRDP) appreciates the opportunity to provide comments on the Environmental Protection Agency's (EPA's) External Review Draft Screening-Level Ecological Risk Assessment (SLERA) for the West Side Soils Operable Unit (WSSOU) dated March 2021, which NRDP received from the Montana Department of Environmental Quality (DEQ) on December 2, 2021. We are also providing limited comments to EPA's Draft Baseline Ecological Risk Assessment Work Plan for West Side Soils Operable Unit dated March 2022 (BERA Work Plan). NRDP has an interest in the WSSOU remedial activities because Blacktail Creek flows from WSSOU into the Butte Priority Soils Operable Unit (BPSOU), meaning remedial decisions made for Blacktail Creek within WSSOU could affect the remedial and restoration activities within BPSOU. NRDP has significant investments in the protection of Blacktail and Silver Bow Creeks and, along with DEQ, has the responsibility of ensuring the State's interests are addressed in the implementation of the BPSOU Consent Decree (CD).

In addition, NRDP wants to ensure that the remedial work on the Blacktail Creek Site (BTC Site), which is being performed by DEQ, is implemented as cost-effectively and protectively as possible. This is important because all the remaining funds from that effort,[1] which are expected to be substantial, are intended to be available for restoration actions, as is specifically provided in Paragraph 21 of the CD.

[1] With the exception of $1 million committed to Butte-Silver Bow per Memorandum of Understanding 2020-260, dated October 8, 2020.

**Draft Screening-Level Ecological Risk Assessment (SLERA)**

Two major smelters in Butte that impact the creeks, the Parrot and the Butte Reduction Works Smelter Sites, are both receiving major cleanup work as they are substantial contributors to BPSOU creek contamination. A third smelter, the historic Bell Smelter, was located just upstream from the BPSOU boundary in West Side Soils OU. This smelter discharged its wastes and tailings directly to the creek, and so is one obvious potential source of historic mine wastes to Blacktail Creek in this reach. The SLERA does not identify or include the Bell Smelter as a potential source; further evaluation of the Bell Smelter and its potential impact to Blacktail Creek is necessary in the Baseline Ecological Risk Assessment (BERA) and the Remedial Investigation (RI).

In addition, there are a few historic surface roads, such as Pinion and Johns Ave's, that spanned Blacktail Creek and were truncated north of the creek when the interstate was constructed in the 1960's. These roads should be investigated because they have bed materials that appear to be constructed of mine waste, which was not atypical in Butte, and can be seen from the walking trail along the northside of Blacktail Creek. If these are mine wastes, they are in the floodway and are being eroded into the creek. These materials should be sampled and tested to determine if they are mine wastes.

NRDP provided comments, other documentation, and data demonstrating these concerns to EPA and your contractor CDM on March 8, 2021, March 9, 2021, and December 11, 2021 (Attachment A). Sediment and sediment pore water data from NRDP's investigations as well as data NRDP collects with DEQ as part of its SSTOU restoration activities from this area were excluded from EPA's SLERA analysis even though it is available.

NRDP is concerned that data presented in the SLERA are insufficient to adequately characterize potential risk within Blacktail Creek. As a result, the SLERA is not serving the purpose of providing a conservative evaluation of potential ecological risk, specifically with respect to potential contamination from the historic Bell Smelter or other sources. Further, the SLERA lacks information needed to meet the other purposes of identifying the need for site-specific data collection efforts or to focus site-specific ecological risk assessments where warranted (EPA 2001a).

**Draft Baseline Ecological Risk Assessment Work Plan (BERA WP)**

The BERA Work Plan states, "*An ecological risk assessment for the Blacktail Creek study area, which considers data collected by EPA as part of the WSSOU RI and historical data collected by the Montana Department of Environmental Quality (DEQ), will be part of a separate evaluation and further monitoring.*" Accordingly, NRDP does not have significant comments on the draft BERA Work Plan, because it does not include the area of most interest to our involvement. However, we respectfully request that the comments in this letter be used to develop the future BERA Work Plan for Blacktail Creek.

As previously described, the SLERA did not utilize all the available Blacktail Creek sediment or sediment pore water data and did not focus its limited sampling efforts on the contaminant area of primary concern, which is downstream of the historic Bell Smelter. Instead, EPA focused its sampling of sediments well upstream of any known sources of sediment contamination. These two general sampling decisions introduced biases which may have caused the SLERA's conclusions of risk and

identification of the need for site-specific data collection efforts to be inaccurate. Accordingly, the SLERA should not be used to exclude evaluation and additional data collection along Blacktail Creek, particularly downstream of the Bell Smelter.

Any new ecological risk assessment for the Blacktail Creek study area should include sediment and sediment pore water data not only collected by EPA as part of the WSSOU RI and historical data collected by the DEQ and NRDP for the SSTOU, but other data also collected by the NRDP and other investigators. Unilaterally eliminating valuable data from any analysis runs contrary to CERCLA requirements and can lead to inaccurate quantification of risk and future site-specific risk assessments that focus on the wrong locations, which is contrary to EPA's SLERA guidance (EPA 2001).

Please consider the attached comments in future drafts of the SLERA and in development of a BERA work plan for the Blacktail Creek area. If you have questions or concerns, please contact me at (406) 439-2108. Thank you for the coordination.

Jim Ford
Project Manager
Natural Resource Damage Program
Montana Department of Justice

cc:

Harley Harris; NRDP
Katherine Hausrath; NRDP
Sydney Stewart, NRDP
Pat Cunneen; NRDP
Chris Wardell; EPA
Dana Barnicoat; EPA
Charlie Partridge; EPA
Jean Belille; EPA
Joe Vranka; EPA
Jon Morgan; DEQ counsel
Carolina Balliew; DEQ
Matt Dorrington, DEQ
Daryl Reed; DEQ
Jim Kambich, BSBC
Eric Hassler; BSBC
Anne Walsh; UP

Loren Burmeister; BP-AR
Josh Bryson; BP-AR
Jean Martin; Counsel BP-AR
Mave Gasaway; attorney for BP-AR
Elizabeth Erickson, BNRC
Jon Sesso, BNRC
Joe Naughton, RESPEC
Gary Icopini; MBMG
David Shanight, CDM Smith
Curt Coover, CDM Smith
Chapin Storrar; CDM Smith
Ian Magruder; CTEC
Janice Hogan; CTEC

## Background

NRDP has an interest in the WSSOU RI and related documents (e.g., SLERA) because Blacktail Creek flows from WSSOU into BPSOU, meaning remedial decisions made for Blacktail Creek within WSSOU could affect the remedial and restoration activities downstream within BPSOU. In addition, the State (through NRDP) has allocated over $37.0 million to protect Blacktail Creek sediments and surface water from contaminated groundwater through the Parrot Tailings Waste Removal Project. NRDP has a responsibility to safeguard this investment and ensure Blacktail Creek surface water and sediments are not subject to additional sources of historic mining-related contamination.

