Fall 11-6-2021

Comments for: Draft Residential Metals Abatement Program Quality Assurance Project Plan (Non-Residential Parcels), Atlantic Richfield Company and Butte- Silver Bow County, dated October 8, 2021

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Re: Comments for: Draft Residential Metals Abatement Program Quality Assurance Project Plan (Non-Residential Parcels), Atlantic Richfield Company and Butte-Silver Bow County, dated October 8, 2021

Dear Eric and Mike:

The U.S. Environmental Protection Agency (EPA), in consultation with the Montana Department of Environmental Quality (DEQ), is providing comments on the *Draft Residential Metals Abatement Program (RMAP) Quality Assurance Project Plan (QAPP) (Non-Residential Parcels) (dated October 8, 2021)* that was prepared by ERM-West, Inc., on behalf of the Atlantic Richfield Company (ARCO) and Butte-Silver Bow County (BSB).

Comments have been stratified into the following sections – General Comments; Specific Comments; Comments on Figures, Tables, and Attachments; and Minor/Editorial Changes. Please review these comments and schedule a meeting with BSB, ARCO, the Agencies (and their respective consultants) so that we can discuss the expected changes prior to the development of the draft final version of the QAPP.

General Comments:

1. The Agencies have reached the conclusion that all schools and daycares will undergo an indoor dust sampling regimen (i.e., entrance floor mats and floor surface sampling in *accessible* areas) without regard to age of building construction, remodeling status/timing, or outdoor soil results. Given the sensitive populations in these buildings, the Agencies need to rely on measured data to document whether dust exposures have the potential to result in unacceptable risks. Accessible areas are defined as classrooms, hallways, bathrooms, and other areas (e.g., cafeterias) that would be frequently used by students/daycare children. In addition, sampling of surfaces in *inaccessible*

areas and attics/crawlspaces[1] will also be performed for all schools and daycares unless the building was constructed or remodeled after historic mining and smelting operations were terminated in 1980 or if the building has had an interior remediation. Inaccessible areas are defined as locations that would not be frequented by students/daycare children but may be used by teachers or administrative/janitorial staff (e.g., staff lounges, supply closets). Note that EPA is proposing to eliminate nearly all micro-vacuum indoor dust sampling in *accessible* locations based on experience during the Anaconda school investigation, which had difficulties obtaining sufficient sample mass in areas that were routinely cleaned. Micro-vacuum sampling will only be performed on surfaces in inaccessible areas or in attics/crawlspaces. Please reframe this QAPP to have all schools and daycares sampled in a consistent manner without regard to the building-specific characteristics (e.g., construction age, outdoor soil sample results).

QAPP has been revised to follow proposed sampling protocol outlined in revised Figure 5.

2. An indoor dust exceedance of the mercury action level would be of concern and must be immediately reported to the Agencies. In the event that indoor dust concentrations of mercury exceed the solid media action level, the Agencies expect that a separate site-specific sampling plan will be prepared to investigate the source of the mercury and to measure mercury vapor concentrations in indoor air. This separate plan would be submitted to the Agencies for review and approval. In this regard, please modify this QAPP to remove sampling and analysis procedures specific to mercury vapor and simply document that those specific details would be provided in a later plan.

   Section 3.4 Mercury Vapor Sampling (re-numbered from Section 3.5) has been updated: "When RMAP mercury vapor sampling is required, the procedures to be used will be included in an agency approved site-specific field sampling plan."

   Section 3.5.1 Residential Mercury Vapor Sampling has been deleted.

3. Similarly, it is anticipated that an indoor dust exceedance of the lead action level would necessitate additional sampling, including lead analysis of interior and exterior paint by XRF, to evaluate the source of the lead exceedance. The Agencies expect that a separate site-specific sampling plan will be prepared to investigate the source of lead in the event of an exceedance of the lead action level. This separate plan would be submitted to the Agencies for review and approval. Therefore, please modify this QAPP to remove sampling and analysis procedures specific to lead paint and defer these details to the later plan.

   Section 3.2.16 Opportunistic Dust Monitoring has been deleted.

4. The project schedule needs to not only accommodate sampling while school is in session, but also to conduct sampling when outdoor soil track-in has the highest potential to occur. This is most likely to occur in spring when soil conditions are moist and not frozen or covered by snow. Please reframe this QAPP to commence when ground conditions are optimized for soil track-in at the schools and daycares.

   QAPP has been revised to include schedule considerations. Figure 4 Project Schedule has been revised.

[1] The term "attics/crawlspaces" is used herein for consistency with RMAP terminology. For schools/daycares, there may not be actual attics or crawlspaces similar to what is encountered at residential properties. Rather, these areas maybe better described as rarely accessed areas, such as pipe catchment or rafter areas, located above or below occupied spaces.

