OFFICE OF THE NEVADA ENVIRONMENTAL RESPONSE TRUST TRUSTEE

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May 6, 2022

Dr. Weiquan Dong, P.E.
Bureau of Industrial Site Cleanup
Nevada Division of Environmental Protection
375 E. Warm Springs Road, Suite 200
Las Vegas, Nevada 89119

RE: Baseline Health Risk Assessment for OU-1 Soils, Revision 2
Nevada Environmental Response Trust
Henderson, Nevada

Dear Dr. Dong:

The Nevada Environmental Response Trust (NERT) is pleased to present the Baseline Health Risk Assessment (BHRA) for OU-1 Soils, Revision 2 for the Nevada Division of Environmental Protection's (NDEP's) review. This report has been revised to address NDEP's comments dated December 22, 2021, a conference call completed on January 18, 2022, and the NDEP's feedback on example figures provided by NERT on January 26, 2022. As requested, NERT has also provided an annotated response to comments for NDEP's review.

If you have any questions or concerns regarding this matter, feel to contact me at (702) 960-4309 or at steve.clough@nert-trust.com.

Office of the Nevada Environmental Response Trust

Stephen R. Clough

Stephen R. Clough, P.G., CEM
Remediation Director
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Attachment 1

This attachment provides responses to comments received from NDEP on the OU-1 Soil BHRA Report.

In a letter dated June 9, 2020, NDEP provided comments on the OU-1 Soil BHRA Report, Revision 0. Subsequent to NERT's submittal of the OU-1 Soil BHRA Report, Revision 1, NDEP determined that all but two comments had been addressed satisfactorily by NERT through the revised submittal. The following presents the NDEP comments which were not resolved though the submittal of the Revision 1 report and NERTs responses to the comments.

1. **NDEP General Comment #1 Decision Units (NDEP Comment Letter dated June 9, 2020):** The rationale for first identifying COPCs on the scale of the entire 143-acre Study Area, and subsequently identifying COPCs in the three Decision Units (DUs) as a subset of those initial COPCs, should be explained. NDEP believes that the size of the decision units should be reconsidered, and an evaluation of potential hot spots should be conducted based on Spatial Quartile plots and Risk/Hazard plots. If hot spots are identified, smaller exposure units may need to be proposed. For the NERT Site, NDEP recommends that exposure units be based on current site usage and exposure potential.

   NERT Response (RTC dated October 15, 2021): *Consistent with an agreement reached during a July 8, 2020 meeting among Nevada Division of Environmental Protection (NDEP) and the Nevada Environmental Response Trust (NERT or the "Trust"), also attended by NDEP consultants and Ramboll (the "July 8th Meeting"), the OU-1 Soil Baseline Health Risk Assessment (BHRA) Study Area was divided into nine exposure units (EUs) based on spatial risk analysis and current land use, replacing the three DUs identified in the January 2020 OU-1 Soil BHRA Report. The chemicals of potential concern (COPCs) for the entire BHRA Study area were first identified to focus the spatial risk analysis on those chemicals that failed the concentration/toxicity screen for the purpose of EU identification. EU-specific COPCs were identified from the list of the Study Area COPCs, while the analytes eliminated as Study Area COPCs were not re-visited for the individual EUs with the rationale provided in Section 6.4.*

   NDEP Response (NDEP Comment Letter dated December 22, 2021): *For the most part the response is acceptable. However, there is also a need to consider the spatial plots that have been requested on a continuous scale to ensure that there are no hot spots within the EUs that could potentially present an unacceptable risk based on the size of an industrial exposure unit. See Specific Comment #1 response below.*

   NERT Response (This letter): ***Consistent with an agreement reached during a January 18, 2022 meeting among NDEP and NERT, also attended by NDEP consultants and Ramboll (the "January 18th Meeting"), and recommendations made by NDEP's consultant in the memorandum regarding "NERT Spatial Plot Recommendations" dated February 18, 2022, spatial concentration bubble plots with a continuous scale have been prepared for soil COPCs with a BCL or action level and incorporated into the OU-1 Soil BHRA Report, Revision 2.***

2. **NDEP Specific Comment #1 Section 5 (NDEP Comment Letter dated June 9, 2020):** The spatial intensity and spatial concentration/risk plots for Section 5 are not well suited to

visualizing spatial patterns of contamination. These plots sort the results among a few bins (such as HI>1 and HI<1, <0.1 BCL, 0.1 BCL - BCL, and >BCL, etc). The spatial quartile plots in Appendix F use four bins for detected values. This type of plotting works well for asbestos fibers, where the range of detected fibers in any sample is between zero and three. But for many analytes, a continuous measure of soil concentration or risk, such as with bubble plots or color-graded heat map, should be used because the bins don't provide enough resolution to see the actual magnitude of concentration differences.

