

**REGION 8**

DENVER, CO 80202

December 6, 2023

Doug Martin
Acting NRDP Program Manager
EPA Response to NRDP Comments
Montana NRDP
Helena, MT 59620

Re: The EPA's Response to NRDP Comments on EPA's Position on the Use of Onsite Material as General Fill at Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site.

Please see the NRDP Comments below and the Environmental Protection Agency responses to them.

NRDP Comments:

Thank you for the opportunity to comment on EPA's Position on the Use of Onsite Material as General Fill at Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site ("Position"). As you are aware, the State has previously provided comments to EPA on many of the components of this proposal. EPA has provided responses to some of the legal aspects of our comments, but the technical components have not been addressed in EPA's Position.

As stated previously to EPA, if EPA does not require that all fill (whether generated on site or imported from offsite) meet Table 2 criteria (the "Backfill Material Suitability Criteria" table) for all contaminants and other criteria, NRDP requests that a site-specific analysis of the proposed use of this new category of higher contaminant concentration general fill be conducted that evaluates the protectiveness of the fill and the location-specific requirements for its onsite use. We believe this analysis is necessary to provide the protective remedy contemplated in the BPSOU Consent Decree. Without the specifics on the location-specific controls and analysis of protectiveness, NRDP cannot evaluate whether this proposal is protective and a modification to the BPSOU CD.

NRDP has three major concerns with EPA's Position, in addition to specific comments:

1. NRDP does not agree that EPA can modify written components of the BPSOU CD, including the FRESOW, other than by following Paragraph 27 of the BPSOU CD. Accordingly, NRDP requests clarification on the extent and locations EPA intends to approve the use of this new category of higher contaminant concentration general fill prior to providing the necessary details and constraints on its use. Is EPA proposing Scenario A or Scenario B, below?

Scenario A: If EPA is proposing to use this new category of higher contamination general fill above of the wetted perimeter of the basins, and above the 3-year high groundwater elevation, but still below the basins (i.e., this appears to only be the basin berms), then we recognize that this is consistent with EPA's previous legal position on how this complies with the BPSOU CD (see Attachment A).

Scenario B: If EPA is proposing to use this new category of higher contaminant concentration general fill in locations besides underneath the Diggings East and Buffalo Gulch stormwater basins (including associated inlet and outlet structures), or underneath the Grove Gulch and Northside Tailings sedimentation basins, then we believe this is inconsistent with EPA's previous legal position (see Attachment A) and a change to the BPSOU CD. If there is a different basis in the BPSOU CD that allows for use of this fill in different portions of BPSOU, we have not seen this legal analysis and request that EPA provide this analysis.

The following comments apply to Scenario B. The State has previously commented that use of onsite fill that contains contaminant concentrations exceeding the Table 2 (the "Backfill Material Suitability Criteria" table, Criteria B General Fill) criteria conflicts with the BPSOU Consent Decree requirements, and that the Paragraph 27 modification provisions must be followed. EPA's response (see Attachment A) was that this new category of higher contaminant concentration general fill exceeding the numeric criteria in Table 2 (the "Backfill Material Suitability Criteria" table for BPSOU) could be used anywhere that "General Fill" could be used, as long as it met the non-contaminant criteria in Table 2. However, Table 2, Footnote 2, states, "Criteria B applies to structural fill below DE and BG stormwater basins (including associated inlet and outlet structures), [and] GG and NST sedimentation basins (including inlet and outlet structures as appropriate)." Criteria B fill is not allowed to be used anywhere else but below the basins.

Part of EPA's Position seems to directly contradict this portion of Table 2 of the FRESOW and its location-specific controls for Criteria B General Fill. Specifically, EPA is proposing to use this new category of higher contaminant concentration fill, "in areas outside of the stormwater basin's/sedimentation bay's wetted perimeter (i.e., the area of the basin/bay high water level)." EPA is also proposing an 18-inch cap over this new category of higher contaminant concentration fill, which seems to imply that it is not only being used under the basins as required in Table 2. Please clarify.

NRDP agrees that this new category of higher contaminant concentration general fill should not be used in the areas the State determined it was most at risk of contaminating groundwater (i.e., under the stormwater basins). However, these sorts of alterations to the FRESOW (e.g.,

changing Table 2, Footnote 2) constitute a modification and EPA must follow the requirements of Paragraph 27 of the Consent Decree.

2. EPA has not explained how it will assure that this proposed set of practices are protective of groundwater, surface water, and vegetation resources. EPA's evaluation of protectiveness should be included in any final Position. At the end of the comments, we are requesting additional information to evaluate the protectiveness of the Position. Based on the information currently available, NRDP cannot agree that the current draft Position is protective; additional detail is provided in the specific comments below.

Primarily, we do not agree that the Position includes enough detail to determine the protectiveness of the leaching to groundwater contaminant pathway. The Position does not represent everything technically practicable to address contamination in groundwater as it allows a new contaminant source to groundwater (See comment 3 below). EPA guidance and other State guidance demonstrate that the concentrations of contaminants in this new category of higher contaminant concentration general fill are many times higher than is typically allowed or deemed protective of groundwater (see Attachment B).