5. EPA plans to provide oversight during reconnaissance and sampling activities, particularly in the early phases of this sampling effort. Unless informed otherwise, please assume that EPA or an EPA contractor will be providing oversight. Please maintain a high level of communication regarding the reconnaissance and sampling whereabouts so this oversight can be effectively performed. Please also include a discussion of EPA oversight in Section 4, Assessment and Oversight.

Section 2.1 Agency Oversight and **Section 4. Assessment and Oversight** have been revised to include the sentence: "The USEPA or a USEPA contractor will provide oversight during site reconnaissance and sampling activities."

Specific Comments:

1. Section 1.0.
    a. In the third paragraph, it should be made more clear that one of the focuses of this QAPP is sampling of interior dust. Therefore, please add the following after the first sentence: "Presently, no interior dust data for schools is available."

        Section 1.0, paragraph 3, Sentence 2 has been inserted as requested.

    b. Please modify the third sentence in the third paragraph to read (new text is in *italics*): "Interior assessments and sampling of *interior dust in* non-residential schools, preschools, and non-residential daycares (see Figure 2) are addressed in this Quality Assurance Project Plan (QAPP)."

        Section 1.0, paragraph 3, Sentence 4 (renumbered) has been modified as requested.

2. Section 1.1.
    a. In the last sentence of the first paragraph, please remove the word "Final".

        Section 1.1, paragraph 3, Sentence 4 has been modified as requested.

    b. In the second paragraph, please update the reference to the *EPA Region 8 QA Document Review Crosswalk*; it should be "USEPA (2017)" and not "USEPA (2016)". The crosswalk is available at: https://www.epa.gov/quality/managing-quality-environmental-data-epa-region-8.

        Section 1.1, paragraph 2, Reference modified to (USEPA 2017) as requested.

        Section 6. References has been updated to USEPA. 2017. The hyperlink has been added: https://www.epa.gov/quality/managing-quality-environmental-data-epa-region-8#tab-qa. Just an FYI: The 2016 reference is still included under QMP on this page; scroll down further to QAPP for 2017 reference.

3. Section 2.0. Please modify this paragraph as follows: "…requirements for sampling and *analysis* activities on each project site within the Program area. *Figure 3 summarizes the project personnel involved in the planning, approval, and implementation of this QAPP.* Project personnel…"

    Section 2.0 modified as requested.

4. Section 2.2. Please modify the last sentence to read: "…will elect to self-perform portions of the RMAP sampling and *analysis* work in consultation…"

    Section 2.2 modified as requested.

5. Section 2.4. Please specify in this paragraph the analytical laboratory that will be performing the work.

    Section 2.4, sentence 1 has been revised: "Pace Analytical Laboratories, LLC, contracted to

work on this Program's project,…".

6. Section 2.5. Please specify the data validation consultant who will be performing the work.

   Section 2.5, sentence 1 has been revised: "The data validation consultant Environmental Standards, Incorporated….

7. Section 2.6. Please specify the environmental consultant who will be performing the work.

   Section 2.6, sentence 1 has been revised: "ERM, the environmental consultant contracted to perform the indoor dust investigations,…".

8. Section 2.7.

   a. Please modify the second sentence of the first paragraph as follows: "Currently, there is no indoor dust data for schools and indoor school dust sampling will be performed to *determine if indoor dust* levels of lead, arsenic, and mercury *are* above the current residential cleanup levels."

      Section 2.7, paragraph 1, sentence 2 has been revised as requested.

   b. Please modify the last two sentences of the first paragraph as follows: "…aerial emissions) and non-mining-related sources *(e.g., lead paint or broken mercury thermometers). This component of the RMAP Program evaluates arsenic, lead, and mercury present in interior dust.*"

      Section 2.7, paragraph 1, sentences 3 and 4 have been revised as requested.

   c. Please replace the middle paragraph with the following text:

      "Sampling and assessment are needed to determine remediation or abatement requirements if:

      - Accessible indoor dust exceeds solid media action levels in areas currently accessible to students or daycare children. Accessible dust is surface dust located in in areas that are commonly occupied by students or daycare children, such as classrooms, hallways, bathrooms, and other areas (e.g., cafeterias) within the school or daycare.
      - Inaccessible indoor dust exceeds solid media action levels in areas mainly accessible to facility staff. Inaccessible dust is surface dust found in locations such as boiler or mechanical rooms, tops of ceiling tiles, janitorial closets, on ventilation system ductwork or vents, and storage rooms in areas that are not commonly accessed or occupied by students or daycare children.
      - For buildings constructed in or before 1980, dust in attics and/or crawlspaces exceeds solid media action levels where there is an exposure pathway to an interior occupied space. Information on attics and/or crawlspaces with elevated dust levels should made available to facility personnel performing maintenance activities to mitigate the potential for future exposures."

