

# TECHNICAL MEMORANDUM

---

**To:** Nevada Environmental Response Trust

---

**Cc:** Nevada Division of Environmental Protection  
United States Environmental Protection Agency

---

**From:** Dana Grady

---

**Date:** June 7, 2023

---

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this memorandum to summarize Tetra Tech's progress during April 2023 toward successfully implementing the Las Vegas Wash Zero-Valent Iron (ZVI)-Enhanced Bioremediation Treatability Study.

## Task Progress Update: April 2023

### Task M18 – Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

- Current Status
  - The installation of the continuous ZVI wall in Test Areas 1a/1b and discontinuous ZVI walls (ZVI-filled borings) in Test Areas 2a/2b/2c were completed in March 2023. The general treatability study layout and location of the continuous ZVI wall and discontinuous ZVI wall (ZVI borings) are presented in Figures 1, 2a, and 2b. A diagram presenting the profile of the continuous ZVI wall will be provided in future monthly progress reports once final field reporting is complete.
  - The installation of 16 injection wells and 61 post-construction monitoring wells began on March 15, 2023 and was completed on April 17, 2023. Well construction details and updated maps of the monitoring well network will be provided in the May 2023 monthly progress report once survey data are received.
  - A one-time injection event was performed from April 17 to April 24, 2023. The injectate solution was blended on-site and consisted of five components including a perchlorate inoculum culture prepared by SiREM, nutrients consisting of Accelerite provided by JRW Bioremediation and potassium phosphate, oxygen scavenger (sodium sulfite), and extracted groundwater. A summary of the injection quantities, rates and pressures for each injection well will be provided in the May 2023 monthly progress report after receipt of the final report from the injection contractor.
- Schedule and Progress Updates
  - Slug testing will be performed in all newly installed wells from May 15 to May 19, 2023.
  - The Month 1 performance monitoring event is tentatively scheduled to begin on May 22, 2023. Following this first sampling event, groundwater levels will be measured monthly and

groundwater samples will be collected quarterly to generate time-series data to evaluate the treatment effectiveness of the ZVI installations with respect to the design performance criteria.

- Health and Safety
  - There were no health and safety incidents related to Task M18 during April 2023.

## CERTIFICATION

---

### Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report

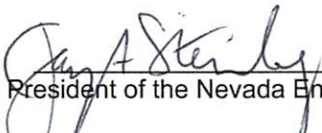
**Nevada Environmental Response Trust Site  
(Former Tronox LLC Site)  
Henderson, Nevada**

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

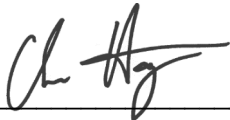
**Date:**           4/7/23

## CERTIFICATION

---

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 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report.



