



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

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June 21, 2016

Mr. Bradley Vann, Project Manager
Superfund Division
United States Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, KS 66219

RE: Comments on North Quarry Subsurface Temperature Monitoring Probes (TMPs) Work Plan

Dear Mr. Vann:

The Missouri Department of Natural Resources' Federal Facilities Section, in coordination with the Solid Waste Management Program, has completed its review of the document titled: "North Quarry Subsurface Temperature Monitoring Probes (TMPs) Work Plan," dated May 2016. Thank you for giving us the opportunity to review and comment on the work plan.

If you have any questions pertaining to these comments, please contact Mr. Seabaugh by phone at (573) 751-8628, or by written correspondence at P.O. Box 176, Jefferson City, MO 65102-0176.

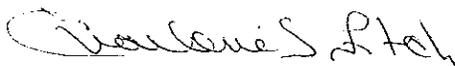
Sincerely,

HAZARDOUS WASTE PROGRAM



Ryan Seabaugh, P.E.
Federal Facilities Section

SOLID WASTE MANAGEMENT PROGRAM

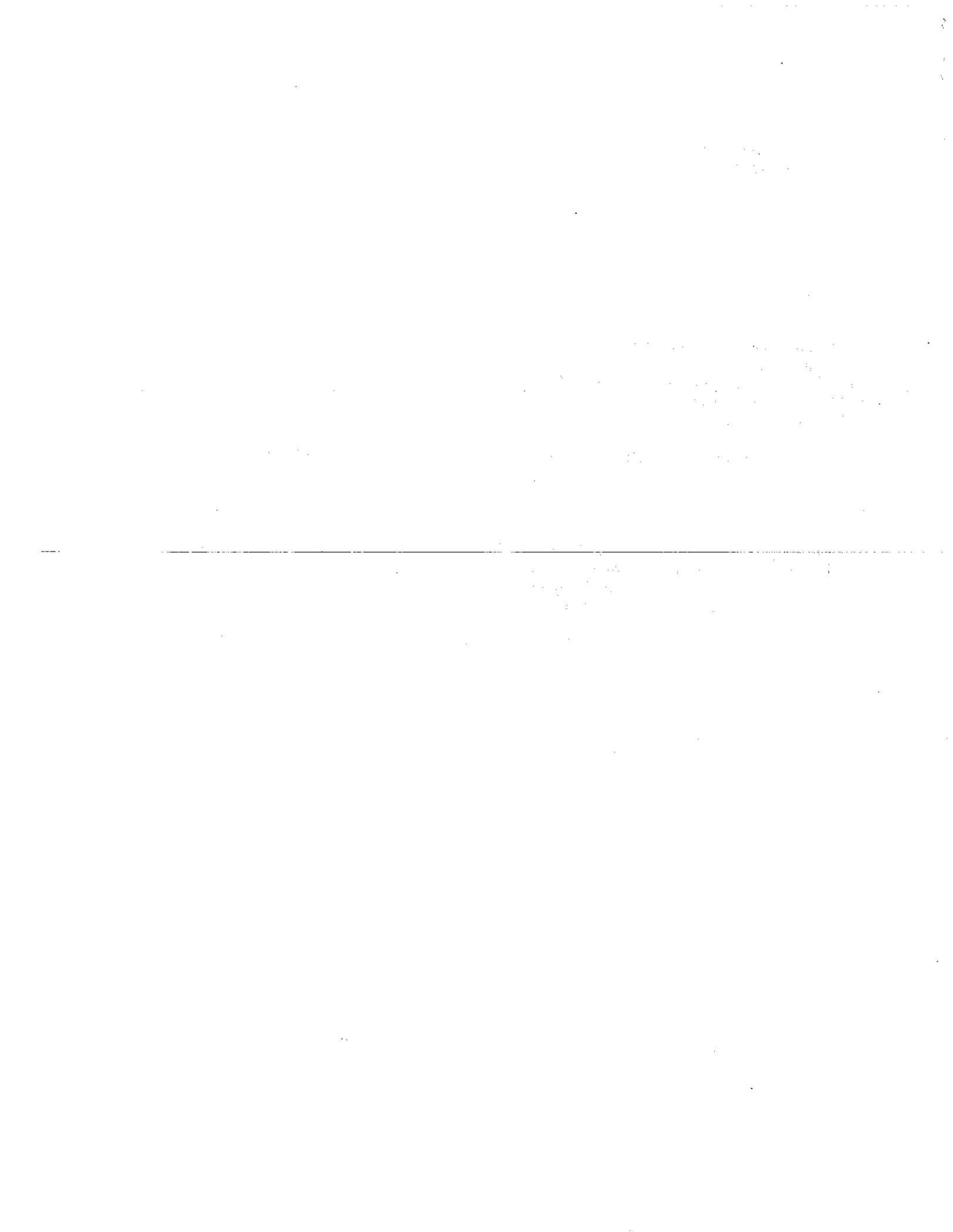


Charlene S. Fitch, P.E.
Chief, Engineering Section

RS:rl

Enclosures: Comments on the North Quarry Subsurface Temperature Monitoring Probes (TMPs) Work Plan

c: Mr. Chris Nagel, Director, Solid Waste Management Program ✓



MISSOURI DEPARTMENT OF NATURAL RESOURCES
NORTH QUARRY SUBSURFACE TEMPERATURE MONITORING PROBES (TMP)
WORK PLAN
DRAFT Comments

1. Page 2, Section 2.1, 2nd paragraph: “Improvements of the TMP design may be incorporated before installation such as multiple TMP conduits in one TMP boring to allow easier replacement...”

Comment: Please expand this discussion to provide definitive information on whether multiple conduits will be used, and to what extent it is feasible for the current proposal (example: How many conduits can fit in a borehole of the proposed size)

2. Page 2, Section 2.2: “The ASAOC has requested that TMPs be installed in the North Quarry to form a line of temperature measurements approaching the OU-1, Area 1...”

Comment: The AOC describes a “system” of TMPs capable of monitoring landfill temperatures that could be a precursor to or indicative of a SSR in the North Quarry that could come into contact with RIM in OU-1. A system of TMPs could represent more than a “line” of TMPs and should also include TMPs in the waste situated on top of the identified RIM area. Additional TMPs may be warranted to be consistent with the AOC.

3. Page 2, Section 2.2: “These proposed TMPs are positioned to augment the existing TMP locations that are shown on Drawing 003 in Appendix A”

Comment: The proposed TMP line appears to have TMPs approximately 125 feet apart, based on the figure. The proposed interval is significantly wider than the current TMP placement interval across the neck, and the effectiveness of such a wide interval is questionable. Please design a system of TMPs consistent with previous installations.

