

# TECHNICAL MEMORANDUM

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**To:** Nevada Environmental Response Trust

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

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**From:** Dana Grady

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**Date:** March 28, 2023

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**Subject:** Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report

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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 February 2023 toward successfully implementing the Las Vegas Wash Zero-Valent Iron (ZVI)-Enhanced Bioremediation Treatability Study.

## Task Progress Update: February 2023

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

- Current Status
  - Following issuance of all construction permits in January 2023, earthwork activities required as part of site preparation for trenching activities began on January 24, 2023. Clearing, grubbing, grading, and surveying activities were completed in January 2023. Site preparation earthwork activities continued in February 2023 and included construction of the staging area and access roads, completion of the 5-foot excavation to bench down in Test Areas 1a/b, installation of the working platform for the trenching equipment, and completion of the as-built survey.
  - Installation of three discontinuous ZVI walls as part of Test Areas 2a/b/c began on February 15, 2023 and is ongoing. The discontinuous ZVI walls consist of a total of 51 borings that are installed via hollow-stem auger. Each boring is backfilled with a mixture of ZVI and sand in accordance with the Work Plan Addendum. ZVI boring construction details will be provided after completion in future monthly progress reports.
- Schedule and Progress Updates
  - Installation of three discontinuous ZVI walls as part of Test Areas 2a/b/c is anticipated to be completed by March 5, 2023.
  - Mobilization of equipment and backfill materials for installation of the continuous ZVI wall via One-Pass Trenching for Test Areas 1a/b is scheduled to begin on March 1, 2023. Installation is anticipated to begin on March 10, 2023. The continuous ZVI wall will consist of a 3-foot-wide, 200-foot-long, continuous trench to a depth of up to 35 feet deep backfilled with mixtures of ZVI,

sand, and pea gravel in accordance with the Work Plan Addendum. Following trenching activities, the top of the One-Pass trench will be backfilled with a 1-foot-thick, bentonite-soil cap above the trench followed by compacted native soil within the entire bench-down area. All work associated with installation of the continuous ZVI wall within Test Areas 1a/b is anticipated to be completed in March 2023.

- Installation of the post-construction monitoring and injection well network is scheduled to begin on March 15, 2023 and is anticipated to be completed in April 2023. A one-time injection of biological inoculum and nutrients will be performed following well installation.
- Health and Safety
  - There were no health and safety incidents related to Task M18 during February 2023.

## CERTIFICATION

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### 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

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

**Signature:** Jay A Steinberg, President, 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

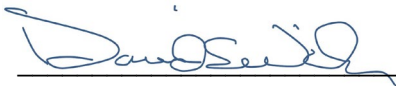
**Date:** 3/25/23

## CERTIFICATION

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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.



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**David S. Wilson, CEM**  
Principal Engineer  
Tetra Tech, Inc.

