# MEMORANDUM

**TO**: Emma Rott, Remedial Project Manager, EPA
Erin Agee, Senior Assistant Regional Counsel, EPA
Will Lindsey, Assistant Regional Counsel, EPA

**FROM**: State of Montana Natural Resource Damage Program (NRDP)

**DATE**: June 26, 2024

**SUBJECT**: Draft Comments on BPSOU "*Diggings East 60% Remedial Design Package"* Received from British Petroleum - Atlantic Richfield Company (BP-AR) on 4/23/2024

The Montana Natural Resource Damage Program (NRDP) represents 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.

It should be noted design information that is required in BPSOU CD Appendix D, Attachment C Section 1.1.2 third paragraph in the "*Materials Management Plan*" and *"Construction Management Quality Assurance Program Plan,*" has not been provided with the documents.

In support of these roles, NRDP provides the following comments on BP-AR's *Diggings East 60% Remedial Design Package* ("60% DE Design").

NRDP has comments concerning several major areas with this design.

1. EPA is proposing to allow BP-AR to use higher contaminant concentration general fill at Diggings East. *See* NRDP's previous comments dated September 8, 2023, available at: NRDP Comment Letter on EPA Onsite Material Position Paper. If EPA does not require that all fill at Diggings East (whether generated on site or imported from offsite) meet Appendix D, Attachment C, 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. This analysis has not been done and the protectiveness issues noted in NRDP's letter on the use of higher contamination fill at Diggings East (or any other portion of BPSOU along Silver Bow Creek) remain unresolved.

Further, NRDP reiterates the previous comments that use of the higher contamination fill throughout Diggings East is not consistent with the Consent Decree, as provided in our September 8, 2023, letter.

2. Inadequate Waste and backfill characterization as required in Section 1.1.2, second paragraph (BPSOU CD Appendix D, Attachment C).

3. Suitable basin vegetation to allow appropriate retention/detention time for the treatment of contaminated stormwater and protection of the creeks as required in Section 1.1.1, third paragraph (BPSOU CD, Appendix D, Attachment C).

4. Appropriate source data identification and use for determination of 3-year high groundwater determination.

5. Basin liner leak detection as required in Section 1.1.1, fourth paragraph (BPSOU CD Appendix D, Attachment C).

6. The appropriateness of allowing irrigation for BPSOU CD projects that the CD did not contemplate or approve.

## 1. Use of higher contamination general fill throughout Diggings East is not demonstrated to be protective of State surface water, groundwater and vegetation/terrestrial resources and is inconsistent with the BPSOU CD

**In Summary:**
EPA's proposal to use the higher contamination general fill poses an unacceptable risk to surface water, groundwater and vegetation/terrestrial resources. EPA is also approving the use of this new category in locations expressly prohibited by Criteria B – General Fill (Appendix D, Attachment C, Table 2). Criteria B is inappropriate to use outside of the basins and was only intended for structural needs. EPA staff and BP-AR understand these new risks associated with this proposal and have proposed a few unacceptable modifications to the CD in an attempt to reduce the risks. It should be noted that EPA does not have the authority to make new contaminant sources and pathways to state ground and surface waters with this proposal.

| |
|---|
| NRDP requests that EPA rely on the existing BPSOU CD Appendix D, Attachment C, Table 2 General Fill requirements and not a higher contamination fill that has not been demonstrated to be protective at Diggings East and the adjacent resources. |

**A capillary break does not address the protectiveness concerns related to higher contamination general fill leaching to groundwater and surface water and does not address vegetative growth concerns.**

The design acknowledges a concern with using higher contamination general fill (i.e., the upward wicking of contaminants to overlying clean cover systems that produce phytotoxic conditions) and attempts to address this concern by incorporating a capillary break in some limited areas. A capillary break will have no substantive effect on downward migration of water through in situ or placed high concentration fill and leaching of contaminants to groundwater. Leaching contaminants to groundwater at Diggings East also leads to the potential of additional contaminated groundwater discharging to surface water and impacting instream sediments and surface water (Attachment D). The potential for leaching to groundwater is even greater because EPA has tentatively approved BP-AR to irrigate these same areas, adding an additional source for infiltration to groundwater. See comment below.

In addition, trees will not grow in this new high concentration fill and need more than an 18-inch cover to survive (Attachment E). BP-AR stated in the June 4, 2024, DE 60% Design meeting that they will plant "400 to 500 trees in the Diggings East project."