4. Page 3, Section 2.3: “Therefore the lost tip method is imperative to successful TMP installation and no sampling is possible using this method.”

Comment: Any material collected from drill stem cleaning could be tested for radionuclides. The drill stem itself could also be scanned for radionuclides. Please develop or reference an existing approved sampling analysis plan, and quality assurance project plan. Please incorporate testing of drilling material that is recovered from the drill stem cleaning process as Investigative Derived Waste and dispose of properly.

5. Page 3, Section 2.3.1: The bulleted list does not contain total TMP depth for waste thickness between 120 feet and 160 feet.

Comment: Please provide total depth information for the interval between 120 feet and 160 feet.

6. Page 4, Section 3.1, Last Paragraph: “To qualify the temperature reading, the resistance (ohms) is compared to a baseline value based on the thermocouple and wire lead length.”

Comment: Please explain how the baseline value is established, and whether installation conditions or temperature are part of establishing baseline conditions.

Please also include a QA/QC procedure for testing probes prior to placing into service.

7. Page 5, Section 3.2, 1st Paragraph: “In addition, the connections to the selector switch may corrode, as well as the selector switch itself.

Comment: Suggest considering options for initial installation to protect the selector switch from corrosion or slow the corrosion process.

8. Page 5, Section 3.2: “TMPs installed in waste have a discrete life. When some thermocouples fail, the TMP can still be used if a general trend in the TMP can be inferred, as compared to historical records of that specific thermocouple interval. This can be seen in the historical analysis in Appendix B. However, if more than three consecutive thermocouple intervals fail (a vertical interval over 60 feet is not monitorable), then the entire TMP will be replaced, or the missing intervals may be replaced with a shorter neighboring TMP.”

Comment: Some TMPs may be 60 feet or less, and have only three thermocouples total, based on the 20-foot interval spacing dictated by the work plan. Additionally, very little if any accurate interpolation or inference could occur with two or fewer thermocouples within a well. Also, there is no clear procedure for acting on inferred temperatures that approach a trigger value. Thermocouples should be replaced if two consecutive thermocouple intervals fail, or greater than 60 vertical feet at a location is not monitored. Additionally, all failed thermocouples should be replaced if the number of failed thermocouples exceeds 20 percent of the total number of thermocouples.

