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Transmitted Via Federal Express

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Susan C. Svirsky, Project Manager
United States Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: EPA Review of GE's June 2006 *Pilot Study Work Plan for Silver Lake Sediments,*
GE-Pittsfield/Housatonic River Site, Pittsfield, Massachusetts
Silver Lake Area (GECD600)

Dear Ms. Svirsky:

This Letter has been prepared in response to discussions between the General Electric Company (GE) and the Environmental Protection Agency (EPA), and the EPA's July 18, 2006 conditional approval letter related to the June 2006 *Pilot Study Work Plan for Silver Lake Sediments* (Work Plan). Provided below is a discussion of GE's responses to EPA's comments.

For convenience, EPA comments have been provided in italics, followed by GE's response in standard format. Where EPA comments require revisions to the Work Plan, those revisions are described in the GE responses and are implemented, as appropriate, in the enclosed revised Work Plan.

Comment 1: ***Page 1-2, Section 1.2:*** *Specify in the objectives the need to understand shear strength behavior and side slope creep, and later in the report, where appropriate, discuss how the evaluation tools will be used to achieve the objective.*

Response 1: Text has been modified in Section 1.2 to reflect the importance of understanding the short- and long-term sediment behaviors in response to cap placement. Text has also been added in Section 4.3.1 to clarify how the monitoring program will provide information related to the monitoring objectives.

Comment 2: ***Page 3-2, Section 3.3:*** *Provide a figure illustrating the three different cap configurations in a cross-sectional view.*

Response 2: Figure 6 has been added to the Work Plan illustrating cross-sections of the three proposed cap configurations.

Comment 3: ***Page 3-2, Section 3.3****: Be more specific regarding what constitutes the appropriate management and disposal of debris removed from the lake bed.*

Response 3: During performance of the pilot study, debris removed from the lake bottom prior to cap placement, if any, will be temporarily held in the materials staging area, if necessary, and are anticipated to be disposed of off-site at a TSCA permitted facility. Should the need arise to modify this plan, GE will

discuss these modifications with EPA prior to implementation. Text has been modified in Section 3.3 to clarify this practice.

Comment 4: Page 3-4, Section 3.3.3: *It is noted in the work plan that the composite geotextile is being proposed at this stage primarily to assess the extent to which inclusion of geotextile minimizes mixing. Evaluate the potential effectiveness of including a layer of activated carbon or alternative active substance in controlling PCB migration through the cap for the full-scale cap placement.*

Response 4: GE will, as part of the forthcoming report on the performance of the Pilot Study, perform a desktop evaluation of potential performance enhancement realized by including an activated carbon or similar activated substance in the geocomposite.

Comment 5: Page 3-4, Section 3.4: *Discuss sequencing of cap placement to minimize the lateral motion or surge resulting from the termination of descent of cap material when it encounters the sediment bed. Consider how this can be minimized, particularly in the placement of the initial lift by correctly sequencing the placement (always working outward from areas with cap material).*

Response 5: In general, all cap related geotextile materials will be placed first, followed by the isolation layer material, and then the armor system. The placement of isolation materials, and subsequent armor stone placement, is anticipated to begin in the deeper portions of the lake and proceed towards the shallow portions, thereby beginning placement in the vicinity of the sloped banks at the toe of the slope and building up towards and/or beyond the water line. As such, materials placed at the toe of the slope will support those materials placed in the "up-slope" areas. Text has been modified in Section 3.4 to clarify this procedure.

Comment 6: Page 3-5, Section 3.5 and Figure 5: *Describe the sequencing of cap placement and shoreline erosion protection.*

Confirm that the ACE guidance for thickness of riprap is 1.5 X the D_{100}, and specify the D_{100}, and provide the calculations. If the calculations differ proposed in the work plan are incorrect, modify the plan to correct the riprap thickness.

It is stated that the armor layer will be constructed to extend from an elevation of 973.1 ft (2.8 ft below wsel) upward to an elevation of 978.1 ft (2.2 ft above wsel) along the shore of the test area. Given that the test area is on the eastern shore, explain how this will satisfy the description of implementation of the performance standard provided in Section 6.2.1 of Attachment I to the SOW of the armor layer extending into the lake to a mean water depth of approximately 5.3 ft along the east and west shores and approximately 2.5 ft along the north and south shores.

Response 6: As discussed above, cap construction is anticipated to be complete before initiation of armor system installation. Similar to the cap, armor system construction is anticipated to be sequenced such that lower-elevation materials are placed first and are available to support the materials placed in "up-slope" areas. Text has been modified in Sections 3.4 and 3.5 to clarify this.

