NEVADA DIVISION OF
ENVIRONMENTAL
PROTECTION

STATE OF NEVADA
Department of Conservation & Natural Resources

Steve Sisolak, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

February 9, 2022

Jay A. Steinberg
Nevada Environmental Response Trust
35 East Wacker Drive, Suite 690
Chicago, IL 60601

Re: **Tronox LLC (TRX) Facility**
Nevada Environmental Response Trust (Trust) Property
NDEP Facility ID #H-000539
Nevada Division of Environmental Protection (NDEP) Response to: R*emedial Investigation Report for OU-1 and OU-2*

Dated: July 9, 2021

Dear Mr. Steinberg,

The NDEP has received and reviewed the Trust's above-identified Deliverable and provides comments in Attachment A. A revised Deliverable should be submitted by **06/09/2022** based on the comments found in Attachment A. The Trust should additionally provide an annotated response-to-comments letter as part of the revised Deliverable.
Please contact the undersigned with any questions at wdong@ndep.nv.gov or 702-668-3929.

Sincerely,

Dong Weiquan

Weiquan Dong, P.E.
Bureau of Industrial Site Cleanup
NDEP-Las Vegas City Office

WD:cp

EC:
Jeffrey Kinder, Deputy Administrator NDEP
Frederick Perdomo, Deputy Administrator NDEP
James Dotchin, NDEP BISC Las Vegas
Carlton Parker, NDEP BISC Las Vegas
Alan Pineda, NDEP BISC Las Vegas
Allan Delorme, Ramboll Environ
Andrew Barnes, Geosyntec
Andrew Steinberg, Nevada Environmental Response Trust
Anna Springsteen, Neptune & Company Inc.
Betty Kuo Brinton, M Metropolitan Water District of Southern California

Brian Waggle, Hargis + Associates
Brian Loffman, Nevada Environmental Response Trust
Brian Rakvica, Syngenta
Carol Nagai, Metropolitan Water District of Southern California
Carrie Hunt, Olin Corporation
Chris Ritchie, Ramboll Environ
Christine Klimek, City of Henderson
Chuck Elmendorf, Stauffer Management Company, LLC
Dan Pastor, P.E. TetraTech
Dane Grimshaw, Olin
Dave Share, Olin
Dave Johnson, LVVWD
Derek Amidon, TetraTech
Ebrahim Juma, Clean Water Team
Ed Modiano, de maximis, inc.
Eric Fordham, GeoPentech
Gary Carter, Endeavour
Greg Kodweis, SNWA
Jill Teraoka, Metropolitan Water District of Southern California
Joanne Otani, The Fehling Group
Joe Kelly, Montrose Chemical Corporation of CA
Joe Leedy, Clean Water Team
John Edgcomb, Edgcomb Law Group
John Pekala, Ramboll Environ
John Solvie, Clark County Water Quality
Kathrine Callaway, Cap-AZ
Kelly McIntosh, GEI Consultants
Kirk Stowers, Broadbent & Associates
Kirsten Lockhart, Neptune & Company Inc.
Kim Kuwabara, Ramboll Environ
Kurt Fehling, The Fehling Group
Lee Farris, BRC
Marcia Scully, Metropolitan Water District of Southern California
Maria Lopez, Metropolitan Water District of Southern California
Mark Duffy, U.S. Environmental Protection Agency, Region 9
Mark Paris, Landwell
Mauricio Santos, Metropolitan Water District of Southern California
Melanie Hanks, Olin
Michael J. Bogle, Womble Carlyle Sandridge & Rice, LLP
Michael Long, Hargis +
Mickey Chaudhuri, Metropolitan Water District of Southern California
Nicholas Pogoncheff, PES Environmental, Inc.
Nicole Moutoux, U.S. Environmental Protection Agency, Region 9
Orestes Morfin, CA
Paul Black, Neptune & Company
Peggy Roefer, CRC

Peter Jacobson, Syngenta
Ranajit Sahu, BRC
Rebecca Sugerman, U.S. Environmental Protection Agency, Region 9
Richard Pfarrer, TIMET
Rick Kellogg, BRC
R9LandSubmit@EPA.gov
Steve Clough, Nevada Environmental Response Trust
Steven Anderson, LVVWD
Steve Armann, U.S. Environmental Protection Agency, Region 9
Tanya O'Neill, Foley & Lardner L
Todd Tietjen, SNWA
William Frier, U.S. Environmental Protection Agency, Region 9

Attachment

1. General Comments

1) The report was very thorough. Data was reported multiple times in the text making the report longer than was perhaps necessary. While no specific changes are requested in the text from this observation, the readability of future submissions would be helped by using figures and tables more consistently to present observations, and text to convey conclusions drawn from the data presented.

2) Section 2 NERT RI Study Area History. A review of the chemistry of the historical manufacturing processes would have strengthened the list of COPC by including compounds not reported by the manufacturing companies due to the fact that they did not analyze for these compounds. The section does not attempt to examine chemistry reported to determine if the reactions could have produced other byproducts not recorded in the reports. An examination of the chemistry would have shown, for example, that a suite of chlorinated chemicals could be produced by reactions where chlorine came in contact with carbon sources such as graphite electrodes, peat and coal. Please discuss whether byproducts were evaluated.

3) Section 5 Physical and Environmental Setting. The mobile and total water content and hydraulic conductivity in the alluvium (Qal) and the coarse and fine grained sections of the Upper Muddy Creek Formation (UMCF) were compared to laboratory determinations of total and mobile porosity and slug test results.

The NMR hydraulic conductivity estimates were plotted against slug test estimates (Figures E-6 Comparison of Hydraulic Conductivity Estimates, per Operable Unit By operable unit) and E-7 Comparison of Hydraulic Conductivity Estimates, per lithology (by lithology). For a perfect match the points should fall along a 45-degree line. They do not with a significant number of points outside the one order of magnitude lines. The NMR results fall over three orders of magnitude while the slug test results fall over about six orders of magnitude.

The match is better at conductivities greater than 1 ft/d. The results are comparable for the alluvium where the hydraulic conductivity is higher, but NMR tends to overestimate for fine grained sediments Therefore, the NMR method does not appear to be capable of reliably measuring low conductivities associated with fine grained sediments.

Comparison of NMR and laboratory porosity results showed that the NMR results were consistently lower for both total and effective porosity. The differences in the Qal were smaller than for the fine grained UMCF. However, only 3 Qal samples were available.

