



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**

STATE OF NEVADA
Department of Conservation & Natural Resources

Steve Sisolak, *Governor*
James R. Lawrence, *Acting Director*
Greg Lovato, *Administrator*

August 26, 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: *Responses to NDEP
Comments dated March 2, 2022, on the Screening-Level Ecological Risk Assessment for
Operable Unit 2 (Rev 0)*

Dated: May 19, 2022

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 **10/26/2022** 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 Weiguan

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
Andrew Barnes, Geosyntec
Andrew Steinberg, Nevada Environmental Response Trust
Anna Springsteen, Neptune & Company Inc.

Betty Kuo Brinton, Metropolitan Water District of Southern California
Brian Waggle, Hargis + Associates
Brian Loffinan, Nevada Environmental Response Trust
Brian Rakvica, Syngenta
Carol Nagai, Metropolitan Water District of Southern California
Chris Ritchie, Ramboll
Christine Klimek, City of Henderson
Chuck Elmendorf, Stauffer Management Company, LLC
Dan Pastor, P.E. TetraTech
Dan Petersen, Ramboll
Dane Grimshaw, Olin
Daniel Chan, SNWA
Darren Croteau, Terraphase Engineering, Inc.
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
Jay A. Steinberg, Nevada Environmental Response Trust
Jeff Gibson, Endeavour
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-Paul Rossi, Stauffer Management Company LLC
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
Kurt Fehling, The Fehling Group
Laura Dye, CRC
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
Peter Jacobson, Syngenta
Ranajit Sahu, BRC
Rebecca Sugarman, U.S. Environmental Protection Agency, Region 9
Richard Pfarrer, TIMET
Rick Kellogg, BRC
R9LandSubmit@EPA.gov

Roy Thun, GHD
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 A

1 st NDEP Comments	NERT's Response	NDEP Comment on Response
1. General Comments		
<p>1. General Comment #1 – Overview: Much of what is described in Section 3 (Risk Characterization) actively falls under Step 3a of the risk assessment process, Screening Refinement. These activities, such as the use of the 95% UCL of the mean concentration in place of the maximum and use of LOAEL-based thresholds in place of NOAEL thresholds were not described in the OU-2 work plan. Section 3.1 of the OU-2 work plan stated: “As necessary, more realistic screening may be conducted during the screening refinement (Step 3a) using more realistic exposure estimates; however, Step 3a is not included in the SLERA Work Plan at this time.”</p> <p>Section 3.4 of the OU-2 SLERA WP further states: “If further assessment or action (i.e., the Step 3a or beyond) is needed, then a work plan addendum will be submitted to the Trust and NDEP for approval.”</p> <p>It does not appear that such a WP addendum was submitted, therefore it is noted that much of the analysis and discussion in Section 3 Risk Characterization in this document was conducted without an approved work plan. For all future deliverables when such a variation from an approved workplan is deemed necessary, the Department requests that such variations be submitted for review and approval.</p> <p>Please note that the UCL calculations were not confirmed but they will be checked for the OU-1 SLERA assuming that the same methods were used for OU-2.</p>	<p>Ramboll acknowledges that a work plan addendum should have been prepared for Trust and NDEP approval. Step 3a of the risk assessment process was included in the OU-2 SLERA Report Revision 0 (August 2021) after a review of the results of the screening indicated that 23 constituents exceeded screening thresholds in Step 1 and Step 2 of USEPA’s Eight Step Ecological Risk Assessment Process. Proceeding to the Step 3a refinement was consistent with applicable guidance and allowed a more thorough investigation of the constituents remaining after Steps 1 and 2 were completed. The additional evaluation for the OU-2 SLERA Report Revision 0 was conducted in the same way as the approach used in the OU-1 Refined SLERA which had been approved by NDEP.</p> <p>Revision 1 of the report will be titled Refined SLERA for Operable Unit 2 (OU-2 Refined SLERA Report) to describe the content of the report more accurately.</p> <p>The UCL calculations for the OU-2 SLERA (like the OU-1 Refined SLERA) were conducted using R code.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
2. Specific Comments		
<p>1. Specific Comment #1: Section 2.1.1.5, Tables 2-5n and 2-5c and Appendices C-4 and C-5 There is insufficient discussion of the background comparisons. The Gilbert’s Toolbox results presented in Table C-5b include many p- values that are equal to one, and several others that are very high. In a 1-sided test this implies a strong significant</p>	<p>Additional discussion will be added to Section 2.1.1.5 of Revision 1 of the OU-2 Refined SLERA Report to address the issue raised in this comment regarding p-values of 1 and relevance regarding site conditions compared to background, including explanation that:</p>	<p>The planned response seems appropriate overall, pending review of the revised report and the added discussion of this issue. However, if the argument is made that there is no</p>

