



NEVADA DIVISION OF
**ENVIRONMENTAL
PROTECTION**

STATE OF NEVADA
Department of Conservation & Natural Resources

Brian Sandoval, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

June 5, 2017

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: *Data Validation
Summary Report for November through December 2014 and September 2016 Parcel C
Soil Remedial Investigation Sampling, Nevada Environmental Response Trust (NERT),
Henderson, Nevada*

Dated: February 23, 2017

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 08/01/2017** 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 702-486-2850 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
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
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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.
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Gary Carter, Endeavour
George Crouse, Syngenta Crop Protection, Inc.
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Joe Leedy, Clean Water Team
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Steve Clough, Nevada Environmental Response Trust
Steven Anderson, LVVWD
Tanya O'Neill, Foley & Lardner L
Todd Tietjen, SNWA

Attachment A

DVSR Review:

1. **Section 1.0, Introduction:** The text states there are 95 field and QC samples; however, the results and samples tables each have only 92 samples. Please correct this discrepancy.
2. **Section 1.0, analyte/method list:** Orthophosphate is reported in the EDD as “orthophosphate” but the text notes it is reported as both orthophosphate and orthophosphate as phosphorus. Please identify which is correct. The EDD reports nitrate as “nitrate as NO₃” but the text states it is reported as nitrate. The EDD reports nitrite as nitrite but the text states it is reported as nitrite as nitrogen. Please verify from the laboratory the reporting basis for these analytes and correct the text or EDD as necessary.
3. **Section 1.0, analyte/method list:** PCB congener and dioxin total TEQs are reported under method SW-846 8280A, although the dioxins were analyzed by Method 8290 and the PCB congeners were analyzed by Method 1668A. If the samples were actually analyzed by this method to report total TEQs, then this method should be in the list of analytical methods. If TEQs were calculated from the Method 8290 and Method 1668A results, then, in order to more readily associated the TEQs with the congener analyses, please change “analytical_method” to something like SW-8290 calc and SW-1668A calc.
4. **Section 1.0, references:** All of the listed National Functional Guidelines listed on page 2 (in two locations) have been superseded. Please update the references and appropriate validation criteria to the most current versions of these documents.
5. **Section 1.0, qualifier definitions:** The second sentence of the “UJ” definition is not necessary. Potential bias in the reported result was specified in the first sentence.
6. **Section 1.0, hierarchy:** Text associated with the “J,” indicates a “high bias,” but “J” is listed instead of “J+.” Please add the “+” to the “J.” Also, please indicate what qualifier is applied when there are qualifications of low (J-) and high bias (J+) applied to the same result.
7. **Section 1.0, DUPs (page 4):** The explanation of which results are used to calculate the DUP RPD is confusing (“...reported as the RPD between sample and laboratory results”). The definition would be clearer as: “DUPs measure laboratory precision. DUPs are replicate samples and are prepared by taking two aliquots from one sample container. The analytical results for DUPs are reported as the RPD between the results of the two aliquots.”
8. **Section 1.0, poor precision:** Matrix interference is not usually cited as a cause of imprecision, as matrix interference is likely the same in both aliquots. Usually, matrix heterogeneity is cited as the cause. Please consider changing this statement.
9. **Section 1.0, sensitivity:** The text states the laboratory reports results down to the MDL. This statement should be revised to state that the results are reported to the SQL.
10. **Sample and analyte counts:** The sample and total result counts in the following sections did not match the EDD. Please correct the text and/or EDD as necessary. As these discrepancies may be related, they are reported together.
 - a. **Section 2.0, VOCs:** The text states there were 63 soil samples analyzed for VOCs; however, the EDD has 61 soil samples. The total analyte count (soil+water) in the text