A potential reason given for the difference was that deeper samples may have been disturbed during sampling. This may result in laboratory samples overestimating the porosity. Therefore, the NMR results could be considered more representative. However, this theory would need to be further investigated before the NMR results could replace the laboratory results.

Overall, these results do not provide enough confidence to allow NMR to replace lab porosity and slug tests. The NMR technique provides additional insights but is not recommended as a standalone technology. At present, it is doubtful that it would be able to provide data to support sequence evaluation of stratigraphy with the necessary confidence to allow use in a feasibility study. However, it may be helpful for the stratigraphic correlation in the places that don't have appropriate lithologic loggings, which is often a case for the old boring loggings.

4) Section 7.0 8.0 RI Results: OU-1 and OU-2. NERT uses the term "background" in connection with groundwater sampling results from a limited number of upgradient wells. However, true background conditions were never established in groundwater for the majority of COPCs in groundwater due to the extent of upgradient impacts from other PRPs. It is recommended that "background" be replaced with "up-gradient" where true background conditions have not been established and cite the draft up-gradient groundwater quality technical memorandum for TDS, arsenic, and perchlorate on issued by NDEP on the January 21, 2016.

5) Section 8.0 RI Results: OU-2. Groundwater Flow: The discussion of Nature and Extent of COPCs in Groundwater should start with a reference to the regional hydrogeology.

This section should start with an overview of the regional hydrogeology that describes sources of water, recharge areas, and discharge areas including from large production wells within the Las Vegas Valley. It should also include a description of general groundwater movement within shallow and deep valley fill deposits within the valley and how regional groundwater movement relates to local site conditions.

In addition to citing estimated hydraulic conductivities and flow velocities, the relative change in hydraulic gradient within the OUs and various water bearing zones should be provided as gradient also plays a role in groundwater velocity.

Changes in groundwater levels and flows may be due to the Groundwater Extraction Systems (GWETs) and changes in pond usage. NDEP suggests presenting the interpretation of historic groundwater elevations and flow directions for the periods such as pre-1940, 1940 - 1980, 1980 - 2000, 2000 - Present to help in better understanding historic COPC migration.

The discussion of water bearing zones should be related to the hydrogeology and sequence stratigraphy described in the prior Section and used to explain hydraulic communication laterally through the sediments and areas of unconfined, semiconfined, and confined groundwater conditions. Because the coarse units of UMCf play a significant role in the contamination migration, NDEP suggests more details on their spatial distribution based on the remediation investigation boring and NMR data.

6) Groundwater Metals Figures. Upgradient concentrations for metals mentioned in the text should also be noted on each figure where the parameter has an established upgradient concentration.

7) Section 9: Conceptual Site Model. Additional Figures: The sources of contamination described in Section 9.4 appear comprehensive, including the description of trespassing chemicals. The text in Section 9.0 is well written and complete, and the first three figures in Section 9.0 do a good job of illustrating the overall site features. However, the conceptual model should include more figures describing/presenting the interactions between sources of contamination, NAPL, groundwater, and

geology to explicitly state what transport pathways and attenuation mechanisms are occurring, and which ones are most important. There are multiple contaminant sources in the study area, and the visual depiction of the interactions could be presented with more clarity using several conceptual figures in this section, to support the information already presented in the text of Section 9.0.

8) Intercept Well Field: It appears the combination of well fields capture the plume(s). But is there any concern that the Interceptor Well Field should be doing more? If the Interceptor Well Field was doing more would there be less need for reliance on the AWF and SWF? This is something that should be addressed during the FS.

9) FS Limitations: The RI concludes by discussing NERT's intent to limit the Feasibility Study (FS) to COPCs originating from or attributed to NERT. It may be technically infeasible to achieve this. This language should be modified with "to the extent technically feasible".

2. Executive Summary

1) "Summary of COPCs for OU-1 and OU-2" on P. ES-3: It would be helpful to cite a figure or figures that show the areas that are discussed.

2) "OU-1 Sources of Contamination" on P. ES-4: This section refers to the Beta Ditch shown on Figure ES-4, but it is difficult to find the Beta Ditch in that figure. Suggest making the label of the Beta Ditch on Figure ES-4 easier to read.

3) "Former AP Plant and Associated Facilities" on P. ES-6

a. This section states that the AP Plant, associated waste containment ponds, and other facilities were located in the northern half of OU-1 south of the IWF/barrier wall and refers to Figure ES-4, but it is not clear from Figure ES-4 where the IWF/barrier wall is.

b. This section states that after closure of the AP-5 Pond, investigation results showed perchlorate concentrations above 1 mg/L in underlying groundwater to a depth of approximately 85 feet. How much above 1 mg/L were the perchlorate concentrations? Note this same statement is in Section 9.4.3 on P. 9-21.

4) "OU-1 Soil Gas" on P. ES-9: ". . . TCE in groundwater originating in and extending from the Western Area Power Administration (WAPA) property" should be changed to "". . . TCE in groundwater originating in and trespassing from the Western Area Power Administration (WAPA) property" similar to the description above of groundwater contamination that is "trespassing from the OSSM site."

5) "OU-2 Sources of Contamination" on P. ES-10: Should add a figure which shows the sources of contamination in OU-2, similar to how Figure ES-4 shows the historical sources of contamination in OU-1.

6) "Sources of Contamination within OU-2 West of Pabco Road (NERT Off-Site Study Area)" on P. ES-10: What were the commercial purposes of the land use in the NERT Off-Site Study Area within OU-2? What was the basis for determining they could not be the source of any Site-related contamination within the area?

Paragraph starting with "Sufficient data" on P. ES-11: The text refers to "hexavalent chromium," but Figure ES-5 refers to "Chromium." The references should be consistent. The typo "COCPs" should be corrected to "COPCs." This same typo is in the second bullet on P. 6-10.

7) "Sources of Contamination within OU-2 East of Pabco Road (Eastside Sub-Area)" on P. ES-12: It would be helpful to cite to a figure that shows the features that are described in the text.

8) "OU-2 Soil Gas" on P. ES-14: Though bromodichloromethane is a COPC in OU-1 and OU-2 groundwater, its isolated presence in OU-2 soil gas is likely related to municipal water distribution and use." Bromodichloromethane has historic sources other than the chlorination of drinking water supplies, such as a flame retardant, being a fire extinguisher ingredient, and as a heavy liquid for mineral and salt separations. Please provide stronger support for limiting the source of bromodichloromethane to municipal water use and distribution.