NDEP Comment

Response

NDEP Comment on Response

<p>difference between background and site data, but the wrong way around. In principle, site concentrations cannot be greater than background, in which case these tests are run as 1-sided tests. However, when differences like this occur, then there are either unaccounted for analytical differences, or the background data do not represent site conditions. At the very least some discussion is needed in the report. Here are some initial thoughts on the impact of this:</p> <ul style="list-style-type: none"> • The possibility to collect local background for this area (OU-2) probably does not exist. This is like the situation on the southern part of the NERT property, where arsenic and uranium concentrations are considerably less than those in the BRC/TIMET background data. Decisions were made for that area to acknowledge that the site concentrations represented a new background for the southern part of the NERT property, but that any remediation decisions would still be held to the BRC/TIMET background data. This could be the case here. • Without further explanation in the report, a case could be made to consider more metal as COPECs, considering there is no appropriate background data set that can be used for comparison • The working hypothesis for why this occurred in the southern part of NERT is to do with potential leaching of metals from the soil matrix, perhaps as a consequence of contaminant (acid, solvents) dumping during operational times, or perhaps as a consequence of leaking pipes near the area (e.g., those that transport water back to Las Vegas from Lake Mead). The geochemistry of the southern part of NERT groundwater is clearly different than the rest of the BMI Complex, exhibiting reducing instead of oxidizing conditions for example. It seems that the same might apply to OU-2, although the mechanism for releasing metals from the soil matrix is perhaps not so clear. The effect is seen clearly in the arsenic and isotopic uranium data, but also applies to most of the chemicals for which at least one of the Gilbert's toolbox p-values is equal to one. This is the same effect that was seen in the southern part of NERT. • Focusing on uranium: Curiously, the elemental uranium data do not show a large difference between site and background. For example, the mean background concentration is 1 mg/kg 	<ul style="list-style-type: none"> • The differences observed are likely a combination of geologic, analytical factors, and natural variance. • With the general natural variability of alluvial geology, even within a single geologic unit, it is unlikely to obtain a perfect representation of local background for every existing site data set or relevant subset of data across this study area. • Therefore, not every variance between site and background data must be due to anthropological influence or analytical issues. <p>In addition, the uncertainty assessment of Revision 1 of the OU-2 Refined SLERA Report will discuss issues raised in the third and fourth bullets of this comment:</p> <ul style="list-style-type: none"> • The geochemistry and mechanisms for potential release of metals (including uranium) from the soil matrix is uncertain. • The maximum depth of the OU-2 SLERA data set is 2.5 feet below ground surface and most of the samples are surface soil samples. It is unlikely that reducing conditions in this area of OU-2 could have been generated in the topsoil. • The elemental uranium data do not show a large difference between site and background, which is evidence that the observed inconsistency in the isotopic results is likely due to analytical issues. Uranium-235 isotopic results for this data set are also significantly below background in addition to the U-234 and U-238 anomalies noted in the comment. It is not possible for the same concentration of uranium metal in the site and background data sets to produce less radioactivity of all three major isotopes at the site, whether or not geological processes influenced the uranium concentration in the soil in this area. However, given the fact that analytical error could arise from any of the four data sets (uranium as a metal and uranium as radioisotopes in both the site and background data sets) and given the age of the 	<p>appropriate background dataset, there needs to be further discussion and justification exploring the metals not included as COPECs as a result of the background comparison tests (see bullet point 2 in the original comment). Box plots and/or quantile plots can be revealing in this situation and should be considered prior to finalizing results. The background comparisons, in effect, are used to statistically confirm what's seen in the data. Please also note that precedent has been set to use the McCullough background levels when the more local site data are less than the McCullough sitewide background data. The point of the comparisons is simply to describe what the data appear to say. Decisions can be made based on these comparisons, but other information can, and has been brought help to make final decisions</p>
---	---	--