3. The Position leaves many critical issues that the State previously agreed to in the BPSOU CD and included in the FRESOW to EPA's sole discretion to make at some later date. The Position states, "[t]he Backfill Material Characterization and Reuse Plans mentioned above will describe the additional location-specific requirements and any other appropriate design parameters for where onsite material may be used as general fill within the appropriate project areas." The discussion thus far has been limited to what criteria on-site backfill material must meet to be used under the stormwater or sediment basins. EPA's statement above introduces further changes to general fill requirements throughout the operable unit. NRDP does not agree with this approach, and instead urges EPA to adhere to the requirements outlined in the FRESOW unless and until those requirements are shown not to be protective of human health and the environment.

The sentence quoted above appears to imply that EPA is deferring potential changes to the BPSOU Consent Decree to be decided at a later date in a CD deliverable. NRDP does not agree that this is an appropriate process for documenting the protectiveness of this proposed change.

Further, understanding the sampling methodology for identifying waste, fill, and this new higher contamination fill is critical to evaluating protectiveness. NRDP would suggest that when EPA has completed each project-specific draft Backfill Material Characterization and Reuse Plan that these questions and concerns then be vetted with the other CD signatories and the public. These draft Backfill Material Characterization and Reuse Plans should be developed as early as possible in the design process for each location. (For example, we have not seen any of these backfill plans for any of these locations, yet EPA said at the August 30 meeting that it planned to have all designs completed by 2025.)

EPA Response:

The EPA thanks NRDP for its comments on the EPA's position paper on the use of onsite material at Butte Priority Soils Operable Unit (BPSOU) of the Silver Bow Creek/Butte Area Superfund Site. In this letter, the EPA will respond to the three main comments in NRDP's letter related to authority to use onsite material, protectiveness of the proposed remedy, and the design process, and will follow with a series of question-by-question responses to NRDP's specific comments.

As stated in the position paper, the EPA is committed to complying with the BPSOU Consent Decree (CD) and is not proposing any CD modification at this time. The EPA is not proposing any changes to the general fill requirements and is not creating a new category of fill.

The EPA is not creating a new category of fill because the BPSOU CD already authorizes the use of onsite material as general fill in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of the Further Remedial Elements Scope of Work (FRESOW), which is Attachment C to Appendix D to the CD.

This language was reviewed and agreed to by all signatories to the CD. The EPA has proposed the use of onsite material as general fill in three project areas: Diggings East, Buffalo Gulch, and North Side Tailings. Any appropriate design details, such as location-specific controls, will be included in the Backfill Material Characterization and Reuse Plans, which will be submitted by Atlantic Richfield Company (AR) for review and input from the other CD signatories as well as the public before being finalized as enforceable design documents under the CD.

NRDP's comments regarding "Scenario A" and "Scenario B" indicate further discussion with the technical team in the publicly-observable Materials Management and Remedial Design/Remedial Action Progress meetings will be useful to work through the appropriate design parameters for general fill. For example, footnote 2 in Table 2 and the vegetation parameter for Criteria B are two pieces among many which relate to the use of general fill at BPSOU that will be important to work through as a technical team. The EPA looks forward to having NRDP's expertise and input in those publicly-observable discussions.

With regard to NRDP's second point about ensuring practices are protective of groundwater, surface water, and vegetation resources, the EPA is committed to ensuring BPSOU cleanup decisions are and will be protective of human health and the environment. As an initial matter, it is important to note that onsite material is material currently on site which does not exceed the CD's waste identification criteria and, therefore, is not required to be disposed in a repository. As to protection of BPSOU groundwater, the BPSOU remedy will ensure protectiveness in several ways, including but not limited to: (1) existing groundwater capture and treatment at Northside Tailings, Diggings East, and Buffalo Gulch; (2) optimization of the existing groundwater capture and treatment system; (3) additional planned groundwater capture and treatment at Blacktail Creek and Butte Reduction Works; (4) contingencies to

extend groundwater capture to prevent contaminants from leaching into groundwater, as well as groundwater and surface water monitoring, both of which include triggers for additional diagnostic evaluation through the Surface Water Compliance Determination Plan and Surface Water Management Plan. The CERCLA five-year review process will also be used to ensure ongoing protectiveness of the remedy. While it is not possible to return the area to pre-mining conditions, the EPA is committed to ensuring the remedy is protective and will work with the fellow signatories to the CD to build in these types of layered strategies to manage groundwater contamination.

With regard to the process, parties to the BPSOU Consent Decree required Backfill Material Characterization and Reuse Plans, which provide a method to document the design details related to the use of onsite material as general fill. The final decisions on where onsite material may be used as general fill for each applicable remedial element will take place during the review and approval process of the Backfill Material Characterization and Reuse Plans, during which the EPA, in consultation with DEQ, will review the draft plans submitted by Atlantic Richfield, and input will be addressed prior to approval. Once approved, these design details and any restrictions on the use of onsite material will be memorialized in the Backfill Material Characterization and Reuse Plans and enforceable under the BPSOU CD.