---

**Christopher Hayes, CEM**  
Environmental Engineer  
Tetra Tech, Inc.

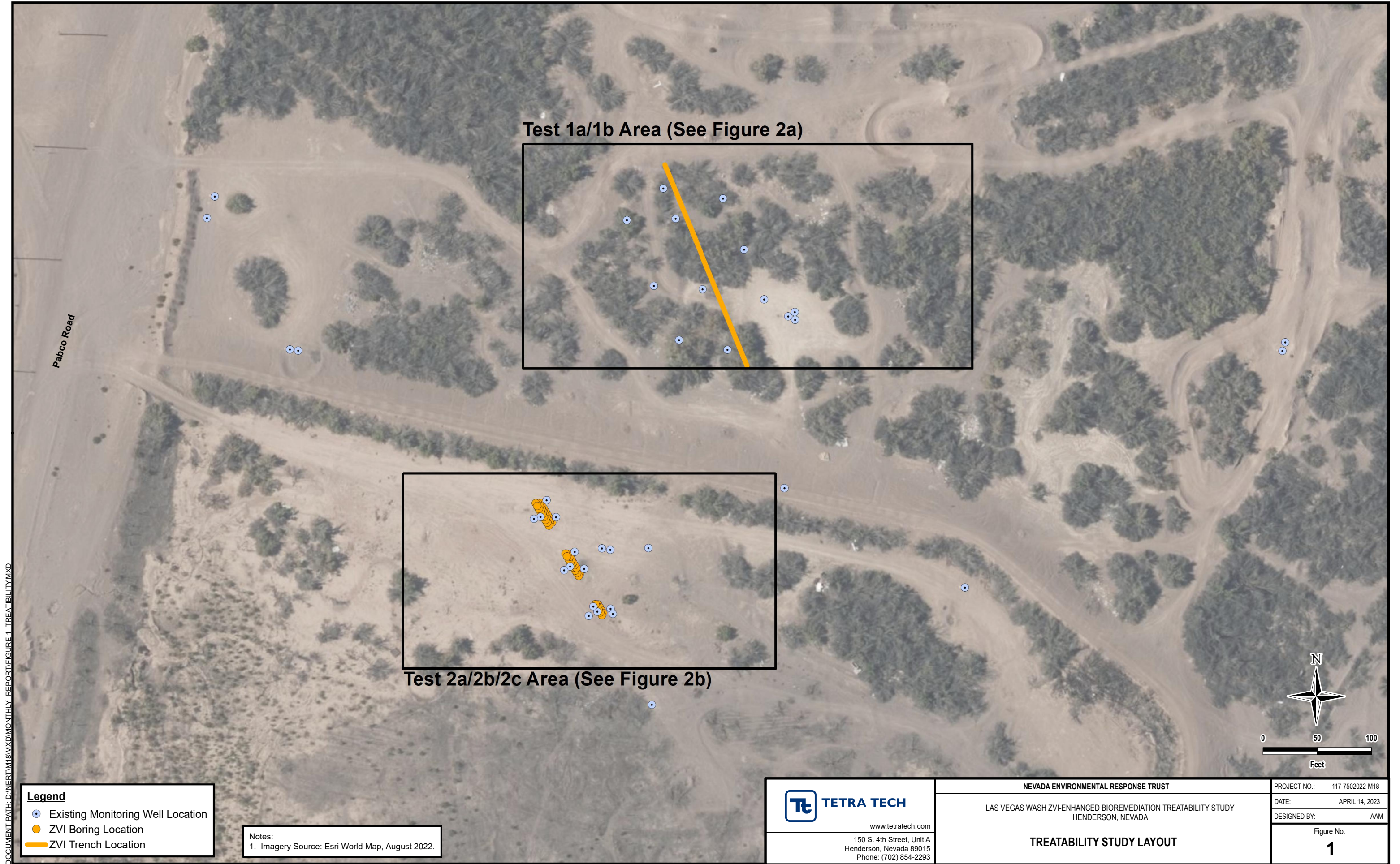
June 7, 2023

---

Date

Nevada CEM Certificate Number: EM2499  
Nevada CEM Expiration Date: December 15, 2024

# Figures



DOCUMENT PATH: D:\NERT\18\18\MONTHLY REPORT\FIGURE 1 - TREATABILITY.MXD

DOCUMENT PATH: D:\NERT\18\18\MONTHLY REPORT\FIGURE 2A TEST AREA 1A 1B.MXD



Legend	
	Existing Monitoring Well Location
	ZVI Trench Location

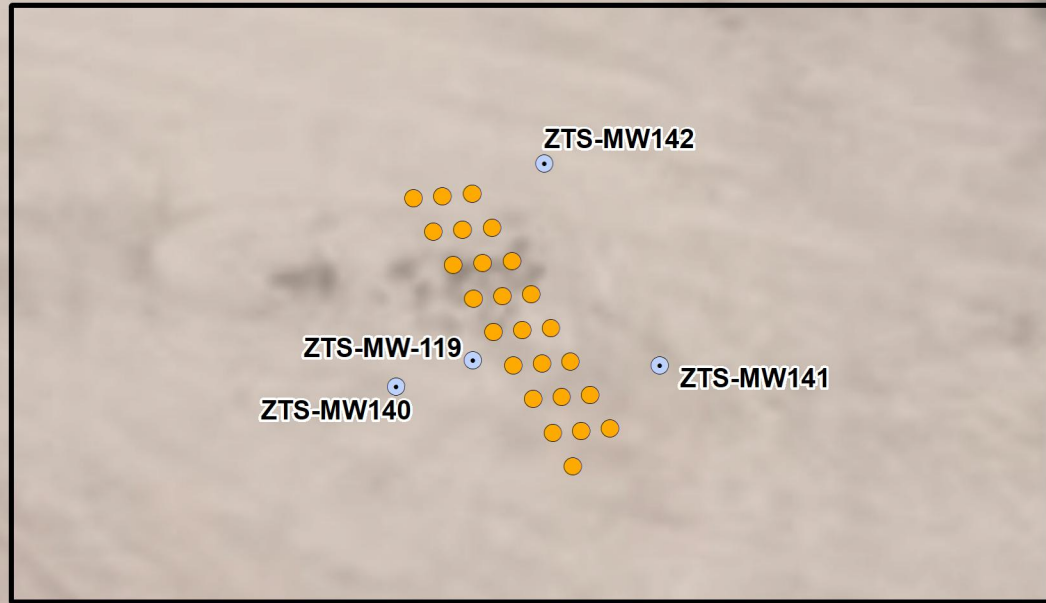
Notes:  
 1. Imagery Source: Esri World Map, August 2022.

