To: Susan Svirsky/R1/USEPA/US@EPA
From: "gretchen" [redacted]
Date: 03/28/2008 11:18AM
Subject: The Rest of River

Hi Susan,

As a property owner living along the Housatonic River in Pittsfield (380 Holmes Rd, between the Pomeroy Avenue bridge and the Holmes Rd bridge), I was totally disappointed in GE's suggested remediation plan as discussed last night in Lee. Concrete retaining walls? Cutting back banks and replacing them with rip rap? And we still can't eat the fish or go for a swim. **It seems that we must destroy the river in order to save it** . How does this benefit anyone especially wildlife? The two miles that have been remediated are hideous and bear no resemblance to the canoeable water way that was there before.

There are still PCB's leaching into the river from the old GE site, the city still uses the river as a depository for storm waters; these issues are not even addressed. Will property owners whose river banks are cut away and all mature trees taken be compensated for the permanent loss of their land? Will anyone want to canoe through a five mile drainage ditch?

I urge you and the EPA to give this plan a comprehensive review and consider the natural beauty of the river in your analysis. GE destroyed the river once, please don't let them do it again.

Sincerely,

Gretchen DeBartolo

PS Thank you for your hard work. I do not envy your position in all this.

-----Original Message-----
From: Lehan, Richard (FWE) [mailto:Richard.Lehan@state.ma.us]
Sent: Friday, March 28, 2008 12:48 PM
To: svirsky.susan@epa.gov
Cc: Madden, Andrew (FWE); Tisa, Mark (FWE); Griffin, Mary (FWE); Marold, Misty-Anne (FWE); Kathy Sferra
Subject: GE Cleanup - DFG request that EPA extend the public comment period on the CMS (3/28/08)

Hi Susan - this is a follow-up to the voicemail that I left at your Boston phone number (I spoke with an EPA staff person at your Pittsfield office who suggested leaving a message on your Boston phone).

I spoke with Andrew Madden, DFG's Division of Fisheries and Wildlife manager of our Western District office, who updated me on last night's public meeting on GE's CMS. Andrew indicated that EPA stated that it has received a request to extend the informal 30 day public comment period on the CMS.

Per my voicemail, I am writing on behalf of the MA Department of Fish and Game ("DFG") and its Division of Fisheries and Wildlife ("DFW") to also request that EPA grant an extension of time for the public to provide comments on the CMS. We recognize and appreciate that EPA is giving the public an additional, informal opportunity to provide input on the CMS before EPA selects the Preferred Alternative, which will then be subject to a formal public comment period. However, given the extent to which our agency's 818 acre Wildlife Managment Area will be directly affected by the Reach of the River cleanup, combined with the scope and complexity of the CMS, we believe that significantly more time than 30 days is needed for public comment. Giving DFG/DFW, other key stakeholders and the general public more time to complete a thorough review of the 700+ page CMS and to develop more complete comments will also be of value to EPA. Extending the public comment period to 90 days would be preferrable; we think that a minimum of 60 days to respond is necessary for the above reasons.

Thank you for your consideration of this request by DFG and its DFW.

Richard Lehan
General Counsel
Department of Fish and Game ("DFG")
251 Causeway Street, Suite 400
Boston, MA 02114
Tel. No. (617) 626-1552
Fax No. (617) 626-1505
Richard.Lehan@state.ma.us

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Kathy Sferra" <ksferra@massaudubon.org>
Date: 03/28/2008 02:00PM
cc: "Lehan, Richard (FWE)" <Richard.Lehan@state.ma.us>, "Rene Laubach" <rlaubach@massaudubon.org>
Subject: RE: GE Cleanup - DFG request that EPA extend the public comment period on the CMS (3/28/08)

Hi Susan

I will just add to what Attorney Lehan has said and also make the same request on behalf of Mass Audubon. I attended the meeting last night and found it very informative and helpful. I almost asked for the microphone to make sure that someone at the Massachusetts meeting also requested an extension, but then thought that I would follow up with you in writing today, and not take up the limited public comment time at the meeting.

I also believe that our comments would be much more meaningful and useful to EPA if we have 60-90 days to digest the study, talk with our colleagues and offer some constructive and thoughtful feedback. As was noted several times last night, these issues of river clean up and habitat restoration are very complex. Just reading the CMS is quite a project!

Many thanks for all of your work on this and we appreciate your consideration of this request.

-Kathy

Kathy Sferra
Director of Stewardship
Mass Audubon
208 South Great Road
Lincoln, MA 01773
781-259-2157 (phone)/781-259-2357 (fax)
Protecting the Nature of Massachusetts

From: Benno Friedman
Sent: Tuesday, April 01, 2008 8:34 PM
To: Silfer, Andrew (GE, Corporate)
Cc: susan svirsky; dean tagliaferro; Tim Gray
Subject: <no subject>

Hello Andy,
Regarding the removal volumes of SEDs 3-8 and FPs 2-7, I'm looking for the breakdown of soils and sediments containing less than 50PPM and that
which contains more than 50PPM, which you must have at least approximated to help with the proposed removal strategies and cost analysis. Initially I had hoped not to have to bother you, but neither Dean nor Susan were of any help. They suggested I contact you. Is there a page/chart in the CMS that discusses this, or are the numbers otherwise available elsewhere? I thank you in advance for providing me with the information I currently lack.
Respectfully Yours,
Benno Friedman

To: "Benno Friedman" <benno2@verizon.net>
From: "Silfer, Andrew (GE, Corporate)" <andrew.silfer@ge.com>
Date: 04/02/2008 04:20PM
cc: Susan Svirsky/R1/USEPA/US@EPA, Dean Tagliaferro/R1/USEPA/US@EPA, "Tim Gray" <housriverkeeper@verizon.net>
Subject: RE: <no subject>

Benno-

The TSCA/non-TSCA split that you have asked for is not expicitly in the CMS for all of the scenarios.

I have attached a table which has the information that you requested.

Andy

-----Original Message-----
From: Benno Friedman [mailto:benno2@verizon.net]
Sent: Tuesday, April 01, 2008 8:34 PM
To: Silfer, Andrew (GE, Corporate)
Cc: susan svirsky; dean tagliaferro; Tim Gray
Subject: <no subject>

Hello Andy,
Regarding the removal volumes of SEDs 3-8 and FPs 2-7, I'm looking for the breakdown of soils and sediments containing less than 50PPM and that
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Respectfully Yours,
Benno Friedman

Table 1
Summary of Removal Volumes

Corrective Measures Study for the Housatonic River
General Electric Company - Pittsfield, Massachusetts

	Approximate Removal Volumes (rounded in-situ cy)		
	TSCA	Non-TSCA	Total (rounded)
FP 2	4,500	12,600	17,000
FP 3	28,000	32,000	60,000
FP 4	45,000	54,000	99,000
FP 5	100,000	0	100,000
FP 6	101,000	215,000	316,000
FP 7	109,000	461,000	570,000
SED 3	38,000	129,000	167,000
SED 4	85,000	210,000	295,000
SED 5	105,000	305,000	410,000
SED 6	179,000	375,000	554,000
SED 7	287,000	506,000	793,000
SED 8	534,000	1,716,000	2,250,000

To: James Ruberto <jruberto@pittsfieldch.com>, Mike Ward <mikeward4@gmail.com>, Chris Speranzo <Rep.ChristopherSperanzo@Hou.State.MA.US>, Rene Laubach <berkshires@massaudubon.org>, Ben Downing <Benjamin.Downing@state.ma.us>, Susan Svirsky/R1/USEPA/US@EPA
From: Paul & Mary Gloger
Date: 04/02/2008 05:08PM
Subject: Housatonic River "Cleanup"

In support of Benno Friedman's article (Berkshire Eagle, April 2, 2008),
we agree that we need civic activism to stop our precious and beautiful river from turning into an unusable and ugly man-made-drainage-ditch.

Why is GE or the EPA even allowed to choose and execute a plan of "correction" of the Housatonic River, its banks and marsh land that is the most totally habitat destructive, especially when there may be more environmentally advantageous, and more thorough, methods that could be researched and used? Why have GE's Ecomaginators not investigated and proposed known biological means of destroying PCBs? Why are they proposing a 19th Century "cleanup" method that, by their own admission, will not be complete?

The length of river already "corrected" has all the charm and usability of a shopping center retention pond. What has been done leaves a result
unfriendly and unusable for people and the wildlife that did live along the river. There is no way that a turtle can get across that rip-rap to
lay eggs. There are no soft earthen banks for the burrows of the mink and muskrat that we are so adamant to save. If the "Rest of River" follows the pattern established so far, animals will be driven from their homes and into neighborhoods seeking food and shelter. Deer may well break their legs trying to navigate the rip-rap trying to get a drink. If there are any turtles left, they will be unable to get to the
water or leave it safely. Steep banks lined with armor stone "rip-rap" are so ugly and unsafe to cross, that, were they to be reproduced on the
"Rest of River," there would be no getting to the river to catch all those "safe" fish.

What has been planted along the "restored" two miles is an architect's "vision" of an urban park, a sterile environment with little or no variety in the plants selected. All very "tidy" for humans, but who's home is it supposed to be? Fred Garner park holds no feeling of a natural and friendly environment.

If PCBs are such a threat, why are there salamanders, fish, frogs, turtles, mink, muskrats, bobcats, fox, cayotes, beaver, ducks, geese, herons, eagles, and other birds to be observed, seemingly thriving, in and along this waterway?

The Housatonic River byway is a sanctuary for wildlife and people. The proposed method of "clean-up" will make it a symbol of human destruction

that is as intolerable as the PCB poisoning in the first place. It will become a national symbol, reminding all of man's lack of stewardship and
care for the Earth. Tourists will not be drawn to the area because of its beauty. The cleanliness of the water is not going to show, so much as is the destruction of habitat and natural ambiance.

Clean fill brought in from elsewhere will destroy the land where it is taken from, and will not create a naturalized environment for centuries.

Loving the Housatonic and having attended the meeting where The Plan was
presented, I was left astounded, grief stricken, and angry at the prospect of such wanton destruction. Nowhere did I hear of any proposed
funding for the employment of a team of naturalists, biologists, and professional environmentalists to work out a plan of habitat preservation and restoration for the animals and birds who need the riparian environment for their homes. Nor did I hear of any funding to implement such a plan if it even existed.

We cannot simply stand by and cover our eyes so as not to see the destruction of nesting birds and squirrels as trees are cut down, and the killing of groundhogs, mink, muskrats, salamanders, and frogs as their in-ground nests and burrows are scraped away. What rescue organization receives help and funding to take in the displaced animals,
baby birds, and squirrels that fall victim to the cutting of the trees and shrubs where they are nesting. Where are the surviving animals' homes to return to when work is "complete?"

Can we not be patient and DEMAND a less destructive solution than the proposed heavy-handed rape-and-scrape assault. We need a KIND and conscientious course of action that doesn't make the "solution" worse than the "situation" that we are attempting to fix.

Paul and Mary Gloger

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Kevin Sherman"
Date: 04/03/2008 12:41PM
Subject: Rest of the River proposal

Dear Susan,

My name is Kevin Sherman and I'm an At Large City Councilor for the City of
Pittsfield. I'm writing to respectfully and strongly urge that no consideration be given for a landfill to be created on East New Lenox Rd.
or in any location in Pittsfield or Berkshire County as a result of the Rest of the River proposal.

While the clean up of the Housatonic River is necessary, it would seem counterintuitive from an environmental standpoint to place any of the removed toxins within feet of the site or anywhere near the affected area.
The area in question is surrounded by farm land, residential housing, and
parks. Pittsfield currently contains the results of a previous clean up
adjacent to an elementary school and the community will not accept another
structure. Additionally, it is not acceptable to place the burden of a toxic waste site removed by the perpetrators of the pollution on any of our
neighboring towns throughout Berkshire County.

It is unclear if the current proposal contains landfill locations or if that will proceed following your review of the current proposal. Either
way I feel it is necessary to voice my opinion in the matter and I hope that whether the landfill is proposed now or will be proposed following the
acceptance of the current proposal that you will evaluate the community's
passion and concerns with regard to public health and safety as well our
pride in our community.

A large part of the charm of Pittsifeld and the Berkshires is our natural
beauty and commitment to our environment. Having a second toxic landfill
in the Heart of the Berkshires is not representative of who we are, presents potential public health issues, and will be a detrminent as we attempt to attract and retain business and young professionals.

I hope that you will understand our position and deny any proposed sites
for toxic waste landfills in Pittsifeld or Berkshire County.

Thank you for time and consideration in the matter, Susan. If you have

any
questions or concerns, please feel free to reach me at (413) 822-9511
or
kevin.j.sherman@gmail.com

Sincerely,

Kevin J. Sherman
City Councilor At Large
City of Pittsfield

To: Susan Svirsky/R1/USEPA/US@EPA
From: "wcoan"
Date: 04/03/2008 05:06PM
Subject: Housatonic Cleanup Plan

April 3, 2008

Dear Ms. Svirsky:

My wife and I attended the public hearing held at Lee High School on March 27 th . We left with the impression that despite GE's claim to be in the vanguard of "eco-enviornmental" technology that it was applying the lowest level of technology to its cleanup plans. Specifically, that the only viable way to clean up its pollution was to dig the toxic mud from the bottom of the river, place it in trucks, and transport it to a yet to be named upland disposal area. The presenters seemed to suggest that the only real options ranged from no action to actions involving even greater toxic mud removal/transportation/dumping and that this plan was less environmentally intrusive and more cost effective to G.E.

In light of the community uproar generated by the disposal dump located behind Allendale School in Pittsfield we would suggest that the project would be delayed for years as communities utilized all political and legal means available to keep such a dump out of Berkshire County. Some have suggested that GE, knowing that such opposition would arise (as it did with the Hudson River project) would rather have the project delayed and pay the legal costs rather than the actual costs of the clean-up. At this point I do not subscribe to such a cynical view. I am assuming that people of good will are going to work together to resolve a problem of mutual concern to all citizens of Berkshire County.

We would strongly urge that the EPA not support any plan that calls for an upland disposal facility. We thought it unusual that the GE used 83 slides to carefully explain their strategy and the rationale for their plan (SED-3). Yet, they stated they had given little thought to where they would locate an upland disposal facility-the most critical (and potentially controversial) component of the plan! It was never explained fully why an off site disposal facility was not considered since that was the solution utilized in the Hudson River project. As was pointed out by a member of the audience, a railroad line runs parallel to most of the portions of the Housatonic River being considered for reclamation.

GE takes great pride in its efforts to develop technologies that are economically advantageous as well as ecologically sound. On their web sit they point to the technology used to bring, for example, a cleaner coal burning plant in Tampa or clean water to Algiers. Presently, GE seems to view the cleaning of the river they polluted as an onerous task foisted on them by government edict. We came away from the meeting feeling that GE is suggesting that if Berkshire County wants a clean river then its citizens will have to pay the price; many years of disruption to their lives and environment. In my view, the citizens have already paid a high enough price.

We believe a more enlightened view would yield greater benefits for GE and the citizens of Berkshire County. GE should view the cleaning of the Housatonic as an opportunity to refine present or bring new technologies to an ecological problem they

created. I would strongly suggest that GE again explore every existing technological approach including chemical extraction or thermal desorption. Revised plans should then be presented that would demonstrate that it has found more technologically sophisticated means than its present plans suggests (dig, truck and pile) that would not be so environmentally intrusive. A visit to the EPA website along with the sites of other organizations dealing with toxic pollution would indicate that many other techniques have been developed or are evolving. I think there will be economic benefits to any business that finds a way to resolve this pervasive pollution problem.

Conclusion: G.E. said that it could never restore the river to its original condition. If I accidentally caused damage to my neighbor's property, I would be expected to fully restore that property to its original condition. Nothing less should be expected of our G.E. neighbor. Do not accept a plan that calls for an upland disposal site in Berkshire County. Accept only a plan that at the least includes a combination of low tech. toxic soil removal along with off site disposal and higher technological solutions such as chemical extraction, thermal desorption or any of the other solutions that are presently being developed that would reduce the environmental impact during the clean up project.

Thank you for your consideration in this extremely important matter.

William and Christine Coan

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/07/2008 08:18PM
Subject: PCB Landfill

Dear Ms. Svirsky,
I am emailing to voice my concerns about the recent proposal to create another PCB landfill in Pittsfield. I am completely opposed to this suggestion. Do you spend time kayaking or recreating on the Housatonic River?
I do. The last thing we need is another "dump" in Pittsfield. Couldn't you instead be on the cutting edge of technology and use the latest and greatest of technologies to rid the area of GE pollution?
What about the technology that Maximillion has to do this very task?
Maybe you could even help the rest of the nation by making this area a cutting edge PCB "remediation center".
You could be a hero!
Oprah is trying to expand the world's awareness by creating the web cast teaching aid for "A New World". It is creating such synergy and connectedness throughout the world.
Maybe you could try to expand your awareness on a personal level and really see what we residents see.
Please reconsider the additional landfill proposal. It is not an acceptable solution to this PCB mess.
I thank you and my community thanks you.
Regards-
Diane Valenti

To: Susan Svirsky/R1/USEPA/US@EPA
From: Ernie & Lee <
Date: 04/08/2008 07:06AM
Subject: PCB LANDFILL

ANOTHER PCB LANDFILL SHOULD NEVER HAPPEN AGAIN IN PITTSFIELD

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/07/2008 10:26PM
Subject: Pittsfield Landfill

Dear Ms Svirsky:

I truly hope that you will listen to those of us from Pittsfield who believe that a Landfill would be totally unacceptable. Pittsfield citizens have endured enough pain and poor health at the hands of a very large corporation (General Electric). It is understandable but deplorable that the some local politicians and former leaders of this City would bend and bow to whatever General Electric determined they would be willing to expense from their very deep coffers to the determent of our Senior citizens who were employed there and the young families who have children with very severe illness (many Terminal) and those young children getting their basic bodies and minds launched for their future here in Pittsfield playgrounds, schools and recreational rivers and parks rather than stand up and risk much by standing their ground with integrity. GE has tried continuously to take the easy road for them regardless of the consequences to the population and future generations of this great city.When the River was dredged and "cleaned" of PCB's it was done only to the minimum required and it saved GE tons of money! Even though some had to be done over! We have seen people lose their homes and forced to move away because of GE cruel decision making. Pittsfield air has been polluted for years from the deteriorated buildings and GE left in such deplorable condition. They showed no concern or respect for this city or its people especially when they new it would not be needed to serve its purposes any longer. We breath the rubble and dust from the demolition leaving ;lead dust and formaldehyde and asbestos in the air. We need your help and others in government to stand up and say Enough,Enough! and not have a Hill 78 or any Landfills
thank you
Theresa Gorman

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Harvey Schafler"
Date: 04/07/2008 10:20PM
cc: "Mike Ward" <mikeward4@gmail.com>
Subject: GE landfill

Susan Svirsky :
If there is one thing that Pittsfield does not need is landfill and all the residents agree is that we don't want another PCB landfill. My vote is to come up with another solution.

HARVEY SCHAFLER
Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Dave" ·
Date: 04/07/2008 09:36PM
cc: "Mike Ward" <mikeward4@gmail.com>
Subject: GE Rest of River - Berkshire County Mass

Dear Ms. Sivirsky,

I am sending you this e-mail to inform you that the GE Proposal is wholly unacceptable. It seems like they have proposed the least palatable proposal in hopes that we will all just go away. Hill 78, next to an elementary school is a dumb idea – and will come back to haunt not only the community, but the Government at some time in the not so distant future. The people that made the deal with the devil are for the most part gone. They trusted GE to do the right thing when choices were to be made. Instead they did the cheapest thing.

Another landfill – nope. I don't care much about politics, but this will activate me if it goes through. GE was a poor steward of the community once and will be forever. The so-called clean up that has left most areas nearly as dirty as before they started (there is a sheen, indicating oil seeping from the banks of the Housatonic behind Lakewood Field), so I think GE which built its reputation on being the best at what it did needs to go back to the drawing board and use other technology.

I don't really care what it costs GE. They broke it, they can fix it.

You have the power to tell GE what to do. I am certain you wouldn't want this stuff in your neighborhood or your community. Apply that same logic to this, and the answer is apparent. No Landfill. No half clean up, and fix the clean up they said they did but didn't. It's easy – 70 years of profits on a community's back, then abandonment to parts unknown and now back in the power transformer business in China . I bet they will leave China as polluted as they left Pittsfield . They are never coming back – so they can clean up their mess, and clean it up right.

David Pill

Pittsfield , MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Darold Greene"
Date: 04/07/2008 09:12PM
Subject: Against Another PCB Land Fill in Berkshires

Susan Svirsky,

We need to make the PCB's go away. Dredging and digging them up and placing them in a pile in the same neighborhood without a plan to process and store them is not an answer.

With all of the great minds in the world, somebody needs to come up with a process that makes the resulting product safe no matter where it is placed. Either way we don't want anymore in Western Massachusetts.

Thanks for listening,

Darold Greene

To: Susan Svirsky/R1/USEPA/US@EPA
From: David K Nichols
Date: 04/07/2008 09:08PM
cc: mikeward4@gmail.com
Subject: Not another PCB landfill in Pittsfield

Hello Susan;

I've been an abutter to the Housatonic River for almost 15 years across the river from Fred Garner Park in Pittsfield

I was pleased that the Consent Decree allowed Pittsfield, GE and the EPA to begin the reclaimation process in Pittsfield and get this episode behind us.
I watched with interest over a 7-10 year time frame as the crews worked their way downstream to our normally quiet neigborhood.
I was pleased to see the successful restoration and reopening of Fred Garner Park after it served for 2 years as the waste water reclaimation site for the final leg of the first "mile and a half" restoration. Its nice to see that area slowly becoming 'natural' again as it enters its second post-restoration spring.

While I was unable to attend the recent public meetings to hear first hand details of the recommended approach for down-river, I read the reports in the Eagle.
I'm not pleased with nor am I in favor of committing to a 10 yr downstream clean-up process which in essence replicates what was done upstream over the past 5-10 years. Our neighborhood and Ward 4 will be in a state of constant "reclaimation and restoration" for the next 6-10 years.....and be forever burdened with the untenable consequences of having a second Pittsfield PCB Landfill somewhere in this vicinity. This process would likely shut-down and for many years impact Canoe Meadows for at least 2-3 years as the removal process follows the river south of Holmes Road into Lenox. There must be a better way.

As a tax payer I'm not convinced that this represents the best use of tax payer $ either. Not withstanding the portion GE will be responsible for.

Pittsfield should NOT be penalized again with a second PCB Landfill and the EPA and GE must develop a better method for PCB removal and or mitigation.
Our neigborhoods and residents deserve better....the EPA and GE can do better.

David K. Nichols

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/07/2008 08:57PM
Subject: (no subject)

Dear Ms.Svirsky,

As a Pittsfield resident, actually as a world resident, I think we need to slow down and understand the ramifications before moving ahead with another landfill for PCBs. I am NOT convinced it is the right way to go, and I hope the EPA is not ready to sign off on it either. I cannot believe that there is not another solution, it just has not been identified as yet, and I am willing to wait a bit longer for it to be discovered. Keep studying, researching, discovering. Please.

Marguerite Bride

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: kathleen tisdale
Date: 04/07/2008 08:47PM
Subject: Hill 79

Susan,
Just dropping you a note in support of my ward councilor and city residents whom are opposed to the proposed " Hill 79 " PCB landfill. Hill 78 has created such animosity and negativity amongst residents surrounding it that even the thought of another dump within city limits is absurd. I was at a gymnastics open event in town on Saturday and overheard parents discussing school choicing their children from Allendale school to get away from the PCB's. There isn't enough that can be said to a parent about safe levels of PCB's that will make them comfortable enough to have their children within 1 mile of this stuff.
Thanks,
David Tisdale

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Opus Dei Awareness Network"
Date: 04/08/2008 07:57AM
Subject: PCB Cleanup of the Housatonic River

Dear Ms. Svirsky,
It is totally unacceptable to create another landfill in Pittsfield containing the toxic substance PCB's. Please count me as one of the large numbers of people who are strongly opposed.
Dianne DiNicola

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Ward Jennifer"
Date: 04/08/2008 08:50AM
Subject: Housatonic River

I am writing to support Councilor Ward's and Councilor Sherman's proposal to do more research and investigating before rushing ahead, digging up the next section of the Housatonic River and creating yet another toxic dump in our city. Please listen to what the councilor's and Pittsfield residents have to say before doing what seems to be the easiest.

Jennifer Ward, RD, LDN, CLC

Wellness Registered Dietitian

Accent on Health/Wellness at Work

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Katie Frisina"
Date: 04/08/2008 09:43AM
cc: <ralph@winstanley.com>
Subject: New PCB landfill in Pittsfield

Dear Ms. Svirsky,

We are writing because of our concerns regarding GE's recently announced "Rest of River" plan for the Housatonic in Pittsfield, Massachusetts. We are extremely alarmed at the plan to create yet another PCB landfill within our city, and we strongly urge you to work to find another solution.

With best regards,
Katie and Ralph Frisina

Pittsfield

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Lafayette, Peter"
Date: 04/08/2008 10:08AM
Subject: FW: Housatonic River Cleanuop

To: 'SvirskySusan@epa.gov'
Cc: 'Kevin Sherman'
Subject: Housatonic River Cleanuop

Susan:

I want to voice my fierce opposition to GE's proposal to create another toxic landfill in Pittsfield, Massachusetts or Berkshire County with the sludge dug up from the next phase of the Housatonic River cleanup. The recently created landfill, Hill 78 in Pittsfield, contains the PCB waste from the first part of the river cleanup and is becoming a battleground for residents here. To suggest that another landfill of this nature be considered here or in another part of Berkshire County is outrageous and we hope the EPA rejects the proposal immediately. Many of us have worked hard to bring Pittsfield back from the severe economic downtown caused in large part by GE's large scale departure from Pittsfield in the late 1980's - 1990's. While GE provided many good jobs for many years, they have left behind a legacy of environmental problems that the city and County are still grappling with. Please do not leave us with another permanent reminder of their presence here with another toxic waste landfill. Thank you.

Peter Lafayette

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Marjorie Bannish"
Date: 04/08/2008 10:10AM
Subject: Dredging "the rest of the Housatonic"

To: Susan Svirsky

From: Marjorie Bannish

I am quite concerned about dredging the Housatonic just north of Woods Pond. Have you considered the magnitude of this venture??? It is quite enormous, and far greater that the tidy river that has been dredged to date.

I am a kayaker and have paddled many sections of the Housatonic. The area you are talking about is basically a huge swamp that 'absorbs' flood waters and overflows during high water times. Though Woods Pond is somewhat contained, it actually continues as swamp up north almost as far as New Lenox Road.

The possibility of maintaining that swamp area after dredging is nil. It will be gone forever. Doesn't dredging just stir up the toxins?? Nature has a way of cleansing itself. I know for a fact there is MUCH wildlife there. I have led paddles along the Housatonic in many sections, and have witnessed marvelous examples of successful wildlife: river rats, beavers, bald eagles, blue herons, many more birds than I can name.

The mud: where on earth would/ could you pile up all that mud??? That swamp is huge. You will need to build another Mt. Greylock with all that mud.

Pls --- do not let fear or the almightly dollar drive this destructive direction. Detox technology is progressing in this area. Please consider plan B (some other alternative).

Thank you,

Marjorie Bannish

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Flynn Marjorie"
Date: 04/08/2008 10:20AM
Subject: PCB & HOUSATONIC RIVER

Please don't "kill the Housatonic ". Let's take our time and enjoy our river as it is for now.

Also, we really don't need a now PCB Landfill in :CityPittsfield .

M.Flynn

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Terence J Chiaretto"
Date: 04/08/2008 10:29AM
cc:

Subject: Re: Upland Storage Facility----Pittsfield Ma.

I'd like to go on record as a Pittsfield resident who vehemently opposes the creation of another Toxic Waste Dump (ie. EPA's equivalent of an Upland Storage Facility) in this city or any nearby community. It is my opinion that the EPA has (ironically) become increasingly lax in their dealings with major polluters such as General Electric. In addition to the on going acceptance of "caps" vs. removal of the pollutants, the EPA has been receptive to such "half measures" as Toxic Waste Dumps. In essence they are bowing to General Electric's every wish and/or demand to resolve such problems in the least costly manner--------despite the continuing detrimental effects on our community.

Terence Chiaretto

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Danielle Brennan"
Date: 04/08/2008 10:30AM
Subject:

THE LANDFILL IS ABSOUTELY UNACCEPTABLE!!!!!!!!!!

Danielle M. Brennan, ALHC

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Esposito, Damian"
Date: 04/08/2008 10:34AM
Subject: Landfill

Dear Susan -

My name is Damian Esposito and I reside at in Pittsfield, MA. I am writing to you to let you know, just in case you have forgotten, the city of Pittsfield already has a toxic waste landfill - "Hill 78." The city or it's surrounding communities does **NOT** need another. Would you volunteer your backyard as the dump site?? We, the residents of Pittsfield (like yourself), would not and do not want ANOTHER toxic waste landfill in our backyards. There must be other ways to dispose of the PCB's.

Thank you for your time,
Damian Esposito

To: "Mike Ward" <mikeward4@gmail.com>
From: "Linda Lapointe"
Date: 04/08/2008 10:39AM
cc: Susan Svirsky/R1/USEPA/US@EPA
Subject: Re: [ward4-pittsfield] Say No to Hill 79

,
----- Original Message -----
From: Mike Ward
To: ward4-pittsfield@yahoogroups.com
Sent: Monday, April 07, 2008 7:42 PM
Subject: [ward4-pittsfield] Say No to Hill 79

WHY YOU SHOULD EMAIL THE EPA TODAY
If there is one thing that Pittsfield residents can agree on it's that we don't need another PCB landfill. But that's precisely what GE recommended a couple weeks ago in their Rest of River proposal.

It may seem that the landfill issue is a no-brainer, but not when you consider the fact that the EPA has the authority to locate a landfill here whether we like it or not.

That is why Councilor Sherman and I are petitioning the City Council tomorrow. And that is why you should email the EPA today.

The EPA's Rest of River project manager is Susan Svirsky and her email address is Svirsky.Susan@ epamail.epa. gov . Tell her you think a new PCB landfill in Pittsfield is unacceptable.

I personally have a lot of other issues with the proposed plan and frankly I'm still researching this stuff.

One thing that struck me is the absurdity of committing to a multi-decade cleanup plan when the technology is continually emerging. I'm sure that's convenient for GE because it contains their cost. But it's also dumb because new methods may end up being less invasive and more cost effective.

Why can't we turn this into an opportunity for Pittsfield? The Housatonic River could be the classroom for next-generation PCB cleanup research. And Pittsfield could be the world center of PCB remediation studies. Instead of prescribing a remedy that may be worse than the disease, the EPA should spend GE's money wisely on new science -- not on digging up mud and dropping it in a new location. My two year old son can do that.

I think we should take the time to decide on an intelligent course of action. Our river isn't getting any worse. In fact those who spend time on the river say it is very much alive. Do we really have to kill the Housatonic to save it? I'm not convinced we do.

-Mike

--
Mike Ward
City Councilor
Ward 4 Pittsfield, MA

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Robbie Harrington"
Date: 04/08/2008 10:49AM
Subject: Rest of the River proposal opposition

I would like to voice my displeasure at the possibility of dredging the toxic PCB's from the Housatonic River and storing them in an "upland storage faciity".

This is unacceptable!

Pittsfield is a beautiful community where people should feel that they and their children and grandchildren are safe from the effects of these toxins.

Of course it is a solution for GE - it will cost them less - but at what cost to us, the residents of Pittsfield??

We need to come up with an alternative plan, one that is safe for the residents and future residents.

I appreciate your time

My home address is , Pittsfield, MA 01201.

Robbie Harrington Brassard

Assistant Classified Advertising Manager
The Berkshire Eagle
Phone: 413-496-6357
Fax: 413-499-3419
rharrington@berkshireeagle.com

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/08/2008 10:50AM
Subject: PCB Landfill

I am writing to protest the possible GE PCB Landfill suggested for Pittsfield, MA. This is not a good solution to the problem.
Joanna Fribush

Pittsfield, MA

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Amuso Kathy"
Date: 04/08/2008 11:00AM
cc: "Kevin Sherman" <Kevin_Sherman@berkshirelife.com>,
<mikeward4@gmail.com>
Subject: RE: Rest of the River proposal opposition

Dear Ms. Svirsky

I am presently the Chairperson of the Pittsfield Public Schools. In the
last four years I have dealt with PCB issues related to the city of Pittsfield and more specifically to Allendale School. Hill 78 resides behind Allendale School. This is an issue of significant concern.

There have been many meetings about the PCBs near Allendale with many different agencies involved. We all want to make sure our community is safe. We know that having this in our community is not the best situation. We continually monitor to make sure the school children and residents are as safe as they can be under the circumstances.

I have to agree with the initiative of two of our City Councilors, Kevin
Sherman and Mike Ward. Pittsfield does not need any more storage areas for PCBs. I feel we have already taken on a significant PCB burden by what Pittsfield already has for PCB storage.

I would be glad to discuss this or work with anyone on this issue.

Thank you,

Kathleen Amuso
Chairperson, Pittsfield Public Schools

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Ruth Healy"
Date: 04/08/2008 11:06AM
Subject: Upland Storage Facility in Pittsfield MA

I would like to go on record as a lifelong Pittsfield, MA resident that I
am strongly opposed to the creation of an upland storage facility being considered as part of the Housatonic River cleanup from the mess left by
GE.

We already have one toxic waste dump nearby one of our city elementary schools, courtesy of GE, and we certainly don't need another in or around
Pittsfield! The Fred Garner Park is a beautiful resource within our city
and should be left just that - a beautiful park, not a toxic waste landfill. Pittsfield still seems to be at the mercy of GE and this is not
acceptable.

The EPA should do everything in its power to save the citizens of Pittsfield from this fate. We won't be able to attract new businesses or
people to relocate to our beautiful city if we become known as a toxic waste dump town, and our children deserve to grow up in a city that puts
its citizens first, not the demands of a company such as GE.

Ruth M. Healy

To: Susan Svirsky/R1/USEPA/US@EPA
From: Patty Brown
Date: 04/08/2008 11:15AM
Subject: PCB Landfill in Pittsfield

Dear Susan,
As a lifelong resident of Pittsfield, MA I have seen many changes. One is the absolutely absurd Pile of PCB's in the back yard of one of our elementary schools. My husband and myself adamently oppose the plan that GE has proposed to leave our city with yet another pile of TOXIC WASTE! This is an unacceptable plan! Please, we implore you, DO NOT LET GE continue to leave their waste in our city!

Thank you,
Patricia Brown-Charland
Mark Charland

To: Susan Svirsky/R1/USEPA/US@EPA
From: "pmbkg"
Date: 04/08/2008 10:51AM
Subject: Don't locate a new PCB landfill in Pittsfield

Susan Svirsky
EPA

Dear Ms.Svirsky,

I urge you to please don't locate a new PCB landfill in Pittsfield as part of the EPA/GE goals
for the clean-up of the rest of the Housatonic River from Pittsfield to Connecticut.

Frankly, I am still looking over the details.The goal should be to restore the Housatonic River
to be safe for the health of humans & wild life and be able to once again be safe for swimming,
fishing, canoeing and kayaking. It is headed in a positive forward direction, however, we should
intelligently investigate all evolving technology to insure the least evasive (and possibly, no
additional costs to GE) methods taking into consideration human and ecological risk assessments.

Thank you for your consideration,

Patrick Gormalley

Pittsfield, Ma 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: Allan Seppa
Date: 04/08/2008 12:01PM
Subject: Rest of the River clean-up

Dear Ms. Svirsky,
As a citizen of Pittsfield and a member of ward 4 I would like to express
my opinion regarding the Rest of the River "clean-up". I would like to go
on record as opposing the plan that was put foward in the two most recent
meetings. I think that dredging another 10 miles of the river would be extremely destructive to the unique environment and wildlife of the river.
I think it is worth waiting and researching less destructive methods as they become available. I am adamantly opposed to another PCB landfill in
Pittsfield.
Sincerely,
Mary Sue Seppa

To: Susan Svirsky/R1/USEPA/US@EPA
From: Lawrence Klein
Date: 04/08/2008 01:35PM
Subject: Say No to Hill 79

If there is one thing that Pittsfield residents can
agree on it's that we don't need another PCB landfill.
A new PCB landfill in Pittsfield is unacceptable.

Thanks,
Lawrence Klein

Lawrence Klein, Esq.

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Sharon Coughlin"
Date: 04/08/2008 01:40PM
Subject: I Object!

Dear Ms. Svirsky,

I vehemently object to the EPA allowing GE, or any other person or entity,
to create an "upland storage facility"
anywhere in the city of Pittsfield or its neighboring communities to store
their PCB's from the Housatonic River.
It is an atrocity that GE was initially allowed to pollute our streams. To
allow them to clean up their mess in the
least costly way at the expense of the future health of the residents in
Berkshire County is wrong.

I urge you to take this proposal off the board. Please do not allow another "Hill 78" in Berkshire County.

Sharon A. Coughlin
Pittsfield, MA

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Mike Ward"
Date: 04/08/2008 02:18PM
Subject: Rest of River thoughts
Hi Susan,

By now you've now doubt received several emails at the urging of Councilor Sherman and myself, and I appreciate your time in reading them.

I found that while everyone is talking about the GE proposal, few people had actually taken the time to find your contact information and share their thoughts. So we gave them a nudge.

It's obvious that the idea of a new landfill in Pittsfield is politically a non-starter. But beyond that consensus there are many other opinions.

Personally, I'm concerned about the destructive nature of dredging in general. One of the reasons I chose my house is that it's within walking distance of Canoe Meadows, and I also enjoy kayaking on the Housatonic in Pittsfield. I just tried the kayak trip a couple years ago and I was so moved by how beautiful and full of wildlife that section of river is that I've been telling the story ever since. Growing up in Pittsfield I only had negative associations with the river, and I couldn't have been more surprised by how beautiful it was once I got in there. Most people will never see this view, and I imagine it would be easier for them to accept dredging as an abstract concept.

One thing that struck me about the GE plan is the absurdity of committing to a multi-decade cleanup plan using yesterday's methods when the technology is continually emerging. I'm sure that's attractive for GE because it contains their cost. But it's also dumb because new methods may end up being less invasive and more cost effective.

Why can't we turn this into an opportunity for Pittsfield? The Housatonic River could be the classroom for next-generation PCB cleanup research. And Pittsfield could be the world center of PCB remediation studies. Instead of prescribing a remedy that may be worse than the disease, the EPA should spend GE's money wisely on new science -- not on digging up mud and dropping it in a new location. My two year old son can do that.

I think we should take the time to decide on an intelligent course of action. Please reject GE's primitive plan and consider something truly new, like making the river a case study in next generation, low impact remediation.

Best regards,
-Mike

--
Mike Ward
City Councilor
Ward 4 Pittsfield, MA
ward4ward4.com
413-499-0462

To: "Mike Ward" <mikeward4@gmail.com>, Susan Svirsky/R1/USEPA/US@EPA
From: "Linda Lapointe"
Date: 04/08/2008 02:17PM
Subject: proposed landfill for pittsfield

I strongly oppose creating more landfill sites in our community, and also support developing a more efficient , ecological ,and esthetically developed river project. Thank you for your consideration. Linda Lapointe

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Jacqueline M King"
Date: 04/08/2008 03:41PM
cc: "Kevin Sherman" <Kevin_Sherman@berkshirelife.com>
Subject: GE's Rest of the River proposal

Ms Svirsky:

I am writing to ask the EPA to reject General Electric's proposal for the Rest of the River clean up of the Housatonic River. Specifically, as a homeowner in Pittsfield's Allendale neighborhood with Hill 78 less than 1/4 mile from my home, I am opposed to any proposal that would allow. General Electric to create another storage facility ('upland' or otherwise) for the dredged materials in Berkshire County or the surrounding area.

Thank you.

Jacqueline M. King

To: Susan Svirsky/R1/USEPA/US@EPA
From: "CFuller"
Date: 04/08/2008 04:45PM
Subject: Housatonic River clean up

We do not think another contaminated pile of dirt
in the city of Pittsfield is in the best interest
of those living here. They can haul the necessary train loads to
Albany N.Y. to join the caravan to Texas.

Charles & Bonnie Fuller

Pittsfield, Ma. 01201-7344

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Beth"
Date: 04/08/2008 08:09PM
Subject: NO NEW LANDFILL IN PITTSFIELD!

Pittsfield does not need GE to dredge up pollutants only to drop them elsewhere in our community.
This is an UNACCEPTABLE solution!
Mary Beth Larrow

Pittsfield, MA 01201

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To: Susan Svirsky/R1/USEPA/US@EPA
From: "Norma Purdy"
Date: 04/08/2008 10:59PM
Subject: PCB'S

Another PCB dump in Pittsfield is unacceptable. We are trying to get rid of the PCBS,not move them from one place to another!!

To: Susan Svirsky/R1/USEPA/US@EPA
From: "John Messerschmitt"
Date: 04/09/2008 10:44AM
Subject: Rest of the River

Dear Ms. Svirsky,
Please take into consideration that there is firm opposition to the EPA's intent to create another pcb landfill in Pittsfield, or anywhere else in Berkshire County for that matter. Dealing with the existing one has been a major obstacle to the quality of life in this community. I for one, simply do not see any merit to having another one established. And beyond that, I am of the opinion that dredging of the river should also not be a potential solution to pcb contamination. Why are we not looking at other alternatives such as micro-organisms to do the job? Certainly, in this day and age, we can do better than dredging as the prime method of removal.

Another concern: How much power does GE wield over the EPA and has the EPA lost track of its mission to protect the environment of the country? It would appear to me that the EPA should have more power over them when it comes to managing the ecology of a nation. Large corporations often need to be reined in, watched over, and made to conform to the laws on the nation, otherwise their profit motives tend to determine their actions. I know you know all that. Please don't let it happen. We need your support in this particular issue. We have a lot more to lose than GE does.
Thank you for your attention to this matter of utmost importance in this community.

Carol Messerschmit

To: Susan Svirsky/R1/USEPA/US@EPA
From: DBianchi
Date: 04/09/2008 11:56AM
Subject: PCB dump site for Berkshire County

I would urge the EPA to NOT to allow GE to establish another storage dump site in Berkshire County. I would urge that any pcb materials dredged from the river be incinerated and sent out of the area or marketed to companies that would reuse the soil. This process was successfully employed in upstate New York. Under no means, however, should another dump site be allowed.

Thank you for your consideration.

Dan Bianchi
Global Montello Group Corp

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Jamie" <
Date: 04/09/2008 11:59AM
Subject: Please do not Destroy the Berkshires

Dear Ms. Svirsky:
I echo the words of the members of my community when they say that there is firm opposition to the EPA's intent to "create another PCB landfill in Pittsfield, or anywhere else in Berkshire County." Calling it an "upland storage facility" makes it no more palatable to those of us who will be exposed to toxic materials for years to come. How many times do we have to find out after the fact that these remedies continue to expose communities to an increase in cancers and other life altering diseases that occur in higher concentrations in areas where these pollutants have been both initially "dumped" and then dumped again under the guise of cleaning up the original problem by moving it to an alternate
location.
I encourage the EPA to explore with GE what other possibilities may exist for clean up that were not available 10 years ago. We only have one planet and it seems time for us to start treating it like it matters.
Thank you in advance for your consideration of this matter.
Jamie L. Dobrowolski

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Robert Letteney"
Date: 04/09/2008 01:05PM
Subject: PCB Landfill in Pittsfield Ma.

Susan, I have been a resident of Pittsfield for the past 36 years. My wife was born here. We love this area and want it preserved. I am strongly opposed to the GE recommendation to add another PCB landfill in Pittsfield or anywhere in Berkshire County. I look to the EPA as a champion for the public, which will work for the preservation of our environment for our children and our grandchildren. It is time that the EPA took a stand and provided the much needed leadership to identify an environmentally sound solution to this problem. Please consider this as you review the GE recommendation for yet another PCB landfill in Pittsfield.

Regards

Robert D. Letteney

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Leslie Wessler"
Date: 04/09/2008 10:51AM
Subject: Pittsfield Landfill

I am totally against another landfill and cannot even believe this has been presented as a option!

Leslie Wessler

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/09/2008 05:09PM
Subject: EPA Rest of the River Project

Susan Svirsky, Project Manager, EPA Rest of the River Project William G and Kathleen M Jerome of in Pittsfield, Ma. wish to register our opposition to the establishment of another landfill storage facility in Pittsfield, Ma. or other towns in Berkshire County. Thank You.

To: Susan Svirsky/R1/USEPA/US@EPA
From: "John Messerschmitt"
Date: 04/09/2008 05:57PM
cc: "James Lumsden"
Subject: Housatonic River Cleanup: F.Y.I (letter copy)

Dear Ms. Svirsky:

I write to indicate my strong opposition to dredging the rest of the Housatonic River.

I was in favor of the dredging of the river through most of Pittsfield, even though I live within 300 yards of it, and had to endure a few summers of noise and dust and truck traffic. I still trust that for the "inner city/suburban" portion it was the best solution, and that park-like natural healing will occur in due time. But this situation and the times have changed.

From the confluence of the two Branches and on south, the river flows through much wilder and naturally beautiful territory. Flood plains are often far more extensive than along the more urbanized area upstream. Wildlife abounds. It would be an ecological disaster to violently disturb this area, wiping out hugh habitat and the wildlife that depends upon it. Meanwhile, there are more promising less invasive solutions, with encouraging test results from Europe, that involve biological agents that can transform the pcbs into safer bi-products. Why not use the River as an experimental area to further test these biological agents as they are further developed over time?

Many people wonder if G.E. is simply looking for the cheapest way out no matter what the cost to the environment and the people living near the River. Others, I must tell you, wonder if the EPA is in some sort of collusion with the G.E., believing that the welfare of "Big Business" must be favored over the needs of the individual, and even over bettering the environment that the agency exists to protect. I myself don't want to believe such cynicism, but the outcome of this decision will convince many one way or the other.

In respect to your time I will not dwell on the obvious:

dumping
dredged material in Berkshire County will not be tolerated by its populace.
Nor say more than state this troubling question: "How can any clean-up,
past, present and future, fail to address the polution of Silver Lake that
eventually will and does find its way back into the River to retoxify it?

