Public Input on General Electric's August 25, 2023 Restoration Performance Objectives and Evaluation Criteria Report

December 2023

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Citizens for PCB Removal Comments

GE-Pittsfield/Housatonic River Site Rest of River (GECD850)

Restoration Performance Objectives and Evaluation Criteria Report

November 25, 2023

The basis of this report is to describe the general conditions of the Housatonic River and what might be expected following any remediation activities during Rest of River remedial actions.

The main concern of CPR for all of these actions is not to return the Housatonic to what would be considered current conditions following those remedial actions, but to go further than what GE may believe they have an obligation to provide.

CPR DEMANDS that following so many years of living with a contaminated river that the Housatonic River be restored to a vibrant, clean, fishable, swimmable and healthy river system. This is our one chance to make things right for the citizens and communities who should be able to enjoy the river without fearful concerns.

None of this contamination of PCBs was caused by any other entity than GE and they are solely responsible to right their wrongs.

Nothing else is acceptable.

Charles Cianfarini
Interim Executive Director
Citizens for PCB Removal

November 27, 2023

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Via Email: R1Housatonic@epa.gov and smith.christopher@epa.gov

Re: **GE-Pittsfield/Housatonic River Site Rest of River (GECD850)**
Reach 5A Baseline Restoration Assessment Report/
Restoration Performance Objectives and Evaluation Criteria Report

Dear Mr. Smith:

On behalf of Mass Audubon, I submit the following comments on the Reach 5A Baseline Restoration Assessment Report and the Restoration Performance Objectives and Evaluation Criteria Report. As noted in our previous comments on this project, Mass Audubon is both a directly affected landowner - at our Canoe Meadows Wildlife Sanctuary in Reach 5A of the Rest of River area - and as a statewide conservation organization, we have a broader interest in the conservation and restoration of the Housatonic River Valley ecosystem for the benefit of both people and wildlife.

Mass Audubon's Senior Conservation Ecologist for our Central/West Region, Tom Lautzenheiser, reviewed the documents and provided the following comments.

Summary Comments

The baseline assessment is extensive, documenting the complex habitat features supporting a diversity of plant and animal life. We recommend that the monitoring and corrective action plans include anticipated climate change impacts. Monitoring should be more frequent, especially in the first three years, and should include biological parameters. More intensive invasive species controls and lower thresholds for invasive species management are warranted, since even small percentages of invasives in a highly disturbed area can result in habitats dominated by invasives over time.

Baseline Restoration Assessment

The Reach 5A Baseline Restoration Assessment (BRA) Report compiles the results of an extensive field data collection effort by many people over approximately two decades, creating a detailed portrait of the physical and

biological (and chemical, as applicable) characteristics of the Housatonic's riverine, riverbank, backwater, upland and wetland floodplain, and vernal pool habitat types, and the rare species that use them[1]. Lingering over the entire report is the question, "if this is how this place is with PCBs, what would it be without them?" Unfortunately, we cannot know, but if the remediation and restoration program can re-establish the functions and processes described within the report's various habitat types while reducing the risk of PCB-related ecological and human health harms, the stage will be set for broad ecosystem recovery.

Climate Change

As presented in the BRA, the Housatonic River, with its various habitat types, is a complex, dynamic ecosystem, and the report commendably captures much of the variability of physical and biological characteristics in the study area. Yet the report seems incomplete without a presentation of the potential effects of climate change on the various habitat types, even on a coarse/provisional basis. (Indeed, the term "climate change" only occurs once in the entire report, in relation to monarch butterflies.)

The baseline documented in the BRA is shifting inexorably with changes in temperature averages and extremes, as well as altered precipitation patterns relative to much of the 20th century climate. If the restoration program is designed around the conditions documented in the BRA, it will miss its opportunity to adapt to the conditions that restored plant communities and engineered structures (in natural channel design, for example) are projected to face in the coming decades. Tools like the U.S. Forest Service's Climate Change Tree Atlas (https://www.fs.usda.gov/ccrc/tool/climate-change-tree-atlas) should be considered when determining planting plans, for example. Hydrological modeling driving bank and channel design decisions should reflect ongoing and anticipated changes in storm frequency and severity. The Northeast hosts a robust community of climate adaptation researchers and practitioners in academia, NGOs, and state and federal agencies; EPA and GE should consider whether this community could have an advisory role in restoration design development.

