EXHIBIT 25

FEBRUARY 18, 2023

SUBMITTAL BY JUDITH KNIGHT ON UDF CONCEPT DESIGN, BOSTON GLOBE ARTICLE (11.9.21), US NEWS AND WORLD REPORT ARTICLE (7.18.22), CORRESPONDENCE AND EMAIL COVER LETTER

Jim Wilusz

From: Judith Knight <jknight@judithknight.com>
Sent: Saturday, February 18, 2023 10:49 PM
To: Robert Wespiser; Cristobal Bonifaz; Cristobal Bonifaz; Jim Wilusz
Cc: Tim Gray
Subject: More Documents/Exhibits submitted re 11/19/2022 Adjud Hrg. before the LBOH
Attachments: UDF Concept.Design Doc. 12.2022.pdf; To LBOH. Boston Globe article re GE Split - 11.9.2021.pdf; To LBOH. U.S. News & World Report re GE Split - 7.18.2022.pdf; Email Ltr. to LBOH 2.18.23.doc

Dear Dr. Wespiser, Attorney Bonifaz, Mr. Wulitz and LBOH,

Attached please find the four documents, listed below, as submissions to for the LBOH consideration and for the public record in the 11/19/22 Adjudicatory Hearing before the LBOH.

1) Copy of the UDF Conceptual-Design submitted by GE to the EPA dated Dec. 6, 2022;
2) Copy of article in the Boston Globe, dated Nov. 9, 2021, regarding GE's end of its conglomeration;
3) Copy of article in the U.S. News & World Report dated July 18, 2022 re GE's slip into 3 companies; and
4) Copy of my cover letter accompanying the 3 above referenced documents.

Thank you for your time and attention to this matter.

Sincerely,

Judith C. Knight, Esq.
342 Main Street
Great Barrington, MA 01230
Off: 413-528-0505
Cell: 413-329-4665
Jknight@judithknight.com

Judith C. Knight, Esq.
342 Main Street
Great Barrington, MA 01230
Off: 413-528-0505/Cell: 413-329-4665
jknight@judithknight.com

February 18, 2023

Lee Board of Health
Attn: Robert Wespiser, MD
Jim Wulitz Tri-Town
Cristobal Bonifaz, Esq.
Via email to the above

Re: 11/19/22 LBOH Adjudicatory Hearing
Re: UDF Conceptual Design Plan and GE's split into 3 companies

Dear Dr. Wespiser, Attorney Bonifaz and Mr. Wulitz, et al.

On behalf of HRI, I am submitting herewith the documents listed below for your consideration.

1) Copy of the UDF Conceptual Design Plan (highlighted) that GE submitted to the EPA, approximately two months ago, on Dec. 6, 2022 (59 pgs.);

2) Copy of an article in the Boston Globe, dated Nov. 9, 2021 and entitled: *"**With GE's Split, the Age of the Industrial Conglomerate is Ending**"*; and

3) Copy of an article in the U.S. News & World Report, dated July 18, 2022 and entitled: *"**GE Reveals Identity of 3 Companies after Historic Split**"*.

HRI recognizes that the UDF Conceptual Design document is only a conceptual design of the UDF and not the final draft. However, please note that almost all of the important details of the UDF design are either still unknown or incomplete. The document is replete with phrases such as: "data is still being collected" and "will be expanded upon in the Final Design Plan" and/or "has not been completed". There is still so much that is unknown about the design of the UDF, how it will be built and what quality controls will be in place.

In the meantime, as reported in the Boston Globe and the U.S. & World Report articles attached below, GE is ending its conglomeration and in the process of splitting into three separate companies.

GE's decision to split into 3 companies raises many questions about who at GE will be accountable if the UDF project goes forward and then fails. These concerns are certainly relevant to the issues in the 11/19/2022 Adjudicatory Hearing before the LBOH.

Thank you for your time and attention to this matter.

Sincerely,
On behalf of HRI,
Their attorney,
Judith C. Knight

Judith C. Knight, Esq.

Global Operations, Environment, Health & Safety

1 Plastics Avenue
Pittsfield, MA 01201

Via Electronic Mail

December 6, 2022

Mr. Richard Fisher
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region I
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850) – Upland Disposal Facility
Interim Pre-Design Investigation Data Summary Report for Upland Disposal Facility Area
Upland Disposal Facility Conceptual Design Plan

Dear Mr. Fisher:

In accordance with EPA's February 25, 2022 conditional approval letter for GE's *Pre-Design Investigation Work Plan for Upland Disposal Facility*, enclosed for EPA's review and approval are the following: (1) GE's *Interim Pre-Design Investigation Data Summary Report for Upland Disposal Facility Area* (Interim PDI Data Summary); and (2) GE's *Upland Disposal Facility Conceptual Design Plan*. These are provided in separate e-mails. In addition, due to the size of the Interim PDI Data Summary, the text, tables, and figures for that report are being provided directly by email and a link to a SharePoint site is also provided for the entire document, including the appendices.

Please let me know if you have any questions about these submittals.

Very truly yours,

Matthew Calacone/csc

Matthew Calacone
Senior Project Manager – Environmental Remediation

Enclosures

Cc: *(via electronic mail)*
Dean Tagliaferro, EPA
Tim Conway, EPA
John Kilborn, EPA
Joshua Fontaine, EPA
Christopher Smith, EPA

1 Introduction

This Upland Disposal Facility Conceptual Design Plan (Conceptual Design Plan) has been prepared on behalf of the General Electric Company (GE) to present the proposed conceptual design elements for the Upland Disposal Facility (UDF) and UDF support area associated with the Rest of River (ROR) Remedial Action. The ROR consists of the portion of the Housatonic River and its backwaters and floodplain (excluding portions of certain residential properties) downstream of the confluence of the East and West Branches of the Housatonic River, which is located approximately two miles downstream from GE's former manufacturing facility in Pittsfield, Massachusetts. The UDF will be constructed on a 75-acre property (the GE Parcel) that was formerly part of an active sand and gravel quarry and that GE acquired from The Lane Construction Corporation (Lane) in April 2021. Figure 1 shows the GE Parcel, along with the anticipated limits of the UDF consolidation area (the waste-containing portion of the UDF) and the associated operational area. In addition, the GE Parcel will contain a UDF support area, which is currently undefined and not shown on the figure and which may include facilities such as sediment dewatering, water treatment, and/or loading areas.

On December 16, 2020, pursuant to the 2000 Consent Decree (CD) for the GE-Pittsfield/Housatonic River Site, the U.S. Environmental Protection Agency (EPA) issued a Revised Final Permit Modification to GE's Resource Conservation and Recovery Act Corrective Action Permit (Revised Permit) specifying a Remedial Action for the ROR (EPA 2020). 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 of the sediments and soils to be removed as part of the Remedial Action. In accordance with the requirements of the Revised Permit, GE submitted to EPA a Rest of River Statement of Work (SOW) specifying the deliverables and activities that GE will conduct to design and implement the ROR Remedial Action. After receipt of EPA comments, GE submitted a Final Revised Rest of River SOW on September 14, 2021 (Final Revised SOW; Anchor QEA et al. 2021). That Final Revised SOW included pre-design and design requirements for the UDF and UDF support area. On September 16, 2021, EPA issued an approval letter for the Final Revised SOW.

On November 24, 2021, GE submitted a Pre-Design Investigation Work Plan for the UDF in accordance with the Final Revised SOW. That work plan was conditionally approved by EPA on February 25, 2022. GE subsequently began the pre-design investigation (PDI) of the UDF area and conducted numerous PDI activities in 2022. The PDI activities conducted through November 2022 are described in GE's *Interim Pre-Design Investigation Data Summary Report for the Upland Disposal Facility Area* (Interim PDI Data Summary; Arcadis and AECOM 2022), which is being submitted concurrently with this Conceptual Design Plan. Those activities are also briefly summarized in Section 2.3 of this plan. The PDI is ongoing, as also discussed in Section 2.3.

1.1 Purpose and Objectives

This Conceptual Design Plan documents the technical basis for the proposed UDF design and demonstrates compliance with the Final Revised SOW. As presented herein, the UDF design is at the conceptual level and subject to revision based on the collection and analysis of additional data in the PDI, further evaluation of site conditions, consideration of UDF operational requirements, and design calculations. The final design for the UDF will be presented in a Final Design Plan (described in Section 4.3.2.2 of the Final Revised SOW) and the associated Operation, Monitoring, and Maintenance Plan for the UDF (UDF OMM Plan) (described in Section 4.3.2.3 of the Final Revised SOW).

