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Waukesha County
SW/CORR

Donald A. Smith, P.E., Market Area Engineering Manager
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Subject: Incompleteness Determination for the Feasibility Report for the Proposed Orchard Ridge Eastern Expansion Southern Unit - Monitoring #4491

Dear Mr. Smith:

The Department of Natural Resources (department) has reviewed for completeness the report entitled "Feasibility Report, Orchard RDF Eastern Expansion, Southern Unit, Village of Menomonee Falls, Waukesha County, Wisconsin", dated July 23, 2020. The feasibility report was prepared by TRC on behalf of Waste Management of Wisconsin, Inc. (WMWI). The department received the report on July 24, 2020. Based on our review of the report, the department has determined that the feasibility report does not contain the minimum information required by ch. NR 512, Wis. Adm. Code; and therefore, the report is not complete.

Part A of this letter identifies the information required to fulfill the minimum feasibility report requirements. Part B lists additional information needed to make a determination regarding site feasibility. Part C provides additional comments regarding site feasibility or matters related to landfill design, construction or operation.

In your response, please include this information as an addendum to the feasibility report. This information is intended for use by the public as well as the department in reviewing the proposed project. Please provide a copy of all information submitted to the department to each recipient of the feasibility report as required by s. 289.23 (4), Wis. Stats.

A. INFORMATION REQUIRED TO COMPLETE THE FEASIBILITY REPORT

The minimum requirements and information that must be included in a feasibility report for the proposed Orchard Ridge Recycling and Disposal Facility (RDF) Eastern Expansion Southern Unit (Southern Unit) are specified in the department's initial site report (ISR) opinion letter, in chs. NR 500, 504, and 512, Wis. Adm. Code, and in ss. 289.24 and 289.34, Wis. Stats.

The following items are required to complete the feasibility report:

1. **Technical Procedures [s. NR 500.05(5), Wis. Adm. Code]:** The report does not indicate whether the tops of well casing used for the purpose of calculating groundwater elevations have been surveyed to an accuracy of ± 0.01 foot, in accordance with s. NR 141.065(2), Wis. Adm. Code.
2. **Locational Criteria [s. NR 504.04(3)(f), Wis. Adm. Code]:** The report does not provide sufficient information to evaluate the potential for granting a ch. NR 812, Wis. Adm. Code, well variance for private water supply well PWE07. The department understands that well driller and construction documentation is unavailable. However, in lieu this documentation, additional information is required

(e.g., geophysical measurements, camera logs) to evaluate the geology; in particular, as it relates to the uncased portion of the well. Based on a phone conversation between the department and TRC, we understand that additional information on water supply well PWE07 may have been obtained subsequent to submittal of the report.

3. **Performance Standards [s. NR 504.04(4)(d), Wis. Adm. Code]:** The report does not provide sufficient information on the potential detrimental effects on groundwater quality as a result of landfill construction or during proposed waste exhumation (e.g. unearthing and agitating waste). For example, the report does not discuss potential changes to geochemistry (e.g. pH, redox, alkalinity, availability of organic carbon), and effects on contaminant levels (e.g., increased dissolution of adsorbed, previously immobilized contaminants). For this evaluation, please include a discussion of potential effects and considerations that should be given to the water supply wells located within 1,200 feet of the proposed expansion and how site conditions and groundwater quality will be monitored, especially during and after waste exhumation, to detect detrimental changes to groundwater quality in a timely manner and ensure the water supply wells are not adversely impacted.
4. **Performance Standards [s. NR 504.04(4)(e), Wis. Adm. Code]:** The report does not provide sufficient information to evaluate the potential for the migration and accumulation of explosive gases to nearby structures during the waste exhumation phase of the landfill development.
5. **Performance Standards [s. NR 504.04(4)(f), Wis. Adm. Code]:** The report does not address the potential for hazardous air emissions as a result of unearthing and agitating waste during exhumation. This missing information includes, but is not limited to, the potential exposure (e.g., via inhalation) of on-site personnel during these activities.
6. **Zone-of-saturation Landfills [s. NR 512.05 regarding potential alternative design from s. NR 504.06(4)(a), Wis. Adm. Code]:** The report concludes in subsection 5.2.2.2 that the site of the proposed expansion meets the definition of a “fine-grained soil environment” in s. NR 500.03(86), Wis. Adm. Code, because the shallow sand deposits and intermediate sand seam are not extensive and continuous across the proposed expansion, and the majority of the soil in the expansion area within 25 feet of the proposed subbase passes the #200 sieve. However, the geologic information for underneath the existing Boundary Road Landfill (BRL) is limited and the conclusion is based on a fair to significant amount of interpretation and extrapolation, using data collected outside the limits of existing waste. With the understanding that the existing landfill created limitations in the ability to collect the geologic data, the department’s position has always been that in order to conclude the site meets the fine-grained soil environment requirements, the evidence that is available should be strong enough so as to minimize (to the extent practicable) the need to rely on interpretations and extrapolations about the subsurface. In our experience, other landfill sites that have been determined to meet the fine-grained soil environment definition typically include soil boring logs and cross-sections that are dominated with clay soil and contain few to no sand seams or potentially non-plastic (e.g., silty) soil areas. These other sites often exhibit field hydraulic conductivities that tend to be lower, and plasticity indices that tend to be higher than what is reported at this site. Given the depositional environment for the soils at the proposed site, it seems reasonable that one should expect extensive sand and silty layers in the clay till. At this time, the department does not agree the geological information available conclusively shows the site is a fine-grained soil environment. Moreover, it remains questionable whether the information needed to clearly demonstrate a fine-grained soil environment is obtainable at this time.

