



August 25, 2021

**TECHNICAL MEMORANDUM**

To: Steve Clough  
Nevada Environmental Response Trust

From: John Pekala, CEM#2347, Expires 9/20/2022, Ramboll  
Chris Stubbs, Jessica Donovan, Jon Hunt, Ramboll

**Re: Phase 3 RI Modification No. 13  
Nevada Environmental Response Trust Site  
Henderson, Nevada  
Ramboll Project No. 1690020169-023**

This Technical Memorandum presents Ramboll’s recommended Modification No. 13 to the scope of work for the Phase 3 Remedial Investigation (RI) currently in progress within the Nevada Environmental Response Trust (NERT) RI Study Area located in Henderson, Nevada. The purpose of Modification No. 13 is to incorporate additional analytes into the comprehensive groundwater sampling program described in Modification Nos. 8, 11, and 12, and to sample shallow soil within the area of the former seep discovered in 1999 where historical perchlorate-impacted groundwater discharged to the ground surface adjacent to the Las Vegas Wash. The former seep was covered with approximately 3 feet of soil as part of the construction of the Sunrise Mountain Weir by Southern Nevada Water Authority and is no longer visible at the surface. This data will be used to support the evaluation of the nature and extent of contamination in Operable Unit (OU)-3 in the forthcoming OU-3 RI Report and the evaluation of human health risks in OU-3 in the forthcoming Baseline Health Risk Assessment (BHRA) for OU-3.

Phase 3 RI Modification No. 8, Revision 1, dated March 19, 2020, proposed field work necessary to address data gaps within OU-3 that need to be resolved prior to the completion of the OU-3 RI. The original Modification No. 8 scope of work included drilling 14 deep pilot borings for the collection of soil samples to be analyzed for chlorate and perchlorate to select depths and screened intervals for new monitoring wells, installation of 37 new monitoring wells, drilling of 12 soil borings at two transects to evaluate potential paleochannels, and the completion of a comprehensive groundwater sampling program to collect groundwater samples at approximately 264 existing and newly installed monitoring wells. Modification No. 8 was approved by the Nevada Division of Environmental Protection (NDEP) on March 20, 2020.

As part of Phase 3 RI Modification No. 11, the ongoing investigation of OU-3 was amended through the addition of five new wells to be installed north of the Seep Well Field. Modification No. 11 was submitted to NDEP on October 21, 2020 and was approved by NDEP on October 28, 2020. The OU-3 investigation was again amended in early 2021 as part of Phase 3 RI Modification No. 12 by the addition of three existing wells to the original Modification Nos. 8 and 11 comprehensive groundwater sampling program to be conducted throughout OU-3. Modification No. 12 was submitted to NDEP on March 9, 2021 and was approved by NDEP on March 10, 2021.

Based on the evaluation of groundwater data conducted for the RI Report for OU-1 and OU-2 (submitted to NDEP on July 9, 2021), it was determined that several analytes within the general chemistry, metals, and volatile organic compound (VOC) analytical suites were detected above screening levels within OU-2 west of Pabco Road that were not included in the comprehensive groundwater sampling program described in Modification Nos. 8, 11, and 12. Since these analytes could have migrated north into OU-3 prior to the installation of the Athens Road Well Field, additional groundwater data are necessary to complete a comprehensive screening of chemicals of potential concern (COPCs) in OU-3 consistent with the RI Report for OU-1 and OU-2 and evaluate the nature and extent of COPCs in groundwater in OU-3 west of Pabco Road. These analytes will be added to the scope of the comprehensive groundwater sampling program to be conducted in OU-3 west of Pabco Road. Although only fourteen VOCs were detected above screening levels in OU-2, all VOCs will be analyzed during the comprehensive groundwater sampling program to be conducted in OU-3 west of Pabco Road in order to support the evaluation of vapor intrusion risk, which will be included in the forthcoming BHRA Report for OU-3.