3. Introduction

P. 1-3, first full paragraph: "This first removal action included the construction of a groundwater treatment system for removal of hexavalent chromium from groundwater, which was constructed in 1987 within OU-1." What first removal action is being referenced here? The prior sentence states that extensive environmental investigations and removal actions have taken place since the 1970s, but this sentence says the groundwater treatment system was constructed in 1987. Should "This first removal action" be changed to "One of the first removal actions"?

4. NERT RI Study Area History

1) Section 2.1.1, 2.1.2, 2.1.4 OU-1 History P. 2-2, through 2-9. There is an absence of an examination of historical operations in these sections to evaluate whether chemical reactions could have produced other by products not recorded in the reports and the possible inclusion of these byproducts as COPCs. Please provide a discussion of the chemical byproducts from the processes described in these sections. For example, gases generated in the chlorinators would have contained chlorinated organic chemicals such as chloroform. Please expand on whether byproducts were evaluated as COPCs.

2) Section 2.1.4 OU-1 History from 1967 to 2005 P. 2-11, Paragraph 2. Note that the onsite landfill operated from 1980-1983 was used for the disposal of sodium chlorate filter cakes that could have contained chlorinated organic chemicals. Please add this fact to this section.

3) Section 2.1.3, "OU-1 History from Approximately 1951 to 1967" on P. 2-7, first paragraph: What is the "eluant" from the crystallizer?

4) Section 2.1.5, "OU-1 History from 2005 to Present" on P. 2-12: "NERT has no oversight role with respect to EMD's facility operations, ponds, and associated permits." Doesn't NERT check to make sure that EMD's operations are not causing any contamination at the NERT site?

5) Section 2.2.1 Olin/Pioneer/Stauffer/Montrose History Pages 2-4, 2-15, 2-6 and 2-17. In addition to the chlorine production wastes listed, cell sludge containing highly chlorinated organic chemicals (DNAPL) would have been produced. Prior to 1958, the chlorine would have contained

volatile chlorinated organic chemicals including chloroform and carbon tetrachloride. The brine sludge, asbestos and cell parts would have chlorinated organic chemicals present. This information should be added to the report.

6) Section 2.3.1, "OU-2 West of Pabco Road: History from 1940s to Present" on P. 2-20: This section discusses the Northwest Ditch and the Alpha Ditch, but it is difficult to see those ditches on Figure 2-9. Suggest using a white background for the blue font in the labels in the figure.

7) Section 2.4.1 and Table 2-3 should also reference the City of Henderson (COH) Wastewater treatment plant #1 that in the 1950s discharged 1 to 1.5 mgd to two ponds (1 lined and 1 unlined) near the facility, as well as to the evaporation and percolation ponds (EPP; now known as the Bird Viewing Preserve and later (1983) Wastewater treatment plant #3 with a capacity of 6.3 mgd that discharged wastewater to the EPP and the Pabco Ribs) (see UNLV, 2003, P. A-36). This is relevant as the ponding of water in this area increased groundwater levels that apparently influenced groundwater levels and flow south of the Athens Road well field.

5. Regulatory Actions, Environmental Investigations, and Remedial Actions

1) "The Seep Area Groundwater Characterization Report (Kerr-McGee 2001)" on P. 3-6: It would be helpful to cite to a figure here.

2) Section 3.3.2, "Environmental Investigation/Remediation Conducted by NERT" on P. 3-16: "This excavation area is shown on Figure 3-2." It is difficult to see where this excavation area and the Beta Ditch are in Figure 3-2.

3) "The Continuous Optimization Program (COP)" on P. 3-17: Should clarify that the supplementary IX system near the SWF is still operating.

4) "Closure of the AP-5 Pond" on P. 3-19: "The pond's location within OU-1 is shown on Figure 3-5." It is difficult to find the AP-5 Pond on Figure 3-5.

5) "AP-5 was closed in order to comply with the Site's Groundwater Discharge Permit (NEV2201515)." This sentence is somewhat ambiguous and could be misleading. This sentence should be revised as follows: "The Site's Groundwater Discharge Permit (NEV2201515) required the primary liner system to be free of leaks. Because there was a leak in the primary liner system for AP-5, NERT could have either: (1) removed the solids in order to repair the leak and maintain compliance with the permit, or (2) closed AP-5 and removed it from the permit, and NERT chose the second option."

6) Section 3.3.4, "NERT's Current Groundwater Extraction and Treatment System", P. 3-20: This section should discuss NERT's GWETS Extension project. P. 3-21: First paragraph should cite to Figure 3-5 which shows the location of the GWETS IX treatment system.

6. Remedial Action Objectives

NDEP suggests that NERT include California's PHG of 1 μg/L for perchlorate and California's MCL for total chromium of 50 μg/L in drinking water as a TBC criterion for remedial action objectives (RAOs) given that RAOs "focus on achieving the Trust's overarching objective of protecting the Las Vegas Wash and downstream interests over a long-time frame (i.e., greater than five years)" and "help achieve out-of-state MCLs at downstream state boundaries".

7. Section 5.5 Hydrogeology

1) This section should start with an overview of the regional hydrogeology that describes sources of water, recharge areas, and discharge areas including from large production wells within the Las Vegas Valley. It should also include a description of general groundwater movement within shallow and deep valley fill deposits within the valley and how regional groundwater movement relates to local site conditions. For instance, it is noted in Section 5.5.1 that: "..recent groundwater elevations measured during annual groundwater monitoring events show that, except for a few small areas, the alluvium has become dewatered and first groundwater now occurs within the UMCf."

2) Figure 5-4 Surficial Geology: The legend doesn't identify the various stratigraphic units shown on the geologic map used as a background for the figure. Are the variations in surficial geology important for the understanding of the CSM? If so, then the figure should include a legend for the units. But if it is not important to know what each of the units are, then this should be clarified in the text and can be left of the figure.

3) Figure 5-5 Conceptual Geologic Model for the Muddy Creek Formation: A general outline of the site should be placed on the generalized model, much like on Figure 9-1, to help the reader place the site geology on the subsequent cross sections into the context of the overall conceptual stratigraphic model.

4) Figure 5-7 Subsurface Cross Section M-M': The various silty sand units depicted in the UMCf fg1 are presented as discontinuous lenses having a similar slope to the ground surface. Given the likely genesis mechanism of these deposits, is it possible that some of them could be interconnected? Please explain if interconnectivity is a factor, and if so how it relates to the transport of contaminants in the UMCf fg1. It would be helpful to have a 3D geological block map to display the silty sand units for entire study area.

