

STATE OF MONTANA, NATURAL RESOURCE DAMAGE PROGRAM



MEMORANDUM

TO: Ms. Erin Agee, Senior Assistant Regional Counsel, EPA
Mr. Nikia Greene, Remedial Project Manager, EPA

FROM: NRDP

DATE: October 11, 2023

SUBJECT: Comments on BPSOU Grove Gulch Submittals Received from British Petroleum
– Atlantic Richfield (BP-AR) on 9/25/2023

The Montana Natural Resource Damage Program (NRDP) acts on behalf of the Governor as natural resource trustee to coordinate restoration with remedy, and also in our role as a State signatory to the Butte Priority Soils Operable Unit Consent Decree (BPSOU CD), to evaluate whether the work to be implemented complies with the BPSOU CD. In support of these roles, NRDP provides the following comments on BP-Atlantic Richfield's (BP-AR's) *Grove Gulch 95% Remedial Design* resubmittal from September 25, 2023.

Our evaluation, detailed in the comments, identified inconsistencies with two places in the BPSOU CD: Section 4.1.2 and footnotes showing the locations for Table 3 Engineered Cap/Cover Systems Material Suitability Criteria (Appendix D, Attachment C, the FRESOW). Additional comments are provided on the sampling and analysis and the use of the EVS model to delineate the Waste at the Grove Gulch site.

It is important to note, NRDP was not invited to the Grove Gulch technical meetings; thus, these comments are likely late in the design development process. However, NRDP believes these comments are important to ensure consistency with the BPSOU CD and to state for the record our concerns with the use of design methods and other details that should not be used at this and the other downstream sites within BPSOU.

As we have previously requested, please include us on all future comments and meetings.

General Comments:

1. NRDP is concerned these documents do not articulate all of the BPSOU CD, Appendix D, Attachment C requirements (i.e., the requirement to remove all of the Waste in the floodplain outside of the sedimentation bay, see comments below.) We believe our previous request to develop a publicly available tracking system would be best to ensure all BPSOU CD requirements are met, such as a master table for BPSOU outlining the requirements and a notation as to specific sections of CD deliverables that meet each requirement. Specific to Grove Gulch, there are at least five different documents that include some portion of BPSOU CD compliance with these requirements. One document could include all the relevant information that demonstrates compliance with the numeric (Tables 1-3) and location-specific requirements of the BPSOU CD, Attachment C. EPA has previously stated that these requirements would be included in the Materials Management Plan, which we agree would be the appropriate document to capture CD compliance.
2. The design package does not adequately characterize Waste for removal outside the sedimentation bay but within the floodplain, as required by the BPSOU CD. Section 4.1.2 of Attachment C provides,
“Tailings, waste, and contaminated soils encountered outside of the sedimentation bay within the floodplain will be removed and disposed of as described in the paragraph below.”

The “paragraph below” states:

“Unless suitable for use as backfill (under Appendix 1, Table 2), removed tailings waste and contaminated soils shall be segregated and disposed of at a repository approved by EPA in consultation with DEQ, which is not located in the SBC-Above the Confluence or Blacktail Creek areas. Inert solid waste and construction debris may remain on-site for use as backfill that meets Table 2 of Appendix 1 criteria. All other municipal wastes, if encountered at the Grove Gulch area, shall be segregated and disposed of at an appropriate permitted facility by the SDs.”

In addition to identifying all Waste that are required to be excavated from below the sedimentation bay, vegetated swale, or bypass Channel on Figure GG-1 of the BPSOU CD, BP-AR must identify the areas outside of the sedimentation bay, vegetated swale, or bypass, but within the floodplain that contain Waste to be removed. The documents state that the entirety of Grove Gulch is in the floodplain, which indicates that all Waste within Grove Gulch needs to be characterized and removed per the BPSOU CD. The BPSOU CD text quoted above is not included in the Design Report Section 4.1, which lists the FRESOW requirements. The text of Section 2.2.1.2 of the RAWP references two areas for excavation outside of the sedimentation bay footprint, but Figure 2 does not clearly identify these areas (see Attachment A). Also, the sampling and characterization is not sufficient to determine that the remainder of the floodplain does not include Waste above the Table 1 criteria. See additional comments.

3. The supplied documents do not contain sufficient characterization of site Waste, nor do they include a plan to characterize, identify, and remove all Waste within the floodplain, as required by the BPSOU CD (see General Comment 2).