NDEP Comment	Response	NDEP Comment on Response
<p>and the mean site concentration is 0.91 mg/kg. However, the results for U-238 and U-234 are markedly different, both with background means of about 1.2 pCi/g and site means of about 0.3 pCi/g. However, the results for Th-230 and Ra-226 are reasonably consistent between background and site concentrations (hence the failure of secular equilibrium in the site data). As noted above, there are two possibilities: analytical issues or geological issues.</p> <p>The elemental uranium results reported might suggest an analytical issue with the isotopic uranium analyses (which would also apply to U-235). However, the differences seen across the rest of the metals between site and background concentrations instead suggest a more geological issue (as described above). If the latter is the case, then uranium has been leached out of the soil matrix along with arsenic and some other metals, and the elemental results for uranium should be questioned. Either way, some resolution is necessary.</p> <ul style="list-style-type: none"> • Although this finding might not affect the conclusions of the screening level ecological risk assessment, it has implications for transport of chemicals through groundwater in this area. The SLERA cannot or should not be performed in vacuum when there are data that challenge the conceptual model of transport in the area. It appears from the data that reducing conditions might have been realized in the area of OU-2, and this information should be addressed in this report and passed on to future or other work regarding groundwater contamination and remediation. 	<p>data sets, it is unlikely that this will be able to be resolved.</p>	
<p>2. Specific Comment #2: Data Handling, 2nd bullet (detection frequency), p. 2-6</p> <p>This text indicates that “USEPA and NDEP advocates that constituents with a frequency of detection less than or equal to five percent may be considered for elimination”. The focal point of that indication is that they “may be considered for elimination”, not that they will be eliminated. Although 5% is specified in the cited NDEP guidance, frequency of detect evaluations should always be balanced by a detection limit evaluation and by spatial analysis of those detects to ensure they do not represent a localized release or hot spot that represents</p>	<p>Text for the Data Handling discussion in Revision 1 of the OU-2 Refined SLERA Report will be added to clarify that elimination of chemicals based on a frequency of detection less than 5% is dependent on spatial evaluation of detected concentrations provided as part of the uncertainty assessment.</p> <p>The constituents with low detection frequency lacking ESVs were discussed in the uncertainty assessment and presented in tabular form in Appendix F-1 and the constituents detected at</p>	<p>This response will be acceptable, pending review of the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>unacceptable exposure or continuing source term. See also Specific Comment #3 below.</p>	<p>frequencies of 5% or less with HQs identified in Tables 2-5a.</p> <p>To address the comment, the Revision 1 of the OU-2 Refined SLERA Report will include a discussion of the constituents with low detection frequency and hazard quotients greater than 1 in a new uncertainty assessment section. The uncertainty assessment discussion will include consideration of the magnitude of the hazard quotients, the spatial overlap with other COPECs, and potential cumulative impacts from the presence of these constituents detected at low frequency when present at the same location as other COPECs. In doing so, the Revision 1 of the OU-2 Refined SLERA Report will present the uncertainty assessment balanced by a detection limit evaluation and spatial analysis to discuss potential localized impacts that may represent unacceptable exposure or a continuing source.</p>	
<p>3. Specific Comment #3: Figures</p> <p>There are no spatial plots in the report for any chemical, let alone the COPECs. The home range for some of the animals considered as receptors in the SLERA is quite small (e.g., small rodents), perhaps similar to a residential exposure unit for a human health risk assessment. When sampling location is fairly sparse compared to the areas of interest some spatial analysis is warranted to ensure that hot spots of contamination are not being missed. This has been a de facto requirement of NDEP on all risk assessment reports in the past and must be included here.</p>	<p>Subsequent to NERT’s submittal of the OU-2 SLERA Report Revision 0 (August 2021), NDEP provided a memorandum to clarify the format preferred for the spatial representation of data (memorandum entitled “NERT Spatial Plot Recommendations” dated February 18, 2022). The 7-page memorandum identifies bubble plots, contours/interpolation, geostatistical kriging, and empirical Bayesian kriging. Revision 1 of the OU-2 Refined SLERA will include spatial plots using a format agreed upon by NDEP, NDEP the Trust, and Ramboll after review and various calls amongst the parties to discuss the NDEP memorandum. Accordingly, bubble plots will be prepared with a continuous scale, using ecological screening values, or refined screening values, as appropriate for the points to be made in Revision 1 of the OU-2 Refined SLERA Report. These spatial plots will be provided for the COPECs identified in the Refined SLERA process (i.e., all constituents with at least one detected concentration that exceeds a plant, soil invertebrate, mammal, or bird ecological screening value). Constituents lacking ecological screening values will be shown in spatial plots as part of the uncertainty</p>	<p>This response will be acceptable, pending review of the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
	<p>assessment. In addition, the Revision 1 of the OU-2 Refined SLERA Report will be updated to cross reference the spatial bubble plots provided in the OU-1 Remedial Investigation (RI) Report.</p> <p>The findings of Revision 1 of the OU-2 Refined SLERA Report will be updated to include discussion of the spatial bubble plots, as appropriate. This new information will augment the graphics with spatial representation of data for the key COPEC already provided in the OU-2 SLERA Report Revision 0, in the Figures from Section 3 and Appendix C.</p>	
<p>4. Specific Comment #4: Figure 2-4 and Table C-1 For locations SA-24, SA-25, SA-26, and SA-27, there are no records in the BMI Regional Database. There are some discrepancies noted between the BMI Regional Database and Tables C-2 and C-3 are due to the reporting of the practical quantitation limit (PQL) versus the sample quantitation limit (SQL). Much like for the previous efforts to reconcile some older NERT data, these data issues need to be resolved before the report is brought to completion.</p>	<p>Locations SA-24, SA-25, SA-26, and SA-27 can be found in the BMI Regional Database under the location IDs SA24, SA25, SA26, and SA27, respectively. Table C-1 of Revision 1 of the OU-2 Refined SLERA Report will be updated to show the full field sample IDs to facilitate matching the data to the BMI database.</p> <p>Ramboll and NDEP collaborated significantly in 2020-2021 to resolve the detection limit column discrepancies for the data set presented in Table C-2 and used in Table C-3 in addition to other historical NERT data. Due to various complications with historical data already in the BMI Regional Database at the time involving former data validation guidance regarding blank contamination, it was agreed that, to avoid possible inadvertent data erasure, the reported result column would not be updated en masse to report non-detects to the SQL, given that the SQL is correct in the BMI database in a separate column. It is consistent with current NDEP guidance to report non-detects to the SQL, which is how Table C-2 is reported, as noted in the comment. However, for this data set (DVSR ID: TronoxAB), no data would be lost by reporting non-detects to the SQL in the BMI database. This adjustment to the reported result column could therefore be made for this data set in the BMI database for consistency with the data set as presented in Table C-2.</p>	<p>This response is acceptable pending review of the revised report. Adding the sample ids will help greatly in cross-referencing data with the BMI Regional Database, and the data for the SA* locations has now been found to exist in the database. NDEP will note that this dataset can be updated in the BMI Regional Database without data loss.