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STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
Division of Remediation
William R Snodgrass TN Tower
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November 27, 2013

Ms. Sue Cange, Assistant Manager Oak Ridge Office
of Environmental Management
U. S. Department of Energy
Oak Ridge Operations Office
P.O. Box 2001
Oak Ridge TN 37831-8540

Dear Ms. Cange

TDEC Approval on Limited Phase I Site Characterization Plan for the Proposed Environmental Management Disposal Facility Site

Thank you for having DOE develop and submit this screening evaluation work plan as part of a response to a meeting between DOE and Tennessee Department of Environment and Conservation (TDEC) Commissioner Martineau, Deputy Commissioner Meghreblian, Director Flood (Division of Solid Waste Management), Director Dudley (Division of Water Resources), and myself. At that meeting, we discussed TDEC's desire that a screening level evaluation be performed prior to publishing the proposed plan for public review instead of waiting to begin gathering site specific hydrologic data after the Record of Decision. Additional discussion was held between DOE and Director Flood that honed in on the number of additional monitoring wells needed for this initial screening evaluation of DOE's proposed Environmental Management Disposal Facility (EMDF) location.

A main reason TDEC requested this screening level investigation is our concern with water levels and water level fluctuations indicated in monitoring wells and piezometers around Cells 1 and 2 at Environmental Management Waste Management Facility (EMWMF). The screening evaluation of the proposed EMDF location basically establishes a cross section of hydrologic data. This approval letter also requests that DOE add instrumentation to select existing monitoring wells/piezometers at EMWMF (identified in comments below) to better understand hydrologic conditions in this portion of Bear Creek Valley and whether the water level fluctuations of concern are localized or wide spread. Existing data for EMWMF is sporadic and the magnitude and frequency of water level fluctuations is unknown. A consideration in the screening evaluation of EMDF will be comparison of water level data gathered at EMDF with data obtained from these wells at EMWMF.

At the above referenced meeting, I also heard DOE state that TDEC selected the proposed EMDF location. After that meeting, I requested documentation from you and also talked with TDEC Oak Ridge personnel. As I currently understand it, TDEC requested DOE evaluate Bear Creek Valley as a potential location for additional disposal with a focus on the area west of EMWMF. One of TDEC's considerations

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in requesting that this area be evaluated is that there are ongoing concerns with releases to the environment from the Bear Creek Burial Grounds and with a water treatment plant proposed as part of EMDF, locating a new disposal facility between EMWMF and Bear Creek Burial Grounds may offer an opportunity to also utilize the water treatment plant to assist in abating Bear Creek Burial Grounds releases. The area west of EMWMF was discounted by DOE and DOE selected the proposed EMDF location east of EMWMF. As part of review of this work plan, I requested one of TDEC's hydrogeologists evaluate existing monitoring wells west of EMWMF and in the Bear Creek Burial Grounds area to see if there may be existing monitoring wells that may be instrumented to give an indication of hydrologic conditions there. Suggested locations are included in comments below.

We appreciate DOE's cooperation with TDEC's request to perform this screening evaluation prior to the proposed plan and it should be understood that TDEC's acceptance of this *Limited Phase I Site Characterization Plan for the Proposed Environmental Management Disposal Facility Site* does not constitute an endorsement of the proposed EMDF location. It should also be understood that where the screening level evaluation should assist in understanding the hydrogeology and characteristics of the site, there are also other concerns that will have to be resolved prior to TDEC acceptance of the RI/FS.

Further, based on existing available data, it is likely that hydrologic conditions may affect additional landfill siting at several locations in Bear Creek Valley. Once again, we believe it beneficial to DOE and the site restoration/remediation effort to maximize benefit of existing EMWMF by minimizing the capacity filled with clean material. Effectively utilizing existing capacity should aid in reducing future capacity needs and thereby afford siting a smaller landfill(s).

TDEC approves the work plan with the following comments:

1. The work plan states that ground water data will be collected continuously for 30 to 60 days. It is understood informed screening decisions need to be made on future CERCLA waste disposal in the near term to allow time for appropriate future detailed site investigation, as well as design and construction, in a time frame that allows some operational overlap with current EMWMF. To accomplish this, TDEC expects the following three items:

    a. As stated in the TDEC letter to DOE dated September 9, 2013 (R. Petrie to J. Japp),

    > "DOE presented a discussion at the workshop that DOE is running out of time to site, design, and construct EMDF before the Environmental Management Waste Management Facility (EMWMF) is at capacity. EMWMF is being filled with an estimated 30 to 50 percent clean material. DOE should begin volume reduction, waste segregation, and size reduction now to reduce amount of material and space needed in EMWMF thereby extending life of EMWMF to allow time for better evaluation of potential EMDF sites."