1.2 Site Description and History

The GE Parcel generally consists of previously disturbed and barren ground areas void of vegetation, open grassed and wooded areas, and ponds that were created as part of the prior quarry operations. The bordering site features are Valley Street to the north, Woodland Road to the east, the Lee Municipal Landfill to the south, and property of Northeast Paving (a Division of Eurovia Atlantic Coast, LLC) to the west located off Willow Hill Road. The soils on site largely consist of sand and gravel. There is a general east-to-west slope in the groundwater table across the site. There is an existing Eversource Energy (Eversource) utility easement containing overhead electric utility lines on the western and southern sides of the GE Parcel. There are no known underground utilities within the GE Parcel.

1.3 Design Report Organization

The remainder of this Conceptual Design Plan is organized into the following sections:

- Section 2 provides a summary of the performance standards, other constraints, and design elements for the UDF and includes a very brief summary of PDI activities to date.
- Section 3 presents a summary of the components and purpose of the baseliner system.
- Section 4 presents a summary of the components and purpose of the final cover system.
- Section 5 provides an overview of the various operational and support areas for the UDF.
- Section 6 provides a preliminary discussion of measures to address habitat impacts at the UDF area.
- Section 7 addresses the anticipated conditions and processes that will occur during closure of the UDF.
- Section 8 addresses the post-closure activities to be performed at the UDF area, including long-term monitoring and maintenance of the UDF area.
- Section 9 presents a proposed schedule for submission of the UDF Final Design Plan.
- Section 10 lists the references cited in this Conceptual Design Plan.

The current set of preliminary design drawings is provided in Appendix A.

Note that some of the UDF components or UDF-related activities covered by the above-listed sections cannot be described in any detail at this time and must await completion of the UDF design. These components and activities are identified as such in a number of sections of this Conceptual Design Plan and will be described in the Final Design Plan for the UDF. The design information presented herein reflects the state of design as of the date of this Conceptual Design Plan and will be expanded upon in the Final Design Plan and/or the associated UDF OMM Plan.

2 Design Summary

This section provides a summary of the basis of the UDF design, including the performance standards in the Revised Permit, applicable or relevant and appropriate requirements (ARARs), PDI information obtained to support the design, the overhead electric utility line easement, the berm and baseliner system, the final cover system, management of leachate and surface water, and the UDF operational and support areas.

2.1 Performance Standards for UDF

Section II.B.5.a of the Revised Permit sets forth the performance standards for the UDF. In summary, those performance standards require that the UDF meet the following construction and design requirements (paraphrased):

- Be constructed at the location shown on Figure 6 of the Revised Permit.
- Provide a maximum design capacity of 1.3 million cubic yards (cy).
- Have a consolidation area with a maximum footprint of 20 acres and a maximum elevation of 1,099 feet above mean sea level (amsl). If the seasonally high groundwater elevation is determined to be higher than 950 feet amsl, the maximum elevation of the consolidation area may be increased by the number of feet between the seasonally high groundwater and 950 feet amsl in order to achieve the maximum waste capacity of 1.3 million cy.
- Include two bottom liners (referred to herein as a baseliner), separated by a drainage layer, and incorporate primary and secondary leachate collection systems.
- Have the baseliner a minimum of 15 feet above a conservative estimate of the seasonally high groundwater elevation. The seasonally high groundwater elevation will be projected using site-specific groundwater elevation data collected in the location of the UDF and modified to account for historical groundwater level fluctuations at similarly sited off-site, long-term monitoring wells in Massachusetts. This estimation will be performed pursuant to a methodology reviewed and approved by EPA.
- Provide for the consolidation area to be covered with a low-permeability cap that includes a hydraulic barrier, drainage layer(s), and vegetation.
- Ensure that the liners/barriers for both the bottom of the UDF and the cap have a permeability equal to or less than 1×10^{-7} centimeters per second (cm/s) and a minimum thickness of 30 thousandths of an inch (mil) and are chemically compatible with polychlorinated biphenyls (PCBs).
- Include a stormwater management system to control surface runoff and minimize the potential for surface erosion or stormwater contribution to leachate generation.
- Include a groundwater monitoring network around the UDF to monitor for PCBs and other constituents identified in the groundwater monitoring plan as approved or modified by EPA.

Compliance with these performance standards is discussed as appropriate throughout this Conceptual Design Plan.

2.2 Applicable or Relevant and Appropriate Requirements and Other Pertinent Regulations

In addition to the performance standards for the UDF presented in Section II.B.5.a of the Revised Permit and summarized in the preceding section, the Revised Permit identifies, in Attachment C, the ARARs for the ROR Remedial Action. The listed ARARs that are pertinent to and considered for the UDF design are presented in Table 2-1 (attached), using the same format as in Attachment C to the Revised Permit. The actions to be taken in the UDF design to comply with these ARARs (where not waived by EPA) are also described in Table 2-1.

In addition to these listed ARARs and the performance standards in the Revised Permit, the design of the baseliner and final cover system components for the UDF has considered as a guide the technical requirements of 310 Code of Massachusetts Regulations (CMR) 19.000 (*Solid Waste Management*) relating to such components of a solid waste landfill (notably, 310 CMR 19.110 and 19.112).

2.3 Pre-Design Investigation

A comprehensive PDI commenced in March 2022 to acquire necessary data to support engineering evaluations and design of the UDF. The results of the activities and investigations conducted to date as part of the PDI are presented in the Interim PDI Data Summary. Those activities include, among others, a baseline habitat assessment, a topographic and bathymetric field survey, a soil geotechnical evaluation, engineering and environmental soil testing, piezometer and monitoring well installation, groundwater elevation and quality testing, and a cultural resource assessment (CRA). These activities are briefly summarized below. The PDI is ongoing as of the date of this Conceptual Design Plan and is scheduled to be completed in late 2023, after which all the data collected during the PDI will be presented in a Final Pre-Design Investigation Summary Report for the Upland Disposal Facility Area (Final UDF PDI Summary), which may incorporate portions of the Interim PDI Data Summary.

2.3.1 Baseline Habitat Assessment

A baseline habitat assessment of the GE Parcel was conducted by AECOM to form a detailed baseline ecological characterization and assessment of existing conditions and to serve as the foundation for developing the Final Cover/Closure Plan for the UDF area and UDF support area. All field investigations were conducted with oversight by scientists representing EPA. This assessment concluded that the east-central part of the GE Parcel contains an area that constitutes a wetland under federal and state criteria and a resource area under the Massachusetts Wetlands Protection Act (MWPA) and also includes a certifiable vernal pool, and that one of the three artificial gravel-pit ponded areas on the parcel also constitutes a resource area under the MWPA. This habitat assessment is described in detail in the Interim PDI Data Summary and Appendix C to it. See also Section 6 below.

2.3.2 Topographic and Bathymetric Field Survey

A topographic survey of the GE Parcel was conducted by Hill Engineers, Architects, and Planners, Inc., in May and June 2022 (provided in Appendix D to the Interim PDI Data Summary Report). Existing topography across the GE Parcel is variable and features several localized high and low points, including pond areas, likely attributable to the site's history as a sand and gravel quarry. The topographic field survey was combined with bathymetric surveys of the water-filled depressions to yield a continuous top-of-existing-ground-surface model. This combined topographic/bathymetric information is depicted on Design Drawing 2.

2.3.3 Geotechnical Evaluation

As a part of the PDI, a soil boring program was implemented to evaluate the engineering properties for site soils. These properties will be used in the UDF design to evaluate slope stability, settlement, and other geotechnical parameters. The soil classifications will also be used in the design of stormwater infiltration basin(s), although additional field testing may be necessary once the footprint and depth of the basin(s) are established as part of the detailed design phase. Subsurface data collected during the geotechnical investigation indicate that the soils at the GE Parcel are consistent with the characteristics and stratification of a glacial outwash deposit. The composition, elevation, and general slope of the underlying bedrock surface were also identified during the soil boring program of the geotechnical investigation. Details of the geotechnical investigation are presented in the Interim PDI Data Summary.

2.3.4 Engineering and Environmental Soil Testing

A series of soil testing was performed through both field and laboratory means to determine the engineering properties and the environmental quality of site soils. Standard penetration testing was performed to ascertain values that will be used during the design of the UDF to estimate engineering properties of site soils. Soil classification and soil index properties were also derived for use in the development of engineering parameters, such as shear strength and soil elastic modulus, to support the stability and settlement evaluations, as well as for determining re-use criteria of excavated materials during construction of the UDF and for estimation of the permeability of the site soils. Soil testing for environmental quality was also conducted to determine the presence and concentration of chemical constituents (if any) in the existing soil that will allow the establishment of baseline chemical conditions for comparative evaluations during UDF operations and post-closure monitoring of the UDF. Details of soil testing performed as part of the PDI are provided in the Interim PDI Data Summary.