The EPA also continues to ensure the public has ample opportunity to engage regarding BPSOU design decisions. The most recent effort to achieve this has been opening the Remedial Design/Remedial Action Progress meetings for public observation. We are piloting opening these meetings for public observation, along with the Materials Management meetings and the Groundwater Modeling meetings, at least through the end of the year to provide additional opportunities for the public to engage with the CD signatories regarding BPSOU design decisions. The EPA is carefully considering the input we receive and is working to address it where appropriate and consistent with the BPSOU CD, in consultation with DEQ.

Please find additional information in response to specific items in NRDP's letter below. The EPA appreciates NRDP's time and effort to provide feedback on the position paper, and we look forward to NRDP's continued involvement in the process. We value input from our partners, stakeholders, and community members, all of whom share our commitment to an effective, protective, and expeditious cleanup for Butte.

Specific Comments (NRDP):

Comment 1: On August 18, 2023, NRDP previously provided this comment on a draft of the Position.

“How is material found onsite reused at Superfund sites? Material found onsite has also been reused at other remediation and restoration projects in Montana, such as the Clark Fork River site and the Parrot Tailings project.”

We again request that EPA edit this statement to be clearer and accurate. The issue is not using fill from onsite or generally where the source of the fill is; rather it is the maximum contaminant concentrations allowed in that fill that NRDP finds most problematic.

The contaminant concentrations allowed in fill generated onsite at the Parrot Tailings Waste Removal Project (Parrot Project), and the Clark Fork OU (CFROU), are significantly lower than what EPA would allow here. We have previously provided EPA with the relevant information about the maximum allowable contaminant concentrations of the fill used at the Parrot Project and the Clark Fork River OU (CFROU) remedial action. The comparisons are in the following table:

In the case of the Parrot Project and the CFROU, the same numeric criteria were applied to onsite fill as to imported fill because the source of the fill is irrelevant. In the case of the CFROU, the ROD requires a total concentration of less than 484 mg/kg. The Parrot Project fill criteria required a total concentration of less than 3,230 mg/kg. In its BPSOU Position, EPA would approve the use of a maximum allowable total contaminant concentration of 11,230 mg/kg, which would be considered waste and removed as “waste” in the Parrot Project and the Clark Fork River OU.

EPA Response:

The EPA understands NRDP’s request to edit the statement regarding the use of “material found onsite” at the Clark Fork River Site and the Parrot Tailings project. As the EPA explained during the August 30, 2023, public meeting, the purpose of explaining that other Superfund sites and restoration projects in Montana use “material found onsite” in their projects is to demonstrate that the use of material found onsite is not an issue that is unique to BPSOU. The purpose of such a statement was, and is, not to say the contamination or clean-up goals between BPSOU, the Parrot Tailings project, and the Clark Fork River Site are the same. The EPA made this clear during the August 30, 2023, public meeting and reiterates that message here.

The EPA disagrees with NRDP’s contention that the maximum contaminant concentrations of onsite material are “problematic.” Risk from metals is not calculated by summation; rather, risk from each metal is determined individually based on toxicity profiles, dose, and effects on human health. The EPA reiterates this explanation about risk from the Position Paper because it appears NRDP is comparing the potential contaminant concentrations of onsite material to what is considered “waste” at other remedial and restoration projects to express a concern that the higher metals concentrations could potentially lead to higher risk. If the EPA has misinterpreted NRDP’s concern, the EPA welcomes a clarification and offers the following regarding NRDP’s comparison between the contaminant levels at BPSOU, the Clark Fork River OU, and the Parrot Tailings project: The fact that what is considered “waste” in the Parrot Project and what is considered “waste” at the Clark Fork River OU are different from each other, and those two are different still from what exceeds the waste identification

criteria at BPSOU, does not demonstrate that it is not protective to use onsite material as general fill at BPSOU. The onsite material referred to in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of the FRESOW, by its definition, is material that does not exceed the BPSOU waste identification criteria, and therefore, is not required to be disposed in a repository. NRDP, as a signatory to the BPSOU CD, reviewed and agreed to this BPSOU waste identification criteria, which is the same criteria as the state-led Streamside Tailings OU. In so doing, NRDP agreed that what would exceed the waste identification criteria at BPSOU would be different from what is considered “waste” at both the Clark Fork River OU and the Parrot Tailings project. In agreeing to the BPSOU waste identification criteria, NRDP also agreed that the concentration of 11,230 included in NRDP’s table would not be considered “waste” at BPSOU. The fact that a metals concentration of 11,230 would be considered “waste” at other remedial and restoration projects is not, in and of itself, relevant to whether use of onsite material as general fill is protective of human health and the environment at BPSOU. The EPA in consultation with DEQ, and in coordination with the rest of the BPSOU CD parties, is charged with ensuring such protection exists, and we value NRDP’s continued input throughout that process.

Comment 2 (NRDP): On August 18, 2023, NRDP previously provided this comment on the draft of the Position.

“How is onsite material characterized for potential use as general fill? Initial characterization of materials located at the Northside Tailings, East Buffalo Gulch, and Diggings East project areas was conducted between 2019- 2023 to estimate the volume of waste that may need to be disposed in a repository and the volume of materials that could be suitable for use as general fill within the project areas depicted below.