**TETRA TECH**  
 www.tetrattech.com  
 150 S. 4th Street, Unit A  
 Henderson, Nevada 89015  
 Phone: (702) 854-2293

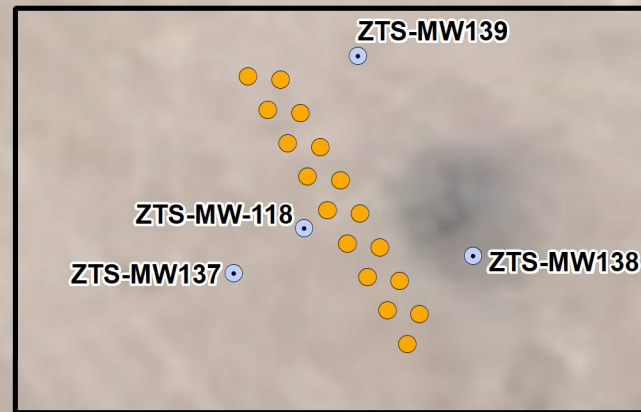
NEVADA ENVIRONMENTAL RESPONSE TRUST  
 LAS VEGAS WASH ZVI-ENHANCED BIOREMEDIATION TREATABILITY STUDY  
 HENDERSON, NEVADA  
**TEST AREA 1a/1b LAYOUT**

PROJECT NO.:	117-7502022-M18
DATE:	APRIL 14, 2023
DESIGNED BY:	AAM
Figure No.	<b>2a</b>

Test 2c Area (Borings ZTS-BH01 through ZTS-BH25)

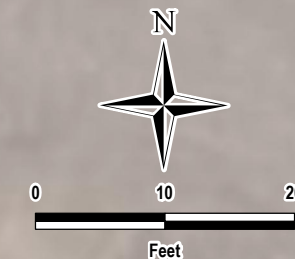
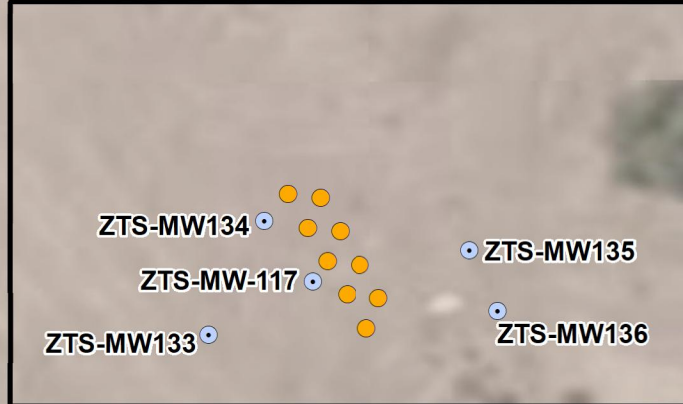


Test 2a Area (Borings ZTS-BH26 through ZTS-BH42)



ZTS-MW113  
 LVWPS-MW102B  
 LVWPS-MW102A

Test 2b Area (Borings ZTS-BH43 through ZTS-BH51)



Legend	
<span style="color: orange;">●</span>	ZVI Boring Location
<span style="color: blue;">●</span>	Existing Monitoring Well Location

Notes:  
 1. Imagery Source: Esri World Map, August 2022.

**TETRA TECH**  
 www.tetratech.com  
 150 S. 4th Street, Unit A  
 Henderson, Nevada 89015  
 Phone: (702) 854-2293

NEVADA ENVIRONMENTAL RESPONSE TRUST  
 LAS VEGAS WASH ZVI-ENHANCED BIOREMEDIATION TREATABILITY STUDY  
 HENDERSON, NEVADA  
**TEST AREA 2a/2b/2c LAYOUT**

PROJECT NO.:	117-7502022-M18
DATE:	APRIL 14, 2023
DESIGNED BY:	AAM
Figure No.	<b>2b</b>

DOCUMENT PATH: D:\NERT\18\18\MONTHLY REPORT\FIGURE 2B TEST AREA 2A 2B 2C.MXD