

Annotated Response to Comments

Unit 4 and 5 Buildings Investigation Work Plan,
Henderson Nevada, dated November 20, 2014
NDEP's Comments Provided in Letter Dated January 20, 2015

Comment No.	Comment (NDEP, January 20, 2015)	Additional EPA/NDEP Comment/Clarification/Discussion (January 27, 2015)	Response (Tetra Tech, February 20, 2015)
1.	<p>The Unit Building 4/5 area is potentially one of the most significant source areas for the entire NERT site. As such, a comprehensive investigation with high-resolution site characterization (HRSC) strategies and techniques is more important than a fast investigation. Field analytical methods should be a supplement to (rather than an alternative to) fixed laboratory methods. The results from these investigations should provide accurate information on:</p> <ul style="list-style-type: none"> a. Containment mass and spatial distribution, especially perchlorate and chromium in both vadose zone and groundwater; b. Migration pathways and velocity of perchlorate and chromium. 	<p>Implementation of the HRSC approach requires a minimum of three transects (one upgradient, one downgradient and one through the assumed "source area"). It was discussed that one transect through the "source area" would be insufficient to provide the data needed for an area the size of the Unit 4 Building. Three transects through the "source area" spaced approximately 60 feet apart is a more appropriate density. This spacing would result in the advancement of 12 soil borings within the Unit 4 Building footprint.</p>	<p>As requested, the Revised Unit 4 and 5 Buildings Investigation Work Plan (Revised Work Plan) has been modified to include use of high-resolution site characterization (HRSC) strategies and techniques.</p> <p>Laboratory analytical data will be used to make field decisions with regards to the need to advance step-out borings.</p> <p>The proposed HRSC approach, which is discussed in Section 4.1 of the Revised Work Plan, will provide the comprehensive environmental data needed to characterize the vertical and horizontal extent of the contaminant mass and spatial distribution as well as migration pathways of perchlorate and chromium in the vadose zone and groundwater in the vicinity of the Unit 4 and 5 Buildings.</p>
2.	<p>Section 3.0, Overview of Investigation Strategy: The proposed strategy includes elements of EPA's Triad approach to site investigation, but the workplan does not include the other two elements of Triad: systematic work project planning and dynamic work strategies. It may be more worthwhile to move forward with the investigation generally as planned and delete the references to Triad.</p>	<p>No additional comments discussed.</p>	<p>As requested, HRSC strategies and techniques have been incorporated into the Revised Work Plan. References to the EPA's Triad approach have been removed.</p> <p>The HRSC approach utilizes "real time" field analytical data and 3-D visualization software to guide the implementation of the work to ensure data gaps are filled and guide the need for step-out borings.</p>

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3.	Section 5.2, Soil Boring and Monitoring Well Locations: Paragraph six of this section indicates 12 perimeter borings and then, in the same paragraph, discusses 21 soil borings. It is not clear if either 12 or 21 are typographical errors, but if they are referencing the same set of borings, the number of borings should be consistent. This section also indicates that the railroad spur (south side of Bldg 4/5 footprint) is a targeted area. If specific spill areas visually identifiable, they should be targeted for sampling.	Potential spill areas or potential preferential contaminant pathways discussed include; the basement sump, basement trenches, storm water roof drain, and perchlorate railcar loading and unloading areas located south of Unit Building 4.	<p>Due to the implementation of the HRSC strategy and techniques into the Revised Work Plan, the number and locations of the soil borings has changed and this comment is no longer applicable.</p> <p>In addition to soil borings that will be advanced along the five transects, additional soil borings will be added to target potential areas where releases may have occurred or where preferential contaminant migration pathways may exist.</p> <p>Additional soil borings and/or additional soil samples will also be collected if visually stained areas are identified.</p>
4.	Section 5.2, Soil Boring and Monitoring Well Locations: this section indicated that eight soil borings will be advanced within the Bldg 4 footprint to identify and delineate potential sources and more precisely target excavation boundaries. Given the limited historical subsurface data at this location and the high likelihood that Bldg 4 is a significant perchlorate source area, eight borings is likely to be the bare minimum number needed to accomplish the stated goals. The locations of the proposed 8 soil borings are evenly distributed. The NDEP suggests that more soil borings should be located in high potential sites. Equipment/personnel mobilization is a major part of the cost of any site investigation; as such, the workplan should include 'next steps' if high perchlorate concentrations are found in the subsurface, and have flexibility in the	<p>Implementation of the HRSC strategy and technique will allow the advancement of 12 soil borings within the footprint of the Unit 4 Building, rather than 8.</p> <p>Potential spill areas or potential preferential contaminant pathways discussed include; the basement sump, basement trenches, storm water roof drain, and perchlorate railcar loading and unloading areas located south of Unit 4. Three additional soil borings have been placed around the basement sump and through the railcar loading/unloading areas.</p>	<p>While the November 20, 2014 Draft Work Plan proposed 8 soil borings evenly distributed within the Unit 4 Building footprint (34 borings total, without step out borings), the Revised Work Plan proposes a total of five transects, with three of the proposed transects crossing the Unit 4 Building basement area. The proposed initial borehole spacing is approximately 60 feet, and includes 12 soil borings within the Unit 4 Building footprint, and an additional 3 soil borings within the basement targeting the southwest basement sump.</p> <p>Step-out soil borings are proposed where perchlorate or hexavalent chromium concentrations exceed the 90th percentile. For additional details, refer to Section 4.3.2 (Step-Out Soil Borings) of the Revised Work Plan.</p>