The BPSOU CD requires sediment sampling to evaluate whether remedial activities are effectively reducing contamination and protecting Blacktail Creek from further contamination. Exceedances of sediment performance standards trigger a diagnostic response, potentially followed by further remedial action. We have not seen how EPA plans to distinguish upstream sources of contaminated sediments within the WSSOU reaches of Blacktail Creek when considering the effectiveness of the BPSOU groundwater capture systems, and this uncertainty could trigger investigations and responses related to Blacktail Creek sediments in BPSOU. Contaminated sediments from Blacktail Creek in WSSOU could also recontaminate a newly remediated Blacktail Creek Remedial Action, which could increase remedial and investigation costs to DEQ and the state. To avoid potential future investigations and response actions, it is important that Blacktail Creek contamination within WSSOU be adequately and accurately characterized in the WSSOU RI and associated risk assessments.

For these reasons, NRDP has prepared the following comments that focus on Blacktail Creek. Specifically, comments center around sediment and pore water data necessary to understand contamination and risk upstream of BPSOU.

## General Comments

<u>Comment #1: Sediment sampling presented in the SLERA is inadequate to characterize risk to ecological receptors in specific reaches of Blacktail Creek.</u>

A significant purpose of the SLERA is to provide a conservative evaluation of potential ecological risks, but NRDP is concerned that the SLERA does not include sufficient data to adequately evaluate these potential risks. Sampling locations used in the SLERA were spaced throughout the entirety of Blacktail Creek, from the headwaters to the boundary of WSSOU and BPSOU. It appears that the sediment sampling locations were entirely biased on collocating them with surface water samples and not on potential sources of sediment contamination. This approach does not target specific areas that would most likely be contaminated, including areas of potential waste sources or depositional areas. This sample bias was partially acknowledged on page 7-1 of the SLERA, "*However, these [sediment] locations were not necessarily optimized to represent areas where metals in sediment could be higher (e.g., in depositional, marshy, or wetland areas).*" Blacktail Creek is more likely to be contaminated near the City of Butte and its historic mining operations than at the headwaters. Without targeted sampling, specific areas of contamination could be missed. The SLERA and BERA should not focus on Blacktail Creek in

general, but instead should focus on areas of Blacktail Creek where wastes were historically generated and/or released.

Specifically, the historic Bell Smelter is one obvious potential source of mining-related contamination within Blacktail Creek just upstream of the BPSOU boundary. The Bell Smelter was located west of Harrison Avenue and south of Harvard Street along Blacktail Creek (formerly known as Bell Creek). The smelter operated on and off between 1881 and 1886 using two blast furnaces and at times smelting nearly 100 tons of ore per day. Though the historic Bell Smelter only operated for a few years, the volume of ore moving through the facility would have produced significant mining-related contamination, much of which was directly discharged to Blacktail Creek. However, the SLERA only includes one sample location downstream of the historic Bell Smelter and no mention of this smelter as a potential source.

In 2015, NRDP collected sediment samples from Blacktail Creek between the historic Bell Smelter and below the boundary with BPSOU. These data were collected under a separate Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) which were provided to EPA prior to the field activities. These data indicate exceedances of threshold effect concentrations (TECs) and probable effect concentrations (PECs) in Blacktail Creek sediments downstream of the historic Bell Smelter. These results should be included and discussed in the SLERA as the results can assist with a conservative screening-level evaluation of potential risk in Blacktail Creek downstream of the historic Bell Smelter.

Comment #2: The SLERA compares the incorrect grain size fraction to various effects concentrations.

The SLERA utilized an inappropriate grain size when comparing the results to TEC and PEC thresholds and did not follow EPA, DEQ, or basin-wide accepted/approved practices of sieving and using a fraction smaller than <0.063 mm. Compared to coarse-grained sediment particles (sand), fine-grained sediment particles (silt and clay) have a greater overall surface area-to-volume ratio. This characteristic, along with other physicochemical properties, make fine-grained sediments much more chemically and biologically interactive than coarse-grained sediments, often resulting in greater sediment-associated contaminant concentrations. High mortality has been observed in test organisms when fine sediments are mixed. The mixing of these sediments can cause disassociation of many compounds from the sediment, increasing their bioavailability and toxicity (Ostrander 1996; Lawrence et al., 1997). To increase the probability of detecting trace elements and to enhance the comparability of data among locations, bed-sediment samples should be sieved and the fine-grained fraction analyzed for the contaminants of interest. For trace elements, the silt-clay fraction smaller than <0.063 mm should be used for analysis (Shelton, L. and P. Capel, 1994).

A few of the guidance documents that refer to the use of fine-grained sediments (<0.063 mm) as comparison to risk-based criteria are listed below:

EPA guidance states "*Depositional zones typically contain fine-grained sediment deposits which are targeted in some sampling programs because fine-grained sediments tend to have higher organic carbon content (and are therefore a more likely repository for pollutants) relative to larger sediment particle size fractions (e.g., sand and gravel) (ASTM, 2000a; Environment Canada, 1994).*" (EPA 2001).

USGS has been using this <0.063 mm size fraction methodology with EPAs funding and approval in the UCFRB since 2018 applying Hornberger's precedent (i.e., the USGS's precedent under contract/approval from EPA) for isolating and utilizing the <0.063 mm size fraction for inorganic contaminant analysis in the Upper Clark Fork River Basin (UCFRB) (Dodge et al, 2018).

DEQ's sediment sampling standard operating procedure (SOP) requiring sampling of <0.063 mm size fraction states: "*For trace elements such as mercury and other metals, benthic sediment samples should be sieved and the fine-grained silt-clay fraction smaller than 60 µm should be saved for analysis.*" (DEQ, 2019).

Comment #3: Pore water data available from Blacktail Creek are not considered in the SLERA.