- (4,695) also does not match the EDD (4,559 without surrogates).
- b. **Section 3.0, SVOCs:** The text states 36 soil samples were analyzed for SVOCs; however, the EDD has 35 soil samples. The total analyte count (soil+water) in the text (2,432) does not match the EDD (2,367 without surrogates).
 - c. **Section 3.0, SVOCs:** The text reports 7 SVOC results rejected for holding time, exceedances and MS/MSD or LCS/LCSD recovery outliers. The EDD has only 6 rejected results and none of the rejections were for holding time.
 - d. **Section 4.0, PAHs:** The text states 36 soil samples were analyzed for PAHs; however, the EDD has 35 soil samples. The total analyte count (soil+water) in the text (608) does not match the EDD has (592, without surrogates).
 - e. **Section 5.0, pesticides:** The text states 35 soil samples were analyzed for chlorinated pesticides; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (820) does not match the EDD (798).
 - f. **Section 6.0, Aroclor:** The text states 35 soil samples were analyzed for Aroclor 1260; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (37) does not match the EDD (36).
 - g. **Section 7.0, GRO:** The text states 52 soil samples were analyzed for GRO; however, the EDD has 50 soil samples. The total analyte count (soil+water) in the text (54) does not match the EDD (52).
 - h. **Section 8.0, extractable TPH:** The text states 35 soil samples were analyzed for Extractable TPH; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (111) does not match the EDD (108).
 - i. **Section 10.0, dioxins:** The text states 35 soil samples were analyzed for dioxins; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (925) does not match the EDD (900, excluding internal standards and results qualified DNR).
 - j. **Section 11.0, PCB congeners:** The text states 35 soil samples were analyzed for PCB congeners; however, the EDD has 34 soil samples. The total analyte (soil+water) count in the text (6,216) does not match the EDD (6,266, excluding internal standards and surrogates).
 - k. **Section 12.0, metals (Methods 200.8, 6010, 6020, 7470, 7471):** The text states 46 soil samples were analyzed for metals; however, the EDD has 69 soil samples analyzed for metals. The total analyte count (soil+water) in the text (1,372) does not match the EDD has (1,342, counting one arsenic result by Method 200.8). Also, the number of rejected results do not match. The text lists 33 and the EDD has only 32.
 - l. **Section 13.0, wet chemistry:** The text states 40 soil samples were analyzed by Method 300.0; however, the EDD has 39 soil samples.
 - m. **Section 13.0, wet chemistry:** The text states 46 soil samples were analyzed by Methods 300.1, 314.0, 7199, SM2320 and SM4500 NH3; however, the EDD has 45 soil samples analyzed by each of these methods.
 - n. **Section 13.0, wet chemistry:** The total analyte count (soil+water) in the text (700) does not match the EDD (666 excluding surrogates).
 - o. **Section 14.0, radium-226:** The text states 35 soil samples were analyzed for radium-226; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (37) does not match the EDD (36).
 - p. **Section 15.0, radium-228:** The text states 35 soil samples were analyzed for radium-228; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (37) does not match the EDD (36).
 - q. **Section 16.0, isotopic uranium:** The text states 35 soil samples were analyzed for isotopic uranium; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (111) does not match the EDD (108).

- r. **Section 17.0, isotopic thorium:** The text states 35 soil samples were analyzed for isotopic thorium; however, the EDD has 34 soil samples. The total analyte count (soil+water) in the text (111) does not match the EDD (108).
 - s. **Section 19.4:** The text states there were 18,452 total results but the EDD has 18,324 results (without surrogates and internal standards). The text lists a total of 58 rejected results, but the EDD has 56. Additionally, the method specific analyte counts and rejection counts will need to be reconciled.
11. **Section 2.1.4, qualification of nondetects for RPD outliers:** Although the National Functional Guidelines (NFG) does not discuss the treatment of LCS/LCSD RPD outliers, the NFG does discuss the treatment of MS/MSD RPD outliers. Per the NFG, nondetect results are not qualified for MS/MSD RPD outliers. Consider removing the qualifications discussed in this section.
12. **General, field duplicate qualifications:** A number of nondetect results and results detected below the PQL were qualified for field duplicate RPD outliers. Given the additional uncertainty in results reported below the PQL, these seem like unnecessary qualifications. As a specific example, hexachlorobenzene results (Section 3.1.6) were qualified as estimated, but both results were less than the PQL. Please consider removing the qualifications from, at a minimum, the hexachlorobenzene results.
13. **Qualification counts:** The number of results reported as qualified did not match the EDD in a number of cases. Please correct the text and/or EDD as necessary.
- a. **Section 2.1.1, VOCs:** The text states 550 results were qualified for continuing calibration outliers; however, the EDD had 538 results qualified.
 - b. **Section 2.1.4, VOCs:** If the LCS/LCSD RPD qualifications discussed above are retained, the qualification counts need to be checked. The text states 24 results were qualified for LCS RPD outliers; however, the EDD had 22 results qualified.
 - c. **Section 2.2.1, VOCs:** The text states that 1,156 results were qualified for exceeding the 48-hour holding time; however, 1,088 results were qualified in the EDD.
 - d. **Section 3.1.1, SVOCs:** The text states that 75 results were qualified for calibration verification outliers; however, 74 results were qualified in the EDD.
 - e. **Section 3.2.1, SVOCs:** Text in the second paragraph indicates one result was rejected for a grossly exceeded holding time; however, the result is not qualified in the EDD, nor were any results qualified by the laboratory as having been analyzed beyond the holding time.
 - f. **Section 3.1.4, SVOCs:** The text notes that benzoic acid and pyridine were qualified as estimated for LCS/LCSD RPD outliers in sample RISB-44-5.0-20141202-EB; however, these results are not qualified in the EDD.
 - g. **Section 5.1.1, pesticides:** The text states that 6 methoxychlor results were qualified for calibration verification outliers; however, 5 results were qualified in the EDD.
 - h. **Section 5.1.2, pesticides:** The text states that 238 results were qualified for surrogate recovery outliers; however, 190 results were qualified in the EDD.
 - i. **Section 7.2.1, GRO:** The text states that 16 results were qualified for holding time exceedances; however, 15 results were qualified in the EDD.
 - j. **Section 11.1.6, PCB congeners:** The text states 35 results were qualified because the results were above the linear range of the calibration; however, the EDD has 34 soil samples.
 - k. **Section 11.2.2.1, PCB congeners:** The text states 232 results were qualified for blank detects; however, the EDD has 231 qualified results.