NRDP previously provided a table and analysis in our September 8, 2023, comments showing that EPA's allowed higher contamination general fill, which is proposed to be used at Diggings East, is significantly higher than what is generally considered protective of groundwater. Specifically, EPA's proposal allows a total contaminant concentration that is 3.5 - 26.1 times greater than what is considered protective of groundwater for contaminant loading from infiltration through high contaminant concentration materials.

**NRDP renews the request for an analysis from EPA showing that use of this higher contamination fill is protective of state groundwater, surface waters, and vegetative/ terrestrial resources**.

When developing site-specific cleanup levels, State Superfund (CECRA) requires the soil leaching to groundwater pathway must be considered to ensure protection of groundwater available at: MT Soil Screen Flowchart 2024. This process uses EPAs Regional Screening Levels (RSLs), Resident Soil to Groundwater, Protection of Groundwater SSL and should be used to quantify the risk to groundwater from this new category of high concentration fill available at: EPA Resident Soil to Groundwater RSL May 2024.

**2. <u>Waste and Fill characterization and potential reuse</u>:** BPSOU CD, Section 1.1.2, second paragraph

**Summary:**
EPA[1] and NRDP agree that BP-AR's reliance solely on Leapfrog modeling to determine where Waste, Fill or other CD regulated materials are located for compliance purposes is not sufficient. BP-AR's own consultant, who developed the DE Leapfrog model states in the report's conclusions: "*Therefore, this tool should be viewed as a guide to assist in design and not as a real-world view of the concentrations within the Site."*

| NRDP believes BP-AR should be required to develop an acceptable characterization (sampling and analysis) Work Plan, SAP, and QAPP to ensure compliance with the CD numeric criteria. |
|---|

**Details:**
Section 1.4, listed item 4, also requires a Backfill Material Characterization and Reuse Plan which requires "*A sampling and analysis plan shall be developed to further delineate existing site soils that may be characterized and reused as suitable backfill material…"*

The goal for all Site materials characterization (sampling and analysis) should be to document CD compliance with numeric requirements included in the BPSOU CD. Characterization is necessary to demonstrate compliance with Attachment C: Table 1 - Waste identification; Table 2 – Backfill Suitability Criteria; and Table 3 – Engineered Caps/Cover Systems Material Suitability Criteria.

As commented on previously in the GG 100% Design, NRDP remains very concerned with use of a model (Leapfrog or EVS) as the sole tool for determining the numeric criteria and containment concentrations in Diggings East, as well as future projects, as BP-AR repeatedly states. These types of models should not be used as the only method to characterize Table 1 Waste for removal because it is inaccurate and has a low confidence interval for mercury, one of the six CD contaminants that are required for determining Waste.

It should be noted that the BPSOU CD does not distinguish between "imported backfill" and "onsite backfill." See Comment 1; backfill, regardless of its source, must meet the requirements of Table 2 and be protective of potential contaminant receptors.

[1] "*EPA does not agree with the waste volumes defined by the EVS model described in Attachment F (Grove Gulch Earth Volumetric Studio Model Inputs Technical Memorandum) of Appendix A (Predesign Investigation Report) of the Final Remedial Design Report (dated March 2024). However, EPA agrees that, as stated in EVS model described in this technical memorandum will also be removed from the project and taken to an approved repository". Therefore, material defined as waste by the EVS model and excavated material not defined as waste by the EVS model will be moved to a repository. That is, all excavated material will be removed to a repository*." (page 5 of EPAs May 29, 2024, GG comments to BP-AR).

*"**4.0 MODEL LIMITATIONS***
*Therefore, this tool should be viewed as a guide to assist in design and not as a real-world view of the concentrations within the Site"* (ARC, 2024)

NRDP agrees with these conclusions from BP-AR's Draft Final Diggings East Stormwater Basin Area Leapfrog Model Report that actual site conditions will be different than what the model predicts. NRDP requests that EPA require sampling of all site materials to ensure compliance with CD numeric criteria. EPA and other CD parties have a right to sample for Wastes (Table 1) and the fill and capping materials (Table 2 and 3) used in BPSOU CD sites to ensure that the Settling Defendant, BP-AR, is building what the CD Parties agreed to in the CD.