Preliminary design and modeling efforts indicate that onsite material could comprise roughly 25-35% of the general fill to be used at the Northside Tailings, East Buffalo Gulch, and Diggings East project areas.” (1)

1 EPA states in the Proposal that this increases “public safety by reducing haul truck traffic on public roads by approximately 6,000-14,000 truckloads.” As noted, we have not seen the volume estimations that support this statement but suggest that if offsite backfill is obtained from the same location as the waste repository (e.g., from Montana Resources), the haul trucks could simply return full of backfill after dumping the waste at the repository as was performed at the Parrot Project. Risk from haul traffic on public roads can also be controlled by using onsite project-specific roads (as used on the Parrot Project), conveyer systems, trains (as used on Streamside Tailing OU and the Milltown OU), or slurry pipeline (as is the case for Montana Resources daily tailings waste disposal).

NRDP has not been provided and are not otherwise aware of any estimates of fill and waste volumes for any project areas or any other basis for this statement. We request that EPA provide these volume estimates and a reference in this document so that this assertion may be better understood.

EPA Response:

This preliminary estimate of 25-35% is based on data provided to all CD parties including NRDP in the [“Draft Final Butte Priority Soils Operable Unit \(BPSOU\) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design”](#) and the [“60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report.”](#) These were provided by AR in December 2020 and December 2022, respectively.

Comment 2 Continued (NRDP): NRDP notes that the study performed by MBMG in 2013 indicated that most of the fill overlying the waste at Diggings East was composed of demolition debris (wood, bricks, concrete, asphalt, etc.). As noted in footnote 3 of Table 2, these materials have to meet the contaminant criteria to be used as backfill. “Inert solid wastes and construction debris includes only unpainted masonry brick, dirt, rock, and concrete, and shall meet metals criteria in Table 2. Concrete size shall not exceed 3 feet by 3 feet.” The State reads this as requiring all contaminant criteria (i.e., “metals”) be met (not simply the “other” non-contaminant criteria of Table 2).

EPA Response:

The EPA’s July 10, 2023, email responded to this same comment regarding construction debris. As previously noted the footnote 3 language in Table 2 applies to a specific subset of material and is consistent with the EPA and DOJ’s understanding of the CD’s onsite material language.

Comment 3 (NRDP):

“During construction, any onsite material that is identified as potentially suitable for general fill will undergo extensive sampling and analysis to confirm that it meets the protective parameters and criteria in the flow diagram below and therefore is in fact suitable to be used as identified in project area work plans also described below. The BPSOU CD specifies if three of the six contaminant criteria listed are exceeded or any one contaminant is above 5,000 mg/kg, then the material is considered tailings, waste, or contaminated soil. Any such material cannot be used as general fill. Preliminary design and modeling efforts indicate that onsite material could comprise roughly 25-35% of the general fill to be used at the Northside Tailings, East Buffalo Gulch, and Diggings East project areas. Estimates will continue to be updated as the project moves further through design.”

It would be helpful to NRDP and the public if EPA would provide additional details about the sampling and analysis plans. The sampling methodology for identifying onsite materials as waste, fill, capping or this new category of higher contaminant concentration general fill that exceeds general fill criteria of Table 2 is crucial to understanding the protectiveness of the draft Position.

EPA Response:

First, as explained above, the EPA has not created a new category of fill. The basis for the volume estimations is derived from the predesign investigation in the [“Draft Final Butte Priority Soils Operable Unit \(BPSOU\) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design”](#) and the [“60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report.”](#) These were provided to all

CD parties by AR in December 2020 and December 2022, respectively. Additionally, the BPSOU CD authorizes the use of onsite material as general fill in sections 1.1.3, 1.4, 2.1.3, 2.4, 3.1.3, 3.4, and 4.3 of the FRESOW. All CD parties, including NRDP, reviewed the language that authorizes such use and agreed to it. The sampling methodology and analysis plans will be included within the Backfill Material Characterization and Reuse Plans to be submitted by AR per the BPSOU CD and available to the CD parties and the public for review. Once these are received, any deficiencies will be identified by the EPA in consultation with DEQ, and the draft plans will be shared and discussed during technical meetings before being finalized and enforceable under the CD. The EPA's review of the sampling and analysis plans in consultation with DEQ will be informed by any relevant guidance as well as Section X of the BPSOU CD.

The EPA's estimate for truck loads was based on the data previously provided to all CD parties including NRDP in the "Draft Final Butte Priority Soils Operable Unit (BPSOU) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design" and the "60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report." These were provided by AR in December 2020 and December 2022, respectively.

Comment 4 (NRDP): On August 18, 2023, NRDP previously provided this comment on a draft of the Position.

"It has been suggested that the risk of using onsite material as general fill is 3.5 times higher than the risk of using imported general fill because, in theory, the onsite material could have 3.5 times higher metals concentrations than the imported general fill. This suggestion is inaccurate; the initial data collected regarding the onsite material (available at Silver Bow Creek/Butte Area EPA website) shows that the onsite material potentially suitable as general fill does not contain metals concentrations that are 3.5 times higher than the metals concentrations applicable to imported general fill. In addition, risk from metals is not calculated by summation and so to add up metals concentrations and suggest that the risk automatically follows that cumulative number is not accurate; risk from each metal is determined individually based on toxicity profiles, dose, and effects on human health. Remedies address the risk of each metal because metals are most often co-located with each other, so addressing the metal with the highest risk also addresses other metals that may also be present."