2.3.5 Piezometer and Monitoring Well Installation

Six piezometer wells and 11 monitoring wells, including two deep-shallow monitoring well pairs, were installed within the GE Parcel. Collectively, these piezometer and monitoring wells are being used to collect groundwater elevation data across the GE Parcel. The monitoring wells may also be used for long-term monitoring of site groundwater during construction, operation, and post-closure of the UDF. Further discussions on the installation of the piezometer and monitoring wells are provided in the Interim PDI Data Summary.

2.3.6 Groundwater Elevation Monitoring

Groundwater elevation monitoring is being conducted within and outside of the GE Parcel utilizing the six piezometer wells, the 11 monitoring wells installed within the GE Parcel, two pre-existing monitoring wells located outside of the GE Parcel at the Lee Municipal Landfill, and two surface water monitoring points located on an artificial pond within the GE Parcel and on the Housatonic River at the Crystal Street Bridge. The seasonally high groundwater elevation in the area of the UDF will be developed using the groundwater elevation in each well, modified, as appropriate, by a technical method that has been reviewed and approved by the EPA. The conservative estimate of the seasonally high groundwater elevation will be used to establish the bottom elevation of the UDF and to evaluate slope stability. Descriptions of the monitoring locations and results of the groundwater elevation monitoring to date are provided in the Interim PDI Data Summary.

2.3.7 Groundwater Quality Monitoring

Semi-annual groundwater quality monitoring is being conducted at the GE Parcel for purposes of establishing baseline groundwater chemical quality conditions prior to construction of the UDF. This monitoring commenced in June 2022 and will continue through 2023. The results from the groundwater quality monitoring performed in June 2022 are presented in the Interim PDI Data Summary, and the results from the monitoring in the remainder of 2022 and in 2023 will be presented in the Final UDF PDI Summary Report. The baseline groundwater chemical quality conditions will be used in developing a groundwater monitoring plan that will be implemented during construction and operation of the UDF and during the UDF final cover/closure period. Further description of the UDF groundwater monitoring plan will be provided in the UDF Final Design.

2.3.8 Cultural Resources Assessment

An initial Phase IA CRA of the GE Parcel was conducted by AECOM under an EPA-approved work plan. The Phase IA CRA did not identify any previously recorded or visible cultural resources within that parcel. However, three locations within portions of the GE Parcel that could potentially be used for UDF support activities were identified as having a potential to contain archaeological resources. A subsequent Phase 1B intensive archaeological survey was then performed at those areas under another EPA-approved work plan and with oversight by EPA representatives. It concluded, based on the combined background research and field studies, that the GE Parcel does not contain any significant cultural resources and that no additional CRA studies or mitigation measures are required. The findings of these assessments are described in detail in the Interim PDI Data Summary and Appendices K and L to it.

2.4 Overhead Electric Utility Line Easement

An existing Eversource easement is located on the western and southern sides of the GE Parcel, as shown on Figure 1. A system of overhead electric wires, towers, and guy wires are located within the easement. The planimetric layout of the UDF has been developed to accommodate the easement and the utilities therein. Specifically, the UDF perimeter berm fill placement has been designed to avoid interference with the towers and guy wires. Although perimeter berm fill does extend into the easement, the fill projection is limited to the extent practicable and occurs at locations that are between the towers. The access road atop the perimeter berm is located completely outside of the easement so that vehicle traffic on the access road is not required to travel beneath the overhead wires and is not restricted by overhead clearance to the wires. Finally, the waste consolidation area for the UDF is also located completely outside of the easement. Design grading and location of other UDF-related features, including stormwater management system components and vehicle access areas along the easement, have not been completed. These features and grading conditions will be provided in the Final Design Plan.

2.5 Perimeter Berm and Baseliner System

The UDF will be encircled by a perimeter berm as shown on Design Drawing 3. The perimeter berm is anticipated to be constructed from site soils excavated from within and adjacent to the UDF footprint. The perimeter berm will be elevated to protect the UDF from inundation by surface water run-on from outside of the UDF footprint and will provide support of systems designed to contain leachate generated within the consolidation area. The perimeter berm also will provide vehicle access to the UDF perimeter and, following closure, stormwater conveyance for runoff from the final cover. Design Drawing 7 shows additional details of the perimeter berm.

The UDF design includes a baseliner system beneath the consolidation materials, extending across the floor of the UDF and along the interior side slopes of the perimeter berm. The baseliner system will consist of two composite liners – an upper (primary) liner and a lower (secondary) liner. The primary liner will consist of a combination of a high-density polyethylene (HDPE) geomembrane underlain by a geosynthetic clay liner. The secondary liner will consist of a combination of an HDPE geomembrane underlain by a geosynthetic clay liner and a one-foot-thick compacted clay liner.

A primary leachate collection system will be included above the primary liner, and a secondary leachate collection system will be included between the primary and secondary liners. The primary system will collect leachate from the overlying consolidation material and convey the leachate to a sump(s) for removal from the UDF. The secondary leachate collection system will function as a leak detection system for the primary liner and will also convey leachate to a sump(s).

At this time, it is anticipated that the UDF will be divided into two cells separated by an intercell berm constructed of compacted clay. In terms of leachate management, the cells will be hydraulically separated, and each will have its own collection sump. The cells may be constructed at the same time or in phases as waste disposal capacity is needed. Further detail regarding the perimeter berm and baseliner system is provided in Section 3.

2.6 Final Cover System

The UDF final cover system design includes cover soils capable of supporting permanent vegetation and subsurface geosynthetics to minimize the percolation of precipitation into the consolidation area and, hence, leachate generation, following closure. A composite layer of an HDPE geomembrane underlain by a geosynthetic clay liner will comprise the hydraulic barrier of the final cover system. A geocomposite drainage layer directly above that barrier will provide for collection and conveyance of precipitation that infiltrates through the overlying cover soils. The drainage layer will also improve stability of the cover system by limiting buildup of porewater pressure in the cover soils. Design grading and configuration of the final cover, which consider surface water management and slope stability, are shown on Design Drawing 4. Further details regarding the final cover system are provided in Section 4.

2.7 Leachate Management

The design of the leachate collection system has not been completed as part of the conceptual design. Therefore, this section contains limited detail regarding leachate management, with a more detailed design to be provided in the Final Design Plan.

As mentioned in Section 2.5, the UDF is anticipated to include two individual cells, each with its own primary and secondary leachate collection systems. Leachate will be removed from each cell using a side-slope riser pipe that extends from the top of the perimeter berm down to the leachate collection sump at the toe of the perimeter berm. Each sump will be subdivided into primary and secondary systems by the UDF baseliner. Separate primary and secondary side-slope riser pipes will be located in each cell's subdivided sump. A submersible pump will be maintained in each side-slope riser pipe within the sumps to allow for automated evacuation of leachate that collects. The submersible pumps will convey leachate though a flexible hose that connects the pumps to pressurized, double-contained HDPE pipes (referred to as force main pipes) buried in the perimeter berm. These leachate force main pipes will extend to a leachate storage facility at the southern end of the UDF, as shown on Design Drawing 5.

2.8 Surface Water Management

The UDF conceptual design includes a comprehensive surface water drainage system consisting of open channels, culverts, and infiltration basins. A drainage ditch located along the full perimeter of the consolidation area will collect and convey surface water runoff to an infiltration basin north of the UDF. Runoff from peripheral areas, including the exterior side slope of the UDF perimeter berm, will be limited and managed by smaller infiltration areas along the edges of the UDF. The general concepts of the surface water management system components are shown on Design Drawing 4.

2.9 UDF Operational and Support Areas

The design aspects of the UDF operational and support areas have not been completed as part of the conceptual design. Therefore, those aspects are discussed in only a limited way in this Conceptual Design Plan and will be described in detail in the Final Design Plan.

3 Perimeter Berm and Baseliner System

As discussed in Section 2.5, the UDF design includes an earthen berm around the circumference of the UDF and a baseliner system beneath the consolidation material and up the interior side slope of the perimeter berm, as shown on Design Drawing 3. Cross-sections depicting the perimeter berm and baseliner system and their relationship to other components of the UDF design are shown on Design Drawings 6 and 7. The baseliner system will have two composite liners (primary and secondary) and two leachate collection systems (primary and secondary). The components of the baseliner system are depicted on Design Drawing 8. This description of the perimeter berm and baseliner system is conceptual and subject to revision based on the collection and evaluation of additional data (notably the additional groundwater elevation data) collected during the remainder of the PDI, as well as additional design work.

3.1 Performance Standards

The UDF baseliner system will comply with the performance standards stipulated in Section II.B.5.a of the Revised Permit. Additionally, the UDF baseliner system will be consistent with applicable standards for primary and secondary liner system components found in 310 CMR 19.110: *Ground Water Protection Systems*.