**Comments on applicable DE 60% Design Figures:**

**C1.2**

Design sheet C1.2 Onsite Material Salvage Plan has no statistical basis for accuracy. These estimates of locations and volumes may be acceptable for bidding purposes, but these do not have suitable accuracy for Waste removal and Fill reuse compliance with the CD.

**C2-01 through C2.0.4**

All these figures portray all surface material (10-15' below ground surface) as "Fill Materials" without a definition. Table 2 - Backfill Suitability Criteria has three categories of Fill: Criteria A - Riparian, Wetland and Sub-irrigated Growth Media; Criteria B - General Fill; and Criteria C - In-stream Sediment Replacement Fill (Attachment B). NRDP/MBMG investigated Digging East thoroughly and much of these materials do not meet the Table 2 criteria for Fill (NRDP, 2014). According to the NRDP/MBMG report, the majority of this material is demolition debris and municipal waste, neither of which meet Table 2 numeric criteria or location specific controls (see Table 2 footnote 3 for limitations).

**C2.2.1 through C2.2.4**

These figures show the use of Table 2 Criteria B "General Fill" used outside of the basin. As noted in footnote 2 of "*Criteria B applies to structural fill below DE and BG stormwater basins (including associated inlet and outlet structures), GG and NST sedimentation basins (including inlet and outlet structures as appropriate. Not for use instream or in floodplains."*

Criteria B is inappropriate to use outside of the basins and was only intended for structural needs (see Criteria B description). Criteria A – Riparian, Wetland, and Sub-irrigated Growth Media is the appropriate fill for these areas outside the basin.

3. **<u>Suitable basin vegetation to allow appropriate retention/detention time for the retention and treatment of contaminated stormwater and protection of the creeks</u>:** BPSOU CD, Appendix D, Attachment C, Section 1.1.1, first and third paragraph

**Summary:**
The Diggings East stormwater treatment basin should be managed for protection of the creeks from contaminated stormwater and not end land use. Vegetation within the treatment pond should be selected based on ability to be used for this purpose first and not allow the vegetation to drive the retention volumes or holding times of the basins.

NRDP believes BP-AR should develop a vegetation plan based on the expected uses of the basin for treatment of contaminated stormwater. The vegetation should not limit the basin use.

**Details:**
These basins, first and foremost, are required to withhold and treat contaminated stormwater to protect and improve surface water quality and toxicity to Silver Bow Creek (SBC). These basins work by retaining and detaining contaminated stormwater from discharging to SBC. If they are not used in that manner they will have limited remedial effect on the continuing water quality exceedances in the creek and will not ensure that the remedy is doing everything technically practicable.

4. **Appropriate source data and use for determination of 3-year high groundwater determination:** BPSOU CD Appendix D, Attachment C, Section 1.1.2, second paragraph

**Summary:**

NRDP believes EPA should require BP-AR to use all appropriate water level data, including 2018 State monitoring wells, in its analysis. EPA should also ensure that any adjustments BP-AR has made to the raw elevation data are specifically identified, supported by the data, and approved by EPA.

**Details:**
The following NRDP comments are on the March 27, 2024, TM "*Diggings East 3-year Maximum Potentiometric Surface (2018-2020).*" NRDP is not aware that this document has been previously provided to NRDP.

Raw elevation data for each well used should be provided. Any adjustment to the raw elevation data must be noted and explained.

BP-AR excluded wells/data without rationale in the 2019-2021 analysis. There are monitoring wells the State installed adjacent to the Subdrain that show water elevation in the Subdrain does not always represent the groundwater elevation, because precipitation of contaminants and associated fouling from other water quality constituents plugs the Subdrain, affecting groundwater flow conditions near the Subdrain. BP-AR assumed that the water level in the pipe

represents the surrounding groundwater elevation in this analysis, which is an incorrect assumption. Please incorporate the water level data from the States wells to provide a more accurate data interpretation.

**Other Questions:**
The 3-year high memo says that these contours in Figure 1 were developed using kriging, but they don't look like it or have been modified. Is this surface a direct result of only kriging or some other method?

It looks like the difference between 2014-2016 and 2019-2021 is generally a higher groundwater elevation. Are there other differences between the two data sets?

How many wells yielded an average kriging error in the potentiometric-surface elevations of feet or less over approximately what percent of the mapped area?

