Memorandum

To:	Orange County Health Care Agency Solid Waste Local Enforcement Agency (LEA) Environmental Health Division 1241 Wast Dyer Road, Suite #120, Santa Ana, CA 92705	**Date:**	January 19, 2024
Attention:	Shyamala Rajagopal Supervising Hazardous Materials Specialist	**Project No.**	CLA.000IR23328
From:	Robin Ferber, PG (CA 5756)		
Subject:	**Addition of Sonic Drilling and Sampling of Stockpile Material Addendum #1 to Final Revised Environmental Sampling Workplan For Stockpiled Material Testing 6145 East Santiago Canyon Road City of Orange, Orange County, California**		

Addition of Sonic Drilling

As discussed on January 11, 2024 with the Orange County Health Care Agency, Solid Waste Local Enforcement Agency (LEA), Leighton and Associates, Inc. (Leighton) has recommended that sonic drilling be approved by the LEA for drilling at Stockpile G or if refusal is encountered elsewhere when using less powerful drilling rigs (e.g., direct-push or hollow-stem auger rigs) during the drilling of stockpiled materials at the Milan site located at 6145 East Santiago Canyon Road in the City of Orange, California (the site or subject property). Sonic drilling will provide an alternative for sample collection if the Air Rotary Casing Hammer (ARCH) drilling rig is unavailable. In addition, sonic drilling has the advantage of collecting a core sample inside the core barrel which will be more representative of the materials/soils being drilled. One of the key advantages of sonic drilling is the collection of continuous cores, which will facilitate the observation of materials/soils and the potential presence of hazardous substances and/or petroleum products during drilling.

This addendum would apply to the Final Revised Environmental Sampling Workplan for Stockpile Material Testing (Stockpile WP), dated December 27, 2023, submitted to the LEA. For the Stockpile WP, Section 3.5.4 should be revised to the following:

3.5.4 Air Rotary Casing Hammer and/or Sonic Drilling

For areas where a HSA drill rig either has encountered refusal or is likely to encounter refusal, an air rotary casing hammer (ARCH) drill rig or a sonic drill rig will be utilized to collect samples. The ARCH utilized a pneumatic hammer to drive a flush-threaded drill casing coupled with a rotary drill string to reach the target sample depth. This drilling method has the advantage of being able to penetrate concrete or rock debris expected to be encountered in soil pile G.

Sonic drilling provides many advantages over other types of drilling techniques. It is a low-impact technology that is safer by minimizing crew tool handling. By rotating and vibrating the rod, core barrel, and casing at sonic frequencies a clean bore hole is drilled, cord and cased at the same time. Sonic drilling provides a continuous and relatively undisturbed core sample of good quality through any type of formation. A split spoon sampler fitted with stainless steel rings will be inserted into the sonic casing and used to collect samples from the desired depths. The ends of the individual rings will be covered with Teflon sheeting and plastic endcaps and stored in a sealed baggie in an ice-chilled cooler.

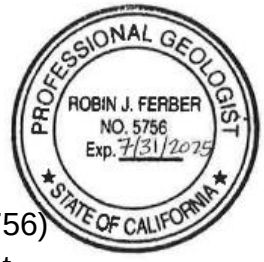
It is our professional opinion that sonic drilling will provide an optional methodology that will adequately collect soil/material samples that will be representative of the materials requiring characterization at the site.

Profiling Soil Stockpile Used as Foundation Material for Roadway access to Stockpile H

Leighton will collect two representative samples of the poorly graded sandy aggregate stockpile used to supplement soil and materials used to build the roadway access to Stockpile H. Approximately 30 cubic yards of aggregate was emplaced in the roadway base. In addition, the remaining stockpile has approximately 1,870 cubic yards of aggregate remaining. The stockpile sample and the sidewall of the roadway soil (i.e., two samples in total) will be collected manually by pushing a stainless-steel sleeve into the stockpile and roadway wall and capping the ends with Teflon sheeting and plastic end caps. The IDs of the samples will be “SP-H-Bridge-1 and SP-H-Bridge-2.” A separate chain-of-custody will be prepared for the samples and delivered in a chilled cooler to the analytical laboratory for testing within the appropriate holding time. The sample will be analyzed for the full suite of analytical tests noted in Section 3.2 in the June 16, 2022 Stipulated Notice and Order.

Should you have any questions, please do not hesitate to contact the undersigned.

Sincerely,



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