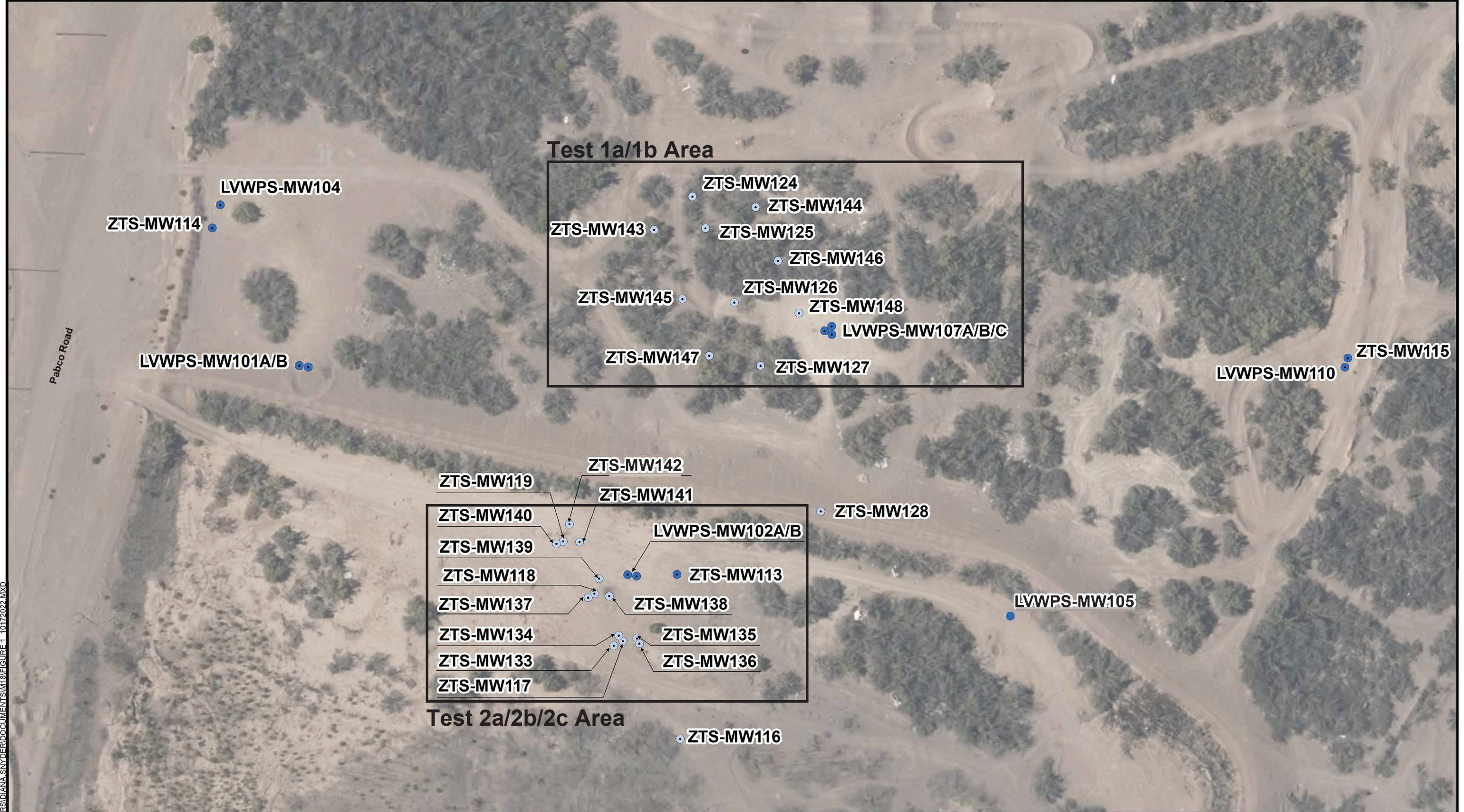
March 28, 2023

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Date

Nevada CEM Certificate Number: 2385  
Nevada CEM Expiration Date: September 19, 2024

## Figures

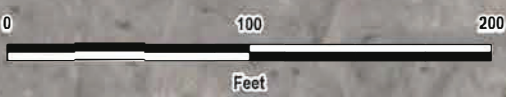


DOCUMENT PATH: C:\USERS\DIANA.SNYDER\DOCUMENTS\M18\FIGURE 1\_10172022.MXD

**Legend**

- Existing Monitoring Well Location
- ⊙ Pre-Construction Monitoring Wells

Notes:  
1. Imagery Source: Esri World Map, October 2019.