      Section 2.7, paragraph 1, sentences 3 and 4 have been revised as requested.

   d. Please insert the following text at the end of Section 2.7: "This QAPP was also developed in response to the Agencies *2020 Unilateral Administrative Order Amendment* (UAO Amendment) *for "Partial Remedial Design/Remedial Action Implementation and CertainOperation and Maintenance at the Butte Priority Soils Operable Unit/Butte Site* (EPA Docket No. CERCLA-08-2011-0011) (USEPA 2020a). The UAO Amendment expanded the RMAP boundary (see Figure 1) and also expanded the Program to include schools, parks, and daycare facilities." Please also add the UAO Amendment to the list of

references.

Section 2.7, paragraph 3 been revised as requested.

Section 6. References included the USEPA.2020a. UAO Amendment.

1. Section 2.8. Note in this section that the existing BPSOU Data Management Plan (Atlantic Richfield Company 2017) is being updated and that the 2020 version of the document is currently under review. The final, approved version of the Data Management Plan should ultimately be the governing document for this QAPP. It should also be noted that only validated data will be uploaded to the Program database.

Section 2.8, paragraph 3 has been revised as requested.

2. Section 2.9.1, Step 1, Describing the conceptual model.
    a. Please modify the first sentence to read: "…the presence of contaminants in soil *and interior dust* around Butte…"
    b. In the second sentence, lead-based paint is one example of a non-mining source. Please provide examples of other "non-mining sources" that have also resulted in contamination in some areas.
    c. Please modify the third sentence to read: "…shoes or clothing) or through open doors and windows *via windblown airborne particulates*."
    d. Please add the following to the fourth sentence: "…incidental ingestion when dust particles are inhaled and then swallowed*, and through incidental ingestion due to hand-to-mouth contact with dust-laden surfaces*."
    e. Please modify the remainder of the paragraph to read: "When people contact contaminated dust, they may be exposed to contaminants, which could pose a health risk if concentrations are above health-protective concentrations. *The residential lead, arsenic, and mercury soil action levels established for the Program account for and are applicable to indoor dust contribution to total exposures. The Program has also established a residential action level for mercury vapors in indoor air*. In order to investigate this problem, data quantifying contaminant concentrations *in indoor dust, and when applicable, mercury vapor*, will need to be collected, compared to the appropriate project action levels, and used for remedial decision-making."

Section 2.9.1, Step 1, Describing the conceptual model of the potential hazard has been revised as requested.

3. Section 2.9.1, Step 2, Key elements/questions. Please modify this paragraph to read as follows: "The Program requires that all area schools and non-residential daycare facilities within the 2020 RMAP Expanded Area be sampled and assessed based on the sample decision framework specified on Figure 5. The goal is to use best efforts to obtain access to all applicable non-residential schools, daycares, and preschools within the 2020 RMAP Expanded Area (see Figure 1) to complete an interior dust investigation. Exterior soil sampling at schools, preschools, and non-residential daycares was addressed in a separate QAPP (ARCO/BSB 2021). Interior dust investigation/sampling are addressed in this QAPP."

Section 2.9.1, Step 2 Key Elements/questions has been revised as requested.

4. Section 2.9.1, Step 2, Specifying the primary study questions.
    a. In the second paragraph regarding the primary study questions, please add the following

question to this paragraph: "…may pose a risk to human health (i.e., above the action levels)? If action levels are exceeded, can the source of the exceedance be ascertained (e.g., historic smelter emissions, lead-based paint, track-in from outside, historic mining operations, or some other source)?"

b. As a follow-on to the primary study questions, please add the following paragraph to this section: "Specifically, these study questions can be detailed and broken down further as follows:

1) Are indoor dust concentrations of arsenic, lead, and/or mercury in currently accessible areas of non-residential properties greater than the BPSOU soil/dust action levels?

2) Are indoor dust concentrations of arsenic, lead, and/or mercury in inaccessible areas of non-residential properties greater than the BPSOU soil/dust action levels?

3) Do attics and/or crawlspaces have dust concentration of arsenic, lead, and/or mercury greater than the BPSOU soil/dust action levels?

4) Is lead, arsenic, and/or mercury being tracked into schools from outside sources?

5) If mercury dust concentrations exceed the action level, are mercury vapor concentrations in indoor air greater than the BPSOU mercury vapor action level?"

Section 2.9.1, Step 2 Specifying the primary study questions has been revised as requested.