Given the department’s current position, the department would be willing to discuss the potential for granting an exemption to the 10-foot separation to groundwater requirement, as specified in s. NR 504.06(2)(b), Wis. Adm. Code. WMWI may submit an exemption request with supporting justification

explaining how this situation is a special case and why an exemption is warranted. We considered this as an incompleteness item at this time because, if WMWI wishes to continue pursuing a design that does not meet the 10-foot separation to groundwater requirement, an exemption request should be submitted or the design modified to meet this requirement.

7. **General Facility Information [s. NR 512.07, Wis. Adm. Code]:** The report does not address whether seasonal fluctuations are anticipated for major waste streams; rather, only annual estimates are discussed in the report.
8. **Site-specific Geotechnical Information [ss. NR 512.09(1)(d) and s. NR 507.14(2)(a), Wis. Adm. Code]:** The report indicates that documentation of any soil mottling observed during field investigations is not applicable; however, no explanation is provided.
9. **Existing Conditions [s. NR 512.11(1), Wis. Adm. Code]:** The scale used to depict existing site conditions (Plan Sheet 3) is too small to clearly depict all of the existing infrastructure surrounding the proposed Southern Unit expansion. An additional existing conditions plan sheet with a minimum scale of 1 inch = 200 feet should be developed for all features within 1,000 feet of the proposed horizontal and vertical Southern Unit. The existing utilities on the east side of the proposed expansion must be clearly indicated on the existing conditions plan sheet.
10. **Existing Conditions [s. NR 512.11(1)(i), Wis. Adm. Code]:** The plan sheets indicate that the horizontal expansion waste limits are proposed to tie-in to the southwest corner of the existing East Expansion landfill. This area of the existing East Expansion landfill contains significant infrastructure including a leachate sump, a gravity flow underdrain pipe, underground utilities, leachate head well monitoring access points, etc. These items must be shown on an existing conditions plan sheet using a larger scale.
11. **Geologic Cross-sections [s. NR 512.11(2)(a), Wis. Adm. Code]:** The geologic cross-sections in the report lack dashed lines and/or question marks where inferred and/or questionable lithostratigraphic boundaries are depicted [e.g., intermediate coarse-grained deposits in geologic cross-sections E-E' and O-O' (Plan Sheets 8 and 18)]. Please note the examples cited are not a comprehensive list. The department requests you provide an explanation of whether those areas without additional soil boring information should be delineated as inferred or unknown. In cases where the lithostratigraphic boundaries are inferred (e.g., to “pinch out”), in particular where this applies to shallow/intermediate sand deposits within 25 feet of the proposed subbase, please provide additional rationale for making such inferences.
12. **Evaluation of the Capability of the Wastewater Treatment Plant (WWTP) to Accept Leachate [s. NR 512.13(3), Wis. Adm. Code]:** The report does not include an evaluation of the capability of the proposed WWTP to treat the leachate.
13. **Specialized Engineering Structures [s. NR 512.13(3), Wis. Adm. Code]:** The plan sheets indicate that the proposed waste limits include a small triangular area (Triangle Area) outside the BRL waste limits in the northwest corner of the proposed Southern Unit expansion. The area encompasses an existing leachate sump for the East Expansion and will require significant engineering modification to provide continued leachate removal from the sump. A description of the modification to the leachate sump that would be constructed with construction of Phase 5 Module 1 are needed at this time to confirm that operation of the sump is feasible with the proposed expansion. The Triangle Area also includes monitoring access point for at least one head well, LHW05E. Details of modifications to the head well(s) is needed to ensure continued monitoring of the head well with the proposed expansion. The Triangle Area also contains a buried gravity flow underdrain pipe for the existing East Expansion landfill. Details of the proposed