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>5. Specific Comment #5: Tables Calculating risk to receptors based on both 95% UCL concentrations and arithmetic mean concentrations appears unnecessary in this risk assessment, because for wildlife receptors the risk based on 95% UCLs results in LOAEL HQs<1. Inclusion of the screening based on arithmetic mean concentrations unnecessarily complicates the document while contributing little to the overall conclusions. Suggest removing the risk characterization based on arithmetic mean concentrations.</p>	<p>The risk estimates based on arithmetic mean concentrations will be omitted from Tables 3-3, 3-4, and 3-7 in Revision 1 of the OU-2 Refined SLERA Report.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>6. Specific Comment #6: Section 2.1.2, Tables 2-4b, 2-5a, 3-1, 3-3, 3- 4, and References The Los Alamos National Library EcoRisk Database has an updated version (v4.2) as of November 2020. Please update where relevant. It may be found here and is now cited as N3B 2020: https://www.intellusnm.com/documents/document-library.crc?method=retrieveLan1File&nodeId=62152 Citation: N3B (Newport News Nuclear BWXT-Los Alamos, LLC), November 2020. "ECORISK Database (Release 4.2)," on CD, Newport News Nuclear BWXT-Los Alamos, LLC, document EM2020-0575, Los Alamos, New Mexico. (N3B 2020)</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will cite and use the updated version of the Los Alamos National Library EcoRisk Database (v4.2 2020).</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>7. Specific Comment #7: Section 2.2.2, p. 2-16 The table presented here showing the HQ summary of the nine COPECs retained for further evaluation in Section 3 is confusing and seems out of place. This table has a column labelled "Reason Retained" that specifies the receptors that are to be evaluated in Section 3 risk characterization, but the screening presented in Section 2 only compares maximum values to the most sensitive receptor. Receptor-specific screening has not yet been presented or discussed in this document. For instance, the table footnote for DDx says that it is not being evaluated in Section 3 for plants and invertebrates, presumably due to the fact that no DDx screening value is shown for plants</p>	<p>The following revisions will be made to Revision 1 of the OU-2 Refined SLERA Report: • This table "HQ Summary for the Nine Constituents Retained for the Risk Characterization" was intended to provide a summary of the constituents that move forward in the risk assessment process (Step 3a). The column referenced in this comment that is currently labelled "Reason Retained" will be revised to "Step 3a Receptor Evaluation". • The footnote for DDx in the table will be revised from footnote "b" to footnote "a" because DDx is evaluated for plants and invertebrates as well as for wildlife in Step 3a. The plant and invertebrate specific risk results are provided in Table 3-3 and 3-4.</p>	<p>The proposed revisions are acceptable, pending review of the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>and invertebrates in Table 2-4a. However, Table 3-1 shows a plant screening value for DDx from LANL (for DDT), and an invertebrate screening value for DDx from the EPA EcoSSLs (which was calculated for this risk assessment from data presented by EPA that EPA deemed insufficient for use in calculating an ECO-SSL).</p> <p>Also, the list of screening values in Table 2-4a does not include values from the LANL Ecorisk Database, even though that is identified as a source of ESVs in the text (see also Specific Comment #6). Table 2-4a should be updated to include ESVs from all primary sources noted in Section the text, including the LANL Ecorisk Database, and the ESVs applied consistently throughout the different sections of this document.</p>	<ul style="list-style-type: none"> • The values from the LANL Ecorisk Database will be added to the list of screening values in Table 2-4a. • The report will be reviewed to confirm that ESVs are applied consistently throughout the different sections of this document, including any updated ESVs from the LANL Database. 	
<p>8. Specific Comment #8: Metals, 1st bullet, p. 2-9 With regard to use of Shapiro-Wilk test, this test is unnecessary and of no real value, and thus, could be omitted. It is also not clear how this information has been used to support any decisions made in this report. If the data are normal, then the mean is normal; if the data are not normal, then the mean is possibly still normal depending on the amount of data and skew. Statistical t-tests assume the means are normal, not the data. Also, UCL calculations should be based on the distribution of the mean more than the distribution of the data, since it is the UCL of the mean that is of interest. Obviously, the distribution of the mean is difficult to obtain with only one sample of data, but if there are enough data and relatively little skew, then t-tests work well, and t-UCLs work well. In addition, these types of goodness-of-fit tests are known to have low power, in which case if there is not much data then normality is difficult to reject, and if there are a lot of data the central limit theorem suggests assuming normality for these types of statistical analyses anyway. No action is necessary, but just to note that the Shapiro-Wilk results are not particularly useful.</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will include a brief discussion of the Shapiro-Wilk test results and will indicate that the Shapiro-Wilk normality testing does not influence the overall conclusions because the 95% UCL based on the distribution of the mean of the dataset is relevant for risk assessment purposes.</p>	<p>The proposed revisions are acceptable, pending review of the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>9. Specific Comment #9: Section 3.3.1, p. 3-4 If dioxins/furans are not described in this section for terrestrial plants and soil invertebrates, then it needs to be made explicit and cross-referenced to the relevant section for discussion.</p>	<p>Section 3.3.1 of Revision 1 to the OU-2 Refined SLERA Report will cross reference the introductory text of Section 3.3 which states dioxins/furans are only considered in the food web model because “studies have documented that invertebrates are not sensitive to dioxins and furans because they lack the aryl hydrocarbon receptor (AhR) upon which toxicity is exerted (Borgman et al. 1990, Hahn et al. 1994, West et al. 1997).”</p>	<p>This is acceptable pending review of the revised report. It is noted that it has been administratively determined that NERT has no mandate to monitor constituents other than perchlorate and chlorate east of Pabco Road.</p>
<p>10. Specific Comment #10: Section 3.3.1, p. 3-5, Excerpt from Table 3-4 A few values within the table do not match the legend. The beta-BHC value of 40 should be highlighted green, and the perchlorate value of 1 should be unhighlighted and bolded.</p>	<p>The highlighting and bolding in Table 3-4 will be corrected in Revision 1 of the OU-2 Refined SLERA Report, as indicated in the comment. Consistency in the highlighting and bolding of the table will be checked for all chemicals.</p>	<p>The proposed revisions are acceptable, pending review of the revised report.</p>
<p>11. Specific Comment #11: Section 3.3.1, 1st paragraph, p. 3-5 The use of RSVs calculated from individual studies [i.e. Novais et al. (2010)], in lieu of published ESVs, needs to be further justified including how the studies were selected and what other studies may have been considered.</p>	<p>Section 3.3.1 of Revision 1 to the OU-2 Refined SLERA Report will include additional discussion regarding how the studies were selected and what other studies were considered. Further, this section will be revised to clarify that the RSVs obtained from individual studies [i.e., Novais et al. (2010), Phillips (2002)], and included in Revision 1 the OU-2 Refined SLERA Report, are not used in lieu of published ESVs, rather they are included to provide context, and balance the use of ESVs.</p>	<p>The proposed revisions are acceptable, pending review of the “additional discussion” in the revised report that is mentioned in the response</p>