The SLERA states multiple times (sections 4.2.2.2 and 7.1.1.2) that no pore water data are available for any of the watersheds evaluated. However, NRDP has collected pore water data in Blacktail Creek in the WSSOU reach of Blacktail Creek and has provided these results to EPA for use in risk assessments (Attachments B and C). Results of this sampling showed exceedances of EPA's surface water ecological screening values (ESVs) for aquatic receptors presented in the SLERA. The chronic ESVs were exceeded for arsenic, cadmium, copper, iron, manganese, and zinc with maximum hazard quotients (HQs) ranging from 1.3 to 42.2. Copper, manganese, and zinc results also exceeded acute ESVs, with maximum HQs between 2.2 and 2.4. These results should be included in EPA's SLERA, especially in the absence of any other pore water data from Blacktail Creek. Though these samples were collected under a different SAP and QAPP, they are appropriate for use in the SLERA to indicate potential risk that should be further investigated. We believe EPA should further investigate Blacktail Creek porewater for potential risks.

Results of NRDP's pore water sampling and comparison to ESVs are provided in Attachment B.

Comment #4: Future plans for evaluation of risk in Blacktail Creek are unclear.

NRDP was recently provided a Draft BERA Work Plan for WSSOU. This BERA Work Plan only addresses the mine study area of WSSOU, which does not include Blacktail Creek, and states that "*An ecological risk assessment for the Blacktail Creek study area, which considers data collected by EPA as part of the WSSOU RI and historical data collected by the Montana Department of Environmental Quality (DEQ), will be part of a separate evaluation and further monitoring.*" It is unclear whether EPA intends to collect additional data to address data gaps in the Blacktail Creek risk assessment or how the decision to collect additional data will be made. Is further data collection planned for Blacktail Creek? What is EPA's plan to evaluate risk in Blacktail Creek? If these decisions are based on the draft SLERA, additional data should be included in the SLERA to better identify areas that pose potential ecological risk (see Comments 1, 2, and 3), to identify the need for site-specific data collection efforts, and to focus site-specific ecological risk assessments where warranted, as recommended by EPA guidance (EPA, 2001).

## Specific Comments

NRDP also has the following comments on the SLERA with respect to data analysis and statistical procedures.

Comment #5: The SLERA does not specify whether sediment results are reported on a dry- or wet-weight basis.

Comment #6: Section 4.2.1.2 states that field duplicate results were excluded from the analysis. A more conservative approach is to use the maximum of the normal and field duplicate sample results for analysis.

Comment #7: If an analyte was detected in fewer than 10% of all samples collected for a specific media, the method detection limit (MDL) was evaluated against the ecological screening value (ESV) to determine whether results are adequate for assessing risk. However, in some cases the detection frequencies of certain analytes are below this 10% threshold only for a specific watershed (e.g., silver in Blacktail Creek surface water). It does not appear that the refined screens conducted an evaluation of the MDL on a watershed-specific basis. In some cases (e.g., silver in Blacktail Creek surface water and silver and selenium in Blacktail Creek sediment) the MDL may be elevated above the ESV for the watershed and therefore the data are insufficient to understand risk.

**References**

DEQ, 2019. Standard Operating Procedure Sample Collection for Chemistry Analysis: Water, Sediment, and Biological Tissue WQDWQPBFM-02, Version 1.0.

Dodge, K.A., Hornberger, M.I., and Turner, M.A., 2018, Water-quality, bed-sediment, and biological data (October 2015 through September 2016) and statistical summaries of data for streams in the Clark Fork Basin, Montana: U.S. Geological Survey Open-File Report 2017–1136, 118 p. (available: https://doi.org/10.3133/ ofr20171136)

EPA 2001. Methods for Collection, Storage and Manipulation of Sediments for Chemical and Toxicological Analyses: Technical Manual, EPA-823-B-01-002. Office of Science & Technology, Office of Water, U.S. Environmental Protection Agency, Washington DC.

EPA 2001a. The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments, Publication 9345.0-14 Environmental Protection Solid Waste and EPA 540/F-01/014, U.S. Environmental Protection Agency, Washington DC.

Lawrence, C., Duh, D., Myers, J., and Pallop, T., 1997, "The Effects of grain Size and TOC on Marine Amphipods in Whole Sediment Bioassays," SETAC, 18th Annual Meeting, IT Corporation, 2200 Cottontail Ln, Somerset, NJ, 08873.

Ostrander, G.K., 1996, "Techniques in Aquatic Toxicology, Assessment of Sediment Toxicity at the Sediment-Water Interface," Techniques in Aquatic Toxicology 33: 609-624.

Shelton, L. and P. Capel, 1994. Guidelines for collecting and processing samples of stream bed sediment for analysis of trace elements and organic contaminants for national water-quality assessment program, Open-File Report 94-458. U.S. Geological Survey, Sacramento, CA.
(available: https://pubs.usgs.gov/of/1994/0458/report.pdf.)

## Ford, Jim

**To:** 'Nikia Greene (Greene.Nikia@epamail.epa.gov)'
**Cc:** Chapin Storrar (CDM); Reed, Daryl
**Subject:** RE: BTC Sediment

**From:** Ford, Jim
**Sent:** Tuesday, March 9, 2021 4:16 PM
**To:** 'Nikia Greene (Greene.Nikia@epamail.epa.gov)' <Greene.Nikia@epamail.epa.gov>
**Cc:** Chapin Storrar (CDM) <storrarcs@cdmsmith.com>; Reed, Daryl <dreed@mt.gov>
**Subject:** FW: BTC Sediment

Nikia,

I certainly appreciate you want to sample this year's spring run-off, which is just around the corner. We haven't seen a draft of your RI or work plan, so cannot fully comment on the adequacy of your data gap investigation, but I will reiterate Daryl's comment on the need for a robust stormwater data set (east and west of BPSOU) and offer a few thoughts on instream sediments. I will also say that I don't believe that the historic SW or sediment data supports that the high contaminant concentrations in Blacktail Creek upstream of BPSOU during run-off and storms events are in any way attributable to some sort of concept of naturally-occurring "background." I would suggest that a better use of resources would be on identifying any major contaminant sources, such as historic smelters that exist in West Side Soils OU, to the perennial creeks and addressing those sources. If you remember, BP-AR and the US and the State had a disagreement about how definitively to describe naturally occurring background in the BPSOU CD, and it seems that same lack of agreement would apply here. Spending a lot of time and resources on the old argument of "background" can be a rabbit hole.

