

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Carl Lenker and Eric Klink

Date: April 6, 2020

Subject: Unit 4 Source Area In-Situ Bioremediation Treatability 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 that summarizes Tetra Tech's progress made during February 2020 toward successfully implementing the Unit 4 Source Area In-Situ Bioremediation Treatability Study.

Task Progress Update: February 2020

Task M21 – Unit 4 Source Area In-Situ Bioremediation (ISB) Treatability Study

- Task Leader – Arul Ayyaswami
- Current Status
 - The University of Nevada – Las Vegas (UNLV) continued microcosm and column testing in accordance with the Unit 4 Source Area In-Situ Bioremediation Treatability Study Bench-Scale Work Plan and Treatability Study Modification No. 1. No new data are available to report for the microcosm or column testing during this reporting period. The following is a brief summary of the bench-scale study activities:
 - On February 28, 2020, (day 554 of the microcosm testing), UNLV collected the final liquid sample from the remaining microcosms containing a combination of molasses, molasses with acetate, mixed microbial cultures, and soil and groundwater collected from boring and well locations near the Unit 4 Building. Following the final liquid sampling, UNLV collected the remaining soil and liquid present in selected microcosms for the analysis of remaining COPCs and overall water chemistry. In addition, UNLV collected samples for microbiological analysis from several microcosms where biodegradation took place and several microcosms where biodegradation was not observed. A summary of the results will be included in future monthly progress reports and the Unit 4 Source Area In-Situ Bioremediation Treatability Study Work Plan Addendum.
 - UNLV completed column testing on February 28, 2020 (day 381 of the column testing) with two intermediate columns (columns packed with a mixture of sand and soil collected from 75 to 85 feet bgs) and two deep columns (columns packed with a mixture of sand and soil collected from 95 to 105 feet bgs). Following the completion of the column testing, UNLV

cut the columns to evaluate the conditions and to analyze the chemical, general chemistry, and microbiological content. A summary of the results will be included in future monthly progress reports and the Unit 4 Source Area In-Situ Bioremediation Treatability Study Work Plan Addendum.

- Schedule and Progress Updates
 - The following activities are scheduled to be conducted in March 2020:
 - Final sample laboratory results from the microcosm and column tests are anticipated to be available in March. The results will be summarized in a future monthly progress report and the Unit 4 Source Area In-Situ Bioremediation Treatability Study Work Plan Addendum.
 - Development of the Unit 4 Source Area In-Situ Bioremediation Treatability Study Work Plan Addendum for Phase 2 that is currently anticipated to be submitted early in the Third Quarter of 2020.
- Health and Safety
 - There were no health and safety incidents related to Task M21 during February 2020.

CERTIFICATION

Unit 4 Source Area 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 in his representative capacity as President of the Nevada Environmental Response Trust Trustee

**Not Individually, but Solely
as President of the 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: _____

4/6/2020

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 Unit 4 Source Area Bioremediation Treatability Study Monthly Progress Report.



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

April 6, 2020

Date

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