modifications to the gravity underdrain pipe are also needed to confirm operation of the gravity flow system is feasible with the proposed expansion.

14. **Preliminary Design in Accordance with ch. NR 504 [s. NR 512.14, Wis. Adm. Code]:** The report indicates that the liner design includes extended leachate collection pipes that are greater than 1,200 feet in length. The liner design also includes a section of 6:1 slope on the leachate pipes in the middle of the landfill. Section NR 504.06(6)(f), Wis. Adm. Code, requires landfills with leachate pipes greater than 1,200 feet to include sweep bends at all changes in alignment using a minimum radius of 10 pipe diameters and pipe alignments that minimize horizontal and vertical alignment changes. The proposed pipe bends in the middle of the landfill do not meet these requirements. Please propose a modified design that satisfies the code requirements for extend leachate pipes.
15. **Existing Sewer Hook-up [s. NR 512.14(2)(a), Wis. Adm. Code]:** The plan sheets do not include the proposed sewer hook-up along County Line Road.
16. **Proposed Physical Changes [s. NR 512.16(2)(a), Wis. Adm. Code]:** The report does not discuss the area outside the waste limits of both the BRL and the East Expansion landfill that will be part of the proposed Southern Unit expansion. The report also does not discuss the area within the BRL that is outside the proposed waste limits for the Southern Unit. The acreage of each area, the approximate soil and waste quantity to be excavated from each area and the quantity and source of soil backfill needed for the area of the BRL waste excavation that is outside the Southern Unit footprint must be included in the volume calculations.
17. **Proposed Physical Changes [s. NR 512.16(2)(b) and (d), Wis. Adm. Code]:** The report does not provide sufficient information on the anticipated discharge rates and volumes during active operations and following closure. In particular, the missing information includes estimated volumes and discharge rates for collected, and potentially impacted, groundwater from the proposed underdrain system. The report also does not address the emissions and discharges associated with the waste exhumation phase of landfill preparation and construction.
18. **Environmental Consequences [s. NR 512.16(4)(a), (d), and (e) Wis. Adm. Code]:** The report does not address physical impacts associated with the waste exhumation phase of landfill development. The report does not address potential impacts to cultural groups and communities/industries served by the landfill. The report should also address whether there are any probable adverse impacts associated with the waste exhumation.

B. ADDITIONAL INFORMATION NEEDED TO MAKE A FEASIBILITY DETERMINATION

The information below is needed to make a feasibility determination:

1. Does the 725-acre area specified for the overall WMWI property include the Omega Hills complex? The Omega Hills landfill and the Parkview landfill should both be listed on in subsection 3.1 as existing landfills within the complex.
2. Please confirm that the minimum liner slopes and maximum leachate flow distances, located within the small Triangle Area in the northwest corner of the proposed Southern Unit, comply with the requirements in s. NR 504.06 (5)(a) and (b), Wis. Adm. Code.

