

# MEMO

Date **January 3, 2019**  
To **Nevada Environmental Response Trust**  
From **John Pekala, Scott Warner, and Chris Ritchie**  
Copy to **Nevada Division of Environmental Protection  
United States Environmental Protection Agency**  
Subject **In-Situ Bioelectrochemical Laboratory-Scale  
Treatability Study Monthly Progress Report**

## **TASK PROGRESS UPDATE: NOVEMBER 2018**

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Ramboll US Corporation (Ramboll) has prepared this memorandum which summarizes Ramboll's progress during November 2018 toward successfully implementing the In-Situ Bioelectrochemical Laboratory-Scale Treatability Study.

## **TASK M24 – IN-SITU BIOELECTROCHEMICAL LABORATORY-SCALE TREATABILITY STUDY**

- Task Leaders – Scott Warner / Chris Ritchie
- Current Status
  - Three experimental columns have been operational and sampled on a consistent basis since October 31, 2018. The three columns assess perchlorate and competing electron acceptor (i.e. nitrate, nitrite, and chlorate) removal under the following electron donor conditions: 1) hydrogen only, 2) no electron donor, and 3) hydrogen and acetate. The "hydrogen only" column simulates an indirect electrochemical treatment scenario wherein hydrogen is generated in a separate reactor and is sparged into groundwater. The "no electron donor" column is the experimental control. The "hydrogen and acetate" column simulates a direct electrochemical treatment scenario of the groundwater wherein dissolved hydrogen and acetate are simultaneously generated, both of which can be utilized as an electron donor.
  - The test columns are being consistently sampled to assess electron donor consumption and electron acceptor removal. During November, column influents and effluents were sampled three times per week, whereas samples along the flow path were collected two times per week.
  - Small-scale microcosms using site soils were also initiated in November to further elucidate electron acceptor preferences (and removal order) with respect to the following electron donor conditions: 1) no electron donors, 2) hydrogen only, 3) hydrogen and acetate, and 4) acetate only.
  - Preliminary data from the column and microcosm tests are expected to be provided in the December and/or January progress update memorandum.

- Schedule and Progress Updates
  - Consistent with previous progress reports, the project schedule has been extended about two months longer than originally projected. Currently, column testing is anticipated to continue through January. A field study work plan is anticipated to be prepared in Q1 2019 provided that the data support moving forward with a field test. The Trust is re-assessing the treatability study schedule in January and updates will be forthcoming in subsequent progress reports.
- Health and Safety
  - There were no safety incidents during November 2018.

## **In-Situ Bioelectrochemical Laboratory-Scale Treatability Study Progress Update**

**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 systems(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, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

**Signature:** *Jay A Steinberg*, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust 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:** 1/4/19

## In-Situ Bioelectrochemical Laboratory-Scale Treatability Study Progress Update

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 prepared 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. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

**Description of Services Provided:** Prepared In-Situ Bioelectrochemical Laboratory-Scale Treatability Study Progress Update, Nevada Environmental Response Trust Site, Henderson, Nevada



Jan. 4, 2019

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**John M. Pekala, PG**

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Date

**Principal**

Certified Environmental Manager

Ramboll US Corporation

CEM Certificate Number: 2347

CEM Expiration Date: September 20, 2020