The Shore Protection Manual (SPM; USACE, 1984), one of the most widely accepted means of estimating armor layer stone sizes and thicknesses, was used in the design of the armor system to be installed over the pilot study cap. Appendix A has been added to the Work Plan to provide the armor system calculations.

As discussed in Appendix A, the SPM standard for armor layer thickness is estimated in two ways: either using the median and maximum stone weights, or using the median stone diameter. Both the stone weight methods returned armor thicknesses less than one foot, and thus by default, the SPM indicates a

conservative 1 foot armor layer thickness should be used. Using the median stone diameter method, and considering the use of graded rip rap, the SPM guidance indicates two times D_{50} should be used to calculate armor layer thickness. As discussed in the Work Plan, a graded rip rap (D_{15}: 4-inches, D_{50}: 6-inches, D_{100}: 8-inches) with an armor thickness of 1 foot has been selected for construction of the armor system.

Performance Standards included in the SOW related to cap construction require "an overlying armoring layer of stone, incorporated along the shoreline as necessary to prevent erosion of the isolation layer due to wind-induced wave action," without specifying a particular depth for the stone. The Performance Standards in Attachment I to the SOW provide for the construction of a shallow-water shelf along the shorelines of the lake to provide an improved habitat for aquatic species. This shallow-water shelf shall consist of an armoring layer of stone to be placed around the shoreline of the capping system [and] a three-inch layer of gravel and sand over the armoring stone to facilitate fish usage on the shelf." These Performance Standards do not contain required dimensions or elevations for the construction of the armoring, or the overlying gravel and sand layer. The armor system dimensions and specifications included in the SOW were based on preliminary evaluations and represented conceptual designs. The SOW and the Sediments PDI report both state that armor system design specifications would be updated, and may change, prior to construction of the cap for Silver Lake sediments. As discussed in the Work Plan, GE intends to place a 3-inch layer of gravel and sand over the underwater extent of the armor stone. Text has been modified in Section 3.5 to clarify this plan.

Comment 7: Page 4-3, Section 4.3.1: *Provide a more informative rationale for the locations selected for all monitoring devices.*

Response 7: In general, locations for installation of various monitoring devices were selected to provide a broad representation of field conditions anticipated to be encountered. As such, to the extent practicable, each of the three individual test areas were provided with the same monitoring coverage (i.e., the same number of devices placed in similar environments). Similarly, the monitoring program was designed to provide feedback related to sediment response to cap placement in the deep-, mid-, and shallow-depth areas, as well as from steeper-, moderately-, and flatter-sloped areas. Text has been added to Section 4.1 noting this rationale.

Comment 8: Page 4-4, Section 4.3.1: *Provide the basis for the specification of a consolidation rate of 1 inch/day. Has the impact of the settlement plate directly on consolidation been considered? Provide discussion in the text as to how this will be interpreted.*

Response 8: The consolidation rate of 1 inch/day was selected in part based on results of the Bench-Scale study as reported in the *Bench-Scale Study for Silver Lake Sediments* (BBL, 2006). During the bench-scale study, the maximum daily consolidation experienced in any of the cores was 1.25 inches. This rationale was added to Section 4.3.1.

Moreover, as discussed in the revised Section 4.3.1, the vibrating wire and physical settlement plates are anticipated to be constructed of thin aluminum sheets approximately 2 x 2 feet in size that are placed on either the sediment surface, or the top of the geotextile surface. Aluminum has been specified because its light weight should minimize the potential impact of the settlement plate directly on consolidation. Consolidation due to the weight of the settlement plates will be recorded during installation, either electronically (the vibrating wire settlement cells) or with conventional survey techniques (physical settlement plates).

Comment 9: Page 4-5, Section 4.3.2 *- Confirm that the SPI can penetrate the cap material (sand) to the depth of four lifts (nominally 8"). The device can have reduced penetration capabilities with increasing*

grain size. Perform SDI measurements at the maximum number of locations that can be done within a reasonable deployment (i.e. no less than 20). Provide a figure with the proposed locations.

Response 9: Several providers of SPI services, including those anticipated to be performing bathymetric, acoustic profiling and SPI services related to the Pilot Study indicate that SPI cameras can penetrate fine sands (similar to the cap material) to as much as 10 inches. GE will employ SPI equipment at 20 locations, as discussed in the revised Section 4.3.2, arranged in a grid fashion across the entire study area. Figure 7 has been modified to illustrate the locations at which SPI images will be captured.