The OU-3 BHRA will include evaluation of human exposures to shallow soils in the former seep area that are potentially contaminated by chemicals that may have migrated in groundwater from the NERT Site into OU-3.<sup>1</sup> Future recreational users and construction workers could be exposed to these contaminants in surface soil (0-1 feet below ground surface [ft bgs]) and soils between 0-10 ft bgs, respectively, through direct contact and inhalation pathways in this area. Limited analytical data has been collected from surface soil in this area, including perchlorate data collected during the Phase 2 RI in October 2017, and perchlorate, chlorate, chromium, and chloroform data collected during the OU-3 Baseline Ecological Risk Assessment (BERA) sampling in June 2019. Therefore, additional soil data between 0-10 feet bgs are necessary for evaluating potential human exposures in the former seep area.

### **Proposed Scope of Work**

Consistent with the approved Phase 3 RI Modification No. 8, Revision 1, dated March 19, 2020, groundwater samples collected from approximately 65 monitoring wells located west of Pabco Road will be analyzed for perchlorate, chlorate, chromium, and chloroform. To characterize general groundwater chemistry, groundwater samples will also be tested for general chemistry parameters.<sup>2</sup> Consistent with Modification Nos. 8, 11, and 12, field parameters including temperature, pH, dissolved oxygen (DO), oxygen reduction potential (ORP), turbidity, and electrical conductivity (EC) will also be measured during sampling. As part of this Modification No. 13, the following analytes, which were detected above their screening level in OU-2 groundwater, will be added to the analysis of groundwater samples collected from wells located west of Pabco Road: bromide, nitrate, nitrite, arsenic, boron, iron, magnesium, manganese, strontium, and vanadium.<sup>3</sup> Also as part of this Modification

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<sup>1</sup> NERT anticipates submittal of a work plan for the OU-3 BHRA to NDEP in late 2021.

<sup>2</sup> General chemistry parameters include total dissolved solids (TDS) and major ions (calcium, magnesium, sodium, potassium, sulfate, iron, nitrate, chloride, and bicarbonate/carbonate/hydroxide alkalinity).

<sup>3</sup> Nitrate, iron, and magnesium are part of the general chemistry parameter suite that is already part of the Modification Nos. 8, 11, and 12 sampling plan but are additionally listed here because they were detected above screening levels in OU-2.

No. 13, VOC analysis of groundwater samples from wells located west of Pabco Road will be expanded from chloroform to the full VOC analytical suite evaluated in OU-2.

As part of this Modification No. 13, a total of nine additional soil samples will be collected from three depth intervals (0 ft, 5 ft, and 9.5 ft bgs) at one new boring location (the pilot boring PC-205) and the two well locations previously specified in Modification No. 11 (PC-205A and PC-205B; see Figure 1). The locations of these three borings are within the location of the former seep where perchlorate-impacted groundwater was first observed to discharge to the surface in 1999, eventually draining to the Las Vegas Wash. It should be noted that the current ground surface is now approximately 3 feet above the former seep due to regrading that SNWA completed during the construction of the Sunrise Mountain Weir. These soil samples will be analyzed for perchlorate, chlorate, nitrate, nitrite, arsenic, boron, chromium, iron, magnesium, manganese, strontium, vanadium, and VOCs.

Please contact us should you have any questions regarding the recommended scope of Phase 3 RI Modification No. 13.

### **Attachments**

Figure 1 Phase 3 RI Modification 13 Soil Sampling Locations - PC-205 Pilot Boring and PC-205A/PC-205B Monitoring Wells

**RI Phase 3 Modification No. 13  
Incorporation of Additional Analytes into the Soil and  
Groundwater Sampling Programs for Phase 3 RI Modification  
Nos. 8, 11, and 12**

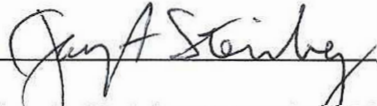
**Nevada Environmental Response Trust  
Site (Former Tronox LLC Site)  
Henderson, Nevada**