Thank you for your time, attention, and ethical sensibility.

Sincerely, John F. Messerschmitt, D. Min

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Armold, Ellen"
Date: 04/10/2008 08:55AM
Subject: PCB Landfill

From: Armold, Ellen
Sent: Thursday, April 10, 2008 8:54 AM
To: 'svirsky.susan@epa-mail.epa.gov'
Subject: PCB Landfill

Dear Susan,
I am absolutely against the toxic sediment going from the Housatonic only to be put in a landfill "near the river". Is that why they purchased the land from the Noble farm in Pittsfield, which is bordering the river? I hope not!

There are many new families in the area of that farm and I would hate to see more incidences of sickness / cancer from playing in or near that area. I have seen the effects of premature death of young people I knew who used to play at the Nyanza dump in Ashland. Let's not take a chance, please!

I think they have done enough damage to Pittsfield and Berkshire County. Make them take it out of Berkshire county! It is time GE gives us a chance to rebuild our City and County for the better!

Respectfully yours,

Ellen Armold

[redacted]
Pittsfield MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Cooper Kyle MD"
Date: 04/10/2008 10:02AM
Subject: Hoosatonic Cleanup

Ms. Svirsky,

I am writing as a concerned citizen of the city of :CityPittsfield , Ma. I understand that there is a proposal by GE to dredge the PCB's and place them in a landfill. We as a community reject this proposal and feel that it is not the best for our community. Please help us come to a more environmentally acceptable solution by rejecting this proposal

Sincerely,

Kyle Cooper M.D.

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Currie Kristen MD"
Date: 04/10/2008 12:19PM
Subject: no toxic dump

Do not let GE's proposal to dredge the river and create a toxic waste landfill go forward. For the health of Pittsfield and Berkshire County residents, there should be no toxic waste disposal in Berkshire County. Kristen Currie, MD, staff cardiologist BMC

To: Susan Svirsky/R1/USEPA/US@EPA, "Kevin Sherman"
<kevin_sherman@berkshirelife.com>
From: "Justin Maaia"
Date: 04/10/2008 01:44PM
Subject: Housatonic River Clean-up

Ms. Swirsky,
I would first of all like to thank you for your time spent dealing with the Housatonic River clean-up in Berkshire County. I am writing to express what I understand is a popular and almost universal sentiment, that another landfill in Pittsfield or Berkshire County is simply unacceptable. This solution should be taken off the board. It is absurd enough that the clean-up has depleted so much of the taxpayers' money and the EPA's efforts. General Electric has not done their part to date, and should not be allowed to complete their "obligation" with such an unnacceptable solution as another landfill.
Thanks for your time,
Sincerely,
Justin C. Maaia

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Wohl Charles"
Date: 04/10/2008 02:49PM
cc: "Leppo Jeff"
Subject: PCBs in Berkshire County, MA

Dear Ms. Svirsky:

As a physician living and practicing in Berkshire County , MA , and as a member of the Housatonic River Advisory Board, I recently reviewed the "Rest of the River" proposal by General Electric Co. The current proposal is to dredge a section of the river in Pittsfield , MA , and then to store the PCB-laden wastes in an "upland storage facility", in other words a toxic dump. As I'm sure you understand, this has great potential for contamination of the air, ground water, and the soil itself. It may be the least expensive proposal for GE, but it is unacceptably hazardous for the communities surrounding the landfill. I vigorously oppose the creation of such a facility in Berkshire County , MA , and believe that this option should be rejected. Thank you for your consideration of this matter.

Charles I. Wohl, MD, FACP

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Thomas D. Marini"
Date: 04/10/2008 11:04PM
Subject: Proposed New Pittsfield MA landfill

Dear Ms. Svirsky:

A new landfill in this city is completely unacceptable.

Instead of prescribing a remedy that may be worse than the disease, the EPA should spend GE's money wisely on new science -- not on digging up mud and dropping it in a new location. A two year old boy can do that.

One thing that struck me is the absurdity of committing to a multi-decade cleanup plan when the technology is continually emerging. I'm sure that's convenient for GE because it contains their cost. But it's also dumb because new methods may end up being less invasive and more cost effective.

Start serving and protecting the people/citizens of this country and not the corporation like GE.

Regards,

Thomas Marini

To: Susan Svirsky/R1/USEPA/US@EPA
From: "stu masters"
Date: 04/10/2008 06:43PM
Subject: GE & reclaiming our river

I agree with others who have said it well.

Another landfill in Pittsfield or Berkshire County is not an acceptable proposal.

This solution should be taken off the board.

We need to reclaim our Housatonic River!

Thanks.

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Leppo Jeff"
Date: 04/10/2008 08:40AM
Subject: GE plan for Pittsfield

The proposal for the Housatonic cleanup of PCB ' s that includes creating a toxic dump on a Berkshire county landfill is unacceptable to the people of this county. GE made billions of dollars ruining our environment and they cannot get away with moving the problem from our river to a landfill with potential for further contamination. There is already a toxic dump in Pittsfield and enough is enough!!

Jeffrey Leppo, MD

BMC Cardiology Division

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Connor, Kathleen"
Date: 04/11/2008 01:57PM
cc: "Mike Ward" <mikeward4@gmail.com>
Subject: Pittsfield Land fill

I would like to voice my opinion to NOT have anymore land fills in Pittsfield and would simply echo what others have stated as far as pursuing other technologies to complete the clean up of the Housatonic RIver.

Kathleen Connor, CMB
Lending Director, GMAC RFC

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/11/2008 10:07AM
Subject: Pittsfield, MA - No more landfills

Hi, my name is Ellen Newton. I'm a resident and registered voter in Pittsfield, MA. I wanted to email you to let you know that I am not in favor of any more landfills in Pittsfield, MA.

I will be encouraging other residents of Pittsfield to do the same.

Regards,

Ellen Newton

To: Susan Svirsky/R1/USEPA/US@EPA
From: Timothy Kushi
Date: 04/11/2008 08:13AM
cc: Mike Ward

Subject: New Pittsfield "Landfill"

Ms. Svirsky,

I'm just e-mailing you to express my extreme opposition to the EPA using the money from General Electric to create yet another health-hazardous PCB landfill, esp. while the cities focus is on revitalizing the Housatonic River...

Know this e-mail speaks for a multitude of other Pittsfield residents.

I would thank you for taking my feelings into consideration when it comes time to finalize spending plans.

Sincerely,

Timothy M. Kushi

Pittsfield, MA 01201

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Newton, Michael"
Date: 04/14/2008 09:27AM
Subject: FW: [ward4-pittsfield] Say No to Hill 79

Ms. Svirsky,
The attached mail says it all.
I currently live within a half mile of the landfill in Pittsfield. I have been a supported of the original solution as it was agreed upon between GE and the EPA, I just wanted it done.
But as the hill, (or should I say mountain now?), has grown it has become almost obscene. WE REALLY NEED TO FIND A BETTER SOLUTION.
Sincerely,
Michael J. Newton

Pittsfield, MA 01201
----- Original Message -----
From: Mike Ward
To: ward4-pittsfield@yahoogroups.com
Sent: Monday, April 07, 2008 7:42 PM
Subject: [ward4-pittsfield] Say No to Hill 79

WHY YOU SHOULD EMAIL THE EPA TODAY
If there is one thing that Pittsfield residents can agree on it's that we don't need another PCB landfill. But that's precisely what GE recommended a couple weeks ago in their Rest of River proposal.
It may seem that the landfill issue is a no-brainer, but not when you consider the fact that the EPA has the authority to locate a landfill here whether we like it or not. That is why Councilor Sherman and I are petitioning the City Council tomorrow. And that is why you should email the EPA today.
The EPA's Rest of River project manager is Susan Svirsky and her email address is Svirsky.Susan@ epamail.epa. gov . Tell her you think a new PCB landfill in Pittsfield is unacceptable.
I personally have a lot of other issues with the proposed plan and frankly I'm still researching this stuff.
One thing that struck me is the absurdity of committing to a multi-decade cleanup plan when the technology is continually emerging. I'm sure that's convenient for GE because it contains their cost. But it's also dumb because new methods may end up being less invasive and more cost effective.
Why can't we turn this into an opportunity for Pittsfield? The Housatonic River could be the classroom for next-generation PCB cleanup research. And Pittsfield could be the world center of PCB remediation studies. Instead of prescribing a remedy that may be worse than the disease, the EPA should spend GE's money wisely on new science -- not on digging up mud and dropping it in a new location. My two year old son can do that.
I think we should take the time to decide on an intelligent course of action. Our river isn't getting any worse. In fact those who spend time on the river say it is very much alive. Do we really have to kill the Housatonic to save it? I'm not convinced we do.
-Mike

--
Mike Ward
City Councilor

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Ray Risley"
Date: 04/14/2008 09:41AM
cc: <ward4-pittsfield@yahoogroupes.com>
Subject: Housatonic River

I am writing in support of my Ward 4 Councilor in Pittsfield, Mass. for his views on the proposed cleanup of the Housatonic River by G.E.
G.E.'s proposal is ludicrous in light of the fact that there has already been major negative public input on the already established PCB landills in Pittsfield. Another landfill is totally unacceptable and should never have been part of G.E.'s original proposal to begin with.
I have canoed the stretch from Fred Garner to Woods Hole many times with our Boy Scout troop instructing the boys on the various animal habitat and wooded areas. I can not imagine this habitat would continue while G.E. was working in the river or that it would return following remediation.
The Housatonic river is a great assett to each community it flows through please don't let G.E. kill it completely.
Respectfully
Raymond E. Risley
Ward 4A

To: Tony Dobrowolski <TDobrowolski@berkshireeagle.com>
From: Paul & Mary Gloger
Date: 04/14/2008 11:11AM
cc: "Benjamin B. Downing" <Benjamin.Downing@state.ma.us>, Chris Speranzo <Rep.ChristopherSperanzo@Hou.State.MA.US>, "Denis E. Guyer" <Rep.DenisGuyer@hou.state.ma.us>, "Gov. Deval Patrick" <GOffice@state.ma.us>, James Ruberto <jruberto@pittsfieldch.com>, Mike Ward <mikeward4@gmail.com>, Rene Laubach <berkshires@massaudubon.org>, Smitty Pignatelli <Rep.SmittyPignatelli@hou.state.ma.us>, Susan Svirsky/R1/USEPA/US@EPA, Tim Gray <HousRiverKeeper@verizon.net>
Subject: Rest of River

Dear Mr. Dobrowolski,

We send heartfelt thanks to you for your column ("GE river plans stay under scrutiny") in the April 14th Berkshire Eagle.

You put so well into words the astounding lack of concern for the environment and natural habitat of the Housatonic River evidenced in the
scrape-and-rape treatment plan proposed by GE. We are in total agreement that we must not lose this sensitive and very valuable ecosystem. Not only is the vegetation of its flood plain essential habitat for wildlife, it is also the first line of defense against major
flooding downstream. It also filters sediment runoff from surrounding land, naturally slowing and cleaning the water.

Your subheading, quoting Mike Ward, "It's a totally wild area where you have a fragile ecosystem" states what SHOULD BE obvious, and brings it to public awareness.

Sincerely,
Paul & Mary Gloger

Pittsfield

March 31, 2008
Susan Svirsky
C/o Weston Solutions
10 Lyman Street
Pittsfield MA 01201

Sarah Flynn

Pittsfield, MA 01201

Dear Ms. Svirsky,
After attending presentation of GE's cleanup plans last Thursday at Lee high school, I am deeply concerned. GE personnel were evasive on many key points.

The biggest one, obviously, is the question of where proposed containment facilities will be located. These are going to be toxic dumps loaded with the highest grade of toxicity. They will remain permanently on the banks of our river, in our community. But where? Before any plans are finalized, before the public comment period is over, this information should be made public so that the people of Berkshire County can be instrumental in deciding what happens. After all, we are the ones who will be left here with these facilities long after GE and the EPA have gone home.

Another important question that we need to hear more about is who will maintain them? GE personnel mentioned in the meeting on March 27th, 2008, that they would maintain them for a time, but who will shoulder the burden after that? Who will pay and be responsible for containment of this highly toxic material in 100 years, when the facilities have begun to need maintenance? Will GE shoulder our children with this burden?

Finally, it was not made clear why GE cannot remove these toxic materials from our community altogether. GE personnel mentioned that obtaining guarantees of existing toxic landfill space to hold these materials in remote facilities is impossible. But why do they need guarantees of space in existing facilities? If GE is able to design and build toxic waste dumps here, on the banks of the Housatonic, why can't they do the same thing somewhere else? Of course, I understand that the cost is higher for GE. But it is obviously a better solution for us. The main question should be what is best for the people and animals of the Berkshires, not the "bottom line."

According to the proposed plan, PCB levels will never be low enough that we can fish or swim in the river. They will never be low enough to ensure safe habitat for our threatened and endangered indicator species, such as otter and mink. And the shores will be left forever marred with toxic waste dumps. It sounds like the people and wildlife of the Berkshires lose on every count.

In faith that the EPA is truly working for the people,

Sarah Flynn

Pittsfield, MA 01201

Email: vander4@verizon.net

April 2, 2008

Ms. Susan Svirsky
EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman St.
Pittsfield, MA 01201

RE: Public Comment on GE's CMS Proposal

Dear Ms. Svirsky:

I am writing to delineate reasons why General Electric's proposal (SE 3 in the CMS) should be rejected outright.

First, GE requests approval of its proposal without providing crucial information concerning where it plans to establish the upland storage facility in which GE hopes to dump approximately 410,000 cubic yards of toxic sediment in a permanent toxic landfill near the river between Pittsfield and Great Barrington. At the March 27, 2008 meeting GE refused to divulge where it planned to put the dump, and it seeks approval of its establishment BEFORE it will disclose its location. Such a tactic is sneaky and unfair to the residents of Berkshire County who deserve to know where another toxic landfill will be placed. GE's strategy is to keep the public in the dark until its proposal is approved by the EPA; then it will disclose the location of the dump – making it too late for public protests. Such a devious strategy should not be tolerated by the EPA it should reject GEs plan outright.

Second, GEs proposal should be rejected because it does not provide for alternative methods of disposing of PCBs. While GE attempted to appear as if it considered technologies such as chemical extraction and thermal desorption, its analysis was lacking and the EPA should independently study the viability of these methods as well as other innovative technology. Moreover, GE should be held to a higher standard of ability to use and develop cutting edge technology as it employs some of the best and brightest scientists in the world, has huge financial resources and scientific facilities to explore clean up options and presumably has a corporate mandate to innovate in ecological friendly design.

Third, GEs proposal to dig out river banks and place armor stone should be scrutinized for more ecologically friendly alternatives. As residents pointed out, the beautiful Housatonic will be reduced to a drainage ditch after GE is done with it. The clean up area contains wildlife preserves such as Canoe Meadows in Pittsfield, and a process of ripping out, dumping, and filling the habitat with rocks will ruin an open space treasure in Pittsfield.

Finally, I am disturbed that the EPA let GE run the March 27, 2008 meeting. When members of the audience asked questions about the effect of options on the environment, GE employees answered, not the more neutral EPA. Specifically Pittsfield City Council member Mike Ward asked if the process would cause PCBs to blow in the air, and the GE representative cavalierly said no. No one from the EPA even questioned this, leaving the public to erroneously believe that PCBs may not be transmitted by air even when bound with dirt particles that are being blown.

I urge the EPA to slow down, hold GE to a higher standard of clean up than it is proposing and to refuse to accept more toxic waste dumps in Berkshire County.

Respectfully submitted,

Valerie A. Andersen

The Berkshire Eagle

People, wildlife lose in GE plan

Letters

After attending the presentation of General Electric's cleanup plans last Thursday in Lee, I am deeply concerned. GE personnel were evasive on many key points.

The biggest one, obviously, is the question of where proposed containment facilities will be located. These are going to be dumps loaded with materials of the highest toxicity. They will remain permanently on the banks of our river, in our community. But where?

Before plans are finalized, before the public comment period is over, this information should be made public so that the people of Berkshire County can be instrumental in deciding what happens. After all, we are the ones who will be left here long after GE and the Environmental Protection Agency have gone home. The trees will grow back, but these dumps will never go away.

Another important question we need to hear more about is who will maintain said facilities? GE personnel mentioned in the meeting on March 27 that they would maintain them for a time, but who will shoulder the burden after that? Who will pay and be responsible for containment of this highly toxic material in 100 years, when the facilities need maintenance? Will GE shoulder our children with this burden?

Finally, it was not made clear why GE cannot remove these toxic materials from our community altogether. GE personnel mentioned that obtaining guarantees of existing toxic landfill space to hold these materials in remote facilities is impossible. But why do they need guarantees of space in existing facilities? If GE is able to design and build toxic waste dumps here, on the banks of the Housatonic, why not do the same thing elsewhere?

Of course, I understand that the cost is higher for GE. But it is obviously a better solution for us. The main question should be what is best for the people and animals of the Berkshires, not the bottom line.

According to GE's proposed plan, PCB levels will never be low enough that we can fish or swim in the river. They will never be low enough to ensure safe habitat for our struggling indicator species, such as otter and mink. And the shores will be left forever marred with toxic waste dumps. It sounds like the people and wildlife of the Berkshires lose on every count.

Please write to the EPA before the informal public comment period ends on April 21. Let GE and the EPA know that the people of the Berkshires are watching, we are aware of what's happening, and that we will speak for ourselves, and for those who cannot speak for themselves: our children and the wildlife of the Housatonic River.

SARAH FLYNN
Pittsfield

Dear Ms. Evinsky, Sarah Flynn's letter conveys my response to the current GE proposal. It's a difficult problem, but the proposed solution doesn't wash. More thought is necessary. Can the engineers who created the PCBs find a way to render them non-toxic? (Or engineers with similar knowledge).

Janelle Rosenelt
Lenox, MA 01240

"Lisa Rosso"
To Susan Svirsky/R1/USEPA/US@EPA
04/15/2008 08:08 AM
Subject PCB Landfill

Good Morning,

As a homeowner in Pittsfield who has had her land dug up by GE because of a high contamination of PCB's, a PCB landfill is not a good idea. Pittsfield has had enough bad press. I would rather not have my home town know as the PCB Capital of the World. Thank You for your time. Lisa Rosso

"Erena Roberta MD"
To Susan Svirsky/R1/USEPA/US@EPA
04/15/2008 11:30 AM
Subject GE Clean-up

Ms. Svirsky,

If Berkshire County is to be free of the PCB's produced by the former GE facility in Pittsfield we must also be free off a toxic landfill!
Plans for GE to dredge PCB's from the Housatonic River and store them in an upland storage facility are unacceptable because Berkshire County will not be free of the toxic waste.
As a resident of this beautiful county, a physician at BFS, and a responsible citizen opposed to the formation of toxic waste storage sites, I am asking that you act responsibly and veto the plans for simple dredgingk and storage. Berkshsire County and all of its citizens deserve to be REALLY FREE of the toxic pollution created by the old GE plant. Andfd GE need to responsibly remove the PCB's. Remove the PCB"S, not storage them.

Thank you for your attention and for any positive action that you can make to influence the decision that will be made regarding the pollution of the Housatonic River and Berkshire County!

Sincerely,
Roberta T. Erena, MD

Susan Svirsy, EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman St.
Pittsfield, MA 01201

Dear EPA,

I am a life long resident of Berkshire County. I was born and raised in Pittsfield, two or less blocks from the Housatonic River in Pittsfield, first on Lyman St. and then on Elm Street. As a child I played with my brothers on the banks of the river I remember thinking how pretty the "rainbows" that the oil slick from the dumped PCB's left in the water. I also remember several times when the oil in the river caught fire and the river between the bridge on Elm and the bridge on Lyman St. "burned."

It has been my observation that the river has not cleaned itself in the 50 plus years that have passed since then and I do not believe that the G.E. proposal of "no action "will work now.

Of the alternatives presented at the Lee Meeting on March 27, 2008, I believe the SED-8 Proposal was the best made by the G.E. I am dismayed that the G.E.'s best proposal will not clean the river or the animals that live in it to the "safe" levels of 2 parts per million. I believe that as thorough a removal of contaminated sediments as possible should be used. I do not agree with the proposal of taking the sediments elsewhere and making a hill of it. That is not a viable proposal, especially since the technology to clean the PCB's out of the soil already exists and has been used successfully before. I believe that Thermal Desorption with reuse is the best alternative, if it will leave the river clean.

My ideal model for PCB removal would be that the first segment of the river be dug up to what ever depth or width leaves the river free of the PCB pollution and clean soil replace it – with rip rap capping where necessary. The soil would then be taken to where ever the thermal desorption plant was set up and thermally cleaned.

Then, the next segment of the river, once it had been dup up, would be replaced with the thermally cleaned soil, while the PCB contaminated soil from the second dig is taken to the thermal desorption plant to be burned off. –And so on down the river. Then no PCB hill would be necessary.

I really don't care how long it would take to do this. All of the short term cheaper solutions which the G.E. proposes may take 40 years or more and still not promise a clean river. The men, trucks and equipment employed will help our local economy.

The G.E's short term solution of dumping the PCB's into our river was a mistake on their part. This powerful company which boasts of its grasp of technology and ecological awareness should now do the right thing and clean up the rest of the Housatonic river to the fullest extent possible. It is possible that as they go along even better ways for clean up will be developed.

I still live only a few blocks form the river in Pittsfield. I had a mother that died of colon cancer (one of the possible cancers caused by PCB's). I word as a teacher in a town the river runs thorough and have watched the number of children with learning disabilities rise. We and our children deserve a clean environment to live in. I hope that many other people who live along the river will also write to you at

svirsky.susan@epa.gov. and let you know what they would like the EPA to do about the river.

Sincerely,

Aurie Walsh

Pittsfield, MA 01201

Gordon Clark
To Susan Svirsky/R1/USEPA/US@EPA
04/17/2008 07:06 AM
Subject PCB Cleanup on Housatonic River

Dear Ms. Svirsky:

This is a comment concerning the unimaginative plan by GE to cleanup the PCB contamination in the Housatonic River. As you know much research has been done on using bacteria to degrade the PCBs. GE published research in the mid 1980's proving the bacteria's effectiveness. Instead of exploring this breakthrough technology, GE has chosen the corporate path of least resistance. By dredging and stockpiling the material we will continue to have GE's PCBs- they will only have been moved from a river to a stockpile. In the process the riparian habitat of the Housatonic will have been destroyed, yet the fish will continue to have PCBs. I ask that you please reject GE's plan outright.

Sincerely,

Gordon Clark

Pittsfield, MA 01201

Susan Svirsky, EPA Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield MA 01201
5 April 2008

Dear Ms. Svirsky ,

We are writing to inform you of a historic event in Lenox, MA on the 5th of April, 2008.

A gathering of citizens met to discuss the proposed cleanup of the Housatonic River as presented by GE. At the meeting were people belonging to a range of organizations, as well as many concerned individuals who expressed a variety of aims, opinions, fears, and goals regarding the future of our River represented at this meeting.

While many specific points on the cleanup were presented, including the level of cleanup, the method of disposal, and what aspects should be given priority, there was one thing we all agreed on: we insist upon participating in the process, from decision making to monitoring, and we will not allow the interests of our community to be put behind other considerations.

This clean-up is going to happen. The EPA has made clear that it has jurisdiction over the cleanup. But we, the citizens of the Housatonic Valley, are aware of what is happening. We are informing ourselves and each other about the health and environmental issues that impact us and that impact the river. We understand the process, and our role in it. We are working together to form an alliance so that the best possible clean up is achieved.

We plan to meet regularly in the upcoming months, and for as long as it takes to see this clean-up through. In that capacity, we look forward to working with you closely as of today and for as long as it takes to see this through.

Sincerely, Tim Gray, HRI

Stockbridge Gas Co.

Sarah Flynn
Pittsfield

HRI

CT

Valerie C. Anderson
Pittsfield

Al Bertelli

Gene Chague
Taconic Chapter Trout Unlimited

Bryan Emmett
Berkshire Natural Resources Council

Board of Directors - HRI

Individuals and groups represented at this meeting

Housatonic River Initiative
Environmental Stewardship Concepts- Dr Peter DeFur
Trout Unlimited
Housatonic Environmental Action League
Berkshire Natural Resource Council
Massachusetts Association of Conservation Commissioners
Housatonic River Commission
Housatonic Valley Association
Berkshire County League of Sportsmen
Berkshire County Fly Fishing Association
Citizens for PCB Removal
Berkshire Environmental Action Team
Concerned Citizens of Lee
Lee Land Trust
Lee Town Representative
Staff -Senator Ben Downing
Staff- Congressman John Olver
Berkshire County Paddlers
Staff- Massachusetts Fish and Wildlife
Lenox Selectmen and Town Manager
Lenox Board of Health

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To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 04/24/2008 12:10PM
Subject: Re: Hazardous Waste

Your email address was given out on "Behind Closed Doors" and wanted to voice my objection to any hazardous waste dump sites being located in Pittsfield or for that fact anywhere in Berkshire County.

Thank you for your time in allowing me voice my objection.

Beverly E. Keil

Pittsfield, MA 01201

The Commonwealth of Massachusetts

April 16, 2008 William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

Susan Svirsky
US Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

RE: GE-Pittsfield/Housatonic River Site, Rest of River (GECD850) Phase 1 Cultural Resource Assessment. **MHC #RC.5875.**

Dear Ms. Svirsky:

Staff of the Massachusetts Historical Commission, the office of the State Historic Preservation Officer, have reviewed the draft report, *Initial Phase 1A Cultural Resources Assessment for the Housatonic River – Rest of River Project,* prepared by URS Corporation, dated March 18, 2008, and received by the MHC. It appears that the draft report is provided to the MHC for review and comment in accordance with 36 CFR 800.4(a)(3) and 800.4(b)(1)). MHC looks forward to review of EPA's findings and determinations.

Please have the project consultants take into account the following comments in preparing a final report.

Pages i-iii, and 1-6 were misbound (upside down, incorrectly punched for GBC binding on the right margin).

The report needs a technical archaeological abstract (summarizing the area surveyed, the goals and methods, and the findings) and a management (executive) summary.

The report text needs to be edited to ensure that all cited works are in the references (references cited in Appendix B, and others in the main body of the report).

On Figures 3 to 6, the captions should indicate that the lettered blocks refer to Figures 7 to 35.

In Chapter 1, and in Chapters 4 and 5, the methodology should be described for how submerged archaeological resources were considered.

In Chapter 1 (page 11), the W.E.B. Du Bois Library in Amherst has an important collection of historical and scholarly sources about Berkshire County and the Housatonic

River sources. The online public catalogue can be searched for pertinent sources to review and consider.

In Chapter 1, an explicit description of the field reconnaissance method should be provided, with data provided in Chapter 5 on the project maps, in summary tables, and the narrative for each location. What was the interval for stopping and conducting surface evaluation? Where did the surface inspections occur? What was the areal extent of the inspections? What were the results?

In Chapter 1, a paragraph should be added that describes the curatorial methods for preserving the research, fieldwork, and report data, and the present location of the project documentation to be curated in accordance with 36 CFR Part 79.

Chapter 2 should include a geological and environmental history of the study area, which is pertinent to the predictive model that should consider major environmental changes for the study area through time. A succession of diverse microenvironments would be expected to have presented favorable locales for land use and settlement in the survey area. See Dewar and McBride, and others in Rossignol and Wandsnider's (1992) *Space, Time, and Archaeological Landscapes* and the edited issue of *Man in the Northeast* 31 (1986)) on wetlands. What are the hydrological processes that caused erosion or deposition of floodplain deposits and river channel scouring? How were those processes affected by the construction and removal of dams and deforestation? What other natural and cultural events have occurred to affect the expected integrity and stratigraphic location of archaeological deposits and features?

The information in Appendix B should be integrated within the main body of the report, in Chapter 3.

The summary of the previous research in the region should begin with the formative antiquarian and avocational efforts in history and archaeology. A very important reexamination of antiquarian pursuits in the Connecticut River Valley provides a context to understand similar efforts in the Berkshire region: Margaret M. Bruchac 2007 *Historical erasure and cultural recovery: Indigenous people in the Connecticut River Valley.* Ph.D. dissertation, Department of Anthropology, University of Massachusetts, Amherst.

On pages, 16, 84, and 85, additional important sources to consider for information about the Early Archaic include:

Johnson, Eric S. 1993 Bifurcate Base Projectile Points in Eastern and Central Massachusetts: Distribution and Raw Materials. *Bulletin of the Massachusetts Archaeological Society* 54: 46-55.

Nicholas, George P. 1987 Rethinking the Early Archaic. *Archaeology of Eastern North America* 15: 99-124.

Nicholas, George P. 1991 Places and Spaces: Changing Patterns of Wetland Use in Southern New England. *Man in the Northeast* 42:75-98.

The thematic issue on the Early Archaic, *The Bulletin, New York State Archaeological Association* 75 (1979).

Early and Middle Archaic Cultures in the Northeast, edited by David R. Starbuck and Charles E. Bolian. Occasional Publications in Northeastern Anthropology, No. 7 (1980).

The secondary sources used for the ancient period context should include relevant research published in the 1990s and in this decade, such as the chapters and references cited in *The Archaeological Northeast* (1999, edited by Levine, Sassaman, and Nassaney); publications by John Cross and Alan Leveille for the Susquehanna Tradition; John Cross and Dianna Doucette for the Middle Archaic; John Pretola and Elizabeth Chilton for the Woodland Period, Tim Binzen for the Upper Housatonic and for Mohican lands; and Dan Mandell and other ethnohistorians for the Stockbridge Munsee and Mahican. The secondary sources for the historical archaeology of the region should note the work of Robert Paynter and Nancy Ladd Muller for the W.E.B. Du Bois birthplace in Great Barrington.

In Chapter 3, there does not appear to be any mention of African Americans and their history in the Berkshire region (see the publications of Bernard A. Drew and David Levinson). Historic and archaeological properties related to African Americans may be expected.

At the conclusion of Chapter 3, a summary of the types of expected historic and archaeological properties in the survey area should be provided.

For Chapters 4 and 5, changes to the environmental settings over time are critical to consider, particularly for the ancient period. More specific, synchronic information about the expected historic and archaeological property types by cultural period should be provided, rather than a generic and diachronic "archaeological sensitivity". The triparite scheme of low/medium-moderate/high should be reconsidered, as areas may be either "sensitive" or "not sensitive" for having potentially significant archaeological deposits and features.

In Chapter 4, it should be noted that the sample of known ancient period sites for Berkshire County is extremely low, not representative, and generally unverified. Recorded historical archaeological sites are also not representative, but are generally verified. The unreliable site sample could be considered in the model by applying a Bayesian method.

In Chapter 5, the opinions of archaeological sensitivity are not clearly explained and have an impressionistic quality. To demonstrate the reliability and accuracy of the assessments, additional information to provide for each survey section would include: ancient and historical period environmental changes and hydrological effects on

landforms and the river channel; the types of expected cultural resources by period; empirical data recorded at locations where surface reconnaissance occurred; information about areas with and without apparent physical integrity, and expected archaeological integrity and depths of deposits and features.

Please provide the MHC with two copies of the final report, with original MHC archaeological sites forms for newly identified sites or new site data about previously recorded sites (with a USGS locus map that clearly shows the site location, and any pertinent larger scale or historical maps and photographic images attached to each site form). Submittal of this information will enable the results to be integrated with the MHC's preservation planning systems (see 48 Fed. Reg 190 (1983)) and will assist in consultation for the project.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800) and the Secretary of Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Fed. Reg. 190 (1983)). If you have questions or require additional information at this time please contact Edward L. Bell at this office.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
State Archaeologist
Massachusetts Historical Commission

xc:
Kevin Mooney, General Electric Company
Daniel F. Cassedy, URS
Kathleen Atwood, USACOE-NED
Victor T. Mastone, Massachusetts BUAR

CITY OF PITTSFIELD

CITY COUNCIL, CITY HALL, 70 ALLEN STREET, PITTSFIELD, MASSACHUSETTS 01201

April 9, 2008

Ms. Susan Svirsky
EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman St.
Pittsfield, MA 01201

Dear Susan,

Please be advised that the Pittsfield City Council in its April 8th meeting voted unanimously in support of the following petition in response to GE's Rest of River proposal:

> ***"The undersigned respectfully requests that the Pittsfield City Council communicate to the Environmental Protection Agency that we will not accept any PCB remediation plan that includes storage of dredged or otherwise removed contaminated materials in the City of Pittsfield or Berkshire County."***

While we encourage the EPA to consider alternatives beyond those presented by GE, the current proposal to create more local landfills is absolutely not acceptable to our community.

We appreciate your diligence in determining a solution that is appropriate for our river and our community.

Best regards,

Gerald Lee
President
Councilor At Large

Matthew M. Kerwood
Vice President
Councilor At Large

Lewis Markham
Ward 1 City Councilor

Louis Costi
Ward 2 City Councilor

Linda Tyer
Ward 3 City Councilor

Michael L. Ward
Ward 4 City Councilor

CITY OF PITTSFIELD

CITY COUNCIL, CITY HALL, 70 ALLEN STREET, PITTSFIELD, MASSACHUSETTS 01201

Jonathan Lothrop
Ward 5 City Councilor

Daniel Bianchi
Ward 6 City Councilor

Anthony Mafluccio
Ward 7 City Councilor

Peter M. Marchetti
Councilor At Large

Kevin J. Sherman
Councilor At Large

Ms Susan Svirsky
Environmental Protection Agency
C/O Weston Solutions,
10 Lyman Street
Pittsfield, MA 01201

Dear Ms Svirsky,

This letter is to participate in the "comment period" on the GE plan to dredge and cap the Housatonic River to Woods pond, including work on some of the oxbows.

First, I would like you to know that I actually use the river. Every year, for the last twenty years I have duck hunted on the river, rowing my canoe up and down the length of water from approximately the Lenox Sportsman's club to Woods pond itself. I lived through the data sampling which occurred several years ago. I can also report to you that since the sampling there have been at least two major floods, strong enough to flood and destroy long standing duck blinds along the river. Thus, I would doubt the accuracy of any sampling data being used. With each flood, the PCBs move, and sink lower into the substrate.

Second, the river is alive with wild life. Muskrats and beavers are common. I talked last year with a trapper who told me he took 15 muskrats with a trap line that covered no more than a quarter mile. Heron, (and we know that heron will not abide bad water) are very common as they fish along the bank. Wood ducks abound. I have had a six point buck swim through my decoy spread, and an eagle attack my decoys. The shore line is thickly covered with varied types of vegetation which animals and birds need. In short, the river is doing fine, without any help from a dredging program.

Now, I don't believe GE really wants to dredge the river. They are just responding to a seemingly unending barrage of bad comments stemming from a small number of environmental zealots. I am no friend of PCBs, but the solution proposed is worse. My preferred solution is to expend funds to insure that inflows of PCBs into the river are truly capped. If that is so, the river will fix itself.

Thank you for providing a chance to comment.

Yours truly,

Henry S. Langendorf

Dalton, MA 01226

Susan Svirsky
Environmental Protection Agency
C/O Weston Solutions
10 Lyman St.
Pitts., MA ~~01226~~ 01201

Dear Susan,
I am very concerned about the approach being considered for PCB removal in the Housatonic River in the region beyond the section already completed. Looking at the "cleaned up" region of the river and thinking of the results that imposing that destructive method on nature in regions that include Canoe Meadows and Woods Pond seems very abusive!
PLEASE:
A] Avoid leaving the river banks destroyed. The stone work used on the first 2 miles approach the nature barriers of the cement walls left by the work done years ago on the Hoosic River project in North Adams.
B] Avoid transporting PCB containing materials over our roadways where trains are available.
C] Try using less destructive removal methods; perhaps the PCB-destroying enzymes or hydraulic dredging.

Thank you,
George Bissell George Bissell 4-28-2008

Dalton, MA 01226

4/24/08

To whom it may concern:

I want to add my voice to those objecting to same-old, same-old GE proposals.

I found the article by Gina Chague in the 4/27 Eagle very compelling, proposing possible alternatives for the Housatonic/Woods Pond debacle.

Lois Chapman

Lenox MA 01240-2340

To: Susan Svirsky/R1/USEPA/US@EPA
From:
Date: 05/04/2008 10:44PM
Subject: GE/Housatonic River Site comment

Dear Ms. Svirsky,

My name is Walton Wilson. I am a resident of Lenox Dale (Berkshire County), MA.

I write to you to express my strong opposition to the current GE plan for removing the PCB's from local portions of the Housatonic River.

Given the history of GE's behavior in this matter, and the magnitude and severity of this pollution, it defies common sense that your agency would even consider implementing GE's low tech, low budget proposal. This the same kind of ill-fated compromise -- minimal effort camouflaged as an environmental "clean up," "efficiency" disguised as "effectiveness" -- that helped bring about other Berkshire disasters such as Hill 78 and OPCA 71.

Digging up acres and acres of river bank, turning residential neighborhoods and communities into industrial waste zones, and stockpiling immense quantities of toxic material for future generations to deal with is shortsighted. And does anyone believe that "capping" the PCBs buried under portions of the riverbed with a thin sand barrier will actually be effective??

We should not employ such unreliable, antiquated means to deal with a problem of this complexity. Please do not allow the Housatonic River "clean up" plan to be locked into a low-grade technology that could be replaced in the future by other approaches that might make much more sense. This effort will take time and the costs will be considerable. Although some of these technologies may not exist at present, changes in environmental science can happen quickly, as you know. I urge the EPA to approach this task in stages, and not to commit to GE's proposal simply because it exists on paper and seems expedient.

Thank you for your time and attention. I look forward to meeting either you or your representative later this week at the town meeting in Lenox.

Sincerely,

Walton Wilson

Lenox Dale, MA 01242

Walton Wilson
Head of Voice and Speech
Associate Chair, Department of Acting
Yale School of Drama

New Haven, CT 06520-8244

To: Susan Svirsky/R1/USEPA/US@EPA
From: Brenda Landes
Date: 05/05/2008 09:18PM
Subject: Landfill, Housatonic River and GE

Dear Ms. Svirsky,

I am writing to register my opposition to the proposed Ge plan for dredging the Housatonic between Fred Garner Park and Woods Pond and adding another landfill to Berkshire County. I know there are no easy solutions but there has to be something better than this quick and dirty proposal. There have been several letters to the editor in the Berkshire Eagle (A sixth-grader knows better than GE, 4/25/08, and Take time to clean river properly, 4/28/08) that I certainly agreed with and that I felt summarized my feelings about the plan. Please listen to the residents of the county and make GE put some of those highly paid minds to work on a more creative solution to the mess they made.

Brenda Landes and family

Pittsfield, MA

5/1/08

Susan Svrsky

1. The clean up of the Housatonic River now completed in Pittsfield is nothing more then a flood control river.

As a sportsmen, this river will never be a place to fish, because of the poorly design cover left in place for fish to survive. This wide open stretches of water will be to warm for fish.

This River must be revisited by someone who knows how to build rock structures that will create cover underneath for fish to hide. The state of Penn. has done wonders with log structures.

2. You must find another way of cleaning up Woods Pond without destroying the river, such as barges with vacume suckers to clean up the bottom and the banks without destroying the whole river like they did in Pittsfield.

Duck and Geese carry P.C.Bs all over the Northeast, not just Woods Pond. My suggestions to this is, G.E. pay for Lal work to check anyone who eats or hunts in Berkshire County for P.C.Bs in their body. I have had this done by G.E. a few years because, I have eaten Ducks, Geese, frogs and game from Woods Pond. My blood count in 2/27/98 after 50 yrs came back, 5.0 parts per billion and was acceptable limits.

Is the P.C.Bs really as bad as they say?? I don't Know.

If everyone tested, shows no major changes, then a Partial cleanup might do the job; with G.E. having

the option of comming back to finish the job 5 yrs from the Partial clean up. These are some of my opions on this clean up for what its worth.

Sincerely

Joseph R. Arena

Pittsfield Ma 01201

The COMMONWEALTH OF MASSACHUSETTS
BOARD OF UNDERWATER ARCHAEOLOGICAL RESOURCES
OFFICE OF COASTAL ZONE MANAGEMENT
251 Causeway Street, Suite 800, Boston, MA 02114-2136
Tel. (617) 626-1200 Fax (617) 626-1240 Web Site: www.mass.gov/czm/buar/index.htm

May 5, 2008

Susan Svirsky
US Environmental Protection Agency
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01202

RE: *Initial Phase 1A Cultural Resources Assessment for the Housatonic River – Rest of the River Project*, General Electric Company, Pittsfield, MA

Dear Ms. Svirsky:

The staff of the Massachusetts Board of Underwater Archaeological Resources has reviewed the above referenced report presenting the archaeological sensitivity for the Rest of the River Project on the Housatonic River in Pittsfield, Massachusetts. While the Board is satisfied with the overall content of the report, the following comments should be considered in preparation of the final document.

The report should contain a management abstract or executive summary before the body of the report presenting a brief history of the project, and a summary of the methodology and findings. Concerning methodology, Chapter 1 would benefit from more detail. For example, the description of the visual reconnaissance survey (section 1.5) should specify the intervals at which the survey team stopped the boat to conduct "pedestrian reconnaissance". Additionally, a ranking system for historic site potential that incorporates the high, medium and low categories used to gauge prehistoric site potential would be useful. Chapter 2, *Environmental Setting*, should provide an environmental history of the survey area in addition to the extant environment conditions presented. Appendix B contains a well-written, detailed cultural context for the project region. However, certain portions of the text related directly to the project area should be moved forward to Chapter 3. The report incorporates excellent use of aerial photo-based maps to depict the range of archaeological sensitivity. These maps would be more useful with larger print and sharper images. Additionally, Figure 8 on page 26 appears to show an area designated as sensitive for historic *terrestrial* sites that is within the river channel.

The Board understands that additional data may be required to refine and field test the sensitivity models presented in this report, and that such data depends on the scope and locations of the remedial actions. The Board looks forward to reviewing future data, findings and recommendations related to this project.

The Board appreciates the opportunity to provide these comments. Should you have any questions regarding this letter, please do not hesitate to contact me at the address above, by telephone at (617) 626-1141 or by email at victor.mastone@state.ma.us.

Sincerely,

Victor T. Mastone
Director

Cc: Brona Simon, MHC
Kate Atwood, USACE
Daniel Cassedy, URS Corporation

BioGenesis[SM] *...Cleaning today for tomorrow*[TM]

May 7, 2008

Ms. Susan Svirsky
EPA Rest of River Project Manager
U.S. Environmental Protection Agency, Region 1
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: Comments on General Electric's Housatonic River – Rest of River, Corrective Measures Study Report, March 2008

Dear Ms. Svirsky:

BioGenesis Enterprises, Inc. has reviewed the Corrective Measures Study Report (CMS Report) submitted by General Electric for the Housatonic River, Rest of River site. We stand behind the testing results included in our Bench-Scale Treatability Study Report (Appendix A to the CMS), however we strongly disagree with the evaluation of those results included in the body of the CMS.

BioGenesis' primary concerns with the CMS report are as follows:

1. GE's evaluation of the BioGenesis[SM] Soil/Sediment Washing Technology asserts that the technology cannot reach the onsite reuse criteria. This conclusion is incorrect and misleading.

2. The overall costs presented in the CMS for the BioGenesis treatment alternative are inflated, and very likely overstate the actual costs for treatment by as much as 24%.

3. The evaluation of the BioGenesis treatment alternative against the General Standards and specifically the Selection Decision Factors in the CMS is biased when compared to the evaluation of non-treatment alternatives.

Attached to this letter is a detailed discussion of these issues.

BioGenesis is committed to the treatment of environmental problems in a responsible and sound manner. Our proven, cost-effective decontamination technology can make a major contribution to the cleanup of the Housatonic River and other polluted waterways. We look forward to working with your office and with GE personnel to realize this potential.

Sincerely,

Charles L. Wilde
Executive Vice President

Enclosure

cc: Andrew Silfer, GE
Tim Grey, Housatonic River Initiative

BioGenesis Enterprises, Inc.
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May 7, 2008
BioGenesis Enterprises, Inc.'s Comments
to the U.S. Environmental Protection Agency
on
General Electric Company's
Housatonic River – Rest of River, Corrective Measures Study Report
(dated March 2008)

Summary

The potential of the patented BioGenesis[SM] Soil/Sediment Washing Technology to cost-effectively remove PCB contamination and allow reuse of the native soil/sediment of the Housatonic River and floodplain – avoiding costly and disruptive transportation and storage in landfills – is clearly demonstrated by the BioGenesis study data (CMS Appendix A). Unfortunately, it is not reflected in the interpretations and recommendations in GE's Corrective Measures Study (CMS) for the Housatonic River, Rest of River site. While BioGenesis stands behind the testing results included in our report, we strongly disagree with the evaluation of those results included in the body of the CMS. Contrary to assertions in the CMS, extrapolation of the treatability study data show that multiple treatment cycles can clean the soil/sediment to meet reuse standards and that treatment costs are highly competitive and significantly lower than projected by GE.

The three primary areas of concern with the CMS report are:

1. GE's evaluation of the BioGenesis[SM] Soil/Sediment Washing Technology asserts that the technology cannot reach the onsite reuse criteria. This conclusion is incorrect and misleading. The data from the bench study show continued reductions in PCB concentrations with multiple treatment cycles, indicating the technology can reach the reuse criteria of 2 mg/kg (ppm).

2. The overall costs presented in the CMS for the BioGenesis treatment alternative (TD 4) are inflated and very likely overstate the actual costs for treatment by as much as 24%.

3. The evaluation of the BioGenesis treatment alternative against the General Standards and specifically the Selection Decision Factors in the CMS is biased when compared to the evaluation of non-treatment alternatives.

BioGenesis has a decade of experience developing and successfully testing, in the U.S. and abroad, its effective, environmentally safe, low temperature treatment of contaminated soil and sediment. For far less cost than estimated in the GE CMS, the BioGenesis technology could treat soil/sediment to levels below 2 mg/kg for reuse in restoring the river and its habitats or for other uses.

GE's analyses and recommendations in the CMS notably overlook the contribution BioGenesis' state-of-the-art, continually improving, treatment technology could make to a comprehensive solution to remediate the Housatonic River – Rest of River site. At significantly less cost and disruption to the local communities than projected in the CMS, incorporation of this proven technology as part of a comprehensive final cleanup plan would emphasize treatment and reuse of contaminated soil rather than just removing it to landfills or capping it in place.