3.2 Perimeter Berm Design

The perimeter berm is a fundamental component of the UDF and will provide numerous functions. The perimeter berm will control both surface water run-on from outside of the UDF and, in combination with the baseliner system, leachate from within the UDF. The perimeter berm will also provide vehicle access to the UDF and include stormwater drainage features that will function during operation of the UDF as well as following closure of the UDF. Both the baseliner and final cover systems will terminate on the perimeter berm. Finally, the perimeter berm will provide space in which to construct utilities needed during UDF operation.

As designed, the perimeter berm creates a waste consolidation area of approximately 13.2 acres, which is less than the maximum of 20 acres allowed by the Revised Permit. Design conditions that established the size of the 13.2-acre consolidation area include accommodation of the Eversource overhead electric utility line easement and associated features to the west and south of the UDF, the parcel boundary configuration to the east of the UDF, and the habitat areas to the north of the UDF. Given those constraints, the resulting 13.2-acre consolidation area represents the maximum horizonal limits for positioning of the UDF perimeter berm and associated stormwater management features. Given those maximum horizontal limits, the remaining design variables controlling the UDF waste consolidation capacity are the depth of the baseliner (relative to groundwater) and the height (peak elevation) of the final cover.

The perimeter berm will be trapezoidal in cross-section with a perimeter drainage ditch formed into the top surface near the berm centerline. The perimeter drainage ditch will be trapezoidal in cross-section with three-foot horizontal to one-foot vertical (3H:1V) side slopes. The perimeter drainage ditch will be of sufficient size (base width and depth) to convey surface water runoff from the perimeter access road and, following closure, from the final cover system. Runoff collected by the perimeter drainage ditch will be routed to an infiltration basin located to the north of the UDF. A 25-foot-wide perimeter access road will be included along the outside edge of the perimeter berm. The access road will likely be surfaced with aggregate and will have an inward cross slope of 1 to 2% to direct runoff into the perimeter drainage ditch. The outside and inside side slopes of the perimeter berm will be slopes at 3H:1V. The exterior side slope (away from the consolidation area) of the perimeter berm will be covered with topsoil and stabilized with vegetation. The interior side slope (towards the consolidation area) will be covered by the baseliner system. The perimeter berm grading is depicted as part of the subgrade design on Design Drawing 3, and a typical perimeter berm detail is shown on Design Drawing 7.

3.3 Baseliner Design

This section describes the baseliner design, including system components, groundwater and bedrock offsets, grading design, settlement, and leachate collection system design. The UDF design includes a baseliner consisting of a double liner system in compliance with the Revised Permit. Both the upper (primary) and lower (secondary) liner systems will be composite liners having two components. The primary liner system will consist of a 60-mil HDPE geomembrane underlain by a geosynthetic clay liner. The secondary liner will consist of a 60-mil HDPE geomembrane underlain by a geosynthetic clay liner and one foot of compacted clay with a maximum allowable permeability of 1×10^{-7} cm/s. The primary leachate collection system will include a geocomposite drainage layer. On the floor areas of the UDF, the primary leachate collection system will also include a one-foot-thick granular drainage layer above the geocomposite. The primary leachate collection system will be constructed directly above the primary liner system. The secondary leachate collection system will consist of the same components as the primary system and will be constructed between the primary and secondary liner systems.

3.3.1 Baseliner System Components

The baseliner system will have two different configurations, depending on whether the baseliner is installed on floor areas or against the side slopes of the perimeter berm or intercell berm. On floor areas, the baseliner system will be composed of the following components (in descending order from top to bottom):

- Operations layer, consisting of one-foot-thick well-graded aggregate and non-woven geotextile;
- Primary leachate collection system, consisting of a one-foot-thick granular drainage layer and a geocomposite drainage layer;
- Primary liner, consisting of a 60-mil textured HDPE geomembrane underlain by a geosynthetic clay liner;
- Secondary leachate collection system, consisting of a one-foot-thick granular drainage layer and a geocomposite drainage layer; and
- Secondary liner, consisting of a 60-mil textured HDPE geomembrane underlain by a geosynthetic clay liner and one-foot-thick compacted clay liner having a maximum permeability of 1×10^{-7} cm/s.

On side slopes, the baseliner components have been modified to eliminate the granular drainage layers of the primary and secondary leachate collection systems, but to provide additional thickness to the operations layer so that the primary liner retains the same cover thickness for protection from heavy equipment during consolidation activities. On side slope areas, the baseliner system will be composed of the following components (in descending order from top to bottom):

- Operations layer, consisting of two-foot-thick well-graded aggregate;
- Primary leachate collection system, consisting of a geocomposite drainage layer;
- Primary liner, consisting of a 60-mil textured HDPE geomembrane underlain by a geosynthetic clay liner;

- Secondary leachate collection system, consisting of a geocomposite drainage layer; and
- Secondary liner, consisting of a 60-mil textured HDPE geomembrane underlain by a geosynthetic clay liner and one-foot-thick compacted clay layer having a maximum permeability of 1×10^{-7} cm/s.

The HDPE geomembranes in the baseliner system are widely used in environmental containment systems and are chemically compatible with PCBs. The permeability of intact geomembranes is very low and typically on the order of 1×10^{-13} cm/s, which is many times less permeable than the maximum value allowed by the Revised Permit. The maximum allowable permeability for the compacted clay layer in the secondary liner complies with the value identified in the Revised Permit. The thicknesses of the HDPE geomembranes are greater than the minimum required by the Revised Permit. Details pertaining to the baseliner system are depicted on Design Drawing 8.

3.3.2 Groundwater and Bedrock Offsets

The Revised Permit and Massachusetts solid waste landfill regulations both stipulate minimum vertical offsets from bedrock and groundwater. Section II.B.5.a of the Revised Permit requires that the UDF baseliner have a minimum 15-foot vertical offset above seasonally high groundwater elevation. According to 310 CMR 19.110(6), the lowermost low-permeability layer of the baseliner must be a minimum of four feet above the top of bedrock or the maximum high groundwater table. Complying with Revised Permit requirement, therefore, also satisfies the groundwater offset specified in 310 CMR 19.110(6).

Continuous groundwater elevation gauging is a component of the PDI, as discussed in Section 2.3.6, and is ongoing as of the date of this Conceptual Design Plan. Once groundwater gauging is complete, the collected elevation data will be evaluated, with modifications, as appropriate, by a technical method that takes into account historical groundwater level fluctuations at similarly sited long-term monitoring wells in Massachusetts. GE proposes to determine this technical method following continued collection and evaluation of the PDI elevation data, so that all such data are available for the evaluation, and to propose the method in the Final UDF PDI Summary Report. With completion of the groundwater gauging program in 2023 and evaluation of the resulting data using that method, a conservative estimate will be made of the seasonally high groundwater elevation, and that estimate will also be presented in the Final UDF PDI Summary Report. After EPA approval, that estimated elevation will be used in the final UDF design to determine the offset from that elevation to the UDF baseliner, to provide the minimum required 15-foot offset.

The top-of-bedrock elevation was confirmed at three boring locations as part of the PDI. The highest top-of-bedrock elevation occurred at 957.5 feet at the boring for monitoring well MW-2022-1. The top of bedrock was lower at the two remaining locations (in the borings for monitoring wells MW-2022-2 and MW-2022-3). Once the final UDF baseliner floor elevations are established based on groundwater elevation data, the bedrock offset can be estimated to verify that the four-foot minimum specified in 310 CMR 19.110(6) is met.

3.3.3 Grading Design

The floor of the baseliner will have a minimum slope of 2% (post-settlement) to conform with 310 CMR 19.110 and to ensure positive drainage within the primary and secondary leachate collection systems towards the designated leachate collection sump areas. To maximize airspace efficiency, the floor of the UDF will be sloped to generally mirror the estimated slope of the groundwater table across the GE Parcel in the UDF area. The maximum slope of the baseliner system will be 3H:1V against the interior side slopes of the perimeter berm and against the side slopes of the intercell berm. These slope gradients are commonly used in landfill baseliner construction. The UDF subgrade is depicted on Design Drawing 3. Within the consolidation area, the grading depicted on Design Drawing 3 is the bottom of the baseliner system. Outside of the limits of consolidation, the grading depicted is final grade. It is noted that Design Drawing 3 does not reflect the presence of leachate collection sumps in the cells. These will be included as the design advances.

3.3.4 Settlement

Design of the UDF baseliner system will consider settlement with regard to consolidation of soils underlying the UDF in response to constructed overburden materials. Analysis of settlement has not been completed as part of conceptual design. Analyses and evaluations pertaining to settlement conditions and their accommodation in the design of the UDF will be conducted as the design advances. The Final Design Plan will include a formal calculation package documenting the baseliner settlement evaluation.