Attached is how the State collects and analyzes SSTOU instream sediment data for (1) looking at remedy and restoration effectiveness and (2) to quantify the impacts from ongoing releases of contaminated sediments from the BPSOU, and additionally West Side Soils OU, to SSTOU. This sampling program and associated QAPP and SAP have been ongoing for many years, extend up to Father Sheehan Park in the West Side Soils OU, and were approved by EPA. Sediment samples are collected quarterly from depositional areas and analyzed for contaminant concentrations in three size fractions (<0.063 mm, 0.063-1 mm, and 1-2 mm) and for the weighted mean concentration among those size fractions and then compared to TECs and PECs. I would think the State would expect similar sample location identification, sample collection, sample preparation (sieving), and lab analysis for sediment data of West Side Soils OU (WSSOU). If the WSSOU data is to be used for any sort of eco-risk assessment type tasks, then following DEQ and AR-approved SOPs and sampling from depositional areas, as well as having size fractionation is of critical importance (DEQ, 2012 & AR, 1992).

Your current data sets for the perenniall creeks in WSSOU look unnecessarily thin in time and space, and would be helped significantly by including the decades of existing surface water, storm water, instream sediment, and instream sediment pore water data that exists in the WSSOU. This historic data could fill those gaps without any extra efforts. 40 CFR 300.430(b) (highlighting added) states that the first step in conducting the RI/FS is scoping. "*Scoping. In implementing this section, the lead agency should consider the program goal, program management principles, and expectations contained in this rule. The investigative and analytical studies should be tailored to site circumstances so that the scope and detail of the analysis is appropriate to the complexity of site problems being addressed. During scoping, the lead and support agencies shall confer to*

*identify the optimal set and sequence of actions necessary to address site problems. Specifically, the lead agency shall:*

*(1) Assemble and evaluate existing data on the site, including the results of any removal actions, remedial preliminary assessment and site inspections, and the NPL listing process.*

*(2) Develop a conceptual understanding of the site based on the evaluation of existing data described in paragraph (b)(1) of this section."*

I'm sure you guys have this all covered in your draft RI, SAPs, and QAPPs but just want to try and ensure there is no miscommunication.

Thanks, Jim

**DEQ (Montana Department of Environmental Quality), 2012a.** *Water Quality Planning Bureau field procedures manual for water quality assessment monitoring, version 3.2*, prepared by DEQ, Helena, MT. Available: http://www.deq.mt.gov/wqinfo/qaprogram/sops.mcpx. (February 18, 2014).

**AR (Atlantic Richfield Company), 1992.** *Clark Fork River Superfund site investigations: standard operating procedures,* prepared by AR, Anaconda, MT.

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**From:** Ford, Jim
**Sent:** Monday, March 8, 2021 12:53 PM
**To:** Chapin Storrar (CDM) <storrarcs@cdmsmith.com>
**Cc:** Reed, Daryl <dreed@mt.gov>; 'Greene, Nikia' <Greene.Nikia@epa.gov>
**Subject:** BTC Sediment

Chapin,

Our BTC sediment data is shown on Fig 3 and 5. RESPEC has been collecting SSTOU sediment concentrations for a long time that extends up to the Butte Country Club. You guys should have those annual reports. I did not mean to highjack the discussion but the Blacktail sediments just upstream of BPSOU are well above any levels of concern and these sediments are mobilized in high flows and storms. I'm not sure if this is considered time critical but given the additional work triggers in the BPSOU CD Surface Water Management Plan with instream sediments and the States surface water waivers of its standards biased primarily on West Side Soils OU producing SW to BPSOU over the SW standards this will probably need to be better understood and addressed in the FS.

Also I want to confirm that EPA is using bulk sediment sample concentrations with no sieving? My understanding is that most folks use the fine fraction (<0.063 mm) for the comparison.

Thanks, Jim

*Due to COVID 19 mitigation and social distancing measures I am working remotely out of the office; please use my cell phone or email for contact until further notice: (406) 439-2108*

Jim Ford
NRDP/DOJ
1720 9th Avenue
P.O. Box 201425

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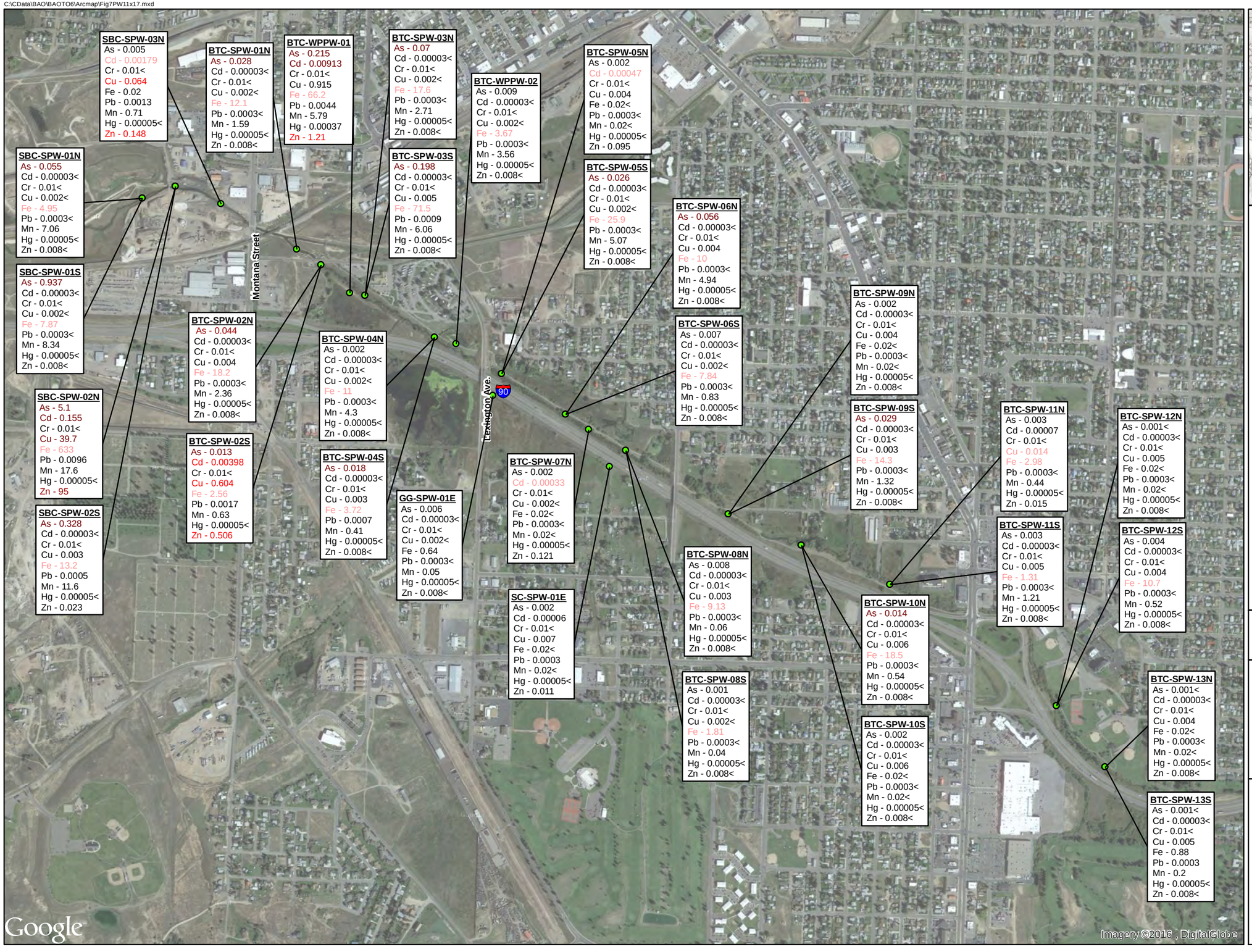


