



## HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE

October 6, 2023

Dean Tagliaferro, EPA Project Manager  
GE-Pittsfield/Housatonic River Site  
Boston, MA  
Submitted via email to [R1Housatonic@epa.gov](mailto:R1Housatonic@epa.gov)

Re: Comments on the *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area*

Dear Mr. Tagliaferro:

The Housatonic Rest of River Municipal Committee (the Committee) respectfully submits the following comments on the *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area* (hereinafter, the UDF PDI Summary Report). The UDF PDI Summary Report builds on the Interim PDI Data Summary submitted in December 2022 and presents data and information obtained during implementation of the PDI activities through June 2023. Additional PDI activities are ongoing and are planned to be completed in late 2023. The results of those activities will be presented in an addendum to this UDF PDI Summary Report. The UDF Final Design Plan is due 60 days after EPA approval of the Final PDI Summary.

The Housatonic Rest of River Municipal Committee submitted comments on the *Upland Disposal Facility (UDF) Conceptual Design and UDF Pre-Design Investigation (PDI) Interim Data Summary* on February 13, 2023. At that time the Committee requested that Interim UDF Design Plan be developed and an independent and impartial contractor with appropriate expertise be engaged to provide a comprehensive presentation to the public at the 75% design phase (or thereabouts). This would allow an interactive review of the proposed design during a public meeting where the design is presented for discussion prior to being finalized. There are questions of particular importance to the community (such as protectiveness of UDF activities to human health, aesthetics, transportation routes, times of operation etc.) that could benefit the final design. The Committee remains concerned with advancing directly to the UDF Final Design Plan without an interim plan available for review and public comment. GE should be required to prepare and submit an Interim UDF Design Plan available for public comment and should include a responsiveness summary summarizing public questions/concerns provided during the meeting, and how GE addressed those questions/concerns in the final design.

The Committee's comments on the *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area* are enclosed as Attachment A. In addition, the Committee has contracted to conduct an independent review, which is enclosed as Attachment C.

Sincerely,  
The Housatonic Rest of River Municipal Committee

Enclosure: Attachment A - Housatonic Rest of River Municipal Committee Comments on the *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area*

Enclosure: Attachment B - Technical Assistance Services for Communities Comments, September 26, 2023

Enclosure: Attachment C – TRC Technical Review of *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area*, September 21, 2023

## ATTACHMENT A

### HOUSATONIC REST OF RIVER MUNICIPAL COMMITTEE

#### Comments on the Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area GE/Housatonic River - Rest of River

The safety of the UDF is of utmost concern to the Housatonic Rest of River Municipal Committee (the Committee) and the community must have the ability to be actively engaged in review of these documents throughout the UDF design process. In addition to the technical review provided by Skeo under the Technical Assistance to Services to Communities (TASC) contract, the Committee has contracted with TRC to conduct an independent review of the *Final Pre-Design Investigation Summary Report for Upland Disposal Facility Area* (hereinafter, the UDF PDI Summary Report). This independent review can be found as Attachment C.

The Committee offers the following comments:

1. The Statement of Work describes the essential elements required for the UDF PDI Summary Report within Section 4.2.2.2 Pre-Design Investigation Summary Report. A component of the required document is an understanding of the UDF Support Areas, which have yet to be identified. The identification of the location and use of the Support Areas is essential to understand if the designed and ongoing monitoring efforts currently included in the UDF PDI Summary Report are complete and would be expected to capture the potential impacts attributable to these areas.

*The absence of understanding the Support Areas location and function represents a significant gap in understanding if the ongoing monitoring is sufficient to capture all future UDF impacts.*

2. The 2022 EPA conditional approval letter for the PDI Work Plan identifies outstanding items to be addressed as part of continued UDF monitoring and design efforts. Outstanding items included the need for GE to discuss with EPA if the deep borings advanced to at least 910 feet indicate the presence of any potential confining or restrictive layers and if there is a need for additional deep borings to better understand the geological setting beneath the UDF. As per information provided in the UDF PDI Summary Report, on pdf page 25, the restrictive or confining layer of underlying marble bedrock occurs at depths ranging from 909.5 feet at MW-2022-3 to about 957.5 feet at MW-2022-1. However, the conceptual location of the bedrock layer is shown to be at elevations greater than 957.5 feet (refer to Figure 7, pdf page 301). In addition, the document does not describe whether the other encountered subsurface geologic layers (silt, clay – shown in Figures 7 and 8, pdf pages 301 and 302) would be expected to be restrictive or confining layers.

*It is important to thoroughly understand the presence or absence of confining or restrictive layers in the subsurface. GE should provide additional detail and consistency with regard to clarifying the presence of any potential confining or restrictive layers.*

3. Based on the limited geotechnical data provided, it cannot be confirmed that a demonstration has been made that the design will provide long-term stability and protectiveness of the environment and human health. We do recognize that the reports are part of a pre-design investigation and that detailed

geotechnical analyses (slope stability, settlement, etc.) are forthcoming and will be provided as the design progresses.

*Detailed geotechnical analyses should be provided as part of an interim conceptual design plan and made available for review before proceeding to final design.*

4. Section 3.5 of the UDF PDI Summary Report documents the installation of six piezometers and eleven monitoring wells to support the proposed water level monitoring and groundwater sampling.

*A shallow and deeper monitoring well arrangement at the MW 2022-1 location is recommended rather than replacing MW 2022-1 with a single monitoring well, as proposed in the document. This would allow for ongoing monitoring of groundwater elevations and the resultant vertical component of groundwater flow. Additional short-term (baseline) and long-term monitoring wells may also be needed depending on the plans for and location(s) of the UDF Support Area(s), which have not been provided yet, including any locations for the performance of sediment management or dewatering on the Property.*

5. The statements at the end of Section 3.6.2 regarding the proposed design separation of the UDF baseliner system and the estimated seasonally high groundwater elevations within the UDF Consolidation Area seem premature given the limited information on the proposed design elevations presented in the UDF Conceptual Design Plan.

*EPA should require GE to provide adequate elevation details for the baseliner system in an Interim UDF Design Report to verify compliance with this important Performance Standard.*

6. The UDF PDI Summary Report indicates that the adjacent property retains active mining operations. The document states “westerly ponds (contained within the Eurovia property) remain in active use as part of the gravel pit operation ongoing...” (pdf page 20) and “greenish color of the pond water, which reflects the suspended silts and clays consistent with the use of the pond for settling as part of that operation” (footnote five, pdf page 21). It is not clear if GE intends to manage the overlapping ponds (fill in certain ponds for the construction of the consolidation area) or if GE will work cooperatively with the landowner to maintain the ponds for gravel operations.