Section 5.1.2 states, "The purpose of DU identification is to avoid "diluting" or lowering EPCs by averaging concentrations from hot spots (if present) with samples collected from areas with significantly lower concentrations." And Section 5.4.1 indicates TCDD-equivalent is an important contributor to estimated cancer risks in DU-1 and DU-2. Below, an example is given for TCDD-equivalent in DU-1, 0-10 ft to demonstrate the difficulty of evaluating whether it's appropriate to aggregate all DU samples to estimate an EPC in the context of the statement cited from Section 5.1.2. Please note that DU-1 represents a substantial portion of the 143-acre BHRA Study Area, and no basis is provided in the HHRA for an assumption that individuals under future land use would likely be exposed in a random manner across all of DU-1. This makes the identification of potential areas of elevated soil concentrations of risk-driving analytes critical for the defensibility of the risk assessment results.

The ProUCL output file for DU-1, 0-10 ft, shows detections in 473 of 474 observations, with a median of 1.7E-05 mg/kg and a mean of 2.7E-04 mg/kg, and a maximum value of 0.025 mg/kg. The TCDD-equivalent data are clearly right-skewed, but do not follow lognormal or gamma distributions at the 5% significance level. The Section 5 plots for TCDD show only where concentrations exceed the TCDD-TEQ action level of 0.0027 mg/kg, which for the 0-2 ft interval are in the NE corner of DU-1 (Figure 5-18b). Review of the spatial quartile plot (Figure F-34) shows lower 0-10 ft TCDD-equivalent concentrations in the portion of DU-1 below DU-3 (mostly green-yellow) and higher concentrations in an east-west band just south of the Excavation Control Area for the holding ponds (mostly red, orange, and yellow). This observation calls into question whether it's appropriate that EPCs should be calculated for all of the area designated as DU-1. However, a continuous-scale plotting of TCDD-equivalent concentrations is necessary to support a judgment on whether one or more subareas of elevated concentrations warrant separate consideration.

NERT Response (RTC dated October 15, 2021): *OU-1 Soil BHRA Report, Revision 1, was updated to include spatial quartile plots (Appendix F) spatial intensity plots (Figures 5-2 through 5-18), and spatial risk plots (Figures 6-1 through 6- 7).*

The spatial quartile plots show the concentration distribution, but without comparing COPC concentrations to the risk-based screening levels. Concentration plots (either quartile plots included in this BHRA or bubble plots/color-graded heat plots requested in the comment) are of limited utility to illustrate risk-relevant spatial patterns for the purpose of EU identification.

The spatial intensity plots (comparing COPC concentrations to basic comparison levels [BCLs]) and spatial risk plots (showing cancer risk or noncancer hazard index [HI] distribution) best serve the purpose of EU identification. Particularly, the spatial risk plots reduce the dimensionality of the analysis by presenting cancer risks and noncancer HIs across COPCs, instead of evaluating the concentration of each COPC individually.

NDEP Response (NDEP Comment Letter dated December 22, 2021): *The primary purpose of requesting spatial plots with a continuous color range and/or bubble size is not the identification of EUs, but proof of proper and thorough exploration of potential spatial patterns within the area of concern, which would be an important component of conceptualizing the risk, and where it is valid to assume exposure would happen randomly across a DU. For example, cobalt was retained as a COPC and potentially shows a spatial pattern with higher concentrations on the east site often based on the plot in Appendix F. The fate and transport model assumes random distribution of this metal as stated in the report. As such, it is noted that the statement that "a continuous measure of soil concentration or risk is not necessary" is problematic. The plots in Appendix F still show four bins and have not been updated. Figures 5-2 through 5-18 have updated dates on them, but it is not clear what has been changed. They still are binned by screening level values. For the figures in the main body of the report, the argument to use risk-based screening levels to bin the data is likely fine, given that continuous spatial plots exist for exploratory reasons in Appendix F, which they still do not, and are discussed in the text where appropriate. Overall, the lack of continuous scale in the plots does not allow easy identification of potential hot spots. Given the sampling density is not large compared to an industrial exposure unit, this continues to be a concern.*

NERT Response (This Letter): ***See NERT's response to General Comment #1. Spatial concentration bubble plots with a continuous scale have been prepared for soil COPCs with a BCL or action level and incorporated in the OU-1 Soil BHRA Report, Revision 2, in accordance with the agreement reached during the January 18th Meeting and recommendations made by NDEP's consultant in the memorandum regarding "NERT Spatial Plot Recommendations" dated February 18, 2022. Based on review of these spatial concentration plots, the findings of the spatial distributions of the evaluated soil COPCs presented in the revised report are consistent with the findings based on the previously prepared spatial quartile plots and spatial intensity plots.***