5) Section 5.5.1 Shallow Water Bearing Zone P.5-9, paragraph 5. The text indicates that the depth to groundwater in the northern portion of OU-1 is 30 feet bgs, and the depth to groundwater in the southern part of OU-2 be 60 feet bgs. These two areas are adjacent, groundwater flows to the north and the land surface slopes downward to the north. Please clarify the locations in the OUs that are being referred to in the text.

6) Section 5.5.1 Shallow Water Bearing Zone P. 5-10 and Appendix D Aquifer Testing Results. The text indicates that the geometric mean of the hydraulic conductivity values for wells screened across both the alluvium and UMCf was 4.4 ft/day. If a well is screened across both high K and low K zones, then the bulk of the hydraulic response will be from the high K zone, and the resulting hydraulic conductivity value will not be representative of an average of the two zones. Please explain the significance of the difference between the geometric mean calculated versus the majority of hydraulic response coming from the high K zone.

7) Section 5.5.1 Shallow Water Bearing Zone P. 5-10, paragraph 2. Given that several extraction well fields have been installed at the site and that historic discharge to unlined ponds and ditches may have caused groundwater mounding it is likely that groundwater flow directions have shifted from the time of COPC release to current conditions. Presenting the interpretation of historic groundwater elevations and flow directions would be helpful in better understanding historic COPC migration.

8) Section 5.5.2 Middle Water Bearing Zone, P. 5-10, paragraph 2. The text states that Figure 5 13b shows a "change in groundwater flow direction toward the northeast, particularly in OU-3" for the Middle Water Bearing Zone 90-130 ft bgs. Examination of the figure reveals a lack of data over most of OU-3, as indicated by the generous sprinkling of "?" on the contour lines, suggesting that this statement should be targeted to specific areas where data exists to support it (e.g., near the bird viewing ponds and the northeast reaches of OU-3 near the wash). Additionally, water level data from the southeast corner of OU-3 near well ES-18 suggests a northwest flow direction in this part of OU-3, as indicated by the contour lines in the referenced figure. The same applies to the statement in the third paragraph of 5.5.2 which concerns the Middle Water Bearing Zone 130-175 ft bgs.

9) Section 5.5.2 Middle Water Bearing Zone P. 5-11, paragraph 2. The range of groundwater velocity values presented for the Middle WBZ (40-1,900 ft/yr) are assumed to be from the calibrated groundwater model. The upper range of these values is similar to the values for the alluvium (1,700-6,000 ft/yr), even though the hydraulic conductivity values referenced for the Middle WBZ are orders of magnitude lower than the values for the alluvium. The hydraulic conductivity values presented in the text are from single-well response tests and may underestimate the true hydraulic conductivity of the formation. If the groundwater velocity in the text is the calibrated groundwater velocity, then the calibrated hydraulic conductivity value must be much higher, because the groundwater velocity stated in the text cannot be calculated based on the hydraulic conductivity value stated in the text. This discrepancy should be addressed in the text.

The text includes several numbers that would be better presented as tables to simplify the text and clarify the numbers.

10) Appendix D Aquifer Testing Results   Section D.2.1 Operable Unit 1 History P. D-2. Artesian (or flowing artesian) conditions do not prevent the completion of slug tests - a temporary riser extension can be attached to the well casing. Suggest changing the text to read "slug tests were not conducted" instead of "slug tests could not be conducted".

11) Appendix D Aquifer Testing Results Section D.2.2 Major Chemical Manufacturing Operations Adjacent to Operable Unit 1. Please explain why an arbitrary 10 feet was added to the saturated thickness for the alluvial well tests. A smaller saturated thickness would result in a slightly higher hydraulic conductivity.

12) Appendix D Aquifer Testing Results Section D.2.3 Operable Unit 2 History. Please explain what is meant by "The averages of the most reliable slug testing results from each well tested." How was the "reliability" of the slug tests determined?

13) Appendix D, Aquifer Testing Results Section D.2.3 Operable Unit 2 History. The text indicates that "In general, the K declines with depth" The plot of K value vs depth Z (Figure D-3 Hydraulic Conductivity vs Screen Depth) shows that the shallow alluvial material has generally higher K values than the deeper UMCf, this is to be expected, because the alluvium is coarser grained, and the UMCf is more fine grained. But there is no obvious correlation with depth in the UMCf; the K values vary by orders of magnitude within the same depth range. Please revise the text to clarify this distinction.

Because the subsurface includes anastomosing streams, where there are discrete zones of higher K that can act as preferential flow paths, averaging K values (or using a geometric mean) may not be appropriate. Please justify the use of the average K values.

14) Section 5.5.1 Shallow Water Bearing Zone P. 5-10, paragraph 3. Please provide an example calculation for groundwater velocity in the shallow WBZ. Using the data provided in the last paragraph of this section, including the alluvium hydraulic conductivity ($K = 7.1x10^{-3}$ cm/s), the gradient shown on Figure 5-12c (0.015 ft/ft), along with an assumed porosity of 0.10, v = Ki/n, would result in a groundwater velocity of almost 1,100 feet/year. But the paragraph indicates that the groundwater velocity values from the groundwater model are between 1,700 and 6,000 ft/yr. The same is observed for flow in UMCf cg2 where the measured hydraulic conductivity at TR-9 is 2.9 ft/d and a gradient of 0.015 ft/ft and assumed porosity of 0.24 would result in a groundwater velocity of 66 ft/yr yet a range of 470 to 1,900 ft/yr is reported based on the groundwater model. Are the groundwater travel times cited from the model consistent with other site observations? Please revise the text to clarify this apparent discrepancy or explain why the calibrated numerical model results are appropriate.

15) Figure 5-12b/c Potentiometric Surface Map, Shallow WBZ. The paleochannels are identified as an important migration pathway in the CSM. These should be included on the Shallow WBZ figures and incorporated into the piezometric surface, as far as they affect the groundwater flow and contaminant transport.

16) Section 5.5.4 Shallow Water Bearing Zone PAGES 5-12 and 5-13, Paragraph 6. Please confirm that the downward hydraulic gradients in the pilot scale areas, when there are natural upward gradients in the rest of the study area caused by the extraction systems in the area including the AMPAC. What is the effect of the surface water impoundments (like the COH Birding Ponds) on the vertical gradients?