*The status of the adjacent quarry could be accurately and consistently depicted throughout the document (whether it is currently in use or not). Potential conflicts to future quarry use or closure (such as the use of pond surface water levels as an indirect measure of groundwater levels) should be acknowledged and discussed to ensure that future potential changes in the mining operation do not affect the validity of the UDF groundwater monitoring network.*

7. The measured groundwater elevations and the modeled groundwater elevations using the Frimpter Method yield levels routinely greater than the permit performance standard threshold of 950 feet above mean sea level. This is allowable as per the permit standards that state “if the seasonally high groundwater elevation is determined to be higher than 950 feet above mean sea level, the maximum elevation of the landfill consolidation area may be increased by the number of feet that is the difference between the seasonally high groundwater elevation and 950 feet above mean sea level in order for the UDF to have a maximum capacity of 1.3 million cubic yards” (pdf pages 59 – 60 of the Revised Final Permit). The difference between the seasonally high groundwater elevation and 950 feet (referred to

as difference values) varies by monitoring well/piezometer location. Estimated difference values occur from a minimum of 3.9 feet above mean sea level (MW-2022-4S) to a maximum of 27.85 feet above mean sea level (MW-2022-1S). These results reveal a very dynamic groundwater system, which highlight several questions and concerns as follows:

- It is important to know the conservative elevation for the bottom of the UDF that will contain the waste within the performance standard requirement of 20 acres at a level of 15 feet above the highest groundwater elevation. It is also important to understand how this conservative elevation will affect the maximum elevation (defined as 1,099 feet to be adjusted based on the estimated elevated groundwater level – described in the permit on pdf pages 59-60, 5.a.(2)(b)) that will be required to accommodate this design.
- The highest groundwater levels occur in the northeast area of the GE parcel, which is considered upgradient and would capture background or groundwater conditions unaffected by UDF influences. Creation of a landfill feature may cause the groundwater flow pathway (from the northeast to the southwest) to diverge, thereby creating new/affected groundwater pathways. It is important to be sure that the planned monitoring well field will capture these potentially new groundwater pathways.

*GE should be required to determine whether the dynamic groundwater levels will affect the usable amount of UDF area available that will meet UDF performance standard requirements, and if the groundwater monitoring design network will be able to identify effects of the UDF on groundwater flow pathways (which may in turn, influence the monitoring well field design).*

8. The document states that wells MW-2022 1S and 1D were found to be of limited use and will be replaced. However, these wells yielded the highest levels of groundwater and co-occur within an area with the highest bedrock levels. In addition, PFAS results for groundwater samples were detected at levels greater than the Method 1 groundwater standards used to determine potential environmental effects resulting from contaminated groundwater discharging to surface water. Furthermore, the area where these wells occur is upgradient of the consolidated area of the UDF; therefore, the water quality provides a measure of pre-UDF disturbance. All of these conditions exemplify the importance of maintaining monitoring wells in this location. If GE plans to install a replacement well or wells, this effort should be accomplished in the very near future to continue to capture upgradient groundwater quality conditions. In addition, if GE plans to install a new well to replace MW-2022 1S and 1D, it is recommended that the soils be characterized (similar to the monitoring wells soils analysis performed during the PDI) to include PFAS analysis to assist with the delineation of possible PFAS contamination.

*The replacement well for wells MW-2022-1S and 1D should be installed in the near future to capture a continuum of groundwater quality characterization. Soils from installation of the new well should be tested for PFAS in addition to the standard suite of soil quality chemical analysis.*

9. The UDF PDI Summary Report captures one year of groundwater elevation monitoring including one month of temporal overlap (June). Comparison of the measured groundwater levels between June 2022 and June 2023 show a decrease in groundwater levels for all wells measured. The results highlight the importance of continued monitoring to capture additional, seasonal/annual trends in the groundwater level data. The report, states that the final groundwater sampling event to test for environmental

quality is scheduled for fall 2023. It is unclear if groundwater level monitoring will continue. While the amount of information captured to date represents a robust dataset from which to draw conclusions regarding trends, this divergence of data in one year demonstrates the need to continue monitoring. The report indicates that additional field activities are ongoing but does not mention if these include continued groundwater level monitoring. In addition, text provided on pdf page 30 states “the monitoring wells may remain in service for continued monitoring” indicating that it is unknown how future monitoring will be accomplished.

*GE should clarify whether groundwater level monitoring will be collected in fall 2023 and if it will continue during and after the UDF construction to capture year-to-year trends.*

10. Figures 7 and 8 depict the geological cross section profiles for transects A – A’ and B – B’ that traverse the GE parcel. Results shown in Figure 7 depict a bedrock marble layer with a surface elevation of about 960 feet to 965 feet above mean sea level. The groundwater levels within this area also range in the highest measured levels across the GE parcel and are likely in relation to this geological feature. The bedrock feature and elevated groundwater levels may pose issues for the design of the UDF in regard to being able to achieve the UDF performance standards.

*GE and EPA should clarify whether bedrock and groundwater levels in the eastern area of the proposed consolidation area will pose concerns for the UDF design.*

11. Figures 9 through 21, on pdf pages 303 through 315, depict measured groundwater elevations by sampling effort (June 2022 through June 2023). Several observations were noted for these figures as follows:

- The boundary of the consolidation area (bold dashed line) needs to be added as a feature to the legend.
- The figures show that the upgradient or the highest groundwater levels occur to the north/northeast. It is important to continue to characterize upgradient/background groundwater quality through the duration of UDF use and post-closure. There appears to be spatial gaps in this upgradient area that may benefit from additional monitoring wells. Specifically, this includes two areas: 1) there are no monitoring wells between MW-2022-1S/1D and MW-2022-7, and 2) between MW-2022-7 and MW-84-1. There are two piezometers (PZ-2022-8 and PZ-2022-7) in this area; however, as stated in the document, on pdf page 30, “prior to UDF construction, the piezometers will be abandoned in place.” In addition, the Support Areas may be placed in this area and should be monitored closely as there is the potential for spills of contaminated materials. *Additional monitoring wells in these two areas should be considered.*
- It is also important to recognize that wells MW-2022-1S and 1D, PZ-2022-8, PZ-2022-7 and MW-84-1 are valuable for future upgradient monitoring of the consolidation area and the potential support areas that have yet to be defined. The document, on pdf page 30, states that MW-2022-1S and 1D are to be replaced. Well MW-84-1 is associated with the Lee Landfill; therefore it is unknown if GE has access to or intends to use this well in the future. *The continued use of these wells for monitoring should be acknowledged.*
- The pond that overlaps the GE parcel and the adjacent quarry area (located between MW-2022-3 and MW-2022-4 and is sampled for surface water levels at site MP-1, shown in Figure 6 pdf page

300) demonstrates to be a groundwater sink (an area where groundwater is moving toward) as shown in the repeated groundwater contours for each map. This indicates that this pond may be a useful surface water quality monitoring feature for PCB analysis in the future after the UDF is in use. *The use of the pond's surface water for future PCB monitoring should be considered.*

- The figures were developed with the use of modeling to infer groundwater level contours. It seems that this same method could shade or outline the area within each map that meets UDF construction performance standards in order to visualize the amount of area available for UDF construction. *The revision of these figures to incorporate a modeled UDF consolidation area footprint based on performance standard compliance should be considered.*

*Based on these findings, EPA should require additional deeper monitoring wells to establish well couplets at the MW 2022-3 location and the MW 2022-6 location. A downgradient well couplet is already present at the MW 2022-4 location. This would provide a more robust downgradient monitoring well network that could account for the occasional, slight downward vertical gradient exhibited by the manual monitoring data.*

10. Table 7A-1, on pdf pages 189 to 196, provides a summary of the groundwater environmental quality testing results. The analytical testing is robust and includes suites of chemicals of interest to the community including dioxins and PFAS. Dioxins are detected in the surface soil fraction of soils gathered during the PDI (Table 4A, pdf pages 53-167). These concentrations are likely typical of industrial soils. Dioxins were generally not detected in groundwater; however, continued monitoring of groundwater for these chemical constituents would help understand if these chemicals are migrating from the soil to the groundwater. Continued monitoring of these same suites of chemicals (dioxins and PFAS) is extremely valuable to the community and would assist in understanding soil-to-groundwater relationships in the UDF area.