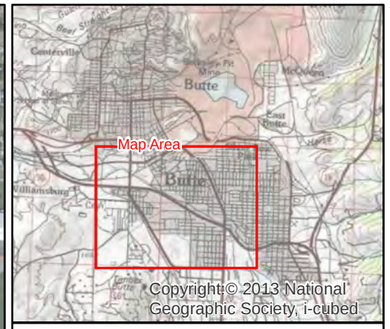


Sample Location
(Units in mg/L, analyzed and reported as dissolved metals)

Exceedances are based on Human Health Standard, Acute Standard and/or Chronic Standard.

**Value exceeds Human Health Standard**
**Value exceeds Acute Standard**
**Value exceeds Chronic Standard**

| | HHS | Acute | Chronic |
|---|---|---|---|
| Arsenic | 0.01 | 0.34 | 0.15 |
| Cadmium | 0.005 | 0.00052* | 0.000097* |
| Chromium | 0.1 | 0.579* | 0.0277* |
| Copper | 1.3 | 0.00379* | 0.00285* |
| Iron | -- | -- | 1 |
| Lead | 0.015 | 0.01398* | 0.000545* |
| Manganese | -- | -- | -- |
| Mercury | 0.05 | 0.0017 | 0.00091 |
| Zinc | 2 | 0.037* | 0.037* |

Notes: MDEQ Circular 7 Water Quality Standards converted from µg/L (parts per billion) to mg/L (parts per million)

* Hardness dependent metals aquatic life standards are based on an assumed hardness of 25 mg/L. Please refer to the pore water dissolved metals results table for sample specific hardness dependent standards.

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**In-Stream and Pond Sediment Pore Water Sampling**

**Silver Bow Creek and Blacktail Creek Corridors**

**Figure 7**

DEPARTMENT OF JUSTICE
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AUSTIN KNUDSEN
ATTORNEY GENERAL

1720 9TH AVENUE

STATE OF MONTANA

(406) 444-0205 (OFFICE)
(406) 444-0236 (FAX)

PO BOX 201425
HELENA, MONTANA 59620-1425

December 8, 2021

Mr. Nikia Greene
Remedial Project Manager
U.S. EPA Region 8 Montana Office
Federal Office Building, Suite 3200
10 W. 15th St.
Helena, MT 59626

Ms. Erin Agee, counsel
U.S. EPA Region 8
1595 Wynkoop Street
Denver, CO 80202

**Re: State of Montana Natural Resource Damage Program Comments on Future EPA Decisions that Could Impact Cost and Implementability of Constructing the Blacktail Creek Remedial Action within the BPSOU CD**

Dear Mr. Greene and Ms. Agee:

The State of Montana Natural Resource Damage Program wants to make EPA aware of issues it has identified and is concerned with which relate to EPA's Remedial Investigation of the West Side Soils Operable Unit and the remedial planning process for implementation of the Butte Priority Soils Operable Unit Consent Decree (BPSOU CD). Our concerns are narrow and focused. They relate solely to restoration funds, the effectiveness of the groundwater remedy which the State of Montana through the Natural Resource Damage Program has invested more than $36M to address, and costs under the BPSOU CD. We provide these comments now to allow EPA time to address any conflicts that may exist before decisions are made.

We would like to ensure that:

**A)** the remedial work on Blacktail Creek Site (BTC Site) being performed by the Montana Department of Environmental Quality is implemented as cost-effectively as possible. This is important because all the remaining funds from that effort (except for the $1 million commitment to Butte-Silver Bow,

per Memorandum of Understanding 2020-260, dated October 8, 2020), are intended to be available for restoration actions, as is specifically provided in Paragraph 21 of the BPSOU CD. The State is committed to providing a cost effective and fully protective remedy with the settlement funds;

**B)** there are no additional costs incurred by the State from potential impacts from the remedial activities (referred to as the "BTC Riparian Actions" in the BPSOU CD) on downstream sites, primarily the Butte Reduction Works Smelter Site Remedial Action (BRW Site); and

**C)** any project sequencing decisions made by EPA will not undermine or impact the BPSOU Surface Water Management Plan, Sediment Performance Monitoring (Exhibit 1 to Attachment A to Appendix D to the CD, Section 5). This sediment monitoring will evaluate the effectiveness of British Petroleum-Atlantic Richfield's (BP-AR's) groundwater capture systems at the BTC Site and the BRW Site to protect Silver Bow Creek and Blacktail Creek instream sediments and surface water from the existing contaminated groundwater discharge.

**Issue 1:**

NRDP and DEQ have documented and quantified over the last 15 years that instream sediments of Blacktail Creek within BPSOU and directly upstream of the BTC Site are contaminated with historic mine wastes. The State has collected this data to monitor the progress of the remedy and restoration of the Streamside Tailings Operable Unit (SSTOU) and while NRDP was investigating the contamination at the Blacktail Creek Site in 2015 - 2017. The most robust of these instream sediment quality sampling efforts on Blacktail Creek was performed by NRDP in 2016 (Attachment A).

There are instream sediment samples in Blacktail Creek in the West Side Soils Operable Unit (WSSOU) upstream of the BTC Site that exceed the BPSOU CD Surface Water Management Plan Table 8-1 for copper by 3 times (451 mg/kg) and zinc (Attachment A., Table 1). This contamination is part of the WSSOU and not the BPSOU.

Our understanding is that EPA is the lead for WSSOU, storm water, and Blacktail Creek in this area of WSSOU. If that is correct, what is the plan to address this waste source, pathway, and ultimately sequencing issue to make sure these wastes do not recontaminate the BTC Site and ultimately the corridor if left unaddressed? How does EPA plan to distinguish upstream contamination when considering the effectiveness of the groundwater capture system(s)?