BioGenesis Enterprises, Inc.
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Introduction

BioGenesis Enterprises, Inc. (BioGenesis) develops, manufactures, and provides products and services for industrial cleaning and remediation. The advanced technology behind all BioGenesis' products reflects our belief that today's solutions can do more than be marginally acceptable; they can also be highly effective and have a positive environmental effect. The BioGenesis[SM] Soil/Sediment Washing Technology, patented in December 2001, is designed to decontaminate both coarse-grained (sand- and gravel-sized) and fine-grained (silt- and clay-sized) particles, by isolating individual particles and removing contaminants and naturally occurring organic material adsorbed to the particles. This is achieved through a combination of physical and chemical forces. The result of the BioGenesis process is a decontaminated soil/sediment that can be reused in the excavation or used as a raw material in the production of topsoil or other construction-grade products.

BioGenesis performed a treatability study using the BioGenesis[SM] Soil/Sediment Washing Technology on sediment and floodplain soil from the Housatonic River – Rest of River site for General Electric in the fall of 2007. The results of the treatability study are included in the Bench-Scale Treatability Study Report (Treatability Study Report) in Appendix A of General Electric's (GE's) Corrective Measures Study Report (CMS Report). The following comments pertain to the evaluation of the BioGenesis[SM] Soil/Sediment Washing Technology in GE's CMS report.

1. BioGenesis' Treatment Technology Can Meet Reuse Standards

Contrary to assertions made in the CMS, the treatability study data show that multiple treatment cycles continued to achieve reductions in PCB concentrations, indicating the BioGenesis[SM] Soil/Sediment Washing Technology can decontaminate sediment and floodplain soils from the Housatonic River – Rest of River site to meet reuse standards.

For the treatability study, BioGenesis was provided PCB-contaminated material from three locations in the Rest of River site. The three locations were selected by Arcadis (GE's consultant) to be representative of:

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a) the range of physical characteristics typical of soil and sediment in the Rest of River site, and
b) the upper limit of PCB concentrations in the soil and sediment in the Rest of River site.

The goals of the treatability study included an evaluation of the extent that the BioGenesis[SM] Soil/Sediment Washing Technology could substantially reduce PCB concentrations in the soil and sediment from the Rest of River site. Data were collected to evaluate this goal. However in the treatability study report, the data interpretation and costing were focused on the reduction of PCB concentrations to below 50 mg/kg (or parts per million, ppm) to reduce disposal cost by not requiring disposal at a Toxic Substance Control Act- (TSCA-) permitted landfill.

During the treatability study, three validation test runs were performed on each of the three materials for a total of nine validation test runs. Each of the nine validation test runs consisted of three treatment cycles to evaluate the effect of multiple treatment cycles on the PCB concentrations. The second and third treatment cycles were performed by collecting the treated soil/sediment after the first or second treatment cycles, recombining the treated material with water, and processing it through the equipment again. Samples were collected after each of the treatment cycles as described in the Treatability Study Report. Presented in Figure 1 is a graph of the weighted PCB concentrations in the treated soil/sediment for each of the nine validation test runs after each treatment cycle.

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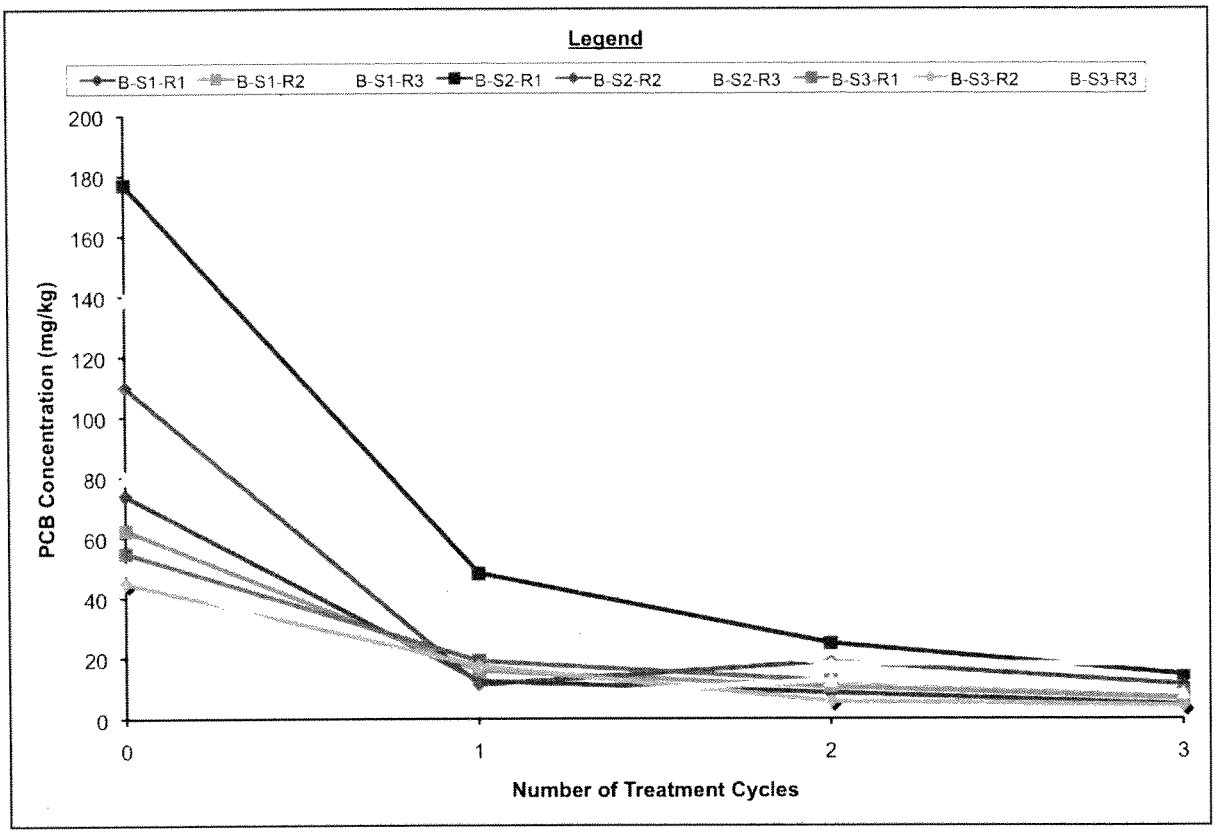

Figure 1 – Bench-Scale Treatability Study Results

A review of Figure 1 shows decreasing concentrations in the treated soil/sediment with each subsequent treatment cycle as would be expected. In order to project the required number of treatment cycles to reach the onsite reuse criteria, or Massachusetts residential criteria, the data are plotted on a log-normal graph and a best fit line is calculated for the data from the three validation test runs on each of the three materials. Presented in Figure 2 is a lognormal plot of the data for each of the three validation test runs with the calculated best-fit curve.

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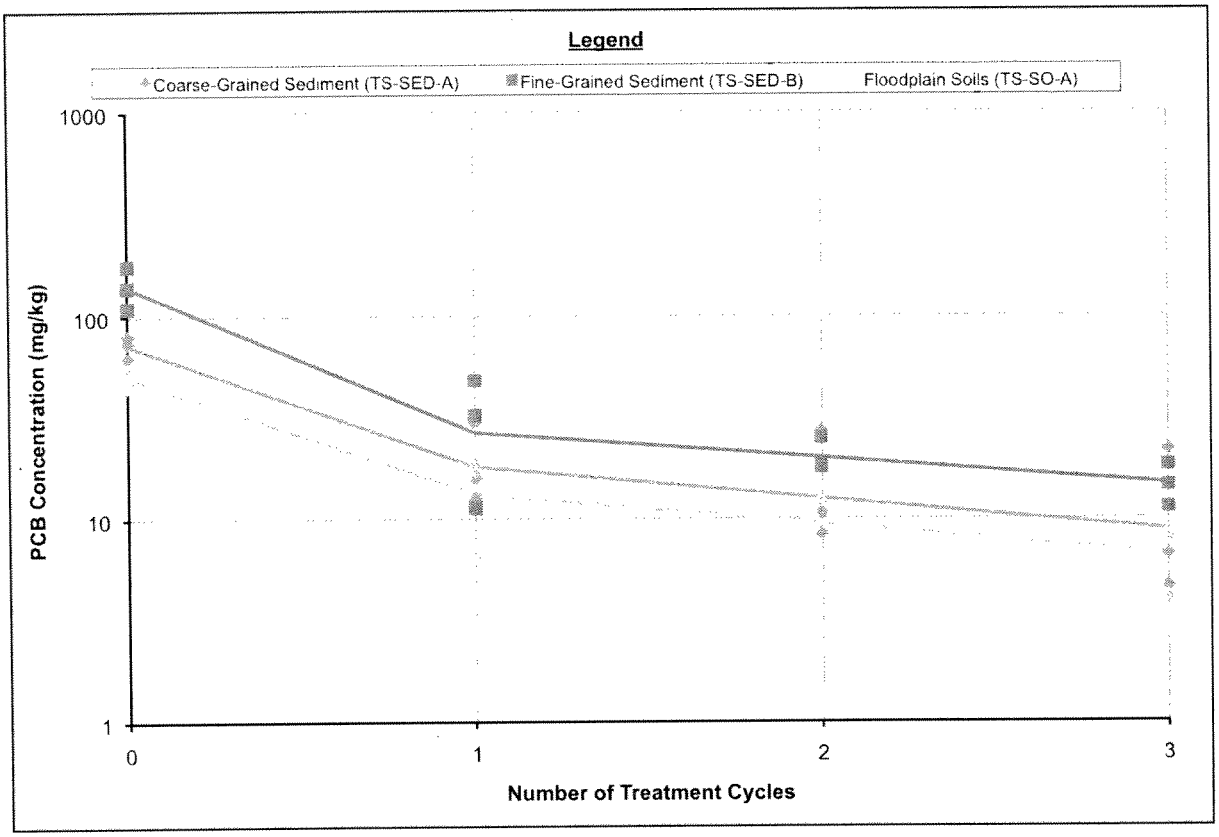

Figure 2 – Lognormal Plot of Bench-Scale Treatability Study Results

A few significant observations can be made from reviewing Figure 2. First, the largest amount of PCB reduction occurs during the initial treatment cycle. This is expected since the loosely bound organic material is easily removed in the initial treatment cycle and PCBs have an affinity toward organic materials. A significant portion of the PCB contamination would be removed with the loosely bound organics. The slope of the curve represents the amount of PCB removal in the initial treatment cycle, which, considering the three disparate soil/sediment matrices and different starting concentrations, is relatively consistent.

Second, subsequent treatment cycles achieve reductions in PCB concentrations at a lesser, but consistent rate. The best-fit curve is a straight line on a lognormal graph, which indicates a logarithmic reduction in concentrations.

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Third, a comparison of the slopes of the best fit curves for all three of the materials for the second and third treatment cycles shows consistent reductions for each material for these treatment cycles. This indicates that the removal of PCBs from the soil/sediment of the Rest of River site using the BioGenesis^{SM} Soil/Sediment Washing Technology is unaffected by the soil/sediment matrix.

All of these observations indicate that the data collected during the bench-scale treatability study can be used to estimate the number of treatment cycles needed to decontaminate the soil/sediment from the Rest of River site to meet the reuse criteria at different starting concentrations. The following equation has been developed to predict the performance of the BioGenesis^{SM} Soil/Sediment Washing Technology on the PCB concentrations in the soil/sediment from the Rest of River site:

$$PCB_T = 0.2322 * PCB_I * e^{-0.33(n-1)}$$

where:

PCB_T = PCB concentration (mg/kg) in treated soil/sediment

PCB_I = PCB concentration (mg/kg) in untreated soil/sediment

n = number of treatment cycles

Based on the data collected during the treatability study, the BioGenesis^{SM} Soil/Sediment Washing Technology can achieve reuse criteria through multiple treatment cycles (see Figure 3), and the amount of treatment can be estimated using the equation above.

2. BioGenesis Treatment Costs Overestimated in CMS by 24% or More

The summary costs for treatment using the BioGenesis^{SM} Soil/Sediment Washing Technology included in Table 19 of Appendix E in the CMS appear to be inflated, thus misrepresenting the costs for treatment. We have two main reasons why we believe the treatment costs are inflated:

a) An Error in the Application of Costs Data – Two costs are provided to represent the range of treatment costs; a minimum treatment cost for treatment of 184,000 cubic yards (cy) of PCB-

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contaminated soil/sediment and a maximum treatment cost for the treatment of 2,820,000 cy of PCB-contaminated soil/sediment. Line Item 2.0, Treatment System cost is about 4 to 8% higher than the costs we provided in the Treatability Study Report. Under the scenario considered in the CMS where the treated soil/sediment would be disposed in a non-TSCA landfill, the cost for transportation and disposal (Line Item 6.0) of the treated material appears high. It seems that an error was made in the calculation of the tonnage of soil/sediment to be disposed. Using the data provided in the Treatability Study Report on page 5-13, for the tonnage of treated soil/sediment per cubic yard processed, as much as a 40% reduction in transportation and disposal costs can be realized. These two items together represent an overall 24% decrease in the cost presented in the CMS as summarized in Table 1.

Table 1 – Evaluation of Costs in the CMS

Item #	Description	Minimum (SED 3 & FP 2)		Maximum (SED 8 & FP 7)	
		CMS Costs[1]	Adjusted Costs	CMS Costs[1]	Adjusted Costs
1.0	Pre-Design Investigation (5%)	$597,625	$552,125	$697,338	$671,806
2.0	Treatment System	$11,952,500	$11,042,500	$13,946,765	$13,436,118
	Subtotal	$12,550,125	$11,594,625	$14,644,103	$14,107,924
	Project/Construction Management (5%)	$627,506	$579,731	$732,205	$705,396
	Engineering and Administration (5%)	$627,506	$579,731	$732,205	$705,396
	Contingency (25%)	$3,137,531	$2,898,656	$3,661,026	$3,526,981
	SUBTOTAL	$16,942,669	$15,652,745	$19,769,540	$19,045,698
4.0	Annual Operations	$4,398,021	$4,388,868	$7,128,043	$7,128,862
	Total Operations[2]	$35,623,971	$35,549,831	$367,094,192	$367,136,394
5.0	Annual O & M	$25,000	$25,000	$25,000	$25,000
	Total O & M	$75,000	$75,000	$75,000	$75,000
6.0	Total Transportation and Disposal[3]	$37,300,853	$37,983,621	$571,220,214	$339,773,127
	TOTAL COST OF ALTERNATIVE (ROUNDED)	**$90,000,000**	**$89,000,000**	**$958,000,000**	**$726,000,000**
	Difference		**-1.1%**		**-24.2%**

Notes:
1. Costs from CMS, Appendix E, Table 19
2. Operations costs include costs to transport removed soil/sediment to the treatment facility. Used same costs as in the CMS for the adjust transport costs.
3. Adjusted Transportation and Disposal costs estimated using density of treated material determined in the treatability study (see page 5-13 of Appendix A of the CMS) and T&D rates from the CMS.

b) Lower Costs are Achieved by Meeting Reuse Standards – The costs for treatment can be substantially reduced when considering treatment to meet reuse criteria. The costs for treatment are a combination of capital costs to build the treatment facility and daily operations costs. A treatment

facility that incorporates multiple treatment cycles in order to achieve higher reductions in PCB concentrations would require a higher capital cost upfront, however the increase in operating costs would be small. Since this material would not require disposal, the T&D costs would be eliminated and there would be an overall cost savings.

Under a scenario of reuse, the treated soil/sediment could be placed back into the excavation, thus replacing the excavated material with cleaned native material, or it could be used as fill material or as topsoil for local construction projects, etc. To provide an estimated range of costs for treatment of the soil/sediment from the Rest of River site to meet the reuse criteria, we have estimated the average PCB concentrations in the soil/sediment proposed to be removed under both the minimum and maximum scenarios. Using the data provided in Sections 4 and 6 of the CMS the following average concentrations were calculated for the minimum and maximum removal projects presented in the CMS:

Minimum Project (SED 3/FP 2):	184,000 cy of soil/sediment 13,900 lbs of PCBs 1.25 tons/cy average density (from Table D-8) **30.2 mg/kg PCBs**
Maximum Project (SED 8/FP 7):	2,820,000 cy of soil/sediment 93,000 lbs of PCBs 1.25 tons/cy average density (from Table D-8) **13.2 mg/kg PCBs**

Plotted in Figure 3 is a graph of the expected treatment curve for the minimum and maximum removal projects using the BioGenesis soil/sediment treatment curve developed from the treatability study data. For the minimum removal project, a treatment facility with 5 treatment cycles would be able to decontaminate the average soil/sediment from the Rest of River site to meet reuse criteria. For the maximum removal project, a treatment facility with 3 treatment cycles would be able to decontaminate the average soil/sediment from the Rest of River site to meet reuse criteria.

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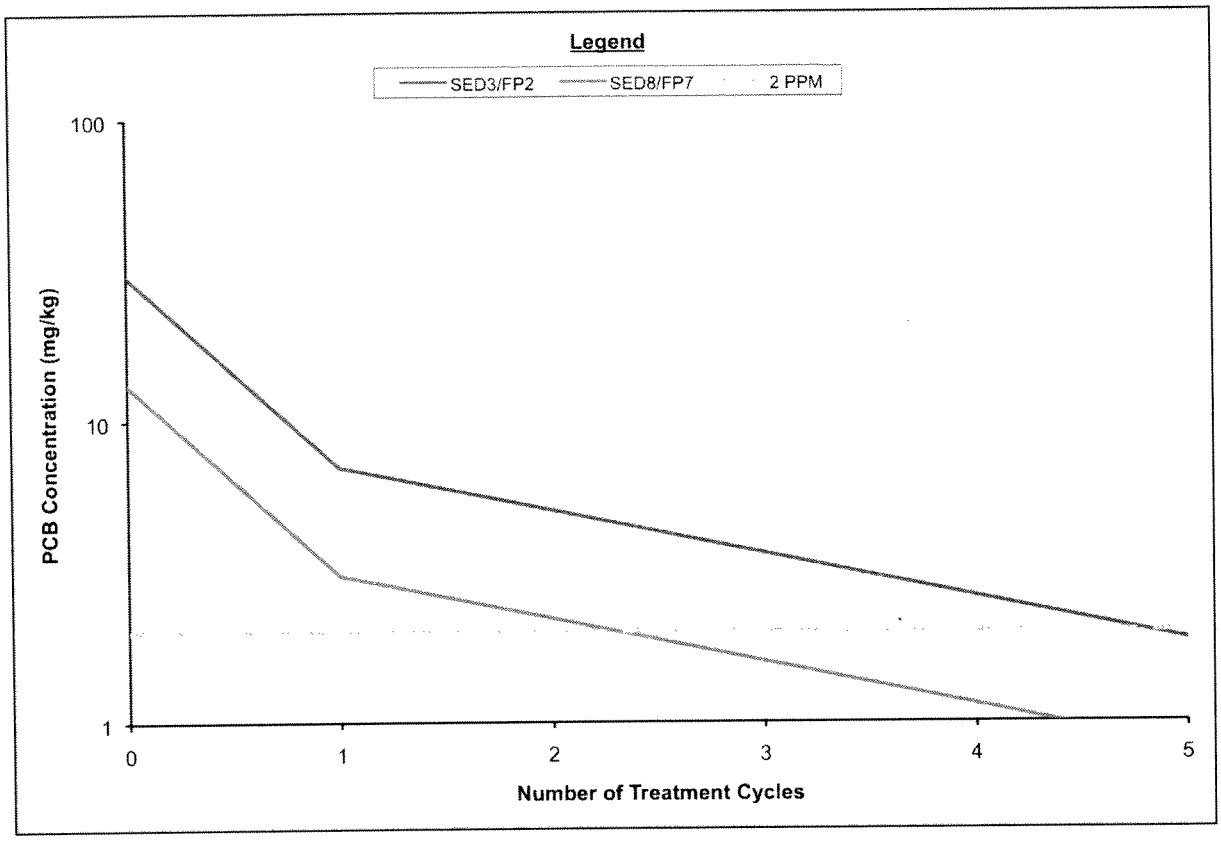

Figure 3 – Required Treatment Cycles to meet reuse criteria

Using the data from Figure 3, the capital costs for the treatment facility for the minimum and maximum removal projects have been estimated. Presented in Tables 2 and 3 are the estimated capital costs for a BioGenesis[SM] Soil/Sediment Washing Technology treatment facility for both the minimum and maximum removal projects.

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Table 2 – Estimated Capital Cost Breakdown – Minimum Project

Cost Component	Quantity	Unit Cost	Total Cost ($)
Upfront Storage			
Storage Cells (precast concrete)	150	$1,000	$150,000
Screening Facilities			
Screening Equipment	1	$110,000	$110,000
Transfer Pumps	2	$9,000	$18,000
Attrition Scrubbing	2	$64,000	$128,000
Aeration/Flotation Unit	1	$90,000	$90,000
Preprocessing Facilities			
Mix Tanks	1	$24,000	$24,000
Mixers	2	$15,000	$30,000
Preprocessors (1skid w/1+1)	1	$68,000	$68,000
Blaster Pump (350 Hp)	1	$94,000	$94,000
Prewash Cyclone Facilities			
Mix Tanks	1	$24,000	$24,000
Mixers	2	$15,000	$30,000
Feed Pump	1	$9,000	$9,000
Cyclone/Shaker Screen	1	$75,000	$75,000
Preprocessing Facilities			
Mix Tanks	5	$24,000	$120,000
Mixers	10	$15,000	$150,000
Preprocessors (1skid w/1+1)	5	$68,000	$340,000
Blaster Pump (350 Hp)	5	$94,000	$470,000
Collision Facilities			
Surge Tank	5	$24,000	$120,000
Mixers	10	$15,000	$150,000
Collision Chamber	5	$410,000	$2,050,000
Blaster Pump (350 Hp)	5	$94,000	$470,000
Cav/Ox Facilities			
Mix Tank	5	$24,000	$120,000
Mixers	10	$15,000	$150,000
Cav/Ox Units	20	$61,000	$1,220,000
Liquid/Solid Separation			
Hydrocyclone unit (tanks, pumps, screeners, mixers)	5	$190,000	$950,000
Mix Tank	5	$24,000	$120,000
Mixers	10	$15,000	$150,000
Centrifuges	5	$340,000	$1,700,000
Wastewater Treatment			
Centrifuges	1	$340,000	$340,000
Tank	1	$24,000	$24,000
Mixers	2	$15,000	$30,000
Clarifier Feed Pumps	2	$8,000	$16,000
Solids Contact Clarifier	1	$75,000	$75,000
Sludge Blowdown Pumps	1	$11,000	$11,000
Thickening Tank w/Rake	1	$38,000	$38,000
Chemical Modifier Feed Tank	1	$2,000	$2,000
Chemical Feed Pump	1	$1,000	$1,000
Press Feed Pumps	1	$11,000	$11,000
Filter Press	1	$375,000	$375,000
Filtrate Tank	1	$2,000	$2,000
Filtrate Return Pumps	1	$2,000	$2,000

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Table 2 – Estimated Capital Cost Breakdown – Minimum Project

(continued)

Cost Component	Quantity	Unit Cost	Total Cost ($)
Clarifier Overflow Tank	1	$1,000	$1,000
Mixers	2	$4,000	$8,000
Pressure Filters	1	$90,000	$90,000
Filter Feed pumps	2	$9,000	$18,000
Filter Backwash Pumps	1	$8,000	$8,000
Effluent Pumps	2	$8,000	$16,000
Chemical Feed Systems			
Surfactant Tank	1	$3,000	$3,000
Mixer	1	$2,000	$2,000
Surfactant Feed Pumps	10	$1,000	$10,000
Defoamer Feed Pumps	10	$1,000	$10,000
Peroxide Storage Tank	1	$7,000	$7,000
Peroxide Feed Pumps	20	$1,000	$20,000
Polyblend Unit	1	$6,000	$6,000
Treated Sediment Storage			
Storage Cells (precast concrete walls)	150	$1,000	$150,000
Transfer Conveyor to Storage	1	$35,000	$35,000
Stacker Conveyor (into storage area)	1	$25,000	$25,000
Plant Air Compressor	1	$20,000	$20,000
Equipment Capital Cost			**$10,486,000**
Engineering and Installation Costs			
Engineering/Procurement	15%		$1,572,900
Equipment Installation	20%		$2,097,200
Mechanical	20%		$2,097,200
Electrical and Instrumentation	20%		$2,097,200
Subtotal Equipment and Installation Costs			**$18,350,500**
Profit	20%		$3,670,100
Contingency	25%		$4,587,625
Total Capital Cost			**$26,608,225**

Notes:
1. Capital costs include equipment for 5 treatment cycles.

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Table 3 – Estimated Capital Cost Breakdown – Maximum Project

Cost Component	Quantity	Unit Cost	Total Cost ($)
Upfront Storage			
Storage Cells (precast concrete)	150	$1,000	$150,000
Screening Facilities			
Screening Equipment	1	$150,000	$150,000
Transfer Pumps	2	$12,000	$24,000
Attrition Scrubbing	2	$85,000	$170,000
Aeration/Flotation Unit	1	$120,000	$120,000
Preprocessing Facilities			
Mix Tanks	1	$32,000	$32,000
Mixers	2	$19,400	$38,800
Preprocessors (1skid w/1+1)	1	$91,000	$91,000
Blaster Pump (350 Hp)	1	$125,000	$125,000
Prewash Cyclone Facilities			
Mix Tanks	1	$32,000	$32,000
Mixers	2	$19,400	$38,800
Feed Pump	1	$12,000	$12,000
Cyclone/Shaker Screen	1	$100,000	$100,000
Preprocessing Facilities			
Mix Tanks	3	$32,000	$96,000
Mixers	6	$19,400	$116,400
Preprocessors (1skid w/1+1)	3	$91,000	$273,000
Blaster Pump (350 Hp)	3	$125,000	$375,000
Collision Facilities			
Surge Tank	3	$32,000	$96,000
Mixers	6	$19,400	$116,400
Collision Chamber	3	$540,000	$1,620,000
Blaster Pump (350 Hp)	3	$125,000	$375,000
Cav/Ox Facilities			
Mix Tank	3	$32,000	$96,000
Mixers	6	$19,400	$116,400
Cav/Ox Units	12	$81,000	$972,000
Liquid/Solid Separation			
Hydrocyclone unit (tanks, pumps, screeners, mixers)	3	$250,000	$750,000
Mix Tank	3	$32,000	$96,000
Mixers	6	$19,400	$116,400
Centrifuges	3	$450,000	$1,350,000
Wastewater Treatment			
Centrifuges	1	$450,000	$450,000
Tank	1	$32,000	$32,000
Mixers	2	$19,400	$38,800
Clarifier Feed Pumps	2	$10,000	$20,000
Solids Contact Clarifier	1	$100,000	$100,000
Sludge Blowdown Pumps	1	$15,000	$15,000
Thickening Tank w/Rake	1	$50,000	$50,000
Chemical Modifier Feed Tank	1	$3,000	$3,000
Chemical Feed Pump	1	$1,500	$1,500
Press Feed Pumps	1	$15,000	$15,000
Filter Press	1	$500,000	$500,000
Filtrate Tank	1	$3,000	$3,000
Filtrate Return Pumps	1	$3,000	$3,000

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Table 3 – Estimated Capital Cost Breakdown – Maximum Project

(continued)

Cost Component	Quantity	Unit Cost	Total Cost ($)
Clarifier Overflow Tank	1	$1,000	$1,000
Mixers	2	$5,000	$10,000
Pressure Filters	1	$125,000	$125,000
Filter Feed pumps	2	$12,000	$24,000
Filter Backwash Pumps	1	$10,000	$10,000
Effluent Pumps	2	$10,000	$20,000
Chemical Feed Systems			
Surfactant Tank	1	$4,500	$4,500
Mixer	1	$2,500	$2,500
Surfactant Feed Pumps	6	$1,560	$9,360
Defoamer Feed Pumps	6	$1,560	$9,360
Peroxide Storage Tank	1	$9,000	$9,000
Peroxide Feed Pumps	12	$1,560	$18,720
Polyblend Unit	1	$8,000	$8,000
Treated Sediment Storage			
Storage Cells (precast concrete walls)	150	$1,000	$150,000
Transfer Conveyor to Storage	1	$35,000	$35,000
Stacker Conveyor (into storage area)	1	$25,000	$25,000
Plant Air Compressor	1	$30,000	$30,000
Equipment Capital Cost			**$9,370,940**
Engineering and Installation Costs			
Engineering/Procurement	15%		$1,405,641
Equipment Installation	20%		$1,874,188
Mechanical	20%		$1,874,188
Electrical and Instrumentation	20%		$1,874,188
Subtotal Equipment and Installation Costs			**$16,399,145**
Profit	20%		$3,279,829
Contingency	25%		$4,099,786
Total Capital Cost			**$23,778,760**

Notes:
1. Capital costs include equipment for 3 treatment cycles.

The total operations costs for the BioGenesis[SM] Soil/Sediment Washing Technology treatment alternative with beneficial reuse are provided in Table 4 for the minimum and maximum removal projects. The range of total treatment costs for the BioGenesis[SM] Soil/Sediment Washing Technology treatment alternative with beneficial reuse (capital costs plus operational costs) is provided in Table 5 for the minimum and maximum removal projects.

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Table 4 – Operations Cost Breakdown

	Minimum Project SED3/FP2	Maximum Project SED8/FP7
Removal Volumes		
Reach 5A	134,000 cy	268,000 cy
Reach 5B	-	153,000 cy
Reach 5C	-	279,000 cy
Reach 5 Erodible banks	33,000 cy	33,000 cy
Reach 5 Backwaters	-	388,000 cy
Reach 6 (Woods Pond)	-	575,000 cy
Reach 7 Impoundments	-	86,000 cy
Reach 8 (Rising Pond)	-	468,000 cy
Floodplain Soils	17,000 cy	570,000 cy
Total	**184,000 cy**	**2,820,000 cy**
Total Volume Delivered to Plant	**220,800 cy**	**3,384,000 cy**
Operations Schedule		
Duration (years)	8.1 yrs	51.5 yrs
Total Months	72.9 months	404.1 months
Total Operating Hours	11,874 hrs	116,904 hrs
Plant Labor Costs	$5,380,406	$61,027,417
Utility Costs		
Power Costs[1]	$6,277,789	$50,521,621
Water Costs[2]	$189,883	$3,320,473
Wastewater Costs	$ 0	$ 0
Waste Disposal Costs		
Oversized Debris T&D	$488,676	$4,696,080
WWTP TSCA Sludge T&D[3]	$1,867,608	$35,743,999
WWTP Non TSCA T&D[3]	$2,684,947	$60,748,433
Chemical Costs[4]	$5,143,535	$74,083,458
Overhead Costs[5]	$8,919,120	$48,574,224
Subtotal Operating Costs	**$30,951,963**	**$338,715,706**
Profit	$6,190,393	$67,743,141
Contingency	$7,737,991	$84,678,926
Total Operating Costs[6]	**$44,880,347**	**$491,137,773**

Notes:

1. Power costs increased for additional equipment.
2. Assumed treated water was recycled into second, third, etc… treatment cycles.
3. Increased WWTP sludge T&D costs for multiple treatment cycles.
4. Washing chemicals only used in initial treatment cycle.
5. Overhead costs increased to add additional equipment maintenance costs.
6. The operating costs include five treatment cycles for the minimum removal project and three treatment cycles for the maximum removal project based on the estimated average PCB concentrations. As demonstrated in the treatability study, concentrations above the average can be treated to meet the reuse criteria with additional treatment cycles. The contingency covers costs for additional treatment of soil/sediment above the average concentration. Once the remedial quantity and range of concentrations in the soil/sediment to be treated is determined, provisions will be made in the design phase to cost effectively decontaminate all the soil/sediment to meet the reuse criteria.

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Table 5 – Summary of Total Treatment Costs

Item #	Description	Minimum Project SED3/FP2	Maximum Project SED8/FP7
1.0	Pre-Design Investigation (5%)	$1,281,030	$1,163,949
2.0	Treatment System	$25,620,600	$23,278,974
	Subtotal	$26,901,630	$24,442,923
	Project/Construction Management (5%)	$1,345,082	$1,222,146
	Engineering and Administration (5%)	$1,345,082	$1,222,146
	Contingency (25%)	$6,725,408	$6,110,731
	SUBTOTAL	$36,317,201	$32,997,946
4.0	Annual Operations	$6,224,784	$10,132,998
	TOTAL OPERATIONS[1]	$50,420,747	$521,849,373
5.0	Annual O & M	$25,000	$25,000
	Total O & M	$75,000	$75,000
6.0	Total Transportation and Disposal[2]	$ 0	$ 0
	TOTAL TD COST (ROUNDED)	**$87,000,000**	**$555,000,000**

Notes:
1. Operations costs include costs to transport removed soil/sediment to the treatment facility. Used same costs as in the CMS for the adjust transport costs.
2. Assumed no value of treated soil/sediment as a fill material or topsoil. Value for fill material could be as high as $20.00/cy.

For comparison to the total treatment and/or disposal costs provided in the CMS, presented in Table 6 is a summary of the TD costs contained in Appendix E of the CMS along with the total treatment cost for the BioGenesis^{SM} Soil/Sediment Washing Technology alternative with beneficial use. In reviewing this table, the BioGenesis^{SM} Soil/Sediment Washing Technology with beneficial use alternative represents a greater than 30% savings as compared to all other alternatives except onsite disposal alternatives (TD 2 and TD 3).

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Table 6 – Summary of Range of TD Costs

TD Alternative	Minimum Project SED3/FP2	Maximum Project SED8/FP7
TD 1 Off-site Disposal[1]	$ 50,000,000	$ 790,000,000
TD 2 Confined Disposal Facility[1]	$ 93,000,000	$ 460,000,000
TD 3 Upland Disposal Facility[1]	$ 22,000,000	$ 121,000,000
TD 4 Chemical Extraction (BioGenesis – CMS estimated costs)[1]	$ 90,000,000	$ 958,000,000
(BioGenesis – corrected costs)[2]	**$ 89,000,000**	**$ 726,000,000**
TD 5A Thermal Desorption with Reuse[1, 3]	$ 64,000,000	$ 935,000,000
TD 5B Thermal Desorption without Reuse[1, 3]	$ 66,000,000	$ 993,000,000
BioGenesis℠ Soil/Sediment Washing with Beneficial Reuse[4]	**$ 87,000,000**	**$ 555,000,000**

Notes:

1. Costs for TD alternatives from Tables 16 thru 21 in Appendix E of the CMS.
2. See Table 1 for a breakdown of the corrected costs.
3. There appears to be a math error in the calculations for the total costs in Tables 20 and 21 of Appendix E of the CMS. The costs reported for the maximum project for Alternative TD 5A is $ 912,000,000. The cost reported for the maximum project for Alternative TD 5B is $969,000,000.
4. See Table 5 for the itemized costs for the BioGenesis℠ Soil/Sediment Washing Alternative with Beneficial Reuse.

3. Evaluation of the BioGenesis Soil/Sediment Washing Technology

Each treatment or disposal alternative is evaluated in the CMS against the General Standards and the Selection Decision Factors per the requirements of the Consent Decree and Permit. In reviewing the evaluation of the BioGenesis℠ Soil/Sediment Washing Technology in comparison to the other alternatives, specifically the non-treatment alternatives, several inconsistencies were noted. The following comments on these evaluations should be considered as part of EPA's evaluation:

1. **Mass Balance Comments are Misleading** – In several places throughout the CMS, it is stated that a mass balance was not performed during the bench-scale treatability study. This is incorrect and the mass balance data are included in the Treatability Study Report. Complete closure was not achieved on the mass balance, as discussed in the Treatability Study Report, due to the nature of bench-scale testing. This means that the estimated amount of solids in the starting material did not equal the estimated amount of solids in all the sampled outlet materials. This is not unusual in bench-scale testing.

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It has been stated in the CMS that the inability to close the mass balance leaves uncertainties regarding the effectiveness and reliability of the BioGenesis[SM] Soil/Sediment Washing Process. This statement is incorrect. This lack of closure of the mass balance does not affect the results for the treated material obtained during the bench-scale study. In addition, by evaluating the bench-scale data based on the mass of solids recovered during the bench-scale study, especially in the costing of the full-scale facility, the lack of mass balance closure is irrelevant.

2. **Control of Sources of Releases is Equal to, or Better Than, Other Alternatives** – In the evaluation of the BioGenesis[SM] Soil/Sediment Washing Technology against the *Control of Sources of Releases* Selection Design Factor, it is stated several times that there could be spills during transport of the material to and from the treatment facility, however under the same evaluation for the non-treatment alternatives, the possibility of spills is ignored. There should be no increase in the risk for spills during transport of the material to the treatment facility, and in fact, there should be a decrease in this risk compared to offsite transport to a landfill (TD1) since the transport to the treatment facility would be local and onsite. Secondly, the risk of release due to spills during transport of the treated material is minimal if the material is treated to reuse standards.

3. **Magnitude of Residual Risk can be Substantially Reduced** – The treatment of the soil/sediment from the Rest of River site to the reuse criteria would significantly reduce the magnitude of residual risk and should be considered.

4. **Characterization of the Adequacy and Reliability of the BioGenesis Treatment Alternative is Misleading** – Several points are raised in evaluating the BioGenesis treatment against the *Adequacy and Reliability* Selection Design Factor. First, the lack of the use of treatment at similar sites is noted as a problem. Second, difficulties in designing full-scale equipment capable of processing large volumes of materials is noted. Third, periodic equipment failure and down time is noted. These issues are true for any of the alternatives

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considered in the CMS, but seem to be only mentioned during the evaluation of the treatment alternatives. There are no sites that have been remediated over a 50-year period as is being considered for the Rest of River site so comparisons to other projects are meaningless. The question of equipment reliability is true for all the alternatives including trucking the contaminated material to off-site landfills. The BioGenesis[SM] Soil/Sediment Washing Technology has been demonstrated at full-scale in several projects over the past several years such as the Venice, Italy project, and the NJ Demonstration project. For these projects the core full-scale equipment has been constructed and operated successfully, which eliminates any design concerns. Since treatment technologies have only been utilized for a short period of time and the project is scheduled to run for up to 50 years, there are no treatment technologies with this level of experience. This is not a negative, but is a positive because the technologies are emerging and improving. There is no consideration given to improvements in treatment technologies, which would ultimately result throughout a project of this magnitude.

5. **Characterization of Short-Term Effectiveness is Misleading** – Under the evaluation of the BioGenesis[SM] Soil/Sediment Washing Technology against the *Short-Term Effectiveness* Selection Design Criteria, it is implied that due to the length of time required for the treatment (8 to 51 years), there would be a greater potential for process failure and release of PCB-contaminated materials than under shorter-term applications. This comment doesn't make sense since the treatment of the soil/sediment from the Rest of River site does not impact the removal schedule. In other words, the removal activities are what drive the project schedule and the treatment system would be operated to match the removal rates.

6. **Impacts on Local Communities Along Truck Transport Routes Are Exaggerated** – Any impact due to truck traffic would be greatly reduced as compared to offsite disposal alternatives if the material is treated and reused as discussed above. In addition, even if the material is transported to a disposal facility after treatment, the number of truck trips required to move the material should be fewer than the number of truck trips required to

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move the bulked, stabilized untreated material because the treated material has lower water content after treatment. Additionally, since the material would be going to a non-TSCA landfill the travel distance is shorter and should result in a lower risk of accidents. Since the material has been decontaminated, any risk of exposure to PCBs is lower with the treatment alternative.

7. **Implementability Issues are Exaggerated** – The BioGenesis specialty equipment has been designed and manufactured to utilize off-the-shelf parts from large existing manufacturers. Any parts that would wear or would need to be replaced would be available during the life of the project from several existing commercial vendors.

8. **Overall Protection of Human Health and the Environment is Improved through Treatment** – As discussed above, the BioGenesis^{SM} Soil/Sediment Washing Process can achieve the reuse criteria for soil/sediment from the Rest of River site. Therefore it would offer a more effective and permanent alternative than disposal of untreated material and would result in a better overall protection of human health and the environment.

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May 5 2008

Concerned Citizens of Lee
PO Box 404
Lee MA 01238

To: Susan Svirsky
EPA
Pittsfield MA 01201

Dear Susan

The Concerned Citizens of Lee wish to express their interest in playing a part in finding a solution to the contamination of PCBs within the Lee community.

We find the solution proposed by GE to be unacceptable in finding a true remedy to this critical problem, and urge your agency to accept citizen-sponsored solutions that have been broached.

As the proposed remediation now stands, more environmental damage will occur than will be resolved. A landfill is totally unacceptable.

Deidre Consolati,
Leader

Pittsfield, MA 01201
May 8, 2008

Susan Svirsky
Environmental Protection Agency c/o Weston Solutions
10 Lyman St.
Pittsfield, MA 01201

Dear Ms. Svirsky:

Every time I see the part of the Housatonic River that GE has already "cleaned up" I am filled with sadness for the loss of the beautiful river, which was friendly to wildlife. I remember seeing ducks swimming under the tree-lined banks behind the Friendly that used to be on Elm St. Now I see only a barren, rock lined ditch. The thought of doing that to more of the river and to Woods Pond is appalling. It would be destroying the river to save it, which makes no sense to me.

In a country that has the technology to send a man to the moon, there certainly must exist the technology for a less invasive method of cleaning the river of PCB's. Perhaps the pollutants could be sucked out, the soil cleaned up and returned. Or someone could find a way to neutralize the PCB's without even removing them. Certainly what has been done with the river so far is unacceptable. Enclosed is an article from the Boston Sunday Globe, and of course there have been many articles and letters to the editor in our own Berkshire Eagle. I hope the same thing that has been done so far is not allowed to be done to the rest of the river.

Also it makes no sense to remove a hazardous substance and pile it up near people, especially children. If it is a problem in the river, how much more of a problem near children? That just creates another problem spot.

Sincerely yours,

Patricia Valiasek

Boston Sunday Globe
Founded 1872
P. STEVEN AINSLEY *Publisher*
MARTIN BARON *Editor* RENÉE LOTH *Editor, Editorial Page*
HELEN W. DONOVAN *Executive Editor*

Destroying a river to clean it

FOR DECADES a GE factory complex in Pittsfield leaked polychlorinated biphenyls — suspected carcinogens better known as PCBs — into the Housatonic River. Under a consent decree with the US Environmental Protection Agency, the company has already dredged a couple miles of the river downstream from the plant to remove the chemicals, and it has more cleanup work to do.

Now GE is proposing even more intensive dredging for the next 5 miles, a stretch that winds through an Audubon sanctuary and a state wildlife preserve. Even advocates of getting the PCBs out of the river are asking whether GE is destroying a village to save it.

The portion of the river that has already been excavated and lined with retaining riprap stones is a poor advertisement for doing anything similar on the next stretch. What had been a tree-lined stream wandering through backyards is now a "ditch," as one environmentalist puts it. Residents and local officials will want to know why GE has rejected less disruptive methods, such as cleansing the sediment on site with equipment that allows immediate reuse of the material. That would eliminate the need to remove and replace more than 300,000 tons of sediment from the Housatonic and its flood plain. It would also eliminate need for a landfill for the sediment, something Mayor James Ruberto of Pittsfield has said he will not allow in his city.

There are other options. Timothy Gray, spokesman of the activist group Housatonic River Initiative, wants GE to try using enzymes from earthworms to break down pollutants on at least a quarter-acre site. A GE spokesman said the company has looked at worms and other microbial solutions for destroying PCBs and found they would not work at the scale needed and in the environment of a polluted river.

Gray also questions why, if dredging is the best method, the company is not proposing it for the next 5-mile stretch of the river beyond the sanctuary and state preserve, leading to a dammed pond in Lenox Dale. GE is proposing just to lay six inches of clean fill on the river bottom to trap contaminated sediment on that portion of the river.

The Massachusetts Audubon Society has not taken a definitive position on the plan, but it is concerned about how dredging would affect its 264-acre Canoe Meadows sanctuary, a site for bird-watching, paddling, hiking, and cross-country skiing. The area is home to bobolinks, osprey, great blue herons, wild turkeys, beaver, and otter.

Even GE acknowledges that under its proposal there will still be restrictions on eating fish from the river. So the public and EPA have every reason to wonder whether its plan's costs and benefits are anywhere near in balance.

To: Susan Svirsky/R1/USEPA/US@EPA
From: Dave M
Date: 05/18/2008 04:42PM
Subject: CMS Comments

Please find my comments relating to the Public Comment Period referencing GE's CMS proposal for the rest of the river.

Thank you

Dave Martindale

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

RE: EPA-GE HOUSATONIC RIVER SITE, CORRECTIVE MEASURES STUDY PUBLIC
COMMENTS

Dear Ms. Svirsky,
I respectfully request that the EPA reject General Electric's Corrective Measures Study recommendation and plan for the next phase of remediation under the consent decree, the clean-up of the rest of the Housatonic River.

It is my opinion that GE's plan for this next phase of clean up of the river is only another poor compromise that will leave the river in no better overall condition than it is now while doing little to protect the local population, the ecosystem or the populace both human and animal, that live locally or downstream.

Project Extent
Because PCB is a persistent and bio-accumulative contaminant and is linked as a potential contributor to many different health issues, every effort should be made to eventually seek out and treat all sources and deposits of this material, not only in the upper reaches of the river but also in the ones below Woods Pond, all the way to the Long Island Sound. This clean-up must not be limited to areas of the upper river. The river is contaminated in its entire length. The entire river should be returned to a condition prior to GE's pollution, not only in Berkshire county, but in the one hundred miles of river south of Woods Pond. There are sources of contamination, in the upper reaches of the river, above where clean-ups have already been attempted, that potentially contributes to further contamination to the river. All sources of contamination should be addressed.
Please mandate that GE restore the entire river to a fishable (edible), swimmable resource.

