

STATE OF NEVADA

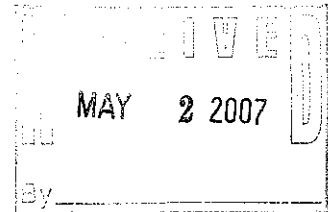
Department of Conservation & Natural Resources

DIVISION OF ENVIRONMENTAL PROTECTION

Jim Gibbons, Governor

Allen Biaggi, Director

Leo M. Drozdoff, P.E., Administrator



April 30, 2007

Mr. Mark Paris
Basic Remediation Company (BRC)
875 West Warm Springs
Henderson, NV 89011

Re.: Nevada Division of Environmental Protection Response to:
BRC Human Health Risk Assessment Report – Borrow Area
dated March 26, 2007
NDEP Facility ID# H-000688

Dear Mr. Paris:

The NDEP has received and reviewed BRC's correspondence identified above and provides comments in Attachment A. Please note that a resubmittal is not required or desired to address these issues. The comments provided in Attachment A are included for the completeness of the administrative record and to provide additional guidance to BRC for future risk assessment submittals.

No further action is required to address these issues and BRC may proceed with the gravel pit operations at this time. Placement of the borrow area materials must be consistent with the criteria described previously by the NDEP. Those criteria are as follows:

1. Materials shall not be used in residential areas;
2. Materials will not be placed at the surface (they will be covered);
3. Materials will be placed in such a manner as to minimize impacts to groundwater (as demonstrated via the VLEACH model); and
4. Materials will be placed in significant quantities (greater than 50,000 cubic yards).

It is expected that BRC will discuss the placement of these materials with the NDEP prior to exportation of any materials. This discussion would include a discussion of the leaching pathway.

Should you have any questions or concerns, please do not hesitate to contact me at (702) 486-2850x247 or brakvica@ndep.nv.gov.



Sincerely,



Brian A. Rakvica, P.E.
Supervisor, Special Projects Branch
Bureau of Corrective Actions

BAR:s

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Attachment A

1. General comment, the report has been improved, but still suffers from a lack of transparency and traceability.
 - a. Considering the likely risks, or lack thereof, related to the use of Borrow Pit gravel and soils, this is considered acceptable. But, it is unlikely to be considered acceptable in risk assessments that are more likely to drive unacceptable risks, for example, the common areas risk assessments that are forthcoming. The report is very difficult in its current form to work through the entirety of the risk assessment because of the lack of transparency and traceability. Equations are incomplete, sufficient annotation is often not provided, and the conclusions are hence difficult to defend. In some cases the conclusions are not reasonable as stated.
 - b. For example, BRC repeatedly states that the radionuclides risks are similar to background risks. If they were similar to background then the background comparisons would not fail. Instead it would be better to point to the low probability that these scenarios will ever occur, and then suggest that given the low probability it might be reasonable to accept cancer risks as high as 10^{-4} . A similar argument could be made for asbestos risks. But, in the case of radionuclides, it is not reasonable to argue that the risks are similar to background.
 - c. The lack of flow, transparency and traceability also affects the logical path to conclusions. Conclusions are not always well enough supported in the text and the appendices, and the reviewer is left to do a lot of work to understand exactly how the risk assessment results and conclusions come together. For reviewers familiar with risk assessment (e.g.: the NDEP) it is possible to piece together the arguments that underlie the conclusions that have been drawn, but we doubt that is the case for other reviewers.
 - d. Please note that the comments provided below are merely examples and should not be considered comprehensive. The NDEP has reviewed the document in its entirety and has internally noted a number of areas that could be changed. These changes, however, will not materially affect the outcome of the document and it is believed that it is not productive to list all of these comments herein.
2. Executive Summary, Page ES-5, Summary of Results. Radionuclide risks are not consistent with background. This is the wrong rationale for drawing the stated conclusions about radionuclide risk. Additional explanation is needed for why the asbestos risks are considered "conservative". In both cases it is probably more reasonable to point to the low probability that the receptor/exposure scenarios will occur, and that 10^{-4} might be considered reasonable under those circumstances. Some discussion could also be provided for why the asbestos risks are so great (comparatively) for one scenario in particular. Explanations could also be given for which chemicals and pathways drive the risks that are "problematic". This should be a requirement of risk assessments so that the complete picture is presented. In general, the conclusions could be written a lot more clearly with better separations and use of bullets, as well as arguments other than those presented for radionuclides and asbestos. In general the conclusions are weakly supported by the arguments made and could be improved substantially with greater explanation and justification. These comments apply equally to Section 8.
3. Section 2, general comment, the role of background in the decision making process is still not fully described. It has two roles. One is COPC selection, and the other is semi-quantitative comparison of background and site risks. This needs to be made clearer in risk assessments, not through a

sentence addition, but through recognition of the integral roles that background has played in both COPC selection and comparison of background and site risks.