The site investigation, Grove Gulch PDIER and the resulting Figure 2 (Attachment A), is an incomplete and inaccurate approximation of the nature and extent of GG Wastes per Table 1 of the BPSOU CD. According to the Materials Management Plan, Section 1.3 – Project Description, page 8, “Figure 2 shows the extent of waste identified on site.” However, Figure 2 only shows small patches of “waste” within the bigger CD-required area for Grove Gulch. The forms on Figure 2 look like an artifact of sample distribution rather than the nature and extent of fluviably-transported and distributed Waste. General Comment 5 further describes how NRDP believes the EVS model is insufficient as the sole method of waste delineation. Complete delineation of Waste nature and extent requires additional field qualifying methods as well as confirmation sampling. Please identify where in the submittal is the document that describes how Waste will be characterized on the project area.

NRDP believes BP-AR should develop a sampling and analysis program to better identify Waste during construction and to confirm that all Waste is being removed as required by the BPSOU CD and all other numeric and location-specific requirements as defined in the BPSOU CD Attachment C are met.

4. It is unclear how the 3-year high groundwater level was determined. The EVS model memo indicates that one year of data (August 2020 to August 2021) was used as an input to the EVS model, which then interpolated the 3-year high groundwater level across the project site (Section 1.0, page 2). However, the memo later states that the 3-year high groundwater elevation was an input to the EVS model (Section 4.0, pages 8 and 9). It’s unclear from these descriptions whether the 3-year high groundwater level was an input to EVS or an output from EVS.
5. The EVS model used to delineate Waste at Grove Gulch is based on limited data and includes a very high degree of uncertainty, making it inappropriate for use as the sole method of delineating Waste. Additional detail is needed in the material characterization plans that will allow for more accurate delineation of Wastes for this and future projects. Concerns with the EVS model being used for this purpose include:
 - a. Mercury XRF results are unusable and mercury lab results from 2018 were rejected due to data quality concerns. Are the usable mercury results sufficient to characterize this contaminant at the site? Can waste be accurately delineated if one of the six contaminants was not adequately characterized? (Grove Gulch Soils Characterization Data Summary Report, Section 5.1, page 8)

- b. The EVS model memo provides figures showing the model confidence for each contaminant throughout the site and states that this represents the percent confidence that the true result falls within one order of magnitude of the interpolated result. Confidence ranges from 82 to 100% for most contaminants, though mercury is much lower (as low as 26% confidence). Even the highest confidence level can only indicate that modeled concentrations are within an order of magnitude of the true concentration. With this level of uncertainty in concentrations, the model is not sufficient to be the sole indicator of waste on site. (Grove Gulch Earth Volumetric Studio Model Inputs, Section 2.5, page 6)
 - c. Waste characterization depends on concentrations of all six contaminants: arsenic, cadmium, copper, lead, mercury, and zinc. Uncertainty is compounded when waste designation depends on concentrations of multiple contaminants, each of which has an order of magnitude uncertainty even at the highest level of confidence.
 - d. The PDIER states that the EVS model indicates waste at PZ-GG-02, 18-24” bgs, though no waste was identified within this interval at the borehole. BP-AR uses this as evidence that the model is conservative in defining the waste extents. It seems more to indicate that the model is unreliable – predictions by the model are shown to be inaccurate. It is unclear, then, how well the model predicts the presence or absence of waste in locations where samples were not taken. (PDIER, Section 4.2, page 16)
6. NRDP notes that there are EPA comments responded to in the crosswalk, e.g., dated May 16, 2022, which NRDP does not have record of receiving. Could EPA please check its distribution list for those comments and let us know if we received them (and presumably there was an error with the State email system)?
 7. Page 3-1, Section 3.2 and the defined terms of the RDWP uses the term “Metro Storm Drain.” Please replace this term with “Silver Bow Creek” in this location and elsewhere in the documents for this site and other FRESOW documents.

Specific Comments on the Materials Management Plan:

1. Section 1.3.1 – Contaminants of Concern Sources (pg. 8)

“The contaminants of concern (COCs) identified in the BPSOU Record of Decision (EPA, 2006) (ROD) include aluminum, arsenic, cadmium, copper, iron, lead, mercury, silver, and zinc for surface water; arsenic, cadmium, copper, lead, mercury, and zinc for groundwater; and arsenic, lead, and mercury for solid media.”