Consolidation and Capping.
I am a resident of Pittsfield Massachusetts and a resident of the Allendale Community. Every day I look out my window and in clear view gaze out upon OPCA 71 and Hill 78. I am adamantly and passionately against any plan that would include landfilling and consolidation as a long term solution for dealing with contamination.
I have watched with ever growing concern regarding this deposit of a mountain of toxic waste in my neighborhood, next to my child's elementary school. I would not like to see any continuation of this consolidation technique or policy, no

matter where it might possibly be proposed. I predict a ground swell of very intense public opposition if any such proposal is promoted. I also believe it is highly immoral to have this material hauled away and placed in someone else's community.

It is my humble opinion that consolidation cannot be considered as a defensible "clean-up" technology. I firmly believe that what has been accomplished under the consent decree, is that toxic material has been routinely shuffled, precariously through our city, and deposited in a very questionable location, using poor or indefensible engineering practices. Vast amounts of contamination have been routinely left behind, under caps, for future generations to deal with. The effect of contamination on local groundwater has not been addressed and is tragic. I cannot, in clear conscience, support any continuation of the status quo of capping and consolidation. I passionately believe that ten years and millions of dollars have been wasted on what amounts to a token effort of clean-up. Nothing has really been cleaned up. Realistically, there has been no reduction of total PCB in our environment. We have basically swept this material under a rug.

Most experts will agree that the danger to human health and the environment is most acute when handling PCB material. After the material has been "capped" the risks are greatly reduced yet there is a limit to the "life" of liner and cap materials. There is a definite and immeasurable risk to the environment when eventually a cap or liner fails. There will be a definite risk to workers, neighbors etc. when a liner or a cap eventually needs to be replaced. (Please note, for the record, Hill 78 is without a liner, a fact that I find unacceptable.) The cost of monitoring and maintaining such a facility in perpetuity is way underestimated.

A "capping" of the bottom of Woods Pond is a continuation of this poor compromise and is close or worse to doing nothing. Being an avid canoe paddler, I am familiar with that stretch of the river. I view that placing six inches of sand in that stretch of the river is a waste of time and the proposal borders on being ridiculous. The river has the potential to scour that "cap" away in many areas in a short time period. Where the cap remains, the wildlife such as the beavers, turtles, frogs and carp will penetrate that cap in numerous places making it largely ineffective. The worst part of this proposal is that vast amounts of contamination will be left behind dependant upon a highly questionable engineering control.

Project Oversight

I have six years experience as a project person working in the remediation of PCB. I was employed by GE as a subcontractor and acted for GE as the Site Manager and Site Health and Safety Officer at the FT Rose Superfund Site for two and one half of those six years. To be able to function defensibly in that position, I have hundreds of hours of safety training and hundreds of hours of instruction in how to properly deal with PCB and the other contaminates that are often found with PCB. You might say that I was trained by GE to be the "junk

yard dog" if you would, to assure that contamination was properly deal with, to assure that site workers were adequately trained and protected and to assure that contamination did not leave the site and to assure that the local population was not adversely affected by clean-up operations.

Because of that experience, I have a very unique and very different perspective than most persons concerning PCB and PCB remediation. I do not consider myself an expert by any means, but only one with significant experience. Through my eyes, I have been appalled by some remediation practices of this first phase of clean-up under the consent decree. I myself have witnessed or observed and heard of questionable practices that should not be allowed to continue. I would be very happy to discuss my observations with you at your convenience.

I urgently request that the next phase of clean-up be conducted using only the best available technology but under far greater and stricter project oversight than what has transpired during the first phase.

Clean up Technology Choices

The plan for clean-up of the river should not be limited to a one plan fits all mentality. This is not like the veterinary science of a hundred years ago where the only cure for a horse's illness was to shoot it. Today, there are many choices for remediation technology. As a life long project person, my perspective of projects dictates that the proper technology, tool or plan should be applied to each and every unique facet of a task. Periodic project reviews are elementary practice. This is a project, whose scope alone is of such magnitude, that one plan generated today cannot possibly address all elements of a clean-up process that extends out over decades. I believe that a phased approach, with well defined goals and periodic reviews, should be utilized in planning for clean-up of the rest of the river. I believe that current technology should be periodically reviewed for effectiveness and cost against new emerging technology and science.

It is easy to see that cost is a motivational factor for GE when selecting clean-up technology. Cost should not be the primary concern in the decision making process. More emphasis should be placed on the effectiveness of the remediation technology, and emphasis should be placed on technologies that destroy the material.

As I stated above, no plan fits all parts of the river. There are many emerging remediation technologies today that make claims of being able to treat contamination in place. As with anything, I am sure that there are limitations for any such technology. With that said, I would like to believe that there are also applications in this river clean up where some of these emerging technologies are a perfect fit and they will work well. Not every stretch of the river is

contaminated to the same extent as every other part nor should all river banks and flood plains be treated with the same broad brush.

Pilot Testing

There are many emerging technologies that claim to be able to clean-up PCB. Because they have never been used in a project of this magnitude or with this particular PCB compound or with this type of sediment they are promptly dismissed as candidates for use in this clean-up. Perhaps this river remediation project could be utilized to develop and prove feasible some of these alternative, less destructive or less invasive technologies through pilot testing. Given the financial incentive, based on the projected costs associated with a many decades long cleanup, it is very likely that nondestructive to the ecosystem and cost effective remediation technology can be developed. GE can put itself in a very favorable public position by promoting high tech remediation. By GE pursuing cutting edge technology in remediation it can truly boast it supports Ecomagination and consequently, more than likely, save itself money and limit its future liability.

Thermal Treatment

I strongly support thermal treatment of contaminated material if the process chosen completely destroys the contaminants.
I was a witness to the thermal desorption of fifty thousand ton of soil at the FT Rose Superfund Site. Though this is might be a small number in comparison to what will be required for the Housatonic River, it is not insignificant. The thermal oxidation of contaminated material at the Rose site utilized a primary kiln device where all organic compounds in the soil were volatized and that vapor stream was directed to a secondary burner. In the secondary burner, at greater than 2000 degrees, the chlorinated compounds were ripped apart and turned into hydrochloric acid vapor. The acid vapor was passed through a scrubbing tower where the gas stream was cooled and neutralized by sodium hydroxide in water solution. The end result was sodium chloride, salty water. That water was then utilized to rehydrate the remediated soil, which was dusty dry when it exited the kiln.

Opponents of thermal destruction will highlight that there is the possibility of the reforming of PCB, Dioxin and Furans as the gas stream cools after exiting the scrubbing tower. As with other forms of remediation technology, I believe this thermal technology continues to evolve. Advances in monitoring technology and controls and advances in technology for scrubbing towers may minimize this problem.

The primary positive of thermal desorption is that the process totally destroys the bulk of the contamination once and forever. No long term plan is needed for monitoring or maintenance of a consolidation facility. There is no fear that the contamination will ever again endanger humans or the environment because it no longer exists. Thermal destruction also destroys the other contaminates

often found with PCB such as chlorinated cleaning solvents and dioxins and furans.

Dredging

Opponents of dredging claim that 75% of the PCB in dredged river sediment is lost to vaporization during dewatering. The University of New York has conducted studies that confirm the vaporization of PCB, in alarming quantities, from river sediment of the Hudson River, at low water occurrences.

Realistically, if one is serious about removing PCB contaminated sediment from the river, at some point dredging will come into play. I support dredging as at least a means of removing "hot" spots of contamination.

If any portion of this project is proposed to utilize dredging, adequate engineering controls must be utilized to contain the PCBs that volatize.

Air Monitoring

Whatever the clean-up technology that is chosen must be accompanied by adequate air monitoring. I have often publically voiced dismay at the frequency and quality of air monitoring associated with the current local clean up and Hill 78 and OPCA 71. Until three years ago, the frequency of air monitoring for local operations was once a month. After public outcry, that frequency was increased to once a week. EPA's own website indicates that for the Hudson River clean-up, air sampling frequency is proposed to be conducted daily.

Citizen Participation

Any clean up plan should include and encourage citizen participation in the evaluation of the ongoing project. This evaluation should include review of current technology effectiveness, emerging technology and how the project can in general be improved. Input by citizens on the solutions to problems uncovered during the implementation of the project should be welcomed from all potentially effected parties. No plan for clean-up of the river should be pursued without a clear plan and a clear understanding of the end result. What will the river look like when the project is complete? It is we, the local community, that will be left with the river after every one else goes home. It is the citizens that wish to fish (and to eat fish), swim, canoe or just generally enjoy the view of a river that are the ones that have a vested interest in this river and we should be considered as participants in deciding how and to what extent this river is to be cleaned up.

Risk Assessments and Dioxin Links:

In the real world PCB is almost always found with other ugly and bad things such as VOC, SVOC, Dioxin, Furan and Mercury.
I believe that GE's risk assessments in general are seriously flawed and therefore understated. When doing risk assessments, I believe that PCB is viewed in a nearly pure form. Often overlooked in risk assessments are the other

contaminates that are frequently found with PCB. Consequently, often overlooked are the synergistic effects of these other contaminates on human health and the environment.

DIOXIN LINKS:

PCB was manufactured and shipped to customers by Monsanto with a percentage of the material containing dioxin and furans. This is a fact that Monsanto knew and hid.

We know that dioxin and furan is formed by the heating of PCB. If we are to look back in depth at the GE transformer manufacturing history, for which, the responsibility of a majority portion of the contamination in the river falls, a few alarming facts surface.

Transformer and capacitor failure was a reality of the manufacturing process. These types of failures are high heat related occurrences. In the manufacture of transformers, particularly when developing increasingly larger capacity models, transformers often failed in test, often failing multiple times. Transformers were returned to GE by customers for service after failure in the field.

When a transformer failed, the failure more often than not could be traced to a melt down of a major component inside the transformer. A fire of high heat actually occurred inside the transformer. This "fire" potentially created dioxin and furan. The transformer oil was then dielectrically contaminated and often of no further use to GE. The first plan of action, after the failure occurrence, was to drain the transformer. Often the oil was dumped into the plant drainage system which communicated with the river or Silver Lake. Often this oil was given away for other use. Secondly, the covers to the transformer were burnt off providing access for the repair. This action also potentially created dioxin and furans. The transformer was then repaired and "cleaned" liberally using the best solvents available, which is why we often find cleaning solvents dispersed through contamination deposits.

Because routine samples are not analyzed for dioxin, furan, VOC and SVOC does not mean they do not exist. Any risk assessment should consider dioxin and furan and other contaminates as appreciable components.

Comprehensive Health Study

Here in the Housatonic River Valley, we sit on one of the largest and most studied deposits of PCB in the country but no one has ever conducted a comprehensive health study of the former GE workers or the community as a whole. No study has ever been conducted to determine if or to what extent this large amount of contamination has played on the health of this community.

I would encourage that a comprehensive health study of persons living in this area be conducted by an independent third party. The findings of such a study could provide defensible and valuable information for future remediation decisions. Knowledge is power.

GE continues to downplay or minimize the health risk of humans and creatures in the environment to PCB exposure. GE continues to ignore current science and health studies linking PCB exposure to a vast array of health problems. GE's position on the toxicity of PCB is not defensible.

Based on what we know today, due to current scientific knowledge concerning this highly persistent toxin, we must make a serious effort to remediate this entire river using the very best available technology.

My opinion, which is possibly shared by many, is that GE's CMS proposal was purposely designed to scare the community with its highly invasive program and the threat of another landfill. Consequently, if enough public opposition arose, GE might not have to do anything.

We should not be hearing from opponents to a clean-up that the cure is worse than the disease. No one wants to see any more destruction of the natural habitat than is absolutely necessary but there are many that agree that this clean-up must happen.

There are many opponents, including myself, to the "armoring" of the river which was engineered for the first two miles of the river remediation. It would be tragic if this practice was determined to be the "cure" for the river for the remainder of the remediation project. I am not alone in viewing what has been left is akin to an over-engineered, industrial drainage ditch and very distasteful.

I would like to thank you for your consideration and review of my lengthy response. In conclusion and summary, please consider having GE use only the best available technology for clean-up of the rest of the river now and as the project is implemented in the next few decades. Please do not allow GE to ignore contamination below Woods Pond. Please encourage GE to promote Ecomagination, as I believe it will be a win-win situation for them and our community in the long term.

Thank you

Dave Martindale

Pittsfield, MA 01201
jddave@hotmail.com

To: Susan Svirsky/R1/USEPA/US@EPA
From: "Patty Spector"
Date: 05/18/2008 09:49PM
Subject: Housatonic comments

Dear Susan, I want to thank you for coming out to Lenox several weeks ago and speaking with us about the proposed plan for the Housatonic clean-up. I was very impressed with your knowledge of the situation and with your concern for the restoration of the river. I am the canoeist who spoke with you several times and since there's only a few days left for the informal comment period, I'd just like to emphasize the importance of the Housatonic to our group of paddlers. This morning there were 10 canoes out on the river at 7am. We usually paddle from the Decker Launch site to the bridge at Woods Pond and back again, that's a 9.5 mile paddle. The river is a sanctuary to us. No matter how hard we train, we always look out for wildlife, stop and watch, and even take side trips to see particular birds, especially eagles. Yesterday we noticed Baltimore Orieles, Red Breasted Grosbeaks, an immature eagle, an osprey, a large swan (now a resident on Woods Pond) and several herons, besides the numerous ducks, geese and goslings. Not only do we fear losing the river during clean-up, but the thought of losing the river and wildlife for 10 or 20 years is devastating, especially since many of us are over 50 and 60 years old. On Friday I paddled up river from the Decker Launch to the old metal bridge. Since the water was low, we could easily see the bottom of the river. It was astounding how the river bottom had changed during the past year and the center of the river, where the current flows, was often impassable due to the build up of sand. Normally we would paddle on the sides (out of the current) going up, and with the current going down, but this is no longer possible at low water conditions.
I understand the importance of removing the PCB concentrations however, I strongly urge you and the EPA to recognize the importance and beauty of the river and it's habitats.
Thank you, Patty Spector

Lenox, Ma. 01240

0123

14 May 2008

Dear Ms. Sursby -

The proposal by GE for the required clean up of the Housatonic River south of the Pittsfield project is completely unacceptable. It is barely a do nothing, cover it up proposal to save GE money. GE has been found guilty in Federal Court a number of times of defrauding the US Gov. in contracts and this is just another example of their arrogance.

River shore cannot stay age. Throwing dirt on top of the PCB's is no answer. They must be removed once and for all.

Thank you,

Robert Gordon

Robert Gordon

TROUT UNLIMITED

May 15, 2008

Ms. Susan Svirsky
Rest of the River Project Manager
United States Environmental Protection Agency
C/O Weston Solutions
10 Lyman Street
Pittsfield MA 01201

RE: EPA-GE Housatonic River Site, Corrective Measures Study Public Comments

Dear Ms. Svirsky:

This letter addresses the pending EPA review of General Electric's (GE's) Corrective Measures Study on the clean up of PCB's from downstream portions of the Housatonic River (the "Rest of the River" Investigation).

The Taconic Chapter of Trout Unlimited represents over 160 members in the Housatonic River area who are dedicated to the protection of coldwater fisheries. We appreciate the opportunity to provide our input before the EPA develops and proposes its Preferred Alternative (s) from GE's recommendations.

Our Chapter has discussed the Rest of the River issue at length and has assessed all of the applicable technologies and cleanup alternatives proposed.

Our conclusion is that, without the necessary expertise to evaluate treatment and disposal alternatives, our input would be largely "second guessing" the experts without adding much value. We believe our role is better served by simply advocating for the outcome all of our members support: The preservation and protection of the Housatonic River as a world-class fishery.

We are concerned that applicable evaluation criteria do not provide sufficient attention to existence of the river as a destination for sportsmen and women. The published assessment criteria are strongly objective in coverage without due consideration given to all-important subjective factors like the beauty and enjoyment of the river itself. In this, the Rest of the River differs dramatically from what has been remediated to date.

Certainly, any focus on the downstream portion of the Housatonic as a sports destination in itself requires a delicate balance with risks to human health and the environment. However, certain alternatives which raise water temperatures, advocate channelization or negatively impact the river's bethic zone environment will have a devastating impact on the fishery.

Residents and tourists alike have enjoyed the two designated Housatonic River "catch and release" areas in Lee and Glendale for years. Contrary to those who voiced strong opposition to the designations, the areas have proven an unparalleled success. The presence or absence of PCB's is simply not a factor in the joy of a day or evening sport fishing the river. However, like Woods' Pond, they are seriously at risk today.

Our request is simple. Please do not destroy the river in the effort to save it.

Sincerely yours,

Gene Chague

Gene Chague, Chairman
Board of Directors
Taconic Chapter of Trout Unlimited
65 East St.
Lenox, MA 01240

BERKSHIRE REGIONAL PLANNING COMMISSION

1 FENN STREET, SUITE 201, PITTSFIELD, MASSACHUSETTS 01201

TELEPHONE (413) 442-1521 • FAX (413) 442-1523

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May 16, 2008

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

RE: EPA-GE Housatonic River Site, Corrective Measures Study Public Comments

Dear Ms. Svirsky:

The Berkshire Regional Planning Commission, a sub-state governmental district organized under M.G.L. Chapter 40B "The Regional Planning Law", representing the 32 municipalities in Berkshire County, respectfully requests that the U.S. Environmental Protection Agency reject the Corrective Measures Study submitted by General Electric Company in March 2008. We do not believe that the study, as presented, serves the short, medium or long term needs of this region, particularly those of the City of Pittsfield and Towns of Lenox, Lee, Stockbridge, Great Barrington, or Sheffield which are located on the main stem of the river.

It may well be unrealistic to expect that the Housatonic River, even in the next half century, can be returned to a pristine, natural state. However, if we understand GE's proposal correctly, under the alternative chosen by GE, the river in Berkshire County will remain unfit for human contact and for any fish consumption and will be hazardous for most of the species which have been modeled. Leaving the river and floodplain in this condition does not even attempt to move toward the goal of the Clean Water Act to return the nation's rivers to a fishable, swimmable condition. We believe that EPA should reject the GE study, if for no other reason, because it does not achieve any reasonable level of clean-up to achieve important local and regional goals.

We find it unacceptable that most of the contamination in the river system would remain in place, in both the river itself and in the floodplain. This is only transferring the need for fuller clean-up to, at best, the next generation. Continuing the use of armoring of the riverbank for another five miles is not acceptable. Use of a thin 6-inch sand cap southward through Woods Pond is a very short-term solution to an ongoing problem. The assessment done of how much scouring would occur, which would remove the sand cap, appears to be weak, at best. The study also does not assess the lateral movement that all rivers go through over time which will release portions of the PCBs left in the floodplain back into the river.

Each of the dams and impoundments south of Woods Pond will be left with all of their existing, and presumably an accumulating amount of, contamination. This saddles each of the dam owners with a significant potential problem. We would like to see at least some of the dams considered for clean hydro-electric power generation, as is done at Glendale. With the contamination left in place behind those dams, that becomes much less likely. Some of the dams are possibly subject to removal, due to obsolescence and/or potential hazard. Throughout New England, and already occurring in Berkshire County, obsolete dams are being removed to allow the return of migratory fish. Leaving the contamination in place behind those dams makes breaching/removal much less likely.

We also find that the GE CMS is deficient in its technical aspects. It calls for landfilling of dredged contaminated material but does not provide the location of the proposed landfill(s) nor attempt to quantify transportation impacts. The amount of air pollution generated by the number of trucks which would be necessary could fairly easily be estimated. Without knowing the location of the landfill(s) the neighborhoods affected cannot be assessed, leaving a critical community impact totally out of the equation. On its face, under cursory review, the study indicates that at least the next level of clean-up beyond that proposed by GE would provide dramatic improvements in the portion of the river which is fit for human contact, limited fish consumption, and much more protective of the modeled species, at a cost which is less than double that estimated for GE's preferred alternative. The study does not appear to have fairly assessed the potential alternative technologies to dredging and landfilling. The bias against these is apparent, but the rationale for that bias is not. As best as we can tell, GE has consistently called for the least cost alternative, regardless of the results of its own modeling.

The Berkshire Regional Planning Commission, at its meeting held on May 15, 2008, endorsed these comments.

Sincerely,

Nathaniel W. Karns, AICP
Executive Director

Cc: Mr. Robert W. Varney, EPA New England Regional Director
The Honorable Duval Patrick, Governor
The Honorable Edward Kennedy, U.S. Senator
The Honorable John Kerry, U.S. Senator
The Honorable John Olver, U.S. Congressman
The Honorable Benjamin Downing, State Senator
The Honorable Smitty Pignatelli, State Representative
The Honorable Christopher Speranzo, State Representative
The Honorable Denis Guyer, State Representative
The Honorable James Ruberto, Mayor, City of Pittsfield
Mr. Ian Bowles, Secretary of Energy & Environmental Affairs
Ms. Laurie Burt, Commissioner, Massachusetts Department of Environmental Protection
Ms. Mary Griffin, Commissioner, Massachusetts Department of Fish & Game
Mr. Richard Sullivan, Commissioner, Massachusetts Department of Conservation & Recreation
Select Boards – Towns of Lenox, Lee, Stockbridge, Great Barrington, Sheffield
Pittsfield City Council

Dear Ms Sibley,

I am writing in agreement with the attached letter — out of my concern that everything possible be done to clean up the Housatonic River once + for all.

Please use new technologies + do everything possible to restore this river.

GE owes it to the future!

Sincerely,

Susan Olshaff

Lenox MA 01240

Tuesday, May 20, 2008

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

Sent via email to: Svirsky.Susan@epamail.epa.gov

RE: EPA GE-HOUSATONIC RIVER SITE, CORRECTIVE MEASURES STUDY PUBLIC COMMENTS

Dear Ms. Svirsky,

We the undersigned urge the Environmental Protection Agency to reject the recommendations of General Electric's *Housatonic River "Rest of River" Corrective Measures Study*. Instead, we ask that the EPA require GE to follow a process that takes full advantage of new science and technology, includes meaningful community input throughout the cleanup process, and truly addresses the entire "rest of the river," from the sources of its ongoing PCB contamination in Berkshire County to its outlet in the Long Island Sound. We represent a broad coalition of environmentalists, sportsmen, municipal and other agencies, and ordinary families who work, play, and live along the river. While we are motivated by a wide range of interests and concerns, we are united in the principles set forth in this letter.

Our goal is simple: We want GE to return the river largely to the condition it was in before they polluted it. We want our families to be able to swim and fish in the river, as they once did, without fear of contamination. We want mink and otter and eagle to live and thrive on the river as they once did. We want the PCBs that GE left behind—which will not break down naturally in our lifetimes—to be permanently neutralized as threats to our communities and our environment. And we don't want all the trees cut down and the river bank turned into a construction site in the process.

WHY GE'S PROPOSAL IS UNACCEPTABLE

We recognize that the economic and technological challenges to achieving this goal are significant. We are not demanding a perfect solution irrespective of practicality and cost. However, GE's proposal will not meet the goal of undoing the damage they have done. Their "solution" is to dig up or cover over large swaths of the Housatonic and dump the highly persistent and highly dangerous contaminants in our communities and along the river itself, using the same techniques that would have been used when Love Canal was a new crisis. Meanwhile, the proposal ignores more than a hundred miles of contaminated river south of Woods Pond and does not eliminate the remaining sources of contamination that continue to release toxins into the river. And after the digging is completed, GE does not provide a credible plan to restore what will be left of the river.

GE's proposal relies heavily on the same methods that were employed 10 or even 20 years ago. It ignores current data and ongoing research supporting the creative use of new technologies. It also ignores the need for further study of the health impacts of the contaminants on the people who have been exposed to them in Massachusetts, Connecticut, and New York. We want to work with GE, and we don't expect miracles. But the current proposal can only be characterized as a failure of "ecomagination."

We are also skeptical that GE's proposal makes sense from a purely economic perspective. GE has not convinced us that dredging the river and moving thousands of tons of contaminated mud will be less expensive than employing new technologies that could potentially treat the PCBs in place. We also aren't convinced that monitoring and maintaining large landfills containing the contaminants for fifty years or more will be cheaper than technologies that may be more expensive at first but don't require the monitoring of toxic waste sites for decades. And we're skeptical that GE's cost estimates fully cover the potential expense and legal liability of leakage from those landfills. In addition to being a bad deal for the people of Massachusetts and Connecticut, the "Rest of River" proposal may very well be a bad deal for GE. We believe that the company could get better results for the community at lower cost if a more creative approach were taken.

WHAT SHOULD BE DONE INSTEAD

GE's proposal extends out fifty years, at the end of which the river will not be fully restored under any of the options that they provide. But we will learn a lot over the course of those fifty years that nobody could plan for today. Scientists will improve upon the new technologies that are becoming available for destroying PCBs, making them cheaper and more effective. We will also learn more about the details of the contamination and the river itself as the cleanup progresses. Even the very best engineers, scientists and computer modelers could not possibly create a plan for this cleanup today that will make sense even fifteen or twenty years from now.

There is a better way. The EPA can mandate a phased process that addresses the clean-up a few problem spots at a time. Each phase would include pilot testing of new technologies. At the end of each phase, the EPA and the community would evaluate the results of the experiments together, along with any other new developments, and adjust plans for the next phase. By requiring such a plan, the Agency would be honoring the commitment it made to the community eight years ago as part of the agreement that enabled the original consent decree to go forward. At a press conference in April 2000, Region One Director Mindy Luber explicitly acknowledged that the agreement "includes EPAs commitment to identify and potentially test new and innovative treatment technologies."

We urge the Agency to honor that commitment. Enclosed is a set of principles that we believe could be the basis for a productive and cooperative relationship with GE that would produce better results for the community while improving GE's brand and protecting its bottom line. We hope that the Agency will consider these principles as the foundations for any plan going forward.

Respectfully submitted,

Berkshire County League of Sportsmen - Mark Jester

Berkshire Environmental Action Team - Jane Winn

Berkshire Environmental Education Network - Jane S. Burke

Berkshire Natural Resource Council - Bryan Emmett

Berkshire Regional Planning Commission - Nat Karns

Berkshire-Litchfield Environmental Council - Star Childs

Citizens for PCB Removal - Charlie and Barbara Cianfarini

Community Development Corporation, South Berkshire - Tim Geller

Green Berkshires Inc, - Eleanor Tillinghast

Housatonic Environmental Action League - Audrey Cole, President

Housatonic River Commission - William Tingley, President

Housatonic River Initiative, Housatonic Riverkeeper - Timothy Gray

Lee Land Trust - Jan Kegler

Town of Lenox, Board of Health

Town of Lenox, Planning Board

Northwest Conservation District - Jean Cronauer, Executive Director

Stratford Action for the Environment - Charles Perez, President

Taconic Chapter of Trout Unlimited - Gene Chague

Town of Sheffield, Board of Selectmen

Rene Wendell, Conservation Ranger, Bartholomew's Cobble

Dr. Don Roeder, Berkshire Environmental Research Center

Jay Baver

Olga Weiss

Lynn Fowler

Woods and Mary Lou Sinclair

Sarah Flynn

Valerie Andersen

Michael Feldstein

The Commonwealth of Massachusetts
Executive Office of Health and Human Services
Department of Public Health
Bureau of Environmental Health
250 Washington Street, Boston, MA 02108-4619
Phone: 617-624-5757 Fax: 617-624-5777
TTY: 617-624-5286

May 19, 2008

Susan Svirsky, EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Dear Ms. Svirsky:

The purpose of this letter is to provide the U.S. Environmental Protection Agency with formal comments from the Massachusetts Department of Public Health, Bureau of Environmental Health (MDPH/BEH) regarding the Corrective Measures Study (CMS) submitted by General Electric (GE) for the Housatonic River Site, Rest of River.

As you know, MDPH/BEH has been involved in addressing public health issues related to widespread contamination in the Housatonic River Area (HRA) since the early 1980s, when we issued a public health consumption advisory for fish, frogs, and turtles for the Housatonic River based on elevated levels of polychlorinated biphenyls (PCBs). In addition, MDPH/BEH completed a PCB Exposure Assessment Study in 1997, issued a public health waterfowl consumption advisory in 1999, convened an Expert Panel designed to address health questions regarding widespread PCB contamination in 2000, conducted a cancer incidence evaluation for five HRA communities in 2002, and has conducted more that 10 site-specific public health assessments and consultations related to GE site contamination through a cooperative agreement with the U.S. Agency for Toxic Substances and Disease Registry (ATSDR). Between 2005 and 2007, MDPH/BEH conducted an environmental exposure analysis and offered serum PCB testing to concerned members of the Allendale Elementary School community in response to PCB exposure concerns associated with the PCB consolidation area, Hill 78. MDPH/BEH continues to work closely with the Pittsfield Board of Health and our Housatonic River Area Advisory Committee (HRAAC) in responding to and evaluating community concerns related to PCB exposure opportunities.

The MDPH/BEH evaluated GE's Corrective Measures Study in the context of potential public health impacts.

We believe that the goal of remedial activities for the Housatonic River, Rest of River should be to return the environment to conditions prior to PCB contamination by GE. As recommended in our Public Health Assessment for the Housatonic River released for public comment in November 2007, such conditions should include the ability to consume fish no longer contaminated with elevated levels of PCBs as well as a range of other recreational activities associated with this once bucolic area of our state. It is therefore disconcerting that the predicted post-remediation PCB concentrations for all presented alternatives would not be able to achieve this goal for fish consumption in Massachusetts. Thus it would appear that under all scenarios presented by GE, fish consumption advisories must remain in place in perpetuity.

MDPH/BEH also is concerned that the remediation of the Rest of River be conducted in the safest manner possible to minimize exposure opportunities to PCBs. It is expected that any dredging and removal activities would result in elevated exposures and risk and therefore, use of innovative technologies to address PCBs in place is critical.

Finally, the CMS contains no specific information regarding a location for an upland disposal facility or transportation plans for dredged sediment and floodplain soils. Without this information, it is impossible to fully evaluate potential exposures and public health impacts associated with any proposed remedial actions.

Thank you for the opportunity to submit comments on GE's proposal. If you have any questions about the above comments or wish to discuss them further, please feel free to contact us at 617-624-5757.

Sincerely,

Suzanne K. Condon, Associate Commissioner
Director, Bureau of Environmental Health

Cc: Martha J. Steele, Deputy Director, BEH
Meg Blanchet, Assistant Director, BEH Environmental Toxicology Program
Julie Cosio, Senior Environmental Analyst, BEH Environmental Toxicology Program
Dr. Phil Adamo, Chairman, Pittsfield Board of Health

Commonwealth of Massachusetts
Division of Fisheries & Wildlife
MassWildlife

Wayne F. MacCallum, *Director*

May 19, 2008

Ms. Susan Svirsky
United States Environmental Protection Agency
Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield MA 01201

Project Name:	*General Electric, Housatonic, Rest of River Remediation*
Proponent:	*General Electric Company*
Location:	Housatonic River, from the confluence south to the Connecticut border
Document Reviewed:	General Electric Company, Pittsfield, Massachusetts, Housatonic River – Rest of River Corrective Measure Study Report dated March 2008, submitted to the U.S. Environmental Protection Agency
DFW Tracking No.	*08-24442*
MA DEP No.	Site No. GECD850; Housatonic River Rest of River

Dear Ms. Svirsky:

Thank you for the opportunity to provide comments on the above-noted Corrective Measures Study Report ("CMS"). We understand that this is an informal public comment period and appreciate the chance to provide constructive guidance as you move forward in the decision making process.

The Division of Fisheries & Wildlife's Interest

The Housatonic River watershed is one of the most biologically rich and unique regions of the Commonwealth. The limestone bedrock creates an exceptional hydrological base, supporting rich, calcareous soils and wetlands found only in this region. These rich soils and wetlands of the valley floor support a unique ecosystem which supports many

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species found no where else in Massachusetts. The Massachusetts Division of Fisheries and Wildlife (the "Division") has been acquiring property over the past several decades to protect this valuable habitat and its wildlife resources and owns one or both sides on approximately 85% of the land along river's bank in Reaches 5 and 6. As discussed in more detail below, the Division is responsible for the protection of state-listed animal and plant species and their habitats pursuant to the Massachusetts Endangered Species Act, M.G.L. c. 131A, ("MESA") and the MESA regulations at 321 CMR 10.00. Under M.G.L. c. 131, the Division is also responsible for the protection and management of inland fisheries resources and wildlife throughout Massachusetts.

Resources within the Rest of River Cleanup Area

The CMS evaluates remedial alternatives for the final "Rest of River" ("ROR") phase of the Housatonic River cleanup. The ROR cleanup will cover the downstream portions of the River from the confluence of the East and West Branches in Pittsfield to Long Island Sound in Connecticut. As discussed below, the ROR cleanup area encompasses a dynamic river system with an abundance of diverse and ecologically sensitive wildlife and fisheries resources.

The Housatonic River has a characteristic braided, wide floodplain with slow moving water that supports diverse wetlands, seasonally flooded areas with the associated flora and fauna. Even the artificial impoundments maintained by dams provide habitat for some state-listed plant species. The ROR itself supports 68 state-listed species of plants and 25 state-listed species of animals that are protected pursuant to the MESA; at least eight (8) of these species are restricted to ROR in Massachusetts (see Appendix I). An additional 25 species of plants are being carefully monitored for potential future protection pursuant to the MESA. As shown on GIS Map No. 1 (attached), the ROR contains a number of Priority Habitats for the state-listed species that have been delineated by the Division pursuant to MESA. In addition to the large number of state-listed species located in the ROR, there are 13 high priority Natural Communities, 12 certified vernal pools and up to 107 potential vernal pools (see Appendix I).

The Housatonic River is a substantial fisheries and recreational resource in western Massachusetts. Thirty-seven species of fish have been found in the ROR and its supporting waters (see Appendix II). Moreover, the ROR supports coldwater habitat including the Housatonic River and its direct tributaries, as listed in Appendix III and illustrated in GIS Map No. 2 (attached). These waters are protected under 314 CMR 4.06 of the MA Surface Water Quality Standards ("MA WQS") as coldwater habitat. The MA WQS require that both the fish population and habitat be protected and maintained as designated or existing uses. Streams not specifically identified in the ROR as coldwater fishery resources may, in fact, contain coldwater habitat that has not

yet been confirmed. This list will be periodically updated as additional coldwater habitat are identified and confirmed.

Coldwater fish species are particularly vulnerable to habitat degradation caused by activities that adversely impact the water quality and quantity. Coldwater fish rely on high quality streams for spawning and thermal refuge. Coldwater fish also utilize the main stem of the Housatonic River during certain portions of their life cycle. In short, the Housatonic River and its tributaries contain numerous habitats that support sensitive coldwater fish populations that are entitled to the highest protection under the MA WQS.

The Housatonic River also supports important, valuable and diverse recreational fisheries for both warm and coldwater species. Countless angling hours are spent in the Massachusetts section of the ROR. Woods Pond in Lenox, MA is consistently one of the most heavily ice-fished waters in Massachusetts, while the Catch and Release sections of the Housatonic River attract anglers from throughout the Northeast.

The George Darey Wildlife Management Area

The George Darey Wildlife Management Area (the "Darey WMA") located within Reach 5 and 6 of the ROR is owned and managed by the Division for biological diversity and wildlife-dependent outdoor recreation. See GIS Map No. 3 (attached). The Darey WMA includes approximately 818 acres spread across multiple parcels consisting largely of river-front and floodplain. The Division has invested substantial resources on behalf of the Commonweath to protect this open space as habitat for fish and wildlife and it provides a wide range of recreational opportunities for the public. In that regard, the Darey WMA is one of western Massachusetts' most heavily utilized wildlife management areas for all types of passive recreation including hunting, fishing, trapping, hiking, canoeing/kayaking, bird watching, and wildlife viewing. Wildlife and outdoor recreation has significant and far-reaching benefits to the economy of the surrounding region. Thus, the long-term management of the Darey WMA to support biodiversity and recreational use is critical to achieving the statutory responsibilities of the Division. For these reasons, the ROR remediation and its effect on the fisheries and wildlife resources are of principal importance to the Division.

State-listed Species

The northern part of the Housatonic River through Reach 5 and 6 of the ROR were surveyed for state-listed species by Woodlot Alternatives, Inc. ("Woodlot") six (6) years ago, as described in Woodlot's 2002 Report, Ecological Characteristics Study of the Primary Study Area. It appears that less survey effort has been expended south of Reach 6 to the Connecticut border. It is the Division's expectation that populations of

state-listed species, natural communities, and vernal pools are likely to be more diverse south of the confluence and throughout the ROR as compared to areas north of the confluence. In that regard, the Division's Natural Heritage and Endangered Species Program ("NHESP") was recently awarded a grant from the Natural Resource Damages ("NRD") Trustee pursuant to the GE Consent Decree for a project that includes, at the outset, conducting surveys to complete an updated and more detailed inventory of state-listed species and their habitats along the Housatonic River. The NHESP has commenced work on a two year field study in anticipation of completing a final updated inventory report in the Spring of 2011. The CMS process does not need to await the completion of this updated inventory work, primarily because of the existing range of information developed by the NHESP on state-listed species occurrences and priority habitats under MESA. The Division believes, however, that this refined inventory information will be helpful to GE and EPA, from a remedy design and restoration standpoint, as the cleanup moves forward.

The selection of the preferred Corrective Measures by EPA should take into consideration impacts to state-listed species and communities, while still achieving cleanup objectives. As discussed below, the remedy selection, in turn, must be based on a thorough analysis of the alternatives in the CMS that expressly analyzes in detail how each component (e.g., the remediation technique used, the sequencing of the construction schedules, the scope and location of staging areas, the plans for restoration) avoid, minimize or mitigate temporary and permanent impacts to state-listed species, as required by MESA. Moreover, unlike stable or "common" species, state-listed species are often characterized by limited distribution and population size. For many of the state-listed species found within the ROR, there are very limited or no up-river populations to serve as a recolonization sources. Therefore, the selected ROR remedy and the related restoration plans in particular need to include collection and storage of state-listed plant materials to ensure that they are directly utilized to recolonize these species with genotypes native to the area. For state-listed species like the Black Maple and other plants unique to the Housatonic, a balance should be achieved to meet the remediation goals while allowing reservoirs of these species to remain unharmed. For example, the Eastern Veined White butterfly population within the river represents the only known, extant population within southern New England. It has been thriving for at least the past 10 years, therefore remediation within its habitat needs to be carefully planned and implemented. If not, the entire population could be lost from the Commonwealth.

Vernal Pools

Vernal pools constitute a unique and increasingly vulnerable type of wetland. Vernal pools are inhabited by many species of wildlife, some of which are totally dependent on vernal pools for their survival. Several amphibians have evolved breeding strategies to

make use of the short hydroperiod of these pools. Certain invertebrates, such as fairy shrimp are wholly dependant upon the annual filling and drawing down of the pool for their lifecycle. Invertebrates are both important predators and prey in vernal pool ecosystems. Vernal pools are an important habitat resource for many birds, mammals, reptiles and amphibians, including many state-listed species.

As noted above, the ROR contains 12 certified vernal pools and up to 107 potential vernal pools. Many of these vernal pools are found within the floodplain and are largely filled by flooding river water and seasonal high water. Remedy alternatives should be sensitive to perturbations to hydraulic connectivity between floodplain pools and the river to ensure these hydraulic connections are maintained. Remedies also need to allow movement of vertebrates within and between the river and vernal pools in order for these unique habitats to be functional. Not only do certain vertebrates rely on the vernal pools for breeding habitat, but many others make long riverine and overland movements to both forage and aestivate in these areas. Care should be taken to ensure that these vertebrates can continue to safely and effectively move through the landscape.

Non-native, Invasive Plants

Like many rivers throughout the United States, populations of invasive plant species are found throughout the ROR. These plants may be benefited by the disturbance, soil movement, soil turning and spreading associated with the implementation of the ROR remedy. Materials brought to the ROR from other locations could introduce new invasive species or enhance existing populations. As part of the selected ROR remedy, EPA should require careful identification and eradiation of invasive plant materials during work. More specifically, offsite materials need to be carefully sourced and treated to avoid introduction of invasive species. Trucks and equipment should be inspected and washed to avoid moving invasive plant materials along the river or from the river to off-site locations. Restoration must include a careful monitoring of disturbed areas with adequate funding to control any observed invasive plants. Otherwise the end result from a biological perspective could be a riverine system overcome by non-native species and lacking strong, healthy native species populations.

Status of MESA as an ARAR

Section 2.13 of the CMS states that the third General Standard specified in the RCRA Permit requires an evaluation of how each remedial alternative would meet Applicable or Relevant and Appropriate Requirements ("ARARs") under federal and state law. The CMS explains that in order for state requirements to constitute an ARAR, they must be promulgated requirements of general applicability, legally enforceable, and more stringent than federal requirements. In addition, compliance is limited to the

"substantive" requirements, as opposed to the "administrative" requirements of an ARAR. The CMS acknowledges, however, that in many cases the regulatory provisions identified as ARARs include a mixture of substantive and administrative requirements. As noted below, the Division believes that the substantive character of certain state ARARs such as MESA necessarily includes obtaining the input and approval of the state regulator.

The CMS properly identifies the MESA and the Division's MESA regulations as location-specific state ARARs. See Section C in Table 2-2 ("Critical Habitat for Threatened and Endangered Species"[1]). The relevant comments associated with MESA in Table 2-2 states that MESA applies to "activities in a State-designated Priority Habitat in MA" and "would also apply to activities affecting State-designated Significant Habitat in MA; however, no such habitat has been designated." The comments accurately state that, to date, the Division has not designated Significant Habitat in MA pursuant to MESA. Instead, the MESA regulations provide that any project or activity that will take place in Priority Habitat must be reviewed by the Division prior to the commencement of work in the Priority Habitat. The purpose of this review is for the Division to determine whether the project or activity will result in a "take"[2] of a state-listed species. See 321 CMR 10.18. However, there are also circumstances where a project or activity that is not located in Priority Habitat may still be reviewed by the Division to determine whether it will cause a take, including when the Division receives new information on the occurrence of a state-listed species prior to the project's completion of permitting milestones specified in the regulation. See 321 CMR 10.13. Thus, the extent to which ROR remedial activities must comply with the substantive requirements of MESA is not necessarily limited to whether they will occur in Priority Habitat.

If the Division determines that a take will occur under MESA, the project or activity must either be modified to eliminate the take or the proponent must obtain a conservation and management permit from the Division pursuant to 310 CMR 10.23. The Division acknowledges that GE would not be required to obtain an actual conservation and management permit from the Division to carry out ROR remedial activities that cause a take under MESA. GE will be required, however, to meet all of the substantive requirements of MESA applicable to a take. More specifically, in

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[1] The Division notes that in addition to "endangered species" and "threatened species," MESA also protects a third category of rare animals and plant species – "species of concern," which are any species that has been documented by biological research and inventory to have suffered a decline that could threaten a species.

[2] "Take" is broadly defined in the MESA regulations to include the killing or harming of such animals as well as the disruption of nesting, breeding, feeding or migratory activity resulting from the destruction, modification or degradation of their habitat. "Take" also includes the killing, collection and picking of rare plants. See 321 CMR 10.01.

addition to showing that the impacts from the remedial action have been avoided, minimized and mitigated, three substantive performance standards must be met in order to authorize a take under MESA:

1. there has been an adequate assessment of alternatives to both temporary and permanent impacts;

2. only an insignificant portion of the local population of the affected state-listed species will be impacted, and

3. a Division-approved conservation and management plan provides for the long-term Net Benefit[3].

See 321 CMR 10.23(2).

As highlighted above and in the appendices to this letter, the ROR hosts a multitude of state-listed animal and plant species that are protected under MESA. Given the potential scope of impact to state-listed species and their habitats, MESA is a critical ARAR for assessing the viability and relative merits of the range of alternatives identified in the CMS Report. Moreover, an integral component of the substantive requirements of MESA involves the Division's review and approval of activities potentially affecting state-listed species, particularly with respect to take determinations and compliance with the above performance standards.

Consequently, the CMS Report needs to do more than acknowledge MESA as an ARAR. Consistent with the third General Standard in GE's RCRA permit, the CMS needs to be revised and supplemented to explain in more detail how each remedial alternative will meet the substantive requirements of MESA. The revised CMS evaluation should place particular emphasis on the compliance of each remedial alternative with above substantive performance standards associated with authorizing a take under MESA. This means setting forth specific proposals on how compliance with the long-term Net Benefit standard (i.e., ensuring that the conservation contribution to the impacted species exceeds the harm caused by the take) will be achieved.

A comprehensive analysis and description in the revised CMS addressing the above issue would also more definitively establish whether or the extent to which a particular remedial alternative is predicated on waiving some or all of the substantive

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[3] "Net Benefit" is defined in the MESA regulations to mean (1) an action(s) that contribute significantly to the long-term conservation of a state-listed species, and (2) that conservation contribution exceeds the harm caused by the proposed project or activity. See 321 CMR 10.01.

requirements of MESA. That consideration, in turn, is an important criterion for determining the appropriateness of the remedial alternative.

Finally, as discussed in more detail below, the revised CMS must contain a thorough description of the restoration components of each remedy alternative, which includes but is not limited to, addressing restoration for impacts to state-listed species and their habitats.

Flow Model

The growing evidence of Global Climate Change suggests that the frequency and intensity of storms causing higher flow levels and velocities may increase dramatically in the next 50 -100 years. Therefore, the Division recommends that EPA review the CMS flow model and selected alternatives in light of global climate change predictions. For example, under the Sediment and Erodible Riverbanks alternative number 3 (SED-3), the model included an extreme high flow event that would result in a 5% erosion in the Thin-layer Cap in Woods Pond. If multiple extreme flow events occur in the coming years as some global climate experts predict, it is likely the cumulative effect may be more significant than described in the CMS and, in the case of Woods Pond, cause destabilization and eventual mobilization of PCB contaminated sediments.

Further, the 50 year projected time frame is quite short in the life of the river and flora and faunal populations. We expect that whatever remedy is chosen, its impacts will persist in the ROR on the order of centuries rather than decades. Finally, the CMS evaluated the effect of each remediation action independent of the other remediation actions. For example, the Sediment and Erodible Riverbanks are considered a stand-alone event relative to the Floodplain Soils and the Treatment/Disposition of Removed Sediments and Soils. GE acknowledges that these activities would likely be conducted temporally and/or spatially in combination, yet none of the modeling appears to determine how these activities could interact nor how work conducted upstream will affect downstream. Also, there does not appear to be any intention to re-apply the model based on actual conditions as portions of the remediation occur. The Division is concerned that this approach may fail to adequately predict the post-remediation conditions.