5. Section 2.9.1, Step 2, Determining alternative actions. Please replace the text in this section with the following:

"**Determining alternative actions**. For all schools and daycares, indoor dust shall be collected from entrance floor mats and floor surfaces in accessible areas. For buildings constructed prior to 1980, indoor dust shall be collected from inaccessible surfaces and attics/crawlspaces. As appropriate, opportunistic sampling of visible surface dust will be performed in accessible areas when present. Possible alternative actions as a result of this sampling, as depicted in Figure 5, are as follows:

- Take no action. If indoor dust concentrations of lead, arsenic, and mercury are below their respective BPSOU residential soil/dust action level, no further action is needed.
- Perform indoor mercury vapor sampling. If mercury dust concentrations exceed the BPSOU residential soil/dust action level, indoor mercury vapor sampling would be necessary.
- Perform lead paint analysis. If lead dust concentrations exceed the BPSOU residential soil/dust action level, interior and/or exterior paint analysis may be necessary to identify the lead source.
- Complete interior remedial action. If indoor dust concentrations of lead, arsenic, and/or mercury are greater than or equal to their respective BPSOU residential soil/dust action level, remedial actions would be necessary. Remedial actions would consist of indoor dust removal or containment. Removal action may include location- and media-specific cleaning, use of a remediation grade/high-efficiency particulate air (HEPA) filter vacuum, carpet replacement, insulation replacement, or other appropriate means. Containment measures may include the use of sealants, coverings, or other physical migration pathway termination

options.

Section 2.9.1, Step 2 Determining alternative actions has been revised as requested.

Specifying the decision statement. The decision statements are as follows:

- Determine whether mercury vapor sampling is required.
- Determine whether lead paint analysis is required.
- Determine whether remedial action (indoor dust removal or containment) is required."

Section 2.9.1, Step 2 Specifying the decision statement has been revised as requested.

6. Section 2.9.1, Step 3, Identifying the number of variables.

   a. Please modify the first sentence to read: "Arsenic, lead, and mercury concentrations *(in mg/kg)* should be determined for each *dust* sample collected *from entrance floor mats, accessible floor surfaces and inaccessible surface locations, and attics/crawlspaces*."

   b. There are other variables to be collected in addition to arsenic, lead, and mercury concentrations in indoor dust. These include, but are not limited to, documenting the areas sampled (i.e., which rooms), potential exposure routes between occupied spaces and attics/crawlspaces, time of year and antecedent weather conditions, approximate surface dust mass. Based on the dust results, it may also be necessary to collect data on mercury concentrations in indoor air and lead concentrations for interior and exterior paint. These and other additional factors should be added to the list of variables to collected in this paragraph.

Section 2.9.1, Step 3, Identifying the number of variables has been revised as requested.

7. Section 2.9.1, Step 3, Identifying the appropriate action levels. After the last sentence, please add the following: "The BPSOU residential action level for mercury vapor is 0.43 micrograms per cubic meter."

Section 2.9.1, Step 3, Identifying the appropriate action levels has been revised as requested.

8. Section 2.9.1, Step 3, Identifying appropriate sampling and analysis methods.

   a. Please modify the fourth sentence of the second paragraph to read: "Because samples must be packaged and shipped *on ice (<6 °C)* to a laboratory for mercury analysis…"

   b. Please delete "If inorganic analyses are used," in the last sentence.

Section 2.9.1, Step 3, Identifying appropriate sampling and analysis methods has been revised as requested.

9. Section 2.9.1, Step 4, Describing what constitutes a sampling unit. In Anaconda, prior to sampling, EPA selected representative rooms or hallways dispersed across each floor to sample based on the knowledge that the air space was shared among multiple rooms and hallways. In a large school, for example, this might be two representative rooms and a hallway on a given floor where floor surface samples were collected. This approach made it easier to document the planned sampling locations in advance, provided clear information to the field teams on where they should sample (e.g., sample the floor surface of Room 222), and allowed for the collection of multiple samples in the same air space. ARCO/BSB are proposing to sample all the spaces together because they share the same air space, which will result in fewer samples being collected. The Agencies would prefer that representative rooms and hallways are sampled to better define the sampling locations in lieu

of a single composite collected across multiple locations. The Agencies recognize that each school and daycare will be different and the site-specific conditions must be considered when identifying sample locations. When developing the sampling plans for each school/daycare, please consider the concepts discussed above in consultation with the on-site EPA representative.

Section 2.9.1, Step 4, Describing what constitutes a sampling unit, paragraph 2 has the following sentence included: "The on-site USEPA representative will be consulted to determine the number of representative rooms and hallways for sample collection at each school/daycare."

10. Section 2.9.1, Step 4, Timeframe for collecting data. This section should discuss any temporal requirements on the sampling (i.e., specify any temporal constraints on the sampling investigation). For example, not only should this section discuss the need to assess all schools when schools are in session, but also consider the time of year the floor mat sampling occurs (e.g., moist spring, dry fall, or snowy winter conditions). As indicated in the general comments, the Agencies recommend sampling during a time period where track-in will be maximized, so it may be necessary to defer sampling until spring 2022 to achieve optimal conditions. Please modify the text accordingly.