Contaminants of concern and their applicability to the project areas are defined in the BPSOU CD Attachment C. Arsenic, cadmium, copper, lead, mercury and zinc are the

contaminants applicable to Grove Gulch soils and Table 1-Waste, Table 2-Fill. And Table 3-Capping (i.e., all solid media). Please correct.

2. Figure 3: Waste Characterization and Management Decision Flow Chart (Attachment B)

This decision tree does not explain how “material” will be “identified for excavation.” Is it implied that they will be visually identified? Will they be identified by utilizing Figure 2? Contaminants cannot be identified by visual or accurately predicted by modeling without statistically determined confidence intervals.

Specific Comments on the Waste Management Plan (Attachment A to the Materials Management Plan):

1. Section 2.1 Characterization (pg. 7)

“The waste subject to the Grove Gulch RA was characterized based on all samples collected at the Site under the Grove Gulch Pre Design Investigation Evaluation Report (AR 2023a) and a review of past land uses of the Site, including review of historical maps, aerial photos, and Site visits. The waste identification criteria of heavy metals impacted waste is defined in the FRESOW Table 1.”

There is no description of the Waste characterization to be performed in the field to document that materials meeting or exceeding the numeric criteria in Table 1-Waste in the floodplain have been excavated. Please provide the details of field screening for numeric confirmation.

2. Section 2.1 Characterization (pg. 7)

This document refers to “heavy metals impacted waste,” in several locations, which is not a defined term BPSOU CD and may create confusion. Please use the terminology of the BPSOU CD; “Waste” is defined in Table 1 and elsewhere.

3. Section 2.2 Disposal (pg. 7)

This document refers in numerous locations to the “selected repository,” which has not yet been selected. Will this document be updated once a repository is selected or will there be a separate document that specifies the “selected” repository and the haul methods and routes to move the wastes?

Specific Comments on the Backfill Material Characterization and Reuse Plan (Attachment B to the Materials Management Plan):

1. Section 2.4 Sampling and Analysis (pg. 8)

“Confirmation sampling of potential onsite reuse material will not be completed since no existing onsite material will be reused at the Grove Gulch Site as part of this RA. All excavated material will be taken off-site and disposed of in accordance with the requirements and protocols of the Waste Management Plan, which is attached as Appendix A to the Materials Management Plan.”

As stated above, NRDP does not agree that onsite soils removal obviates the need for confirmation sampling. To meet CD requirements, sampling must be performed to identify Table 1-Waste and ensure that all Waste has all been excavated or capped (depending on the location of the Waste; see comments above.) Limited pre-design investigation modeling and visual identification are inaccurate methods.

Specific Comments on the Construction Monitoring Quality Assurance Project Plan (QAPP):

1. Section 4.3.1 – Sampling of Imported or Borrow Soil Materials

This section references “imported or borrow soil materials.” What is the distinction between “borrow” and “imported” materials? For BPSOU CD Table 2-Fill and Table 3-Capping, the BPSOU CD does not use “borrow” and it is unclear what is meant. These terms may suggest that the sampling process applies to imported or onsite reused material. Other documents for this project indicate that no onsite material will be reused at Grove Gulch. “Borrow material” should be defined, or references to it should be removed if it refers to backfill generated onsite and will not be used in project construction.

2. Section 4.3.1 – Sampling of Imported or Borrow Soil Materials

This section states that “soils ... from sources that have been sampled and certified as acceptable materials during the BPSOU FRESOW construction may be used without any additional testing or certification, however the Construction Contractor shall verify and provide as a submittal prior to importing the material.” It goes on to state that “Ongoing sampling of import and borrow soil will be completed by the Construction Contractor at a frequency of one sample for every 500 CY of material used on site.” These statements seem contradictory. Perhaps the first statement is meant to say that “initial testing or certification” is not needed if the material has been previously certified? Ongoing sampling and analysis of imported material should be required to make sure that all soil meets the BPSOU CD Table 2-Fill requirements.