The CMS' Evaluation of Remediation Techniques, Use of a CDF, and Supporting Facilities

The CMS is lacking in supporting documentation for the proposed remediation techniques. The references cited in several sections include few long-term studies of the proposed alternatives or studies relevant to river systems. For example, any application of capping should consider biological disturbance (e.g. carp, rooted aquatic

macrophytes, turtles, etc.) but this issue is not addressed in the CMS. For these reasons, the CMS should be supplemented to include an analysis of the proposed remediation techniques based on a broader range of more relevant studies, as well as expressly address the issue of biological disturbances associated with the use of capping.

The Division would not support an in-water Confined Disposal Facility ("CDF") due to the habitat loss and likelihood of failure within the Housatonic River system. As discussed above, the 818 acre Darey WMA has exceptional value to the Commonwealth from the perspective of biological diversity, wildlife and fisheries resources and recreational use, and is the culmination of years of work by the Division and the dedication of substantial public resources. Consequently, the Division is also strongly opposed to locating an upland disposal facility on the Darey WMA or in other areas that would directly impact the Darey WMA.

Finally, when evaluating remedial alternatives as part of GE's CMS and pursuant to the RCRA permit, one of the selection decision factors is an alternative's short-term effectiveness. This factor assesses the impacts to the environment, nearby communities and workers during the implementation of the remedy. An important aspect of that assessment involves the location, number and acreage associated with the number of access roads, staging areas and related equipment proposed in connection with each of the relevant remedial alternatives. While the Division generally recognizes the need for these supporting facilities, we believe that the CMS does not provide a thorough enough explanation and supporting analysis for the conclusions reached by GE in this area. For example, GE should be required to support and justify in more detail in a supplemental CMS why it needs as many of the above supporting facilities in each of the proposed locations, and how impacts to state-listed species and their habitats can be avoided or minimized through the redesign or relocation of access roads and staging areas. It is premature for EPA to come to any conclusions regarding this critical selection decision factor without significantly more analysis and supporting information from GE.

Restoration

As emphasized above, the short and long term effects of the ROR remediation on the Housatonic River, the array of diverse wildlife and fisheries resources (including state-listed species), and the effect of the remedy on the Darey WMA, are of paramount importance to the Division. The cleanup of the first 2 miles of the River involved a relatively straight channel located within a highly urbanized area of Pittsfield. In contrast, Reaches 5 and 6, which our WMA runs the length of, is a complex river channel encompassing numerous and productive populations of state-listed species and

other wildlife and habitats. The ROR is also relatively undeveloped and heavily utilized by the public for recreational purposes.

The ROR cleanup will likely have major impacts on this rich and ecologically sensitive environment. By illustration, even the set of remedial alternatives determined by GE to be "best suited" as a result of the CMS [SED 3/FP 3/local upland disposal facility] includes:

- Removal of 250,000 tons of river sediments/bank soils over 42 acres from Reach 5A and banks in 5B;
- Placement of 6-inch cap over an additional 97 acres in part of 5C and in Woods Pond;
- Removal of 90,000 tons of floodplain soil over 38 acres;
- Removal area by habitat includes 12 acres of upland forest (50-75 years to replace mature trees); and 20 acres of wetlands, including v.p.;
- Disposal in an upland landfill near the River but outside the 100 year floodplain; and
- Will take 10 years to implement.

In our March 28, 2007 comments on the CMS proposal, the Division highlighted the absence of a meaningful evaluation of the post-remediation condition or of planned restoration components of each remedial alternative, particularly as proposed for stream banks and floodplain resources. We emphasized the need for the upcoming CMS to address the long-term feasibility of remedial alternatives in terms of species habitat needs and the restoration of ecological communities impacted by the remedy. In our view, the resulting CMS does not address this core concern of the Division, and makes the task of assessing the validity of the alternatives analysis in the CMS unnecessarily difficult. In short, GE's failure to meaningfully address the post-remediation conditions and proposed restoration associated with the remedial alternatives is a fundamental deficiency in the CMS, and EPA should not rely on the CMS as the basis for its remedy selection.

The Division, after reviewing the CMS, has no indication of post-remediation conditions and proposed restoration associated with the remedial alternatives. For example, it is unclear from the CMS what assumptions GE made regarding the specific scope and types of restoration envisioned for the key resource areas (e.g., stream banks, floodplain, wildlife habitats), or if restoration costs are included in the cost estimates for

the alternatives. If so, the CMS does not break out or explain the basis for the restoration costs in any detail.

Presumably, GE intends to propose specific restoration plans at the design phase of the project. However, the success of the project from the Division's perspective depends very much on the post-remediation habitat conditions. Thus, it is critical to the integrity of the alternatives analysis in the CMS that the restoration component of each alternative be adequately described, analyzed and vetted based on public input before EPA makes its final remedy selection. We think this means requiring GE to further revise and supplement the CMS with detailed restoration plans for all impacted fisheries and wildlife resources, demonstrating, as applicable, how such restoration will comply with the MESA performance standards. The restoration plans must also include adequate information on monitoring and the use of best management practices to ensure the long-term viability of restored habitats and other resource areas. GE should then redo the alternatives analysis based on this more complete picture of the true "cost" of each alternative.

Moreover, it is important that in developing a supplemental CMS addressing this issue, there be no conflicting assumptions as to what constitutes appropriate restoration. Remedy work should include restoration of existing ecosystem and habitat features in similar configuration and frequency as in the pre-work condition. Ecosystem changes that cause shifts in biologic communities can be problematic to local populations. For example, loss of appropriate host fishes for mussel larvae could decimate these mussel populations' ability to survive and re-colonize the river. Shifts in native macrofaunal invertebrate assemblages can cause fundamental shift native populations.

In that regard, the CMS, in discussing the habitat impact of armor stone in the remediated Pittsfield section, states that these areas were rapidly colonized by macro-invertebrates. However, the Division's view is that this outcome likely represents short-term colonization by a limited number of species that either prefer this microhabitat or are more tolerant of the change. It is suggestive of a likely loss of the normal invertebrate assemblages and a rapid colonization of disturbance–tolerant invertebrate species. Thus, the armoring technique represents more the introduction or alteration of a habitat rather than achieving adequate restoration of a previous habitat value. Additionally, any temporary increase in macro-invertebrate numbers would be more than offset by the removal of the natural lateral connectivity of the river caused by the hardening, a permanent condition.

For the above reasons, the CMS should be supplemented to include a more thorough analysis of the scope and types of bioengineering techniques that should be applied whenever possible to minimize the use of hard structure, particularly for bank stabilization purposes. The Division's larger point is that any remedial action taken in

the ROR should have an overarching restoration goal of returning the wildlife and fisheries habitats to their current condition. The CMS, in its present form, does not demonstrate that the alternatives analysis contained therein was predicated on achieving this goal.

Conclusion

The Division has a direct and substantial interest in the proposed ROR cleanup, and therefore, in the adequacy of the CMS. Our interest is based on our statutory and regulatory authority and duty to protect inland wildlife and fisheries resources of the Commonwealth, including state-listed rare species pursuant to MESA. Moreover, the Division owns and operates the 818 acre Darey WMA that runs the length of Reaches 5 and 6 of the ROR, which has been impacted by the PCB contamination of the River and will be directly affected by the upcoming cleanup of the ROR.

Unlike the cleanup of the first 2 miles of the River, the ROR involves a much larger, more complex river and cleanup area that is rich in wildlife and fisheries resources, including numerous state-listed species, and high recreational and aesthetic values. It is therefore critical that the selected cleanup remedy minimize impacts to important endangered species, fisheries and wildlife habitats to the greatest extent practical, while still achieving clean-up objectives. It is equally important that EPA's ultimate remedy selection be based on a thorough and detailed evaluation of alternatives that includes careful consideration of the extent to which an alternative will comply with an key state ARAR such as MESA and will result in the restoration of impacted wildlife and fisheries resources and habitats. In our view, restoration means that existing wildlife and fisheries habitats are maintained and/or re-created; it does not mean replacing them with functions and habitats that do not currently exist in the ROR.

As explained above, the Division believes that the CMS is fundamentally deficient, and that rather than rely this CMS as the basis for its final remedy selection, EPA should require GE to develop a supplemental CMS that addresses in a more comprehensive and explicit manner the areas identified in the Division's comment letter, including:

- how and the extent to which each alternative will comply with substantive requirements of MESA, particularly the performance standards applicable to a take of a state-listed species;

- how each alternative will result in the long-term restoration of impacted wildlife and fisheries resources and habitat as contemplated by MESA and other relevant environmental statutes and regulations;

- a more thorough analysis and justification for the proposed location, number and acreage associated the proposed support facilities (access roads, staging areas, etc.) for each remedial alternative;

- a reapplication of a revised Flow Model based on actual site and cleanup conditions as the phases of the ROR remediation are completed, which also accounts for the potential effects of global climate change; and

- an expanded evaluation of the proposed remediation techniques, based on additional and more relevant studies, including the use of bioengineering techniques.

The Division further requests that the public be given another reasonable opportunity to provide comments on a revised and supplemental CMS.

Lastly, once EPA makes its final remedy selection, to the extent that some habitat impacts may be unavoidable, it is critical that even more detailed habitat restoration and monitoring plans be developed early in the planning process, and that the Division and other state agencies responsible for administering the statutes and regulations identified as ARARs for the remedy weigh in on their adequacy. Consistent with the Division's request for a supplemental CMS, the selected remedy should allow for adaptation and fine-scale adjustments to protect localized resources, address events outside of model predictions, incorporate cumulative changes as work proceeds, and consider technological advances. The Division is hopeful that the EPA will ultimately select a remedy for the ROR that ensures the continued ecological viability of the Rest of River while meeting remediation goals. Our request that GE do more work on the CMS is for the purpose of achieving that shared goal.

Thank you for your consideration. If you have any questions on the Division's comments, please contact Dr. Mark S. Tisa of my staff at (508) 389-6328.

Very truly yours,

Wayne F. MacCallum

Wayne F. MacCallum
Director

cc: Mary B. Griffin, Commissioner, DFG
Richard Lehan, General Counsel, DFG
Fisheries and Wildlife Board

Attachments:

Appendix I: State-Listed Species
Appendix II: List of Fish Species
Appendix III: List of Coldwater Fisheries Habitats
GIS Map No. 1: Priority Habitats for State-Listed Species
GIS Map No. 2: Coldwater Fisheries Habitats
GIS Map No. 3: George Darey Wildlife Management Area, Reaches 5 and 6 in the Rest of River Cleanup Area

APPENDIX I: RARE SPECIES AND NATURAL COMMUNITIES WITHIN THE REST OF RIVER STUDY AREA OF THE HOUSATONIC RIVER WITHIN MASSACHUSETTS (AS OF JANUARY 2008)

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
Alasmidonta undulata	Triangle Floater	SC	3	2	-
Strophitus undulatus	Creeper	SC	2	2	-
Neurocordulia yamaskanensis	Stygian Shadowdragon	SC	1	0	-
Ophiogomphus carolus	Riffle Snaketail	T	1	0	-
Stylurus scudderi	Zebra Clubtail	E	2	0	-
Stylurus spiniceps	Arrow Clubtail	T	3	0	-
Pieris oleracea	Eastern Veined White	T	1	4	unique
Gammarus pseudolimnaeus	Northern Spring Amphipod	SC	1	0	-
Limnadia lenticularis	American Clam Shrimp	SC	1	0	-
Catostomus catostomus	Longnose Sucker	SC	3	2	-
Lota lota	Burbot	SC	0	1	-
Percopsis omiscomaycus	Trout-perch	SC	2	0	-
Notropis bifrenatus	Bridle Shiner	SC	6[C]	0	-
Ambystoma jeffersonianum	Jefferson Salamander	SC	4	0	-
Hemidactylium scutatum	Four-toed Salamander	SC	2	0	-
Botaurus lentiginosus	American Bittern	E	4	0	-
Circus cyaneus	Northern Harrier	T	0	1	-

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
BIRDS (cont.)					
Cistothorus platensis	Sedge Wren	E	1	0	-
Gallinula chloropus	Common Moorhen	SC	3	0	-
Haliaeetus leucocephalus	Bald Eagle	E	2	1	-
Ixobrychus exilis	Least Bittern	E	0	1	-
Podilymbus podiceps	Pied-billed Grebe	E	0	1	-
Sorex palustris	Water Shrew	SC	1	0	-
Glyptemys insculpta	Wood Turtle	SC	9	0	-
Terrapene carolina	Eastern Box Turtle	SC	0	1	-
Nuphar microphylla	Tiny Cow-lily	E	1	0	-
Potamogeton friesii	Fries' Pondweed	E	0	1	-
Potamogeton strictifolius	Straight-leaved Pondweed	E	1	0	-
Veronica catenata	Sessile Water-speedwell	E	0	1	unique
Agrimonia parviflora	Small-flowered Agrimony	E	1	0	unique
Cardamine pratensis var. palustris	Fen Cuckoo Flower	T	1	0	-
Carex tetanica	Fen Sedge	SC	1	2	-
Conioselinum chinense	Hemlock Parsley	SC	2	0	-
Gentiana andrewsii	Andrews' Bottle Gentian	E	2	0	-
Lobelia siphilitica	Great Blue Lobelia	E	4	0	-
Malaxis monophyllos var. brachypoda	White Adder's-mouth	E	1	1	-
Thuja occidentalis	Arborvitae	E		1	YES

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
Eleocharis intermedia	Intermediate Spike-sedge	T	3	0	-
Eragrostis frankii	Frank's Lovegrass	SC	2	2	-
Symphyotrichum prenanthoides	Crooked-stem Aster	T	1	0	-
Acer nigrum	Black Maple	SC	2	3	-
Arisaema dracontium	Green Dragon	T	3	0	-
Cardamine douglassii	Purple Cress	E		1	unique
Carex alopecoidea	Foxtail Sedge	T	3	0	-
Carex davisii	Davis's Sedge	E	1	0	unique
Carex grayi	Gray's Sedge	T	5	0	-
Carex tuckermanii	Tuckerman's Sedge	E	1	0	-
Claytonia virginica	Narrow-leaved Spring Beauty	E	2	0	-
Elymus villosus	Hairy Wild Rye	E	2	0	-
Equisetum scirpoides	Dwarf Scouring-rush	SC	1	2	-
Hypericum ascyron	Giant St. John's-wort	E	1	0	-
Platanthera flava var. herbiola	Pale Green Orchis	T	1	0	-
Quercus macrocarpa	Mossy-cup Oak	SC	4	3	-
Ranunculus pensylvanicus	Bristly Buttercup	T	4	0	-
Sagittaria cuneata	Wapato	T	10	0	-
Sanicula odorata	Long-styled Sanicle	T	3	0	-
Veronicastrum virginicum	Culver's-root	T	2	0	-
Carex hitchcockiana	Hitchcock's Sedge	SC	1	0	
Morus rubra	Red Mulberry	E	0	1	
Panax quinquefolius	Ginseng	SC	1	0	Globally rare[C]
Quercus muehlenbergii	Yellow Oak	T	1	0	unique
Chamaelirium luteum	Devil's-bit	E	0	1	Unique
Chenopodium foggii	Fogg's Goosefoot	E	1	0	Globally rare

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
LEDGES AND OURCROPS; OPEN (cont.)					
Cynoglossum virginianum var. boreale	Northern Wild Comfrey	E	0	1	0
Desmodium cuspidatum	Large-bracted Tick-trefoil	T	0	1	0
Panicum philadelphicum ssp. gattingeri	Gattinger's Panic-grass	SC	1	0	0
Sporobolus neglectus	Small Dropseed	E	1	0	unique
FRESHWATER COMMUNITY	Black ash-red maple-tamarack calcareous seepage swamp	S2	1		
	Calcareous sloping fen	S2	1		
	Hemlock-hardwood swamp	S4	1		
	Major-river floodplain forest	S2	4		
	Small-river floodplain forest	S2	1		
	Transitional floodplain forest	S2	2		
	Wet meadow	S4	1		
TERRESTRIAL COMMUNITY	Calcareous rock cliff community	S3			
	Deep emergent marsh	S4	1		
			1		
VERNAL POOLS	Certified	not ranked	12		
	Potential	not ranked	107		

NOTES:

A - STATE RANK:

- "Endangered" (E) species are native species which are in danger of extinction throughout all or part of their range, or which are in danger of extirpation from Massachusetts, as documented by biological research and inventory.
- "Threatened" (T) species are native species which are likely to become endangered in the foreseeable future, or which are declining or rare as determined by biological research and inventory.

- "Special concern" (SC) species are native species which have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts.
- "Historic" (H) species or communities occurred historically in Massachusetts, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 25 years. Populations that have become Historic are no longer protected under the Massachusetts Endangered Species Act.
- "Critically Imperiled" (S1) because of extreme rarity (often 5 or fewer occurrences), or because of factor(s) such as very steep declines, making it especially vulnerable to extirpation from the state.
- "Imperiled" (S2) in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
- "Vulnerable" (S3) in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- "Apparently Secure" (S4) is uncommon but not rare; some cause for long-term concern due to declines or other factors.
- "Secure" (S5) is common, widespread, and abundant in the state.

B – "Globally Rare" species are those with an estimate of extinction risk of G3, G2, or G1 according to NatureServe. Ranks are based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5).

C – Bridle Shiner records noted in the above table are from tributaries and impoundments flowing into the Rest of River section.

Appendix II. FISH SPECIES WITHIN THE ROR AND ITS SUPPORTING WATERS (AS OF JANUARY 2008).

Banded killifish (*Fundulus diaphanous*)
Black crappie (*Pomoxis nigromaculatus*)
Blacknose dace (*Rhinichthys atratulus*)
Bluegill (*Lepomis macrochirus*)
Bluntnose minnow (*Pimephales notatus*)
* Bridle shiner (*Notropis bifrenatus*)
Brook trout (*Salvelinus fontinalis*)
Brown bullhead (*Ameiurus nebulosus*)
Brown trout (*Salmo trutta*)
* Burbot (*Lota lota*)
Carp (*Cyprinus carpio*)
Chain pickerel (*Esox niger*)
Common shiner (*Notropis cornutus*)
Creek chub (*Semotilus atromaculatus*)
Creek chubsucker (*Erimyzon oblongus*)
Fallfish (*Semotilus corporalis*)
Fathead minnow (*Pimephales promelas*)
Golden shiner (*Notemigonus crysoleucas*)
Goldfish (*Carassius auratus*)
Green sunfish (*Lepomis cyanellus*)
Largemouth bass (*Micropterus salmoides*)
Longnose dace (*Rhinicthys cataractae*)
* Longnose sucker (*Catastomus catastomus*)
Northern pike (*Esox lucius*)
Pumpkinseed (*Lepomis gibbosus*)
Rainbow trout (*Oncorhynchus mykiss*)
Redbreast sunfish (*Lepomis auritus*)
Redfin pickerel (*Esox americanus*)
Rock bass (*Ambloplites rupestris*)
Slimy sculpin (*Cottus cognatus*)
Smallmouth bass (*Micropterus dolomieu*)
Spottail shiner (*Notropis hudsonius*)
Tessellated darter (*Etheostoma olmstedi*)
Tiger muskellunge (*Esox lucius* x *Esox masquinongy*)
White sucker (*Catastomus commersoni*)
Yellow Bullhead (*Ameiurus natalis*)
Yellow perch (*Perca flavescens*)

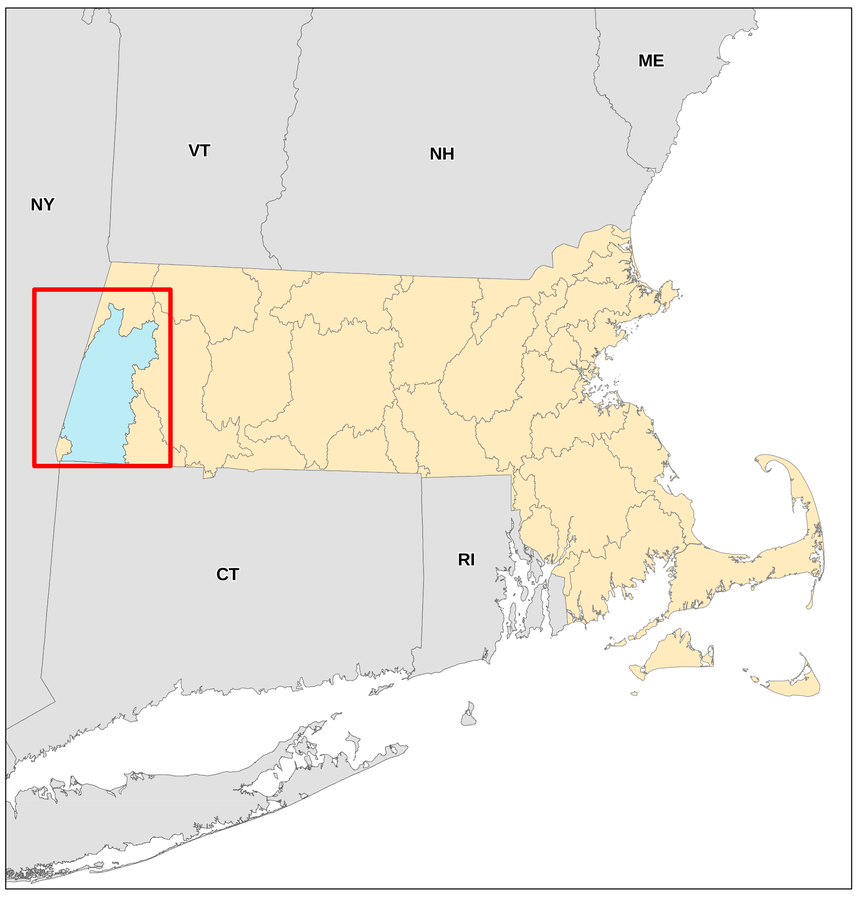
Sources: Division of Fisheries and Wildlife fisheries database and *Inland Fishes of Massachusetts* (Hartel et. al, 2002).

* Species protected pursuant to the MA Endangered Species Act

Appendix III. Coldwater Habitat

The Housatonic River, its branches and the following tributaries to the ROR, are either designated as coldwater or protected under the anti-degradation clause of the MA surface water quality standards (314 CMR 4.06).

Goose Pond Brook
Williams River
Green River
Hubbard Brook
Konkapot River
Ironwork Brook
Thomas & Palmer Brook
Mohawk Brook
Beartown Brook
Hop Brook
Washington Mt. Brook
Yokun Brook
Felton Brook
Mill Brook
Sackett Brook
Wahconah Falls Brook
Cleveland Brook
Bennett Brook
Cady Brook
Secum (Sechum) Brook
Town Brook
Smith Brook
Jacoby Brook



GIS Map (No. 1)-
Priority Habitat in the Housatonic Watershed

- Housatonic River and Branches
- NHESP Priority Habitats
- Lakes/Ponds
- Other Streams

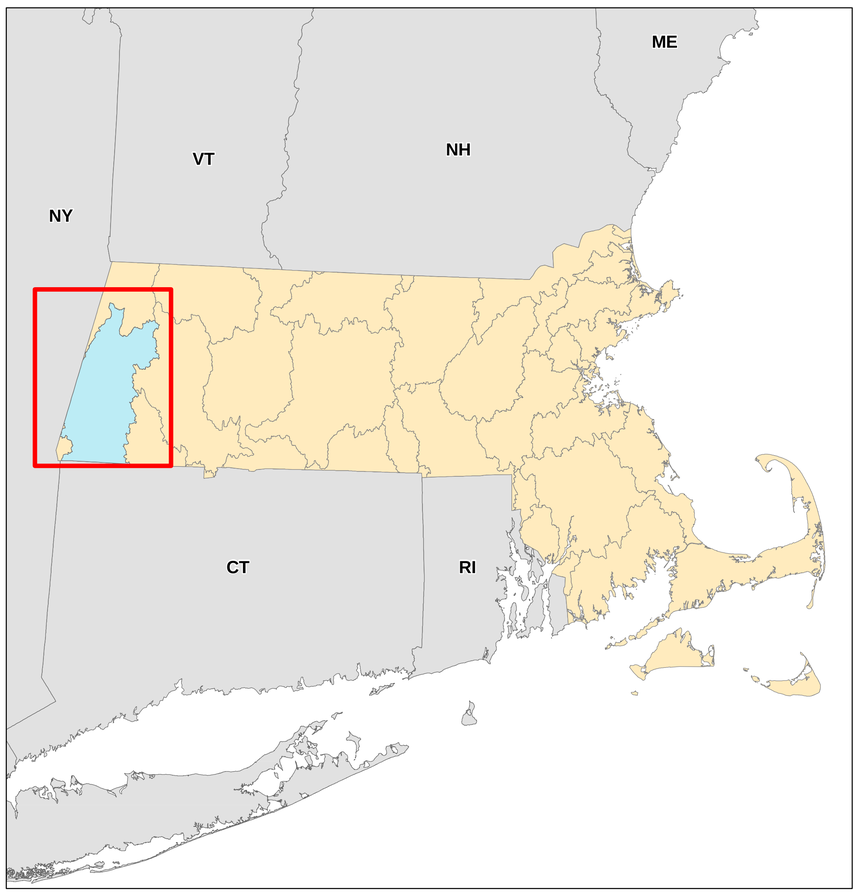
Print Date: May 9, 2008

WILLIAMSTOWN
FLORIDA
ADAMS
NEW ASHFORD
SAVOY
CHESHIRE
HANCOCK
LANESBOROUGH
WINDSOR
DALTON
West Branch
PITTSFIELD
East Branch
Southwest Branch
East Branch
HINSDALE
PERU
Southwest Branch
Housatonic River
WORTHINGTON
RICHMOND
LENOX
WASHINGTON
Wood's Pond Dam
MIDDLEFIELD
WEST STOCKBRIDGE
Housatonic River
STOCKBRIDGE
LEE
BECKET
CHESTER
ALFORD
Housatonic River
TYRINGHAM
GREAT BARRINGTON
OTIS
MONTEREY
BLANDFORD
EGREMONT
SANDISFIELD
GRANVILLE
SHEFFIELD
NEW MARLBOROUGH
MOUNT WASHINGTON
Housatonic River
TOLLAND
GRANVILLE

10
Kilometers
5
Miles

N

EXECUTIVE OFFICE of ENERGY & ENVIRONMENTAL AFFAIRS
Commonwealth of Massachusetts Department of Fish & Game
COMMONWEALTH of MASSACHUSETTS DIVISION of FISHERIES & WILDLIFE



GIS Map (No. 2)-
Coldwater Habitat in the Housatonic Watershed

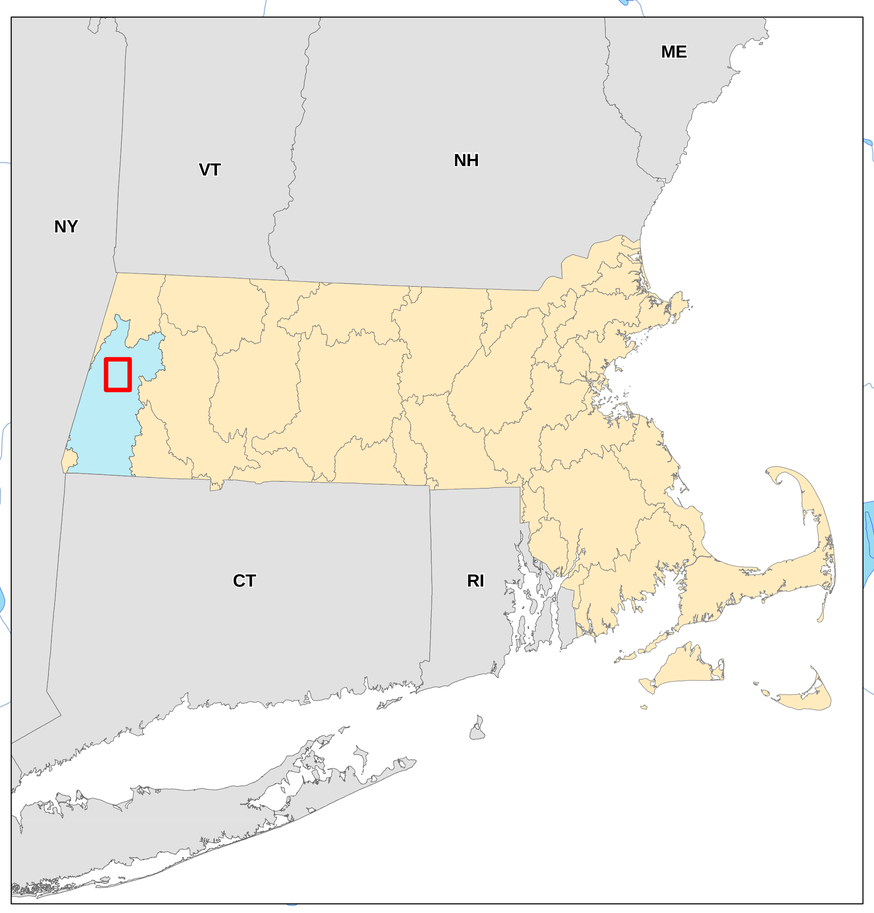
- Known Coldwater Habitat in the ROR and Its Direct Tributaries
- Other Known Coldwater Habitat in the Housatonic Watershed
- Other Streams **(some may contain coldwater habitat, which has not yet been confirmed)

Print Date: May 9, 2008

WILLIAMSTOWN
FLORIDA
ADAMS
NEW ASHFORD
SAVOY
CHESHIRE
HANCOCK
LANESBOROUGH
WINDSOR
DALTON
West Branch
CUMMINGTON
PITTSFIELD
East Branch
East Branch
HINSDALE
Sackett Brook
PERU
Housatonic River
WORTHINGTON
Mill Brook
Yokun Brook
RICHMOND
LENOX
WASHINGTON
Felton Brook
Wood's Pond Dam
Washington Mt. Brook
MIDDLEFIELD
WEST STOCKBRIDGE
Housatonic River
Williams River
STOCKBRIDGE
LEE
Mohawk Brook
Goose Pond Brook
BECKET
CHESTER
Beartown Brook
Hop Brook
ALFORD
Housatonic River
TYRINGHAM
GREAT BARRINGTON
Thomas & Palmer Brook
OTIS
Green River
MONTEREY
BLANDFORD
Konkapot River
EGREMONT
Hubbard Brook
Ironwork Brook
GRANVILLE
SANDISFIELD
SHEFFIELD
NEW MARLBOROUGH
MOUNT WASHINGTON
TOLLAND
Housatonic River
Konkapot River
GRANVILLE

10
Kilometers
5
Miles

N



GIS Map (No. 3)-
Rest-of-River (ROR) Reaches 5 and 6

George L. Darey Housatonic River Valley WMA

Housatonic River and Its Branches

Direct Coldwater Tributaries

Other Streams **(some may contain coldwater habitat, which has not yet been confirmed)

Print Date: May 12, 2008

West Branch

East Branch

Housatonic River

PITTSFIELD

Sackett Brook

Housatonic River

New Lenox Road

Yokun Brook

Canoe Access

Mill Brook

LENOX

WASHINGTON

Felton Brook

Wood's Pond Dam

Wood's Pond

LEE

Housatonic River

STOCKBRIDGE

1

Kilometers

1

Miles

N

B.E.A.T. Working with you to protect the environment of Berkshire County and beyond

May 20, 2008

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

RE: General Electric Company's Corrective Measures Study for the Housatonic River Site, Rest of River

Dear Ms. Svirsky,

Please accept these comments from the Berkshire Environmental Action Team, Inc. (BEAT) on General Electric Company's (GE) Corrective Measures Study (CMS) for the Housatonic River Site, Rest of River (ROR).

We are very disappointed with the CMS that GE presented for the ROR. Please either disapprove the CMS or apply conditions to dramatically change the structure of the CMS.

BEAT supports the comments made by Environmental Stewardship Concepts on behalf of the Housatonic River Initiative. Our comments will not address GE's CMS directly because we do not feel it deserves to be taken seriously. GE does not offer any options that we find acceptable. We agree with the Housatonic River Initiative that the goal of the CMS should be to return the Housatonic River to the people as a fishable, swimmable river.

BEAT feels very strongly that the first issue that must be dealt with is source control. We are pleased that the flows out of both Unkamet Brook and Silver lake are being measured, but measuring will just give us a better indication of how much contamination is continuing to flow into the Housatonic River upstream of the remediation that has been done thus far. In addition, the long-expired National Pollution Discharge Elimination System (NPDES) permit allows even more contamination to be released back into our river. The recent communication between GE and EPA shows that GE's attempts to contain LNAPL in the groundwater in the area of Unkamet Brook have not been entirely successful. We do understand that far less contamination is flowing into the river than there was 10 years ago. However, PCBs are persistent. We feel strongly that the known sources of PCBs entering the river should be stopped as quickly as possible.

BEAT will not be commenting on GE's CMS specifically, because we believe a fundamentally different approach should be taken. One that does not treat the river in nearly as uniform a manner, but instead looks at different areas in different ways given the ecological processes each area supports. This approach should be an iterative process employing adaptive management. That is, starting in one ecologically distinct area, best management procedures should be employed, possibly testing alternative technologies or strategies for restoration. Then a thorough evaluation should be conducted to determine what worked and what did not. Then the strategy for the next area should be adapted given what was learned. At each stage, public input should be solicited, because the people who live by or use an area have valuable insights to share.

It seems logical to start at the top (most upstream part) of the rest of the river, however a suggestion was made to possibly use Woods Pond as a temporary catch basin. BEAT believes this suggestion should be carefully evaluated. Perhaps suction dredging behind the dam at Woods Pond before any other remediation is attempted would increase the ability of this area to catch more PCB contaminated sediment while eliminating the threat of all the current contamination behind the dam from moving further downstream.

Each section chosen for remediation should use the best available methods and technologies for the given situation. The most promising alternative technologies could be carefully tested, monitored, and evaluated. Perhaps in some areas nothing would be done at this point in belief that in the near future an alternative technology would produce a much more desirable outcome and the amount of contamination that would move from the location in the meantime would be acceptable – especially if it could be contained or if it were captured further downstream.

While these treatments are being employed, the downstream effects should be carefully monitored, because even small changes upstream can have profound impacts downstream. Any restoration should not just be to make the river look like it did before, but to restore the ecological processes that were there before. That includes leaving the river in a condition that it can do what rivers do – meander back and forth in the floodplain.

After the remediation in a given stretch of river, the process and outcomes should be carefully evaluated and changes made based on those lessons learned. BEAT believes that the remediation in the ROR should advance the science of river remediation.

We realize that this approach may not give GE the closure that the company wants, but the company that did the polluting, not the citizens of all the communities downstream, should bear the consequences. To ease the uncertainty, a trust fund could be set up to fund future cleanup efforts.

Thank you for considering our comments.

Sincerely,

Jane Winn
Executive Director

BEAT ❀ 27 Highland Ave., Pittsfield, MA 01201 ❀ 413-230-7321 ❀ jane@thebeatnews.org

CITIZENS FOR PCB REMOVAL'S COMMENTS ON THE CMS
(HOUSATONIC RIVER "REST OF RIVER") AS PRESENTED BY GENERAL ELECTRIC COMPANY MARCH 2008

We write these comments as Community members whose initial involvement was generated out of concern, frustration, anger and alarm over the General Electric-generated PCB and other toxic chemical contamination in our own yards, gardens and homes, neighborhoods, school yards, and city, county and local state parks. It was then, and continues to be under our city streets and county roads, and in our ground water. GE's attitude at that time of "yes, its there, but it won't hurt you, and will go away by itself, therefore we really don't need to do anything about it" spawned several federal lawsuits, numerous public protests, multiple government forums, and widespread community outrage.

The so-called "science" of what GE has now presented as numerous options for "the Rest of the River" represents a similar approach for the Housatonic River Valley all the way to the ocean, and should be, and will be reacted to in a similar manner as above. It should be and must be completely rejected and discarded.

We write these comments as the actual human beings who have lived with the problems of contamination for decades; some since birth, others for varying portions of our lives. We write as people who have worked with PCB's or worked in PCB contaminated buildings or lived with PCB contaminated workers. We are people who have lived in PCB contaminated homes, lived in PCB saturated neighborhoods, played as children in PCB contaminated parks, schoolyards, and the River, itself. We attended or had our children attend PCB contaminated schools. We have lived near PCB contaminated dumps and landfills, eaten fruits and vegetables out of PCB contaminated soils and fish from contaminated ponds and rivers. We did all this innocently, victims; unaware of the dangers around us.

We write this as people who have suffered the consequences of this pervasive, inescapable saturation of toxic chemical contamination. We have watched as our grandparents, parents, siblings, spouses, children, friends, co-workers and neighbors have suffered and succumbed - <u>at higher rates than anywhere else in the Commonwealth of Massachusetts</u> - to aggressive cancers of all types.

And most of all, we write as victims of Cancer, ourselves. One of CPR's founding members is, at this moment, in a life and death battle with a rare but aggressive form of liver cancer.

We write on behalf of today's children and all future children and citizens of Berkshire County and beyond who have an inalienable RIGHT to a clean and safe environment, without fear of recontamination of so-called "cleaned" areas of our homes, neighborhoods, schools, playgrounds and parks, the River and beyond.

As our name implies, we have always advocated for the REMOVAL of PCB's and other contaminants, not the covering up nor landfilling of large concentrated amounts either in industrial sites, neighborhoods nor riverbanks. Neither do we advocate for the trucking of these poisons to other locations to become someone else's problem. **We very much support the SAFE treatment and detoxification of the contaminants in and around the river using less invasive, less destructive emerging technologies.**

We wish for this to be done in a thoughtful, community-involved approach, with as much concern for the integrity of the environment – the River and surrounding neighborhoods and communities as possible. Much like treating a cancer patient, we ask that it be kept paramount that we do not "kill the patient" while trying to extract the malignancy. In other words, that the dredge, haul, landfill and "cap" mentality give way *to methods that do not obliterate the river, riverbank, and floodplain ecosystems* while rendering them *truly clean.*

While we know that costs are a factor in this process, under no circumstances should it be the main consideration. Frankly, we have no sympathy for a company who could have done things the morally and ethically RIGHT way at the time, long ago, when it would have been, in the long run, much cheaper. Likewise, the costs of long term monitoring, and likely re-remediating, for both GE and the Government will be far greater in future dollars, than truly solving this problem by neutralizing the poisons, fully, now, in today's dollars. Furthermore, the benefit to the community in terms of attracting cutting edge new technology companies to the Berkshires, the profusion of highly skilled well-paying jobs they will provide, and the well-educated new blood these jobs will attract, is priceless. It can be one way to stem the exodus of our brightest, higher educated young people to greener – both literally and figuratively – pastures. Surely, the Government is in favor of a positive economic outcome for Berkshire County and Connecticut as well.

Finally, we insist that this approach be integrated with the past cleanup in such a way that ALL the unanswered questions of contamination sources be addressed honestly, fully, thoroughly, once and for all. This is the only logical and practical method. We view this as our last best chance to truly make this remediation the model for all future toxic cleanups in Massachusetts and the United States. Lets find a way to ALL work together to make this project the archetype purification of this watershed and its past.

<u>Executive Committee</u>:

Barbara Cianfarini	Thelma Barzottini	Gayle Gibbs
Charlie Cianfarini	Dave Gibbs	

TOWN OF LENOX
MASSACHUSETTS

TOWN HALL - 6 WALKER STREET
LENOX, MA 01240
PHONE: (413) 637-5500
FAX: (413) 637-5518
WWW.TOWNOFLENOX.COM

May 15, 2008

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

Dear Ms. Svirsky,

Thank you for attending the second forum recently sponsored by the Lenox Board of Selectmen and Board of Health. It was helpful to hear more about the proposed clean-up that GE has put forth and the process EPA will be going through to evaluate the CMS.

At our most recent meeting held last night, the Lenox Board of Selectmen voted unanimously to request that the EPA reject the Corrective Measures Study submitted by General Electric in March, 2008. We are extremely concerned that the proposed measures put forth will have a major negative impact on our community with too little gain in terms of truly cleaning up the PCB's in the Housatonic River and floodplain.

We find it unacceptable that there could be a new, permanent hazardous waste landfill constructed in our community. We wish to state in very clear terms that such a facility will be vigorously opposed. It makes no sense to us to purposely construct a new hazardous waste site when there are plenty of existing sites elsewhere.

The detrimental impacts on Lenox residential neighborhoods that result from the current clean-up scenarios are also not acceptable. The access to the river and floodplain in Lenox is either from New Lenox Road or through the village of Lenox Dale. Property values, which comprise a major part of a citizen's assets, will plummet and the ability to sell property in these areas will disappear with the prospect of years of living within a major "construction zone". The fact that these concerns are not considered as part of the decision process that EPA and GE go through in determining the clean up strategy is particularly bothersome.

We also want to voice our concerns about the potential impacts on our local infrastructure. The amount of truck traffic alone contemplated in the GE proposal would

wreak havoc on our local roads. We need guarantees that any damage caused to our infrastructure by the clean-up efforts will be repaired by the contractors.

The proposed corrective measures are all based on older techniques – dredging or covering – and fail to take advantage of innovative techniques that have been or will be developed. It will take many years to clean up the river. A mechanism must be put into place to allow for experimentation and alternative corrective measures to be utilized if and when they become available. We believe there should be a strong bias toward corrective measures which can be done without major excavation, hauling out contaminated materials and hauling in replacement materials.

The ability of local communities to have a meaningful voice in the decision making that takes place now and in the future must be preserved. We welcome this opportunity to comment on the initial proposal submitted by General Electric. We advocate for on-going opportunities as the process continues.

We look forward to future updates that you can provide us and our ability to provide critical guidance.

On behalf of Lenox Board of Selectmen,

Stephen Pavlosky, Chairman

Roscoe Sandlin, Clerk

Housatonic Valley Association
PROTECTING YOUR BACKYARD
www.hvatoday.org

In Connecticut and New York
150 Kent Road
P.O. Box 28
Cornwall Bridge, CT 06754
860-672-6678

In Massachusetts
1383 Pleasant Street
P.O. Box 251
South Lee, MA 01260
413-394-9796

May 19th, 2008

Susan Svirsky
Rest of River Project Manager
USEPA
c/o Weston Solution
10 Lyman Street
Pittsfield, MA 01201

RE: Corrective Measures Study

Dear Susan,

The Housatonic Valley Association (HVA) is dedicated solely to protecting the environmental health of the 2,000 square-mile watershed of the Housatonic River. HVA's mission is to save the natural character and health of our communities by protecting land and water throughout the watershed from the Berkshires through western Connecticut to Long Island Sound. Since the mid-seventies, HVA has been involved with the Housatonic River PCB contamination and remediation issue. We have participated in the many aspects of this issue throughout the years including the run-up to the Consent Decree and the design and implementation of restoration projects funded with National Resource Damages moneys. We have been members of the CCC since 1999 and we are a document repository. Our comments below regarding the Corrective Measures Study, set forth by General Electric (GE), state the guiding principals, preferred treatment alternatives and additional concerns of our organization.

I. Guiding Principals

While reviewing the remediation alternatives we developed guiding principles as to what we would like to see as the end result of remediation. These are: (1) Remediation should restore the river to a 'fishable[1]' and 'swimable[2]' waterbody. (2) Cleanup should be to the best ability of technology regardless of time, money and temporary aesthetic damage. A careful and thorough cleanup may require sacrificing short-term aesthetics and use of the area in order to protect this and future generations (both person and wildlife) by providing them with clean, safe and naturally beautiful river. (3) Post-remediation PCB concentrations should meet the lower range of IMPG concentrations. (4) The river should be able to flow and move as rivers naturally do. Therefore, enough bank and flood plain material must be removed to allow some meandering, rather than leaving contaminated material behind armored banks that prevent natural movement. (5) The risk of recontamination should be minimized.

II. Recommendations

Upon reviewing the CMS document, we have determined that the following alternatives will satisfy our overarching goals. However, we are open to any alternatives that meet our guiding principals.

1) In reaches 5 through 8, we prefer sediment options (SED) 5 and 6. These provide quicker remediation to the area to satisfy a 10-6 HH risk, as well as achieving a swimable, fishable river. The suggested alternative of SED 3 is composed of much Monitored

[1] We view fishable as a habitat able to consistently producing and support healthy fish consumable at a frequency of at least 15 times a year.
[2] We see swimable as a system that can support primary contact by humans.

Natural Recovery (MNR) and Thin-Layer Capping (TLC) which are not aggressive enough within reaches 5 through 8 to achieve our guiding principles. SED 5 and 6 also offer a reduced risk of recontamination (Figure 4-16a) as they use a combination of removal and capping.

2) For remediation in the Flood Plain, we believe alternative number 7 should be the preferred technique as it brings the HH risk to 10-6 and achieves the lower bound IMPGs. When access roadways are built, we would also like to see that the areas each accesses are fully remediated. Some alternatives only remove the most highly contaminated material, leaving behind a great deal of less contaminated soils. It would make more sense to remediate all contaminated material once the access roads are built and the machines are in place.
3) For the treatment and disposal of contaminated material, in the absence of an effective remedial technology, we support the use of an upland disposal landfill as long as it is located outside of the 100 year flood plain and is seen as a temporary solution with further remediation of stored material to be done as technology allows. Removal of this material could be done via the railroad. This removal option was discounted due to the cost of retrofitting the existing infrastructure. However, the increased truck traffic on local roads will increase the road maintenance budgets of the surrounding towns. We are also requesting that EPA consider revisiting the results of biogenesis when run four or five times. It seems possible that this process could reduce contamination in the material to a level that would allow the material to be reused. Costs associated with biogenesis and with road maintenance should be analyzed and compared with the upland disposal facility option to truly determine which alternative is more cost effective and which alternative assigns cost burdens to the correct party.
4) We also request that EPA consider the following:
    a. Make sure that the solution accounts for both global warming and increases in impervious surfaces that could affect flow velocities and 100 year flooding patterns.
    b. Factor in the real potential for dam removal in the future. The study was done assuming that dams such as Woods Pond and Rising Pond would remain in place forever. However, given the huge environmental movement toward dam removal and the potential for a breech if improperly maintained, we ask that the remediation be done in such a manner that removal or breech would not release large amounts of contaminants. In the event that any dams, including those in Connecticut, require maintenance that moves instream sediment, we ask that GE be required to test the material and remove contaminated material in advance.
    c. Use a phased approach to the remediation plan to allow newer and better technologies to be incorporated as they are discovered. The remediation should be held to a strict schedule, but build in regular periodic reevaluations as more advanced technologies are found, especially if they will limit the amount of destruction done to the site while still removing PCBs.