As noted in previous comments, the restoration plans and corrective action measures need to take into consideration the changes in precipitation patterns that are occurring due to climate change, notably increasing intensities of precipitation events as well as increasing drought frequency.

Baseline Quantification

The BRA presents hundreds of pages of field data forms, photographs, and other documentation of ecological conditions from the study area over decades. Richly descriptive narrative summaries of the characteristics of and functional assessment for each habitat type are also provided. What seems to be missing, however, is a more distilled quantitative analysis of these data, which could be used to develop restoration targets. In addition to species richness in each plant community, for example, other diversity indices (such as evenness) could be calculated; hydroperiod and other metrics from vernal pools could be summarized with basic statistics. Tabular summaries, including mean, range, standard deviation, etc., as appropriate, of collected field data would help quantify baseline conditions and facilitate restoration design.

[1] Mass Audubon appreciates the selection of the report's cover photograph, an aerial view down the river valley from the vicinity of West Pond at Canoe Meadows—a more quintessential image of Reach 5A, with the river flanked by wetlands, fields, and forests, would be hard to find.

Restoration Criteria Report

Restoration Objective Types

The major restoration objectives identified for riverine, riverbank, backwater, impoundment, floodplain wetland, upland floodplain, and vernal pool habitat types are based primarily on physical/structural parameters, such as re-establishing pre-remediation hydrology, limiting erosion/scour, creating various habitat features, and attaining 80 percent cover of native target plant species in a variety of habitat types. Such physical parameters are important for evaluating success but are not sufficient.

The remediation monitoring program should include biological parameters such as macroinvertebrate community characterization within riverine and other aquatic habitat types, and plant community composition metrics (e.g., diversity and evenness indices, similarity to reference sites, etc.) within planted restoration areas. Evidence of breeding populations of obligate amphibian species should be collected as part of any vernal pool monitoring as well. Many of these measures are proposed to be evaluated in year seven following the completion of restoration activities, but tracking these parameters annually will facilitate a more quantitative and nuanced evaluation of the changes on restored areas over time.

Ultimately, all interested parties desire a biologically diverse Housatonic River system with ecologically insignificant residual PCBs. To this end the Revised Final Permit includes short- and long-term biota monitoring performance standards for fish fillets and/or duck breast tissue, which will provide a general index of PCB levels in the environment. Potentially other organisms could/should also be included in tissue sampling; PCB levels in long-range migratory waterfowl such as ducks probably do not reflect local exposure. Frogs or turtles (such as snapping turtle) that spend most of their lives in contact with area sediments could be alternative sampling targets. In any case, the restoration criteria described in this report do not include PCB sampling from soils or biota, which should be metrics of primary interest and included in any evaluation of restoration performance, consistent with the established cleanup target concentrations.

Monitoring Frequency and Duration

Section 5.1 of this report specifies that two monitoring visits will be conducted per year for the first three years following completion of restoration activities, and once per year in the fourth, fifth, and seventh years. Drawing from Mass Audubon's own experience with complex ecological restoration projects, this monitoring schedule is inadequate for identifying and responding effectively to potential problems with establishing native plant species and communities. It is encouraging that Section 6 (Preliminary Maintenance/Corrective Action Program) identifies many plant establishment challenges and proposes appropriate BMPs to address them. But various challenges, including deer and beaver herbivory, vole damage, drought stress, sediment erosion and/or deposition, and invasive plant competition, can emerge over various time scales, for some a season or more, and others even in less than a day. The monitoring plan for at least the first two years should include quarterly visits at a minimum and provide flexibility for increasing visit frequency or extending the monitoring period beyond seven years.

Invasive Plant Management

Invasive plant species represent an important challenge to the success of efforts to restore the functions and characteristics of ecological communities affected by remediation activities. As described, there seems to be some ambiguity about the extent to which invasive plant populations will be managed in the post-remediation period. For instance, two criteria for riverbank and floodplain restoration are:

- Mean percent cover of native target species is equal to or greater than 80 percent in each design plant community type; and
- Mean percent cover of invasive or likely invasive plant species…is equal to or less than 10 percent in each design plant community type *or equal to or less than a percent cover documented at reference sites*… [emphasis added].