**Issue 2:**

BP-AR has been clear in design meetings that it would like to construct the Butte Reduction Works Smelter Site (BRW Site) as its first major construction project following construction of a small sedimentation basin at Grove Gulch.

Constructing a downstream project that involves removing the entire creek bed, banks, and floodplain before upstream projects that involve removing wastes from the entire floodplain on a fluvial system such as this poses a significant risk of downstream recontamination. There are instream sediment samples in the BTC Site that exceed the BPSOU CD Surface Water Management Plan removal criteria for copper by 39 times (5,890 mg/kg) and zinc by 14 times (6,510 mg/kg) (Attachment A, and Table 1).

If EPA allows BP-AR to construct the BRW Site before the BTC Site, Diggings East Stormwater treatment basin or other upstream projects are constructed and recontamination of the BRW Site sediment occurs (as would be expected), it creates confusion about the source of the contamination. Although the consequences of this confusion would require a careful review of the BPSOU CD, we see two likely results. First, it could be difficult or impossible to determine that the Butte Reduction Works Smelter Area Mine Waste Remediation and Contaminated Groundwater Hydraulic Control portion of the required remedy is complete, because not all of the contaminated sediments would be removed in the BRW area. Second, it would make it difficult to determine whether the BRW Contaminated Groundwater Hydraulic Control is functioning and whether BP-AR has adequately controlled discharge of contaminated groundwater to surface water and sediments in BPSOU, as required by Attachment C to Appendix D of the BPSOU CD.

Recontamination from upstream projects is likely regardless of when the BTC Site construction occurs. Instream sediment contamination from the BTC Site will transport to the BRW Site every year regardless of when construction occurs (Attachment B). Also, this situation should not preclude the full utilization of the Surface Water Management Plan instream sediment performance triggers for evaluating the effectiveness of BP-AR groundwater capture system specifically at the BRW Site (Table 1).

**Issue 3:**

The BTC groundwater capture system that BP-AR is required to construct should be fully functional prior to the State's construction of the BTC Riparian Actions (Attachment B). If the BTC Riparian Actions are constructed prior to this groundwater control, contaminated groundwater could recontaminate the instream sediments. BP-AR has recently acknowledged this sequencing necessity in its latest schedule, as is required by Exhibit 1 to Appendix D of the BPSOU CD. We thought it prudent to restate it here.

**Issue 4:**

It is clear from the attached figures that the Digging East Stormwater Basin (DESB) (Attachment D) and Buffalo Gulch Stormwater Basin (Attachment C) will both need to be constructed and functioning prior to the State's BTC Riparian Actions work. Without these capture and treatment systems in place, contaminated sediments would continue to be transported by Silver Bow Creek above the confluence to the BTC Site, specifically the confluence area. Clearly, as in other cases,

these upstream historic mine waste contaminant sources and pathways need to be addressed prior to implementation of downstream waste removal projects.

**Issue 5:**

Paragraph 35 of the BPSOU CD states that "AR will take the State's BTC Riparian Actions construction de-watering water at the Butte Treatment Lagoons to the extent treatment is needed and at times when the volume and chemistry of such water will not overwhelm the Butte Treatment Lagoons' capacity and/or prevent it from meeting discharge standards, as approved by EPA during Remedial Design." Consistent with this provision, the BTC Riparian Actions must be scheduled at a time when there is BTL capacity and it is not being used for the other remedial actions, so that BP-AR is able to take all BTC Riparian Action dewatering water that requires treatment.

In summary, sequencing of the various BPSOU remedial projects is of critical importance and if done incorrectly could potentially recontaminate downstream BPSOU sites. This also applies to Blacktail Creek contamination within West Side Soils OU. These sources/pathways could negatively impact the cost of the BTC Site remedial work and the funds remaining for restoration purposes.

Please let me know if you have any further questions or would like to meet to discuss these concerns in further detail.

Sincerely,

Jim Ford
Natural Resource Damage Program
Montana Department of Justice

cc:

Harley Harris; NRDP
Katherine Hausrath; NRDP
Ray Vinkey; NRDP
Chris Wardell; EPA
Dana Barnicoat; EPA
Joe Vranka; EPA
Jon Morgan; DEQ counsel
Jenny Chambers; DEQ
Carolina Balliew; DEQ
Matt Dorrington, DEQ

Wil, George, DEQ
Daryl Reed; DEQ
John Gallagher, BSBC
Eric Hassler; BSBC
Loren Burmeister; AR
Josh Bryson; AR
Jean Martin; Counsel AR
Mave Gasaway; attorney for AR
Gary Icopini; MBMG
David Shanight, CDM Smith
Curt Coover, CDM Smith
Chapin Storrar; CDM Smith
Ian Magruder; CTEC

**References:**

Tetra Tech, **Data Gap Investigation - Silver Bow Creek and Blacktail Creek Corridors**, July 21, 2016

RESPEC, **Monitoring Report for 2020 Streamside Tailings Operable Unit Silver Bow Creek/Butte Area NPL Site**, Prepared for MDEQ and MDJ/NRDP

**BPSOU Surface Water Management Plan** Exhibit 1 to Attachment A to Appendix D to the Consent Decree

# Table 1

Consent Decree for the Butte Priority Soils Operable Unit
Partial Remedial Design/Remedial Action and Operation and Maintenance

