NEVADA DIVISION OF
ENVIRONMENTAL
PROTECTION

STATE OF NEVADA
Department of Conservation & Natural Resources
Brian Sandoval, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

September 6, 2018

Jay A. Steinberg
Nevada Environmental Response Trust
35 East Wacker Drive, Suite 1550
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: *Vacuum Enhanced Recovery Treatability Study Results Report*

Dated: July 12, 2018

Dear Mr. Steinberg,

The NDEP has received and reviewed the Trust's above-identified Deliverable and finds that the document is acceptable with the following comments noted for the Administrative Record:

1. "Perchlorate concentrations decreased from 53 mg/L to 0.89 mg/L, chlorate concentrations decreased from 140 mg/L to 3.2 mg/L, hexavalent chromium concentrations decreased from 0.17 mg/L to 0.027 mg/L, and chloroform concentrations decreased from 0.029 mg/L to 0.00041 mg/L." in VER-01D and an approximate 21 percent increase in groundwater extraction rate were reported during the deep VER treatability study. It is hard to believe that the concentration of these chemicals decreased so fast. NDEP suggests re-sampling this well for perchlorate and chlorate to eliminate crossing contamination from drilling and submitting the results as a supplemental report or in the next semi-annual or annual performance report;

2. The approximate 21 percent increase in groundwater extraction rate was compared the extraction rates between conventional pumping and VER within first 12 hours (Figure 9) but the extraction rate of 0.64 gallons per minute under VER is likely not sustainable, so the 21 percent increase is likely overestimated;

3. VER is good for the media with the hydraulic conductivity ranging from 10^{-3} to 10^{-5} cm/s (EPA, 1996). The average vertical conductivity for the samples from 100 feet below ground surface in this study was 1.56 x 10^{-7} cm/s, which is outside of the range of hydraulic conductivities where VER is typically applied. This again suggests that the 21 percent increase in groundwater extraction rate under VER being overestimated;

4. Figure 11 180-day Capture Zones from Intermediate and Deep Zones would be better if the particle tracking lines are showed in three-dimension;

5. Section 5.3.1 Treatability Cost Summary. As presented Table 33 is more in line with a work plan, in future Treatability Study Reports, this table should be as the section heading

indicates, treatability study cost summary, please use actual costs for this task with the exception of the category labeled final reporting which can be estimated.

6. Section 5.3.2 Preliminary Indications of Costs for Full-Scale Implementation of VER. We agree that this is a high level preliminary discussion of the costs associated with this technique at field scale and detailed costs will be different and would be discussed in the feasibility studies reports. For planning purposes and more to the proof of concept, a short discussion on the scalability of this techniques would be desired. Are there any limitations or issues to consider such as can these techniques be applied across faults? Can this technique work across paleochannels?

Please contact the undersigned with any questions at wdong@ndep.nv.gov or 702-486-2850 x252.

Sincerely,

Dong Weiquan

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

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