    Section 2.9.1, Step 4, Timeframe for collecting data has the following sentence included: "The collection of floor mat dust samples will occur during a season when track-in will be maximized (e.g., moist spring conditions)."

11. Section 2.9.2.2, Accuracy/Bias. ICP Serial Dilution samples, ICP interference check standards, calibration recoveries, and blank analyses are also other laboratory QC that assess accuracy and bias and should be added to this section.

    Section 2.9.2.2, Accuracy/Bias, paragraph 1, sentence 5 has been revised: Additional laboratory QC samples (serial dilution samples, interference check samples, calibration standards, calibration blanks, and method blanks) may be used to assess accuracy as appropriate to the analytical method.

12. Section 2.9.2.5. It appears the second sentence of the last paragraph may be a holdover from the QAPP prepared for school soil sampling (i.e., 150 µm vs. 250 µm soil fractions that were analyzed). Please confirm the accuracy of this sentence for the dust sampling effort and revise as appropriate.

    Section 2.9.2.5 Completeness, paragraph 3, sentence 2 was removed.

13. Section 2.9.2.6. Please provide the anticipated MDLs for arsenic, lead, and mercury to document they will be adequate (i.e., include a cross-reference to Table 1). Also, please consider if this section could be combined with Section 2.9.2.7 as their content appears redundant.

    Section 2.9.2.6, paragraph 1 has been revised to include: "The MDLs for arsenic, lead and mercury are included in Table 1."

    Section 2.9.2.7 Method Sensitivity header has been deleted. Text has been merged into Section 2.9.2.6 as paragraph 2.

14. Section 2.10. Please review and modify this section as necessary to incorporate the different entities, including subcontractors, performing the field work contained in this QAPP.

    Section 2.10 has been updated to include *ERM field personnel*

15. Section 2.11. Please see earlier comment (on Section 2.8) regarding the Data Management Plan.

    Section 2.11, sentence 5 has been updated to "Refer to the BPSOU Final Data Management Plan (Atlantic Richfield 2017 or most current revision)…"

16. Section 2.11.2.

a. There is some carryover text from the school soil sampling QAPP that needs to be removed in this section. For example, the bullet for "All field measurements made" discusses polygons and should be changed to include dust-specific measurements, such as the area sampled, HVS3 pressure readings, sample masses, and other measurements related to indoor dust sampling.

b. Please delete the bullet discussing "Samples taken by other parties".

c. Please modify the bullet "Collection of field duplicates" to read "Collection of field duplicates and information on the associated parent sample".

Section 2.11.2 Field Documentation has been revised as requested.

17. Section 2.11.4. Please modify this section to note that COCs will also be provided in the laboratory data packages.

Section 2.11.4 Chain-of-Custody Records, paragraph 2 has been revised to include sentence 3: "The chain-of-custody records will be included in the laboratory data packages."

18. Section 2.11.5. Please modify this section to note that the associated laboratory data packages will be sufficient for both the Stage 2 and Stage 4 required validations.

Section 2.11.5 Analytical Laboratory Records, sentence 4 has been revised: "The deliverable (data package or report) issued by the laboratory must include data necessary to complete Stage 2 and Stage 4 validation of laboratory results."

19. Section 2.11.6. The last two paragraphs discuss the preparation of an annual DSR; however, the interior dust sampling is expected to be a one-time event. Thus, the DSR should be specific to the interior dust sampling program rather than part of an annual DSR. The interior dust sampling DSR should be submitted to the Agencies for review approximately 3 months after all data validation activities are completed.

Section 2.11.4 Project Data Reports, paragraphs 2 and 3 have been revised to replace "annual DSR" with "interior dust sampling DSR".

20. Section 3.2.2.

a. As indicated in the general comments, floor mat sampling using the HVS3 should be performed at all schools/daycares regardless of the outdoor soil conditions. Please modify this section accordingly.

b. Prior to purchase, please consult with EPA regarding the floor mats that will be used for the entrance floor sampling. Floor mats for the entrance sampling in Anaconda were purchased from Direct Mat in Ringgold, GA, (800) 295-3932, Model 13TOUGH, 18" X 24" TOUGH RIB- CHARCOAL- 3/4" VINYL EDGING. These floor mats were effective for the Anaconda sampling effort and are also recommended for use during the RMAP sampling.

The ERM field team will consult with EPA to verify the floor mats meet the project requirements.

Section 3.2.2, sentences 2 and 3 have been revised to read: "The field sampling team will consult with USEPA to obtain replacement mats for collection of dirt at building entrances. At all schools/daycares replacement mats will be put in place the week prior to the interior sampling to collect samples under typical conditions to determine if COCs are being tracked into the schools."