3.3.5 Leachate Collection System Design

This section provides some information regarding the leachate collection system. However, the design of the leachate collection system has not been completed, and a more detailed design will be included in the Final Design Plan.

The conceptual leachate management plan for the UDF is seen on Design Drawing 5, which shows the general layout and components of the leachate management system. It is noted that this drawing does not depict the layout of leachate collection piping, as the design of this piping has not yet been completed.

3.3.5.1 Drainage Layer Design

Design of the primary leachate collection system will consider the rate of liquid reaching the drainage layer under active (uncapped) conditions and closed (capped) conditions, with the former anticipated to govern. A water balance model such as the EPA's Hydrologic Evaluation of Landfill Performance software will likely be used to estimate the rate of liquid reaching the primary leachate collection system. Although the primary system includes both a granular drainage layer and a geocomposite in the floor areas of the UDF, the geocomposite will be designed to provide capacity to convey this peak flow to the downstream features (e.g., leachate collection pipes or sumps) without relying on the capacity contribution from the overlying granular drainage layer. In side-slope areas, the granular drainage layer is omitted because of the greater capacity within the geocomposite due to steeper slopes. The Final Design Plan will include a formal calculation package documenting the drainage layer design for the primary leachate collection system. It is anticipated that the geocomposite in the secondary leachate collection system will be composed of the same material and have the same hydraulic capacity as the primary system. Because the secondary system typically has lower flow rates than the overlying primary system, this will provide a conservative design basis for the secondary leachate collection system.

3.3.5.2 Leachate Collection Pipe Design

Leachate collection pipes will be used to remove collected leachate from the geocomposite layer (discussed in Section 3.3.5.1) and convey the liquid to leachate collection sumps. Leachate collection piping will be included in both the primary and secondary leachate collection system of each cell. The collection piping will be perforated to allow leachate to enter the piping along the floor of the UDF. Non-perforated cleanouts will extend from the perforated pipes to above final grade along the top of the perimeter berm. These cleanouts will allow for periodic remote inspection and/or maintenance access as needed.

Both perforated and non-perforated piping will likely consist of fused solid wall (standard dimension ratio type) HDPE construction. Collection piping will be located based on the proposed baseliner system grading (e.g., coincident with areas of leachate confluence) and/or at appropriate spatial intervals as needed given the capacity of the contributing geocomposite and the rate at which leachate is expected to reach the primary leachate collection system. Similar to the geocomposite in the primary and secondary leachate collection systems, the leachate collection pipe design for the secondary system is expected to be identical to that in the primary system. The capacity of the collection piping will be based on the Manning equation for pipe-full conditions. The structural performance of the leachate collection piping will be analyzed to verify that the pipe strength is sufficient to withstand the anticipated loading from burial and equipment operations in the UDF. The Final Design Plan will include a formal calculation package documenting the leachate collection pipe design.

3.4 Site Excavation and Backfill Earthwork Quantities

Following site preparation, excavation for UDF construction will proceed to the subgrade elevations within the consolidation area depicted on Design Drawing 3. Note that this drawing also depicts fill placement needed to construct the perimeter berm. It is anticipated that excavated soil can be used as fill to create the perimeter berm and other peripheral features requiring fill. The intention is to maximize the re-use of excavated material while achieving compliance with the performance standards of the Revised Permit (discussed in Section 2.1).

A mass earthwork analysis was performed as part of this Conceptual Design Plan. This analysis was inclusive of the perimeter berm and peripheral (conceptual) grading shown on Design Drawing 3. The analysis did not include the road/pipe corridor to the north, the UDF operational area located in the southeastern portion of the GE Parcel, or the stormwater basins shown on Design Drawing 3. Earthwork computations for these areas will be developed based on more advanced designs and the results provided in the Final Design Plan.

Below are quantities generated from the preliminary earthwork analysis. The excess excavated materials will be evaluated for potential reuse as part of the overall remedial project.

Table 3-1. Conceptual Mass Earthwork Volume Estimate

Excavation Volume	Fill Volume[1]	Surplus Excavation Volume
620,000 cy	370,000 cy	250,000 cy

Note:

[1] Assumes excavated material is suitable for re-use in construction for required fill components.

4 Final Cover System

Following placement of consolidation materials, the consolidation area will be covered with a multilayered geosynthetic final cover system to isolate the consolidation material from direct contact with the environment, minimize leachate generation, and support the establishment of vegetation. As with the baseline liner system, this description of the final cover system is conceptual and may be revised based on the collection and evaluation of additional PDI data and on additional design work.

4.1 Performance Standards

The UDF final cover system will comply with the performance standards specified in Section II.B.5.a of the Revised Permit. Additionally, the UDF final cover system will be consistent with the relevant standards for the final cover system components found in 310 CMR 19.112: *Landfill Final Cover Systems*.

4.2 Final Cover Design

This section describes the final cover design, including system components, grading design, settlement, slope stability, and disposal capacity.

4.2.1 Final Cover System Components

The final cover system will consist of the following components (in descending order from top to bottom):

- Six-inch-thick topsoil layer;
- Eighteen-inch-thick general fill soil layer;
- Geocomposite drainage layer;
- 60-mil textured HDPE geomembrane;
- Geosynthetic clay liner; and
- Six-inch-thick soil subbase layer.

The layering and individual final cover components will meet the applicable performance standards in the Revised Permit and the relevant standards in 310 CMR 19.112 for final cover system components. The total cover soil thickness of 24 inches is greater than the minimum thickness required by 310 CMR 19.112(9). As with the baseliner, the HDPE geomembrane in the final cover system is widely used in environmental containment systems and is chemically compatible with PCBs. The permeability of intact geomembranes is very low and typically on the order of 1×10^{-13} cm/s, which is many times less permeable than the maximum value allowed by the Revised Permit. The thicknesses of the HDPE geomembrane to be used in the final cover is greater than the minimum required by the Revised Permit.

4.2.2 Grading Design

The UDF final grading plan following final cover installation is depicted on Design Drawing 4. The maximum (peak) elevation of the UDF, inclusive of the final cover, will be approximately 1,098 feet, which is one foot below the maximum elevation allowed by the Revised Permit.

The plateau of the final cover system will be graded to promote positive drainage of surface water runoff to collection drainage swales and culverts and to minimize infiltration of precipitation within the consolidation area. A minimum slope of 5% will be provided on the plateau of the final cover to comply with 310 CMR 19.112(2). The side slopes of the final cover system will have a maximum slope of 3H:1V that considers slope stability requirements and complies with 310 CMR 19.112(2). Further discussion of slope stability is provided in Section 4.2.4.

4.2.3 Settlement

Design of the UDF final cover system will consider settlement with regard to consolidation of the materials placed within the UDF. As noted with regard to the baseliner system, analysis of settlement has not been completed as part of conceptual design. Analyses and evaluations pertaining to settlement conditions and their accommodation in the design of the UDF will be conducted as the design advances. The Final Design Plan will include a formal calculation package documenting the final cover settlement evaluation.

4.2.4 Slope Stability

To support this Conceptual Design Plan, cross-section(s) through the UDF at proposed excavation subgrade and final closure conditions were evaluated for global stability. Global stability of the conceptual landfill grades was evaluated using the Spencer method of analysis using SLOPE/W (Geo-Slope International Ltd., Slope/W 2019), a slope stability software. Design slopes were analyzed for both static and pseudo-static (seismic) conditions. Further discussion of this slope stability analysis is provided in the following subsections.

4.2.4.1 Model Development

Input parameters and results for the global stability models for this Conceptual Design Plan are discussed below. Soil parameters used in the slope stability model evaluations were estimated for each material type (i.e., dredged/waste materials, underlying soils, and compacted perimeter berm and cover soils). The input soil parameters corresponding to these material types included material unit weight (in pounds per cubic foot), shear strength in terms of internal angle of friction (in degrees), and cohesion (in pounds per square foot), as applicable. These estimated material properties were derived from a review of boring logs of soil borings advanced at the UDF area and from the results of geotechnical laboratory testing. Site material properties as determined from laboratory testing and review of soil boring logs will continue to be evaluated and adjusted as the data are finalized and the UDF design progresses.

Geosynthetic shear strength parameters could represent the weakest interface shear strength for the UDF. For purposes of the current global stability evaluation, the baseliner system components were modeled as one layer. The assumed shear strength for this single modeled layer represents the critical (weakest) interface of the collective layers that it represents. Groundwater was included in the stability models and was based on elevation data collected from the site monitoring wells.

