

# 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 **Galleria Drive ZVI-Enhanced Bioremediation 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 Galleria Drive ZVI-Enhanced Bioremediation Treatability Study.

## **TASK M18 – GALLERIA DRIVE ZVI-ENHANCED BIOREMEDIATION TREATABILITY STUDY.**

- Task Leaders – Scott Warner / Chris Ritchie
- Current Status
  - Phase 1 of the treatability study is underway. The pre-design field investigation as specified in the work plan is complete; bench-scale testing is in progress. Phase 2 (design and implementation of a field test) will be proposed in early 2019 as part of a forthcoming Work Plan Addendum.
  - Column testing consisting of two test columns are currently operating to test reduction of nitrate, chlorate, and perchlorate under dynamic, site-simulated conditions. One column is filled with ZVI only as the reactive media; the second column is composed of ZVI with added organic carbon ("ZVI+oc"). Results to-date demonstrate that nitrate and chlorate are rapidly removed in both columns, corroborating previous batch test results. Perchlorate removal is being observed in the ZVI+oc column, but is not yet confirmed in the ZVI-only column. Tests are being planned to assess the apparent inhibition of perchlorate reduction in the ZVI only column.
  - As previously reported, four longer columns (five feet long) have been built with ports along the side. These columns will be used to evaluate the degradation of varying concentrations of contaminants. One of these columns has been designed to test the Peroxychem EHC product, which is a commercial injectable ZVI plus solid organic carbon mixture.

- Schedule and Progress Updates
  - Field work related to the pre-design field investigation as specified in the work plan is complete. Additional deeper investigation is planned for early January in accordance with Treatability/Pilot Study Modification No. 5 dated November 5, 2018 (approved by NDEP on November 14, 2018).
  - Consistent with previous progress reports, the project schedule has been extended about two months longer than originally projected. Additional time is necessary to collect data from the column tests to evaluate perchlorate reduction with and without added carbon. 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.

## **Galleria Drive ZVI-Enhanced Bioremediation 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 as* \_\_\_\_\_, not individually, but solely in his *President* 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

## Galleria Drive ZVI-Enhanced Bioremediation 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 Galleria Drive ZVI-Enhanced Bioremediation Treatability Study Progress Update, Nevada Environmental Response Trust Site, Henderson, Nevada



Jan. 4, 2019

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**John M. Pekala, PG**  
**Principal**

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Date

Certified Environmental Manager  
Ramboll US Corporation  
CEM Certificate Number: 2347  
CEM Expiration Date: September 20, 2020