21. Section 3.2.3.

a. As indicated in the general comments, floor surface sampling using the HVS3 should be performed at all schools/daycares. Please modify this section accordingly.

b. Please modify the first sentence to read: "A representative number of floors will be vacuumed *using the HVS3* under typical conditions…" Every effort should be made to collect sufficient sample mass with the HVS3, including sampling floor surfaces in additional room areas.

Section 3.2.3 Floor Surface Sampling, sentence one has been revised: "A representative number of floors will be vacuumed using the HSV3 under typical conditions to obtain dust samples for analysis of COCs in readily accessible interiors within all schools/daycares." Sentence 3 has been inserted: "Efforts will be made to collect sufficient sample mass with the HSV3, including sampling in additional room areas."

22. Section 3.2.4.1. EPA is proposing that floor surface sampling will provide sufficient information to assess surface dust in accessible areas. However, there may be circumstances where a micro-vacuum dust sample may be collected in accessible areas (e.g., an opportunistic collection of a micro-vacuum sample of visible surface dust). Please modify this paragraph to read: "Floor surface sample results will be used assess surface dust in accessible areas of schools and daycares. However, there may be circumstances where an opportunistic micro-vacuum surface dust sample may be collected to provide useful information on surface dusts within accessible areas (e.g., top of cabinets, bookshelves) if visible dust is observed. These surface sampling results will be used to determine if arsenic, lead, and/or mercury is present in concentrations exceeding cleanup levels."

Replaced text in **Section 3.2.4.1 Accessible Surface Sampling** as requested.

23. Section 3.2.4.2.

a. Please modify this paragraph as follows: "For buildings constructed prior to 1980 (that have not undergone remodeling or had an interior remediation since this time), micro-vacuum surface dust samples will be collected from areas typically inaccessible to students (e.g., boiler or mechanical rooms, tops of ceiling tiles, janitorial closets, ventilation system ductwork or vents, storage rooms, I-beams, etc.). These sample results are intended to provide information on exposure potential to facility staff performing maintenance or other functions in these areas. In addition, these samples may also provide information on the potential source of contaminants if elevated concentrations are present in floor dust samples."

Replaced text in **Section 3.2.4.2 Inaccessible Surface Sampling** as requested.

b. Please add a new section titled: "3.2.4.2 Attic and Crawlspace Sampling". Please insert the following text for this new section: "For buildings constructed prior to 1980 (that have not undergone remodeling or had an interior remediation since this time), micro-vacuum surface dust samples will be collected from attic and crawlspaces if there is an exposure pathway to an occupied space. These dust samples will provide information on the potential source of contaminants if elevated concentrations are present in floor dust samples."

Added **Section 3.2.4.3 Attic and Crawlspace Sampling** and inserted the text requested.

24. Section 3.2.6. Please remove this section. As indicated in the general comments, if needed, a site-specific plan to detail the assessment of lead concentrations in interior and exterior paint should be developed, which will include the specifics of any XRF analysis.

Removed **Section 3.2.6 Opportunistic Dust Monitoring**.

25. Section 3.4.1. Please describe in this section (and in the quality control section) that blank samples

of silica sand will be collected from a number of the floor mats before they are put in use at the schools to confirm background concentrations of contaminants.

Added sentence at end of **Section 3.5.1** (renumbered from 3.4.1), paragraph 1: "A floor mat blank sample will be collected at the beginning of each sampling event as described in Section 3.10.5."

Added **Section 3.10.5 Floor Mat Blanks** (using acid washed glass beads) to **Section 3.10 Field Quality Control Samples.**

26. Section 3.4.2.

    a. Note in the first paragraph that it should be determined and noted when floors were last cleaned.

    b. In the second paragraph, insert the following before the last sentence: "The analysis of arsenic and lead will be prioritized over the mercury analysis."

    Section 3.5.2 (renumbered from 3.4.2) has been modified as requested.

27. Section 3.4.3.

    a. Please specify the sample cassettes to be used, the process to be used for obtaining pre- and post-sampling weights, and micro-vacuum flow rate. In Anaconda, samples were collected on 37-millimeter (mm) two-piece air sampling cassettes with matched-weight mixed cellulose ester (MCE) filters. Prior to sampling, ten unused filters (from the same sample lot) were weighed to establish an average filter weight. Then, sample weights were calculated by subtracting the average filter weight from the measured filter plus sample weight for each sample. Filter lot blank samples were analyzed by ICP-MS in accordance with EPA Method 6020A prior to use of the cassettes in the field.

    b. EPA's experience in Anaconda indicates that a minimum sample mass of 0.05 grams is needed for analysis, as measured by a portable scale with at least 0.01-gram readability. Please add the minimum mass required by laboratory for the surface dust sampling.

    c. The ASTM micro-vacuum procedure specifies a flow rate of 2.5 liters per minute (L/min) for the micro-vacuum. In Anaconda, to augment the mass of sample collected, the allowable flow rate was increased to 6.0 ± 0.5 L/min. Please specify the flow rate intended for the surface dust sampling.

    d. Please modify the last two sentences to read: "Samples will typically be micro-vacuumed from multiple sub-locations (a minimum of two) within the area sampled to form a composite sample, typically in the same room or space (e.g., mechanical room). Samples in inaccessible locations with heavy dust may also be collected using a disposable paintbrush and properly decontaminated dustpan."