NRDP did not suggest or state that the "risk" is 3.5 times greater; rather it noted that the allowable contaminant levels would be 3.5 times higher, which is an accurate statement. In fact, risk is not always linear, which is our point: the relationship between contaminant levels and risk in this situation simply has not, in any publicly known way, been analyzed and determined by EPA. NRDP requests that EPA perform an evaluation of risk of your proposal and publicly provide that evaluation for review.

EPA Response:

Risk is the product of exposure and hazard. To evaluate risk, there must be exposure. Because the public will not come into contact with any potential onsite material used as general fill, there is no exposure. The remedy addresses potential risks to surface and groundwater through, among other remedy components, existing and future groundwater capture systems.

Comment 5 (NRDP): On August 18, 2023, NRDP previously provided this comment on a draft of the Position. This comment was not incorporated by EPA before releasing it to the public; instead, EPA simply added “(available at Silver Bow Creek/Butte Area EPA website).” NRDP has attempted to locate this information and would request further information on where to find it (i.e., a link to a document would be helpful).

“the initial data collected regarding the onsite material (available at Silver Bow Creek/Butte Area EPA website) shows that the onsite material potentially suitable as general fill does not contain metals concentrations that are 3.5 times higher than the metals concentrations applicable to imported general fill.”

We recommend providing the source of this statement in a reference or preferably delete this sentence. Maximum thresholds for contaminant concentrations for solid materials/soils and water should be set at levels that are protective of human health and the environment; protection of the environment should not rely on an assumption that the contaminants will be significantly below the allowed levels.

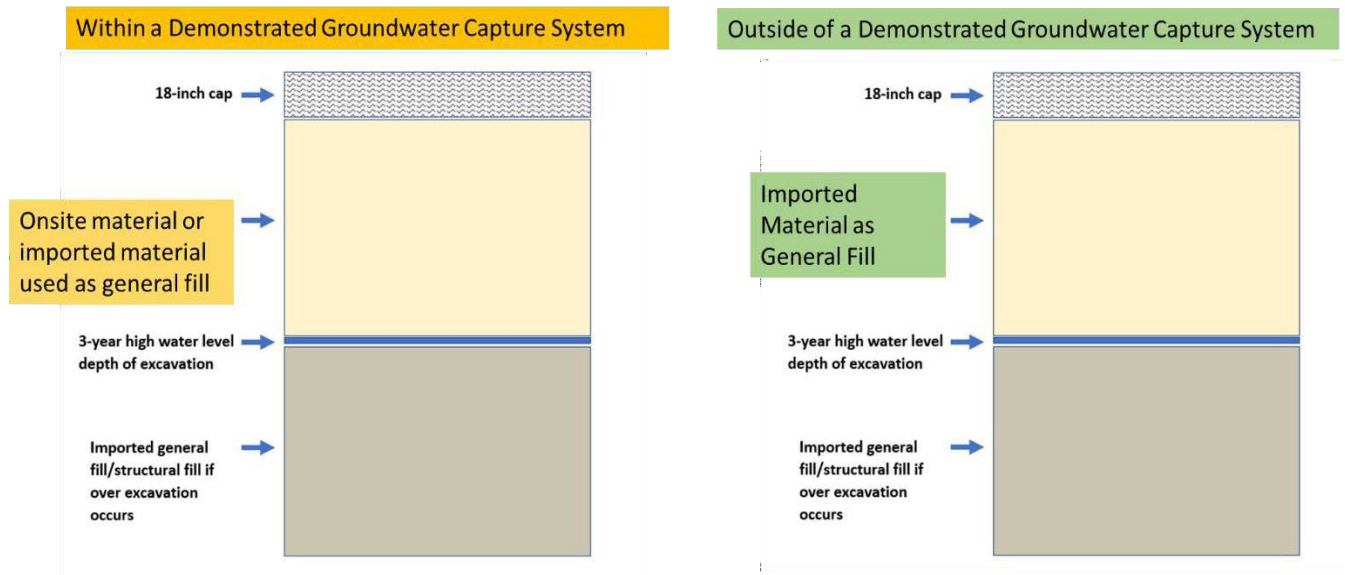
EPA Response:

NRDP previously received the data that is the basis for the EPA’s statement regarding the metals concentrations in the “[Draft Final Butte Priority Soils Operable Unit \(BPSOU\) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design](#)” and the “[60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report](#).” These were provided to all CD parties by AR in December 2020 and December 2022, respectively.

Comment 6 (NRDP):

“Protection of Groundwater Proposed requirements would limit reuse of onsite material for general fill to areas above the 3-year high water table and within a current or future demonstrated groundwater capture zone where groundwater is collected and treated before discharge, thereby eliminating the groundwater to surface water pathway.”

General Fill Cross Section



By only allowing this new higher contaminant concentration general fill within a “demonstrated groundwater capture system,” it appears that EPA agrees that this type of higher contaminant concentration general fill, if used without well-defined and strict location specific controls, is a risk to groundwater from irrigation infiltration, precipitation infiltration, and groundwater saturation. NRDP agrees that these materials are leachable and a risk to water resources of the State, and relying on engineered controls is not protective of the resource.

