

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Dan Pastor and Dana Grady

Date: April 7, 2019

Subject: Las Vegas Wash Bioremediation Pilot Study Monthly Progress Report

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this memorandum which summarizes Tetra Tech's progress during January 2019 toward successfully implementing the Las Vegas Wash Bioremediation Pilot Study.

Task Progress Update: January 2019

Task M19 – Las Vegas Wash Pilot Study

- Task Leader – Dana Grady/Dan Pastor
- Current Status
 - Phase 1 pre-design field activities continue to be performed during this reporting period to gather relevant data and information required to optimize the final pilot study locations and design (targeted treatment interval and depth, contaminant concentrations, etc.). The Phase 1 findings and resulting Phase 2 pilot study design will be presented in a Work Plan Addendum. A third-party cost evaluation will be completed, followed by a Stakeholder Roundtable presentation during the second quarter of 2019. Following completion of the third-party cost review and stakeholder roundtable, the Las Vegas Wash Bioremediation Pilot Study Work Plan Addendum will be submitted to NDEP, EPA, and the NERT Stakeholders.
 - The Phase 1 pre-design field activities are now complete. A summary of the final field activities and results is presented below. For reference, a figure set has been provided to include an overview figure (Figure 1) and Transect 1B area Phase 1 pre-design monitoring well location figure (Figure 2).
 - Biotraps were installed in four monitoring wells LVWPS-MW204B, LVWPS-MW212D, LVWPS-MW222C, and LVWPS-MW223A on December 26, 2018. These biotrap were retrieved on January 23, 2019. A summary of the results will be provided when available.

- Slug testing in 35 of the 37 new monitoring wells and two existing wells (MW-13 and WMW4.9S) began on November 26, 2018 and was completed on December 3, 2018. Results of the slug testing indicate a range of hydraulic conductivities (K). Specifically:
 - K values resulting from tests in wells screened in the alluvium ranging from 2 to 417 ft/day.
 - K values resulting from tests in wells screened in the UMCf averaged approximately 4 ft/day, with some values as low as 0.1 ft/day that generally correspond with observations of increased cementation and consolidation.
- Borehole dilution testing of 15 monitoring wells (LVWPS-MW210A/B/C/D/E, LVWPS-MW214, LVWPS-MW217A/B/C, LVWPS-MW220A/B, LVWPS-MW222A, and LVWPS-MW223A/B/C) was completed in January 2019. Data processing is ongoing, and a brief summary of the results will be provided once the processing is complete.
- NMR logging of the deepest well at each of the 15 new well locations installed as part of Modification No. 2 began on November 12, 2018 and was completed on December 2, 2018. Data processing is ongoing, and a brief summary of the results will be provided once the processing is complete.
- Schedule and Progress Updates
 - Field work associated with Modification No. 2 began on August 27, 2018 and was completed in January 2019.
 - The Las Vegas Wash Bioremediation Pilot Study Work Plan Addendum will summarize the Phase 1 findings and present the final Phase 2 design. The Work Plan Addendum will be submitted in the second quarter of 2019.
- Health and Safety
 - There were no safety incidents related to Task M19 during January 2019.

CERTIFICATION

Las Vegas Wash Bioremediation Pilot 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*

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: 4-7-19

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: Las Vegas Wash Bioremediation Pilot Study Monthly Progress Report, Nevada Environmental Response Trust Site, Henderson, Nevada.