5. **Basin liner leak detection requirements:** BPSOU CD Appendix D, Attachment C, Section 1.1.1, fourth paragraph

**Summary:**
The DE basin liner and leak detection requires that the basin meet a leakage performance standard, and that the monitoring system be able to detect leakage. BP-AR is proposing to use the Subdrain for leak detection, which was not provided for in the CD. In addition, vegetation, including trees, should be analyzed for its potential to cause leakage.

| |
|---|
| NRDP requests an effective leak detection system as required in the CD be established. Using the Subdrain for leak detection is ineffective and does not meet the requirements of the CD. |

**Details:**
BP-AR is providing the following, which does not meet the requirements of the BPSOU CD:

***"4.2 Leakage Monitoring System and Plan***
*To address the leakage detection monitoring system design and plan development requirements, Pioneer proposes to construct a liner system that will exceed the leakage performance specification and that the installed liner is certified to be leak free."* (DE Stormwater Basin Liner System Design Report)

BP-AR is proposing to use the Subdrain for its leak detection compliance point, which is not allowed in the BPSOU CD.

The BPSOU CD FRESOW for the DE Stormwater Basin Area states the following:

*"The stormwater basin liner shall be designed to meet the following leakage performance specification: 1x10-7 centimeters per second (cm/s).* ***A plan to monitor leakage through the liner shall also be developed during final design and approved by EPA, in consultation with DE****Q. The objective of the basin leak detection monitoring system is to assess leakage from the basin to protect the BPSOU sub-drain, groundwater and Blacktail Creek from infiltration of stormwater through adjacent tailings, wastes or contaminated soils and additional contaminant loading to groundwater. Monitoring and leak detection data shall be collected utilizing stormwater water balance, existing wells, and newly installed groundwater monitoring wells that are located downgradient, cross-gradient, and upgradient of the basin. Other leak detection technology/methods as approved by EPA in consultation with DEQ may be used as an alternative to the storm water balance. SDs may additionally employ piezometers. To the extent feasible, the detection system shall be capable of detecting leakage at a rate of 1x10-6 cm/s. The exact number, type, and location of monitoring wells, proposed analytes, and monitoring frequency shall be submitted to EPA for approval, in consultation with DEQ, as a component of the final design plan****. If leakage is detected as described above, the SDs shall generate a report describing the leakage and any effects and shall submit this report to EPA and DEQ.*** *The report shall include recommended actions for correcting the leak if it adversely impacts surface water, the groundwater capture system (BPSOU subdrain), groundwater mounding concerns, neighbors and the surrounding area, or the integrity, operation and/or capacity of the stormwater basin. Corrective measures directed by EPA, in consultation with DEQ, in response to this report shall be implemented by the SDs."*
(emphasis added).

The reason in the BPSOU CD for requiring a liner and a leak detection system capable of detecting a leak at 1 x $10^{-6}$ cm/sec is to ensure it doesn't leak into groundwater. NRDP's concerns with leakage from the basin are 3-fold:

a) wastes will remain under the basins and oxygenated surface water should not infiltrate through wastes,
b) chemistry differences between the surface water and groundwater may change the existing geochemical conditions and release additional contamination, and
c) additional water or hydraulic connection would change the flow regime/potentiometric surface further reducing the effectiveness of the Subdrain and potential discharge of contaminated groundwater to Blacktail Creek and SBC.

**Please include a leak detection plan that meets the requirements of the BPSOU CD.**

Also, it appears that BP-AR is planning on planting trees over the liner system (Design Figures L.3.09 through L.3.17). Tree root systems are problematic for liner systems; they provide

additional avenues of leakage, and so trees are typically not allowed over them. What measures will EPA require to address this concern?

**6. <u>The appropriateness of allowing irrigation for BPSOU CD projects that the CD did not contemplate or approve</u>:**

**Summary:**
The BPSOU CD numeric criteria for Appendix D, Attachment C, Table 1 Waste, Table 2 Fill or Table 3 Cap materials were not developed to allow irrigation. Allowing irrigation will allow a new source and pathway to groundwater contamination.

| |
|---|
| NRDP proposes that BP-AR modify their vegetation plans to use native plants that don't require irrigation. |

**Details:**
EPA has approved the use of irrigation throughout this project area (Design figures L4.00 through L4.18). Irrigation over mine wastes is not a protective activity and not approved in the BPSOU CD. NRDP is not aware of irrigation of mine waste sites where waste is left in place. Irrigating mine waste and higher contamination general fill in Diggings East will increase contaminant loading to groundwater.