*The groundwater monitoring should continue to include the suites of analysis listed in Table 7A-1 (particularly in reference to the dioxins and PFAS chemicals).*

11. The Committee previously commented on the discrepancies noted between chemical analysis results shown in the comparative GE and EPA Quality Testing Split Results. The purpose of collecting split samples is to verify the accuracy and precision of sample collection and analysis. To date the results provided within GE documents have summarized these results in general narrative terms. The use of split analysis of sampled media will be of particular value and importance when the UDF becomes active. The issues shown in the incomparability between the split sample analysis should be acknowledged and addressed prior to UDF monitoring when waste materials management procedures are in place.

*The discrepancies in the GE and EPA split sample analysis must be addressed prior to UDF monitoring when the UDF is active.*

12. The UDF PDI Summary Report states that to the extent that mitigation for the loss of resource areas is required, mitigation options will be addressed in the UDF Final Design Plan, along with any additional data collection necessary for such mitigation. Possible mitigation areas should be identified during this period of ongoing monitoring since the information would capture seasonal considerations that

influence important mitigation area features such as stormwater pathways, species occurrence and migration patterns and other possible habitat characteristics (vegetation diversity and density).

*GE should proactively incorporate mitigation planning and incorporate seasonal monitoring for future mitigation area considerations as part of the continued field efforts to be accomplished until (and perhaps beyond) the production of the Final UDF Design Plan.*

# Attachment B



## Technical Assistance Services *for* Communities GE-Pittsfield/Housatonic River Site Comments on Upland Disposal Facility (UDF) Pre-Design Investigation (PDI) Summary Report September 26, 2023

**Contract No.:** 68HERH21A0018

**Call Order Number:** 68HERH22F0082 (14.0.0 OSRTI – Regional & Headquarters  
TASC/CI Support)

**Technical Direction:** R1 2.9.14 GE Pittsfield

**Technical Assistance Services for Communities (TASC)  
Comments on GE-Pittsfield/Housatonic River Site – UDF PDI Summary Report,  
August 2023**

### **Introduction**

This document provides TASC comments on the GE-Pittsfield/Housatonic River, Rest of River – Upland Disposal Facility (UDF) Final Pre-Design Investigation (PDI) Summary Report for UDF Area (UDF PDI Summary Report). This document is for the Berkshire Regional Planning Commission (BRPC), the Town of Lee, the City of Pittsfield and other entities to use as they develop comments to share with the U.S. Environmental Protection Agency (EPA). TASC does not make comments directly to EPA on behalf of communities. This document is funded by EPA’s TASC program. The contents do not necessarily reflect the policies, actions or positions of EPA.

Pursuant to the Revised Resource Conservation and Recovery Act (RCRA) Permit Modification (Revised Final Permit) issued by EPA to the General Electric Company (GE) on December 16, 2020, for the Rest of River (ROR) portion of the GE-Pittsfield/Housatonic River site, GE is required to conduct a remedial action for the ROR. The selected ROR remedial action includes a provision for GE to construct and utilize a UDF at the former Lane site for the disposal of certain sediments and soils removed as part of the remedial action.<sup>1</sup> The PDI Work Plan for the UDF was submitted to EPA on November 24, 2021, in accordance with the Final Revised Statement of Work (SOW). It included descriptions of desktop, field and laboratory-based activities necessary to acquire information for design of the UDF. Additional requirements for the PDI were in EPA’s February 25, 2022, conditional approval letter for the PDI Work Plan. More requirements for the Final PDI Summary were in EPA’s April 18, 2023, conditional approval letter for the Interim PDI Data Summary. This document, the UDF PDI Summary Report, builds

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<sup>1</sup> The former Lane site is a 75-acre property that was formerly part of an active sand and gravel quarry. GE acquired the property from The Lane Construction Corporation in April 2021.



on the Interim PDI Data Summary and presents data and information obtained during implementation of the PDI activities through June 2023. Additional PDI activities are ongoing and are planned to be completed in late 2023. The results of those activities will be presented in an addendum to this UDF PDI Summary Report. The UDF Final Design Plan is due 60 days after EPA approval of the Final PDI Summary.

## **Summary**

The August 2023 UDF PDI Summary Report has five sections:

- Introduction.
- Site Background and Historical Site Data Summary.
- Pre-Design Investigation and Data Summary and Evaluation.
- Schedule and Addendum.
- References.

The purpose of the UDF PDI Summary Report is to describe the investigations conducted through June 2023 and the acquired data that will support engineering evaluations and detailed planning and design of the UDF. In general, the PDI activities and investigations included an assessment of the habitat at the parcel; a survey of existing site features, subsurface conditions, groundwater and soils; weather monitoring; and a cultural resource assessment and intensive archaeological survey of selected areas within the GE parcel.

The UDF Support Area will be defined in the UDF Final Design Plan. The final PDI groundwater sampling event to test for environmental quality is scheduled for fall 2023. The results of the groundwater sampling will be included in the addendum to the UDF PDI Summary Report.

## **TASC Comments**

TASC reviewed the UDF PDI Summary Report to determine if it meets the requirements set forth in the SOW, the Revised Final Permit and EPA's 2022 conditional approval letter for the PDI Work Plan. In addition, TASC revisited previously provided comments generated from the review of:

1. GE-Pittsfield/Housatonic River Site Pre-Design Investigation Work Plan for Upland Disposal Facility (December 2021).
2. GE-Pittsfield/Housatonic River Site – UDF Conceptual Design Plan (December 2022).
3. GE-Pittsfield/Housatonic River Site – UDF Pre-Design Investigation Interim Data Summary (December 2022).

TASC's review of the UDF PDI Summary Report focused on the application of UDF design performance standards as described in the SOW and the Final Revised Permit. The performance standards are dependent on measured and modeled groundwater elevations. These levels are critical to the design and capacity of the UDF to keep the contained polychlorinated biphenyl (PCB)-contaminated waste from coming in contact with groundwater. Enough groundwater

information has been obtained to understand an annual trend in groundwater levels and to begin the design of the UDF.