EPA Response:

As explained above, the EPA has not created a new category of fill. The EPA would not describe the potential risk to groundwater as NRDP does above. However, in an effort to address NRDP’s previous input regarding the potential use of onsite material as general fill, the EPA included a demonstrated groundwater capture system as a potential design parameter for consideration.

Comment 6 Continued (NRDP):

The State of Montana agreed to the BPSOU CD (as well as the 2020 ROD Amendment that removed the 2006 requirement that BP-AR install a water treatment plant to meet surface water standards if other remedial elements failed to do so) with a core requirement that additional and ongoing sources of groundwater contamination would not be allowed. The State’s rationale in this decision was to mitigate the risks of contaminated groundwater impacting surface water and instream sediments. Use of this new category of higher contaminant concentration fill as general fill, without an analysis of whether that material will leach to groundwater, undercuts BP-AR’s responsibility to implement technically practicable solutions prior to waiving groundwater standards (2). Although EPA has waived groundwater standards, it does not follow that practicable remedial efforts to address source removals of a state resource should be abandoned. Reducing ongoing sources of groundwater contamination also was the

basis for the State moving forward with the Parrot Project. This Position potential creates a new source and new pathways to groundwater contamination if not properly addressed.

EPA Response:

As explained above, the EPA has not created a new category of fill. The BPSOU remedy relies on removals and controls to protect human health and the environment. The BPSOU remedy will address groundwater contamination and ensure protectiveness in several ways, including but not limited to: (1) existing groundwater capture and treatment at Northside Tailings, Diggings East, and Buffalo Gulch; (2) optimization of the existing groundwater capture and treatment system; (3) additional planned groundwater capture and treatment at Blacktail Creek and Butte Reduction Works; (4) contingencies to extend groundwater capture to prevent contaminants from leaching into groundwater, as well as groundwater and surface water monitoring, both of which include triggers for additional diagnostic evaluation through the Surface Water Compliance Determination Plan and Surface Water Management Plan.

Comment 6 Continued (NRDP) 3-year High Groundwater:

The 3-year groundwater level criterion was not established in the CD with this scenario in mind. Using the high 3-year groundwater level criteria now for placement of this new category of higher contaminant concentration general fill means that it could be saturated on average every 4 years by groundwater and perhaps more frequently. Does EPA have an analysis that demonstrates that this criterion is protective? If not, then a more protective frequency should be considered, such as 7- or 10-year high groundwater.

EPA Response:

As explained above, the EPA has not created a new category of fill. The EPA included the 3-year high groundwater elevation as one potential design parameter concerning the use of onsite material as general fill based on NRDP's recommendation that a high groundwater elevation be included. The EPA looks forward to discussing this potential parameter with NRDP in the publicly-observable Remedial Design/Remedial Action Progress meetings, materials management meetings, and the groundwater modeling meetings.

Comment 6 Continued (NRDP) Capture Zone:

The State does not agree that additional groundwater contamination loading sources are acceptable now or in the future, which is implicit in the "capture zone" criteria (i.e., it can contaminate groundwater because groundwater will be captured somewhere else). Allowing further contamination to groundwater is not acceptable to the State (3).

² *Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration*, 1993, Directive 9234.2-25, page 13, "A demonstration that ground-water restoration is technically impracticable generally should be accompanied by a demonstration that contamination sources have been, or will be, identified and removed or treated to the extent practicable."

³ *Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration*, 1993, Directive 9234.2-25 at page 20, "Source containment has several benefits. First, source containment will contribute to long-term management of contaminant migration by limiting further contamination of ground water and spread of potentially mobile sources"

We also have concerns with the feasibility of relying on a “demonstrated” groundwater capture zone to protect the State’s groundwater resources. How will the groundwater capture zone be determined in order to guide the placement of this new category of higher contaminant concentration general fill? What guidance will EPA use to determine groundwater capture zones? How can the groundwater capture zone be adequately defined to explain the placement of onsite fill for current projects when future remedial elements for groundwater capture are still years away from design, implementation, and effectiveness determination?

EPA Response:

As explained above, the EPA has not created a new category of fill. A capture zone analysis is currently underway as part of the development of a groundwater model by AR and will be reviewed by the EPA in consultation with DEQ. The EPA has requested input from NRDP for the BPSOU Groundwater Hydraulic Control System Predesign Investigation Evaluation Report and looks forward to further discussion on this topic during the publicly-observable groundwater modeling meetings. Any decision the EPA makes in consultation with DEQ regarding groundwater will be informed, as appropriate, by the EPA groundwater guidance and the BPSOU CD. One such guidance is [A Systematic Approach for Evaluation of Capture Zones at Pump and Treat Systems \(January 2008\)](#), which the EPA believes may have material relevant to groundwater capture at BPSOU.

Comment 7 (NRDP):

“Capping with cover soil, then revegetating or installing a hard surface such as a sidewalk or parking lot will reduce likelihood of erosion, movement of soils, and potential leaching. With these measures in place, reuse of onsite materials is not expected to impact current groundwater conditions. Additionally, there is currently a restriction on the use of groundwater in place.”