<p>12. Specific Comment #12: Section 3.3.1, p. 3-5 and 3-6 It looks as though these paragraphs should be in a bulleted format as was done for Terrestrial Plants and Soil Invertebrates on page 3- 4.</p>	<p>The text in Section 3.3.1 of Revision 1 of the OU-2 Refined SLERA Report will be provided in bulleted form.</p>	<p>The proposed revisions are acceptable, pending review of the revised report.</p>
<p>13. Specific Comment #13: Section 3.3, 1st paragraph, p. 3-6 For nitrate, nitrite, and sulfate, please explain why the site 95%UCL concentration is being compared to the 95%UCL background concentration for decision-making purposes instead of employing the same statistical tests for background that were used for other analytes. Comparison of UCLs is completely inappropriate (there is absolutely no statistical justification for such a comparison).</p>	<p>The section was intended to identify the constituents lacking ecological screening values retained for discussion in the uncertainty assessment. In the context of evaluating constituents lacking ESVs, the 95% UCL is used for consideration, but not decision-making. Revision 1 of the OU-2 Refined SLERA Report will include the following: • A comparison of nitrate, nitrite, and sulfate to background using the same approach as done for metals will be performed. The discussion of the 95% UCL for</p>	<p>This is acceptable pending review of the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
	<p>nitrate, nitrite, and sulfate currently in Section 3.3 will be updated to reflect that comparison. The 95% UCL will only be retained for context in Section 3.5 (the uncertainty assessment) and will not be retained in Section 3.3.</p> <ul style="list-style-type: none"> • Section 3.3 will state that nitrate, nitrite, and sulfate and other chemicals lacking ESVs are discussed further in the uncertainty assessment. In the uncertainty assessment, the discussion will include the updated background comparison. 	
<p>14. Specific Comment #14: Section 3.4.2 Total dose intake (TDI) and total daily dose (TDD) appear to be used interchangeably. Total daily dose would be more appropriate, and section 3.4.2.1 should be renamed to Total Daily Dose.</p>	<p>References to TDI in Revision 1 of the OU-2 Refined SLERA Report will be replaced with TDD.</p>	<p>This is acceptable pending review of the revised report.</p>
<p>15. Specific Comment #15: Section 3.4.2.2, p.3-9 More detail is needed as to how a chemical was determined to have low or high bioaccumulation potential. Furthermore, it is stated that “only bioaccumulative chemicals were evaluated in the food web model,” thus, an explanation is needed as to what chemicals were not evaluated and why.</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will indicate the list of bioaccumulative compounds are those from the list of chemicals considered persistent, bioaccumulative, and toxic (PBT) constituents as defined by the USEPA PBT program (USEPA 2000). A listing of those chemicals included for the food web model and those excluded will be listed and discussed.</p> <p>The following reference cited above will be added to the reference section of Revision 1 of the OU-2 Refined SLERA Report. USEPA 2000. Bioaccumulation Testing and Interpretation for The Purpose of Sediment Quality Assessment Status and Needs. EPA-823-R-00-001. February.</p>	<p>The proposed approach is acceptable, pending review of the revised report.</p>
<p>LG-03216. Specific Comment #16: Section 3.4.2.3, p. 3-14 The AUFs are said to be provided in Appendix D-2, however, only the home ranges are provided in every table. In only a couple of tables are site foraging frequency (SFF) values provided, but they are all equivalent to 1. AUFs should be provided in Appendix D-2 tables, and the area for OU-2 should be provided in this section; for example, the OU-2 area should be provided when the example calculation for kit fox AUF of 0.96.</p>	<p>The species-specific AUFs are provided in Table 3-5a and will be added to Tables 3-6 through 3-9 in Revision 1 of the OU-2 Refined SLERA Report. Also, the AUF for each receptor evaluated will be provided in Appendix D-2 and Appendix E. In addition, the term “Area Use Factor (AUF)” will replace the term “Site Foraging Frequency (SFF)” wherever SFF appears in the report.</p>	<p>The proposed revisions are acceptable, pending review of the above referenced text in the revised report.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>17. Specific Comment #17: Section 3.4.5 Please add a discussing why bis(2-ethylhexyl) phthalate and bromine were not included in the wildlife receptor models. At the moment there is currently no discussion as to why these two chemicals do not appear in the Appendix E tables.</p>	<p>Please see the response to Comment 15. Revision 1 of the OU- 2 Refined SLERA Report will include a listing of those chemicals included for the food web model and those excluded will be listed and discussed.</p> <p>A discussion of these two chemicals will also be added as part of the uncertainty assessment in Revision 1 of the OU-2 Refined SLERA Report.</p>	<p>The proposed approach is acceptable, pending review of the text of the uncertainty assessment section in the revised report.</p>
<p>18. Specific Comment #18: Section 3.5, COPECs Lacking ESVs and COPECs Lacking Plant ESVs For the COPECs without ESVs that have frequency of detection as a line of evidence, please provide an additional discussion of the spatial distribution of those detects and discuss whether those detects are potentially indicative of a localized release or potential hotspot. If these detects are indicative of either a localized release or hotspot, writing them off due to a low frequency of detection is not appropriate.</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will include additional discussion of constituents lacking ESVs and detected in fewer than 5% of samples in the uncertainty assessment.</p> <p>The review will include a spatial analysis relative to other constituents and known areas of elevated concentrations, discussion of the magnitude of HQs (if available), and an evaluation of the detection limits.</p>	<p>The proposed approach is acceptable, pending review of the revised report. Please include graphical representations of the spatial analyses conducted.</p>
<p>19. Specific Comment #19: Section 3.5, p. 3-20 and 3-21 There needs to be more substantial discussion surrounding the COPECs without ESVs because simply eliminating them because they lack an ESV is not acceptable. There are many statements that these COPECs are not bioaccumulative, detected only once, or have a low frequency of detection. However, some further discussion is needed to remove chemicals based on frequency of detection (and 10% is not an appropriate target for frequency of detection as discussed in Specific Comments #2 and 3 above).</p> <p>Detected chemicals without ESVs should be discussed in the context of the conceptual site model. For example, are these chemicals expected to be present on site, or to have migrated to the area of the detected samples? The COPECs without ESV sections need to provide more detail and conclude whether these chemicals potentially pose a risk.</p>	<p>Section 3.5 provides an evaluation of all chemicals for which there are no ESVs. Additionally, Table 3-10 provides an uncertainty analysis for constituents lacking ESVs. Therefore, in this context, the frequency of detection is considered different than the context used for screening, as noted in Specific Comment #2.</p> <p>Because this is the Uncertainty Section, various approaches to evaluate the data were used. The frequency of detection was simply another way to consider whether a particular constituent could pose a risk as a detection frequency of 10% vs. 100% is a relevant piece of information for the evaluation of risk in the uncertainty phase of the risk assessment. The two constituents with detection frequency of 10% discussed are ortho-phosphate and total petroleum hydrocarbons (oil range organics). These two constituents and chemicals lacking ESVs will be discussed in the context of the conceptual site model and overall contribution to potential risks in Revision 1 of the OU-2 Refined SLERA Report as part of the uncertainty assessment.</p>	<p>Proposed response is acceptable provided that the uncertainty analysis makes it clear that the 10% frequency of detect is used as a bounding to the 5% criterion, and not as a strict threshold for elimination of COPCs. As with the 5% frequency of detect threshold, spatial analyses of COPCs with 10% or less detection is also needed to ensure they are not representative of hotspots.</p>