**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  
MONTHLY PROGRESS REPORT  
HENDERSON, NEVADA

**PRE-CONSTRUCTION MONITORING WELLS**

PROJECT NO.: 117-7502022  
DATE: OCTOBER 17, 2022  
DESIGNED BY: AAM

Figure No.  
**1**

## Tables

**Table 1**  
**Phase 2 Pre-Construction Well Construction Details**  
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water <sup>1</sup>	Groundwater Elevation	Casing Material	Slot Size	Filter Pack Gradation	Nominal Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl	ft bTOC	amsl		inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs
ZTS-MW116	UMCf	26732461.29	833014.94	1548.45	1547.92	16.75	1531.17	Schedule 40 PVC	0.010	#2/16	6	55	2	15	48.5	48	33
ZTS-MW117	UMCf	26732546.84	832964.21	1547.64	1547.32	16.30	1531.02	Schedule 40 PVC	0.010	#2/16	8	75	4	15	56	55.5	40.5
ZTS-MW118	Alluvium	26732588.00	832939.61	1547.64	1547.41	16.78	1530.63	Schedule 40 PVC	0.020	#3	8	40	4	10	24	23.5	13.5
ZTS-MW119	Alluvium	26732634.25	832912.06	1547.46	1547.12	16.80	1530.32	Schedule 40 PVC	0.020	#3	8	37.5	4	10	25.5	25	15
ZTS-MW124	Alluvium	26732935.79	833025.72	1544.78	1544.44	16.28	1528.16	Schedule 40 PVC	0.020	#3	8	40	4	10	34.5	34	24
ZTS-MW125	UMCf	26732907.80	833037.00	1546.94	1546.51	18.49	1528.02	Schedule 40 PVC	0.010	#2/16	8	75	4	10	50.5	50	40
ZTS-MW126	Alluvium	26732842.82	833063.07	1548.61	1548.47	20.38	1528.09	Schedule 40 PVC	0.020	#3	8	40	4	10	30.5	30	20
ZTS-MW127	Alluvium	26732787.83	833086.14	1548.05	1547.67	19.48	1528.19	Schedule 40 PVC	0.020	#3	8	40	4	5	23.5	23	18
ZTS-MW128	UMCf	26732659.68	833137.95	1555.83	1555.41	26.89	1528.52	Schedule 40 PVC	0.010	#2/16	6	75	2	10	52.5	52	42
ZTS-MW133	UMCf	26732542.30	832957.28	1547.79	1547.51	10.24	1537.27	Schedule 40 PVC	0.010	#2/16	6	75	2	15	69.5	69	54
ZTS-MW134	UMCf	26732551.09	832961.57	1547.75	1547.54	16.78	1530.76	Schedule 40 PVC	0.010	#2/16	6	37	2	10	36.5	36	26
ZTS-MW135	UMCf	26732548.80	832977.51	1547.56	1547.42	10.13	1537.29	Schedule 40 PVC	0.010	#2/16	6	76	2	15	69.5	69	54
ZTS-MW136	UMCf	26732544.12	832979.70	1547.67	1547.29	16.54	1530.75	Schedule 40 PVC	0.010	#2/16	6	55	2	20	47.5	47	27
ZTS-MW137	Alluvium	26732584.41	832934.77	1547.68	1547.44	16.80	1530.64	Schedule 40 PVC	0.020	#3	6	28	2	10	24.5	24	14
ZTS-MW138	Alluvium	26732585.74	832953.21	1547.68	1547.35	16.81	1530.54	Schedule 40 PVC	0.020	#3	6	25	2	10	24.5	24	14
ZTS-MW139	Alluvium	26732601.13	832944.31	1547.36	1547.07	16.59	1530.48	Schedule 40 PVC	0.020	#3	6	30	2	10	23.5	23	13
ZTS-MW140	Alluvium	26732631.52	832907.03	1547.30	1546.73	16.36	1530.37	Schedule 40 PVC	0.020	#3	6	30	2	10	26.0	25.5	15.5
ZTS-MW141	Alluvium	26732633.15	832927.38	1547.65	1547.39	17.12	1530.27	Schedule 40 PVC	0.020	#3	6	30	2	10	25.0	24.5	14.5
ZTS-MW142	Alluvium	26732648.69	832918.45	1547.42	1546.81	16.62	1530.19	Schedule 40 PVC	0.020	#3	6	27	2	10	26.5	26	16
ZTS-MW143	Alluvium	26732906.40	832992.60	1545.04	1544.90	16.51	1528.39	Schedule 40 PVC	0.020	#3	6	35	2	10	33.5	33	23
ZTS-MW144	Alluvium	26732926.25	833081.32	1544.47	1544.52	16.82	1527.70	Schedule 40 PVC	0.020	#3	6	40	2	10	34.5	34	24
ZTS-MW145	UMCf	26732845.93	833017.26	1547.43	1547.13	18.73	1528.40	Schedule 40 PVC	0.010	#2/16	8	50	4	10	49.5	49	39
ZTS-MW146	UMCf	26732879.40	833100.75	1548.63	1547.33	20.61	1526.72	Schedule 40 PVC	0.010	#2/16	8	55	4	10	51.5	51	41
ZTS-MW147	Alluvium	26732796.25	833040.66	1547.65	1547.18	18.70	1528.48	Schedule 40 PVC	0.020	#3	6	35	2	10	30.0	29.5	19.5
ZTS-MW148	Alluvium	26732833.56	833119.27	1548.62	1548.41	20.67	1527.74	Schedule 40 PVC	0.020	#3	6	35	2	10	32.5	32.0	22.0

Notes  
 amsl - above mean sea level  
 bgs - below ground surface  
 bTOC - below top of casing  
 PVC - polyvinyl chloride  
 UMCf - Upper Muddy Creek formation  
 1. Depth to water collected on October 17, 2022.