Capping:

The figure entitled, “General Fill Cross Section” shows an 18-inch cap over the “onsite fill,” which appears to be a requirement of the Position. Capping with 18 inches of soil does not provide adequate protection from infiltration and leaching to groundwater in Butte, MT. For the design of the 18-acre Evapotranspiration Cover System for the Parrot Project, NRDP modeled this infiltration contaminant transport mechanism, which led to the design and construction of a 36-inch-thick cap, made of very specific soils to interrupt and address the risks for this infiltration pathway.

EPA Response:

The 18-inch cover would help prevent direct exposure of the public to onsite material. The cover may provide some measure of groundwater protection but is not designed to completely prevent infiltration of rain/snow melt to groundwater; rather, it is intended to prevent human exposure to contaminants of concern. Groundwater will be captured and treated to limit or prevent plume migration and to prevent discharge to surface water. In addition, the limestone contained within the capillary break layer will provide alkalinity to

neutralize groundwater and lower the mobility of COCs where determined necessary in design.

Comment 7 Continued (NRDP):

In addition, irrigation will not be allowed on the Parrot Project ET Cover System. EPA and BP-AR have been proposing to artificially irrigate many areas within the Diggings East, Northside Tailings and Buffalo Gulch storm water basin areas, which would add even more water and lead to additional leaching of contaminants to groundwater. If EPA is still considering allowing additional water associated with irrigation, then modeling should be performed to show protection of groundwater. When FRESOW Tables 1, 2, and 3 were developed for the BPSOU CD, irrigation was not considered as an acceptable end land use in mine waste projects where all the waste is not being removed. Please clarify how/if irrigation will be allowed.

EPA Response:

The EPA agrees that if irrigation is proposed in these project areas, irrigation plans must be prepared by AR which will detail the procedures to be used for each project area and may include infiltration monitoring to ensure the remedy is protective. If and when such draft irrigation plans are developed, the EPA, in consultation with DEQ, will review the plans. Such draft plans will be shared and discussed at technical meetings where the EPA will welcome NRDP's input.

Comment 7 Continued (NRDP):

EPA also notes that Buffalo Gulch, Northside Tailings, and Diggings East have certain upland areas where this "onsite material" may be used as general fill with upland caps. Table 3 limits uplands caps to Diggings East and Northside Tailings. Please see General Comment 1. How does EPA propose modifying the CD to address this change to Table 3?

EPA Response:

The EPA is not proposing any change to Table 3 or any other modification to the CD. Please see the EPA response to General Comment 1.

Comment 7 Continued (NRDP) Hard Surfaces:

We cannot tell what role the "hard surface" would play in this Position. Would hard surfaces be required to ensure this Position is protective of leaching to groundwater? If so, how would EPA ensure that the parking lots would remain in place in perpetuity and how would this be enforceable? Whether these hard surfaces would remain in place in perpetuity and how this would be enforced is critical to evaluating the protectiveness of this Position.

EPA Response:

Hard surfaces are engineered caps that will be integrated as part of the design for review and approval. These engineered caps are a common practice and effective component of Superfund remedies across the nation. The integrity of the hard surfaces, as part of final

approved designs, will be maintained through long-term maintenance outlined in a required O&M plan for this area by AR/BSB with the EPA in consultation with DEQ oversight.

Comment 8 (NRDP):

“Where would onsite material be used as general fill?”

The use of onsite material within certain protective parameters allows the remedy to be constructed in a timely manner while protecting human health and the environment now and into the future. Initial EPA proposed design parameters include:

- *Onsite Material can be used in areas outside of the stormwater basin’s/sedimentation bay’s wetted perimeter (i.e., the area of the basin/bay high water level).*
- *Onsite Material can only be placed above any groundwater elevation measured in the last 3- years.*
- *Onsite Material will not be located within any 100-year floodplain or channel/stream, including future channel alignments (i.e., ROCC’s designated channel alignment), in riparian areas or within the stormwater or sediment ponds or inlet structures.*
- *Onsite Material can only be placed in areas within a demonstrated groundwater capture system.*

The project areas of Buffalo Gulch, Northside Tailings, and Diggings East have certain upland areas that meet the above criteria such that onsite material used as general fill is protective of human health and the environment. See general fill cross section above, where EPA is proposing onsite material would be used as general fill in relation to imported general fill.”

It appears that EPA is stating that this new category of higher contaminant concentration general fill can be used anywhere within the Buffalo Gulch, Northside Tailings, and Diggings East project areas if it:

- Is located above the 3-year high groundwater,
- above the wetted perimeter of the stormwater/sedimentation ponds; and
- is in the groundwater capture zone as solely determined by EPA.

NRDP does not believe this is consistent with the BPSOU Consent Decree or EPA’s own legal analysis (see Attachment A). Table 3 defined upland caps for Diggings East and Northside Tailings only. Please see NRDP’s first general comment.

However, the Position clearly states that this material will only be used in the Buffalo Gulch, Northside Tailings, and Diggings East project areas. NRDP understands that EPA is not proposing to use this new category of higher contaminant concentration general fill elsewhere and this Position does not provide legal or technical justification for use elsewhere in BPSOU.