Section 3.5.3 (renumbered from 3.4.3) has been modified as requested. The content has been re-ordered for readability, with an additional paragraph added for micro-vacuum sampling details.

28. Section 3.8. Please clarify "respective laboratories" in this sentence. It is anticipated that all samples will be sent to Pace Analytical for analysis. Please clarify if multiple laboratories will besupporting this investigation.

Section 3.9 (renumbered from 3.8), sentence 1 has been revised: "respective laboratories" has been corrected to "laboratory".

29. Section 3.8.2. ICP Interference check samples, internal standards and tunes should be discussed in this section. Please update the text accordingly.

Section 3.9.2 (renumbered from 3.8.2), paragraph 2 has been revised to include: "Instrument

QC samples include calibration verification standards, calibration blanks, and contract required detection limit standards. ICP-MS QC samples also include tuning standards, interference check standards, and internal standards."

30. Section 3.8.2.1. Initial calibration blanks and continuing calibration blanks will be validated as well and should be listed in this section. Please update the text accordingly.

Section 3.9.2.1 (renumbered from 3.8.2.1), sentence 6 included the calibration blanks: "Initial and continuing calibration blanks are also analyzed every 10 samples and samples are re-analyzed within compliant blank analyses." This was put into a separate paragraph for visibility.

31. Section 3.9. At the end of the second paragraph, it is mentioned that all sampling equipment is "one time use". However, this is not the case, as the HVS3 vacuum must be decontaminated between samples. Please describe the field quality control samples to be collected for the HVS3 sampler to ensure decontamination procedures are effective.

Section 3.10 (re-numbered from 3.9), sentence 2 has been revised: "Sampling equipment for soils and indoor dust filter cassettes are anticipated to be "one time use"; therefore, no external contamination blank/cross-contamination blank samples will be submitted. The HVS3 vacuum is decontaminated between samples; equipment blank samples will be collected to ensure decontamination procedures are effective."

32. Section 3.10. The laboratory should notify ARCO/BSB when they will be disposing of the samples. Please update the text accordingly.

Added sentence to end of **Section 3.11** (re-numbered from 3.10): "The laboratory will notify ARCO/BSB when they will be disposing of samples."

33. Section 4.0. Please specify if any internal audits are planned for the indoor dust sampling.

Text has been revised to indicate internal audits may be performed. *Internal audits are not planned at this time. If concerns are raised during work execution, or observed the agency oversight, internal audits will be scheduled.*

34. Section 5.0. There should be discussion on how many data packages will be validated at Stage 2 and Stage 4 per school. It should also be noted that each individual data package will have a data validation report. Please update the text accordingly.

Section 5.0, sentence 3 has been updated: "The analytical data collected under this QAPP and produced by analytical laboratories will undergo a combination of Stage 4 and 2B data validation *which is described in section 5.2.*

Section 5.2.3 Data Validation Ratios has been added to address how many data packages will be validated at Stage 2B and Stage 4.

35. Section 5.1.2.2. The process by which the laboratory prepares and uploads an EDD to the ARCO EQuIS database is unclear. It is not common practice for the laboratory to load project results. Please clarify the procedure for how results from the laboratory are incorporated into the project database. Only the validated EDD should be uploaded into the database in order to ensure that the final validated data is in the database. This step would not be performed by the laboratory.

Section 5.1.2.2, paragraph 3 has been revised to include: "A non-validated EDD is uploaded to the AR EQuIS database by the laboratory to capture the laboratory supplied EDD. Once the laboratory supplied EDD is loaded, the data validator is notified and downloads the non-validated EDD from the database for the verification and validation process. Once data verification and validation is complete, the qualifiers will be added to the downloaded EDD, the enforcement "E"

and screening "S" qualifiers are added and the revised EDD is uploaded to the database by the validator for final reporting."

36. Section 5.2.2. It should be noted that each data package will have an individual data validation report. All the validation reports will be an appendix to the DSR. Please update the text accordingly.
See **Section 5.2.1**, paragraph 2: "Stage 2B and Stage 4 data validations and reports are generated by an initial reviewer on a per-SDG or sampling location basis from the complete Level 4 data package to ensure completeness and data usability of data packages."
Inserted **Section 5.2**, paragraph 3, sentence 2: "The data validation reports for each SDG will be included as an appendix to the DSR."