17) Section 5.5.4 Shallow Water Bearing Zone P. 5-12, paragraph 5. Please explain why the Phase 5 model layers are used to determine which WBZ the mid screen well elevations were located within rather than the depths presented for the WBZ in Sections 5.51, 5.5.2 and 5.5.3.

18) Figure 5-15a/b Vertical Gradient Evaluation. Well M-71, M-74, and M-135 were identified on both of these figures as having been used to calculate vertical gradients, but these wells do not appear on other water level figures in Section 5. Were these wells used in the generation of the water level contours and not presented due to space consideration? Please provide a table in section 5 with the results of the vertical gradient calculations.

19) Section 5.5.5 Temporal Groundwater Elevation Trends P. 5-13, paragraph 3. Please explain how the "representative wells" were chosen for the groundwater elevation temporal trends. What criterion were used to determine if a well was representative. Perhaps consider presenting the average groundwater elevations for OU-1 over time using all wells that are monitored on the same frequency

20) Section 5.5.6 Nuclear Magnetic Resonance Investigation P. 5-15, paragraph 3. States that "NMR logs were found to be a useful tool for confirming field observations of lithology and providing an estimate of porosity that is potentially more representative of in situ conditions than laboratory measurements." The NMR logs provide significantly lower effective porosity estimates than that of the laboratory measurements and also significantly lower than that specified in the Phase 6 Model. If NMR logs are more representative, the effective porosity assigned in the Phase 6 Model should be reduced which would significantly increase the predicted groundwater velocity. In the text it is stated that NMR porosity estimates are potentially more representative of in-situ conditions than laboratory measurements. If NMR porosity measurements are more representative, then they should be used. Otherwise, it should be stated that NMR likely underestimates the porosity. Please reconsider and revise text accordingly, else explain why predicted groundwater velocity is accurate.

8. Section 6: Scope of the Remedial Investigation

Section 6.0 Scope of the Remedial Investigation P. 6-1. A high-level understanding of chronology would be helpful to the reader. Consider adding a table with the year ranges for each Phase of the investigation as an Appendix to the report. Also consider including some specifics for each phase as a means of recognizing the back and forth conversations leading to additions to each specific phase.

9. Section 7: RI Results: OU-1

1) Section 7.1.1 Initial Soil COPC Screening, P. 7-2, paragraph 2. It is understood that based on the parameters of the risk assessments, which assume exposure up to 10 feet of soil, the NDEP has cleared (requiring no further action) the upper 10 feet of the soil horizon for BRC. Please include this information as the rationale for choosing 10 feet as the cut off for shallow soil within the alluvium as those unfamiliar with the history of the site will not be familiar with this.

2) Section 7.1.1 Initial Soil COPC Screening P. 7-2, second bullet paragraph 3. This bullet states that chemicals in soil with a detection frequency of 5% or less were eliminated as COPCs. This is inconsistent with NDEP guidance and past comments on the RI workplans. Detection frequency may only be used following a hot spot analysis. Given the size of the parcels addressed by the RI and the number of samples, a 5% detection frequency may actually result in localized hot spots. Therefore, the lack thereof needs to be demonstrated through the use of intensity plots, spatial analysis, or another technically defensible technique.

3) Section 7.1.1 Initial Soil COPC Screening, P. 7-2, Last bullet. The Deliverable states that NDEP guidance was followed by addressing the indicator chemicals for total petroleum hydrocarbons.

However, this is only part of the guidance, and it does not appear that the second part was followed. Specifically, the BCL guidance further states:

"However, there may be sites where petroleum hydrocarbons may be present, but samples were either not analyzed for the indicator chemicals or the indicator chemicals were not detected in petroleum hydrocarbons present. In those cases, BCLs for total petroleum hydrocarbons (TPH) by hydrocarbon type (aliphatic or aromatic) and by molecular weight (low, medium, and high) were developed. The six TPH fractions were assigned representative compounds for determination of toxicity values and chemical specific parameters to calculate BCLs. The PPRTV document for TPH (USEPA, 2009c) was the principal source for these toxicity values. The carbon ranges and representative compounds are listed below. An average of the chemical specific parameters for 2 methylnaphthalene and naphthalene was calculated for the medium aromatic fraction."

The Deliverable should be revised to demonstrate that use of indicator chemicals is appropriate and consistent with the BLC guidance.

4) Section 7.1.2.2, Metals P. 7-8, paragraph 5. It would be helpful here to also reference Tables 1-2a and 1-2b, as having the statistical results, with Table 1-3 providing the summary of those interpretations.

5) Section 7.1.2.3 Radionuclides, P. 7-13. For both Radium 226 and Thorium 230 it is noted that the populations are approximated by a log normal distribution. "The populations are well approximated by a log normal distribution (see Figure I-29 in Appendix I), indicating that while the populations at the site may be higher than background, an anthropogenic source of high activities is unlikely." It's unclear why a log normal approximation would lead to the conclusion that an anthropogenic source is unlikely. Please provide additional discussion or additional analysis to back up the claim that an anthropogenic source for the analytes is unlikely.

6) Section 7.1.2.3, Radionuclides, P. 7-13. This is a general comment about the presentation of radionuclides. All radionuclides in the Th and U chains are used in the tests of secular equilibrium (both sets of tests demonstrate that the two radionuclide chains are in approximate secular equilibrium). However, nearly all of the rest of the presentation does not show data, data summaries or plots for the uranium isotopes, presumably relying instead on the results for uranium as a metal. Please include the uranium isotopic results in the various tables and plots. Also, why are there no radionuclide data in the southern portion of OU-1?

In addition, it is curious that the U chain radionuclides show concentrations that are greater than background (mostly in the upper tails of the distributions) at greater depths. What is the likely explanation for this? There is no source for this U chain considering it is in approximate secular equilibrium; suggesting that leaching from the soil matrix cannot explain this. It seems that a possible explanation is slight geologic differences or analytical differences between the background and site samples. This might not be easy to prove, but finding an explanation associated with a contaminant source seems even more unlikely. More discussion is warranted.

The U chain radionuclide mean site concentrations do increase with depth as well, but presumably they do in the background data as well? It would be helpful to have the summary statistics for background data for comparison.