**Other Questions:**

A. Where is all the water for the permanent pools and irrigation of all these areas coming from? What is the estimated volume (gallons) and rate (gallons/minute) of water needed for each of these uses?

**cc:**

Jim Ford, NRDP
Pat Cunneen, NRDP
Sydney Stewart, NRDP
Doug Martin, NRDP
Katherine Hausrath, NRDP counsel
Carolina Balliew, EPA
Molly Roby, EPA
Ben Bielenberg, EPA
Aaron Urdiales, EPA
Kevin Stone, DEQ
Katie Garcin-Forba, DEQ
Jon Morgan, DEQ counsel

JP Gallagher, BSB
Josh Vincent, WET
Jim Kambich, BSB
Eric Hassler, BSB
Josh Bryson, BP-AR
Jean Martin, BP-AR counsel
Mave Gasaway, BP-AR counsel
Elizabeth Erickson, BNRC
Daryl Reed, DEQ

**References:**

Atlantic Richfield Company, 2024. Draft Final Diggings East Stormwater Basin Area Leapfrog Model Report, 2024

Atlantic Richfield Company, 2017. Draft 3-Year Maximum Observed Potentiometric Surface (2014-2016) Technical Memorandum. Prepared by Pioneer Technical Services, Inc., April 26, 2017.

EPA, 2020. Consent Decree for the Butte Priority Soils Operable Unit. Partial Remedial Design/Remedial Action and Operation and Maintenance. U.S. Environmental Protection Agency. Available at BPSOU CD

NRDP, 2014. Butte Area One Restoration Site Final Draft Version Tailings/Impacted Sediment Delineation of the Diggings East, Blacktail Creek Berm, and Northside Tailings Areas. February 2014

NRDP, 2024. Comments on BPSOU "100% Grove Gulch Final Submittal" Received from Atlantic Richfield Company (BP-AR) on 3/22/2024, May 30, 2024 NRDP GG Comments

NRDP, 2020. Draft Final – Butte Area One Parrot Performance Monitoring Program Conceptual Site Model, May 2020 at Parrot CSM

**Attachments:**

A – BPSOU CD Table 2 Backfill Suitability Criteria

B – BPSOU CD Table 3 Engineered Caps/Cover Systems Material Suitability Criteria

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

Table 2: Backfill Material Suitability Criteria

| PARAMETER | CRITERIA A[1] RIPARIAN, WETLAND AND SUB-IRRIGATED GROWTH MEDIA | CRITERIA B[2,3] GENERAL FILL | CRITERIA C[4] IN-STREAM SEDIMENT REPLACEMENT MEDIA |
|---|---|---|---|
| **Soil Texture** | | | |
| USDA Texture | Not Sa, LoSa or Cl | Not clay soils | TBD during design phase |
| Sand | 20-70% | | |
| Silt | 10-60% | | |
| Clay | 5-30% | | |
| **Coarse Fraction (%>2mm)** | <35%, Maximum fragment size = 3 inches | <60%, Maximum fragment size = 18 inches | |
| **pH** | 5.5 to 8.5 S.U. | | |
| **EC/Salinity** | <4.0 mmho/cm | <6.0 mmho/cm | TBD during design phase |
| **SAR** | <12 | | |
| **Soil Saturation Percentage** | Between 25% and 85% | | |
| **Metals** | | | |
| Arsenic | <30 mg/kg | <200 mg/kg | <30 mg/kg |
| Cadmium | <4 mg/kg | <20 mg/kg | <4 mg/kg |
| Copper | <100 mg/kg | <1,000 mg/kg | <100 mg/kg |
| Lead | <100 mg/kg | <1,000 mg/kg | <100 mg/kg |
| Mercury | <5 mg/kg | <10 mg/kg | <5 mg/kg |
| Zinc | <250 mg/kg | <1,000 mg/kg | <250 mg/kg |
| **Nutrients** | | | |
| Phosphorous (P) | P, K, and $NO_3$, will be used to verify fertilizer rates | Not Applicable (NA) | NA |
| Potassium (K) | | | |
| Nitrate + Nitrite ($NO_3$) | | | |
| Organic Matter | 3% minimum organic matter on a dry weight basis in the upper 6 inches of cover soil | | |
| **Vegetation** | Vegetation shall consist of native species appropriate to the riparian, wetland, or sub-irrigated setting to the extent practicable. Final revegetation shall be determined as part of remedial design activities. | Not for use in Engineered Caps. This material can only be placed >18 inches below ground surface for structural needs. | NA |

1 - Criteria A, from the SSTOU soil suitability requirements, applies to all replacement soils in:
a. All areas of BTC and BRW; and
b. BG, GG, NST and DE materials for the stormwater basin inlet and outlet channels, vegetated swales and bypass areas, and above the stormwater liner systems.