Comments on Figures, Tables, and Attachments:

1. Table 5-1. The definition for the non-detect "U" qualifier is incorrect. The definition is as follows: "The analyte was analyzed for, but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate." Please update the table accordingly. The definition for the estimated non-detect "UJ" uses the term "RL." For this project it is noted that non-detect values are determined based on the MDL and not the RL. Terminology of reporting limit terms need to be consistent in all text and tables. Please update the definition and identify in the sensitivity section that non-detect values are reported at the MDL value.
Table 5-1 changes have been made as requested.
2. Figure 3. Please consider to clarify some aspects of this figure: 1) Color coding should be added to the legend and a third color be added for Agency oversight; 2) Affiliations are inconsistently presented, for example, sometimes affiliation is included in parentheses and other times at the top of the cell; 3) Chad Anderson's name is misspelled; 4) Consider an alternative name for "laborers" as this term is not indicative of their skill sets (e.g., environmental technicians may be a better term).
Figure 3 changes have been made as requested.
3. Figure 5. Several changes are needed for Figure 5 to modify the sampling design and alternate actions as described in the general comments above. The Agencies prepared a modified example of Figure 5 for inclusion in the QAPP (see attachment).
Figure 5 has been revised following the modified example.
4. Appendix E. These letters appear to have been developed using the outdoor soil letters as a template. Additional changes are needed to modify these letters to be specific to indoor dust.
Appendix E Notification letters have been modified to be specific to indoor dust (and/or earthen basement soil).

Minor/Editorial Changes:

1. Section 2.9.1, Step 1, Describing the problem. In the first sentence, change "haved" to "have". In the last sentence, please change "non-related" to "unrelated".

Section 2.9.1, Step 1, Describing the problem, sentence 1 has been changed from "Properties...had the potential…" to "Properties…have the potential…..".
2. Section 2.9.1. Step 1, Identifying available resources. Please modify this sentence to read: "Atlantic Richfield (Section 2.2) and BSB (Section 2.3), *and their support contractors*, will provide necessary project resources (financial and staffing) to properly implement the Program. Project schedule details are provided in Section 2.8."
Section 2.9.1. Step 1, Identifying available resources, sentence 1 has been changed to read "Atlantic Richfield (Section 2.2), BSB (Section 2.3), *and their support contractors* will provide...".

3. Section 3.3.1. Please delete the header for Section 3.3.1 and keep just the heading "3.3 Mercury Vapor Sampling".
   Section 3.4.1. Residential Mercury Vapor Sampling (re-numbered from 3.3.1) has been removed following the request made in General Comment 2.
4. Section 3.7. Please delete "and sample depth" from the last sentence of the first paragraph.
   Section 3.8 Sample Identification (re-numbered from 3.7) has been updated to meet the BP database naming conventions and to include soils. Depth was removed for the indoor dust samples.
5. Section 5.2.2. In the bulleted items, there is a typographical error. "CP-MS" interference check samples should be changed to "ICP-MS" interference check samples.
   Section 5.2.2 bullet was corrected to "ICP-MS interference check samples".

If you have any questions or concerns, please call me at (406) 457-5019.

Sincerely,

NIKIA GREENE

Digitally signed by NIKIA GREENE
Date: 2021.12.06 13:50:49 -07'00'

Nikia Greene

Remedial Project Manager

Attachments: EPA Crosswalk
Revised Figure 5

cc: (email only)
Butte File
Jenny Chambers; DEQ
Matt Dorrington, DEQ
Daryl Reed; DEQ
Jon Morgan; DEQ counsel
Carolina Balliew; DEQ
Harley Harris; NRDP
Katherine Hausrath; NRDP
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John Gallagher; BSBC
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Julia Crain; BSBC
Abby Peltomaa; BSBC
Jeremy Grotbo; BSBC
Anne Walsh; UP
Robert Bylsma; UP counsel
Leo Berry; BNSF and UP counsel
Mark Engdahl; BNSF
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Robert Lowry, BNSF counsel
Loren Burmeister; AR
Josh Bryson; AR
Mike Mcanulty; AR
Dave Griffis; AR
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Pat Sampson; Pioneer for AR
Scott Sampson; Pioneer for AR
Scott Bradshaw; TREC
Mike Borduin; Pioneer for AR
Karen Helfrich; Pioneer for AR
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Don Booth; AR consultant
Ted Duaime; MBMG
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David Shanight, CDM Smith
Curt Coover, CDM Smith
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Ian Magruder; CTEC (Tech Advisor)
Janice Hogan; CTEC
Kristi Carroll; Montana Tech Library