7) Section 7.1.2.4, VOCs P. 7-15, paragraph 3. The Deliverable states: "PCE and TCE were only detected at frequencies of 4.1% and 4.6%, respectively (Table 7-1b)." Some of these detections were quite high relative to the leach-based screening level. The mean value of the TCE detects was greater than the leach-based soil screening level. As mentioned in specific comment above, "detections less 5%" is insufficient to exclude analytes as COPCs. Please add additional discussion and/or analysis before TCE and PCE as COPCs.

8) Section 7.1.2.11 Other Organics, P. 7-18, paragraph 3. The Deliverable states: "Given the limited area potentially impacted and laboratory uncertainty in the results, formaldehyde is not retained as a COPC for soil in OU-1." Uncertainty in laboratory results is not a logical reason for excluding an analyte for further analysis. Given the samples were all greater than the LSSL, it is prudent to retest samples before elimination, or retain as a COPC.

9) Section 7.2.2.5, SVOCs P.7-30, paragraph 2. "The Deliverable states: "Hexachlorobutadiene was detected in only two groundwater wells screened within the shallow WBZ (0-55 bgs) and was not detected below 55 feet." This appears to be a problematic analyte with respect to the screening level (<0.197 µg/L) and the detection limits which range from 0.25-130 µg/L. This should be addressed in the discussion before excluding hexachlorobutadiene as a COPC for groundwater in OU-1.

10) Figures 7-1 through 7-26. It would be helpful to have more consistency in the color coding for the distribution of contaminants. There should be a single color or symbol denoting "above the applicable criterion" whether that is the SSL at DAF 1, DAF 20 or other. Having the max background value incorporated into the coding intervals would be helpful. The figures for some of the metals (e.g., arsenic, cobalt, manganese) are not fully delineated. There are elevated concentrations adjacent to the property boundaries. This should be addressed in the text.

11) Figures for Section 7 RI Results: OU-1. Analytes are sometimes plotted spatially at different intervals. This seems to be designed to capture aspects of the depth vs. concentration plots, but it would be nice to have some explanation in the text for why these decisions were made, and why some analytes are only spatially plotted down to 10 ft bgs (i.e., Lead). Some depth plots for groundwater would also be useful, perhaps similar to the ones presented for soil gas.

12) Figure 7-70a Chloroform Distribution Shallow WBZ (55-90 ft bgs). AA-MW-14 has no chloroform concentration reported, but it appears as though the contours were drawn assuming that the chloroform concentration was similar to the nearby well AA-MW-13 (<200 ppb) rather than the nearby well B-01 (5,600 ppb). Consider revising the contours without any assumptions regarding AA-MW-14. This would result in the enlargement of the 500 and 1,000 contours, joining the impacted areas to the north and south of AA-MW-14. The contours drawn on Fig 7-70a Chloroform Distribution Shallow WBZ (55-90 ft bgs) already include professional judgment (e.g.,

M-65, M-66 are ~800 ppb but are inside the 1,000 contour), so additional modifications are consistent with current procedures.

13) Figure 7-70c Chloroform Distribution Middle WBZ (90-130 ft bgs). The former Beta Ditch is believed to be a major pathway for the migration of contaminant onto OU-1. This is apparent in the Shallow Zone figures. However, in the Middle Zone figure, this does not seem to be the case. If this is not the case, please explain in the text that the beta ditch is only relevant as a pathway for the Shallow Zone and that the Middle Zone is controlled by a different transport mechanism.

10. Section 8: RI Results: OU-2

1) Section 8.1, "Identification of Soil COPCs" on P. 8-1 explains that the NERT Off-Site Study Area, which is located in OU-2 immediately downgradient of OU-1 west of Pabco Road and extends into OU-3, was not evaluated for COPCs in the vadose zone due to lack of overlying contributing operations. While this may be true, there is a potential for soluble constituents such as perchlorate and hexavalent chromium to become trapped in the capillary fringe as groundwater levels decline due to dewatering during pumping, changes in areas and amounts of surface water recharge, or naturally from drought. Trapped COPCs would not be easily flushed from the soil but could continue to contribute mass for an extended period of time.

2) Section 8.5.2.2 Arsenic P. 8-23, paragraph 7. The statement: "…the vertical extent of arsenic contamination above the established background level is defined within the Shallow WBZ." appears to be contradicted by the data on Figure 8 8b, where the arsenic concentrations in the northern wells range up to 0.12 mg/L, which is above the listed upgradient concentration of 0.059 mg/L. Please revise the text to add additional explanation.

3) Section 8.5.3, "Summary of Extent of COPCs in OU-2 Groundwater" on P. 8-30 does not list trespassing perchlorate from AMPAC at the northern end of OU-2 at the western side of the Athens Road Wellfield, although it is discussed earlier in Section 8.5. Perchlorate from the AMPAC should also be listed in Section 8.5.3 based on a comprehensive analysis of multiline of evidence.

11. Section 9 Conceptual Site Model

1) Figure 9-2b Conceptual Site Model: NERT Site Study Area to Las Vegas Wash. Should the alluvium be shown as dewatered over more of OU-1 on this figure? (Given the depictions on other figures e.g., 9-5b Perchlorate in Groundwater in the Shallow WBZ (55-90 ft bgs) Showing the Extent of Saturated Alluvium, 9-7a Tracking of Particles Released at the Base of the Alluvium in OU-1).

2) Section 9.1.1, Schematic of the CSM P. 9-3, paragraphs 1 and 2. Paleochannels and interfingering are stated as some of the controlling factors for the movement of COPCs. However, there is insufficient discussion on the extent of the paleochannels and interfingering to support the implied level of significance in the CSM. In addition, the report appears to be using density driven flow, matrix diffusion and upward gradient generally as a way of explaining the presence of COPCs in any location, without necessarily providing location specific evidence that one or more of these mechanisms is in fact driving the concentrations in a location or area.

3) Section 9.1.1, Schematic of the CSM P. 9-3, paragraph 1. "As indicated in the 2020 Annual Groundwater Monitoring and GWETS Performance Report (Ramboll 2021b), the three extraction well fields completely capture all COPCs migrating from OU-1 via groundwater" is repeatedly stated. Suggest changing language to "the three extraction well fields effectively capture COPCs" as complete capture may be more than can be proven by the data.

4) Section 9.1.2, Physical Features of the Site P. 9-4, paragraph 1. Please explain how we can tell that the sandy units stated to be acting as preferential flow paths are limited in extent. If they are limited in extent, the text should explicitly state whether they are important for contaminant transport.