TASC identified comments associated with the monitoring design (the need for more thorough monitoring upgradient within areas unaffected by the UDF) and groundwater quality data analysis. Specific TASC comments are:

1. The next document deliverables following this UDF PDI Summary Report will include an addendum to the Final PDI Summary (to include the fall 2023 groundwater monitoring results) and the UDF Final Design Plan. The Final PDI Summary addendum will incorporate data gathered in fall 2023 and any adjustments accommodating comments and review of the previous deliverables. The UDF Final Design Plan will present the final engineering design of the UDF. TASC previously commented (TASC review of the UDF Conceptual Design Plan and UDF PDI Interim Data Summary, December 2022) that community members may want to ask GE to provide a comprehensive presentation of the final proposed design to the public. Community members may also want to request that GE provide a response to comments in the UDF Final Design Plan for the community to track and understand how their previous concerns were addressed or why they were not addressed. An interactive public meeting will benefit the community and GE by providing a forum to actively discuss UDF design aspects of particular concern. Since significant, outstanding UDF components are unknown (e.g., placement of Support Area features and possible monitoring components to capture Support Area features), it seems particularly important to discuss and describe the UDF footprint in its entirety to the community. Topics of concern and interest may include, but are not limited to, Support Area design and monitoring, air monitoring and per- and polyfluoroalkyl substances (PFAS) in groundwater.

*Given the important concerns that the public has regarding design of the UDF, the community may want to ask EPA if GE could provide a presentation at a public meeting describing the UDF final design, and if it would be appropriate for GE to incorporate a response to community comments within the UDF Final Design Plan. The public meeting would allow for an exchange between GE and the community so that GE could understand community questions and concerns and address them in the UDF final design.*

2. The SOW, on pdf page 47, describes the essential elements required for the UDF PDI Summary Report within Section 4.2.2.2 Pre-Design Investigation Summary Report. A component of the required document is an understanding of the UDF Support Areas, which have yet to be identified. The identification of the location and use of the Support Areas is essential to understand if the designed and ongoing monitoring efforts currently included in the UDF PDI Summary Report are complete and would be expected to capture the potential impacts attributable to these areas.

*The community may want to ask EPA if the absence of understanding the Support Areas location and function represents a significant gap in understanding if the ongoing monitoring is sufficient to capture all future UDF impacts.*

3. The 2022 EPA conditional approval letter for the PDI Work Plan identifies outstanding items to be addressed as part of continued UDF monitoring and design efforts. Item #36, on pdf page 7 of the letter, describes the need for GE to discuss with EPA if the deep borings advanced to at least 910 feet indicate the presence of any potential confining or restrictive layers and if there is a need for additional deep borings to better understand the geological setting beneath the UDF. As per information provided in the UDF PDI Summary Report, on pdf page 25, the restrictive or confining layer of underlying marble bedrock occurs at depths ranging from 909.5 feet at MW-2022-3 to about 957.5 feet at MW-2022-1. However, the conceptual location of the bedrock layer is shown to be at elevations greater than 957.5 feet (refer to Figure 7, pdf page 301). In addition, the document does not describe whether the other encountered subsurface geologic layers (silt, clay – shown in Figures 7 and 8, pdf pages 301 and 302) would be expected to be restrictive or confining layers.

*The community may want to ask EPA if the requests presented in item #36 of the 2022 conditional approval letter have been met in order to thoroughly understand the presence or absence of confining or restrictive layers in the subsurface. Moving forward, the community may want to ask EPA to ask GE to provide additional detail in terms of how items in EPA's conditional approval letter have been addressed and to add more detail about the geology.*

4. TASC has raised several questions related to the status of the adjacent gravel quarry (Northeast Paving, a division of Eurovia Atlantic Coast, LLC). The UDF PDI Summary Report indicates that the adjacent property retains active mining operations. The document states “westerly ponds (contained within the Eurovia property) remain in active use as part of the gravel pit operation ongoing...” (pdf page 20) and “greenish color of the pond water, which reflects the suspended silts and clays consistent with the use of the pond for settling as part of that operation” (footnote five, pdf page 21). It is not clear if GE intends to manage the overlapping ponds (fill in certain ponds for the construction of the consolidation area) or if GE will work cooperatively with the landowner to maintain the ponds for gravel operations.

*The community may want to ask EPA if the status of the adjacent quarry could be thoroughly and accurately depicted throughout the document (whether it is currently in use or not). Potential conflicts to future quarry use or closure (such as the use of pond surface water levels as an indirect measure of groundwater levels) should be acknowledged and discussed to ensure that future potential changes in the mining operation do not affect the validity of the UDF groundwater monitoring network.*

5. TASC discussed the need for mitigation area identification and incorporation into UDF design plans during review of the UDF Conceptual Design Plan during previous document reviews. This document indicates that continued monitoring up until the production of the final design is planned and states (pdf page 21, footnote six), “As indicated in the habitat assessment report in Appendix C, the impacts on the identified resource areas from the construction and operation of the UDF and UDF support facilities

will be evaluated further and, to the extent that mitigation for the loss of resource areas is required, mitigation option will be addressed in the UDF Final Design Plan, along with any additional data collection necessary for such mitigation.” Once again, TASC suggests the need to identify possible mitigation areas during this period of ongoing monitoring since the information would capture seasonal considerations that influence important mitigation area features such as stormwater pathways, species occurrence and migration patterns and other possible habitat characteristics (vegetation diversity and density).

*The community may want to ask EPA if seasonal monitoring for future mitigation area considerations is included as part of the continued field efforts to be accomplished until (and perhaps beyond) the production of the Final UDF Design Plan.* In addition, the community may want to ask the EPA if it is appropriate for GE to proactively incorporate mitigation planning as part of the forthcoming UDF Design Plan.

6. The measured groundwater elevations (Table 6A, pdf page 182) and the modeled groundwater elevations using the Frimpter Method (Table 6B, pdf page 183) yield levels routinely greater than the permit performance standard threshold of 950 feet above mean sea level. This is allowable as per the permit standards that state “if the seasonally high groundwater elevation is determined to be higher than 950 feet above mean sea level, the maximum elevation of the landfill consolidation area may be increased by the number of feet that is the difference between the seasonally high groundwater elevation and 950 feet above mean sea level in order for the UDF to have a maximum capacity of 1.3 million cubic yards” (pdf pages 59 – 60 of the Revised Final Permit). The difference between the seasonally high groundwater elevation and 950 feet (referred to as difference values) varies by monitoring well/piezometer location. Estimated difference values (example calculated value for MW-2022-1S from Table 6B (pdf page 183) of  $975.85 - 950 = 25.85$  ft) occur from a minimum of 3.9 feet above mean sea level (MW-2022-4S) to a maximum of 27.85 feet above mean sea level (MW-2022-1S) (Table 6B). These results reveal a very dynamic groundwater system, which highlight several questions and concerns as follows:
  - It is important to know the conservative elevation for the bottom of the UDF that will contain the waste within the performance standard requirement of 20 acres at a level of 15 feet above the highest groundwater elevation. It is also important to understand how this conservative elevation will affect the maximum elevation (defined as 1,099 feet to be adjusted based on the estimated elevated groundwater level – described in the permit on pdf pages 59-60, 5.a.(2)(b)) that will be required to accommodate this design.
  - The highest groundwater levels occur in the northeast area of the GE parcel, which is considered upgradient and would capture background or groundwater conditions unaffected by UDF influences. Creation of a landfill feature may cause the groundwater flow pathway (from the northeast to the southwest) to diverge, thereby creating new/affected groundwater pathways. It is important to be sure that the planned monitoring well field will capture these potentially new groundwater pathways.