NDEP Comment	Response	NDEP Comment on Response
<p>20. Specific Comment #20: Section 3.5, 1st paragraph, p. 3-21 It is unclear why bromine was used as a surrogate for bromide. Provide discussion as to why this is an appropriate surrogate and make it clear that the bromine calculations are a surrogate for bromide.</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will indicate:</p> <ul style="list-style-type: none"> • Bromine was used as a surrogate for bromide in the uncertainty section as another way to evaluate potential risks from bromide given that there is no ESV for bromide and bromide is simply the anion of bromine. • The key difference between bromine and bromide is that bromide is the reduced form of bromine. • Bromine is more chemically reactive than bromide and bromide is more stable than the bromine atom. • USEPA (2005) conducted a risk assessment for bromide and found that bromide is “practically non-toxic to avian species” with LC50s of > 5,600 mg/kg. USEPA reported LC50s based on oral toxicity to rats (as a surrogate for terrestrial mammals) as >3,900 mg/kg. <p>The following reference cited above will be added to the reference section of Revision 1 of the OU-2 SLERA Report. USEPA. 2005. Ecological Hazard and Environmental Risk Assessment of Bromine and Sodium Bromide for the Registration Eligibility Decision (RED) Document.</p>	<p>The proposed response is acceptable, pending review of the revised report.</p>
<p>21. Specific Comment #21: Section 3.5, 2nd paragraph, p. 3-21 See Specific Comment #13, and further discuss whether these chemicals pose a potential risk to receptors at the site. Straight comparison of averages is not appropriate, and neither is comparison of UCLs. Background comparison plots and tests are presented in Appendix C and should be used (excepting the concerns about the background data per Specific Comment #1).</p>	<p>The uncertainty section of a risk assessment often uses a variety of methods to evaluate potential risk, particularly for those chemicals that lack ESVs. Where background data are available for various constituents lacking ESVs, a background evaluation using information from Appendix C will be added to Section 3.5 of Revision 1 of the OU-2 Refined SLERA Report uncertainty discussion.</p>	<p>The proposed approach is acceptable, pending review of the revised report.</p> <p>Please also note that EPA has previously made it clear that UCLs for site data and background data should not be compared directly. Consideration should be given to removing a direct comparison of UCLs, or, at the very least, some qualification is needed in terms of respective samples sizes. It is ok to compare means, but UCLs depend on sample size, in</p>