3. Please confirm the separation distance between the landfill’s permanent berm and the property line along the east side of the proposed Southern Unit expansion at the southern end of the landfill would meet the minimum 50-foot separation requirement in s. NR 504.09(2)(f.), Wis. Adm. Code.
4. Subsection 6.2 of the report states the leachate from the Southern Unit will be typical of that produced from the existing Orchard Ridge RDF. Please discuss the characteristics of leachate in BRL and whether that is expected to impact the leachate characteristics in the Southern Unit.
5. Subsection 10.4 of the report proposes intermediate waste grades that are 5% higher than final waste grades to allow for settlement. Plan Sheet 24 illustrates the final grades with final cover in place. Please provide a plan sheet with maximum intermediate waste grades that include the 5% waste overfill waste grades.
6. Subsection 1.5 of the report discusses ch.140, Wis. Adm. Code, groundwater standard exceedances. Please provide the following additional information regarding the reported exceedances:
 - a. Please clarify whether the elevated arsenic concentrations are attributable to any or all of the upgradient facilities owned or operated by WMWI. Please provide any available supporting information for your response or refer the department to the location(s) within the report wherein this is discussed and clearly demonstrated.
 - b. This subsection states that elevated chloride and sulfate concentrations above ch. NR 140, Wis. Adm. Code, groundwater quality standards “are caused by naturally occurring substances in groundwater, laboratory contaminants or errors, [and] road salt”. Please clarify whether any of the elevated chloride or sulfate concentrations are attributable to any or all of the upgradient facilities owned or operated by WMWI, including maintenance of private roads on its property. In cases where laboratory cross-contamination or error are concluded, please provide further evidence of this. Alternatively, to support these conclusions, please refer the department to the location(s) within the report wherein this is discussed and clearly demonstrated. Since the report states these exceedances are not attributed to the Orchard Ridge Landfill or East Expansion because they “have been designed and are being constructed, operated, and maintained in compliance with NR 500 requirements”, please clarify why WMWI believes their respective designs alone preclude these facilities as potential sources for contamination. Please provide additional documentation to support this conclusion or refer the department to the location(s) within the report wherein this is discussed and clearly demonstrated.
7. Subsection 8.2 of the report states that 400,000 cubic yards (cy) of clean soil will be available from phased removal of the BRL cover. Please clarify which layers of the BRL cover are included in this 400,000 cy. As noted, any treated soils are not considered clean soil and should be excluded.
8. Subsection 8.6 of the report states that “collected groundwater may be treated utilizing the existing passive storm water treatment system located adjacent to and part of Stormwater Basin 2”. Previous investigations of groundwater quality at the proposed expansion site have documented impacts to groundwater, including volatile organic compounds (VOCs), and metals. Please provide clarification of what is meant by “treatment”. Is the proposal to use the storm water system to remove VOCs and metals that may be in the collected groundwater, or is the treatment referred to simply the settlement of suspended solids? If the collected groundwater is found to contain VOCs or metals at concentrations of concern, then WMWI may need to propose a treatment method for those substances before the water is discharged to the storm water system under its WWTP permit.

9. The legend for the geologic cross-sections uses “PI” for plasticity index. However, “PL” is used on the cross-sections, which we infer to be plasticity limit. Table 5-3 in the report includes values under the plasticity index, which are the same values given on the cross-sections. Please clarify if the PL number provided on the cross-sections is really for the PI (plasticity index), since the department interprets the plasticity index (PI) = liquid limit (LL) – plasticity limit (PL).
10. Please clarify if the “Percent of waste from Orchard Ridge RDF service area” indicated in each landfill table in subsection 14.2.2.3 of the feasibility report is the percentage of overlap the Orchard Ridge service area has with that landfill’s service area.
11. Plan Sheet #26 should include the monitoring access points for the side slope leachate head wells.

C. ADDITIONAL COMMENTS

The following additional comment relates to site feasibility, the landfill design, construction or operation of the proposed facility. Please address this with your response to the items in Parts A and B above.

1. Subsection 8.5 of the report identifies material that may be difficult to visually differentiate between treated biosoil and decomposed waste as one of the materials that would be tested for beneficial reuse. The department understands that a more detailed site-specific waste removal plan would be proposed as part of, or prior to the plan of operation; however, note that the department expects any waste materials (non-final cover soils) would likely require disposal.

This incompleteness determination is not a denial of your proposal, but merely indicates that additional information is needed to continue the department’s review. Submittal of this information does not ensure a favorable determination, nor does it preclude the department from requiring additional information if continued review indicates it is needed. Upon receipt of the additional information, the department has 60 days to determine whether or not the feasibility report is complete. Please be aware if additional review indicates the feasibility report is twice incomplete, the department may require an additional plan review fee as specified in Table 3 (Note 1), ch. NR 520, Wis. Adm. Code.

Please do not hesitate to contact David Buser, Waste Management Hydrogeologist at (414) 263-8677 or David.Buser@wisconsin.gov, or Susan Fisher, Waste Management Engineer at (262) 574-2148 or susan.fisher@wisconsin.gov, if you have any questions about this letter.

Sincerely,



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Waste and Materials Management Program Supervisor
Southeast Region

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