Footnotes explain that certain sections of riverbank and floodplain are dominated by invasive plant species prior to remediation, and that remediation activities may not be sufficient to limit the establishment of these species post-remediation. In these invasive plant dominated areas, does the 80 percent cover goal for native target species, and the related 80 percent survivorship goals, still apply? Or, if a reference community had, for example, 80 percent cover of invasive plant species, would that override the goals for native target plant species establishment?

The latter interpretation is not acceptable. While GE is not especially responsible for the current distribution of invasive plant populations throughout the Rest of River site, the remediation offers perhaps the best opportunity to improve the ecological condition of affected areas through a concerted invasive plant management program. Moreover, the continued presence of major invasive plant occurrences within or adjacent to remediated areas will inevitably lead to the degradation and eventual failure of restoration efforts. Managing invasive plant populations throughout and in the vicinity of the area affected by remediation activities is necessary for restoration success.

A Massachusetts example of riparian invasive plant management success on the East Branch of the Westfield River offers some hope for the future of the Housatonic River. In a multi-year effort led by the Department of Conservation and Recreation (DCR) and its partners in the Westfield River Watershed Invasive Species Partnership (WISP), dense and widespread invasive plant populations along approximately 4 miles of riverbank and adjacent floodplain in the Gilbert A. Bliss State Forest were reduced to minor occurrences. Target species included Japanese knotweed, round leaf bittersweet, and glossy buckthorn, a similar assortment as occurs along the Housatonic River. Working around rare plant and animal populations, contractors used physical and chemical techniques to remove invasive plants without substantial non-target effects; managing lingering and newly establishing invasive plant occurrences on the site is now a matter of annual maintenance. GE's implementation of a similar effort along the Housatonic would greatly improve the restoration program's chances of success.

Beavers

Beaver is a keystone species along the Housatonic River, and beavers are highly likely to recolonize areas affected by remediation. Restoration plans should anticipate and accommodate beaver activities, including potentially facilitating their presence to help reestablish the complex natural community/habitat type occurrences documented in the baseline assessment. Beaver presence and activity should be tolerated unless roads, buildings, or other essential infrastructure become affected, and flooding issues should be addressed through beaver-friendly flow control structures wherever possible. (Protecting planted trees from beaver herbivory is likely to be needed in areas targeted for forest restoration. Yet dense plantings of seedlings or live stakes could be used in these areas and beyond to provide a rapid recovery of preferred beaver food species, enabling beaver presence while also allowing large trees to regrow.) The restoration plans should include flexibility to adjust the locations of specific habitat types if beaver activities alter hydrology.

Monitoring to Assess Ecological Function

As noted above, the report proposes a year seven visit to assess the ecological function of restored areas. This is a complicated assessment, because, for example, rebuilding a floodplain forest takes much longer than 7 years—though monitoring can indicate whether the restoration is "on track" or not. Ideally, by that time the assessment of ecological function would only be a formality to document patterns and trajectories already observed/anticipated during each previous monitoring visit, rather than uncovering failures to achieve restoration objectives.

As ecological restoration is still something of an art as well as a science, different observers may disagree about whether a certain condition qualifies as success. A restoration project of this magnitude, sophistication, and public interest should include an independent, third-party assessment throughout the restoration process. The local academic community could be a good resource for this, engaging students and faculty in restoration evaluation. Staff from the Massachusetts Division of Fisheries and Wildlife/Natural Heritage and Endangered Species Program should also be included in providing qualitative and quantitative project oversight and evaluation.

Next Steps

We understand that restoration design is an iterative process, with this report describing high-level project performance objectives and future reports addressing specific design features within each remediation unit. Mass Audubon is keenly interested in understanding remediation and restoration details as they affect Canoe Meadows and other areas within the Rest of River site. We hope that there will be opportunities for review and comment as these further documents and plans are prepared.

Thank you for the opportunity to review these reports, and for your consideration of these comments.

Regards,

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