Thank you for this opportunity to comment.

Sincerely,

Marc Taylor

Lynn Werner

Marc Taylor, Board President

Lynn Werner, Executive Director

HOUSATONIC RIVER COMMISSION

"to coordinate on a regional basis the local management and protection of the Housatonic River Valley in northwestern Connecticut"

(860) 868-7341 17 SACKETT HILL ROAD • WARREN, CONNECTICUT 06754

May 19, 2008

Susan Svirsky, EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield, MA 01201

Re: Housatonic River Commission: Comments on the CMS and Preferred Remedial Alternative or set of alternatives (Preferred Alternatives) for the Housatonic River/GE/EPA Rest of River Remediation

Dear Ms. Svirsky:

I am writing to you on behalf of the Housatonic River Commission which represents the Towns of Canaan, Cornwall, Kent, New Milford, North Canaan, Salisbury and Sharon. The Housatonic River Commission would like to make the following comments on the recently released Corrective Measurers Proposal/Study (CMS).

Thank you for the extension of the public comment period. As a Commission made up entirely of volunteers, it takes time for us to review and respond to documents like the CMS.

From our perspective, the worst part of the CMS is the plan for dredging and landfills as a reasonable alternative for "clean up" of the prime wild and scenic areas of southern Massachusetts. We do not believe it is possible to do large scale dredging in the oxbows and fields north of Woods Pond and then restore the disturbed areas to any semblance of their existing condition. The construction of access roads, the introduction of heavy equipment and the removal of mature vegetation in these sensitive areas would be disastrous.

Where dredging is absolutely necessary, we urge the use of the nearby Housatonic Railroad to reduce the amount of truck traffic using local roads. Any landfills that are created should be considered as temporary.

The CMS approaches the clean-up with a one time, chiseled in stone plan. But, over the next decades, better remediation technologies will almost certainly become available. In addition, GE and the EPA will undoubtedly learn invaluable lessons from actually doing the Housatonic cleanup as well as cleanups on other Rivers. The CMS should approach the cleanup as an iterative process that learns from the cleanup experiences and incorporates new and better remediation technologies as they become available.

Another area of concern is that alternative remediation technologies are given short shrift in the CMS. There are no provisions in the CMS to try even small scale alternative technologies. We do not pretend to believe that all of the alternative technologies will prove effective. But, we do believe that alternative technologies deserve a fair chance to prove their worth.

Containment of existing contaminated sediment is needed to prevent spikes of PCBs in the Connecticut sections of the River as happened with the breach of the Rising Pond Dam. Reach 6 (Woods Pond Dam) would be a good place to work for that containment. A large containment area could be established where it would have a minimal impact on the area north of the dam. This is also an area where new technologies could be tested on site.

The proposed Alternative (SED 1 – SED 8) for Reaches 9 – 16 (all of Connecticut) of Monitored Natural Recovery (MNR) is inadequate. The River Commission would like to see deep core testing especially behind Connecticut dams. This testing is needed to assuage long standing concerns about sediments behind the dams. In addition, more extensive testing of the flood plains and other potential hot spots should be done. Finally, the CMS should include provisions for reevaluation if the MNR fails to continue lowering the PCB levels in Connecticut.

We look forward to the time when all the parties involved can declare the remediation a success and we can again fully enjoy our beautiful Housatonic River.

Sincerely,

William R. Tingley, Chairman

William R. Tingley, Chairman
Housatonic River Commission

cc: file, HRC, Area Legislators, NWCCOG

THE GENERAL COURT OF MASSACHUSETTS
STATE HOUSE, BOSTON 02133-1053

May 20, 2008

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

RE: EPA-GE HOUSATONIC RIVER SITE, CORRECTIVE MEASURES STUDY
PUBLIC COMMENTS

Dear Ms. Svirsky,

Please accept this letter as our strongest form of opposition to any cleanup plan for the Housatonic River "Rest of River" which includes a hazardous waste landfill anywhere within Berkshire County. Any cleanup or remediation plan that allows for contaminated soil to remain in our communities is unacceptable and should not be considered by the Environmental Protection Agency.

We also request that the EPA consider any and all remediation measures that take full advantage of new science and technology and include meaningful community input throughout the cleanup process. Any remediation plan that the EPA develops should truly address the entire "rest of the river" from the sources of its ongoing PCB contamination in Berkshire County to its outlet in the Long Island Sound.

We appreciate this opportunity to provide input to the EPA regarding this important river remediation and restoration and thank you in advance for considering our comments.

Sincerely,

Benjamin B. Downing
State Senator
Berkshire, Hampshire, and Franklin District

Christopher N. Speranzo
State Representative
3rd Berkshire District

Smitty Pignatelli
State Representative
4th Berkshire District

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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IAN A. BOWLES
Secretary

LAURIE BURT
Commissioner

MEMORANDUM

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

Subject**:** General Electric, Housatonic, Rest of River Remediation

Site No. GECD850; Comments on *Housatonic River – Rest of River – Corrective Measures Study*

Date: May 20, 2008

The Massachusetts Department of Environmental Protection (MassDEP) has reviewed the document titled: *Housatonic River – Rest of River – Corrective Measures Study* (the Report), dated March 2008 and prepared by ARCADIS BBL and QEA on behalf of the General Electric Company (GE). The Report contains a substantial amount of detail and MassDEP understands that a high level of detail and specificity about the implementation of the selected alternative can only be provided during the design phase. However, MassDEP finds that sufficient detail is lacking in a number of areas that seem critical to the full evaluation of alternatives and will allow the best alternative to be selected. Therefore, MassDEP recommends that the U.S. Environmental Protection Agency (EPA) require GE to submit a revised version of the Report, for public review and comment, that provides the necessary clarification and level of detail concerning a number of issues, before EPA selects any alternative(s). Requiring the submittal of a revised or supplemental report and allowing the public adequate time to review the additional detailed material to be contained in the report will allow the public more time to understand and evaluate the proposed alternatives and provide more informed and effective input on the merits and/or shortcomings of all of the evaluated alternatives. MassDEP believes that supplemental public outreach efforts in the form of additional, well advertised informal public meetings both during the new review period and following EPA's review of the public comments, but prior to its issuance of a conditional review letter, will both allow the public to better understand the pros and cons of all of the options and enhance the public dialogue with Berkshire County residents, many of whom have not been actively involved in earlier components of the evaluation and planning processes for the Rest of River site.

MassDEP offers for your consideration the comments that follow, which review the Report, evaluate the proposed alternatives, based on the information currently contained in the Report, and identify areas where additional detail and analyses seem merited. MassDEP's comments also focus particular attention on the Report's review and evaluation of state Applicable or Relevant and Appropriate Requirements (ARARs).

GENERAL COMMENTS

Although detailed and comprehensive in some areas, the Report lacks sufficient information for MassDEP to fully evaluate the true risks and impacts associated with each of the alternatives presented. In addition, the report deemphasizes some negative aspects (such as permanent habitat destruction, leaving behind contamination that will pose an ongoing risk to human health and biota for a very long period of time, etc.) and overemphasizes some positive aspects of what appears to be GE's preferred technology and Monitored Natural Recovery (MNR) (such as reduced acreage impacted, time to complete the project, etc.). With respect to more aggressive remedial technologies presented, the Report overemphasizes a number of negative aspects of some of the other technologies (such as cost, predicted worker deaths and injuries, short-term habitat destruction, perceived complications with acquiring the materials and having adequate techniques available to properly restore habitat and aesthetics, etc.). Some of these issues will be elaborated on further in the comments that follow. However, GE's approach does not appear to properly or equally balance all of the remedy selection factors. MassDEP therefore recommends that GE be required to present a more thorough and objective evaluation of all alternatives in a revised or supplemental report. While not endorsing any particular alternative at this time, MassDEP notes that any remedial alternative selected, including the more aggressive options beyond MNR, should address the serious concerns of the Massachusetts Division of Fisheries & Wildlife with respect to habitat, wildlife and rare species.

The Report is also deficient for its failure to comprehensively evaluate how each alternative will comply with the substantive requirements of the state ARARs. Insufficient information has been provided to be able to determine if there will be compliance with the ARARs, or whether ARAR waivers will be needed. While GE has asserted that several ARARs will be technically impracticable to meet, it has failed to include a thorough discussion of why this is so, making it impossible to evaluate its assertions in any meaningful way. GE defers to the design stage considerations that should be included at this stage, making its evaluation of the alternatives incomplete.

Cleanup that will be Compatible with the Requirements of the Massachusetts Contingency Plan

Under its Massachusetts Contingency Plan (MCP) regulations that govern cleanups at hazardous waste sites, Mass DEP favors remedial alternatives that remove and/or treat contamination, thereby permanently reducing risks to human and ecological receptors that are considered acceptable. For human health, a lifetime excess cancer risk of 10^{-5} and a non-cancer risk achieving a Hazard Index of 1 for reasonable maximum exposure (RME) assumptions are considered protective. For ecological risks, MassDEP considers those lower-bound Interim Media Protection Goals (IMPGs) that were developed by GE in its IMPG Report and based on EPA's Ecological Risk Assessment to be protective. Therefore, a combination of sediment, floodplain and disposal alternatives that achieves these risk-related goals for all defined exposure areas throughout the site, while at the same time taking into consideration the protection of rare species, the protection and/or in-kind restoration of sensitive and important habitat areas, and

maintaining existing river flow dynamics is considered best. An alternative meeting all of these criteria would allow the remediation project to meet the majority of state regulations, thereby eliminating the need for EPA to grant any waivers of Applicable of Relevant and Appropriate Requirements (ARARs) that would be difficult to justify for this project. The remedy should be designed so that temporary habitat alterations are minimized to the maximum extent possible. Bank stabilization measures should incorporate "soft" bioengineering and plantings with species specific to the site, to the maximum extent feasible, and channel restoration should focus on restoring existing channel characteristics and flow dynamics. Wetland and habitat restoration should be done in a manner that re-establishes existing habitat characteristics, species and functions. Treatment options should effectively reduce contaminant concentrations and disposal options should emphasize re-use.

Projected Times to Complete the Work

Although the projected time period for achieving most in-river work under the various alternatives seem comparable to those for the 0.5-Mile and 1.5-Miles Reaches, the times predicted to conduct the sediment removals in Woods Pond and Rising Pond under alternative SED 8 seem excessive - 11 years and 9 years, respectively, especially considering the more rapid construction rates shown for hydraulic dredging relative to removals "in the dry". GE should explain if removal rates are limited by the sizes of the staging areas necessary to allow the dewatering of the large volumes of sediment or by some other limiting factors. GE should also explore potential methodologies for enhancing production rates. In addition, if a dredging technology can be selected that minimizes the re-suspension of sediments during dredging and suspended sediment can be amply controlled to prevent downstream migration, GE may be able to considerably reduce the overall construction time for removals from impoundments in Reaches 6, 7, and 8 by performing simultaneous removals in several impoundments. Whereas performing work in a sequence from upstream to downstream locations is essential for the river reaches upstream of Woods Pond, such an approach may not be necessary for the downstream reaches, because reduced current flows in the impoundments should limit the amount of material the passes over the dams and any suspended sediment from work taking place in one impoundment is unlikely to make its way down to the next impoundment where work will occur. In addition, whereas remediation in the river channel is limited by the time needed to install and remove sheet pile to form individual cells in an upstream to downstream manner, the same constraints will not apply to the impoundments. Being able to complete remediation in Reaches 6 through 8 in a more expedited manner will also allow work to be completed well in advance of the predicted 51-year timeframe and will allow habitat areas to be restored considerably sooner.

Administrative and Institutional Controls

Under remedial alternatives such as MNR or thin-layer capping where contamination that does not meet risk-based standards will be left behind, uses of the river by humans and wildlife can be expected to impact these remedies by disturbing and re-suspending sediments that have been covered either by natural sedimentation process or thin-layer capping. Large fish, birds, or mammals may disturb sediments or thin-layer cap materials in pursuit of food, when nest-building or when crossing the river, and humans can be expected to wade in certain areas for swimming, fishing or when launching watercraft, or when dropping anchors, paddling or pushing off in shallow waters. In addition, any future utility maintenance or installation projects, or bridge maintenance projects that may occur, as well as any potential channel or impoundment maintenance activities associated with flood control or recreational/navigation purposes, could result in disturbance and re-suspension of contaminated sediments or transfer them to previously

remediated and/or upland areas. It would be difficult to effect or enforce institutional controls or restrictions on the river environment in perpetuity.

As for floodplain properties, as acknowledged in the Report, Grants of Environmental Restrictions and Easements (EREs) or Conditional Solutions would be necessary to prevent residential or agricultural uses from occurring on floodplain properties that do not meet cleanup levels.

Interim Media Protection Goals (IMPGs)

To determine the areas over which IMPGs for insectivorous mammals should be averaged, the investigators identified the area that would be required to sustain a "minimum viable population" of the mammal. This appears to be a novel approach that has not previously been presented in Housatonic River risk assessment reports. GE uses a minimum viable population for a related South American mammal and then adjusts that estimate to a less protective value with little justification. MassDEP does not believe this approach is valid for these reasons. First, the method used to estimate of the area required to sustain the minimum viable population is not rigorous and not justified. Second, the area required to sustain the minimum viable population is not relevant as an averaging area, because the individual members of the population do not necessarily range over such a large area. A sub-area could contain PCB concentrations that are toxic to mammals exposed at that location. Such an area should not be averaged with others that are essentially clean. To avoid underestimating risk, MassDEP believes that the averaging area for the insectivorous mammal should be the foraging area of a single individual rather than a population.

Thin-layer capping

Under some of the proposed sediment alternatives, GE's analysis provides the placement of a thin-layer (i.e., 6-inch) sand cap in certain lower-velocity portions of the river (i.e., Reach 5C), backwaters or impoundments. Placing an even, uniform layer of capping material may be problematic in the backwater areas that typically have dense mats of emergent aquatic vegetation. GE should provide more detail on how it plans to successfully place this cap in order to achieve a uniform cap of the proposed thickness.

In the Report, GE states that this cap may be placed in some backwater or other shallow areas such that it will create a new type of wetland with emergent (versus submergent) vegetation or completely fill in these water bodies and create a new terrestrial environment. GE states that it does not consider the creation of these new environments to be a negative impact. Permanently turning an aquatic environment/habitat into another type of wetland, or into a terrestrial environment/habitat, is something that would not be allowed under the Wetlands Protection Act Regulations (310 CMR 10.00) (one of the Applicable or Relevant and Appropriate Requirements, or ARARs). In addition, although not currently listed as an ARAR, the Waterways Regulations (310 CMR 9.00) do not allow permanent impacts to navigation in regulated waterways. The Wetlands Protection Act Regulations also require that channel carrying capacity not be impaired, but GE has not demonstrated how the placement of thin-layer caps will meet this criterion. Currently, these areas are navigable by kayak, canoe, and pontoon boat, but they would no longer be navigable under the proposed scenarios.

It is unclear how thin layer caps will be placed "in the wet" to prevent mixing with the underlying contaminated sediments. GE should clarify this.

Capping and Armoring

Based on recent experience with the pilot study in Silver Lake, it is unclear how GE will control turbidity that may arise during underwater placement of a organic-carbon-enhanced cap that is placed in areas of the river that are proposed to be capped "in the wet." GE should explain how it would address this issue.

MassDEP has several concerns with capping and armoring without excavation for certain sections of the river channel, Woods Pond and Rising Pond provided under some of the sediment removal alternatives. First, GE has not demonstrated how these changes to channel morphology and roughness will affect the river flow dynamics and it is not clear that the model has the ability to take this into account. Second, in areas of reduced and almost stagnant flow, like Woods Pond and Rising Pond, it is unclear why riprap needs to be placed, as cap material in these areas would not be expected to move under most flow regimes. Third, GE has not demonstrated how the placement of caps in unexcavated areas will meet the requirements of both the Wetlands Protection Act Regulations and the Waterways Regulations. For all of these reasons, MassDEP does not favor the placement of capping and armor without accompanying excavation to sequester contamination in certain portions of the river.

It is unclear how capping and heavy armoring materials will be placed "in the wet" to prevent mixing with the underlying contaminated sediments. GE should clarify this.

Excavation in the Dry

For most reaches where GE discusses removal of sediments under the various alternatives, GE explains the installation of sheetpile cells within the river and performance of the excavations under dry conditions, however, it is unclear if GE has performed the necessary geotechnical investigations, to date, to be sure that shallow depths to bedrock, such as those encountered in a section of the 1.5-Mile Reach Removal will not be encountered that will limit the use of this technique. In the revised or supplemental report, GE should explain whether these geotechnical investigations have been done and/or what other information was used to determine if sheetpiling can be driven into these sections of the river. If this information does not yet exist, GE should revise its time and cost estimates for sediment removals in Reach 5 to reflect the schedule and cost for completing work under the various sediment removal technologies using a wet-excavation approach.

Hydraulic Dredging

Typically hydraulic dredging has the potential to suspend much sediment during the dredging process. This could result in downstream transport of contaminated sediment as well as increased turbidity that could result in negative impacts to aquatic biota. GE proposes to install silt curtains to ameliorate this effect but these controls are usually less effective in areas with flow as opposed to more stagnant areas. Furthermore, with hydraulic dredging proposed to go on for a number of years in some of the impoundments under some of the alternatives, re-suspension and turbidity in those areas will also be a potential ongoing problem. In addition, some hydraulic dredging techniques allow much better re-suspension control than others. In order to better evaluate how removals using this technology will be performed in a manner that controls re-suspension and turbidity, GE should provide additional information concerning the hydraulic dredging technology that it plans to use and on its efficacy in

controlling these potential problems. Finally, although GE's analysis includes monitoring for turbidity during the dredging operations, it does not provide specific actions that will be taken to address this problem. The specific actions should be identified for agency review.

Bank Stabilization

GE notes in the Report that it does not consider overland flow from the floodplain to constitute a significant potential source of recontamination to the river. However, MassDEP realizes that the eroding back of banks, particularly along river meander bends, could act as an ongoing source of recontamination to river sediments over time, therefore some amount of riverbank stabilization seems merited. In association with any of the sediments alternatives that involve sediment removals in adjacent sections of the river channel, GE proposes the stabilization of "erodible banks" along a 7-mile stretch of river beginning at the confluence. However, the Report does not define which banks GE considers to be "erodible," nor does GE identify the locations where bank stabilization measures will be used. In the revised or supplemental report, GE should explain the criteria it used to define erodible banks and along which section of riverbank it proposes to stabilize the banks. Banks should be stabilized to the extent necessary to prevent erosional processes from recontaminating the river, but if feasible, certain areas should be left unstabilized to preserve potential habitat for bank-burrowing mammals and bank-nesting birds.

Since the placement of any stabilization structure will impact the erosional patterns and channel flow dynamics of the river, both the selection and placement of bank stabilization structures must be carefully evaluated. Soft bioengineered structures are preferred over hard structures (such as riprap) because of their ability to absorb and dissipate, rather than deflect flow energies.

GE proposes to cut back erodible banks to achieve stable slopes before installing revetment mats, armor, or bioengineered structures. GE proposes to install hard structures over 80% of the erodible banks and softer, bioengineered structures over only 20% of the banks. Even some of the bioengineered structures evaluated by GE are hard relative to the range of structures that could likely be installed at the site. However, the literature suggests that many banks can be successfully stabilized with bioengineered structures as long as the toe of the bioengineered banks is stabilized with a hard structure, such as riprap, that is keyed into the bottom of the channel as well as the upstream and downstream ends of the bioengineered section of bank, and slopes of 1:1 or 1.2:1 are attained. Bioengineered materials are selected to withstand the flows in the area between normal low and high water that would be experienced during a 2- to 10-year flood event.

A wider variety of bioengineered materials are available, most of which provide a more potential habitat value, a more natural appearance and greater enhancement of aesthetics than would be provided by the structure than provided by GE. Furthermore, bank stabilization project can sometimes be designed to preserve existing large trees. In addition, enhancements to habitat value and stabilization could be provided if the bioengineered structures were planted with suitable native vegetation. MassDEP notes that GE does not currently provide for planting much vegetation in its stabilized riverbank areas, but primarily wait for natural re-colonization processes to take place. MassDEP believes that these processes would operate too slowly and would also leave the areas open for potential colonization by invasive species, so a more active planting program is strongly recommended.

The Department recommends that GE be required to more fully investigate the use of bioengineered structures for purposes of bank stabilization and fully evaluate the impact of using any bank stabilization structure in those locations.

Mitigating or Avoiding Impacts to Habitats of State-Listed Rare Species and Other Significant Habitats

In the Report, GE acknowledges the presence at the Rest of River Site of some endangered plant and animal species that were identified in 2002 report by Woodlot Alternatives, Inc. (Woodlot) titled *Ecological Characterization of the Housatonic River* and attempts to determine those areas of the Site where proposed work may impact rare species under the different proposed remedial alternatives, although GE's focus appears to be on species that lie outside of the river channel in the floodplain. Of the 20 rare plants that were observed by Woodlot in the section of the river that extends from the confluence down to Woods Pond, 8 of these are not currently subject to regulatory protection (due to being watch-listed, de-listed, etc.). It is difficult comparing GE's plan with those of Woodlot (due to differences in scale) to determine exactly which areas containing rare state-listed plants may be impacted by the work, but it appears that under the FP4 alternative, rare plants species lie on or near the edges of proposed removals at 25 locations, and therefore, could be impacted by the work, although GE states in the Report that it anticipates that only 5 locations will be impacted by its proposed work.

Although the information contained in the Woodlot report is a good resource for making initial evaluations about potential impacts to state-listed rare species, it is important to note that Woodlot's data are over six years old, so the locations of rare plants within the site may have changed. Furthermore, the Massachusetts Natural Heritage and Endangered Species Program maintains and updates a list of all state-listed species that occur along the river in Berkshire County. NHESP's records list occurrences of a number of additional plant and animal species that are found in both the river channel and floodplain (including the vernal pools). These include the wood turtle, the Jefferson salamander, the marbled salamander, the four-toed salamander (currently proposed for de-listing), the longnose sucker, the creeper and the triangle floater (both species of mussels), the American bittern, the least bittern, the king rail, and several dragonflies. NHESP recently received a Natural Resource Damages (NRD) grant from the NRD Trustees (under the Consent Decree) to perform presence/absence and abundance surveys of rare species and their habitats along the Housatonic River. Fieldwork is expected to commence soon and this effort will provide additional information that GE should evaluate in a revised or supplemental report.

Work-related impacts to rare plant habitats are potentially more problematic than impacts to rare animal habitats, because individual plants or groups of plants are likely to be permanently destroyed. However, it would appear that such impacts can be avoided by redesigning staging areas and access roads to avoid these areas. In cases where the necessary remedial work provided under a particular remedial alternative for the floodplain is proposed to take place within one of these mapped rare plant areas, it is highly likely that removal areas can be modified to avoid impacting these areas, since the alternatives that propose cleanups to reach risk-related levels rely on averaging surficial concentrations over fairly large averaging areas.

Work-related impacts to the habitats of most state-listed animals may be avoided through sequencing the in-river construction schedule to avoid spawning periods (for example, for the long-nose sucker) or hibernation periods (for example, for the wood turtle). Work in vernal pools and other portions of the floodplain could similarly be sequenced to avoid breeding impacts to salamanders and wood turtles using

vernal pools and endangered species of birds using the floodplain for nesting. Considering that the FP 4 floodplain alternative is anticipated to take 4 years to complete, relative to construction schedules ranging from 10 to 38 years for remediating adjacent section of the river channel, there would appear to be ample time to allow floodplain construction activities to be sequenced around the breeding activities of rare, resident animal species and carefully limiting alterations to only those areas necessary in order to conduct the remediation. In addition, since some of the excavation areas in the floodplain are very small in size, especially those excavation areas in vernal pools, GE should evaluate using smaller excavating equipment in these areas to reduce the impact footprint of the work by reducing the sizes of the access roads and staging areas.

In the case of the rare species of mussels that are present in portions of Reaches 5A and 5C, in-river work will undoubtedly impact both the habitat and the species. Therefore, detailed plans to relocate these mussels would have to be developed well in advance of any work commencing in these areas. Successful mussel-relocation programs have been carried out effectively on other water bodies.

Re-vegetating work areas as soon as possible with indigenous plant communities and maintaining an ongoing invasive management plan will drastically reduce the likelihood that invasive plant species can get a stronghold in any of the work areas, but is especially important in the areas around sensitive and rare plant communities.

Wetlands and Habitat Restoration and Alteration

The Report places considerable emphasis on what GE considers to be long-term impacts to habitat and associated aesthetics for the more aggressive sediment and floodplain removal alternatives. However, GE has demonstrated in its restoration work for the 0.5-Mile Reach that, the vegetative community can be successfully restored in a relatively short time period. The restored vegetation in the 0.5-Mile Reach has been growing for only 6 to 9 years and the area is re-establishing well. Therefore, MassDEP believes that if restoration is carefully planned and implemented and restored areas are adequately monitored and maintained in the first few years after restoration, impressive regrowth can be achieved in relatively short periods of time.

GE also states that it anticipates some difficulty obtaining amounts of seed and plant materials in order to restore wetland and floodplain areas in the large areas that may be impacted by the implementation of the more aggressive sediment and floodplain alternatives. Furthermore, GE suggests that wetland restoration technologies are not yet well proven. MassDEP does not agree with these conclusions and believes that materials and proven methods exist for adequately restoring the impacted areas. However, restoring these area will require careful advance planning on GE's part, including performing inventories of the vegetation, soil composition and structure and hydraulic conditions in the areas to be restored and ordering and obtaining the necessary quantities of materials. Minimizing the sizes of the areas that must be altered will also diminish the burden of the size of the area that must be restored.

GE also emphasizes the magnitude of impact to vernal pools due to some of the more aggressive floodplain alternatives in terms to modifications to hydrologic budgets and associated modifications to plant communities. However, GE has already successfully demonstrated on one of the Phase 4 floodplain properties located just upstream of the confluence that it can successfully restore vernal pool habitat by the spring following the completion of the restoration project. Reestablishing the proper pre-alteration topography and planting vegetation for shade and cover seem to be key elements or restoration success.

If remedial and restoration work is carefully scheduled to avoid amphibian breeding seasons, and work in the area around the vernal pools is limited to that necessary to gain access to the pool, long-term impacts to the vernal pool habitat and the species using them should be greatly diminished, if not eliminated.

Access Roads and Staging Areas

For the construction of access roads and staging areas, the sediment remediation alternatives propose to alter between 9 and 48 acres of land in the floodplain and the floodplain alternatives propose to alter between 55 and somewhat over 59 acres of land in the floodplain. Although the text is somewhat unclear and the floodplain estimates are not expressed consistently, it appears that these acreage estimates represent separate, rather than combined, proposed alterations. Wherever possible, staging areas and access roads for both sediment and floodplain removals should be combined and should be constructed to be outside of sensitive habitat areas (rare species habitat, exemplary plant communities) and bordering vegetated wetlands. GE should reevaluate its proposed access road network (which has not yet been presented for agency review) in order to minimize the lengths and width of the roads and staging areas and to explore other access possibilities and equipment that might be less intrusive and require smaller impact footprints (i.e., limiting access roads to one bank, using temporary bridge crossings, using gravity-feed bypass pumping where feasible, using smaller cranes, trucks and excavators etc.).

Since all sediment alternatives other SED 1 and SED 2 require that the river channel be accessed in Reaches 5 and 6, there is very little difference in the acreages of floodplain that must be temporarily altered for the construction of access roads and staging areas for SED 3 through SED 8. Since GE has placed considerable emphasis on differences in the amounts of alterations for the different alternatives, MassDEP believes that it is important to emphasize this minimal difference for the implementation of the sediment alternatives that propose removal.

MassDEP would also recommend conducting any necessary tree or shrub removals prior to the nesting season, whenever feasible.

Any altered areas need to be actively restored to pre-existing conditions, rather than relying on more passive methods, such as allowing the slow process of natural succession to take place. Active restoration will allow the altered vegetative communities to recover considerably more quickly, as has already been evidenced in the restored areas within the 0.5-Mile Reach. Altered areas should be inventoried prior to the commencement of work, with restoration plans being tailored to the specific habitat and plant communities that have been altered. Initial reliance on the Woodlot report may be made to determine general vegetation types in the affected areas, but this information should be confirmed and supplemented on the basis of field reconnaissance by qualified botanists and wetlands biologists during the design phase.

The Report repeatedly states that soil compaction will occur in area of access roads and staging areas and that this may have permanent impacts on the vegetation in these areas. MassDEP believes that the compaction can be reversed using mechanical means and fully expects that all altered areas will be fully restored to pre-existing conditions in terms of soil characteristics, drainage, etc.

Dewatering Sediments and Floodplain Soils

The Report states that for sediment removals behind impoundments in Reach 7, the space available for staging areas for the gravity dewatering of sediments is very limited and, therefore, GE is proposing to use geotubes in order to dewater sediments. MassDEP recommends the evaluation of the use of geotubes for dewatering sediments to help reduce the size of staging areas for hydraulically-dredged sediments from Reach 5C, Woods Pond and Rising Pond.

For all of the dry-excavated sediments and floodplain soils, GE proposes to stockpile these materials and allow them to dewater under the influence of gravity. When such dewatering was performed on soils and sediments excavated from the upper 2 miles of the river and floodplain, gravity dewatering took place inside a building at the GE facility where this process could occur outside of the influence of periods of rain. Since excessively long dewatering periods could result in delays in moving the materials to the various treatment or disposal options, GE should explain how on-site gravity dewatering will be conducted in order to prevent these materials from becoming rewetted by precipitation.

Applicable or Relevant and Appropriate Requirements

Identification of Federal and State ARARs

GE appears to have provided a comprehensive list of ARARs for the Rest of River project, with the exception of M.G.L. c.91 and 310 CMR 9.00. The Massachusetts Waterways Law and the implementing regulations (M.G.L. c.91 and 310 CMR 9.00) should be addressed in the revised or supplemental report and GE should explain how the requirements under these regulations will be met by the proposed work or why a waiver of this ARAR is necessary and justified.

MassDEP has not identified any other ARARs that were not included on GE's list, however MassDEP reserves its rights to revise this comment should such identification be made in the future.

Specific Comments

1. Temporary staging areas for dewatering and handling of PCB-containing sediments. GE asserts that it is uncertain whether these staging areas would meet the default conditions of EPA's TSCA regulations at 40 CFR §761.65(c)(9)[1]. GE fails to include any discussion of this uncertainty, and leaves to the design

[1] (9) Bulk PCB remediation waste or PCB bulk product waste may be stored at the clean-up site or site of generation for 180 days subject to the following conditions: (i) The waste is placed in a pile designed and operated to control dispersal of the waste by wind, where necessary, by means other than wetting. (ii) The waste must not generate leachate through decomposition or other reactions.
(iii) The storage site must have: (A) A liner that is designed, constructed, and installed to prevent any migration of wastes off or through the liner into the adjacent subsurface soil, ground water or surface water at any time during the active life (including the closure period) of the storage site. The liner may be constructed of materials that may allow waste to migrate into the liner. The liner must be: (*1*) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to
which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation. (*2*) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift. (*3*) Installed to cover all surrounding earth likely to be in contact with the waste.

stage a determination that the staging areas would qualify for a risk-based approval pursuant to 40 CFR 761.61(c). GE should have included a discussion of what they see as the uncertainties, what the design problems might be, and how they could avoid them so that the staging areas would be compliant.

GE also asserts that these staging areas would not meet the requirements of RCRA for hazardous waste storage facilities because "it is not anticipated that waste pile staging areas would be constructed with the double liner/leachate collection systems…or that they would have groundwater monitoring systems…." The Report fails to include any discussion of why GE does not anticipate designing and constructing these areas such that they would comply, nor any discussion of why they could not be located such that they could comply. GE also contends that compliance may be location-dependent, but fails to include any discussion of potential locations for these staging areas so that their assertions can be properly evaluated.[2]

2. Discharge from Water Treatment facilities to the Housatonic River

GE asserts that because the receiving waters do not currently meet state water quality standards, it is not technically feasible for the discharge to meet those standards. The quality of the receiving waters should not impact GE's ability to comply with the substantive requirements applicable to the discharge. GE has not included any discussion of whether they would be able to meet the water quality standards at the point of discharge.

3. Treatment/Disposition of Removed Sediments and Soils

The CMS Report is deficient in its failure to consider transportation alternatives to trucking. With a rail line located proximal to the site, GE should be required to re-evaluate the use of the railways for transport of removed sediments and soils from the site.

4. Upland Disposal Facility – TD 3

This alternative cannot properly be evaluated without knowing the potential locations where it would be sited. GE should have included in the Report identification and analysis of all potential locations it would consider in siting this facility. The Report is therefore deficient. Until GE does this, a remedy decision that includes this alternative cannot be made.

TSCA Chemical Waste Landfill regulations

Rather than expressing uncertainty that the Upland Disposal Facility could meet the requirements of TSCA for siting and designing a chemical waste landfill, GE should have identified potential locations where a compliant facility could be designed and constructed, or stated that no such location exists. TSCA

(B) A cover that meets the requirements of paragraph (c)(9)(iii)(A) of this section, is installed to cover all of the stored waste likely to be contacted with precipitation, and is secured so as not to be functionally disabled by winds expected under normal seasonal meteorological conditions at the storage site. (C) A run-on control system designed, constructed, operated, and maintained such that: (*1*) It prevents flow onto the stored waste during peak discharge from at least a 25-year storm. (*2*) It collects and controls at least the water volume resulting from a 24-hour, 25-year storm. Collection and holding facilities (e.g., tanks or basins) must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system. (iv) The provisions of this paragraph may be modified under § 761.61(c).

[2] The comment applies equally to GE's evaluation of the floodplain alternatives, and their discussion therein of ARAR compliance.

contains specific requirements for soils at chemical waste landfills. *See* 40 CFR 761.75(b)(1). GE has failed to discuss whether there are potential locations for this facility that meet the requirements of TSCA.

GE should minimize the number of waivers they need by identifying now the possible locations for the Upland Disposal Facility. If GE did this, then EPA would better be able to evaluate whether this alternative should be considered appropriate, in light of its ability to comply with ARARs.

GE's evaluation of this alternative is too vague to enable a thorough analysis. GE has deferred to the design stage matters that should properly be addressed in the Report. For example, GE should have identified the specific requirements of 40 CFR 761.75 [pertaining to Chemical Waste Landfills] it believes will need to be waived, and the reasons why the alternative could not be designed to meet those requirements.

RCRA Hazardous Waste Landfill regulations

Applicability of EPA's Area of Contamination (AOC) Policy

If the wastes to be placed in the Upland Disposal Facility constitute hazardous waste, then GE intends to discuss with EPA the applicability of federal and state hazardous waste regulations. GE asserts, in footnote 179, that some of those requirements would not apply if the Upland Disposal Facility is considered within the same Area of Contamination as the excavated sediments and soils, such that under the AOC policy, the RCRA requirements would not be triggered, including minimum technology requirements. Although it is impossible to say with any certainty that this facility would not be within an AOC, because GE has not provided any location information, it is premature to discuss the application of this policy. Under the AOC policy, there is a focus on something that could be <u>considered</u> a landfill; with this alternative we are talking about an actual landfill.

ARAR waiver should be requested only if necessary, but GE should not ask EPA to narrow the universe of ARARs in order to avoid a waiver request and the need to justify the same. This appears to be what they have done with their discussion of AOC. EPA should consider placement of waste materials into a facility such as the Upland Disposal Facility as placement <u>into</u> such a facility, and not movement of waste <u>within</u> an existing facility. The Upland Disposal Facility is a discrete thing to be created; it does not exist as part of the existing area of contamination.

Construction of an Upland Disposal Facility

MassDEP would not permit a landfill for RCRA or TSCA waste that was not constructed with a double liner system, as required by the regulations. Therefore, if GE is intending that any such landfill would be designed and constructed not in compliance with applicable laws and regulations, then it needs to more fully describe why such design and construction would be technically impracticable. The Report falls considerably short of providing sufficient information or analysis relative to this issue.

GE could eliminate the uncertainty regarding compliance with ARARs by gearing its site selection to locations that would enable it to construct a compliant facility. Further, GE states that it does not anticipate designing and constructing this facility with a double liner/leachate collection system required for hazardous waste landfills, but fails to say why not. GE should provide reasons and justifications.

Short- and Long-Term Monitoring

For the various sediment alternatives, GE proposes to conduct post-construction monitoring over a 5-year period that will involve the visual inspection of thin-layer and armored cap materials, visual inspection of the stabilized riverbanks, and the collection of thin-layer cap samples for visual analysis. Changes to bank conditions, including bank stabilization structures, on a meandering river such as the Housatonic in Reaches 5 and 7 are unlikely to manifest themselves within a 5-year time period, particularly if major storm events do not occur during that time period. Considering the amount of riverbanks that may be stabilized and the currently unquantified impacts to the river flow dynamics that this may cause, MassDEP recommends that the monitoring period be extended for an number of years until GE can demonstrate that the banks and channel configuration remain stable. Theoretically, armor and capping that is part of the final remedy should be monitored in perpetuity.

Also for sediments, a 30-year, long-term monitoring period is proposed that will consist of yearly fish sampling, quarterly water-column sampling and one sampling round every 5 years for sediment analysis. MassDEP's Office of Research and Standards recommends that long-term monitoring of invertebrate and duck tissue be performed to ensure that the remedies are functioning as designed. If SED 1 and 2 were selected by EPA, MassDEP believes that long-term monitoring should be extended for some considerable period of time beyond the proposed 30-year period to ensure that the remedy is working as anticipated.

In the floodplain, GE proposes to undertake annual monitoring of restored areas of vegetation for a period of 3 years. Considering the magnitude of the proposed alterations to floodplain, vernal pool and wetland habitats, a 3-year monitoring period may be insufficient to ensure reestablishment of the temporarily altered habitats. A period of at least 5 years of monitoring is recommended, with the monitoring clock being reset each time GE must conduct substantial work to replant areas that do not show an appropriate amount of growth and vigor. MassDEP realizes that GE's detailed monitoring plan will be submitted during the design phase for the project, however, MassDEP expects that this plan will contain provisions to ensure that healthy, restored areas become established in as short a period as possible. Such provisions should include an active invasive management program, irrigation protocols, and a monitoring schedule and contingencies to address damage to vegetation due to disease and animal activity.

COMMENTS ON SPECIFIC ALTERNATIVES

SED 1/SED 2 Alternatives

These alternatives are essentially the same, the difference being that monitoring is included in SED 2. Since these alternatives propose no remediation to the river, the existing contamination will remain behind and continue to be eroded from erosional areas of the channel, especially during major storm events and continue to pose unacceptable risks to human health and biota. The monitored natural recovery (MNR) that GE provides as a remedial approach for the Rest of River site relies almost solely on the sequestering of more contaminated sediments under cleaner sediments over time.

SED 6 and SED 7 Alternatives

Although all sediment alternatives that propose removals achieve acceptable risk-based levels for human health, direct-contact exposures, the SED 6 alternative is the first sediment alternative that achieves acceptable risk-based levels for amphibians, insectivorous birds, piscivorous mammals and benthic

invertebrates in most subreaches of the river. However, since both the SED 6 and SED 7 alternatives rely on the use of thin-layer capping and capping without excavation in order to achieve these risk levels, MassDEP does not consider these alternatives, as presented, to adequately describe how they would meet the requirements of the ARARs.

SED 8 Alternative

Although additional time is required to remediate the river reaches in the SED 8 alternative, the majority of the time involves remediating Woods Pond and Rising Pond (11 years and 9 years, respectively). Remediation in the impoundments will likely have less impact on biota and habitat, since these areas are built up and biota can move around in the impoundments, or upstream, if necessary. Therefore, it appears that GE may be overemphasizing the differences between the impacts for the alternatives. A single area will not experience exponential impacts and the impact over the entire remediation area and the time for that impact cannot be translated into a cumulative long-term impact at any one location.

Sediment sampling data for Woods Pond and Rising Pond indicate that the proposed 6-foot and 7-foot removals (for Woods Pond and Rising Pond, respectively) will remove most sediments with concentrations greater than 1 ppm, with the majority of the sediments below those depth intervals ranging from under 1 ppm down to non-detect. The western half of Woods Pond and the channel area contains very shallow water depths (less than 4 feet), which can make navigation by canoe or kayak and full recreational use of the pond difficult during the drier months. This alternative involves backfilling all excavated areas behind dams areas to current bottom elevations. Where possible, behind any of the impoundments and where residual PCB concentrations allow, GE should be required to investigate the possibility of backfilling less, so that the overall depths of these impoundments are increased. This would provide several benefits: allowing increased recreational use, providing a buffer for storage of any sediments that may be washed downstream during major storm event, increasing the diversity of habitat for fish, preventing the need for any further dredging for navigational/recreational purposes in the future, and reducing the amount of backfill material and associated labor time and costs that would be required to transport and place this material. GE should factor these time and materials savings into its calculation of estimated costs, time to complete the alternative and number of truckloads entering the site.

The SED 8 alternative proposes to remove sediments from behind all of the existing dams between Woods Pond headwaters and Rising Pond Dam. The SED 8 alternative provides the best remedy for addressing the potential future removals of these dams, because it will remove the majority of PCB-contaminated sediments in these locations. In addition, it would be beneficial to the implementation of any future dams removals if GE could run the model to account for anticipated sediment transport and the resultant distribution of contamination in Reach 7 that would result from both the proposed sediment removals behind these dams and the removal of these dams. All of the other proposed remedies do not address contamination behind these dams through sediment removal and rely on the continued existence and proper maintenance of these dams. Any sediment alternative that does not include sediment removal behind these dams, would necessitate that GE to re-evaluate post-dam-removal conditions and undertake any necessary removals at the time when dam removals would be undertaken.

The SED 8 alternative removes the highest PCB mass, 54,500 lbs, from the river, making this mass of PCBs permanently unavailable for re-suspension and exposures to humans and biota.

None of the sediment removal alternatives will result in fish concentrations that will allow unlimited human consumption of fish taken from all reaches of the river (i.e., 50 meals annually) in periods of less than 250 years, although no subsistence fishing has been documented for the Massachusetts portions of the Housatonic River. However, SED 8 does show a substantial increase in risk-reduction benefits for fish consumption at Central Tendency Exposure (or average) consumption levels of 14 meals per year in more reaches of the river than is provided by all of the other sediment alternatives.

In order to allow a more comprehensive evaluation of all of the alternatives and considering the magnitude of the additional sediment removals proposed under the SED 8 alternative, GE should explain why the SED 8 alternative will not result in the lower-end IMPGs being attained for benthic invertebrates in Reach 7C or in the lower-end IMPGs being attained for consumption of fish by piscivorous birds in Reach 7B.

GE argues that the cumulative impacts to wildlife under more aggressive sediment removal alternatives, such as SED 8, will be considerably greater than the impacts of alternatives proposing less sediment removal and suggests that these cumulative impacts will be felt by biota throughout Reaches 5 through 8 over the entire 51-year construction period. Although the times to complete remediation of each subreach are greatest under SED 8, they are not substantially greater than for the lesser alternatives, with most of the additional construction time being attributed to sediment removals in Rising Pond and Woods Pond. In addition, impacts to biota are expected to be experienced only on a reach-specific basis for the duration of time that work is occurring in their immediate habitat. Therefore, MassDEP does not concur with GE's conclusion that biota will experience a substantially greater, and more traumatic, long-term cumulative impact under SED 8 than under the other removal scenarios.

Relative to SED 8, GE also states that it questions its ability to obtain the large quantities of backfill material needed for that alternative well into the future. However, GE should evaluate if treated soils and sediments may provide the needed backfill materials.

Under SED 8, if clean backfill materials are used, MassDEP recommends that the sediments neither be capped nor armored, since the residual levels would not pose a direct contact risk for humans or a risk for biota. This approach would reestablish a more natural river bottom in a shorter period of time and would provide an ongoing source of bedload materials and maintain existing channel roughness to maintain proper and pre-existing river flows. This would be particularly important if one of the ongoing sediment sources, the riverbanks are stabilized to prevent erosion.

FP1 through FP 3 Alternatives

These alternatives do not achieve the necessary risk-based IMPGs for human health direct contact or biota.

FP 4 Alternative

This is the first floodplain alternative that attains a lifetime excess cancer risk of 10^{-5} and a non-cancer risk and a Hazard Index of 1 for reasonable maximum exposure (RME) assumptions, so it is considered to be protective of human health recreational exposures, including those in high-use areas and for the consumption of agricultural products on existing farms with the imposition of an ERE on these properties to restrict future uses and changes in use. However, this alternative does not achieve the lower bound IMPGs for amphibians, insectivorous birds or piscivorous mammals that MassDEP considers to be

acceptable risk levels. However, the additional removals that are proposed to address biota that are shown for the FP 7 alternative would adequately address ecorisk concerns. Therefore, MassDEP recommends an evaluation of incorporating those portions of the biota-based removal areas depicted on Figure 6-6 to the removals shown on Figure 6-4. The resulting removal extents would only be slightly greater than those depicted on Figure 6-4 and would provide the necessary level of protection for both humans and wildlife.

FP 5 and FP6 Alternatives

These alternatives do not meet a condition of no significant risk for either human health or biota. In addition, FP 6 proposes to alter considerably more area of wetland and floodplain that does FP 4, yet without achieving the necessary risk-based goals.

FP 7 Alternative

This alternative achieves the necessary risk-based goals for biota and a lifetime excess cancer risk of 10^{-6} and a non-cancer risk and a Hazard Index of 1 for reasonable maximum exposure (RME) assumptions. However, it proposes to alter considerably greater quantities of both wetland and floodplain areas for both soil removals and the construction of access roads and staging areas.

Chemical Extraction (TD 4)

This alternative is unable to achieve low PCB concentrations in the treated materials to allow reuse at the site and generates large quantities of wastewater by the treatment process.