2 - Criteria B applies to structural fill below DE and BG stormwater basins (including associated inlet and outlet structures), GG and NST sedimentation basins (including inlet and outlet structures as appropriate). Not for use in-stream or in floodplains.

3 - 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.

4 - Criteria C applies to all materials placed in Blacktail, Silver Bow Creek below the confluence with Blacktail Creek and Confluence Area channel and riparian areas including the Blacktail Creek wetlands.

# Attachment B

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

Table 3: Engineered Caps/Cover Systems Material Suitability Criteria

| PARAMETER | CRITERIA D[5] RIPARIAN OR SUB-IRRIGATED ENGINEERED CAP/COVER SYSTEMS | | CRITERIA E[6] UPLAND ENGINEERED CAP/COVER SYSTEMS | |
|---|---|---|---|---|
| | (0 to 6-inches) | (6 to 18 inches) | (0 to 6-inches) | (6 to 18 inches) |
| **Soil Texture** | | | | |
| USDA Texture | Not Sa, LoSa or Cl | Cover soil shall be a friable material and the <2.0 mm fraction characterized as loam, sandy loam, sandy clay loam, sandy clay, clay loam, silty clay, silty clay loam, silt loam, or silt in accordance with the USDA Soil Conservation Service textural classification. | | |
| Sand | 20-70% | | | |
| Silt | 10-60% | | | |
| Clay | 5-30% | | | |
| **Coarse Fraction (%>2mm)** | <35%, Maximum fragment size = 3 inches | <45%, Maximum fragment size = 6 inches | <45%, Maximum fragment size = 3 inches | <45%, Maximum fragment size = 6 inches |
| **pH** | 5.5 to 8.5 S.U. | | | |
| **EC/Salinity** | <4.0 mmho/cm | | | |
| **SAR** | <12 | | | |
| **Soil Saturation Percentage** | Between 25% and 85% | | | |
| **Metals** | | | | |
| Arsenic | <30 mg/kg | | <97 mg/kg | |
| Cadmium | <4 mg/kg | | <4 mg/kg | |
| Copper | <100 mg/kg | | <250 mg/kg | |
| Lead | <100 mg/kg | | <100 mg/kg | |
| Mercury | <5 mg/kg | | <5 mg/kg | |
| Zinc | <250 mg/kg | | <250 mg/kg | |
| **Nutrients** | | | | |
| Phosphorous (P) | P, K, and $NO_3$, will be used to verify fertilizer rates | Not applicable | P, K, and $NO_3$, will be used to verify fertilizer rates | Not applicable |
| Potassium (K) | | | | |
| Nitrate + Nitrite ($NO_3$) | | | | |
| Organic Matter | 3% minimum organic matter on a dry weight basis in the upper 6 inches of cover soil | | 3% minimum organic matter on a dry weight basis in the upper 6 inches of cover soil | |
| **Cap and Cover Thickness and Vegetation** | Engineered Cap minimum depth is 18 inches. Vegetation shall consist of native species appropriate to the riparian setting to the extent practicable. Final revegetation and capillary break design (if necessary) shall be determined as part of remedial design activities. | | Engineered Cap minimum depth is 18 inches. Vegetation shall consist of native species appropriate to the upland setting to the extent practicable. Final revegetation and capillary break design (if necessary) shall be determined as part of remedial design activities. | |

[5] - Criteria D applies to Engineered Caps at NST, GG and BG set forth in the following figures: Figures NST-1, GG-1, and BG-1.

[6] - Criteria E applies to Engineered Caps in upland areas of DE and NST set forth in the following figures: Figures DE-1 and NST-1. Criteria E does not apply to any sub-irrigated, wetland or riparian areas of NST and DE set forth in the following figures: Figures NST-1 and DE-1.