4. Section 2.4.4, page 2-8, top paragraph, BRC should have discussed how asbestos was analyzed for in 2000 and if it was a different method than the elutriator, and if so, if the data are relevant.
5. Section 3, general comment, We note that Section 3 is focused on chemistry issues, however, there is still some language that inappropriately ties the chemistry issues to the Data Quality Objective (DQO) process. The DQO process is about decision making, not about chemistry. It is about the data and the decisions that will be made based on the data. This distinction needs to be better understood and made. For example, Table 1 still refers to DQOs in 2 cells. These are not DQO issues. These are Data Quality Indicator (DQI) issues and it is important that the distinction is understood. Chapter 3 should be focused on Data Validation (DV), Data Usability (DU) and DQIs, not on DQOs, the latter is the purview of Data Quality Assessment (DQA), as described in Section 3.1.8 currently.
6. Section 2.4.5, page 2-8, 3rd paragraph, BRC should have included discussion regarding how sample depths compare with the estimated depth of excavation.
7. Section 3, general comment, NDEP could not find the Data Useability Tables that we did together. These are not included in the hard copy as far as we can tell, and the one that is on the CD appears to be similar to an old type instead of the new one that we agreed to. This comment also applies to a number of BRC's response to previous comments.
8. Section 3.1.1, page 3-2, BRC states "Since the Work Plan was written and approved, the boundary definition of the area considered for use as Borrow Area soils has changed." In instances like this it would be appropriate to provide a citation to the NDEP approval document for change of boundary definition.
9. Section 3.1.3, page 3-5, insertion for asbestos methods. It is not clear why these 2 paragraphs are here. It would seem that this discussion would be better placed elsewhere, such as Criterion IV.
10. Section 3.1.5, page 3-7, BRC states "The analytical sensitivity is perhaps not low enough in regards to the amphibole fibers." This statement is important and at the crux of the entire risk analysis and assessment argument regarding asbestos. The weight of this statement is not adequately discussed from this point on in the document, and otherwise should not be ignored. A complete discussion of the analytical sensitivity of asbestos sampling and its bearing on the analysis of risk is in order for this assessment. Examples follow. How should sub-sampling of asbestos collection filters be changed to improve analytical sensitivity? Since sample size plays a crucial role in the outcome of the analysis, could the difficulties of analytical sensitivity for the risk assessment have been thwarted in advance?
11. Sections 3.1.6 and 3.1.7 the NDEP has the following comments:
 - a. These sections cover similar material. It seems that Section 3.1.6 has missed the point of the Data Usability Step 5, which is a data review. An explanation of Data Review is provided in Appendix D, Attachment D-2, but Section 3.1.6 offers something different, that should primarily be in Section 3.1.7.
 - b. Most of section 3.1.6 belongs in Section 3.1.7 with the exception of Section 3.1.6.3. Also, Section 3.1.6 should include details on what percentage of data was validated against which criteria (e.g., Levels/Tiers) along with qualifier descriptions. For example, the tables in the Data Validation Summary Reports that show the level of data validation under Level III versus Level IV along with tables that show to which samples this applies to should be included. How the DQIs were used to assess usability can be included in Section 3.1.7 with the DQI information (item 3 below).

12. Section 3.1.7.2. the NDEP has the following comments:

- a. The report states, "Twenty-eight sample IDs also received VOC, SVOC, PCB, and pesticide data qualifiers due to sample temperature " The report should provide more details on this temperature issue. Describe what the temperatures were, why they might have been exceeded and why the data were not rejected.
- b. Blanks. The report states, "The following are analytes that were detected in blanks that were within five times detections in field samples ..." What does "within five times detections" mean? These are analytes that were detected above the detection or reporting limits. This sentence and similar statements require clarification in future submittals.
- c. Page 3-14, "aldehyde" needs to be added after "endrin" to "BP-09-0-1A (4,4'-DDT, endosulfan I, endrin, and heptachlor)" in the Matrix spike recovery section of this section.