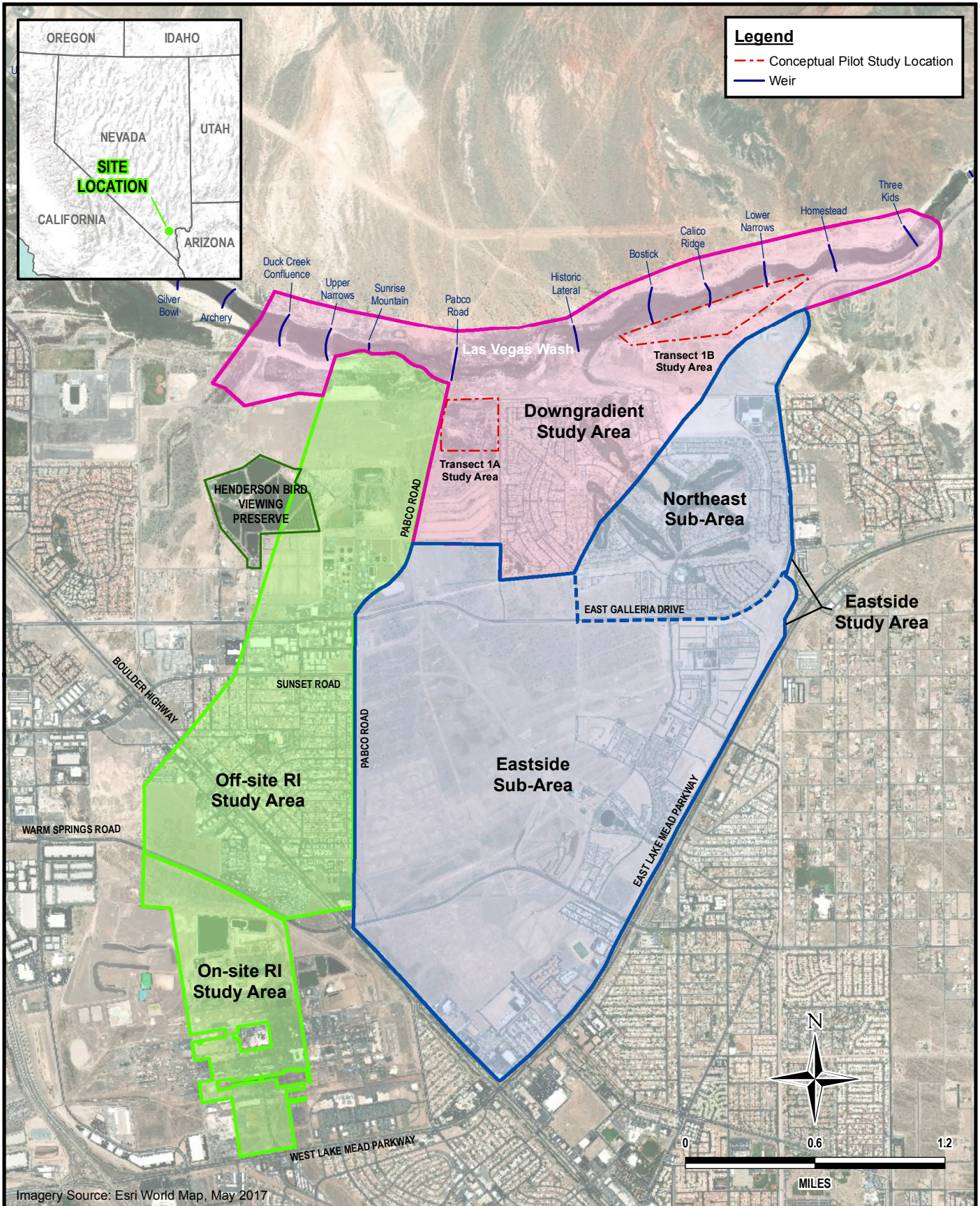
Kyle Hansen, CEM
Field Operations Manager/Geologist
Tetra Tech, Inc.

April 7, 2019

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2020

Figures



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Imagery Source: Esri World Map, May 2017



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NEVADA ENVIRONMENTAL RESPONSE TRUST

MONTHLY PROGRESS REPORT

TREATABILITY STUDY LOCATION

Project No.: 117-7502018

Date: JULY 09, 2018

Designed By: SRA

Figure No.

1

DRAFT

Legend

- Monitoring Well
- Weir



\\TTS\00F5\PROJECTS\NERTGIS\FIGURE DATABASE\MXD\19\FIGURE2.MXD

Imagery Source: Esri World Map, May 2017



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NEVADA ENVIRONMENTAL RESPONSE TRUST

MONTHLY PROGRESS REPORT

**PHASE 1 PRE-DESIGN LOCATIONS
TRANSECT 1B VICINITY**

PROJECT NO.: 117-7502018

DATE: NOVEMBER 28, 2018

DESIGNED BY: SRA

Figure No.

2