5) Section 9.1.3, Summary of Groundwater Contamination P. 9-5, paragraph 4. Please provide rationale to support that density driven flow may have contributed to downward migration. For example, are there measurements of the density of the brine that was released and could it be shown that higher groundwater levels plus a high density historic release could reverse the observed upward gradient. Please include language to explain how this is occurring.

6) Section 9.3.2, Migration Pathways P. 9-13, Paragraph 2. The unlined Eastside Sub Area ponds are included along with the unlined Beta Ditch as a major source of contamination yet the unlined Eastside Sub Area ponds do not appear to be discussed in detail elsewhere in the RI Report. Please add more details the usage of the unlined Beta Ditch and its contribution to groundwater recharge and COPCs migrations.

7) Section 9.3.2, "Migration Pathways" on P. 9-13 explains that upward hydraulic gradients and matrix diffusion are contributors of COPC mass from the UMCf to the alluvium. Is it possible to estimate the amount of mass that is being contributed from the UMCf due to these processes?

8) Section 9.3.4, Chemical Mobility and Persistence P. 9-16, Paragraph 4. Is stratigraphic/ lithologic information available to support the statement that "Migration of trespassing DNAPLs onto OU-1 from the OSSM site would have behaved similarly, generally following the slope of the top of finer grained units until reaching residual levels of DNAPL saturation." If stratigraphic/lithologic information is available, an appropriate figure showing the slope of the top of finer grained units should be referenced to support the understanding of DNAPL migration.

9) Section 9.4, Sources of Contamination within OU-1 P. 9-16. The previous sections of the report present the data upon which the CSM is based, and this section should present the interpretation (CSM). These figures should be conceptual in nature based on the information, much like Figures 9-1 through 9-3, using plan and cross-sectional views, as appropriate. Some examples of additional useful information include:

> a. Figures 9-7a Tracking of Particles Released at the Base of the Alluvium in OU-1 and 9.8 Primary COPC Plumes in the Shallow WBZ (55-90 ft bgs): How much of the plume in OU-1 is believed attributable to the trespassing plumes? The particle tracking could have also been started in each of the source areas of mass significant depths including on OSSM property, to help define the areas of probable trespass to OU-1.

b. On Figure 9.5b Perchlorate in Groundwater in the Shallow WBZ (55-90 ft bgs) Showing the Extent of Saturated Alluvium: there are two separate "lobes" of impacted groundwater in the Eastside Sub Area. It is assumed that these are both remnants from the infiltration from the former BMI ponds. But it would be helpful to have a figure that explicitly shows the migration pathways in relation to sources. This will need to be more than one figure to present all of the pathways (NAPL, groundwater, preferential migration, soil vapor). The estimated extents of the plumes from each of the sources could be depicted in separate colors, for example, to help the reader visualize the information already presented in the text.

c. The groundwater contours and contaminant plumes appear to be drawn taking into account the paleochannels, but this is not explicitly shown on the figures.

d. A figure showing how far does the DNAPL from OSSM extends onto OU-1, and the interaction with the groundwater. This was shown in a previous section but is important enough to repeat in the CSM section, but as a conceptual figure showing the mechanisms.

This is not to say that the CSM is wrong, but that a more explicit presentation of the conclusion of the CSM would help focus the reader on the important points, and tie all of the pieces together.

10) Section 9.4.5, Trespassing Chemicals P. 9-23, Paragraph 2. Trespassing chemicals have been observed between the properties of the BMI complex, but they are widely disputed. NDEP requires that the analysis about the trespassing chemicals be based on multiple lines of data such as hydrogeology, groundwater movement, site history, chemical fingerprint, mass flux and groundwater flow and transport model.

The particle tracking analysis (Figures 9-7a Tracking of Particles Released at the Base of the Alluvium in OU-1 and 9-8 Primary COPC Plumes in the Shallow WBZ (55-90 ft bgs), 9-7b Tracking of Particles in OU-2 and OU-3 Released in the Alluvium, and 9 7c Tracking of the Particles in OU-2 and OU-3 Released in the UMCf) show primarily northward flow along the west OU-1 boundary, generally consistent with observed groundwater elevation contours presented in Section 5. However, the particle traces do not address the historic migration of the OSSM chloroform plume in a northeast direction from the OSSM property onto OU-1 (Figure 7- 70a Chloroform Distribution Shallow WBZ (55-90 ft bgs) and 7-70b Chloroform Distribution Shallow WBZ (55-90 ft bgs) OU-1, 2015-2018) nor the migration of the chloroform plume from Unit 4 to the northeast. Additional discussion/analysis should be added to address why observed groundwater flow directions are generally north, but the observed orientation of the chloroform plume indicates that it migrated to the northeast. If changes in pumping have shifted groundwater flow directions provide supporting evidence. If chloroform migration is controlled by the slope of low permeability geologic material or any other lithologic feature provide supporting evidence.

11) Section 9.5.1.2, “Former Ditches”: Should show more clearly on Figure 2-9 the locations of the ditches.

12) Section 9.5.1.4. Origin of COPCs in OU-2 P. 9 28, paragraph 4. The difference in the shape of the chloroform plume from the perchlorate, chlorate and chromium plumes is apparent. It is

appreciated that this is addressed in the text of previous sections (Section 7) with respect to NAPL but should be mentioned in Section 9 also.

13) Several wells with elevated chloroform in groundwater within the TIMET property also have elevated perchlorate and chromium, so some chloroform in these wells potentially have same origin as perchlorate and chromium. It will be helpful that the RI report includes quantifications for the mass flux of perchlorate, chromium and chloroform crossing the eastern NERT property boundary of OU-1 along the particle tracking lines starting from the upper gradient sources and the vertical up-gradient mass flux of perchlorate, chromium and chloroform from relatively deeper layers to shallower layers. It was also noticed that the chloroform data of several wells within TIMET property was dated 2008 due to no recent data available, which could carry some uncertainty about the chloroform plumes of this area. Because this RI report concluded that some groundwater chloroform of OU-2 has its source from TIMET property, NDEP suggests collecting chloroform, perchlorate, chlorate, and chromium data from those wells used for more comprehensive analysis on this subject.

14) Section 9.7.2, Mass Removal P. 9-37, paragraph 1. If sufficient data are available, repeating this mass estimation analysis for chloroform could be useful for understanding the persistence of potential contamination of the groundwater. As the Deliverable notes, the DNAPL plume in the UMCf near the OSSM/NERT boundary represents an ongoing source of VOCs, the most mobile of which is chloroform. Understanding the mass removal compared to the mass in the subsurface would be useful for chloroform, just as it is for perchlorate and chromium.