- l. **Section 12.1.1, metals:** The text states that 69 results were qualified for calibration verification or CRQL outliers; however, the EDD has only 48 results qualified.
 - m. **Section 12.1.2, metals:** The text states that 180 results were qualified for MS/MSD recovery outliers and that 33 results were rejected. The EDD has 179 results qualified and 32 results rejected.
 - n. **Section 12.1.2, metals:** The text states that 45 results were qualified for MS/MSD RPD outliers; however, the EDD has 42 results qualified.
 - o. **Section 12.1.3, metals:** The text states that 38 results were qualified for LCS recovery outliers; however, the EDD has 37 results qualified.
 - p. **Section 13.1.3, wet chemistry:** The text states that 19 results were qualified for MS/MSD recovery outliers; however, the EDD has 22 results qualified.
14. **Stage 4 review:** The stated number of samples for which raw data was reviewed did not match the number of Level 4 samples in several cases. As raw data review is not conducted at level 2B, please confirm the number of samples for which the raw data was assessed and correct the text or EDD as necessary.
- a. **Section 2.1.7:** The text states that raw data was reviewed for 6 soil samples; however, only 5 soil samples were validated at Level 4.
 - b. **Section 7.1.5:** The text states that raw data was reviewed for 6 soil samples; however, only 5 soil samples were validated at Level 4.
 - c. **Section 12.1.7:** The text states that raw data was reviewed for 3 arsenic only samples; however, only 2 arsenic only samples were validated at Level 4.
15. **Unreported qualifications:** In several cases, qualifications were identified in the EDD that were not discussed in the text. Please correct the text and/or EDD as necessary.
- a. **Section 4.1.1:** The text states there were no qualifications for calibration outliers; however, six results for indeno[1,2,3-cd]pyrene were qualified as estimated nondetects and coded with the "c" reason code.
 - b. **Section 10:** Fifty results in samples M-189-0.5 and RISB-42-0.5 were qualified DNR with the "o" reason code.
 - c. **Section 12.2.1.1, unreported qualification:** Arsenic detected in EB-20160908 was qualified as estimated for an associated blank detect.
16. **Table II, elements of review:** The instrument performance check is applicable to the perchlorate and anion analyses but is listed as "NA" for both State 2B and Stage 4. Please update the table.
17. **Table III, percent reviewed at Stage 4:** Per NDEP guidance, soil sample results are to be validated at Stage 4 at a rate of 10%. With a few exceptions, Stage 4 analyses were performed, by method, at less than 10%. Please validate additional results such that each method has at least 10% Stage 4 validation.
18. **EDD issues:** Please check the following and correct the EDD and or text as necessary:
- a. 6 results for demeton, demeton-o and demeton-s in samples M-191-1.0 and M-191-5.0 were qualified as nondetected by the laboratory, but do not have a "final_validation_qualifer" of "U."
 - b. 51 results were qualified by the laboratory as having a holding time exceedance but were not qualified for holding time in validation.
 - c. All trip blanks are reported with soil units (mg/kg).
 - d. Dioxin and PCB congener internal standards are reported as "result_type" "TG". As internal standards are not target compounds, they should have a different "result_type."

EDD guidance suggests "IS."

- e. There are 41 records for "Nitrate as NO3" with CAS ID "14797-55-8|3" and a single record for "Nitrate" with CAD ID "14797-55-8."

EDD Review

1. The results table has 272 records where the analytical suite is RADS, but the result_uncertainty and minimum_detectable_activity fields are null. Please provide the result_uncertainty and minimum_detectable_activity for all radionuclide results.
2. There were 18 records for pH in the results table where the matrix is soil and the sample was filtered as indicated by the filtered_flag=Y. Please verify that these samples were filtered for analysis.