

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Arul Ayyaswami and Dan Pastor

Date: December 15, 2017

Subject: Unit 4 Source Area Bioremediation Treatability Study Progress Update

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 through November 2017 toward successfully implementing the Unit 4 Source Area In-Situ Bioremediation Treatability Study. Bench-scale testing work is being conducted as outlined in the Unit 4 Source Area In-Situ Bioremediation Treatability Study Bench-Scale Work Plan (Work Plan).

Task Progress Update: November 2017

Task M21 – Unit 4 Source Area In-situ Bioremediation Treatability Study

- Task Leader – Arul Ayyaswami
- Current Status
 - The University of Nevada – Las Vegas (UNLV) started microcosm testing on November 11, 2017 with a combination of soil and groundwater collected from boring locations M-251 (located within the Unit 4 Building basement) and M-253 (located to the east of the Unit 4 Building basement). Perchlorate concentrations in the soil extract were 285 mg/L from boring location M-251 and 214 mg/L from boring M-253. Perchlorate concentrations in groundwater samples were 3,650 mg/L from monitoring well M-251-100 and 1,190 mg/L from monitoring well M-253-100. Total dissolved solid concentrations in groundwater samples were 36,544 mg/L from monitoring well M-251-100 and 4,322 mg/L from monitoring well M-253-100. Evaluation of the microcosm results are ongoing.
- Schedule and Progress Updates
 - UNLV microcosm testing will continue in December 2017.
 - The Draft Unit 4 Source Area In-Situ Bioremediation Treatability Study Work Plan is under development and will be submitted in December.
- Health and Safety
 - There have been no health and safety incidents related to Task M21 during November.

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 Progress Update.



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

December 15, 2017

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2018