*The community may want to ask EPA if the dynamic groundwater levels will affect the usable amount of UDF area available that will meet UDF performance standard requirements, and if the groundwater monitoring design network will be able to identify effects of the UDF on groundwater flow pathways (which may in turn, influence the monitoring well field design).*

7. The document, on pdf page 29, states that wells MW-2022 1S and 1D were found to be of limited use and will be replaced. These wells yielded the highest levels of groundwater and co-occur within an area with the highest bedrock levels. In addition, PFAS results for groundwater samples were detected at levels greater than the Method 1 groundwater standards (pdf pages 189-190 for 1D, and 197 – 198 for 1S) used to determine potential environmental effects resulting from contaminated groundwater discharging to surface water (referred to as GW-1 and GW-3 standards, described on pdf page 35 of the document). Furthermore, the area where these wells occur is upgradient of the consolidated area of the UDF; therefore, the water quality provides a measure of pre-UDF disturbance. All of these conditions exemplify the importance of maintaining monitoring wells in this location. If GE plans to install a replacement well or wells, this effort should be accomplished in the very near future to continue to capture upgradient groundwater quality conditions. In addition, if GE plans to install a new well to replace MW-2022 1S and 1D, it is recommended that the soils be characterized (similar to the monitoring wells soils analysis performed during the PDI) to include PFAS analysis to assist with the delineation of possible PFAS contamination.

*The community may want to ask EPA if installation of the proposed replacement well for wells MW-2022-1S and 1D will occur in the near future to capture a continuum of groundwater quality characterization. Since PFAS results for groundwater samples are being investigated by Massachusetts DEP, and these chemicals were detected at levels greater than the Method 1 groundwater standards, it could be important to analyze the soils from installation of the new well for PFAS in addition to the standard suite of soil quality chemical analysis.*

8. Table 6A of the UDF PDI Summary Report provides groundwater elevation monitoring results for monitoring wells Lee Landfill wells, piezometers and two surface water features (MP-1, Gravel Pond and MP-2, Housatonic River). The results in the table capture one year of monitoring including one month of temporal overlap (June). Comparison of the measured groundwater levels between June 2022 and June 2023 show a decrease in groundwater levels for all wells measured. The decreases range from 0.04 feet to 10.41 feet. The results highlight the importance of continued monitoring to capture additional, seasonal/annual trends in the groundwater level data. The document, on pdf page 36, states that the final groundwater sampling event to test for environmental quality is scheduled for fall 2023. It is unclear if groundwater level monitoring will continue. While the amount of information captured to date represents a robust dataset from which to draw conclusions regarding trends, this divergence of data in one year demonstrates the need to continue monitoring. The document, on pdf page 11, indicates that additional field activities are ongoing but does not mention if these include continued groundwater

level monitoring. In addition, text provided on pdf page 30 states “the monitoring wells may remain in service for continued monitoring” indicating that it is unknown how future monitoring will be accomplished.

*The community may want to ask EPA if groundwater level monitoring will be collected in fall 2023 and if it will continue during and after the UDF construction to capture year-to-year trends.*

9. Figures 7 and 8 depict the geological cross section profiles for transects A – A’ and B – B’ that traverse the GE parcel. Results shown in Figure 7 depict a bedrock marble layer with a surface elevation of about 960 feet to 965 feet above mean sea level. The groundwater levels within this area also range in the highest measured levels across the GE parcel (highest measured groundwater elevations in May 2023 for MW-2022-1S at 973.15 feet above mean sea level and MW-2022-1D at 972.89 feet above mean sea level) and are likely in relation to this geological feature. The bedrock feature and elevated groundwater levels may pose issues for the design of the UDF in regard to being able to achieve the UDF performance standards.

*The community may want to ask EPA if the bedrock and groundwater levels in the eastern area of the proposed consolidation area will pose concerns for the UDF design.*

10. Figures 9 through 21, on pdf pages 303 through 315, depict measured groundwater elevations by sampling effort (June 2022 through June 2023). Several observations were noted for these figures as follows:

- The boundary of the consolidation area (bold dashed line) needs to be added as a feature to the legend.
- The figures show that the upgradient or the highest groundwater levels occur to the north/northeast. It is important to continue to characterize upgradient/background groundwater quality through the duration of UDF use and post-closure. There appears to be spatial gaps in this upgradient area that may benefit from additional monitoring wells. Specifically, this includes two areas: 1) there are no monitoring wells between MW-2022-1S/1D and MW-2022-7, and 2) between MW-2022-7 and MW-84-1. There are two piezometers (PZ-2022-8 and PZ-2022-7) in this area; however, as stated in the document, on pdf page 30, “prior to UDF construction, the piezometers will be abandoned in place.” In addition, the Support Areas may be placed in this area and should be monitored closely as there is the potential for spills of contaminated materials. *Additional monitoring wells in these two areas should be considered.*
- It is also important to recognize that wells MW-2022-1S and 1D, PZ-2022-8, PZ-2022-7 and MW-84-1 are valuable for future upgradient monitoring of the consolidation area and the potential support areas that have yet to be defined. The document, on pdf page 30, states that MW-2022-1S and 1D are to be replaced. Well MW-84-1 is associated with the Lee Landfill; therefore it is unknown if GE has access to or intends to use this well in the future. *The continued use of these wells for monitoring should be acknowledged.*
- The pond that overlaps the GE parcel and the adjacent quarry area (located between MW-2022-3 and MW-2022-4 and is sampled for surface water levels at site MP-1,

shown in Figure 6 pdf page 300) demonstrates to be a groundwater sink (an area where groundwater is moving toward) as shown in the repeated groundwater contours for each map. This indicates that this pond may be a useful surface water quality monitoring feature for PCB analysis in the future after the UDF is in use. *The use of the pond's surface water for future PCB monitoring should be considered.*

- The figures were developed with the use of modeling to infer groundwater level contours. It seems that this same method could shade or outline the area within each map that meets UDF construction performance standards in order to visualize the amount of area available for UDF construction. *The revision of these figures to incorporate a modeled UDF consolidation area footprint based on performance standard compliance should be considered.*

The community may want to ask EPA the following questions:

*Since characterization of upgradient/background groundwater quality is an important measure for the future UDF groundwater characterization, should the upgradient monitoring well field be bolstered to include two additional monitoring wells between the MW-2022-1S and 1D replacement well and MW-2022-7, MW-2022-7 and MW-84-1? In addition, it is important to recognize the existing wells (the replacement well for MW-2022-1S and 1D, MW-2022-8 and MW-84-1) need to continue to be used for monitoring.*

*Given the monitoring results shown to date, it is apparent that the pond associated with MP-1 is a possible groundwater sink. As such, the surface water quality measurements of PCBs may be appropriate to measure UDF effectiveness in the future. Would it be appropriate to continue monitoring this pond and to include surface water (and sediment and porewater, preferably) for PCB content?*

*Could Figures 9 through 21 be amended to include a modeled footprint of the appropriate area that meets UDF construction performance standards?*

11. TASC previously commented on the discrepancies noted between chemical analysis results shown in the comparative GE and EPA Quality Testing Split Results. The purpose of collecting split samples is to verify the accuracy and precision of sample collection and analysis. To date the results provided within GE documents have summarized these results in general narrative terms. For instance, in Section 3.3.2, on pdf page 27, which describes soil testing for environmental quality, the document states “the data from EPA’s split samples are generally similar to the results from GE’s samples” (in reference to results provided in Table 4B). On review of Tables 4B and 7B the following observations are:

- PCB analysis in soils (Table 4B, pdf pages 168-180) varies significantly between GE and EPA. GE detection limits range from 0.19 milligrams per kilogram (mg/kg) to 0.30 mg/kg, while EPA detection limits are an order of magnitude lower (ranging from 0.035 mg/kg to 0.051 mg/kg). EPA’s lower detection limits represent a more stringent analysis method and should be relied on and used for future monitoring by GE.