    b. Concurrent with implementation of this Phase 1 Site Characterization, there are opportunities to also place similar continual ground water monitoring (1) in select monitoring wells at EMWMF and (2) west of EMWMF in either existing monitoring wells at the burial ground or new wells between the burial ground and EMWMF. This will aid with the screening for disposal sites at EMDF and/or potential disposal sites in

Bear Creek Valley west of EMWMF. Please see comments below about adding continual monitoring east of EMWMF and near the burial grounds

c. Thirty (30) to sixty (60) days of continual groundwater monitoring may not yield the data needed to make an informed decision. The work plan also references making the decision on how long to monitor based on meteorological conditions at the time. When DOE determines there is sufficient data for inclusion in the appendix to the RI/FS, continual ground water data collection should not stop. It should not stop until there is agreement that additional data from those locations is not needed.

2. The work plan specifies that shallow wells will be drilled to the top of bedrock or a depth of 30 feet whichever comes first. EMWMF GW 923 reports a total depth of about 40 feet and a number of previous quarterly water level measuring events reported no water or the well was dry. GW 923 was apparently not drilled deep enough to effectively monitor ground water elevations. Shallow ground water monitoring wells must have water to be meaningful and therefore need to be screened in the saturated zone below perched water zones. The shallow well located at GWM-3 may fall in this category.

3. TDEC requests wells GW 918, GW 916, GW 917, GW 927, GW 947, and GW 952 on the east side of EMWMF have continual monitoring for temperature, conductivity and water level. GW 918 screened from 20 to 30 feet at a ground elevation of about 1065 is artesian during some sampling events and is located near a spring. Work plan figure "Existing Wetlands Near Proposed EMDF" with the proposed facility overlay shows a spring at an elevation of about 1050 feet immediately west of proposed EMDF location, a seep in the EMDF footprint at an elevation of about 1050 feet, and a seep east of the proposed EMDF location at an elevation of about 1050 feet. Adding continual monitoring to GW918 may help understand fluctuations and conditions on the Pine Ridge side of the proposed site. Similarly, piezometers including but not limited to GW950, GW947, and GW 948 immediately north of EMWMF cells 1 and 2 show fluctuating season groundwater levels with the elevation of groundwater measured in piezometers near, at or above ground surface on one or more sampling events. GW 916 east of EMWMF is located near a seep upstream of a work plan proposed surface water monitoring station. Water level elevation in GW916 appears close to the seep elevation shown in figure "Existing Wetlands Near Proposed EMDF". GW 927 screened from 60 to 90 feet on May 6, 2013 had a water elevation of 986.34 feet. GW 917 screened fror 0 to 50 feet had a water level elevation of 981 feet. GW 927 and 917 indicate an upward gradient. GW 952 is immediately downhill from Cells 1 and 2 and shows fluctuations in water level. These wells and piezometers should add an additional cross section of water level data and fluctuations in Bear Creek Valley to compare and validate data obtained from wells installed in the EMDF evaluation area.

4. During previous comments concerning locating an additional disposal facility, TDEC suggested locating a new disposal cell or cells west of EMWMF. With potential water issues in the area DOE selected east of EMWMF for EMDF, TDEC expects DOE to install continual groundwater monitoring west of EMWMF to evaluate this area. At a minimum, TDEC expects the following wells at the Bear Creek Burial Grounds to be monitored: GW-342, GW-242, GW-290, GW-629, and GW-082. In addition, the following EMWMF wells should also be included in this effort: GW-925, GW-916, and GW-922. These wells should be instrumented for continual measurements for temperature, conductivity and water level. TDEC identified several existing

wells that may give an indication of the hydrogeology. DOE should verify whether these locations may provide adequate indication of the hydrogeology and if not, propose additional existing or new well locations for this determination.

5. The Rutledge formation is a steeply dipping limestone formation with little information on it in this area. An additional well is needed to be installed in the EMDF area and screened in the Rutledge formation. This well needs to be located and sized to intersect the formation across an interval below the elevation of the tributaries crossing the outcrop of the Rutledge Limestone. The diameter of the finished well shall be sufficient to allow TDEC access with equipment that is 4" in diameter. This well does not change comments on well installation.

Questions or comments concerning the contents of this letter should be directed to the Division of Remediation DOE Oversight Office.

Sincerely

Robert A Binford

Robert A. Binford, Director
Division of Remediation

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