Thermal Desorption (TD 5)

This is a proven technology that has the ability to treat contaminated soil and sediment with high concentrations of PCBs to low concentrations that will permit on-site re-use in the floodplain and possibly also within the river channel as backfill. It has the added advantage that it reduces the volume of contaminated material that will require disposal and it also has the ability to destroy PCBs if an afterburner or gas-phase chemical reduction process is used. GE cites the high-moisture and clay content of sediments as being problematic, because this can clump and reduce the throughput efficiency. However, the literature suggests that this problem can be overcome by using a unit that has been fitted with a screen to remove large objects and debris and a shredder to break up clumps. High moisture content could also be considered to be prohibitive in terms of the heat expenditure that is necessary to volatilize the contaminants. However, thermal desorption units can handle feedstocks with moisture contents up to 20%. Since excavated soils and sediments would have to be dewatered to levels that are essentially dry (i.e., which pass the paint filter test) for acceptance at a landfill, soils and sediments with 20% moisture content would appear to require less dewatering than soils passing the paint filter test, so it would appear that these materials could be adequately dewatered on-site under the processes that GE is already proposing.

Confined Disposal Facility (TD 2)

This disposal option, as presented, permanently alters wildlife habitat and current recreational uses of both the river channel and Woods Pond, will degrade the aesthetics of the areas for recreational users, poses a long-term risk of recontaminating the river if it is not properly monitored and maintained over the

long-term, and cannot be designed to meet the requirements of either the Wetlands Protection Act Regulations or the Waterways Regulations.

Disposal in Permitted Off-site Landfills (TD 1) and TD 3 Upland Disposal Facility

As stated above, under the ARAR evaluation, there is not sufficient information regarding an upland disposal facility to provide further comment.

EDITORIAL COMMENTS AND CLARIFICATIONS

On page 5-1, second paragraph, last sentence: the 95% UCL should be defined as the "upper confidence limit" and not the "upper concentration limit."

The various graphs showing model predictions of PCB concentrations in sediments and surface water over time under the various sediments alternatives show some unusual trends such as rebounds in concentrations for sediments and fluctuations in concentrations for surface water. To assist reviewers in interpreting the modeling results in the context of evaluating the various sediment removal alternatives, it would be helpful if GE were to provide an explanation for these trends in the text, to the extent possible.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND
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Massachusetts Department of Agricultural Resources

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Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

DOUGLAS W. PETERSEN
Commissioner

May 20, 2008

By Hand Delivery
Robert W. Varney
Regional Administrator
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114-2023

Re: Comments from the Massachusetts Department of Agricultural Resources on the Housatonic River – Rest of the River Corrective Measure Study

Dear Mr. Varney:

The Massachusetts Department of Agricultural Resources (DAR) is pleased to submit these comments to the Environmental Protection Agency (EPA) in connection with the Housatonic River – Rest of River – Corrective Measures Study (CMS), dated March 2008 and prepared on behalf of the General Electric Company (GE). DAR agrees with the comments that have been submitted by the Massachusetts Department of Fish and Game (DFG) and the Massachusetts Department of Environmental Protection (DEP), as well as the Massachusetts Department of Conservation and Recreation (DCR), and writes to provide further comments with respect to the cleanup of the Rest of the River (ROR) area and its potential impacts to DAR's Agricultural Preservation Restrictions (APR) properties along the Housatonic River.

The Department of Agricultural Resources Agricultural Preservation Restriction program provides for the protection, in perpetuity, of working farmland and landscapes with prime, state and locally important soils. DAR's purpose in part is to ensure a ready and available food source and to maintain a vibrant agricultural economy within the Commonwealth. To that end, the APR program seeks to keep the land available, viable and affordable for landowners to continue agriculture activity and use into the future. This land is a finite resource and must be steadfastly protected to ensure its availability for agricultural use for generations to come. Because DAR's responsibility is to preserve and protect this agricultural land, including soils, from any activity detrimental to agriculture, DAR has a substantial interest in the corrective measures being evaluated for the ROR.

The Department of Agricultural Resources has identified at least nine APR properties along the Housatonic River corridor. These properties include: the 110-acre Noble APR located in Pittsfield Massachusetts; a 141-acre APR located in Lee; two restricted properties totaling 473 acres in Great Barrington; and four APR properties consisting of 654 acres located in Sheffield. These farm properties represent some of the finest agricultural resources in the

Commonwealth and include amongst their agricultural endeavors the raising of commercial livestock, forage crops and commercial vegetables. DAR is also currently considering the acquisition of additional restrictions in the ROR area of the Housatonic River for its APR program. DAR therefore has a significant interest in ensuring that any cleanup activities implemented in the ROR avoid potential negative impacts to current and future agricultural activities on the above referenced properties.[1] Any remedy must minimize the potential impact to our valuable agricultural land resources, which are an intricate part of the Berkshire economy and beautiful scenic landscape, and any impacts that cannot be avoided must be addressed through a comprehensive mitigation process. Unfortunately, the CMS prepared by GE does not allow us to sufficiently evaluate these considerations at this time.

DAR strongly supports the concerns raised by the Massachusetts DEP, DFG, and DCR that more information is needed to fully evaluate the alternatives presented in GE's corrective measures study. We therefore join DEP, DFG and DCR's request for a supplemental CMS report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the Massachusetts environmental agencies, including our concerns about impacts to agricultural interests.

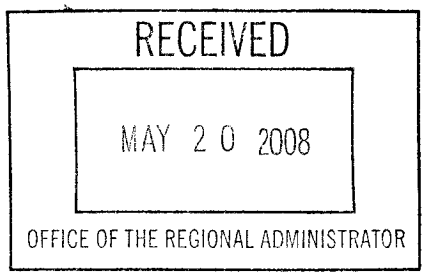
DAR commends EPA for the work that has been done on this important matter, and I thank you for considering our comments.

Sincerely,

Douglas W. Petersen, Commissioner
Department of Agricultural Resources

[1] DAR also notes that several of the APR properties have involvement and rights with our Federal partners at USDA's Natural Resource Conservation Service, through its Farm and Ranch Lands Protection program.

dcr
Massachusetts



May 20, 2008

Via Hand Delivery
Robert W. Varney
Regional Administrator
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114-2023

RE: Comments of the Massachusetts Department of Conservation and Recreation on the Housatonic River – Rest of River Corrective Measures Study (March, 2008), prepared by General Electric Company

Dear Mr. Varney:

The Commonwealth of Massachusetts Department of Conservation and Recreation ("DCR"), is pleased to submit these comments to the Environmental Protection Agency (EPA) in connection with the Housatonic River – Rest of River – Corrective Measures Study (the Report), dated March 2008 and prepared on behalf of the General Electric Company (GE). The Report outlines the conditions under which GE proposes to remediate the "Rest of River" ("ROR") area, which is delineated as the downstream portion of the Housatonic River from the confluence of the East and West Branches in Pittsfield in Berkshire County, Massachusetts, to Long Island Sound in Connecticut.

The historical and environmental background for the Report is more particularly described in the comment letters submitted by the Massachusetts Departments of Environmental Protection (MassDEP) and Fish and Game (DFG). Upon review of the Report and comments by MassDEP and DFG, DCR has identified that it is the owner of a 23.6 acre parcel of land that is situated within Beartown State Forest, off Meadow Street (Route 102) in South Lee, and therefore within the ROR area. Additionally, DCR has identified three dams within the ROR area that are subject to regulation by DCR pursuant to G. L. c. 253, §§ 44-48 and DCR's Dam Safety Regulations set forth at 302 CMR 10.00. In light of DCR's authority and duty to exercise general care and oversight of the Commonwealth's natural resources and regulate dams within the Commonwealth, DCR has a direct and substantial interest in the ROR cleanup. Accordingly, DCR submits these comments in support of the concerns and observations raised by MassDEP and DFG; and requests EPA to require GE to develop a supplemental CMS Report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the environmental agencies.

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

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Richard K. Sullivan, Jr., Commissioner
Department of Conservation & Recreation

I. Mitigating or Avoiding Impacts to Habitats of State-Listed Rare Species and Other Significant Habitats

As noted above, DCR owns a certain 23.6 acre parcel of land within the Beartown State Forest, which is situated along the Housatonic River, and downstream of the confluence of the East and West Branches on the south side of the Housatonic River in Pittsfield, MA (ROR). DCR's ownership interest in the Beartown property is in keeping with its statutory authority to exercise general care and oversight of the natural resources of the commonwealth and adjacent waters. See G. L. c. 21, § 1. DCR is also responsible for acquiring and maintaining land and water areas for conservation purposes within the state parks under G. L c. 184, §§ 31-33, and G. L. c. 132A, §§ 2A, 3 and 3A.

The Beartown property is situated entirely within the floodplain and consists of a mixture of open wet meadow, open fields, a floodplain forest and an oxbow, which is a unique feature of the property that should be maintained or otherwise restored as part of any remediation of this parcel. This parcel is within a priority habitat for rare species and estimated habitat for rare wildlife. This parcel also supports various non-native invasive plant species such as barberry, honeysuckle and multiflora rose. Consistent with the concerns raised by DFG, we urge EPA to fashion remediation measures that avoids any impact to these species and related habitats; and prevents the spread of these non-native invasive plant species. Moreover, given DCR's interest in the preservation of its habitat species, DCR endorses DFG and MassDEP's request that EPA's selected ROR remedy be based on a more thorough analysis of the alternatives in the CMS that would minimize or mitigate any temporary and permanent impacts to these identified habitat species.

II. Mitigating or Avoiding Impacts to Environmental Contaminants at the Dams

In addition to the foregoing, DCR has identified the following dams within the ROR area that are subject to DCR jurisdiction:

Rising Paper Co. Dam, owned by Neenah Paper, Inc. in Great Barrington, MA;
Columbia Mill, owned by Schwitzer-Mauduit, Inc. in Lee, MA; and
Woods Pond Dam, owned by General Electric Co., in Lee, MA.

In keeping with its authority under G. L. c. 253, §§ 44-48 and DCR's Dam Safety Regulations set forth at 302 CMR 10.00, DCR's Office of Dam Safety (ODS) issued a Certificate of Non-Compliance and Dam Safety Orders to Schwitzer-Mauduit, Inc., advising the owner that its

Columbia Mill dam is unsafe and has serious structural deficiencies. The Certificate and Order accordingly requires the owner to take actions to bring the dam into compliance with DCR's dam safety regulations. To address the structural deficiencies, DCR anticipates that the Columbia Mill dam will require significant structural work or will need to be breached. DCR further notes that while the other two dams are currently considered safe, they will nevertheless require structural repairs or need to be breached in the future. Such activities are likely to face significant scrutiny and impediments given the overall concern that these dams are likely to contain PCB laden silt behind them. The remedial design of any remedial alternative ultimately selected for the ROR needs to keep these dam safety considerations in mind. These concerns are consistent with MassDEP's request that GE's CMS adequately address any future utility maintenance, installation projects, bridge maintenance projects or channel or impoundment maintenance activities to minimize the impacts of any potential disturbance and re-suspension of contaminated sediments during any of these activities.

Based on the foregoing, DCR requests EPA to require GE to develop a supplemental CMS Report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the Massachusetts environmental agencies. Thank you for soliciting our input on the CMS Report, and for your consideration of our comment letters.

Sincerely yours,

Richard K. Sullivan, Jr.
Commissioner

cc: Ian Bowles, Secretary of Energy and Environmental Affairs
Susan Svirsky, EPA Region 1
EPA contact for submittal of comments
Laurie Burt, Commissioner, MassDEP
Mary Griffin, Commissioner, Mass DFG

Mass Audubon
Protecting the Nature of Massachusetts

May 20, 2008

Susan Svirsky
Rest of River Project Manager
U.S. Environmental Protection Agency
10 Lyman Street
Pittsfield, MA 01201

Re: Comments on General Electric Corrective Measures Study for Housatonic "Rest of River"

Dear Ms. Svirsky:

On behalf of the Massachusetts Audubon Society I submit the following comments on the Corrective Measures Study (CMS) for the Housatonic River – Rest of River released by General Electric in March 2008. As the second largest landowner within the Primary Study Area (PSA) we appreciate the willingness of the Environmental Protection Agency (EPA) to accept informal public comments as well as to extend the period for public comment to sixty days to allow for a more detailed "informal" review of the CMS.

The following is a summary of the key points that are raised in our comment letter below, and which we request be addressed in a Supplemental CMS:

1. Mass Audubon has a direct and substantial interest in the proposed cleanup both as the second largest affected landowner within the PSA and as a conservation organization whose mission is protecting the nature of Massachusetts for people and for wildlife. Mass Audubon strongly supports the clean up of the Housatonic River in order to reduce PCB concentrations to acceptable levels for humans and wildlife.

2. The CMS contains insufficient information to evaluate the feasibility and cost of restoration of remediated areas. Given the sensitivity of the habitat along the Housatonic River and its floodplain, GE must be held to accordingly high standards for this clean up, which should begin with avoidance and minimization of adverse impacts to critical habitats. Where there is no alternative but to destroy habitats, restoration of affected areas to fully functional habitats must be required by EPA. Further information and analysis of restoration options through a Supplemental CMS is needed prior to identification of a recommended clean up alternative by EPA.

3. Proposed armoring of the riverbank in Reach 5 will have permanent, unacceptable impacts on critical habitat features such as wildlife dens and mature trees, and will fundamentally alter the riverine/floodplain system. More creative remediation and restoration alternatives should be identified and evaluated by GE in a Supplemental CMS.

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4. EPA should ensure that appropriate financial and institutional mechanisms (e.g. escrow or other guaranteed funds) are in place to ensure that all restoration activities are fully implemented and monitored in perpetuity.

5. Adaptive management should be applied to the Housatonic River clean up, with flexibility to adjust remediation and restoration methods over time based on experience and evolving techniques. GE and EPA should give consideration to permitting a "demonstration phase" of the clean up south of the confluence which would employ state of the art restoration techniques and provide time for evaluation of the results before proceeding with the remainder of the clean up.

6. Further evaluation of compliance with state regulations is needed, particularly in relationship to the Massachusetts Endangered Species Act and Wetlands Protection Act.

7. Additional site-specific information is needed regarding floodplain remediation at Canoe Meadows Wildlife Sanctuary, remediation of vernal pools, construction of access roads and staging areas, use of the rail line for hauling materials and alternatives to the permanent landfilling of PCBs in proximity to the River.

8. GE should compensate affected landowners for the short and long-term harm to public recreational use of lands and waters that will be affected by the clean up as well as for any long term resource damage that will result. In addition, we expect GE to provide compensation for the significant direct costs incurred by Mass Audubon for staff and consultant review and oversight of this project.

I. Mass Audubon's Land Interests within the Primary Study Area

Mass Audubon owns and operates the 262-acre Canoe Meadows Wildlife Sanctuary, located in the City of Pittsfield within reach 5A, approximately one mile downstream from the confluence of the East and West branches of the Housatonic River. Mass Audubon's property is located primarily to the south of the Holmes Road Bridge, although a small portion of the sanctuary is located north of the bridge along the River. Canoe Meadows contains approximately 3,000 linear feet of frontage on the Housatonic River and includes approximately 2.6 acres of land under the Housatonic River.

Since its establishment in 1975, Canoe Meadows has been dedicated to wildlife habitat conservation and public education. Trails in the sanctuary are used extensively by the public for passive recreation and wildlife appreciation and for group programs, including the Sacred Way Trail which is located partially in the floodplain in proximity to the Housatonic River. Mass Audubon regularly conducts canoe programs for children and adults along the River. Because of concerns about PCB contamination in these areas, Mass Audubon has posted signs at the sanctuary that warn visitors about the presence of PCB contamination and provide advice about limiting exposure to PCB contamination.

The ecological characteristics of Canoe Meadows Wildlife Sanctuary are unusual in Massachusetts. The calcium-rich bedrock underlying the Housatonic Valley has given rise to especially fertile floodplain soils that support a uniquely high concentration of rare or uncommon species. The sanctuary alone provides habitat for at least seven state-listed rare species, including American Bittern (Endangered), a

breeding population of Wood Turtle (Special Concern), Bristly Buttercup (Threatened), and White Adder's-mouth (Endangered). Canoe Meadows also contains several certified vernal pools, and the uncommon northern leopard frog occurs there. Approximately 25% of the sanctuary's acreage, including the majority of the rare species habitat, is within the 10 year floodplain directly affected by PCB contamination. In addition to these rare species, there are also significant archeological resources located at Canoe Meadows.

The Upper Housatonic River Valley that includes Canoe Meadows Wildlife Sanctuary has also been designated by Mass Audubon as an Important Bird Area (IBA), underscoring its significance as bird habitat and as a migratory corridor. With approximately 1,300 acres of riparian woodland, oxbow ponds, marshes, beaver swamps, grasslands, and upland woods along the meandering Housatonic River, this IBA represents some of the finest riparian habitat remaining in central Berkshire County. The designated IBA comprises Canoe Meadows Wildlife Sanctuary in Pittsfield at the northern end; the 816-acre George L. Darey Housatonic Valley Wildlife Management Area, south of Canoe Meadows, extending from Pittsfield to Lenox and Lee; and the 200-acre Post Farm, the site of a former Lenox town landfill, currently managed by the Lenox Conservation Commission and abutting the Wildlife Management Area at its southern end. More than 200 species of birds have been recorded on these lands since 1970.

Up to several pairs of the state-endangered American Bittern breed in the area annually. A special concern species, the Common Moorhen is an uncommon though regular breeder in the area. Other high conservation priority species represented by at least 25 breeding pairs include: American Black Duck, American Woodcock, Hairy Woodpecker, Eastern Wood-Pewee, Alder Flycatcher, Least Flycatcher, Great Crested Flycatcher, Eastern Kingbird, Veery, Chestnut-sided Warbler, American Redstart, Indigo Bunting, and Rose-breasted Grosbeak. In addition, the following species with more than one percent of their entire breeding population within Massachusetts breed in the area: Eastern Phoebe, Wood Thrush, Gray Catbird, Blue-winged Warbler, Scarlet Tanager, and Baltimore Oriole. Riparian Forest is present along this portion of the Housatonic River. Characteristic breeding bird species of this increasingly rare habitat type include: Wood Duck, Hooded Merganser, Warbling and Yellow-throated Vireos, Veery, and Blue-gray Gnatcatcher. Rare and/or declining species representative of extensive freshwater marshlands that breed on the area include: American Bittern, Sora, Virginia Rail, King Rail, and Common Moorhen. The site is a migration corridor for the Common Nighthawk. **All of these species are currently affected by PCB contamination, and their future in this area will largely be dictated by the remediation and restoration efforts.**

Mass Audubon has a direct and substantial interest in the proposed cleanup <u>both</u> as the second largest affected landowner within the PSA and as a conservation organization whose mission is protecting the nature of Massachusetts for people and for wildlife. Mass Audubon strongly supports the clean up of the Housatonic River in order to reduce PCB concentrations to acceptable levels for humans and wildlife. At the same time, we recognize that this clean up is occurring within a highly complex ecosystem area with extraordinary scenic, wildlife habitat and recreational attributes including the gently meandering river itself, as well as the rare species habitat, floodplain forest, diverse wetlands, and vernal pools the river has influenced over time. The clean up, as envisioned in the CMS, will result in significant short and medium term adverse impacts on Mass Audubon's land as well as on land owned by the Massachusetts Department of Fish and Game,

including the potential construction of access roads and staging areas, closure of the most heavily visited recreational areas during the clean up, and alteration of critical habitat areas. As such, **it is essential that GE be held to accordingly high standards for this clean up, which must begin with avoidance and minimization of adverse impacts to critical habitats. Where there is no alternative but to destroy habitats, restoration of affected areas to fully functional habitats must be required by EPA.** The goal should not be creation of habitats that are merely aesthetically pleasing, but the restoration of high quality wildlife habitats that are functionally equivalent to those that will be altered by the remediation. We believe that restoration of the scope and nature that we envision is likely to significantly affect the cost of various alternatives and this cost must be factored into the evaluation of alternatives.

We believe that the affected landowners should also be compensated by GE for the short and long-term harm to public recreational use of lands and waters that will be affected by the clean up as well as for any long term resource damage that will result from the clean up of river and floodplain resources. For example, Mass Audubon derives program revenue from activities at Canoe Meadows that will be lost during the period work is ongoing at the Sanctuary. In addition, we anticipate that Mass Audubon's stewardship and science staff, and consultants will be required to devote significant time to ensuring that all restoration work is designed and carried out in an appropriate manner as part of any agreement to allow access to our property for this proposed remediation work. We expect that the cost of this staff time and related expenditures will be covered by General Electric as part of the design and monitoring process.

II. The CMS Contains Insufficient Information to Evaluate the Proposed Alternatives

II.A. Insufficient Information is Provided in the CMS on Post-Remediation Restoration

In Mass Audubon's comments on the CMS Scope, we acknowledged the importance of the Housatonic River clean up to improving the overall health of this river system, even though it will result in some relatively severe short-term alterations of critical habitats. In those comments, we noted in the importance of restoration of affected habitats in our comments, stating:

> "… it is absolutely essential that the restoration of areas disturbed by remediation be very carefully planned, implemented, and monitored. This should include strong provisions to prevent establishment of invasive species in disturbed areas, and restoration of important habitat features such as bank habitat and vegetative structure and diversity to as close to "natural" conditions as possible."

After review of the 800+ page CMS, we are surprised to see virtually no information about restoration of affected habitats, and note that such information is required by Condition #4 of EPA's Conditional Approval letter for the Corrective Measures Study Proposal dated April 13, 2007. For example, there has been widespread public criticism of the approach to bank restoration and stabilization in the upstream 1 ½ miles of the Housatonic River. We share the public concern about this work. While it may be achieving the result of creating an aesthetically acceptable vegetated river bank, we do not believe that functionally equivalent habitat has been created that adequately "replicates" the pre-construction functionality of the bank, and have not seen any studies suggesting that it has. We are similarly concerned about restoration of functional floodplain forest habitat, vernal pools, and river bottom habitat as we have not seen any studies to date that suggest that GE has fully restored functional

habitat in such resource areas along the River. If such information exists, it should be provided in the Supplemental CMS.

The CMS (p.4-28) states that the project "would include restoration of areas that are directly impacted… *as appropriate to restore the habitat value of the affected systems to the extent practical*. Restoration would be accomplished using a combination of passive procedures (practices to facilitate natural re-establishment of the resource) and active procedures (plantings or other mitigation)" [emphasis added]. GE's CMS states that details of the restoration will be developed during the design phase of the project. Unfortunately this is after the selection of the most appropriate alternative and the opportunity for public comment. **The costs of this restoration work and the technical feasibility of restoration are essential components of the alternatives evaluation** and as noted above, we believe that they are significantly underestimated in the CMS, based on the work that we have seen occur upstream. Restoration of the type and scale necessary to allow this project to go forward in substantial compliance with federal and state Applicable or Relevant and Appropriate Requirements (ARARs), including the Massachusetts Wetlands Protection Act and the Massachusetts Endangered Species Act, is likely to significantly increase the costs of each of the alternatives, in an amount proportional to the scale of the habitat alteration proposed. **For these reasons, we do not believe that EPA can propose a remediation alternative without knowing whether or not it is possible to restore fully functional habitat in the areas that will be affected by the remediation.** GE's own consultant acknowledged at the Citizens Coordinating Council public hearing in Lee that they know of no other location where work of this nature has been done in as sensitive a habitat area as the Housatonic. Since GE will, of necessity, be working on the "cutting edge" of sensitive habitat restoration, it is even more critical that attention to be paid to this issue as part of the alternatives evaluation in the CMS, not during the design phase of the project.

GE states on page 16 of the Executive Summary of the CMS "The greater the scale of the remediation, the greater the long-term adverse effects on the environment (e.g. loss of mature trees in the floodplain staging areas, changes in the nature of wetlands, and long-term adverse impacts on biota and habitat." This statement is provided in support of SED 3, the clean up proposal that would result in the least impact to river systems. We do not concur with this reasoning. GE should not be using the sensitivity of the habitat along the river as a justification for a lower standard of remediation of the River. **EPA should insist on the appropriate level of cleanup and a correspondingly high standard for habitat restoration, even if this raises the cost of the selected alternative considerably**. To do otherwise would have the unintended consequence of "rewarding" polluters for damaging the most significant habitats as less clean up would be required in such sensitive locations.

One of our most significant concerns about post-remediation restoration relates to the proposed river bank remediation work in Reach 5A. As noted above, **the bank stabilization and "restoration" work that has been completed upstream is wholly inadequate to restore the functional values of the river bank. We concur with the comments made by the Massachusetts Division of Fisheries and Wildlife in the CMS scoping process that the upstream work, replicated here, would be "a disaster and a complete ecological failure."** The Massachusetts Department of Environmental Protection (DEP) also weighed in expressing its concern about "hard engineering" of erodible banks:

> "Mass DEP has a number of concerns relative to the widespread use of hard structures as bank stabilization structures in areas of the river below the confluence. The 2-mile stretch of river where these

> structures have been used is a relatively straight section of channel (compared with the tight meanders in downstream sections) that is located in a highly urbanized area with minimal significant wildlife habitat and lower recreational and aesthetic value. By contrast, downstream river sections are undeveloped, provide significant habitat and experience significantly greater recreational use by the public. Widespread use of hard structures in this section of the river is likely to meet with considerable community opposition. Existing wildlife habitat functions will be lost and plantings to restore lost riverine characteristics can be problematic and not all that effective. In addition, the use of hard structures along the banks of the river will affect river flow dynamics by deflecting flows to downstream sections of the channel (particularly important in areas with meanders) and banks, and may also affect channel carrying capacity and the extent of flooding. In order to remain effective in preventing exposures and recontamination, long-term monitoring and potentially frequent maintenance of these structures (as evidenced by observations in the 0.5-Mile Reach) will be required. Considering the many river miles that may be impacted, such monitoring and maintenance may be a monumental task."

Nevertheless, GE's CMS proposes (p. 4-29) to stabilize the banks in the same manner as was done in the Upper ½ mile reach. The CMS (p. 4-44) discusses the long-term adverse impacts to this habitat that would result from the remediation/restoration as proposed. **We do not support any bank work within Canoe Meadows Wildlife Sanctuary that permanently "armors" the bank with stone, rip rap or other "hard" material in a manner that prevents future bank erosion and also prevents the planting of mature trees that will shade the river – which could eliminate habitat for avian and mammalian bank-dwelling species and adversely affect water temperature in the River. Such stabilization methods are also likely to result in downcutting of the river channel, exposing deep PCB-contaminated sediment layers. More creative bio-remediation or alternative approaches need to be identified by GE in the Supplemental CMS for this section of the river bank.** Examples of alternatives that should be evaluated include deeper excavation followed by covering armoring with clean material of sufficient depth to allow growth of mature trees; or leaving some sections of bank unaltered; or fully cleaning and restoring to a more natural condition some sections (i.e. through more localized testing and different treatments of some sections of the bank).

II.B. EPA Should Require a Supplemental CMS to address Ecological Restoration

As discussed above, we believe that GE has fundamentally failed to respond to comments that were raised in the CMS Scoping Process about the needs for detailed information on post-cleanup restoration by Mass Audubon, DEP, and the Massachusetts Division of Fisheries and Wildlife. Virtually no information is included regarding proposed restoration of the river bottom, banks and floodplains, access roads and staging areas. Without this information, we are unable to fully evaluate the various alternatives that are presented in the CMS and understand the impact that they will have on our property.

We have attached to our comment letter the Society for Ecological Restoration International's *Primer on Ecological Restoration* (2004). We believe that EPA should direct GE to prepare a Supplemental CMS that fully and completely documents how habitats affected by remediation activities will be restored. The Supplemental CMS should include sufficient detail to evaluate whether proposed restoration activities meets established standards such as SER's attributes of restored ecosystems, including re-established ecosystem structure and function, resilience, and self-sustenance. SER's *Guidelines for Developing and Managing Ecological Restoration Projects* (2005; http://www.ser.org/content/guidelines_ecological_restoration.asp) provides additional detail. Only

when GE provides such information will the public and EPA be able to fully evaluate the acceptability and trade-offs involved in each of the alternatives.

We also believe that GE should be required by EPA to escrow sufficient funds to ensure that all restoration activities in Rest of River are fully carried out and monitored. GE should be reimbursed from the fund as the restoration is completed and demonstrated to be fully functional by post-construction monitoring. This is necessary to ensure that the long terms funds are in place to ensure that restoration and monitoring occurs properly. In addition, EPA should establish a long-term funding mechanism to ensure that needed monitoring will take place in perpetuity. We do not believe that thirty years is a sufficient period for monitoring. Without such long-term monitoring, natural processes will eventually result in changes to the river system and the likely release of any PCBs that remain in the river system and floodplain. Historic maps of the area clearly depict the Housatonic as a dynamic river system, which has meandered across its floodplain for millennia. These meanders will continue as long as the river flows; armoring may alter these changes but will not stop them. Development in the watershed over the coming decades will increase storm flows and associated erosive forces. When these river dynamics are considered, it is more appropriate to be thinking in terms of hundreds of years than decades. GE must have a mechanism in place for accountability and appropriate responses to further PCB releases through this longer term.

III. The Selected Alternative Must be Responsive to Technological Advances and Site Conditions

The proposed clean up will occur over many years. There is an opportunity throughout the duration of this cleanup to apply new technologies and creative thinking. Mass Audubon believes that EPA should create a permitting process that is designed to recognize that technological advances in PCB clean up are likely to occur during this time period and encourage GE to employ them as the project progresses downstream. Therefore, we support the concept of a phased clean up.

We are open to discussing the possibility of using a portion of Reach 5A as a model or demonstration area for sound ecological restoration prior to the clean up proceeding along the remainder of the River. In this manner, GE would have the opportunity to demonstrate to the community and to regulatory agencies that the highest standard of restoration can be carried out following remediation activities. However, such an approach would require a period of study following the remediation and restoration work in order to provide time to gauge the effectiveness of the work and whether any modifications are needed in terms of the approach being taken.

The remediation planning and implementation process will be ongoing for a number of years. While alternative in-situ treatment technologies may not be presently available for utilization, the **remediation plans should be flexible enough to enable new technologies to be considered if and when they become available during further phases of planning or implementation.** This is part of an adaptive management approach, and appropriate for such a complex project of many years duration.

IV. The CMS contains Insufficient Information regarding to Compliance with ARARs

The CMS states that "it is anticipated that all the removal alternatives would meet the ARARs that have been identified" and that "… there is no material basis for distinguishing among these alternatives based

on ARAR compliance." We respectfully disagree with this conclusion, particularly with regard to the application of the Massachusetts Endangered Species Act (MESA) and the Massachusetts Wetlands Protection Act (WPA) to the proposed project. **We urge EPA to require additional information from GE with regard to compliance with MESA and the WPA in the Supplemental CMS.** ARARs for this project should include measures to address the substantive requirements of these laws and associated regulations in regards to chemical, location, and activity-specific ARARs. While we recognize that the procedural requirements of these laws will not apply, there nevertheless are important substantive requirements that are not addressed in the draft CMS. A Supplemental CMS should address these concerns.

MESA is identified in Table 2-2 of the CMS as a "location-specific" ARAR, and the CMS dismisses the need for compliance by stating that there is no state-designated habitat in Massachusetts. In fact, the requirements of MESA will significantly affect the proposed project. The CMS states (p. 4-43) that long-term alteration of habitat could adversely affect rare and plant species. The project is located within Priority and Estimated Habitat of state listed rare species. Work within these areas is regulated under MESA and the associated regulations at 321 CMR 10.00 (http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_home.htm). The CMS should specifically address the substantive requirements at 321 CMR 10.23(2):

> *If the Director [of Fish and Wildlife] determines that the applicant for a permit has avoided, minimized and mitigated impacts to State-listed Species consistent with the following performance standards, then the Director may issue a conservation and management permit, provided:*
> *(a) The applicant has adequately assessed alternatives to both temporary and permanent impacts to State-listed Species;*
> *(b) An insignificant portion of the local population would be impacted by the Project or Activity, and;*
> *(c) The applicant agrees to carry out a conservation and management plan that provides a long-term Net Benefit to the conservation of the State-listed Species that has been approved by the Director, as provided in 321 CMR 10.23(5), and shall be carried out by the applicant.*

The WPA is identified in Table 2-2 as a "location-specific" ARAR, stating "*under [310 CMR] 10.53(3)(q), actions responding to the release or threat of release of hazardous materials are allowed as "limited project" if they meet requirements specified therein. If response actions would not meet these criteria, the requirements of 10.54 -10.58 would apply."* This is true, but also incomplete and inadequate. Even in instances where projects qualify for "limited project" status, thereby allowing impacts in excess of the usual WPA regulatory limits, projects are nevertheless required to demonstrate that alternatives to avoid and minimize impacts are considered, and that impacts are mitigated (310 CMR 10.53(3)). These are substantive requirements that should be evaluated in relation to all of the wetland resource areas impacted by proposed remedial actions and associated sediment transport and disposition measures. For example, alternatives to permanent loss of bank and mature woody vegetation structure should be evaluated, along with alternative restoration designs that minimize and mitigate for impacts to these and other wetland habitat features. Impacts to important wildlife characteristics of wetland

resource areas should be evaluated, using the substantive standards in the Department of Environmental Protection's *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*. (http://www.mass.gov/dep/water/laws/wldhab.pdf). Furthermore, the limited project provision of the WPA regulations prohibits impacts to rare species. Further alternatives analysis is needed to demonstrate maximum feasible compliance with this regulation before a waiver may be considered.

MESA and the WPA should be applied to the chemical and activity-specific ARARs as well as the location-specific section where they are currently mentioned. Chemical impacts to rare species and chemical alterations of wetland resources are covered by these laws. The choice of activities used in remediation has direct bearing on the degree to which impacts to rare species and wetlands are avoided, minimized, and mitigated.

V. Evaluation of Alternatives

As noted above, we feel strongly that without additional information on the type and nature of the proposed restoration it is not possible to adequately evaluate the alternatives that are presented by GE in the CMS. We do have the following preliminary comments regarding the alternatives:

- We believe that GE should be required to evaluate the feasibility of removing material from the project site using the existing railroad line.

- We have serious concerns about any proposals for thin layer capping of contaminated aquatic resources at Canoe Meadows including Oxbow Pond and West Pond. Both West and Oxbow Ponds are important habitats on the sanctuary, supporting populations of frogs, turtles, wading birds and waterfowl, and insects not found elsewhere on the site. Thin layer capping – which would deposit a thin layer of material directly over existing sediments, without removing contaminants, would make these ponds shallower and change their substrate characteristics, making them less suitable habitat for many organisms. It would also result in significant alteration of resources without any removal of contaminated soils. In the area of West Pond, the floodplain remediation options would impact portions of an old field, a *Phalaris* meadow, a wet meadow and a sedge marsh. The wet meadow in particular, hosts diverse plant, mammal, bird and insect communities and would be affected by FP2, 3, 4 and 7. We believe that these resources should either be fully remediated or left alone with monitored natural recovery – but are not able to choose between these alternatives without more specific information on proposed restoration.

- We request that there be additional site-specific analysis at Oxbow Pond in Reach 5A. This is a forested floodplain area that would be significantly altered by the proposed clean up. This area is likely to host rare species including wood turtles, mustard white, and purple milkweed, as well as Watch Listed species including butternut. Restoration of the forested areas affected by the remediation activities will take many decades, even in a best-case scenario. This floodplain forest is an area where a finer scale of analysis is needed with regard to PCB contamination levels to determine the most appropriate clean up remedy.

- We also believe that any work in the floodplain should be done at the same time as river/bank work so as to complete the work on any given affected property and move downstream in an orderly fashion.

- We are particularly concerned about the proposed vernal pool work which would alter 14 acres of vernal pool habitat, encompassing portions of 60 different vernal pools, and require the construction of extensive access roads and staging areas in some places. As noted on Pages 6-35, 36 and 39 of the CMS, there are no known locations where vernal pool work of this magnitude and extent has been successfully undertaken. We believe that additional examination of vernal pools should be required in the Supplemental CMS. In some cases it may be appropriate to choose monitored natural recovery for those pools that are distant from existing access points, and to ensure that breeding populations of vernal pool species are not entirely displaced as a result of remediation activities.

- In all cases, GE should be required to limit the extent of staging areas and access road construction to the extent feasible. For example, roads could be built narrower than 20 feet and staging areas should be as narrow as possible. One lane roads with pull-offs should be more than adequate. Full restoration of any areas disturbed for access and staging must be required with monitoring and revegetation to ensure that invasive species do not take hold in these areas.

- We are strongly opposed to construction of a Confined Disposal Facility within riverine wetland areas and concur with GE that this alternative is inappropriate. We are also concerned about the siting of a permanent landfill in close proximity to the Housatonic River. Additional evaluation of measures to treat and reuse soil should be contained in the Supplemental CMS, particularly in light of the claims made by BioGenesis that their treatment methods have applicability to this project.

Thank you for this opportunity to comment during this informal comment period on the Draft CMS. We want to again reiterate our strong support for the clean up of the Housatonic River for both its human health and ecological benefits. We look forward to continuing to work with EPA and GE, as well as with community leaders on these important issues over the coming months and years.

Sincerely,

Laura A. Johnson
President

cc: Jeff Porter, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (for General Electric)

Kevin Mooney, Remediation Project Manager, General Electric
Mary Griffin, Commissioner, Massachusetts Department of Fish and Game
Laurie Burt, Commissioner, Department of Environmental Protection
Wayne F. MacCallum, Director, Massachusetts Division of Fisheries and Wildife
Susan Steenstrup, DEP WERO
Congressman John Olver
Senator Benjamin B. Downing
Representative Christopher Speranzo
Representative Denis E. Guyer
Representative William Smitty Pignatelli
Berkshire Natural Resources Council
Housatonic Valley Association
Housatonic River Initiative
Berkshire Environmental Action Team
The Trustees of Reservations

Society for Ecological Restoration International

Guidelines for Developing and Managing Ecological Restoration Projects, 2nd Edition

Guidelines for Developing and Managing Ecological Restoration Projects, 2nd Edition. Andre Clewell[1], John Rieger[2], and John Munro[3]. December 2005. www.ser.org and Tucson: Society for Ecological Restoration International.

Contents:

Preface to the Second Edition

The first edition of *Guidelines for Developing and Managing Ecological Restoration Projects (Guidelines)* was published on the website (www.ser.org) of the Society for Ecological Restoration International (SER International) on June 24, 2000. This new edition brings the *Guidelines* into conformity with the *SER International Primer on Ecological Restoration (SER International Primer)* (SER International 2002 and 2004) and expands the text for clarity and insight. Substitutions have been made for some terms, e.g., *implementation* for *installation*. The numbering of the guidelines was retained although some titles were modified. Peer review for the second edition was provided by the membership of the SER International Science and Policy Working Group and the SER International Board of Directors. This edition was approved as an official SER International document by the Board of Directors on December 15, 2005.

Introduction

This document describes the procedures for conducting ecological restoration in accord with the norms of the discipline that were established in the *SER International Primer* (SER 2002 and 2004, **www.ser.org**). Each procedure is stated in terms of a guideline that leads restoration practitioners and project managers stepwise through the process of ecological restoration. Adherence to these 51 guidelines will reduce errors of omission and commission that compromise project quality and effectiveness. The guidelines are applicable to the restoration* of any ecosystem—terrestrial or aquatic—that is attempted anywhere in the world and under any auspices, including public works projects, environmental stewardship programs, mitigation projects, private land initiatives, etc. Users of the *Guidelines* are advised to become familiar with the *SER International Primer* in advance and refer to it for definitions of terms and discussions of concepts. Design issues and the details for planning and implementing restoration projects lie beyond the scope of these guidelines. We leave such complexities to the authors of manuals and the presenters of workshops who address these topics

* "Restoration" when used alone in this document connotes "ecological restoration."

Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. It is an intentional activity that initiates or accelerates ecosystem recovery with respect to its health (functional processes), integrity (species composition and community structure), and sustainability (resistance to disturbance and resilience). Restoration ensures abiotic support from the physical environment, suitable flows and exchanges of organisms and materials with the surrounding landscape, and the reestablishment of cultural interactions upon which the integrity of some ecosystems depends. Restoration attempts to return an ecosystem to its historic trajectory, i.e., to a state that resembles a known prior state or to another state that could be expected to develop naturally within the bounds of the historic trajectory. The restored ecosystem may not necessarily recover its former state, since contemporary constraints and conditions can cause it to develop along an altered trajectory.

In accord with the *SER International Primer,* these *Guidelines* assume that ecological restoration is accomplished once the assistance of a restoration practitioner is no longer needed to ensure long-term ecosystem sustainability. However, ecosystem management may be required to prevent recurrent degradation of restored ecosystems on account of alterations in the environment or anthropogenic changes. Such activities are considered management rather than restoration. In other words, ecological restoration makes ecosystems whole again and ecological management keeps them whole. Correspondingly, some restored ecosystems will require management in the form of traditional cultural practices. This distinction between restoration and management (including cultural practices) facilitates resource planning and budgeting, and it protects ecological restoration efforts from being held liable for subsequent inconsistencies or misjudgment in ecosystem management.

The project guidelines are numbered for convenience. They do not necessarily have to be initiated in numerical order, and some may be accomplished concurrently. The guidelines are grouped into six phases of project work: conceptual planning (including feasibility assessments), preliminary tasks (upon which subsequent planning relies), implementation planning, project implementation, post-implementation tasks (monitoring and aftercare), and evaluation and publicity.

We recommend that a diary be kept for each guideline to document project activities as they happen and to record all relevant information for each guideline as it is generated. Tabular data, graphics, and ancillary documents can be appended. Narratives in the form of written responses to Guidelines #1 through #36 collectively comprise a comprehensive ecological restoration plan that can be filed with public agencies, funding institutions, permitting authorities, corporate offices, and other interested parties. The narratives serve as the basis for preparing progress reports and applications for continuing financial support. They become invaluable to new practitioners and management personnel who are assigned in mid-project. When the project has been completed, the narratives comprise a thorough and well organized case history which only needs editing to generate a final report and to prepare articles for publication.

Conceptual Planning

Conceptual planning identifies the restoration project site, specifies restoration goals, and provides relevant background information. Conceptual planning is conducted when restoration appears to be a feasible option but before a decision has been made to exercise that option. Conceptual planning provides preliminary information such as observations from site reconnaissance and perhaps a few representative measurements. Detailed, systematic inventories of ecosystem properties and the biota are not included in this phase of activity. Written responses to Guidelines #1 through #16 collectively comprise the conceptual plan and broadly characterize the proposed restoration project.

1. Identify the project site location and its boundaries. Delineate project boundaries and portray them as maps, preferably generated on a small-scale aerial photograph and also on soil and topographic maps that show the watershed and other aspects of the surrounding landscape. Use of GPS (Global Positioning System), land survey, or other measurement devices as appropriate is encouraged.

2. Identify ownership. Give the name and address of the landowner(s). If an organization or institution owns or manages all or part of the site, give the names and titles of key personnel. Note the auspices under which the project will be conducted—public works, environmental stewardship, mitigation, etc. If there is more than one owner, make sure that all are in agreement with the goals and methods proposed for the restoration program.

3. Identify the need for ecological restoration. Tell what happened at the site that precipitated the need for restoration. Describe the improvements that are anticipated following restoration. Benefits may be ecological, economic, cultural, aesthetic, educational, and scientific. Ecological benefits may amplify biodiversity; improve food chain support, etc. Economic benefits are natural services (also called social services) and products that ecosystems contribute towards human wellbeing and economic sustainability. Ecosystems in this regard are recognized and valued as natural capital.

Cultural improvements may include social performance and rituals, passive recreation, and spiritual renewal. Aesthetic benefits pertain to the intrinsic natural beauty of native ecosystems. Educational benefits accrue from advances in environmental literacy that students gain from participating in, or learning about, ecological restoration. Scientific benefits accrue when a restoration project site is used for demonstration of ecological principles and concepts or as an experimental area.

4. Identify the kind of ecosystem to be restored. Name and briefly describe the kind of ecosystem that was degraded, damaged, or destroyed, for example, tropical dry forest, vernal pool, semiarid steppe, shola (India), chalk meadow (Europe), cypress swamp (USA), etc. Other descriptors should be added to facilitate communication with those who may not be familiar with the natural landscapes in the bioregion. These descriptors should include the names of a few characteristic or conspicuous species and should indicate community structure (desert, grassland, savannah, woodland, forest, etc.), life form (herbaceous perennial, succulent, shrub, evergreen tree, etc.), predominant taxonomic categories (coniferous, graminaceous, etc.), moisture conditions (hydric, xeric,

etc.), salinity conditions (freshwater, brackish, saline, etc.), and geomorphologic context (montane, alluvial, estuarine, etc.). Reference to readily accessible published descriptions can augment or replace some of these descriptors.

5. Identify restoration goals. Goals are the ideal states and conditions that an ecological restoration effort attempts to achieve. Written expressions of goals provide the basis for all restoration activities, and later they become the basis for project evaluation. We cannot overemphasize the importance of expressing each and every project goal with a succinct and carefully crafted statement. All ecological restoration projects share a common suite of ecological goals that consist of recovering ecosystem integrity, health, and the potential for long-term sustainability. They are listed as the attributes of restored ecosystems in Section 3 of the *SER International Primer.* They deserve to be restated for each restoration project. Otherwise, they can be underappreciated or overlooked by authorities and other interested parties who are not well versed in ecological restoration. A project may have additional ecological goals, such as to provide habitat for particular species or to reassemble particular biotic communities.

Statements of ecological goals should candidly express the degree to which recovery can be anticipated to a former state or trajectory. Some ecosystems can be faithfully restored to a known or probable historic condition, particularly when degradation or damage is not severe and where human demographic pressures are light, plant species richness are low on account of rigorous environmental conditions, and where the ecologically young vegetation in a newly restored ecosystem tends to resemble the mature vegetation of the pre-disturbance state. Even so, the restored ecosystem will undoubtedly differ in some respects from its model, owing to the complex and seemingly random (stochastic) aspects of ecosystem dynamics. Other restorations may not even approximate a historical model or reference, because contemporary constraints or conditions prevent restoration to a former, historic condition.