- The suites of analytes vary between GE and EPA (Tables 4B and 7B). For instance, EPA did not analyze all of the gathered samples for PCBs (entire Aroclor series) or volatile organic chemicals, while GE omitted certain analytes within a given suite. GE and EPA need to more accurately coordinate their split sample analysis suites to be able to compare results consistently.
- PCB analysis in groundwater (Table 7B, pdf pages 288-290) varies significantly between GE and EPA. GE detection limits are all 0.0005 milligrams per liter (mg/L) while EPA's range from 0.00048 mg/L to 0.001 mg/L. It would be more appropriate if the methods EPA and GE relied upon could be more comparable.

The use of split analysis of sampled media will be of particular value and importance when the UDF becomes active. The issues shown in the incomparability between the split sample analysis should be acknowledged and addressed prior to UDF monitoring when waste materials management procedures are in place.

*The community may want to ask EPA if the discrepancies in the GE and EPA split sample analysis will be addressed prior to UDF monitoring when the UDF is active, or if the current level of precision is adequate and meets the requirements in the quality assurance project plan for this project.*

12. Table 7A-1, on pdf pages 189 to 196, provides a summary of the groundwater environmental quality testing results. The analytical testing is robust and includes suites of chemicals of interest to the community including dioxins and PFAS. Dioxins are detected in the surface soil fraction of soils gathered during the PDI (Table 4A, pdf pages 53-167). These concentrations are likely typical of industrial soils. Dioxins were generally not detected in groundwater; however, continued monitoring of groundwater for these chemical constituents would help understand if these chemicals are migrating from the soil to the groundwater. Continued monitoring of these same suites of chemicals (dioxins and PFAS) is extremely valuable to the community and would assist in understanding soil-to-groundwater relationships in the UDF area.

*The community may want to ask EPA if the groundwater monitoring can continue to include the suites of analysis listed in Table 7A-1 (particularly in reference to the dioxins and PFAS chemicals).*



## References Cited

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GE. Pre-Design Investigation Work Plan for Upland Disposal Facility. GE-Pittsfield/Housatonic River Site. November 2021.

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# Attachment C

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## MEMORANDUM

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TO: Melissa Provencher, BRPC  
FROM: Jeff Hershberger, PG  
SUBJECT: Final PDI Report Review  
COPY TO: Project File

DATE: September 21, 2023  
TRC PROJECT NO.: 562500.0000

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TRC Environmental Corporation (TRC) provides this technical memorandum to the Berkshire Regional Planning Commission (BRPC) in support of the Housatonic Rest of River Municipal Committee (the Committee) related to the ongoing remedial activities associated with the General Electric (GE)-Pittsfield/Housatonic River Superfund Site (the Site). This memorandum conveys the findings of TRC's review of the following document (the Report).

- *Final Pre-Design Investigation (PDI) Summary Report for Upland Disposal Facility (UDF) Area, GE-Pittsfield/Housatonic River Site (Arcadis, August 2023)*

The Final PDI Summary Report for the UDF Area builds upon the Interim PDI Data Summary (Arcadis, December 2022) and documents additional data collection through June 2023. Additional PDI activities and data received after June 2023 will reportedly be documented in an addendum to this Final PDI Summary Report.

The Upland Disposal Facility (UDF) will be used to manage the majority of the PCB-impacted soils and sediments that will be removed as part of the performance of the Rest of River (ROR) Remedial Action. The UDF will be located on the former Lane Parcel in Lee, Massachusetts (the Property). The actual UDF area, termed the Consolidation Area in Site reports, will occupy up to 20 acres. Surrounding land on the Property will be used to support the construction and operation of the UDF. Details on the nature and location of the UDF Support area(s) has not yet been provided by General Electric (GE).

The requirements for the implementation of the ROR Remedial Action are detailed in the Final Revised Rest of River Statement of Work (SOW) and, specifically for the performance of the Pre-Design Investigation, in the PDI Work Plan for the UDF, supplemented by the additional requirements detailed in the USEPA conditional approval letter for the PDI Work Plan (dated February 25, 2023) and the USEPA conditional approval letters for the Interim PDI Data Summary (dated April 18, 2023) and for the UDF Conceptual Design Plan (dated April 18, 2023).

A Conceptual Design Plan for the UDF was submitted in December 2022 and was conditionally approved by the USEPA in April 2023. USEPA approval of the Final PDI Summary Report will trigger the requirement to submit the Final Design Plan for the UDF within 60 days. The Operation, Monitoring, and Maintenance Plan for the UDF will also be submitted at the same time as the Final Design Plan, as required by the Final Revised Rest of River Statement of Work (GE, September 2021).

The following provides TRC comments on the Final PDI Summary Report for the UDF Area.

### **GEOTECHNICAL TESTING**

TRC performed a review of the geotechnical data (boring logs, geologic cross-sections, and laboratory testing results) presented in Arcadis' Final Pre-Design Investigation Report and evaluated if this information is adequate to demonstrate long-term stability and protectiveness of the environment and human health of

the proposed Upland Disposal Facility. In summary, based on the limited geotechnical data provided in the report as part of the pre-design phase of the project, TRC was not able to confirm that enough information is available to be used in slope stability and settlement analyses to demonstrate long-term stability of a proposed design of the UDF.

TRC's observations are as follows:

1. A total of 22 borings were completed and are positioned within and outside of the anticipated UDF Consolidation Area - 16 of the 22 borings were utilized for soil quality testing purposes and 6 of the 22 borings were utilized for the installation of temporary piezometers within and outside of the UDF footprint. The number and locations of borings appear to be appropriate for the proposed design.
2. Limited geotechnical data was provided in the report. The report included boring logs, laboratory testing results of index properties (e.g., grain size, moisture content, Atterberg limits, organic content, and specific gravity), and a generalized geologic soil profile. However, there were no shear strength or consolidation laboratory testing reports or estimated values that would be used in subsequent analyses that would be necessary to conduct global stability and settlement analyses. The report indicated that because cohesive soils were not encountered during the geotechnical investigations, soil samples were not collected for evaluation involving shear strength testing (e.g., triaxial shear test). TRC recognizes the granular nature of the subsurface conditions at the site would make collection of relatively undisturbed samples (via Shelby tubes) difficult in order to perform shear strength and consolidation laboratory testing.
3. The report indicates that the results of the Standard Penetration Testing (SPT), N-values, reported in the previously performed test borings and the soil index properties determined in the previously laboratory testing will be used to estimate soil engineering parameters, such as shear strength and soil elastic modulus, to support the stability and settlement evaluations during the design of the UDF. When Shelby tubes cannot be collected within granular materials, it is common practice in the industry to estimate engineering parameters based on N-values and index laboratory testing. Cone Penetration Test (CPT) borings, dilatometer borings, and prebored pressuremeter testing can be used to collect this data, however, due to the dense nature and presence of gravel, these tests may be difficult to perform in the site geology.
4. The report did not provide shear strength and soil elastic modulus parameters that will be used in the design calculations. It is recommended that a detailed summary, assumptions, and rationale used in estimating the shear strength and soil elastic modulus parameters be provided in the Final UDF Design Report to indicate how the soil parameters were selected and how the existing data (N-values and soil index testing) was used.