For the pseudo-static evaluations, a peak ground acceleration was developed from the Unified Hazard Tool of the U.S. Geological Survey Earthquake Hazards Program. Based on the site location, the Unified Hazard Tool estimated a peak ground acceleration of 0.084 of the acceleration due to gravity. Consistent with industry standards for seismic stability using the pseudo-static approach, vertical acceleration is taken as 0.0.

Results of preliminary global stability analyses for the conceptual design are summarized in the following subsection.

4.2.4.2 Global Static and Seismic Stability

Global stability of the UDF was evaluated using deep-seated circular failure surfaces for both static and pseudo-static conditions. Two sections through the UDF limits were evaluated, one under final grading conditions and one for the temporary subgrade excavation grade conditions. The analyses were performed using the Spencer method, which satisfies both moment and force equilibrium. Circular searches with forced exit and entry locations were used to evaluate failure surfaces for each cross-section. The limits of the exit/entry locations are varied to estimate the critical failure surface and corresponding minimum factor of safety.

The static cases were evaluated with a temporary construction surcharge of 250 pounds per square foot positioned at the top of slope for each section and compared to a minimum factor of safety of 1.50. For the (seismic) pseudo-static evaluations, a minimum factor of safety of 1.0 was required. Factor of safety values for the sections analyzed for this conceptual design meet or exceed these minimum required values. These stability evaluations will be updated in the final design, and compliance with the minimum factor of safety will be verified and demonstrated in calculations provided in the Final Design Plan.

4.2.5 Disposal Capacity

The estimated net volume capacity of the UDF has been determined by: (1) making a volumetric comparison of final grade elevations shown on Design Drawing 4 to subgrade elevations shown on Design Drawing 3 within the consolidation area limits (to show the estimated gross volume); and then (2) subtracting the estimated volumes required to construct the baseliner and final cover systems (based on the thickness and surface area of those systems). The net available volume for consolidation material placement is 1.3 million cy. At the time of submittal of this Conceptual Design Plan, site groundwater elevation data are still being collected. Consequently, the final floor elevation of the UDF has yet to be determined. Once this elevation is finalized, the design grading may need to be adjusted to remain compliant with Revised Permit's requirements.

4.2.6 Final Cover Installation

The UDF final cover will likely be installed in a phased manner on areas that have achieved final grade and where installation of the final cover will not impact continued operation of the UDF as required prior to final closure. Phasing of final cover installation will consider the management of stormwater in a manner that avoids generating contact water resulting from final cover areas and continuing consolidation material placement operations.

4.3 Subsurface Drainage System Design

The design of the subsurface drainage system has not been completed as part of the conceptual design. This section, therefore, contains only limited information regarding that system. A more detailed design will be provided in the Final Design Plan.

4.3.1 Drainage Layer Design

The geocomposite drainage layer included in the final cover system will collect and convey non-contact water that infiltrates into the final cover soil layers. This layer will minimize hydraulic head on the underlying geomembrane and geosynthetic clay liner, thereby reducing leakage into the consolidation material and the subsequent generation of leachate. The geocomposite drainage layer will also enhance slope stability for the overlying final cover system layers. The design of the geocomposite drainage layer will be based on the anticipated maximum rate of infiltration through the cover soil and appropriate reduction factors and an overall factor of safety. The Final Design Plan will include calculations documenting the drainage layer design.

4.3.2 Collection and Conveyance Piping Design

Subsurface collection and conveyance piping will be used to remove non-contact water from the geocomposite layer (discussed in Section 4.3.1) and will release the collected water into the stormwater management features on and around the perimeter of the UDF. The collection piping will be perforated to allow non-contact water to enter the piping. Non-perforated conveyance piping will be used wherever the piping is to provide a conveyance function but collection is not needed. Both types of piping will likely consist of corrugated HDPE construction. Collection piping will be located based on the proposed final grading (e.g., coincident with surface water diversion berms as indicated on Design Drawing 9) and at appropriate spatial intervals as needed given the capacity of the contributing geocomposite and the rate at which non-contact water infiltrates through the cover soil to the geocomposite drainage layer. The capacity of the collection and conveyance piping will be based on the Manning equation for pipe-full conditions. The Final Design Plan will include calculations documenting the subsurface collection and conveyance piping design.

4.4 Surface Water Management System Design

The design of the surface water management system has not been completed as part of the conceptual design. This section, therefore, contains limited information regarding that system, and will be expanded in the Final Design Plan. Stormwater management features will be designed in accordance with the requirements of EPA's National Pollutant Discharge Elimination System (NPDES) regulations under the Clean Water Act on stormwater discharges – namely, 40 Code of Federal Regulations (CFR) 122.26(c)(1)(ii)(C) and 122.44(k) – which constitute an ARAR. In addition, the UDF stormwater management system design will be consistent with the Massachusetts Stormwater Handbook and Stormwater Standards (Stormwater Handbook; MassDEP 2008). Construction and operation of the UDF will employ best management practices that will control stormwater runoff from the UDF area in a manner that minimizes erosion, sediment migration, and other potential impacts to drainage conditions downgradient of the UDF.

4.4.1 Drainage Patterns

Stormwater runoff from the final cover will flow via sheet flow across the constructed grade before being intercepted by surface water diversion berms or by the perimeter drainage ditch at the edge of the consolidation area. Stormwater that is collected and conveyed by open channels and culverts from the UDF will be conveyed to an infiltration basin proposed to the north of the UDF. A portion of the stormwater runoff from the outside side slopes of the UDF perimeter berm cannot be routed to this stormwater basin because of elevation constraints and will instead be managed by infiltration features constructed along the toe of the perimeter berm. Stormwater runoff from the UDF support area is anticipated to drain into a smaller infiltration basin located to the south of the UDF.

4.4.2 Open Channel Design

Open channels will include the perimeter drainage ditch along the top of the perimeter berm and surface water diversion berms on the side slopes of the UDF itself as well as on a portion of the perimeter berm side slope. The open channel design will include an assessment of channel capacity (flow rate) and erosive forces. Channel capacity will be evaluated using Manning's equation for open channel flow and is a function of channel slope, cross-section, and channel roughness. The potential for erosion in the open channels will be assessed for both newly constructed (bare soil) and established (vegetated) conditions and may dictate the need for temporary or permanent erosion protection such as matting, riprap, or other armoring.

4.4.3 Culvert Design

Culverts will be used where needed to convey stormwater beneath roads or other features to maintain continuity of those features. Culverts may also be used to convey stormwater down the side slopes of the UDF. The culvert design will be based on the peak design flow rate at the culvert inlet and will account for energy losses within the barrel as well as at the entrance and exit. The culvert design will also account for tailwater effects associated with downstream features. Each culvert will include outlet protection to dissipate flow energy and minimize erosion of the receiving ground surface.

4.4.4 Stormwater Basin Design

Infiltration basins will act as both a water quality treatment measure and as a means of attenuation for the peak runoff flow rates resulting from higher intensity precipitation events. The size and depth of the infiltration basins will be determined based on the estimated peak storm event flow rates and volumes and the infiltration capacity (permeability) of the basin soils.

5 UDF Operational and Support Areas

The design aspects relating to the UDF operational and support areas have not been completed as part of the conceptual design. This section, therefore, contains limited information regarding those areas, including the monitoring activities to be conducted. More detailed design information regarding UDF operational and support areas, including the monitoring to be conducted in them, will be provided in the Final Design Plan and the associated UDF OMM Plan.

5.1 Site Security

The portion of the GE Parcel that will include the UDF consolidation area will be surrounded by a chain-link fence that will be installed prior to UDF construction. Access into the fenced area will be provided at discrete locations via locking gates. These locations are anticipated to coincide at crossings with existing and proposed roads. Additionally, the UDF operational area is anticipated to be secured by a chain-link fence. Other portions of the GE Parcel that may be designated as the UDF support area may include chain-link fence in certain locations.

5.2 Disposal Material Management and Placement

As of the date of this Conceptual Design Plan, methods for transporting dredged or excavated material to the UDF for disposal are still being evaluated but will include trucking or conveyance via slurry within a temporary pipe to the UDF. The methods and procedures for transport of material to the UDF will be described in GE's On-Site Transportation and Disposal Plan. The methods for managing and placing that material within the UDF are dependent on the means of delivery of the material from the remedial areas. The material will be placed in a manner that maximizes the capacity of the UDF and minimizes impacts to the community and environment. The disposal of such material at the UDF will be discussed further in the Final Design Plan.

5.3 Management of Contact and Non-Contact Waters

Waters from the UDF may include runoff from rainfall or snow melt, decant water from the consolidation operation, and leachate collected in the primary or secondary leachate collection systems. Regardless of origin, the management of waters generated from or encountered within the UDF will depend on whether the waters have had the potential for contact with the consolidation material (contact water) or not (non-contact water).