3. Section 4.3.1 – Sampling of Imported or Borrow Soil Materials

NRDP does not believe the sampling proposed in this section is sufficient to ensure that the backfill material is uncontaminated. It is unclear who would “certify[y] as acceptable” the “borrow” materials from other FRESOW locations and how it would be demonstrated that these other materials meet all Table 2 backfill requirements. Further, the one sample per 500 cubic yards is not sufficient to characterize the backfill and is less protective than DEQ’s approach to adequately characterizing backfill. See [2023 06 05 Clean Fill FAQ.pdf \(mt.gov\)](#)

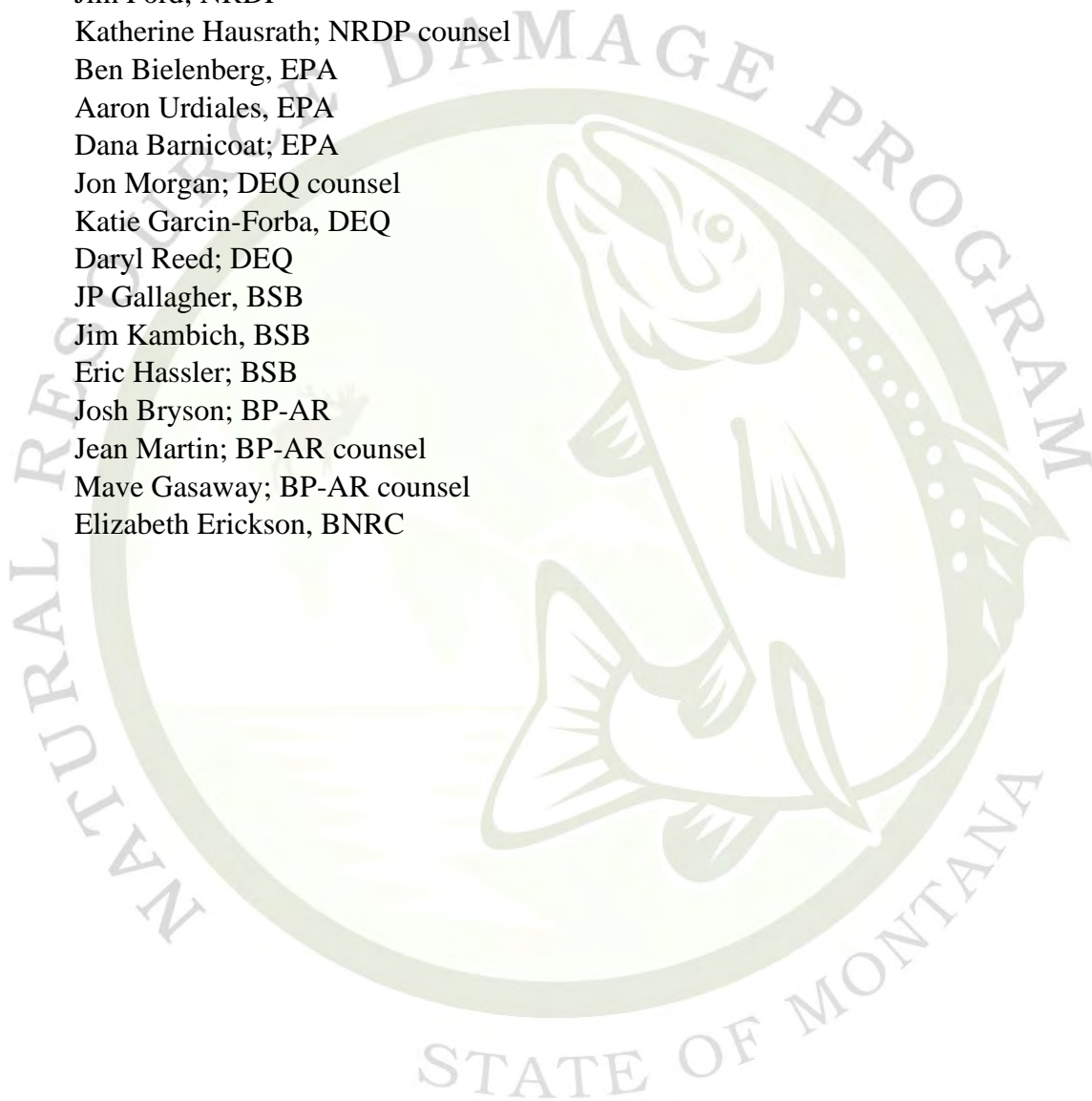
4. Table 3 Engineered Cap/Cover Systems Material Suitability Criteria (from FRESOW Table 3) (pg. 79)

This Table has been modified from the BPSOU CD, Attachment C and as such is not representative of the location-specific requirements of the BPSOU CD. Specifically, the

table changed the footnotes (Footnotes 5 and 6 in the BPSOU CD, Footnotes 1 and 2 in the QAPP) that reference the BPSOU CD figures that show where these caps are to be placed. Please correct or remove.

