712 Brook Street, Suite 103, Rocky Hill, CT 06067
Tel: 860.513.1473

MEMORANDUM

TO: Christopher Ketchen, Town Manager, Lenox, MA

FROM: Weston & Sampson

DATE: May 20, 2024

SUBJECT: Upland Disposal Facility Final Design Plan

Weston and Sampson Engineers, Inc. (Weston & Sampson) has reviewed the relevant technical documents and reports pertaining to the design of the proposed Upland Disposal Facility (UDF) for the GE-Pittsfield/Housatonic Rest of River Project. In this memorandum we provide our review comments on the landfill and geotechnical engineering aspects of the Project. The documents which were the primary focus of our review and comment efforts were as follows:

- *Upland Disposal Facility Final Design Plan*, Arcadis, February 2024.

To support this technical review, we also referred to the following documents for supporting information:

- *Revised Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area*, GE-Pittsfield/Housatonic River Site; Arcadis, January 2024.
- *Upland Disposal Facility, Operation, Monitoring, and Maintenance Plan*, GE-Pittsfield/Housatonic River Site; Arcadis, February 2024.

The format for this memorandum generally presents a brief bulleted synopsis of comments made on the Final Design Plan. The memorandum has two main sections focusing on Landfill Engineering and Geotechnical Engineering.

Landfill Engineering

The proposed final cover system components include 18" General Soil Fill as shown on Sheet 25 of the design plans and described in Technical Specification Section: 31 05 13, 2.01 Materials. This is the final cover system layer above drainage geocomposite and the Technical Specification references 3" minus soil and a permeability no greater than $1x10^{-4}$ cm/sec.

- *Comment #1:* Stones of 3" in size have the potential to damage the underlying geocomposite and geomembrane and it is typical to specify 1" minus soil material for this layer. Please provide justification for use of 3" minus materials.
- *Comment #2:* A maximum allowable permeability of $1x10^{-4}$ cm/sec is an order of magnitude higher than what is typically specified for a "drainage layer" material ($1x10^{-3}$ cm/sec). Soil with a permeability of $1x10^{-4}$ cm/sec or less will potentially limit the infiltration rate of water through this layer to the drainage geocomposite. This could result in saturated conditions in the above topsoil

layer potentially causing instability and excessive erosion. Please provide justification for use of lower permeability materials in this drainage layer.

Perimeter Berm & Anchor Trenches as shown on sheet 13 indicate three geosynthetic anchor trenches (liner system, cap system and geosynthetics extension) located along the perimeter berm.

- *Comment #3:* While this design works, it appears to be overly complicated and may be difficult to construct. Also, there is potential for leachate to fill and create a hydraulic head in the liner system anchor trench because the cap geomembrane is welded to the liner several feet outside of the liner anchor trench. Typically, in landfill designs, the cap geomembrane is welded to the liner geomembrane before the liner anchor trench, which eliminates the potential for leachate sitting in the anchor trench. This would also eliminate the need for the geosynthetics extension and its anchor trench. Please consider revising this detail.

PVC Gas Vents detail as shown on sheet 38.

- *Comment #4:* The landfill gas vents are designed to be SCH 40 PVC; please consider specifying SCH 80 for additional strength. These vents are subject to damage from UV exposure, weather, and post closure maintenance activities (mowing). The extra strength will help prolong the life of these vents.
- *Comment #5:* The bottom of the PVC gas vent pipe is perforated to allow the collection of landfill gas. The detail shows previously excavated consolidated soils to be used as backfill around the perforated pipe. It is recommended that a stone filter backfill be used in place of the soil to allow better gas collection and to prevent soil from migrating into or clogging the perforations.

There are no plans or specifications for electrical supply and control panels. It is assumed that these will be developed at a later date.

- *Comment #6:* Electrical supply and control panels are integral to the operation of the UDF, and these plans should be provided prior to construction.

The Paved Entrance Road, as shown on the construction drawings (sheet 35) show pavement thicknesses of 1-$^1/_2$" top course and 2-$^1/_2$" binder course. Technical specification 32 12 00, section 2.0, specifies pavement thicknesses of 2" top course and 4" binder course.

- *Comment #7:* Provide clarification of pavement thicknesses.

Leachate Conveyance Pipe as shown on the construction plans (sheet 20) specify HDPE SDR 21 for the dual contained leachate pipe from the leachate vaults to the storage tanks. The HDPE technical specification, section 33 05 33 specifies SDR 26 for this pipe.

- *Comment #8:* Please clarify the type of pipe to be used.
- *Comment #9:* There are no pipe spacers between the carrier pipe and the containment pipe. Consider using pipe manufactured with spacers to prevent damage to the carrier pipe.

The HDPE pipe specification, section 33 05 33 specifies 80-mil HDPE geomembrane for leachate pipe boots. All other geomembrane in the design is 60-mil thickness.

- *Comment #10:* Please clarify if the 80-mil thickness is correct.

In general, based on our review of the Final Design Plan, the UDF design meets the requirements for a hazardous waste landfill as specified under Subtitle C of the Resource Conservation and Recovery Act (RCRA). The basic requirements of a Subtitle C landfill include double liner system, double leachate collection and removal systems, leak detection system, and stormwater run-on/runoff controls, which the UDF includes as part of its design. However, we recommend that the GE and their contractors address the comments above.

We also recommend that GE and their contractors expedite provision of details concerning additional UDF operational support areas needed for activities associated with hydraulic dredging and pumping. The handling, dewatering, placement, and compaction of hydraulically dredged sediment is intrinsic to the design and operation of the UDF. Section 31 22 00 requires that consolidation material be compacted to 90%. This degree of compaction for hydraulically dredged material will require significant unit operations for dewatering pumped sediment slurry, such as geotubes, centrifuge, filter press, or other suitable means. Section 5.2 of the Final Design Report suggests that slurry will be placed directly into the UDF cells, however, the means and methods for this approach is lacking in specifics. Details should be provided on how the slurry material will be managed, dewatered within the cells so that material compaction criteria can be met.

If dewatering of slurry is proposed for outside the UDF cells, the operational support areas to conduct slurry dewatering have not been identified in the Final Design Plan. Based on the extents of proposed site grading and development, it is unclear where such additional operational footprints could be located within the site boundaries. Information should be provided on any additional footprint needed and, if it is on a different parcel, property, or other area of the Lane property, its' availability for purchase, lease, or use on the project should be clarified. The scenario whereby hydraulic dredging (which has the great benefit of eliminating trucking) is determined at a later point in the project planning and design process to be unfeasible due to lack of available and suitably sized footprint for slurry dewatering operations should be avoided.

Geotechnical Engineering

Specification 31 22 00 indicated that the Consolidated Materials in the UDF shall have a minimum unconfined compressive strength of 10 psi.

- Comment #1: The specification does not indicate what test method is to be used to measure this value and this should be provided.
- Comment #2: Please provide calculations showing that placement of the consolidated materials to a compressive strength of 10 psi is consistent with the geotechnical material properties assumed for the slope stability and settlement analyses.