9. Page 5, Section 4.0: “In accordance with the North Quarry ASAOC, certain triggers will be used to indicate the need for further investigation of the possibility of an SSR in the North Quarry. The proposed triggers are:”

Comment: Please modify the sentence to say “In accordance with the North Quarry ASAOC, certain triggers will be used to indicate the need for installation of additional TMPs. The triggers are:” Please also add any additional activities that will prompt installation of additional TMPs.

10. Page 5, Section 4.0: “If a TMP reading indicates a possible trigger exceedance, a verification process will be followed to ensure the reading is a true exceedance. The conductance of the thermocouple string will also be checked.”

Comment: Please describe the actions that will be followed for TMPs as readings approach and exceed trigger values. Any necessary validation or quality control checks for values exceeding trigger values will be immediately performed.

11. Page 5, Section 4.0: "If a TMP reading indicates a possible trigger exceedance, a verification process will be followed to ensure the reading is a true exceedance. The conductance of the thermocouple string will also be checked."

Comment: Please also describe the actions that will be followed for gas extraction wells as they approach and exceed trigger values. Any necessary validation or quality control checks for values exceeding trigger values will be immediately performed.

12. Pages 5 and 6, Section 4.0: A verified achievement of a trigger value could indicate either the presence of a subsurface oxidation event (SSO), or the presence of an SSR, or just a non-typical or transient reading that is neither an SSO nor an SSR. Procedures for investigating, verifying, and remediating an SSO are presented in the "Inert Gas Injection Work Plan for Hot Spot Remediation."

Comment: Verified trigger exceedances require immediate action to attempt to reduce subsurface temperatures. This statement should be deleted or corrected to describe actions to reduce temperatures below trigger values.

13. Section 4, Page 6, Last Paragraph:

Comment: The entire paragraph discusses actions that should be taken prior to a trigger exceedance. Trigger exceedances require immediate action to attempt to reduce subsurface temperatures.

14. Section 6, Page 7: "Once the North Quarry Subsurface TMP Work Plan is approved by the USEPA..."

Comment: Approval by DNR is also required.

15. Section 6, Page 7: "TMP Calibration and Normalization – 2 weeks."

Comment: This time period appears to be excessive, and should be reduced

16. HASP – page 2, Section 1.2: "Some of the actions described in Section 3 of this HASP will entail intrusive work into the subsurface. Subsurface activities to be conducted in that portion of the North Quarry of Bridgeton Landfill that overlies the southwestern portion of Area 1 of West Lake Landfill may encounter Area 1 RIM. Prior to such intrusive work being initiated, personnel with specific knowledge of conditions associated with Area 1 of West Lake Landfill (e.g., Feezor Engineering, Inc., Engineering Management Support, Inc. (EMSI), Auxier & Associates, Inc. (A&A), etc.) must be consulted to determine if the proposed intrusive activities would present a potential radiological hazard. If it is determined that the proposed activities as designed would

potentially present a radiological hazard, then the radiation safety protocol described in Section 3 of this HASP for the specific removal action will be implemented.”

Comment: Due to proximity to RIM, all actions north of the quarry high wall should assume RIM may be encountered and utilize SOPs for RIM work.

17. HASP – page 15, Section 2.2.4: “To mitigate against these potential hazards, workers involved in any intrusive project work taking place at a location in the North Quarry that...”

Comment: Due to proximity to RIM, all actions north of the quarry high wall should assume RIM may be encountered and utilize SOPs for RIM work.

18. HASP – page 28, Section 3.5.1.: “If the work will be performed at a location in the North Quarry that 1) overlies the southwestern portion of Area 1 of West Lake Landfill, and 2) has the potential to encounter Area 1 RIM (as determined in consultation with FEI, EMSI, and/or A&A,...”

Comment: Due to proximity to RIM, all actions north of the quarry high wall should assume RIM may be encountered and utilize SOPs for RIM work. All occurrences of this or similar statements should subsequently be replaced (examples: page 29, Section 3.5.3; page 31, Section 3.5.6)

19. HASP – page 31, Section 3.5.6; “Vehicles and downhole tooling/equipment used during TMP Installation work performed at those locations in the North Quarry satisfying both of the criteria described above will be checked for radiological impact using Masslinn® wipes and a direct-read instrument prior to leaving a work area.

Comment: SOPs for working in a RIM impacted area should be followed for all TMP installations north of the quarry high wall.