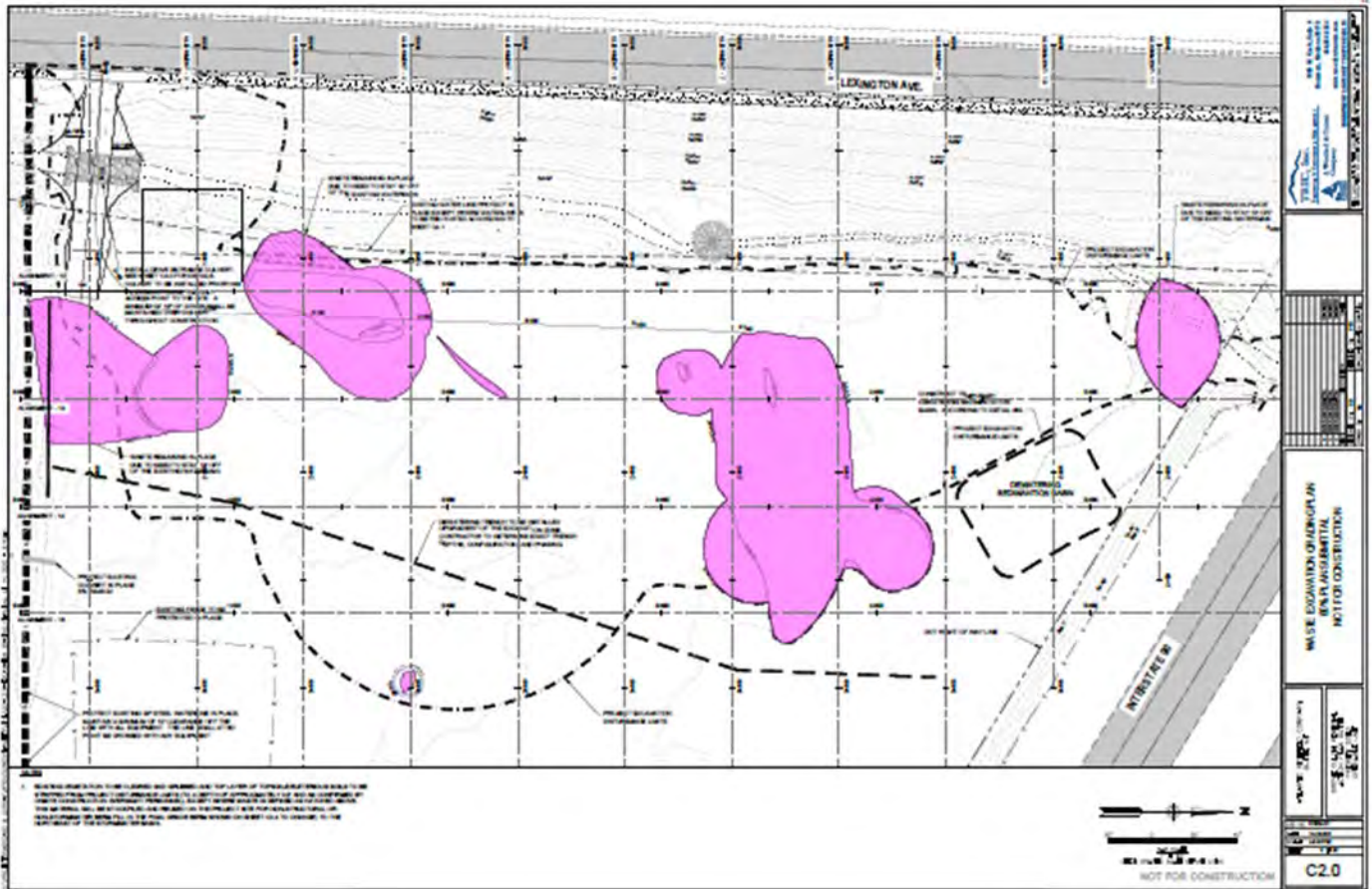
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Attachment A

Materials Management Plan, Figure 2 Waste Excavation Grading Plan



Attachment B

Figure 3: Waste Characterization and Management Decision Flow Chart