**Table 8-1. Probable Effect Concentrations for Sediment (Ingersoll *et al.* 2000, MacDonald *et al.* 2000)**

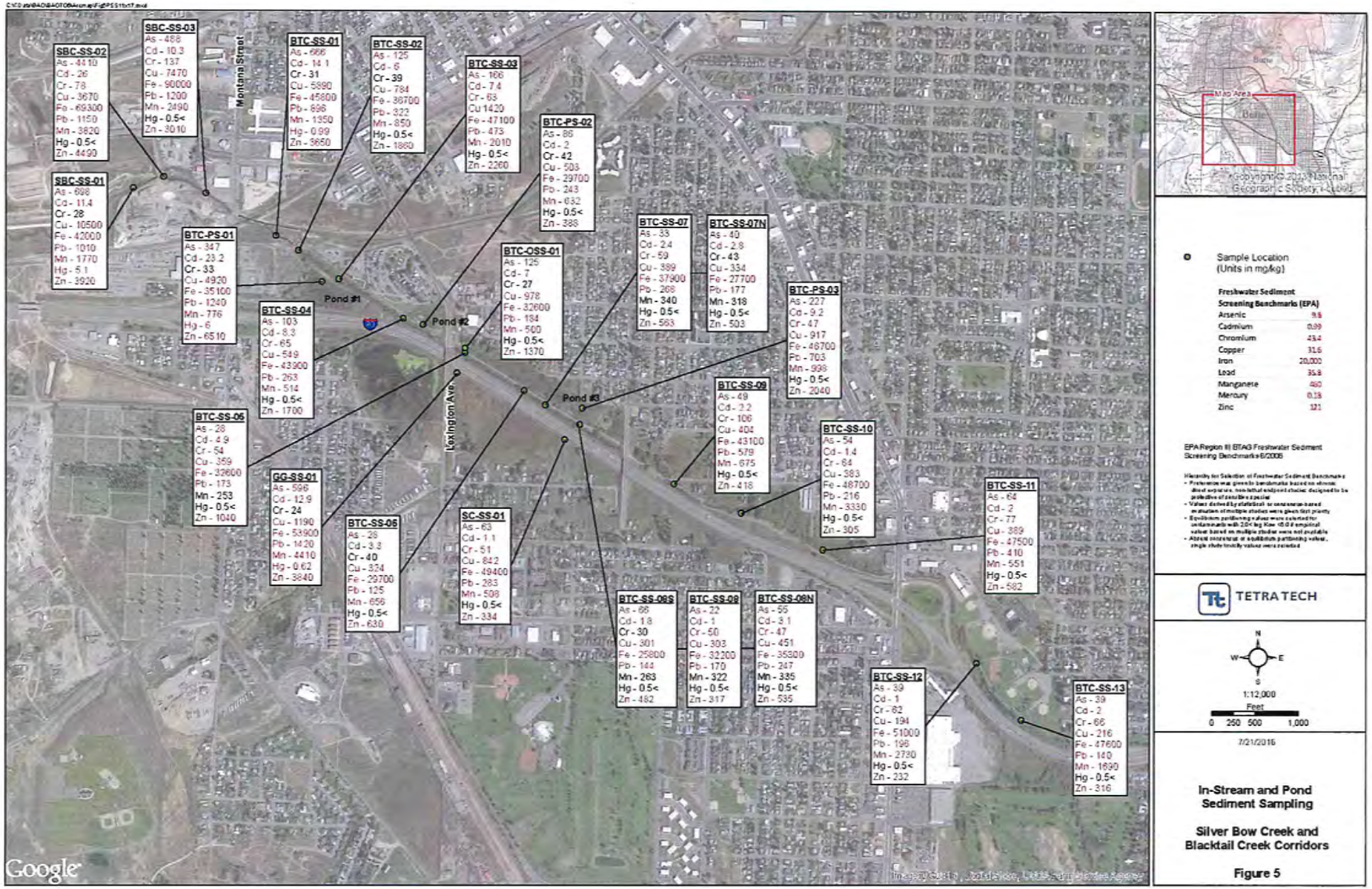
| Contaminant of Concern | Probable Effect Concentration (mg/kg, dry weight, bulk sample) |
|---|---|
| Arsenic | 33 |
| Cadmium | 4.98 |
| Copper | 149 |
| Lead | 128 |
| Mercury | 1.06 |
| Zinc | 459 |

mg/kg – milligram per kilogram

**Table 9-1. SWMP Lines of Evidence for Additional Groundwater Hydraulic Control**

| Medium | Metric | Criteria |
|---|---|---|
| Monitoring | | |
| Sediment | Bulk sample (<2mm) contaminant concentrations | Probable Effects Concentrations (PECs, Table 8-1). Exceedance of PECs will be considered a "sediment deviation" and will trigger a preliminary diagnostic investigation and quarterly sediment monitoring unless the contaminated sediment is removed. |
| Surface Water (Normal Flow) | Contaminant concentrations | Surface water compliance exceedances during normal flow will trigger a diagnostic evaluation. |
| Diagnostic Response Investigation | | |
| Sediment | Bulk sample (<2mm) contaminant concentrations | Statistically significant trends of quarterly COC concentrations per depth interval, that indicate sediments will continue to exceed PECs as a result of contaminated GW discharge. |
| Surface Water (Normal Flow) | Contaminant concentrations | Statistical trends or significant differences of contaminant concentrations between adjacent performance monitoring stations |
| Groundwater | Hydraulic gradient | Interpret groundwater gradient between surface water and adjacent groundwater to determine the potential for contaminated groundwater to impact surface water and sediment quality |
| Groundwater | Contaminant concentrations | Document groundwater COC concentrations adjacent to surface water areas of evaluation and the potential for contaminated groundwater to impact surface water and sediments quality. |
| Pore Water | Contaminant concentrations | Interpret contaminant concentrations from within the hyporheic zone to inform potential source of contamination. |