In conclusion, based on the limited geotechnical data provided in the above referenced documents, TRC is not able to confirm at this time that a demonstration has been made that the design will provide long-term stability and protectiveness of the environment and human health. We do recognize that the reports are part of a pre-design investigation and that detailed geotechnical analyses (slope stability, settlement, etc.) are forthcoming and will be provided as the design progresses. TRC can perform a detailed review of the additional data and analyses once made available.

## **SOIL TESTING**

The means and methods used to perform the characterization of the subsurface materials within the Property, estimate the depth to the underlying bedrock, assess the infiltration capacity of the soils and estimate the hydraulic conductivity of the materials seem reasonable and appropriate for this effort and to meet the needs for the design of the UDF and supporting facilities (e.g., stormwater infiltration basins).

Extensive soil sampling and laboratory analysis was performed to characterize soil quality on the Property with the stated objective of collecting the necessary data to support assessing the potential to reuse any excavated soils on the Property during the construction of the UDF. These results are discussed in **Section 3.4**. The laboratory analytical results are presented on **Table 4A** (GE samples) and **Table 4B** (USEPA split samples). The laboratory results were compared to the USEPA Region 9 Preliminary Remediation Goals (PRGs) and MassDEP MCP Method 1 S-1/GW-1 soil standards as required by the Conditional Approval of the Interim PDI Report.

Based on a limited review of Table 4A and Table 4B, the primary analytes detected include the following:

- Various dioxins and furans;
- Various volatile organic compounds (VOCs) including acetone, chloroform, PCE, toluene, and xylenes;
- Phthalates
- PAHs
- Sulfide
- Various pesticides/herbicides
- Various inorganics

PCBs were not detected at concentrations above the laboratory reporting limits in any of the soil samples.

Based on the information provided in these tables, the only analytes detected at concentrations exceeding any of the noted regulatory thresholds are arsenic and nickel. The detected concentrations of arsenic exceed the USEPA Region 9 Residential and/or Industrial Soil PRGs but are less than the MassDEP MCP Method 1 S-1/GW-1 standards. Nickel was detected at concentrations above the MassDEP MCP Method 1 S-1/GW-1 standards but less than the listed Region 9 thresholds.

***It would be helpful if, in future reports, the detected analytes in the tables were BOLDED, to make it easier to identify the detected constituents. It would also be helpful if a Key was added at the bottom of Table 4A to explain what underlining of detected concentrations means vs shading of the detected concentrations. In addition, the underlining of concentrations is difficult to see in the tables.***

***Additionally, it would be helpful in future reports if the noted exceedances were summarized within a small table within the text rather than just described in the text.***

## **MONITORING WELLS AND PIEZOMETERS**

**Section 3.5** of the Report documents the installation of six piezometers and eleven monitoring wells to support the proposed water level monitoring and groundwater sampling.

***Would recommend maintaining a shallow and deeper monitoring well arrangement at the MW 2022-1 location rather than replacing with a single monitoring well, as proposed in the document. This***

**would allow for ongoing monitoring of groundwater elevations and the resultant vertical component of groundwater flow.**

**Additional short-term (baseline) and long-term monitoring wells may be needed depending on the plans for and location(s) of the UDF Support Area(s), which have not been provided yet, including any locations for the performance of sediment management or dewatering on the Property.**

### **GEOLOGIC CROSS SECTIONS**

Based on the findings of the drilling and testing programs completed on the Property and as required by the Conditional Approval of the Interim PDI Report, GE constructed two geologic cross sections through the Property and the proposed UDF Consolidation Area (**Figure 7 and Figure 8**). These cross sections are very useful for visualizing the geologic setting of the proposed UDF, the relationship between the unconsolidated deposits and the underlying marble bedrock and the range of groundwater elevations recorded for each well or well couplet.

These geologic cross sections can be used to present the groundwater elevations in relation to UDF features in the Final UDF Design Report, as required by the UDF Conceptual Design Plan conditional approval.

**There is no discussion in the report regarding if any of the stratigraphic layers identified within the Property would represent restrictive or confining layers as required by the USEPA Conditional Approval of the PDI Work Plan.**

### **GROUNDWATER ELEVATION MONITORING**

As required by the SOW and UDF Work Plan, extensive water level monitoring was performed using both manual measurements and electronic data loggers within and surrounding the UDF Consolidation Area as documented in **Section 3.6**.

The manual water level measurements are provided on **Table 6A** and hydrographs of the water level data collected by the electronic data loggers are provided in **Appendix I**.

**Combined hydrographs for the well couplets (MW 2022-1S/1D and MW 2022-4S/4D) were not provided as noted in Section 3.6.1 (Description of Monitoring). These combined hydrographs will be important when evaluating the vertical component of groundwater flow over time and the adequacy of the long-term monitoring well network.**

**Would also be helpful to add precipitation data to the hydrographs to assist in visualizing the effect of both precipitation events and dry periods on the measured water levels and water level elevation trends.**

**It would also be helpful if the monthly manual measurements were added to the hydrographs as control points to verify that the data logger monitoring results are accurate and no data logger drift occurred over the 13 months of monitoring.**

The manual water level measurements support that the vertical component of groundwater flow is predominantly horizontal to slightly upward, other than the May 2023 manual measurements at the MW 2022-1 well couplet. The May 2023 measurements at the MW 2022-1S/1D couplet support a slightly downward groundwater flow component upgradient side of the Consolidation Area. The nature of the

vertical component of groundwater flow (predominantly upward) are consistent with the location of the proposed UDF proximal to a significant hydrogeologic discharge area, the Housatonic River.

**Figures 9 thru 21** present groundwater elevation contour maps created using the manual water level measurements summarized on **Table 6A**. Groundwater levels were collected in the Site monitoring wells and piezometers, an existing pond to the northwest of the Consolidation Area (denoted as PZ Pond on these figures) and two off-Site wells (MW 84-1 and MW 84-2), located at the Lee Municipal Landfill. These thirteen contour maps present similar groundwater flow patterns under both lower and higher groundwater elevation conditions. All of the maps present groundwater flow downgradient of the UDF Consolidation Area towards the northwest (MW 2022-3 and PZ Pond area), to the west (MW 2022-5 area) and to the southwest (MW 2022-6 area).