Non-contact waters may include any of the following:

- Water or runoff from the existing ground surface within the UDF or UDF support area footprint;
- Water encountered in the ground or managed during the excavation of the UDF and during baseliner construction;
- Runoff from a newly constructed cell prior to placement of consolidation material;
- Runoff from unused portions of a cell that are segregated from active portions of cells by geomembrane;
- Runoff from the UDF perimeter berm;
- Runoff from intermediate final cover(s); and

- Runoff from the UDF final cover at any stage of construction following completion of the final cover geomembrane.

Contact waters include any other waters besides those listed above. By default, waters will be assumed to be contact waters unless the origin and potential for non-contact with consolidation materials are determined. Once final cover has advanced to and includes completion of the geomembrane layer, runoff from the area will be assumed to be non-contact in nature. Therefore, maintaining separation between contact and non-contact waters is necessary for proper management of UDF waters.

5.4 UDF Support Facilities

It is anticipated that UDF support facilities will be constructed to provide access to the UDF perimeter berm, parking for personnel, staging for inbound/outbound materials and equipment, and a location for a leachate storage and treatment facility. More details regarding those support facilities, including their locations within the GE Parcel, will be provided in the Final Design Plan.

5.5 Groundwater Monitoring

A system of groundwater monitoring wells was installed as part of the PDI, as noted in Section 2.3.5. These monitoring wells are depicted on Design Drawing 2 and are located to encircle the UDF consolidation area. The locations of these monitoring wells allow for sampling of groundwater upgradient and downgradient of the UDF, as well as to the sides. These wells have already been sampled for groundwater quality (see Section 2.3.7) and will continue to be sampled on a routine basis. Data collected prior to construction of the UDF will be used to establish baseline conditions for comparison to future sampling data.

5.6 Air Monitoring

Development of the baseline air monitoring program to be operated prior to use of the UDF and design of the air monitoring program to be implemented during construction and operation of the UDF have not been completed as part of the conceptual design. Therefore, those air monitoring programs will be described in the Final Design Plan and/or the associated UDF OMM Plan.

5.7 Surface Water Monitoring

As discussed in Section 5.3, waters from the UDF will be considered either contact or non-contact, depending on their origin. Contact surface water is assumed to require collection and treatment. Non-contact surface water will be managed as traditional stormwater in accordance with the requirements of EPA's Clean Water Act NPDES regulations on stormwater discharges (40 CFR 122.26(c)(1)(ii)(C) and 122.44(k)) and the Stormwater Handbook (MassDEP 2008). Surface water monitoring during UDF operation will be dependent on the design of the stormwater management system, which is still being developed and will be presented in the Final Design Plan and/or UDF OMM Plan.

6 Measures to Address Habitat Impacts

The Final Revised SOW requires that the Conceptual Design Plan provide a preliminary discussion of the habitat impacts of the UDF and support areas and potential measures to address such impacts. Based upon the baseline habitat assessment presented in the Interim PDI Data Summary and the conceptual design of the UDF to date, this section presents a preliminary discussion of habitat impacts and potential measures to address them. For this purpose, it is recognized that while the anticipated limits of consolidation material (the consolidation area) and the associated operational area have been identified, the associated support area within the GE Parcel remains undefined. Given this situation as well as the fact that the design is only conceptual at this stage, the identification of habitat impacts has not been completed and will be evaluated further in the Final Design Plan.

Habitat impacts within the consolidation area will be limited due to the prevailing habitat cover types in this area and the associated land use history as a recently disturbed earth removal area. The area consists of approximately 15.5 acres in total area, roughly 92% of which were previously subject to this past earth work and are currently either in a non-vegetated condition (2.66 acres or 17%) or composed of recently established grassland with some scattered woody shrubs and forbs (11.58 acres or 75%). Only 1.22 acres of the consolidation area (7.9%) consist of forested cover habitat. Since the habitat value of such disturbed cover conditions is generally limited to a small suite of wildlife species adapted to such conditions and given the land use history of such recent disturbances, the impacts related to this loss of habitat will be minimal. Further, the longer-term state of this consolidation area is anticipated to be established in a similar grassland cover type, such that the long-term habitat impacts will also be minor and may even constitute an improvement in the habitat.

Activities outside of the consolidation area, in both the operational and support areas, will affect a greater range of habitat conditions, including both early successional grassland/non-vegetated habitat and mature forested cover, as described in the baseline habitat assessment. Habitat impacts from activities in such areas will be addressed by several best management measures, preliminary short-term measures (e.g., sedimentation/erosion controls and time of year restrictions for some construction activities), and long-term measures (e.g., vegetative screening or buffers and habitat restoration). All such measures will be further evaluated and discussed in the Final Design Plan when construction activities are more completely designed.

The impacts (if any) from the construction and operation of the UDF and UDF support facilities on the identified regulated wetlands and MWPA resource areas and the identified vernal pool (mentioned in Section 2.3.1 and described in the baseline habitat assessment) will also evaluated further during additional design activities. Further, to the extent that mitigation for the loss of regulated resource areas is required, the additional data necessary for such mitigation will be collected during additional PDI activities, and the mitigation measures will be described in the Final Design Plan.

Potential impacts on the habitat of threatened or endangered species, notably the northern long-eared bat (as also discussed in the baseline habitat assessment), and potential measures to address such impacts (if any) will also be evaluated further as the design proceeds. Such impacts and measures, if any, will addressed in the Final Design Plan.

7 UDF Closure

The design of the UDF closure has not been completed as part of the conceptual design. As a result, this section provides only very limited information regarding UDF closure. The planned closure activities will be discussed further in Final Design Plan, with specific details to be presented in the Final Cover/Closure Plan for the UDF (described in Section 4.3.2.5 of the Final Revised SOW).

7.1 Final Cover Phasing

Final cover construction will likely be performed in a phased manner to reduce the generation of leachate due to rainfall and snowmelt and to confine the consolidation material at the earliest opportunity. The timing and extent of each phase of final cover construction will be driven by the actual rate of consolidation material placement, the ability to achieve final grade while leaving sufficient open area for ongoing consolidation operations, and the ability to manage stormwater runoff and maintain separation between contact and non-contact stormwater.

7.2 Documentation for Final Cover Construction

Drawings and specifications will be prepared for each phase of final cover construction. A certification report will be prepared following the completion of each phase of final cover.

7.3 Future Land Use Restrictions

In accordance with Section II.B.7.d.(2) of the Revised Permit, GE will prepare and record a Grant of Environmental Restriction and Easement (ERE) in accordance with the CD to prohibit excavation of the closed UDF, prohibit extraction, consumption, or utilization of groundwater underneath the UDF area (including a 500-foot zone around the waste consolidation area) and restrict the future use of and access to the UDF area. The Final Cover/Closure Plan for the UDF will describe GE's plans for preparing and recording this ERE and for conducting subsequent inspections to evaluate compliance with the ERE. It will also discuss potential future uses of the area.

8 UDF Post-Closure Activities

The design of post-closure activities for the UDF and associated areas has not been completed as part of the conceptual design. Those activities will be discussed further in the Final Design Plan, with additional and final details in the UDF Post-Closure Monitoring and Maintenance Plan (described in Section 5.2 of the Final Revised SOW). Those activities will include long-term groundwater and air monitoring, routine periodic inspections and maintenance or repair of the final cover system and other components of the UDF, inspections and maintenance/repairs of ancillary components of the UDF (e.g., fences, gates, signs), inspections to ensure compliance with the ERE for the UDF area, and associated documentation and reporting.

The Boston Globe
November 9, 2021

With General Electric's split, the age of the industrial conglomerate is ending

The promise GE brought to Boston in 2016 looks far smaller today.

By **Jon Chesto** Globe Staff, Updated November 9, 2021, 7:37 p.m.

GE's corporate headquarters on Necco Street in Boston. The storied company will divide itself into three public companies focused on aviation, health care, and energy. CRAIG F. WALKER/GLOBE STAFF

When General Electric moved to Boston more than five years ago, the industrial titan offered a grand vision for its future, one that spanned a dizzying array of industries.

But the company's fortunes soon reversed. Ambitions were scaled back amid financial trouble, and whole divisions were sold off. Now, the latest twist: Chief Executive Larry Culp on Tuesday unveiled a plan to split what's left of GE into three separate companies, in the hopes that they will be more successful on their own than they have been under the same corporate umbrella.

In early 2023, Culp said, GE will spin out its health care business as a standalone public company, with GE's renewable energy and power businesses to be combined and spun out a year later. The remaining company will primarily consist of GE Aviation, which builds and services jet engines.