Comment 10: Page 4-5, Section 4.3.3: *Provide more specifics regarding the conditions under which exceedence of the turbidity reading of 50 NTUs will be evaluated (e.g., average, duration of measurements, instantaneous). Specify the sampling locations at which the visual observations of sheens or plumes will be evaluated for additional sampling.*

Response 10: Frequent assessments of the continuously recorded turbidity data will be made at all three proposed locations. During any one assessment at any of the two locations furthest from the study area, if the readings (averaged over 15-minute intervals) exceed 50 NTU, water quality samples for analysis of PCB and TSS will be collected at all three water monitoring locations. Text has been modified in Section 4.3.3 to clarify this monitoring practice.

Water samples will also be collected for analysis of PCBs and TSS if significant sheens or sediment plumes are visually observed emanating from the pilot study area or from activities related to the pilot study (e.g., barge movement). The water samples will be collected from the plume area and the two water monitoring locations nearest the outfall. Text has been modified in Section 4.3.3 to clarify this monitoring practice.

Comment 11: Page 4-6, Section 4.4.1: *The different surveying techniques may provide alternative output and capabilities in resolution when determining cap placement effectiveness. Therefore, both the bathymetric survey and acoustic profiler should used to establish pre-construction baselines. Likewise, without a baseline, it may be difficult to distinguish the mixed layer using the SPI technique. Include some baseline locations in the center area, after the geotextile has been placed in the adjacent areas.*

Response 11: GE will add an additional acoustic surface profile survey prior to initiating construction activities to augment the bathymetric survey previously proposed. Additionally, prior to the placement of isolation materials, GE will employ SPI technology at 8 locations in the non-geotextile test area to establish pre-construction images of sediment conditions and profiles. Table 1, Figure 7 and text in Section 4 have been modified to reflect these additions.

Comment 12: Page 4-7, Section 4.4.2: *Instead of submitting the 6" to top-of-isolation layer horizon for analysis, analyze the top 2" (nominally 12" to 14") horizon and the remaining 6" to ? (nominally 12") horizon separately. Retain the analysis of the bottom 6" as described. There may be problems with sample core retention given the nature of the cap material. Discuss how this will be handled if encountered and ways to minimize this issue. Add a sediment collection location in the center run, second cell from shore, of the composite geotextile layer test area to evaluate performance in the area of moderate slope.*

Response 12: GE agrees that care must be taken to minimize material disturbance and/or loss during sediment and cap material collection activities. To date, GE has collected well over 100 sediment cores from within Silver Lake, and will continue to employ the collection methods and practices as fully described in the *Field Sampling Plan/Quality Assurance Project Plan* (BBL, revised 2002). However, GE recognizes that the granular, less-cohesive nature of the saturated cap materials may cause difficulties with standard sediment core collection techniques. Alternative methods of core collection (e.g., core catchers, Russian peat samplers, K-B corers) that provide physical means of retaining and/or supporting materials in

the bottom of the core will be made available if standard collection techniques do not provide sufficient material recovery. Should the need arise to use any of these modified collection procedures GE will discuss these modifications with EPA prior to implementation.
GE will add an additional cap material collection location in the area it understands EPA to be referring to as "the center run, second cell from shore, of the composite geotextile layer test area" to evaluate cap performance and constructability in areas of moderate slope, as indicated on the revised Figure 10. Additionally, for all cap material cores collected, GE will separate the top two inches of the core (nominally 12- to 14-inches) from the previously proposed 6-inch to top-of-cap increment for individual analysis. As such, all cap material cores will be processed for analysis in the following increments (measurements relative to the sediment/cap interface, or geotextile layer): 0- to 2-inch, 2- to 4-inch, 4- to 6-inch, 6- to 12-inch, and 12- to 14-inch cap layers. As previously proposed, all of these samples will be analyzed for PCB, TOC and grain size. Text has been modified in Section 4.4.2 to reflect these changes.

General Comment: *Specifications, testing methods, and frequency of testing must be provided for the construction materials to be used in the pilot project (e.g. rip rap, TOC, geotextiles, etc.).*

Response to General Comment: GE has provided construction material specifications, testing methods, and frequency of material testing in Appendix A.

This revised Work Plan is intended to supersede and replace the version previously submitted in June of 2006. Please feel free to contact me with any additional questions.

Sincerely,

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GE Project Coordinator

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Enclosure

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