13. Section 3.1.7.5. The preparation methods that were used, especially those for the metals, should be included in this section since comparability is also dependent upon the method of preparation. Also, a discussion of secular equilibrium could be included here to show the radionuclides in the soils generally followed this equilibrium. Also, provide additional details on the Ra-226 issue. Which methods were used and which data was used or not used and why (e.g. blank contamination). There is also a discrepancy between the text and Table 2 which indicates there was only one method used for Ra-226 analysis.

14. Section 3.1.7.5. Comparability of the site and background data should also be addressed here, both in terms of geology and analytical methods.

15. Section 3.1.8, the concept of data adequacy and how data adequacy relates to DQOs should be discussed between NDEP and BRC.

16. Section 3.1.8.1, the NDEP has the following comments:

- a. The paragraph about background is not revealing in any way. A conclusion is made, whereas what is needed is a discussion about the appropriateness of the background data for use in this risk assessment.
- b. Asbestos and the radionuclide risk-drivers should be included in here.

17. Section 5, most of this Section is about methods and not about results. It seems that the results should be summarized from the Tables and Appendices into this Section. This applies to Section 6 as well. The results presented in Section 8 are final results only, so it is difficult to piece the whole thing together. The risk drivers are not clearly identified in the text. Intermediary results summaries are needed in Sections 5 and 6 to set the stage for the results that come in Section 8, and also, potentially, to better support the uncertainty analysis in Section 7.

18. Section 6, general comments as follows:

- a. References to GISdT should be changed to GiSdT.
- b. Formulas. It would be helpful to have the complete formulas presented for both asbestos and radionuclide risk calculations. They are presented for the main cancer endpoint and the hazard index (HI) endpoint, but not for asbestos and radionuclides. For asbestos, different pieces of the total equation are presented, but not tied together in Sections 6.2 and 6.4. For radionuclides the equations are still missing. References are provided, but the basic equations should be pulled into the main text, for completeness, transparency and traceability, so the reviewer does not need to find the material in references.
- c. Along with summaries of intermediate results, it would be helpful to identify the main chemical drivers and the main pathway drivers for the risk results. This would put the results in context of what matters, and what might need to be controlled in the future.

- d. Some Table references are missing it seems in Chapters 5 and 6. The results are contained in Tables only, in which case it is very important to reference the Tables in the right sections, and often. It would be preferable as well to present summaries of results in the text.
- e. The 8 hour Exposure Time parameter for asbestos risk calculations still does not seem to be described explicitly in the text. This is necessary to complete the asbestos risk calculations.

19. Section 6.1.1.1. This table should have the units for the analytes.

20. Section 6.1.3, page 6-6, for the following equations:

1. Estimated Bulk Concentration (10^6 s/gPM10) = Long fiber count \times Pooled analytical sensitivity
2. 95% UCL of Poisson Distribution (10^6 s/gPM10) = $\text{CHIINV}(1 - \alpha, 2 \times (\text{Long fiber count} + 1)/2)$
3. Estimated Airborne Concentration (s/cm^3) = Estimated bulk concentration (10^6 s/gPM10) \times
Estimated dust level (ug/cm^3)

provide annotations, such that *all* variables, units, and functions are identified and fully described.

21. Section 6.4.1, page 6-14, second equation. Change:

$$\text{Total Carcinogenic Risk} = \Sigma \text{Individual Risk}$$

to

$$\text{Total Carcinogenic Risk} = \Sigma \text{Risk}_i$$

where, $i = \text{COPC } i$

22. Section 6.4.2, page 6-15. For the sake of clarity, the following equation should change:

$$\text{Hazard Index} = \Sigma \text{Hazard Quotients}$$

to

$$\text{Hazard Index} = \Sigma \text{Hazard Quotients}_{i,j}$$

where, $i = \text{COPC } i$, and $j = \text{Pathway } j$

23. Section 7.1.2, pages 7-2 to 7-3, the section does not present adequate information that is useful in assessing "Analyte Quantification." If the topic is going to be adequately addressed, even in a qualitative sense, then appropriate conceptualization should be provided for how laboratory procedures are aimed at identifying difficulties with analysis of particular constituents in the context of the sampled media and its delivery to the lab.

24. Section 7.1.3, in general, the section inadequately addresses concerns of detection limits. If there are problems with detection limits for a defined list of COPCs, then please discuss them directly.

25. Section 7.1.4, page 7-4, BRC provided the example of hexacholobenzene as an analyte for which the maximum detection limit has a significant influence on the resulting 95% UCL calculation. Since this was only an example, it would be helpful to discuss the other constituents that also had the same difficulty. Expand the discussion to a more general address of the topic; the use of the example

is fine, but all COPCs that showed similar difficulty should be addressed. A summary table would be an efficient way to summarize the information.