***Based on these findings, TRC recommends that USEPA consider requiring additional deeper monitoring wells to establish well couplets at the MW 2022-3 location and the MW 2022-6 location. A downgradient well couplet is already present at the MW 2022-4 location. This would provide a more robust downgradient monitoring well network that could account for the occasional, slight downward vertical gradient exhibited by the manual monitoring data.***

#### *Estimation of Seasonally High Groundwater Elevation*

The Revised Permit requires that the bottom liner of the UDF be located at least 15 feet above the estimated seasonally high groundwater level within the Consolidation Area. To support the design of the UDF, the Frimpter Method was used to estimate the seasonally high groundwater levels within the Consolidation Area using the Frimpter Method, the Site groundwater elevation data, and available data from nearby USGS monitoring wells located in relatively similar hydrogeologic settings.

**Section 3.6.2** presents the approach and discusses the results of the estimation of seasonally high groundwater elevations on the Site. The revised RCRA permit requires that the design of the UDF maintain a minimum 15-foot separation between the estimated seasonally high groundwater elevations and the bottom of the UDF and also states that if the estimates of seasonally high groundwater elevations are higher than 950 feet AMSL, the landfill design can incorporate a maximum surface elevation greater than 1,099 feet AMSL.

The estimates of seasonally high groundwater elevations were completed using Site-specific groundwater elevations and depths to groundwater collected both manually and using electronic data loggers and the Frimpter Method as documented in the following USGS report.

- USGS, 1980, Probable High Ground-Water Levels in Massachusetts, Water Resources Investigations 80-1205, Open-File Report 80-1205.

The method also requires the use of available depth to groundwater data and certain well-specific parameters for USGS long-term observation wells located as near as possible and in similar hydrogeologic settings to the Site monitoring wells. GE utilized the following USGS observation wells in their analysis.

- MA-PTW 51 (Pittsfield, Massachusetts)
- MA-DWF 44R (Deerfield, Massachusetts)

The selected USGS wells, in particular the Pittsfield MA well, appear appropriate for this evaluation. The reported well characteristics for these two wells are summarized in the following table.

USGS Well	Setting	OW <sub>r</sub> (feet)	OW <sub>max</sub> (feet)
MA-PTW 51	Valley Flat; Stratified Drift	12.12	12.3
MA-DFW 44R	Valley Flat; Stratified Drift	4.68	1.56

**NOTES:**

OW<sub>r</sub> – upper limit of annual range of water level

OW<sub>max</sub> – depth to recorded maximum water level

The results of this analysis are summarized on **Table 6B** and **Table 6C**. The projected seasonally high groundwater elevations for the monitoring wells and piezometers within the Consolidation Area range from 955.73 feet AMSL (PZ 2022-2) to 966.61 feet AMSL (PZ 2022-3). All of the estimated seasonally high groundwater elevations calculated for Site piezometers and monitoring wells exceed the 950 feet AMSL noted in the Settlement Agreement and the revised RCRA Permit.

***It would have been helpful if the required parameters (OW<sub>r</sub> and OW<sub>max</sub>) for the USGS wells were provided in the Final PDI Summary Report along with an example calculation demonstrating the approach and equation used for the calculations.***

***Also, the Station Name for the Deerfield, Massachusetts USGS well is listed incorrectly in the report.***

TRC performed calculations of the predicted seasonally high groundwater elevation for the months of June 2022, January 2023 and May 2023 using the data provided on Table 6C and available information for the USGS Deerfield, Massachusetts well. These calculations are only approximate values as the Report did not note that date of the Transducer Measured GW Elevation reported on Table 6C such that the corresponding depth to groundwater at the USGS well could only be approximated. The method requires the use of depth to water values for both wells collected on the same date. Additionally, GE did note how they selected the value for Sr from Figure 11 (Valley Flat) and Figure 12 (Terrace). The calculated seasonally high groundwater elevations calculated by TRC were all slightly less than the values calculated by GE.

***Would be helpful to know the actual date of the Transducer Measured GW Elevation for each month on Table 6C so that it can be matched with the appropriate depth to water value for the USGS well on the same date.***

***Would be very helpful to understand how GE selected the applicable S<sub>r</sub> values from Figure 11 (Valley Flat) and Figure 12 (Terrace) to support their calculations. Different levels of %Confidence can be used to select these values from the report figures and this information is not provided in the report.***

***The statements at the end of Section 3.6.2 regarding the proposed design separation of the UDF baseliner system and the estimated seasonally high groundwater elevations within the UDF Consolidation Area seem premature given the limited information on the proposed design elevations presented in the UDF Conceptual Design Plan. Adequate elevation details for the baseliner system need to be provided in the Final UDF Design Report to verify compliance with this important Performance Standard.***

**GROUNDWATER QUALITY**

The findings of the assessment of groundwater quality are documented in **Section 3.7** of the Report. Three groundwater sampling events (June/July 2022, November/December 2022 and May/June 2023) were completed at all of the monitoring wells, with the exception of MW 2022-1S. MW 2022-1S was only sampled twice. The stated objective of the groundwater sampling is to establish baseline conditions in the



groundwater prior to the construction and operation of the UDF and performance of activities within the UDF support areas.

The laboratory results for the analysis of the groundwater samples are provided on **Tables 7A-1 through 7A-11**. As required by the Conditional Approval of the Interim PDI Report, the analytical results were compared to the MassDEP MCP Method 1 GW-1 and GW-3 standards.

Based on a limited review of the information provided on these tables, the detected analytes in the groundwater samples generally included the following:

- Various dioxins and furans
- Various VOCs including chloroform, CFC-12, 1,1-DCA, 1,2-DCB, 1,4-DCB, 1,2,4-TCB and chloroethane
- Phthalates
- PAHs
- Various pesticides/herbicides
- Various inorganics

PCBs were not detected at concentrations above the laboratory reporting limits in any of the groundwater samples.

According to the tables, the only analytes detected at concentrations exceeding either the MassDEP Method 1 GW-1 or GW-3 standards are WHO Dioxin TEQ (MW 2022-9), cyanide (MW 2022-5) and Total PFAS (MW 2022-1S, MW 2022-1D and MW 2022-9).

***If additional baseline groundwater sampling is performed on the Property, these analytes should continue to be included. And consideration should be given to requiring these analytes for the Performance Monitoring once UDF activities commence on the Property.***

***Additionally, it would be helpful if in future reports the noted exceedances were summarized within a small table within the text rather than described in the text.***

### **EXISTING POTABLE SUPPLY WELLS**

In **Section 3.11**, as required by the Conditional Approval of the Interim PDI Report, GE states that three potential nearby wells were identified in the Project area and that only one of these wells is located within 500 feet of the UDF Consolidation Area. The approximate location of this well is shown on **Figure 25**. GE also notes that this well is reportedly no longer in use. GE also notes that the sources of their information for this evaluation included the following:

- Review of aerial imagery
- Field reconnaissance
- Discussions with MassDEP

***Did GE perform any research in the Town of Lee municipal offices relative to potential potable wells in the Project Area? This is not noted in the report.***

***Has this well been properly abandoned? Would probably be prudent to consider requiring its abandonment so that it is not used for potable uses in the future.***

## REFERENCES

- Anchor QEA, LLC. 2021. Final Revised Rest of River Statement of Work. GE-Pittsfield/Housatonic River Site. September 2021.
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