What the spinoffs mean for GE's Boston headquarters, where the company employs fewer than 200 people, remains to be seen. But any local impact will be muted by the divestitures and streamlining GE has already undergone under Culp and his predecessor John Flannery.

The grand headquarters along Fort Point Channel that then-CEO Jeff Immelt envisioned when GE moved here from Connecticut in 2016 is now roughly 100,000 square feet of rehabbed warehouse space. Hundreds of new tech jobs planned for the city never materialized — and the public subsidies offered to entice GE here have been paid back or relinquished. Even its sponsorship deal with the Celtics, which for a few years put the company's famous logo on the team's equally famous green jerseys, is over.

Culp, in an interview, said he doesn't see this as the end of the road for the storied company, whose roots date back well over a century ago to inventor Thomas Edison. Rather, Culp positioned it as a new chapter for GE, which reported nearly $80 billion in revenue last year and remains valued at more than $120 billion.

Ground was broken in 2017 for GE's new headquarters in Fort Point. The company employs fewer than 200 people there now. PAT GREENHOUSE

"None of these businesses are going to be small," said Culp, who plans to remain with GE through the spinoffs and oversee the aviation-focused business afterward. "We're going to move forward and do what we've always done: compete, win, and serve. That's what we've done all the way back to Edison. We'll do it in a different form, but the DNA will never go away."

Culp said GE remains committed to Massachusetts, where it employs about 3,300 people, mostly at the GE Aviation plant in Lynn. The questions of where the various corporate headquarters offices will ultimately sit have not been answered. But Culp vowed to stay in Boston, at least for the near-term.

"For the foreseeable future, I don't plan to move my desk," he said. "Boston has been a good home for us."

The timing of the breakup announcement came as a surprise, but the idea certainly did not. As one of the country's last remaining true industrial conglomerates and arguably its best known, GE has been long eyed as a possible candidate for this sort of split. During his brief tenure as chief executive, Flannery opened the door to such a move, and ended up agreeing to divest a number of business lines, such as lighting and train engines.

So why now? There are at least two big factors. By most accounts, the company is in stronger financial shape than it was when Flannery took the helm in 2017 or when Culp took over the following year. Back then, the company was still struggling under the weight of at least two major deals orchestrated under Immelt as well as big financial problems in its power and insurance businesses.

Culp has spent three years stabilizing the company and paring down debt. By the end of the year, he will have shaved $75 billion in debt since 2018, in part thanks to the just-closed sale of GE's aircraft-leasing business. (About $65 billion in debt will remain.)

The businesses needed to show credit rating agencies and customers that they were strong enough to last for the long haul on their own, without a giant parent company to fall back on, said Nick Heymann, an analyst with investment bank William Blair & Co.

"What we're trusting is that Larry knows these businesses have reached the proper tipping point where they can stand on their own financially," Heymann said.

Another big reason for the spinoffs: GE's listless stock price. GE investors clearly have been unimpressed with the current structure. No matter what moves Culp made, the stock has traded in a relatively narrow range, leaving GE's market value a fraction of its peak in 2000, when Jack Welch presided over what was then a far-flung empire. (On news of the split Tuesday, the stock rose a meager 2.7 percent to close at $111.29 a share.)

Speaking Tuesday, Culp acknowledged the company has been "underinvested" by major shareholders who might prefer aviation, health care, or energy to a broad conglomerate. And some analysts said the split could spark their interest.

"This will . . . attract more investors interested in GE's specific growth businesses without having to own the entire conglomerate structure," said Mark Williams, a finance professor at Boston University's Questrom School of Business. "Clearly for GE, the pieces spun out are worth more than the whole."

The GE of today is certainly not small: The company employed 174,000 people across 170 countries at the end of last year, including 56,000 in the United States. However, that total number is just over half what it had roughly five years ago, before Flannery began divesting businesses.

About 47,000 people work for the Chicago-based health care division, while roughly 75,000 people work for GE's power and renewable energy businesses that will be combined, along with the software business known as GE Digital. (The executive who will lead that group is currently based in Atlanta.) And about 40,000 people work for GE's aviation business, which is headquartered in Cincinnati today.

Many questions still need to be sorted out. It's too early to know whether the health care or energy businesses would keep the GE brand, for example, or what might happen to GE's college-like campus in Crotonville, N.Y., used for training and corporate retreats.

Peter Cohan, a strategy lecturer at Babson College and a longtime GE shareholder, said he suggested such a breakup in 2007 when he met with GE's then-chief financial officer, Keith Sherin, at the company's Rockefeller Center offices in Manhattan.

Even back then, the concept of an industrial conglomerate was falling out of favor with investors and academics. One key argument for conglomerates — that unrelated business lines in different parts of the economy would balance each other out, and stabilize the company as a whole — turned out to be nonsensical, Cohan said.

And many have broken up over the years, including Connecticut-based United Technologies, which last year split itself into three pieces, much as GE is doing. The company's core aerospace business merged with Raytheon and is now based in Waltham.

Now, it's GE's turn.

"GE was the last gasp of the conglomerate idea," Cohan said. "The fact that GE is finally doing this is the ultimate punctuation mark at the end of this era of conglomerates."

Jon Chesto can be reached at jon.chesto@globe.com. Follow him on Twitter @jonchesto.

Show comments

U.S. News & World Report - July 18, 2022

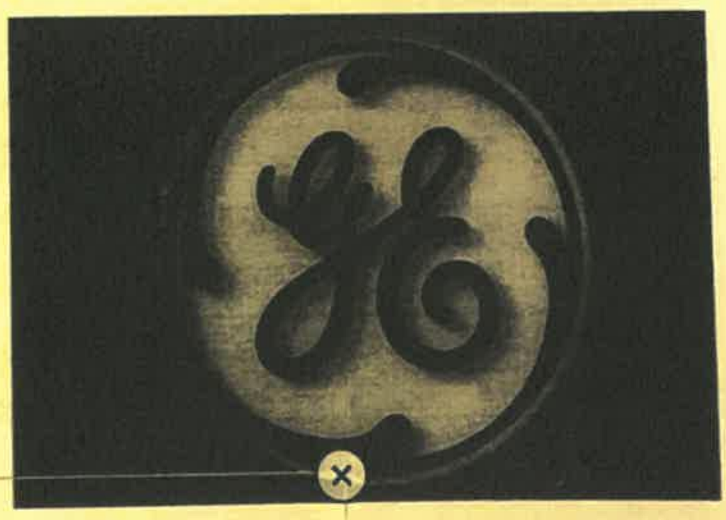
GE Reveals Identity of 3 Companies After Historic Split

GE has decided on the names it will give to the three publicly companies that it plans to divide itself into.

By Associated Press

July 18, 2022

Save



FILE - The General Electric logo is displayed on a sign outside their headquarters, Nov. 10, 2021, in Boston. General Electric has decided on the names it will give to the three companies that it plans to divide itself into. GE said Monday, July 18, 2022 that the healthcare business will be named GE Healthcare; the aviation business will be called GE Aerospace; and its energy businesses, including GE Renewable Energy, GE Power, GE Digital, and GE Energy Financial Services, will be named GE Vernova. (AP Photo/Charles Krupa, file) THE ASSOCIATED PRESS

By MICHELLE CHAPMAN, AP Business Writer

General Electric on Monday revealed the names of the three companies that will operate on their own after the historic split of the one-time conglomerate, including a mashup of words that will make up the name of the new energy company.

GE announced in November that it planned to split into three companies focused on aviation, health care and energy.

The name of the aviation business that will essentially be the remaining core of GE, headed by CEO Larry Culp, will be called GE Aerospace.

The energy wing, including GE Renewable Energy, GE Power, GE Digital, and GE Energy Financial Services, will be called GE Vernova.

"The new name is a combination of 'ver,' derived from 'verde' and 'verdant' to signal the greens and blues of the Earth, and 'nova,' from the Latin 'novus,' or 'new,' reflecting a new and innovative era of lower carbon energy that GE Vernova will help deliver," the company said Monday.

The healthcare business will be named GE Healthcare.

The split is the culmination of years of paring by the massive American conglomerate which signaled a shift away from a corporate structure that dominated U.S. business for decades.

The company has already rid itself of the products most Americans know it for, including its appliances, and in 2020, the light bulbs that GE had been making since the late 19th century when the company was founded.

The breakup marks the apogee of those efforts, divvying up an empire created in the 1980s under Jack Welch, one of America's first CEO "superstars."

The company said Monday that GE HealthCare will be listed on the Nasdaq under the ticker symbol "GEHC." GE plans a tax-free spin-off of the business early next year.

GE Vernova is exected to be spun off in early 2024. Once the spinoffs are complete, GE will be an aviation-focused company that will own the GE trademark and provide long-term licenses to the other companies.

Tags: Associated Press, business, Massachusetts