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	schedule so that additional borings can be advanced if needed as part of this field mobilization.		
5.	<p>Section 5.3, Soil Boring Advancement Decision Matrix:</p> <ul style="list-style-type: none"> a. The 'decision matrix' referenced in this section is a simple flowchart with go/no-go decisions based on the field screening of soil samples collected at five foot depth intervals in the borings. The plan should consider additional/alternative sample depths based on field observations such as soil color and lithology changes. b. Likewise, the throughput of the field instruments should be considered. It may be feasible to collect and test soil samples at two-or three-foot intervals for perchlorate (ion-specific electrode), but XRF screening for chromium may be slower. c. If field instrument data will be a significant part of the decision-making process, the field data must be correlated to the fixed laboratory data. The workplan does not specify how the field instruments will be correlated to fixed lab data. d. The NDEP Basic Comparison levels (BCL) for indoor industrial/commercial worker field screening values are 1,230 mg/kg for Cr (VI), 100,000 mg/kg for Cr 	<p>The NDEP/EPA expressed concerns they had regarding the use of field instrumentation proposed to screen soil samples for perchlorate and chromium. They expressed their desire to use laboratory data rather the field screened data for field implementation and decision making purposes.</p>	<p>Section 5.3 corresponds to Section 4.3.2 in the Revised Work Plan.</p> <ul style="list-style-type: none"> a) The decision matrix in the Revised Work Plan has been modified to reflect NDEP's comments. Figure 9 of the Revised Work Plan provides the decision logic proposed for step-out borings based on analytical laboratory data. Soil samples will be collected at 2.5-foot intervals for laboratory analysis. Soil samples will also be collected and analyzed at changes in lithology and evidence of soil staining. Field screening as proposed in the November 20, 2014 Draft Work Plan has been removed. b) For the reasons mentioned above in 5.a), field screening of soil samples will not be performed. Instead, laboratory analysis will be used for step out boring decision making. c) The Revised Work Plan has been modified to indicate that decisions with regard to step-out borings will be based on analytical laboratory results. d) The decision criteria for step out borings has been changed in the Revised Work Plan. These criteria are provided in Section 4.3.2 and Figure 9.

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	<p>(III) and 795 mg/kg for perchlorate, respectively (http://ndep.nv.gov/bmi/docs/bcl_calculations_august_2013.pdf). The NDEP suggest that the NERT considers chemical-specific dilution attenuation factors (DAF) for studying the potential migration to groundwater. These comments are also applied to Figure 9 – Leasehold Investigation Decision Matrix.</p>		
6.	<p>Section 5.4.3, COPC Field Screening:</p> <ol style="list-style-type: none"> a. As indicated in comment 6a above, the workplan should reconsider the planned five-foot depth intervals. Additional/alternative depths should be considered based on subsurface conditions. b. The workplan indicates that “Tetra Tech will screen soil samples for perchlorate and hexavalent chromium.” The workplan should be corrected to indicate that soil samples will be screened for perchlorate and total chromium. c. The workplan indicated that the Thomas ISE instrument will be calibrated on a weekly basis with perchlorate references standards. If field screening data will be used for decision-making (as indicated in Figure 9 of the workplan), the field data should 	No additional comments discussed other than mentioned under comment 5.	Field screening of soil for COPCs, Section 5.4.3 of the November 20, 2014 Draft Work Plan, has been removed from the Revised Work Plan. It is now proposed that decisions regarding step out borings will be based on laboratory analytical data and not field screening data.

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	<p>be correlated to fixed lab data in addition to the calibration with perchlorate references standards.</p> <p>d. X-ray fluorescence (XRF) field screening for chromium should be field-tested prior to project mobilization if the data will be used for decision-making purposes (as indicated in Figure 9 of the workplan). XRF is not a point-and-shoot technology when used for metals analysis in soil. Soil moisture, grain size, and sample preparation are all significant issues that may impact the field screening results, instrument through-put and, ultimately, usability of the data for decision-making purposes.</p>		
7.	<p>Section 5.4.5, Grab Groundwater Sampling: the description of temporary wells for grab groundwater samples includes the installation of a filter pack within the annular space of the six-inch borehole (i.e., around the two-inch diameter casing), but there is no indication of any purging prior to sample collection with a narrow-gauge bailer. The workplan should include a sufficient purge volume to ensure that the groundwater sample is representative of the formation and not of the filter pack.</p>	<p>Discussed that purging of temporary wells was not required in accordance with the SAP/FSP. NDEP mentioned that may have been an oversight on their part.</p>	<p>Section 5.1.4 of the Revised Work Plan provides a description of temporary well purging. The RI/FS FSP will be revised accordingly.</p>