

# MEMO

Date **June 6, 2018**  
To **Nevada Environmental Response Trust**  
From **John Pekala, Scott Warner, and Chris Ritchie**  
Copy to **Nevada Division of Environmental Protection**  
Subject **United States Environmental Protection Agency**  
**Galleria Road ZVI-Enhanced Bioremediation Treatability**  
**Study Monthly Progress Report**

## **Task Progress Update: April 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 April 2018 toward successfully implementing the Galleria Road ZVI-Enhanced Bioremediation Treatability Study.

## **Task M18 – Galleria Road ZVI-Enhanced Bioremediation Treatability Study**

- Task Leader – Scott Warner / Chris Ritchie
- Current Status
  - Phase 1 of treatability study (pre-design investigation and bench-scale testing) is underway. Phase 2 (design and implementation of a field test) will be proposed later in 2018.
  - Surface geophysics was performed April 9 through 11, 2018.
  - Drilling of the pre-design investigation borings and monitoring wells was performed April 10 through April 30. Saturated alluvium of any significance was not encountered in the borings; therefore, all wells were screened within the UMCf.
  - All of the pre-design investigation soil borings were completed (a total of 9).
  - All of the pre-design investigation monitoring wells were completed (a total of 7).
  - Bench-scale testing program, being performed at the University of Nevada Las Vegas (UNLV), began on April 30, 2018. Batch tests demonstrating perchlorate/chlorate removal in the presence of nitrate are in progress.
- Schedule and Progress Updates
  - This task remains on schedule.
  - Survey of monitoring well locations to be performed on May 15.

- Monitoring well development is currently ongoing with a projected completion date of May 23.
- Monitoring well sampling and aquifer testing will be performed following the completion of monitoring well development activities. Slug tests and single borehole dilution testing will be performed in accordance with the work plan.
- Health and Safety
  - There were no safety incidents related to Task M18 during April 2018.

## **Attachments**

Table 1 – Phase 1 Pre-Design Investigation Soil Boring Summary (Preliminary Information)

Table 2 – Phase 1 Pre-Design Investigation Monitoring Well Summary (Preliminary Information)

Figure 1 – Phase 1 Pre-Design Investigation Boring and Monitoring Well Locations (Preliminary Information)

## Galleria Road 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, as President and not individually, 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:** 6/8/18

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



June 6, 2018

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

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Date

Certified Environmental Manager  
Ramboll Environ US Corporation  
CEM Certificate Number: 2347  
CEM Expiration Date: September 20, 2018

**TABLE 1: PHASE 1 PRE-DESIGN INVESTIGATION SOIL BORING SUMMARY (Preliminary Information)**

Nevada Environmental Response Trust Site

Henderson, Nevada

Boring ID	Boring Total Depth (ft bgs)	Northing (meters)	Easting (meters)	Sample Depths (ft bgs)
ESB-19	35	8146484.332	253179.3197	10, 20, 30
ESB-20	40	8146563.872	253340.684	10, 20, 30, 40
ESB-21	40	8146599.838	253540.2664	10, 20, 30, 40
ESB-22	45	8146535.089	253723.9304	10, 20, 30, 40
ESB-23	45	8146751.406	253647.4086	10, 20, 30, 40
ES-33 (Pilot)	120	8146655.727	253194.3672	10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 40, 50, 60, 70, 80, 90, 100, 110, 120
ES-34 (Pilot)	120	8146673.622	253379.0012	10, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 50, 60, 70, 80, 90, 100, 110, 120
ES-35 (Pilot)	120	8146712.877	253535.9339	10, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 50, 60, 70, 80, 90, 100, 110, 120
ES-36 (Pilot)	120	8146742.077	253750.9373	10, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 50, 60, 70, 80, 90, 100, 110, 120

**Notes:**

ft bgs - feet below ground surface

Pilot - Soil boring associated with corresponding monitoring well. Drilled approximately 5 feet downgradient from monitoring well.

**TABLE 2: PHASE 1 PRE-DESIGN INVESTIGATION MONITORING WELL SUMMARY (Preliminary Information)**

**Nevada Environmental Response Trust Site**

**Henderson, Nevada**

<b>Monitoring Well ID</b>	<b>Installation Date</b>	<b>Northing (meters)</b>	<b>Easting (meters)</b>	<b>Total Depth (ft bgs)</b>	<b>Screen Length (ft)</b>	<b>Screened Interval</b>	<b>Depth to Groundwater</b>
ES-33	4/14/2018	8146655.727	253194.3672	33	15	18 to 33	31.04*
ES-34	4/17/2018	8146673.622	253379.0012	41	15	26 to 41	DRY
ES-35	4/15/2018	8146712.877	253535.9339	45	15	30 to 45	28.23*
ES-36	4/17/2018	8146742.077	253750.9373	45	15	30 to 45	34.28*
ES-37	4/27/2018	8146484.332	253179.3197	37	15	22 to 37	29.56*
ES-38	4/27/2018	8146599.838	253540.2664	40	15	25 to 40	28.30*
ES-39	4/30/2018	8146535.089	253723.9304	45	15	30 to 45	41.00*

**Notes:**

\*Depth to water following completion of well installation. Depth to water collected before development.

ft - feet

ft bgs - feet below ground surface



**Legend**

- ◆ Deeper Boring
- ◆ Shallow Boring
- ◆ 4-inch diameter monitoring well

**Phase 1 Pre-Design Investigation Boring and Monitoring Well Locations  
(Preliminary Information)**

Galleria Road ZVI-Enhanced Bioremediation Treatability Study  
Nevada Environmental Trust Site; Henderson, Nevada

**FIGURE  
1**