# Attachment A



# Attachment B

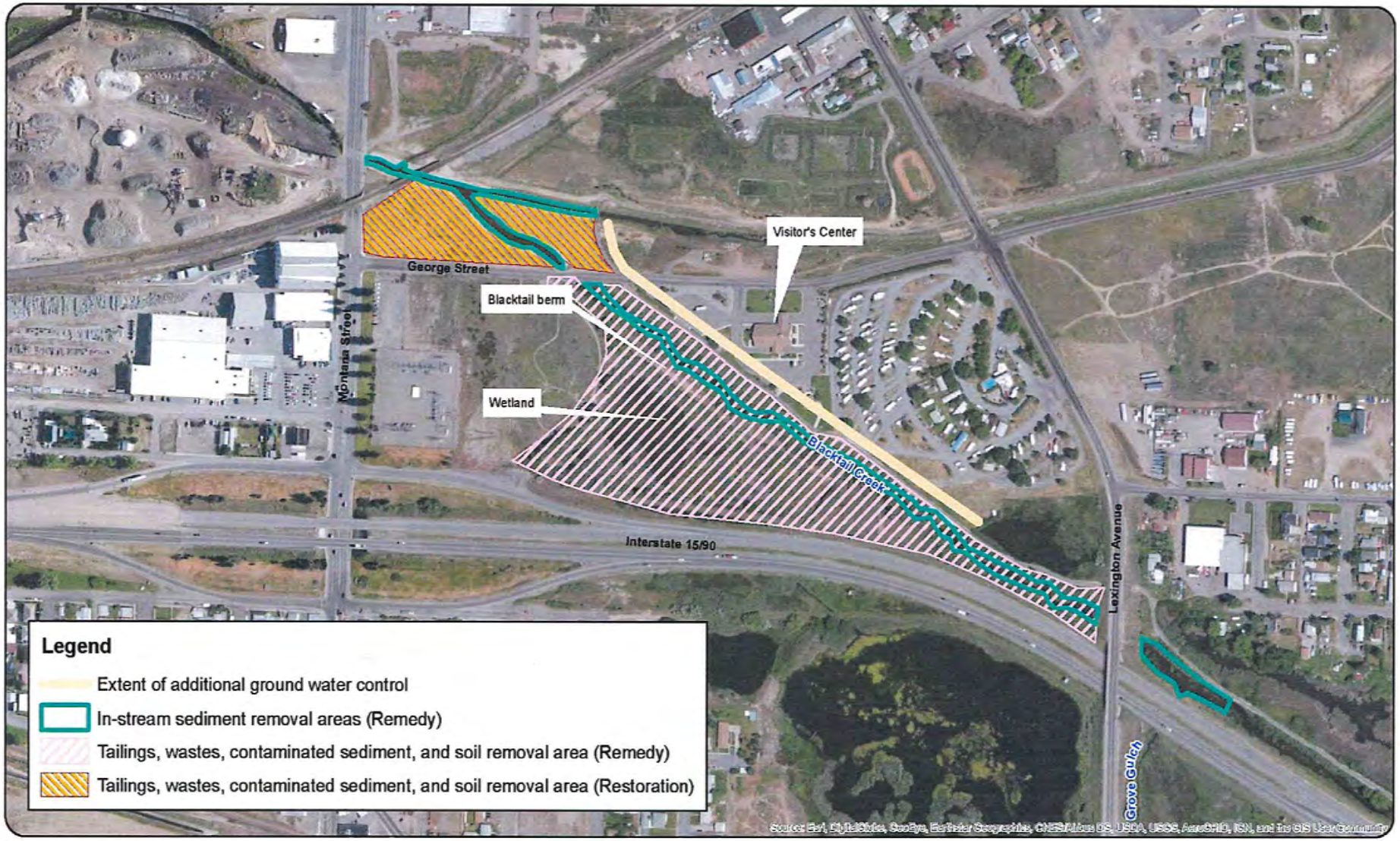



**Figure BTC-1**
**Blacktail Creek**
**Remedial Action Plan**

**Conceptual**
Features, boundaries, and areas indicated are conceptual.

# Attachment C

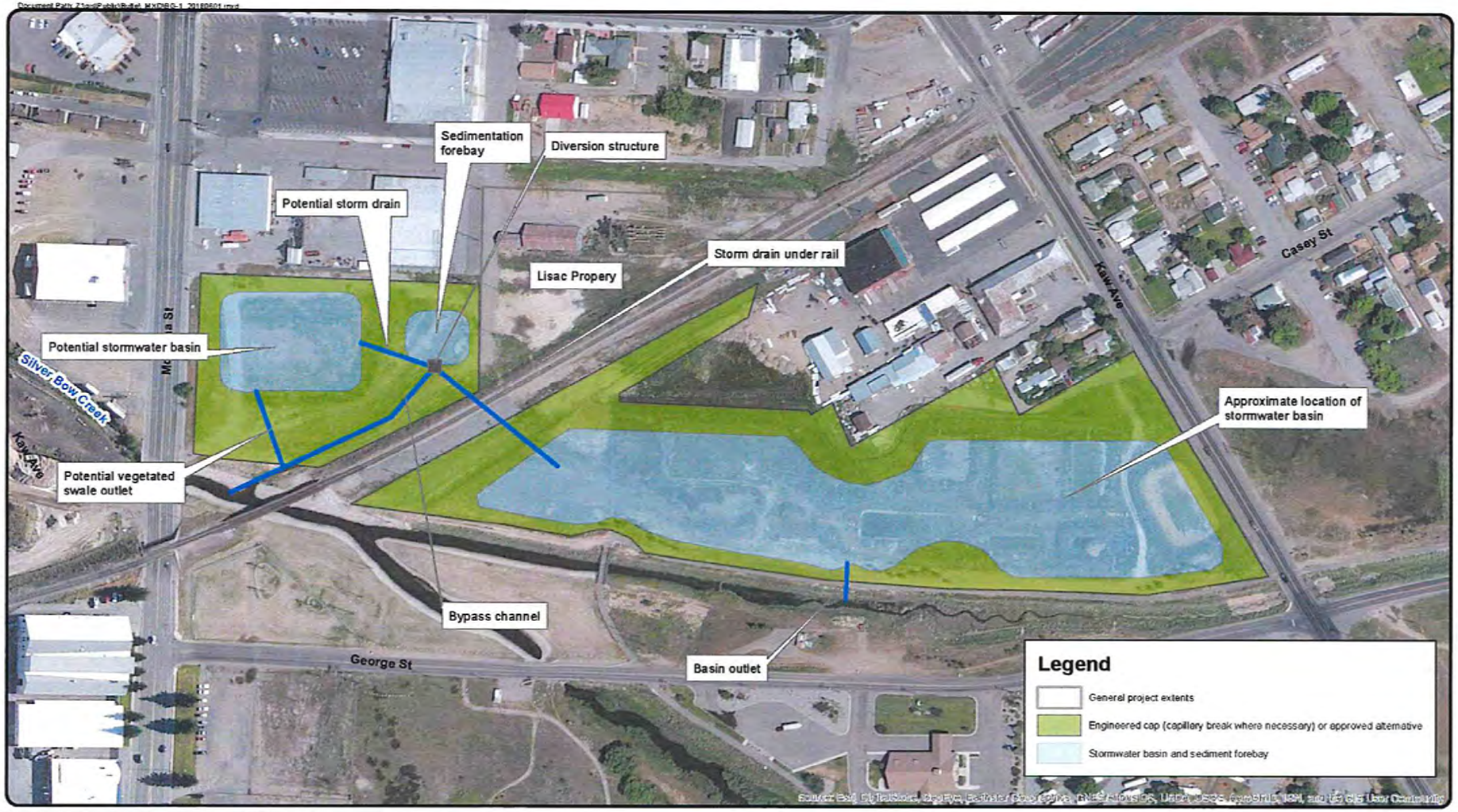



**Figure BG-1**
**Buffalo Gulch**
**Remedial Action Plan**

**Conceptual**
Features, boundaries, and areas indicated are conceptual.

# Attachment D


**Figure DE-1**
**Diggings East**
**Remedial Action Plan**

**Conceptual**
Features, boundaries, and areas indicated are conceptual.

N
COORD SYS ZONE: MT SP
DATUM: NAD83
UNITS: FEET

0 150 300 600 Feet