15) Section 9.7.3, Mass Remaining in Soil and Groundwater P. 9-38, Table 9-3a. Including a short explanation of the methods used to estimate the masses of perchlorate and hexavalent chromium above Table 9 3a should be included to strengthen the text. It would also be helpful to briefly describe sources of uncertainty in these estimates.

16) Section 9.7.3, Mass Remaining in Soil and Groundwater paragraph 4, P. 9-38. In addition to estimating the total mass remaining in the subsurface, a comparison of the estimated mass remaining in the soil and the annual mass extraction by the well fields would be useful for understanding the potential longevity of the contamination entering the saturated alluvium from the UMCf. This would allow the reader to roughly estimate, for example, the percentage of the estimated mass that is extracted per year.

12. Section 10: Summary of Conclusions

1) Section 10.2, Hydrogeology of the NERT RI Study Area P. 10-4. Please quantify the vertical upward gradients to give the reader an idea of magnitude.
2) Section 10.6, "Conclusions," on P. 10-16: Update the list of sources of COPCs trespassing into or migrating to OU-2 for which NERT is not responsible after addressing the comments about the trespassing chemicals above.

13. Appendix I, Site Soil Background Analysis

The R Code for calculations in Appendix I is missing. Please add R code in an appendix.

Appendix I, Site Soil Background Analysis. The manner in which Section 7 is structured, where the statistical portion of the COPC selection is tucked away in Appendix I makes it harder to follow the COPC selection logic in the main text. It would be clearer if this was integrated into the text, or at least more effectively summarized. For example, it would help to at least make a comment in Section 7.1.2.2 that the statistical portion is in Appendix I because it is based on work previously done using the same datasets.

Additionally, one thing that makes this background comparisons analysis difficult to fully interpret is that summary statistics for the background data are not presented. It would be more helpful if summary statistics were presented for each metals/radionuclide along with the summary statistics for the site data. [at least, if this is presented, we could not find it].

14. Minor Corrections

1) Section Executive Summary, P. ES-4, paragraph 1. State that "As such, there are multiple sources for several COPCs than just those within OU-1.", Should this read "As such, there are multiple sources for several COPCs other than just the sources within OU-1"?

2) Executive Summary, P. ES 6, paragraph 2. "With respect to the ditches east and west of OU-1, this use represented a historical source of contaminants to OU-1 environmental media unrelated to former OU-1 operations (i.e., these contaminants were from the neighboring properties) (Geraghty & Miller 1993)." Was it just discharge from OSSM flowing east to west across OU-1 that contributed contamination to OU-1 or was there discharge to the Beta Ditch from TIMET that flowed onto OU-1 as well? If so, showing the flow direction along the Beta Ditch on Figure ES-4 would be helpful.

3) Figure ES-1 NERT RI Study Area Location Map. Add the location of the former AMPAC site to Figure ES-2. This is pertinent to the discussion regarding the AMPAC Site on P. ES-11.

4) Figure ES-4 Historical Sources of Contamination in OU-1. Show the location of the IWF/Barrier wall as it is discussed in the text where Figure ES-4 is referenced. If the IWF/Barrier wall is outside of the Figure ES-4 boundary they could be added to Figure ES-5.

5) Figure ES-5 Primary COPC Plumes in the Shallow WBZ (0-55 ft bgs). Add the extractions wells shown on Figure ES-5 to the legend. Label the well fields and show the barrier wall location (i.e., GWET, IWF, etc).

6) Figure 5-6b Sub surface Cross Section A-A' Location Map and Explanation. Figure 5-6b: Two entries in the legend are "MUDDY CREEK FORMATION FINE GRAINED FACIES #1" The second entry should presumably be #2.

7) Section 5.5.1 Shallow Water Bearing Zone P. 5-9, Cross section A-A' (Figure 5-6a) Sub surface Cross Section A-A' Illustrating Site Hydrostratigraphic Units. Please mention in this section that the divisions between the water bearing zones were determined by NDEP.

8) Cross section A-A' (Figure 5-6a) Sub surface Cross Section A-A' Illustrating Site Hydrostratigraphic Units. This section should also show the water levels measured in the lower wells of the Middle WBZ, in addition to the water levels shown.

9) Figures 5-12/a/b/c Groundwater Tables Contour Map Second Quarter 2018; Potentiometric Surface Map, Shallow WBZ (55-90 ft bgs), OU-1; Potentiometric Surface Map, Shallow WBZ (~55-90 ft bgs). For consistency, the unsaturated portions of the alluvium should be consistently presented on these figures.

10) Section 5.5.1 Shallow Water Bearing Zone P. 5-10. The AWF and SWF are referenced in this section, and should be identified on figures within the section, to help the reader remember where they are. Or this section should refer to a figure in another section where the AWF and SWF are shown.

11) Section 5.5.1 Shallow Water Bearing Zone P. 5-10, paragraph 3. The calculations for the groundwater velocity values in the alluvium should be presented.

12) Section 6.3 Phase 2 RI P. 6-13. Bullets 6 and 7. If grouting the boreholes per the requirements of NAC 534.420 was done via tremie grouting please add this detail.

13) Section 8.5.1 OU-2 Groundwater Primary COPCs P. 8-22. The discussion of chloroform in this section includes a discussion of the area north of the TIMET GWETS. Please either show the position of the TIMET GWETS on the figures referenced in this discussion or reference another figure showing the TIMET GWETS.

14) Section 9, Conceptual Site Model P. 9-5, Paragraph 3. States that: "The historical migration of perchlorate from OU-1 to Las Vegas Wash, Lake Mead, and the Colorado River that was depicted in the West Side CSM has been eliminated by operation of the GWETS"; however, the West Side CSM does not present/discuss the migration to Lake Mead and the Colorado River.

15) Section 10.7 Next Steps P. 10-16. In addition to the information from the RIs, risk assessments and groundwater transport model, it is assumed that the information from the various pilot and treatability studies performed and in progress at the site will also be used to conduct the Feasibility Studies.

16) References: NDEP 2017c. The department recognizes that revised documents are issued and may overlap with the preparation of deliverables. please utilize the 2020 version of the BCL Guidance document and its associated screening levels during the revision of the Deliverable.