



NEVADA DIVISION OF  
**ENVIRONMENTAL  
PROTECTION**

**STATE OF NEVADA**  
Department of Conservation & Natural Resources

Brian Sandoval, Governor  
Leo M. Drozdoff, P.E., Director  
David Emme, Administrator

July 22, 2016

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: *Leasehold Utility  
Investigation Work Plan, Nevada Environmental Response Trust Site, Henderson,  
Nevada*

Dated: July 5, 2016

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 08/22/2016** 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](mailto:wdong@ndep.nv.gov) or 702-486-2850 x252.

Sincerely,

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

WD:cp

EC:

James Dotchin, NDEP BISC Las Vegas  
Carlton Parker, NDEP BISC Las Vegas  
Adam Baas, Edgcomb Law Group  
Allan Delorme, Ramboll Environ  
Alison Fong, U.S. Environmental Protection Agency, Region 9  
Andrew Barnes, Geosyntec  
Andrew Steinberg, Nevada Environmental Response Trust  
Anna Springsteen, Neptune & Company Inc.

Betty Kuo Brinton, MWDH2O  
Brenda Pohlmann, City of Henderson  
Brian Waggle, Hargis + Associates  
Carol Nagai, MWDH2O  
Chris Ritchie, Ramboll Environ  
Chuck Elmendorf, Stauffer Management Company, LLC  
Dave Share, Olin  
David Johnson, Central Arizona Water Conservation District  
Dave Johnson, LVVWD  
Derek Amidon, Tetrattech  
Ebrahim Juma, Clean Water Team  
Ed Modiano, de maximis, inc.  
Eric Fordham, Geopentech  
Frank Johns, Tetrattech  
Gary Carter, Endeavour  
George Crouse, Syngenta Crop Protection, Inc.  
Harry Van Den Berg, AECOM  
Jay Steinberg, Nevada Environmental Response Trust  
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Joe Leedy, Clean Water Team  
John Pekala, Ramboll Environ  
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Nicholas Pogoncheff, PES Environmental, Inc.  
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Patti Meeks, Neptune & Company Inc.  
Peggy Roefer, CRC  
Ranajit Sahu, BRC  
Richard Pfarrer, TIMET  
Rick Kellogg, BRC  
Scott Bryan, Central Arizona Project  
Steven Anderson, LVVWD  
Steve Clough, Nevada Environmental Response Trust  
Tanya O'Neill, Foley & Lardner L  
Todd Tietjen, SNWA

## Attachment A

1. General comments. The goal of the NERT utilities investigation work plan is to locate potential leakage from the active water supply pipeline network and the storm sewer lines and to quantify the leaking water on the perchlorate and chromium transport in vadose zone and groundwater. The information on the water leakage is also a key to understanding the sources of the water contributing to IWF. Therefore, the investigation area should be expanded from the leasehold utility investigation area of Figure 1 to whole NERT property area where the active water pipelines are located.
2. NDEP and EPA suggest that NERT first conduct water pressure measurements at all accessible points such as fire hydrant, valves and meters from the water supplier to terminal water users. The information from the pressure measurements will be used to determine potential leaking locations that will be confirmed with the technology including the acoustic leak detection technology.
3. Section 2.1 Project Objectives, Page 1. The Work Plan should include collecting the information about the water chemistry of the supplied water and the information about how much water was received, how much water was consumed by different water use categories and how much water was returned;
4. Section 3.2 Task 2 - Leak Detection Investigation. Based upon published literature regarding acoustic leak detection technology, the following concerns are noted regarding the investigator's ability to meet project objectives:
  - a. Water pressure is not discussed within Work Plan. There is a direct correlation between the intensity of the sound of the leak (i.e. ability to be detected) and water pressure within the pipe. NERT should include this information and incorporate in to their analysis in the revised work plan.
  - b. Depth of pipe is obviously another function of sound intensity. As one reference notes, "At 7 or 8 feet deep, only very large leaks with good water pressure will produce enough noise to be heard at the surface." Once again the water pressure must be understood and a discussion with the subcontractor conducting the work should be conducted to understand the limitations involved with pipe buried at this depth.
  - c. Ground cover also affects the detection ability for the leak since hard surfaces or compacted soils resonate with the sounds of the leak. It appears the acoustic investigation will be conducted in remediation zones where backfill material has been placed. The backfill material type and compaction specifications should be an additional topic in the revised work plan to understand the limitations involved with the pipe buried in these areas.
  - d. The proposed investigation area is an active industrial site with a potentially significant amount of background "noise" in the subsurface. Suggest this also be vetted in the revised work plan.
  - e. The work plan should consider other technologies in case the acoustic leak detection technology doesn't meet the proposed goal.
5. Section 3.3.1 Groundwater Monitoring Well Installation and Sampling. NDEP and EPA suggest NERT should make efforts to use existing monitoring wells or coordinate Phase II RI investigator on the proposed wells, to justify the value of the additional wells over the long-term to the groundwater monitoring program we are trying to optimize. NDEP requires final

confirmation for new wells proposed in this work plan after reviewing the results from the leaking detection investigation.

6. Section 3.3.2 Estimating Approximate Volume of Impacted Soil. The electrical resistance tomography (ERT) is based on the subsurface distribution of resistivity that can be affected by soil moisture and many other factors. NERT should make sure that the proposed ERT is an effective to image the three-dimensional of geometry of a moisture plume.
7. Section 3.4 Task 4 - Outfall Inspection and Sampling. Based upon the proposed sampling plan at storm Outfalls only half of the objective is achieved (regarding if infiltration of impacted water to the storm sewer) since it does not identify location(s). NDEP suggests that NERT consider a closed circuit television inspection of the system which can provide color snap shots of defects and locating features and other more certain methods.
8. Figure 3a Remediation Zone B Utilities. This figure is difficult to read. NDEP suggests that NERT make Figure 3a more readable either plotting major features in different figure or provide a plate with higher resolution in revised work plan.
9. The scanned images for some utilities drawings are not readable. NERT may inquire this information from neighbor companies within BMI complex. Section 2.1 Project Objectives, Page 1. Figure 3a (Remediation Zone B Utilities) shows larger areas of the water distribution pipeline system.
10. Section 3.5 Task 5—Reporting. NERT should at least include following items in final investigation report:
  - a. Drawings of the existing water distribution systems (the mains and major branches) and inactive pipelines in the area enclosed by NERT property boundary;
  - b. The results of the leak detection investigation. The format of the results could be a map showing locations that are leaking, pressure change and flow rate change;
  - c. Tables of water received, consumed, returned, and lost to groundwater by major water use types within the NERT property boundary;
  - d. Table of water chemistry data that is available from the water suppliers;
  - e. Completed well construction forms, if applicable;
  - f. The results of the geophysical investigation and soil and groundwater sampling, including estimates of moisture-impacted soil volumes and the mass of perchlorate and/or hexavalent chromium that could be leached from soil to groundwater by the leaks investigated, if applicable;
  - g. The results of the Outfall 001 and 002 inspection and sampling, if applicable; and
  - h. Recommendations for further investigation.