**Nevada Environmental Response Trust (NERT) Representative Certification**

I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the system(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

**Signature:**  Not Individually, but Solely  
as President of the Trustee

**Name:** Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

**Title:** Solely as President and not individually

**Company:** Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

**Date:** 8/25/21

Phase 3 RI Modification No. 13  
Nevada Environmental Response Trust Site  
Henderson, Nevada

**RI Phase 3 Modification No. 13  
Incorporation of Additional Analytes into the Soil and  
Groundwater Sampling Programs for Phase 3 RI Modification  
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**Nevada Environmental Response Trust  
Site (Former Tronox LLC Site)  
Henderson, Nevada**

**Responsible Certified Environmental Manager (CEM) for this project**

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and, to the best of my knowledge, comply with all applicable federal, state and local statutes, regulations and ordinances.

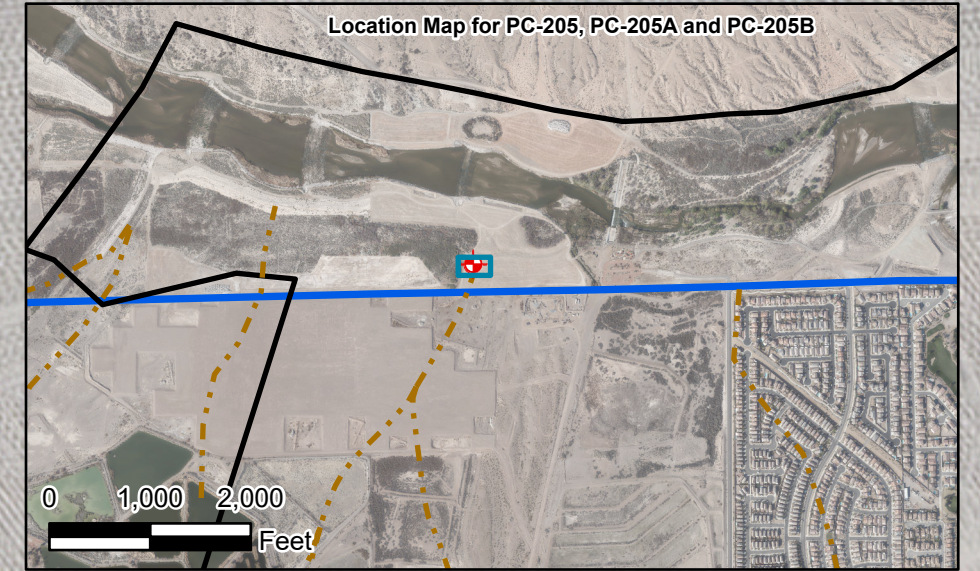


**John M. Pekala, PG  
Principal**






August 25, 2021

**Date**

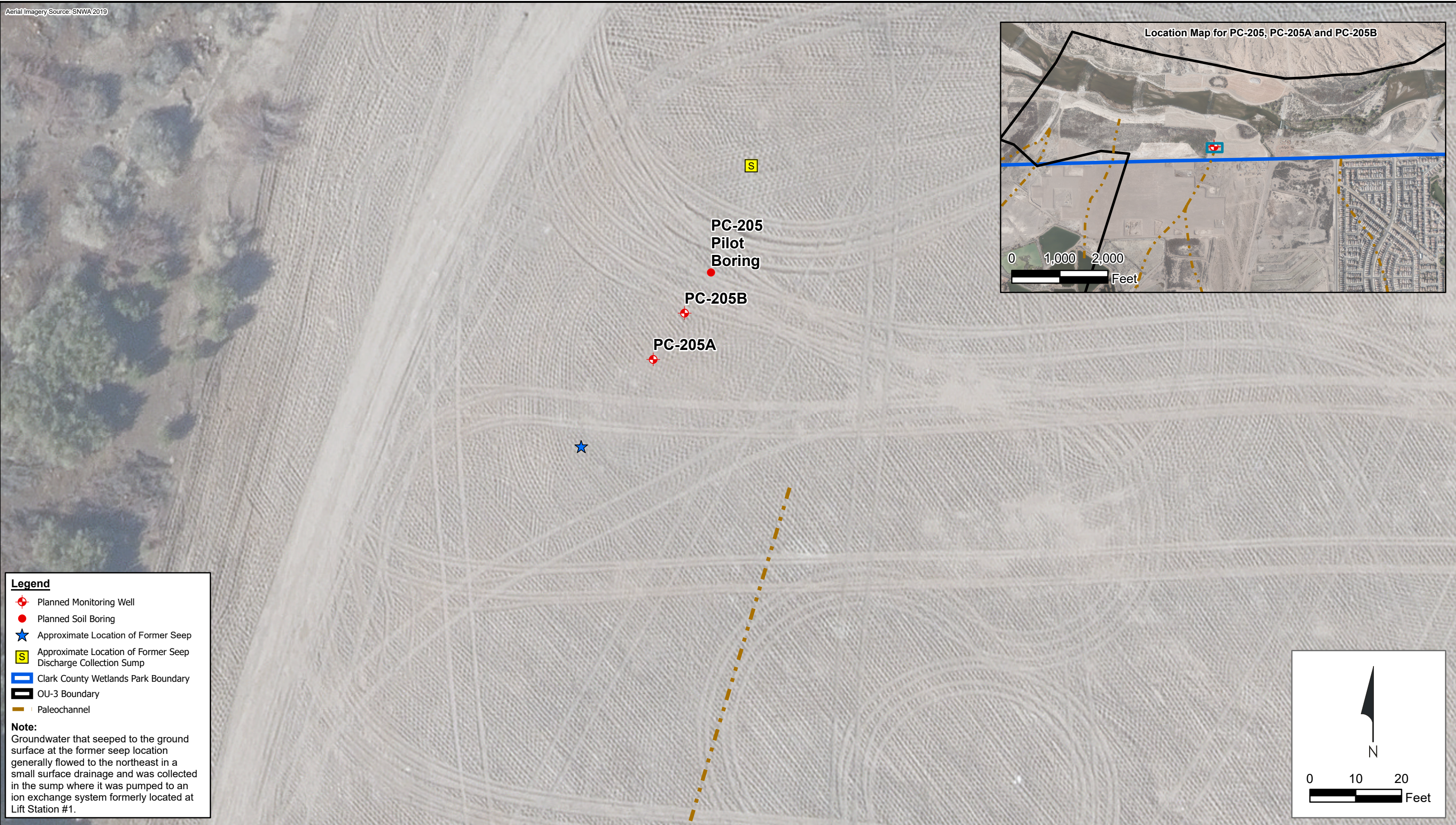
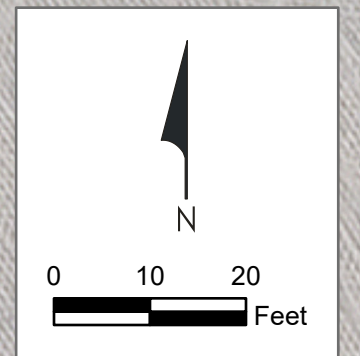
Certified Environmental Manager  
Ramboll US Consulting, Inc.  
CEM Certificate Number: 2347  
CEM Expiration Date: September 20, 2022



**Legend**

-  Planned Monitoring Well
-  Planned Soil Boring
-  Approximate Location of Former Seep
-  Approximate Location of Former Seep Discharge Collection Sump
-  Clark County Wetlands Park Boundary
-  OU-3 Boundary
-  Paleochannel

**Note:**  
Groundwater that seeped to the ground surface at the former seep location generally flowed to the northeast in a small surface drainage and was collected in the sump where it was pumped to an ion exchange system formerly located at Lift Station #1.



**Phase 3 RI Modification 13 Soil Sampling Locations - PC-205 Pilot Boring and PC-205A/PC-205B Monitoring Wells**  
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Henderson, Nevada

Figure  
**1**