26. Section 7.3.1.1, page 7-5, regarding the statement: "In an evaluation, risks are sometimes not calculated for all of the exposure pathways that may occur, possibly causing some underestimation of risk." It would be helpful to explain this statement in the context of the CSM and any variances from the identified exposure scenarios.
27. Section 8, general comment, the term "theoretical" should be deleted where it is used. These are estimated risks, not theoretical ones.
28. Section 8.1, page 8-1, BRC states "It should be noted that zero risks are associated with long amphibole structures." This is incorrect and is an unacceptable risk interpretation. Again, the problem confronted is a matter of sampling and measurement for the amphibole and chrysotile structures in question. Please avoid this statement in the future.
29. Section 8.1, page 8-1, please note that an ILCR of 1×10^{-4} is not consistent with the radionuclide background soil cancer risk of 5×10^{-5} . These statements occur in a number of places and the NDEP will not repeat this comment for each instance.
30. Section 8.3, page 8-3, please note that an ILCR of 3×10^{-6} is not consistent with the radionuclide background soil cancer risk of 1×10^{-6} .
31. Section 9.1, page 9-2, bullet 3, BRC states "Native soils at each placement site were assumed to be unimpacted for modeling purposes". Please note that this is not a "conservative" assumption.
32. Table 1, items that refer to DQO instead of DQIs should be changed.
33. Attachment A-2-1, the NDEP has the following comments:
 - a. Response to Comment (RTC) 3. Some of the text has been changed to make the receptors clear; however, in Table ES-1, for example, it appears that there are 3 receptor scenarios and not 4. It should be clear in the Executive Summary text why the Future Construction Worker Onsite and the Future Construction Worker Offsite scenarios have been combined in Table ES-1.
 - b. RTC 16, it does not appear that clarification is given regarding the term ambient conditions.
 - c. RTC 23, we don't agree with BRC's claim that "the sample preparation step prior to analysis involves grinding the material – making this difference moot." Just because the lab grinds (homogenizes) all the samples, it does not mean that in the field the different grain sizes would be homogenized. I.e., just because we are not measuring the differences does not mean that they do not exist.
 - d. RTC 24c, Mention of the eight potential borrow material use sites (and reference to a figure showing their locations) was added to Section 2.1; however, seven sites are still referenced in Section 2.3.5 (previous Section 2.3.4). Also, an explanation as to why the eight areas were selected as recipients of Borrow Area soil was not provided. Also, please note, to facilitate future reviews, please note in the responses to comments when a section number has changed.
 - e. RTC 43l, the BRC response to this comment references the response to 43 (e), which does not really address the comment. In addition:
 - i. The Data Usability Tables are not mentioned in this section, and it would seem to be appropriate to do so.
 - ii. As suggested in the comment, a further explanation of the rules that have been applied to qualify or reject data due to blank contamination should be added to the text.

- iii. Not all of the analytes given in the Table in this section have a qualification due to blank contamination in the Data Usability Tables. Some explanation is needed here as to why not, or else please resolve the discrepancy between the table in the text and the DU table.
- iv. the word "anomalous" is misspelled in the DU table in the Metals worksheet.
- f. RTC 43m and 43n, a discussion of the comparability of site and background data (as it relates to data usability) was not found in the revised report.
- g. RTC 46, Rationale was provided for selecting the maintenance worker for the data adequacy analysis based on "the greater exposure time". It should be noted that, for asbestos, the exposure and risk are considerably higher for the construction worker relative to the maintenance worker.
- h. RTC 59a, 59b, 59d, and 59e, it does not appear that the text was revised to address these comments.
- i. RTC 66, the only edit to this Section 6.2.1 (previously Section 6.3.2) appears to be the addition of the adjective "current/future onsite". A discussion providing rationale for site-specific exposure parameters was not found in this section.
- j. RTC 89c, the relevance of the background risks in this risk assessment report is still not sufficiently discussed. Background risk has been used to support decision making. This needs to be made clear upfront, as well as during the report in appropriate places.
- k. RTC 121a, Table F-1 (previously Table E-1) continues to reference an incorrect site-specific average soil moisture value. According to Table F-4, the average soil moisture is 1.5%, not 23% as noted in the PEF table. This grossly underestimates resuspension of particulates.
- l. RTC 121e, Table F-4 does not cite the reference for the site-specific data contained in the table.