NDEP Comment	Response	NDEP Comment on Response
		which case their comparison is not advisable. Note also that the spatial analysis could affect how risk estimates are calculated and compared (if any changes are made to exposure areas, etc.).
<p>22. Specific Comment #22: Section 3.5, p. 3—22, Additional OU-2 SLERA Uncertainties</p> <p>Please provide more detail on the modeling uncertainties including exposure parameters and derivation of TRVs used. Each bullet point needs more discussion. For example, why is an HQ less than a LOAEL but greater than a NOAEL an uncertainty? The true effects levels generally occur between the NOAEL and LOAEL. Some consideration of that uncertainty may affect the overall conclusion regarding whether risk is acceptable or unacceptable. For all of these bullet points, is risk underestimated or overestimated and how do these uncertainties affect the risk estimates?</p>	<p>Additional detail will be provided in the uncertainty section of Revision 1 of the OU-2 Refined SLERA Report, including detail on the modeling uncertainties including exposure parameters and the derivation of TRVs.</p> <p>In addition, Revision 1 of the OU-2 Refined SLERA Report will include discussion of whether the uncertainties overestimated or underestimated risk estimates, including consideration of the potential effects within the range of the NOAEL and the LOAEL. The discussion will include how the uncertainties potentially affect the overall conclusions. While this information will enhance the clarity of the uncertainty assessment, it will not lead to changes in the OU-2 conclusions because this type of information was already considered.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>23. Specific Comment #23: Table 3-1</p> <p>Please change the column headers from “BERA” to “SLERA”. This is not a baseline risk assessment. The values presented in the columns are no-effects based thresholds that are appropriate for a SLERA.</p>	<p>The column headers in Table 3-1 will be revised from “BERA” to “SLERA” in Revision 1 of the OU-2 Refined SLERA Report.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>24. Specific Comment #24: Table 3-1</p> <p>It is unclear how the “No Plant ESV” listed for beta-BHC differs from the “NC” (no criterion) designation listed for other analytes. Please explain or edit for consistency.</p>	<p>Table 3-1 of Revision 1 of the OU-2 Refined SLERA Report will be updated to use only NC (No Criterion) in place of the phrase “No Plant ESV” or “No Invert ESV” where criteria are not available.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>25. Specific Comment #25: Table 3-10</p> <p>The exclusion of TPH - Oil range organics and ortho-phosphate based on a detection frequency < 10% is inconsistent with NDEP guidance, which specifies a detection frequency threshold of <5% for consideration for elimination of analytes as COPECs after also considering relevant site-specific factors</p>	<p>Please see the response to Specific Comment #2.</p> <p>In addition to that stated in response to Specific Comment #2, Section 3.5 of Revision 1 of the OU-2 Refined SLERA Report will be expanded to discuss NDEP’s BCL Guidance and Section 7 of the ITRC TPH</p>	<p>Proposed response is acceptable, pending review of revised text. As noted in the comment to response #19, revisions to the uncertainty analysis should make clear that</p>