EPA Response:

As explained above, the EPA has not created a new category of fill. The EPA’s position is clear that onsite material would only be used in the Buffalo Gulch, Northside Tailings, and Diggings East project areas. Onsite material is not proposed for use as general fill elsewhere in BPSOU. Please see the EPA’s response above regarding NRDP’s “Scenario A” and “Scenario B” and the utility of the publicly observable technical meetings to explore these topics further.

Information Request (NRDP):

EPA's determination that this proposal is protective of State surface water, groundwater, and vegetation seems to be predicated on a few things that NRDP has not seen, as far as we are aware. Please provide copies of the following to aid in our evaluation of EPA's proposal:

1. An analysis that the 18-inch cover, new category of higher contaminant concentration general fill groundwater saturation every 4 years, and irrigation is protective of groundwater from all infiltration. Attachment B lists the EPA's calculation of screening levels for contaminant concentrations in fill material that protects groundwater (the Regional Screening Levels (RSL) Table (November 2022)).

EPA Response:

As explained above, the EPA has not created a new category of fill. As to groundwater standards, a Technical Impracticability evaluation was completed for the alluvial aquifer that led to a waiver of groundwater standards. Therefore, the RSLs referenced above do not apply. Irrigation plans will be developed and shared with NRDP as available, as described above. The 18-inch cover is intended to prevent direct exposure of the public to onsite material; the cap may provide some measure of groundwater protection but is not designed to completely prevent infiltration of rain/snow melt to groundwater, rather, other components of the proposed remedy (controls and systems including ICs, permitting, groundwater capture and treatment) would provide this protection. Please see answer to comment #7 above.

Information Request Continued (NRDP)

2. An analysis of the groundwater capture zone currently and into the future for the State's review.

EPA Response:

As part of the groundwater optimization studies, further groundwater capture designs, and as part of the BPSOU CD, AR is preparing a groundwater model that will include delineation of a capture zone around all groundwater controls in the alluvial corridor. The EPA has requested input from NRDP for the BPSOU BTC Groundwater Hydraulic Control System Predesign Investigation Evaluation Report and looks forward to further discussion on this topic during the publicly observable groundwater modeling meetings. Additionally, NRDP received a revised version of the Draft Final BTC Groundwater Hydraulic Control System Remedial Design Work Plan (BTC GWHC) and response to Agency comments on December 2, 2022. The EPA considers this a working draft document that continues to be updated throughout the design process. Please see Section 3.0 Remedial Design of Appendix D to the BPSOU CD for design process details.

Information Request Continued (NRDP)

3. “Initial characterization of materials located at the Northside Tailings, East Buffalo Gulch, and Diggings East project areas was conducted between 2019-2023 to estimate the volume of waste that may need to be disposed in a repository and the volume of materials that could be suitable for use as general fill within the project areas depicted below.

Preliminary design and modeling efforts indicate that onsite material could comprise roughly 25-35% of the general fill to be used at the Northside Tailings, East Buffalo Gulch, and Diggings East project areas.”

EPA Response:

This preliminary estimate of 25-35% is based on data provided to all CD parties including NRDP in the [“Draft Final Butte Priority Soils Operable Unit \(BPSOU\) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design”](#) and the [“60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report.”](#) These were provided to all CD parties by AR in December 2020 and December 2022, respectively.

Information Request Continued (NRDP)

4. “Initial data collected regarding the onsite material (available at Silver Bow Creek/Butte Area EPA website) shows that the onsite material is potentially suitable as general fill does not contain metals concentrations that are 3.5 times higher than the metals concentrations applicable to imported general fill.” Please provide the data and analysis that supports this statement.

EPA Response:

NRDP previously received the data that is the basis for the EPA’s statement regarding the metals concentrations in the [“Draft Final Butte Priority Soils Operable Unit \(BPSOU\) Northside Tailings/East Buffalo Gulch Area and Diggings East Stormwater Basin Area Further Remedial Element 30% Remedial Design”](#) and the [“60% Draft Buffalo Gulch Stormwater Basin Remedial Design Report.”](#) These were provided to all CD parties by AR in December 2020 and December 2022, respectively. For additional information please see the following pre-design investigation data (linked above): Buffalo Gulch Soils Characterization Data Summary Report Attachment F to the Buffalo Gulch PDI Evaluation Report and Appendix A Northside Tailings/East Buffalo Gulch and Diggings East Stormwater Basin Area Soil Characterization and Geotechnical Investigation Pre-Design Investigation Evaluation Report.

Information Request Continued (NRDP)

5. How would the new category of higher contaminant concentration general fill be identified (sampling methods and frequency)? NRDP has asked for this previously and has not received it.

EPA Response:

As explained above, the EPA has not created a new category of fill. The sampling methodology and analysis plans will be included within the Backfill Material Characterization and Reuse Plans, which are yet to be submitted by AR for the CD parties and the public to review. Once these are received, any deficiencies will be identified by the EPA in consultation with DEQ, and the draft plans will be shared and discussed during technical meetings where the EPA looks forward to receiving NRDP's input.