NDEP Comment	Response	NDEP Comment on Response
<p>such as spatial distribution. See the current NDEP BCL Guidance as well as Section 7 of the ITRC TPH Risk Evaluation at Petroleum Contaminated Sites for additional risk assessment information of TPH, including references to potentially applicable soil screening levels. https://tphrisk- 1.itrcweb.org/</p>	<p>Risk Evaluation at Petroleum Contaminated Sites will be consulted for additional risk assessment information for TPH, including references to potentially applicable soil screening levels. https://tphrisk-1.itrcweb.org/</p>	<p>the 10% frequency of detect is used as a bounding to the 5% criterion, and not as a strict threshold for elimination of COPCs. As with the 5% frequency of detect threshold, spatial analyses of COPCs with 10% or less detection is also needed to ensure they are not representative of hotspots.</p>
<p>26. Specific Comment #26: Appendix C, Table C-1 Comparison between Table C-1 and the BMI Regional Database: For locations SA-24, SA-25, SA-26 and SA-27 (from ENSR), indicates there are no records in the BMI database or the sample or location tables for these location IDs. Please verify these samples were included in an NDEP-approved DVSR/EDD and identify the DVSR.</p>	<p>Please see the response to Specific Comment #4.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>27. Specific Comment #27: Appendix E, Tables E-1 through E9 These tables present two sets of NOAEL and LOAEL HQ calculations, one set for AUF = 1 and one set for AUF <= 1. For the column entitled AUF <=1, please put in the actual AUF used in the calculation. This applies mainly to Tables E6, E8, and E9, which obviously use an AUF < 1 in the final two columns.</p> <p>For tables E1 - E5, and E7, the final two columns are redundant with the previous two columns and should be removed.</p> <p>Also, the term AUF in Appendix E is inconsistent with the terminology in the Appendix D exposure parameter tables, which use the term site foraging frequency (SFF). All SFF values in the exposure parameter tables show SFF = 1, so the SFF (or AUF) values < 1 used to calculate HQs in Tables E6, E8, and E9 are never defined. Please revise accordingly.</p>	<p>Revision 1 of the OU-2 Refined SLERA Report will:</p> <ul style="list-style-type: none"> • Include the receptor-specific AUFs in Tables in Appendix E for receptors with AUFs less than 1. • Replace “SFF” with “AUF” in the Appendix D Exposure Parameter tables. <p>Redundancy will be reduced to the extent possible given limitations of the excel worksheets which contain all receptors.</p>	<p>This response will be acceptable, pending review of the revised report.</p>
<p>28. Specific Comment #28: Background Comparison The background information on habitat suitability based on direct field evidence and the opinion of a qualified biologist/ecologist appears to come exclusively from the Checklist for Ecological Assessment in Appendix A, which was</p>	<p>The Ramboll ecologists involved in the project now (2022) are the same as those involved in 2015 and 2018, and as such, the conclusions in the report about the limited ecological habitat and condition will not change. However, Appendices A and B will be updated to</p>	<p>This response will be acceptable, pending review of the revised report.</p>

NDEP Comment

Response

NDEP Comment on Response

<p>completed in 2018. Have any more recent assessments been done by a biologist or ecologist? If so include them. The 2018 form indicates that a prior assessment was conducted in 2015. How do the assessments compare? Have any other field-based biological assessments been conducted and made available? It may be worth including a discussion of observations from both assessments depending on the nature of the 2015 checklist.</p>	<p>provide more current information and photographs from the most recent site visits, as relevant.</p>	
---	--	--