Restoration can be conducted in any of five contexts. The appropriate context should be identified in the project goals in order to underscore the intent of restoration and to avoid or minimize subsequent misunderstandings, conflict and criticisms. They are:

a) **Recovery of a degraded (**subtle or gradual changes that reduce ecological integrity and health**) or damaged (**acute and obvious changes) **ecosystem to its former state.**
b) **Replacement of an ecosystem that was entirely destroyed (**degradation or damage removes all macroscopic life), and commonly ruins the physical environment) **with one of the same kind.** The new ecosystem must be entirely reconstructed on a site that was denuded of its vegetation (terrestrial systems) or its benthos (aquatic systems). Replacements are common on surface-mined lands and brownfields (severely damaged urban and industrial lands).
c) **Transformation** (conversion of an ecosystem to a different kind of ecosystem or land use type) **of another kind of ecosystem from the bioregion to replace one which was removed from a landscape that became irreversibly altered.** This option is important for restoring natural areas in an urban context where, for example, original hydrologic conditions cannot be restored.

d) **Substitution of a replacement ecosystem where an altered environment can no longer support any naturally occurring type of ecosystem in the bioregion.** The replacement ecosystem may consist of novel combinations of indigenous species that are assembled to suit new site conditions as, for example, at a retired solid waste disposal site.
e) **Substitution of a potential replacement ecosystem, because no reference system exists to serve as a model for restoration.** This option is relevant in densely populated regions of Eurasia, where many centuries of land use have obliterated all remnants of original ecosystems.

All ecological restoration projects have cultural goals (see Guideline #3), even though such goals may be implied in the enabling legislation that authorizes public agencies to conduct or permit project work. All cultural goals should be stated clearly, because they provide the basis for public understanding of the benefits of a project. Public appreciation is conducive to garnering fiscal support, to accommodation of project activities by public agencies, to attracting stakeholder participation in project planning and implementation, and to commanding respect for the restored ecosystem by local residents.

6. Identify physical site conditions in need of repair. Many ecosystems in need of restoration are dysfunctional on account of damage to the physical environment, such as soil compaction, soil erosion, surface water diversion, and impediments to tidal inundation. The physical environment must be capable of sustaining viable, reproductive species populations that comprise the biota of the restored ecosystem.

7. Identify stressors in need of regulation or re-initiation. Stressors are recurring factors in the environment that maintain the integrity of an ecosystem by discouraging the establishment of what would otherwise be competitive species. Examples are fires, anoxia caused by flooding or prolonged hydroperiod, periodic drought, salinity shocks associated with tides and coastal aerosols, freezing temperatures, and unstable substrates caused by water, wind or gravity as on beaches, dunes, and flood plains. In some ecosystems, stressors may include sustainable cultural activities, such as the periodic harvest of biotic resources and the ignition of fires. These should be identified as stressors of cultural origin.

8. Identify and list the kinds of biotic interventions that are needed. Many restoration projects require manipulation of the biota, particularly vegetation, to reduce or eradicate unwanted species and to introduce or augment populations of desirable species. Invasive non-native species generally require extirpation. Other species, native or non-native, may be removed if they retard or arrest biotic succession. Species that may need introduction include mycorrhizal fungi, N-fixing bacteria, other soil microbiota and, in aquatic environments, benthic infauna (animals that live in sediments). Mobile animals generally colonize restored habitats spontaneously; however, animal introductions are sometimes needed. Animals can be enticed to colonize project sites by providing perches for birds, distributing coarse detritus for small animal cover, preparing a variety of different substrates in streams as habitat for macroinvertebrates, etc.

9. Identify landscape restrictions. Population demographics of many species at a project site may be adversely affected by external conditions and activities offsite in the

surrounding landscape. Land and water usage are commonly at fault. Restoration should not be attempted if the landscape is likely to be heavily compromised.

Restoration of some aquatic ecosystems depends entirely on making ecological improvements elsewhere in the catchment, and all restoration work is accomplished offsite. An example of an impact from offsite would be discharge of turbid or polluted water such as agricultural runoff that reaches a proposed project site. Another example would be recurrent flooding and consequent sedimentation in a lowland site that was caused by unrestrained runoff following harvest of montane forest. In this instance, restoration efforts might be better directed at afforestation (forest recovery) in highlands. The hydrologic regime in any project site can be altered offsite by dams, drainage projects, diversions of runoff caused by highways and other public works, and by impervious surfaces on developed land. Water tables can be depressed gradually by transpiration following reforestation and can be raised acutely after timber harvest or after ditches are filled. Fire frequency is reduced by intentional suppression and by landscape fragmentation that interrupts the cover of flammable vegetation. Fire hazards develop in the form of dense brush in response to fire suppression. Exotic species colonization onsite is commonly traced to infestations offsite. The presence or abundance of birds and other mobile animals in the restored ecosystem depends on the health of other ecosystems in the landscape that comprise parts of their territories.

Hazards elsewhere in the landscape such as these should be identified and evaluated in terms of their potential to compromise restoration efforts, and the possibility that they can be ameliorated should be assessed realistically.

10. Identify project-funding sources. Potential external funding sources should be listed if internal funding is inadequate.

11. Identify labor sources and equipment needs. Personnel may have to be hired, volunteers invited, and other labor contracted. Determine the need and availability of special equipment.

12. Identify biotic resource needs and sources. Biotic resources may include seeds, other plant propagules, nursery-grown planting stocks, and animals for establishment at the project site. Some stocks are commercially available. Others, such as seeds of native plants, may have to be collected from other natural areas.

13. Identify the need for securing permits required by government agencies. Permits may be required for tasks such as the excavation or filling of streams and wetlands, other earthwork activities, herbicide use, and prescribed burning. Other permits may be applicable for the protection of endangered species, historic sites, etc.

14. Identify permit specifications, deed restrictions, and other legal constraints. Zoning regulations and restrictive covenants may preclude certain restoration activities. Legal restrictions on ingress and egress could prevent the implementation of some restoration tasks. If the restoration is to be placed under conservation easement, the timing of the easement must be satisfied and manipulations to the environment may have to be completed prior to the effective date of the easement. If restoration is to be

conducted under contract or as mitigation or mitigation banking, contract conditions and permit specifications must be compatible with the restoration plan and incorporated into it. If they are not, negotiations may have to be conducted with the agency in charge.

15. Identify project duration. Project duration can greatly affect project costs. Short-term restoration projects can be more costly than longer-term projects. The longer the project, the more the practitioner can rely on natural recovery and volunteer labor to accomplish specific restoration objectives that are identified below in Guideline #27. In accelerated restoration programs such as mitigation projects, costly interventions must substitute for these natural processes.

16. Identify strategies for long-term protection and management. Ecological restoration is meaningless without reasonable assurance that the project site will be protected and properly managed into the indefinite future. To the extent possible, threats to the integrity of a restored ecosystem on privately owned land should be minimized by mechanisms such as conservation easements or other kinds of zoning. External threats can be reduced by buffers and binding commitments from neighboring landowners. Alternatively, the restored ecosystem could be legally transferred to a public resource agency or non-governmental organization. However, the protection and management of restored ecosystems on public lands are not guaranteed, and a formal commitment for that purpose by the responsible agency is desirable.

Preliminary Tasks

Preliminary tasks are those upon which project planning depends. These tasks form the foundation for well-conceived restoration designs. Preliminary tasks are fulfilled after the completion of conceptual planning and the decision to proceed with the restoration project.

17. Appoint a restoration practitioner who is in charge of all technical aspects of restoration. Restoration projects are complex, require the coordination of diverse activities, and demand numerous decisions owing in part to the complex nature of ecosystem development. For these reasons, leadership should be vested in a restoration practitioner who maintains overview of the entire project and who has the authority to act quickly and decisively to obviate threats to project integrity. Many smaller projects can be accomplished by a single practitioner who functions in various roles—from project director and manager to field technician and laborer. Larger projects may require the appointment of a *chief restoration practitioner* who oversees a restoration team that includes other restoration practitioners. The chief practitioner may delegate specific tasks but retains the ultimate responsibility for the attainment of objectives.

Ideally, the expertise of the chief practitioner should be solicited by project planners. If restoration is a subcontract component of a larger project, the chief practitioner should enjoy equal status with other subcontractors to prevent actions that could complicate scheduling, compromise restoration quality, and inflate costs. In any event, the chief practitioner and the project manager should maintain open lines of communication.

Practitioner responsibilities are sometimes divided according to the organizational charts of larger corporations and government bureaus. Pluralistic leadership augments the potential for errors in project design and implementation. In mitigation projects, agency personnel become silent co-partners with the chief practitioner when they mandate particular restoration activities as permit specifications. This practice reduces the chief practitioner's capacity for flexibility and innovation, including the prompt implementation of mid-course corrections. The preparation of a written guidance document, based upon responses to these guidelines, will help promote the judicious execution of the restoration project in cases of pluralistic leadership.

18. Appoint the restoration team. For larger projects, the chief practitioner may need the collaboration of other practitioners to supervise labor crews and subcontractors and also of technical personnel with critical skills and expertise. Collectively, they comprise the restoration team. It is essential that the responsibilities of each individual are clearly assigned and that each person be given concomitant authority.

19. Prepare a budget to accommodate the completion of preliminary tasks. The budget addresses labor and materials and includes funds needed for reporting. It recommends or specifies a schedule of events.

20. Document existing project site conditions and describe the biota. This guideline builds on preliminary information in the responses to guidelines #3 and #4 and is significantly more comprehensive and detailed. Documentation for this guideline should include a systematic inventory that quantifies the degree of degradation or damage. Species composition should be determined and species abundance estimated. The structure of all component communities should be described in sufficient detail to allow a realistic prediction of the effectiveness of subsequent restoration efforts. Soils, hydrology, and other aspects of the physical environment should be described. Such information is critical later in project evaluation, which depends in part upon being able to contrast the project site before and after restoration.

Properly labeled and archived photographs are essential for documenting any restoration project. Numerous photos should be taken with care during good photographic conditions prior to conducting any restoration work. Photographic locations and compass directions should be recorded, so that before and after photos can be compared. Close-up and wide angle photos should be included, with some taken from an elevated position as from the cargo bed of a truck. Videotapes, aerial photographs, and oblique aerial photos from a low-flying aircraft are helpful.

21. Document the project site history that led to the need for restoration. Site history that was identified for Guideline #3 is expanded, if necessary, to provide a comprehensive overview. The years during which impacts occurred should be recorded. Historical aerial photos that show the pre-disturbance state and that show disturbance events are helpful.

22. Conduct pre-project monitoring as needed. Often it is useful or requisite to obtain baseline measurements on such parameters as water quality, groundwater elevation, and gross metabolism of soil organisms for a year or more prior to initial

project installation. If so, these measurements will continue throughout the life of the project as part of the monitoring program. Unanticipated extremes in data can indicate problems that might require mid-course correction to prevent the collapse of the project. Upon project completion, the data are assessed to help evaluate the effectiveness of restoration.

23. Establish the reference ecosystem or "reference." The reference model represents the future condition or target on which the restoration is designed and which will serve later as a basis for project evaluation. The reference can consist of the pre-disturbance condition if it is known, one or more undisturbed sites with the same type of ecosystem, descriptions of such sites, or another document, as described in Section 5 of the *SER International Primer*. The reference must be sufficiently broad to accommodate the amplitude of potential endpoints that could reasonably be expected from restoration.

The selection of the reference increases in difficulty in instances where contemporary constraints and conditions alter the historic trajectory or in other instances where the bioregion lacks comparative ecosystems of the kind being restored. In extreme cases, the only concrete reference data may consist of a list of native species that could potentially contribute to the assembly of an ecosystem with the intended community structure. The degree to which the reference can serve as a model for a restoration project and for its evaluation depends on its specificity and its appropriateness, and both can vary widely among projects. In some projects, the reference can serve almost as a template. In others, it can only hint at the direction of development.

24. Gather pertinent autecological information for key species. The chief practitioner should access whatever knowledge is available regarding the recruitment, maintenance, and reproduction of key species. If necessary, trials and tests of species establishment and growth can be conducted by the restoration team prior to project implementation.

25. Conduct investigations as needed to assess the effectiveness of restoration methods and strategies. Innovative restoration methods may require testing prior to their implementation at the project site. Experimental plots or small-scale "pilot projects" may demonstrate feasibility or reveal weaknesses in restoration design and execution prior to attempting larger-scale restoration. Pilot projects are particularly useful in attempting the restoration of a particular kind of ecosystem for the first time in a bioregion.

26. Decide whether ecosystem goals are realistic or whether they need modification. The selection of realistic goals is crucial. The potential for the achievement of some goals that were identified during conceptual planning (Guideline #5) may now appear unrealistic in light of more thorough information generated subsequently. Other goals could be added. At this time, the project team should reassess the selection of goals in Guideline #5 and make modifications if warranted.

27. Prepare a list of objectives designed to achieve restoration goals. In order to achieve restoration goals, explicit actions are undertaken to attain specific end results. Each end result is called an objective. For example, if the goal is to recover the former forest ecosystem on land that was converted for the production of row-crops, one

objective might be to establish tree cover with a designated species composition and species abundance at a finite location in that field. In restoration projects that are conducted under contract, objectives are ordinarily "time certain," meaning that they are to be done within a specified length of time in order to accommodate project planning, budgeting, and regulatory concern.

Objectives are subject to precise empirical determination, as will be described in Guideline #36. Objectives are selected with the anticipation that their completion will allow the fulfillment of project goals. Goals are less amenable to precise empirical determination, because they require measurements of innumerable parameters that are constantly subject to change on account of ecosystem dynamics. For that reason, objectives are used as indicators of the achievement of goals.

Ecological objectives are realized by manipulating the biota and/or the physical environment. Some are executed at the beginning of restoration, such as removing a road, filling a previously excavated canal, or adding organic matter or lime to the soil. Other objectives require repetitious actions, such as the periodic ignition of prescribed fires or the removal of recurring invasive species that threaten the establishment of desirable vegetation. Some objectives may require actions that take place offsite to improve conditions onsite. The number of ecological objectives for an ecological restoration project may vary from one to many, depending upon project goals and the degree to which the ecosystem was degraded or damaged.

Cultural objectives pertain to the realization of cultural project goals. These objectives may involve publicity campaigns, public celebrations of restoration in progress, participation of stakeholders and school children in restoration implementation and monitoring, and other actions that ensure cultural intimacy with ecosystem recovery.

28. Secure permits required by regulatory and zoning authorities. These permits were identified in guidelines #13 and #14.

29. Establish liaison with interested public agencies. Ecological restoration is necessarily an endeavor of public concern, even if it is conducted on privately owned land without public expenditure. A restored ecosystem provides beneficial natural services well beyond property boundaries. Since restoration generally contributes to public wellbeing, public agencies that are responsible for natural resource protection and management should be aware of any restoration projects within their jurisdictions, regardless of ownership and funding. Upon their recognition, restoration projects can be afforded protection, favorable publicity, attentive management, or other favorable accommodation by public agencies. Site tours, websites, newsletters, and press releases are ways of establishing liaison with public agencies. Interagency memoranda can inform other agencies of restoration projects initiated by a sponsoring agency on public land.

30. Establish liaison with the public and publicize the project. Local residents automatically become stakeholders in the restoration. They need to know how the restored ecosystem can benefit them personally. For example, the restoration may attract ecotourism that will benefit local businesses, or it may serve as an environmental education venue for local schools. If residents favor the restoration, they will protect it

and vest it with their political support. If they are unaware of the restoration and its public benefits, they may vandalize or otherwise disrespect it.

31. Arrange for public participation in project planning and implementation to fulfill cultural goals. Many ecological restoration projects are conducted in technocratic manner; particularly those that are intended to satisfy contract conditions and permit stipulations required by public agencies. The public is commonly excluded except at legally required and sometimes perfunctory public hearings. Restoration is planned, implemented, and monitored by trained professionals without the assistance of volunteers from the public who may be perceived as liability risks for insurance purposes and who could complicate scheduling and supervision. Public participation could increase project costs and threaten timely project completion. However, the exclusion of the public can cause other problems such as those mentioned in Guideline #30. Public agencies should consider incentives for the restoration team to incorporate local residents and other stakeholders in all phases of project work. By doing so, the public will develop a feeling of ownership, and participants may assume a stewardship role for the completed project.

32. Install roads and other infrastructure needed to facilitate project implementation. Ordinarily, restoration projects remove roads and other infrastructure. However, improvements or new construction may be necessary to provide access to project sites or otherwise facilitate project implementation and maintenance. For instance, infrastructure improvement could reduce down time, improve safety, create opportunities for public relations tours, reduce trafficking through sensitive habitats, and discourage erosion from surface runoff on exposed land. Haul roads, staging areas, and fire lanes should be constructed as needed. To the extent possible, infrastructure should be removed in a subsequent task during project implementation.

33. Engage and train personnel who will supervise and conduct project implementation tasks. Project personnel who lack restoration experience or knowledge of particular methods will benefit from attending workshops and conferences that provide background information. Otherwise, the chief practitioner should provide or arrange for training. Ideally, everyone who engages in the restoration, including laborers, should be briefed on project goals and objectives.

Implementation Planning

Implementation plans describe the tasks that will be performed to realize project objectives. These tasks collectively comprise the project design. The care and thoroughness with which implementation planning is conducted will be reflected by how aptly implementation tasks are executed.

34. Describe the interventions that will be implemented to attain each objective. The chief practitioner designates and describes all actions, treatments, and manipulations needed to accomplish each objective listed in Guideline #27. For example, if the objective is to establish tree cover with a designated species composition and species abundance on former cropland, one intervention could be to plant sapling trees of the designated species at specified densities.

Restoration projects should be designed to reduce the need for mid-course corrections that inflate costs and cause delays. In that regard, special care should be given to the design of site preparation activities that precede the introduction of biotic resources. Once biotic resources are introduced, it may become exceedingly difficult and expensive to repair dysfunctional aspects of the physical environment on account of inadequate site preparation.

Some restoration interventions require aftercare or continuing periodic maintenance after initial implementation. These tasks are predictable and can be written into the implementation plans under their respective objectives. Examples of maintenance tasks include the repair of erosion on freshly graded land and the removal of competitive weeds and vines from around young plantings.

35. Acknowledge the role of passive restoration. Commonly, some but not all aspects of an ecosystem require intentional intervention to accomplish restoration. For example, if a correction to the physical environment is all that would be needed to initiate the recovery of the biota, then the practitioner would limit restoration activities to making that correction. To ensure that all aspects of ecosystem recovery have been considered, the restoration plan should acknowledge those attributes that are expected to develop passively without intervention. In the example, the practitioner would state that no manipulations were needed for the recovery of the biota.

Realize that ecological restoration is an intentional process that involves at least modest intervention on the part of a practitioner. If recovery occurs without any intervention, it should be called *natural reestablishment* or designated by another term besides *ecological restoration*.

36. Prepare performance standards and monitoring protocols to measure the attainment of each objective. A performance standard (also called a *design criterion* or *success criterion)* is a specific state of ecosystem recovery that indicates or demonstrates that an objective has been attained. For example, if the objective is to reestablish tree cover with a particular species composition and abundance on former cropland (as stated in the example for Guideline #27) and an intervention to realize that objective is to plant tree saplings of particular species at specified densities (as stated in the example for Guideline #34), then a plausible performance standard would be the establishment of a young forest that contained certain species of trees with minimal thresholds for tree species density, tree height, and collective canopy closure within a specified timeframe. Another potential example of performance standards would be the attainment of a threshold percentage of herbaceous vegetative cover in a seeded area within a given timeframe.

Satisfaction of some performance standards can be attained by a single observation—for example, to determine whether a canal has been filled. Other performance standards require a series of monitoring events to document trends towards the attainment of a specified numeric threshold for a physical parameter or for a particular level of plant abundance or growth.

Performance standards require careful selection so as to engender confidence in their power to measure the attainment of an objective. Otherwise, the objectivity of the performance standard may be biased by the initial results of implementation.

Monitoring protocols should be geared specifically to performance standards. Other monitoring generates extraneous information and inflates project costs. Monitoring protocols should be selected that allow data to be gathered with relative ease, thereby reducing monitoring costs. When a monitoring protocol is selected, a procedure for the analysis of monitoring data should be specified. For example, a statistical procedure could be designated—and a confidence interval stipulated—for determining significant differences.

Performance standards are of particular utility in restoration projects that are conducted by contractors or that are required to satisfy permit conditions. The attainment of performance standards represents hard evidence that objectives have been met, that contractors can be paid, and that permit holders can be released from regulatory liability. Conversely, non-attainment demonstrates non-compliance that can lead to enforcement actions and legal sanctions.

In a less technocratic context, the need for inclusion of performance standards in a restoration project diminishes. In smaller, less complex projects, or in projects where time of completion is not an issue, performance standards need not be specified. Instead, an ecological evaluation can be substituted in accord with Guideline #49.

37. Schedule the tasks needed to fulfill each objective. Scheduling can be complex. Some interventions can be accomplished concurrently and others must be done sequentially. Planted nursery stock may have to be contract-grown for months or longer in advance of planting and must be delivered in prime condition. If planting is delayed, planting stocks may become root-bound and worthless. If direct seeding is prescribed, seed collecting sites will have to be identified. The seed must be collected when ripe and possibly stored and pre-treated. Site preparation for terrestrial systems should not be scheduled when conditions are unsuitable. For example, soil manipulations cannot be accomplished if flooding is likely, and prescribed burning must be planned and conducted in accordance with applicable fire codes. The temporary unavailability of labor and equipment can further complicate scheduling. Workdays may have to be shortened for safety during especially hot weather and in lightning storms. Wet weather may cause equipment to become mired. Schedules should reflect these eventualities.

Tasks for most objectives are implemented within a year or two. Some tasks may have to be delayed. For example, the re-introduction of plants and animals that require specialized habitat requirements may have to be postponed several years until habitat conditions become suitable.

38. Obtain equipment, supplies, and biotic resources. Only appropriate items should be procured. For example, machinery should be selected that does not compact the soil inordinately or damage it when making turns. Degradable materials such as organic mulch are generally preferable to persistent ones such as plastic ground covers. Nursery-grown plants should be accepted only in peak condition, and their potting soil should

consist of all natural materials. Care should be taken to ensure that regional ecotypes of biotic resources are obtained to increase the chances for genetic fitness and to prevent introduction of poorly adapted ecotypes. However, a wider selection of ecotypes and species may be advantageous in order to pre-adapt the biota at project sites undergoing environmental change. Nurseries sometimes supply superior trees that have been selected for timber quality. These may have to be inter-planted with "inferior" stock to facilitate ecosystem processes other than fiber production. For instance, deformed trees may be valuable for their wildlife cavities. Named cultivars and hybrids are unacceptable other than as temporary cover or nurse crops, because they do not represent natural species or taxa.

39. Prepare a budget for implementation tasks, maintenance events, and contingencies. Budgeting for planned implementation tasks is obvious. However, budgeting for unknown contingencies is equally important. No restoration project has ever been accomplished exactly as it was planned. Restoration is a multivariate undertaking, and it is impossible to account for all eventualities. Examples of contingencies are severe weather events, depredations of deer and other herbivores on a freshly planted site, colonization by invasive species, vandalism, and unanticipated land use activities elsewhere in the landscape that impact the project site. The need to make at least some repairs is a near certainty. Generally, the cost of repair increases in relation to the time it takes to respond after its need is discovered. For these reasons, contingency funds should be budgeted for availability on short notice.

Implementation Tasks

Project implementation fulfills implementation plans. If planning was thorough and supervision is adequate, implementation can proceed smoothly and within budget.

40. Mark boundaries and work areas. The project site should be staked or marked conspicuously in the field, so that labor crews know exactly where to work.

41. Install permanent monitoring fixtures. The ends of transect lines, photographic stations, bench marks, and other locations that will be used periodically for monitoring are staked or otherwise marked on-site and, if possible, identified with GPS coordinates. Staff gauges, piezometer wells, or other specified monitoring equipment is installed, marked, and their locations identified with GPS coordinates.

42. Implement restoration tasks. Restoration tasks were identified in Guideline #34, and these are now implemented to fulfill the ecological restoration objectives. The chief practitioner supervises project implementation or delegates supervision to project team members. Responsibility for proper implementation generally should not be entrusted to subcontractors, volunteers, and labors crews who are doing the work. The cost of retrofitting exceeds the cost of appropriate supervision.

Post-implementation Tasks

The attainment of objectives may depend as much on aftercare as it does to the care given to the execution of implementation tasks. The importance of post-implementation work cannot be overemphasized.

43. Protect the project site against vandals and herbivory. Security of the project site should be reviewed following project implementation. Vandalism may include youths who use project sites for recreational activities (e.g., camp fires, dirt bike riding). Grazing animals include domestic livestock, feral swine, deer, elephants, geese, nutria and many others. Beaver can destroy a newly planted site by plugging streams and culverts. Nuisance animals may require trapping and relocation or the construction of fenced exclosures.

44. Perform post-implementation maintenance. Conduct any maintenance activities that were described in Guideline #34.

45. Reconnoiter the project site regularly to identify needs for mid-course corrections. The chief practitioner needs to inspect the project site frequently, particularly during the first year or two following an intervention, to schedule maintenance and to react promptly to contingencies.

46. Perform monitoring as required to document the attainment of performance standards. Monitoring and the reporting of monitoring data are expensive. For that reason, monitoring should not be required until the data will be meaningful for decision-making. Regular reconnaissance (Guideline #45) may negate the need for frequent monitoring. Not all monitoring can be postponed. Some factors, such as water elevations and water quality parameters, are usually measured on a regular schedule to provide interpretable data. Sometimes monitoring is required to document survival of planting stock. A more effective substitute would be to require the replacement of stock that did not survive in lieu of monitoring.

47. Implement adaptive management procedures as needed. Adaptive management as a restoration strategy is highly recommended, if not essential, because what happens in one phase of project work can alter what was planned for the next phase. A restoration plan must contain built-in flexibility to facilitate alternative actions for addressing underperformance relative to objectives. The rationale for initiating adaptive management should be well documented by monitoring data or other observations. The project manager should realize that restoration objectives may never be realized for reasons that lie beyond the control of the chief practitioner. If so, then new goals (Guideline #5) and objectives (Guideline #27) may have to be substituted to ensure the recovery of a functional, intact, and otherwise whole ecosystem.

Evaluation and Publicity

Assessments are conducted to ensure the satisfaction of project objectives and goals. The project is publicized for public and technical consumption.

48. Assess monitoring data to determine whether performance standards are met and project objectives are attained. The results of data analysis should be documented in writing. If performance standards are not met within a reasonable period of time, refer to Guideline #47. Guideline #48 is ignored for smaller projects for which no performance standards were specified in Guideline #36.

49. Conduct an ecological evaluation of the newly completed project. This guideline requires satisfaction for those projects for which no performance standards were specified in Guideline #36. The evaluation should compare the restored ecosystem to its condition prior to the initiation of restoration activities (Guideline #20). The evaluation should determine whether or not the ecological goals from Guideline #5 were met, including the ecological attributes of restored ecosystems. Technical publication is normally the way that an evaluation is presented. To satisfy the requirements of scientific rigor that some journals expect, this evaluation may require more documentation of site conditions than those that are available from monitoring data. For that reason, an ecological investigation is apropos for all completed restoration projects. Some restoration projects are conducted by enduring institutions that have the capacity for follow-up investigations to provide a conservation perspective on the valued ecosystems after they have undergone restoration. To facilitate this possibility, care should be given to use inventory protocols that can be readily repeated for comparative purposes.

50. Determine whether cultural project goals were met. These goals were specified in Guideline #5.

51. Publicize and prepare written accounts of the completed restoration project. All too often, project personnel walk away from a completed project to begin another without stopping to consider the magnitude of their work and its benefits to the public and the environment. Sometimes a final report is required by contract or as a permit condition. Even if it is not, preparation of a final report is warranted to serve as an archival record of the project. The public deserves to be informed of a completed project and the benefits that accrue from it. News releases, media events, and public celebrations are all in order. Popular articles for public consumption can be prepared in non-technical language. Such publicity keeps ecological restoration in the public eye. If policy makers and politicians are aware of successfully completed projects, they will be more inclined to promote and fund new projects. Technical accounts of the project are equally important. Case histories become a treasure trove of information for all restoration practitioners who want to improve their professional proficiency. Case histories can be published in technical journals, trade journals, and posted on internet sites. Papers and posters can be presented at conferences.

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Ms. Susan Svirsky
Rest of River Project Manager
U.S. Environmental Protection Agency
10 Lyman Street
Pittsfield, MA 01201

Re: Comments on General Electric Corrective Measures Study
for Housatonic "Rest of River"

Dear Ms. Svirsky:

Berkshire Natural Resources Council is writing to encourage the EPA to require substantial revision and improvement of the Housatonic River "Rest of River" Corrective Measures Study. The study includes numerous shortcomings. It fails to provide for an effective adaptive management process. It fails to incorporate the cost and standards of restoration, or to convincingly explore alternative remediation technologies. The process as currently defined does not provide a meaningful role for the Commonwealth and important stakeholders in the decision making process. Most importantly, the CMS fails to establish a plan that will lead to a clean-up resulting in a clean, fishable, swimable, and naturally functional river.

Adaptive Management

The Housatonic River is a complex system and any intervention requires an adaptive management approach. A successful approach will provide a) benchmark goals for success, b) stepwise evaluation management strategy and outcomes to inform improvement of the strategy, and c) meaningful stakeholder involvement. Benchmarks should provide criteria to evaluate the success of removing PCBs as well as reclamation and restoration performance standards. Benchmarks should be quantifiable for monitoring and evaluation and should also provide GE with clear expectations for performance and potential liability. At each step there should be a meaningful dialogue among important stakeholders considering results of prior management and changes necessary to ensure future success.

There is an understandable desire shared by most stakeholders for an expedient clean-up. However, the natural and human environment will be better served by a careful and stepwise process executed over a number of years. Stepwise, as each reach or even each mile is cleaned and restored or reclaimed, valuable experience will be gained to inform the clean-up of the next mile. A slower progression will allow trees along the river bank to grow and provide shade for the fishery before large areas downstream are opened to the daylight. During a deliberate

stepwise progression natural communities will have more time to disperse and re-colonize disturbed sites and the human community will be less impacted and be better able to manage the complexity of the system at hand. Granted, any cleanup will not be fast, but taking deliberate pauses between short stretches of river will lessen the impacts and improve the over all cleanup.

Restoration Standards

Any cleanup will require some level of restoration. The standard for the clean-up and restoration should be nothing short of a fully functional ecosystem, defined by site specific reference ecosystems identified and characterized prior to the disturbance, and consistent with the Society for Ecological Restoration's *Attributes of Restored Ecosystems* (see attached excerpt from SER). Certain remediation options presented in the CMS necessitate permanently impairing the natural function of the river through methods including permanent riverbank stabilization, bank armoring, long term chanellization and management, and removal of coarse woody debris inputs. Such remedies must be considered as reclamation or ecological engineering, not ecological restoration. This is an important distinction: Restoration of a fully functional river should be considered the only strategy sufficient to avoid mitigation for resource damages. Without exploring the implications of each alternative on the potential for, and projected costs of, ecological restoration, the cost-effectiveness of each alternative cannot be completely evaluated. Approval by the EPA of a revised CMS should be dependent on incorporation into the CMS of reclamation and ecological restoration standards and cost estimates associated with various alternatives.

Alternative Remediation Technologies

All eyes are on the cleanup of the Housatonic. The standard we set may be repeated around the country as may be our successes and shortcomings. While we might not achieve a perfect cleanup, we should learn as much as possible in the process to inform future cleanups. The CMS employs basic and ancient technologies of "dig and bury," and we believe it does not adequately or convincingly evaluate alternative technologies. While proven alternative remediation technologies may not be readily available today, the limits of our knowledge in 2008 should not preclude options for effective remediation in the future. Furthermore, if such a precious and complex natural resource as the Housatonic River must be first degraded by contamination and then fall under the excavator, such intrusion should be balanced with a sincere effort to study, learn and advance the science of remediation as much as possible in the process. We strongly believe that pilot studies on the feasibility and efficacy of alternative remediation technologies should be conducted at each stage of the clean-up. These studies can inform cleanup decisions on the next section of river as well as make a positive impact on future remediation projects around the country. The legacy of the Housatonic and its cleanup can and should be one that the community and the country can be proud of.

Stakeholder Involvement

The lack of involvement of stakeholders in the decision making process is a great failing of the CMS and perhaps the Consent Decree itself. While it is understood that GE and EPA will be working with individual landowners regarding implementation and reclamation or restoration

planning, decisions made as EPA approves or rejects the CMS have the potential to drastically limit the available future options. When considering the importance and complexity of the resource at hand, the Commonwealth and other important stakeholders must be at the table for important decision making.

Conclusion

While the alternatives, process, and evaluation in the CMS may be flawed, it is telling that it also leaves the question as to whether the most extensive cleanup considered will truly return the river to an unconditionally fishable and swimable recreational resource free of institutional controls, and to its standing as a wild river that is free of permanent engineering solutions. These should be the goals and standards for the cleanup of the Housatonic: fishable and swimable is the national goal for all rivers and waterways, and a wild river is our reasonable hope and expectation for our river resource. The CMS as constructed does not evaluate what is necessary to clean the river to this standard – it limits itself to balancing the cost and outcomes of a series of failed solutions. The alternatives as defined leave the river subject to potential future inputs of PCBs, and mandate permanent engineering and management of the river. BNRC advocates for a cleanup that will return the Housatonic to a fishable and swimable river that is free of permanent engineering and channel management.

Thank you for your consideration of these issues. We look forward to working with you further as the process continues.

Sincerely,

Theodore H. Ames
President

cc: Jeff Porter, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C. (for General Electric)
Kevin Mooney, Remediation Project Manager, General Electric
Mary Griffin, Commissioner, Massachusetts Department of Fish and Game
Laurie Burt, Commissioner, Department of Environmental Protection
Wayne F. MacCallum, Director, Massachusetts Division of Fisheries and Wildlife
Susan Steenstrup, DEP WERO
Congressman John Olver
Senator Benjamin B. Downing
Representative Christopher Speranzo
Representative Denis E. Guyer
Representative William Smitty Pignatelli
Berkshire Environmental Action Team
Housatonic River Initiative
Housatonic Valley Association
Massachusetts Audubon Society
The Trustees of Reservations

The following excerpt is taken from *The SER International Primer on Ecological Restoration.*

Section 3. Attributes of Restored Ecosystems

This section addresses the question of what is meant by "recovery" in ecological restoration. An ecosystem has recovered - and is restored - when it contains sufficient biotic and abiotic resources to continue its development without further assistance or subsidy. It will sustain itself structurally and functionally. It will demonstrate resilience to normal ranges of environmental stress and disturbance. It will interact with contiguous ecosystems in terms of biotic and abiotic flows and cultural interactions.

The nine attributes listed below provide a basis for determining when restoration has been accomplished. The full expression of all of these attributes is not essential to demonstrate restoration. Instead, it is only necessary for these attributes to demonstrate an appropriate trajectory of ecosystem development towards the intended goals or reference. Some attributes are readily measured. Others must be assessed indirectly, including most ecosystem functions, which cannot be ascertained without research efforts that exceed the capabilities and budgets of most restoration projects.

1. The restored ecosystem contains a characteristic assemblage of the species that occur in the reference ecosystem and that provide appropriate community structure.

2. The restored ecosystem consists of indigenous species to the greatest practicable extent. In restored cultural ecosystems, allowances can be made for exotic domesticated species and for non-invasive ruderal and segetal species that presumably co-evolved with them. Ruderals are plants that colonize disturbed sites, whereas segetals typically grow intermixed with crop species.

3. All functional groups necessary for the continued development and/or stability of the restored ecosystem are represented or, if they are not, the missing groups have the potential to colonize by natural means.

4. The physical environment of the restored ecosystem is capable of sustaining reproducing populations of the species necessary for its continued stability or development along the desired trajectory.

5. The restored ecosystem apparently functions normally for its ecological stage of development, and signs of dysfunction are absent.

6. The restored ecosystem is suitably integrated into a larger ecological matrix or landscape, with which it interacts through abiotic and biotic flows and exchanges.

7. Potential threats to the health and integrity of the restored ecosystem from the surrounding landscape have been eliminated or reduced as much as possible.

8. The restored ecosystem is sufficiently resilient to endure the normal periodic stress events in the local environment that serve to maintain the integrity of the ecosystem.

9. The restored ecosystem is self-sustaining to the same degree as its reference ecosystem, and has the potential to persist indefinitely under existing environmental conditions. Nevertheless, aspects of its biodiversity, structure and functioning may change as part of normal ecosystem development, and may fluctuate in response to normal periodic stress and occasional disturbance events of greater consequence. As in any intact ecosystem, the species composition and other attributes of a restored ecosystem may evolve as environmental conditions change.

Other attributes gain relevance and should be added to this list if they are identified as goals of the restoration project. For example, one of the goals of restoration might be to provide specified natural goods and services for social benefit in a sustainable manner. In this respect, the restored ecosystem serves as natural capital for the accrual of these goods and services. Another goal might be for the restored ecosystem to provide habitat for rare species or to harbor a diverse genepool for selected species. Other possible goals of restoration might include the provision of aesthetic amenities or the accommodation of activities of social consequence, such as the strengthening of a community through the participation of individuals in a restoration project

Society for Ecological Restoration International Science & Policy Working Group. 2004. *The SER International Primer on Ecological Restoration.* www.ser.org & Tucson: Society for Ecological Restoration International.

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Friday, May 16, 2008

Ms. Susan Svirsky
Rest of River Project Manager
United States Environmental Protection Agency
c/o Western Solutions
10 Lyman Street
Pittsfield, MA 01201

RE: EPA-GE Housatonic River Site, Corrective Measures Study Public Comments

Dear Ms. Svirsky:

I would like to thank you and EPA for taking informal comments in regards to General Electric's Housatonic River "Rest of River Corrective Measures Study. We hope that this insightful process may indeed lead to the best possible cleanup for the river.

For 117 years, The Trustees of Reservations has been preserving for public use and enjoyment properties of exceptional scenic, historic and ecological value in Massachusetts and working to protect special places across the state. This remains our mission.

It is with this purpose in mind that the Trustees have been strong advocates for the Housatonic River – truly a special place. We played a key role in securing federal designation of the Upper Housatonic Valley National Heritage Area. Within this boundary we own and manage eleven properties, one of which is Bartholomew's Cobble. Of the Cobble's 329 acres, 76 acres directly abut the river.

Bartholomew's Cobble is one of The Trustees' most important properties and has received federal recognition as a National Natural Landmark. Thankfully, none of the clean-up proposals GE has submitted pertain directly to this property, but we very concerned about the negative impact on proposals directly affecting the Canoe Meadows in Pittsfield, MA, a property owned and managed by the Massachusetts Audubon Society.

The idea of dredging and land filling with contaminated material, cutting down all the trees along the banks, and replacing the embankments with rip-rap should not be the only clean-up and restoration option. This is a remarkably beautiful and scenic river that should retain its beauty and ecological values irrespective of the clean-up method. We ask that the EPA require GE to follow a process that takes full advantage of the latest science and technologies.

GE estimates that this clean-up may take 50 years. Given that extraordinary length of time, we ask EPA to mandate a phased process that includes public involvement and definite benchmarks for progress and critical evaluation. To make decisions today for a cleanup that far in the future would be unrealistic. A better idea would be to go more slowly, have more public input along the way, embrace new and better ways of remediation as the cleanup progresses, and include a process of adaptive management that calls for review of successes and failures and allows for changes in strategy based on this information.

Charles Eliot founded the Trustees on the premise that people and land are interconnected and that natural and cultural landscapes play a key role in supporting a healthy society. In that spirit, we strongly endorse the following ten principles of the Housatonic Clean River Coalition (HCRC) on this issue.

We endorse HCRC's Ten Principles for a Better River Cleanup.

1. Long-term health and environmental goals for the project should be described clearly and simply at the beginning of the clean-up.
2. Areas of contamination should be addressed a few at a time in phases rather than all at once.
3. Each phase should include pilot projects to test new technologies.
4. Plans should be reviewed and revised at the end of each phase.
5. The community should have a formal and substantial role in planning each new phase.
6. Planning for each phase should be guided by limits on environmental disruption and cost established at the beginning of the process.
7. A comprehensive health study should be conducted by an independent body, and the results of that study should influence planning and priorities.
8. The entire river, including areas downstream in Connecticut, should be evaluated for remediation in each phase.
9. Sources of continued contamination of the river should be identified, evaluated, and remediated.
10. If the EPA mandates dredging, lined landfills should be considered only as purely temporary measures.

Once again, we very much appreciate EPA's proactive approach to inviting these comments. We want to see a comprehensive clean-up take place, following as much informed public participation and expert consideration as can be achieved. Thank you for your consideration.

Sincerely yours,

Andrew W. Kendall
President

United States Department of the Interior

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May 20, 2008

Susan Svirsky
EPA Rest of River Project Manager
Weston Solutions
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Pittsfield, MA 01201

Dear Ms. Svirsky:

Thank you for the opportunity to review the Housatonic River – Rest of River (ROR) Corrective Measures Study (CMS), General Electric (GE)-Pittsfield/Housatonic River Site, Pittsfield, MA, March 2008. We are providing comments during the CMS informal public comment period under our role as a Natural Resource Trustee.

The document synthesizes a large volume of accumulated site and modeling data to present a breadth of remedial alternatives. As presented, no one alternative meets the level of ecological protection that we feel is warranted throughout the entirety of the ROR. However, specific remedial options proposed within alternative types do have merit and are worth implementing in combination with comprehensive restoration techniques. We are aware that more detailed specifications and direction will be provided in future Proposed Remedial and Restoration Plans once remedial/restoration options are decided on by the regulatory agencies. However, the CMS should stand alone and additional data should be provided, as described below, to allow a more thorough evaluation of the potential impacts and effectiveness of remedial options. We expect that there will be several phases of regulatory document review that will allow for further agency comment and discussion prior to finalization of remedial/restoration alternatives. However, herein we provide preliminary overview recommendations and summary comments early in the remedial measures review process so that our general position on remedial/restoration alternatives is known to the regulatory and natural resource agencies and Responsible Party.

We support aggressive clean-up of PCB-contaminated soils/sediments and habitats, based on conservative media protection goals, for the long-term protection of fish and wildlife resources. Both regulatory and natural resource agencies should evaluate the best methods to prevent, avoid, or minimize impacts to important habitat areas while still accomplishing reasonable PCB remediation. Restoration efforts should be equally aggressive and innovative with stringent monitoring protocols

to insure that the widely varied riverine and floodplain habitats are fully restored, remain healthy, and free of invasive species over the long-term. We strongly suggest an expedited remedial initiation and completion time frame rather than the protracted timeline presented by GE.

Recommendations provided herein should be considered conditional and may evolve during subsequent discussions with regulatory and natural resources agencies, further analysis of CMS data or data not provided in this document, new information, or future conditions resulting from remedial or natural processes that substantially alter existing conditions. The following are recommendations for remedial options for the riverine portions of the ROR, based on the eight remediation alternatives, as presented in Table 1-1 and discussed in Section 4:

Reach 5A: Conduct 2-foot removal with full-scale capping, in-situ or in the dry, except in areas prone to high scouring and with PCB concentrations significantly elevated above the lower bound sediment Interim Media Protection Goals (IMPGs) at depth, then conduct 3-foot removal with backfill and capping. Two-foot removal/capping, as proposed under SED-3 through SED-6 alternatives, should be sufficient to remove a large percentage of the PCB contamination in the riverbed and provide adequate protection post-capping. However, because PCB concentration data is not provided, it is difficult to determine if sediments deeper than 2 feet should be addressed, as proposed in SED-7/8. Therefore, we propose additional excavation and cap thickness to cover the potential for elevated PCB concentrations at depth that may be problematic in high erosion areas. Under most scenarios, a 2-foot engineered cap, discussed below, should be sufficient to contain sub-cap PCB migration, provide ample thickness to weather low-moderate erosional processes over extended time frames, protect benthic and vertebrate biota from exposure, prohibit exposure to humans during consumptive and non-consumptive use activities and add a safety factor for uncertainty. A 3-foot cap in high erosion areas may necessitate the use of moderate armoring of the riverbed in conjunction with 2-foot capping strategies.

Reaches 5 B and 5C: Conduct removal and capping activities, as indicated for Reach 5A, where relevant and appropriate, based on exceedance of PCB concentrations above lower bound sediment IMPGs.

Erodible banks: Conduct 2-foot removal of bank soils to lower bound sediment IMPG standards at depth, where relevant and appropriate, as discussed below, with backfill/capping and stabilization of embankments, using the greatest proportion of bioengineering material feasible.

Reach 5 Backwaters: Conduct 2-foot removal of sediments with full-scale in-situ capping, in areas in excess of lower bound sediment IMPGs and less than 6-10 feet deep, dependent on phototropic zone depth. In areas deeper than the phototropic zone, perform full-scale in-situ capping. Removal of contaminated sediments should include the removal of contaminated emergent/submergent plant stock that exists in most backwater areas and acts as a potential mechanism for annual PCB cycling or PCB biomass reservoir. Capping should not encroach on phototropic zone depths which may vary considerably within or between backwater areas dependent on suspended sediment loads and organic cycling. A 2-foot-thick cap should exclude most shallow rooting emergent/submergent plants that re-colonize backwater areas from future exposure to sub-cap residual PCB concentrations, prevent

preferential pathway migration of PCBs along plant roots, and offer a buffer for biotic perturbations related to invertebrate vertical movements, fish spawning and vertebrate foraging/gathering.

Reach 6 Woods Pond: Conduct 2-foot removal with full-scale in-situ capping in shallow areas not subject to scour, 3-foot removal with backfill and capping in areas prone to high scouring and with PCB concentrations significantly elevated above the IMPGs at depth. Conduct full-scale in-situ capping in areas deeper than the phototropic zone not subject to channel flows or scouring. Removal of contaminated sediments or deep water capping should include the removal of contaminated submerged aquatic vegetation (SAV) during sediment dredging or prior to capping activities. SAV may interfere with effective capping activities due to its significant bulk volume and its probable high net weight PCB biomass and entrained sediment content.

Reach 7 Channel: Conduct Monitored Natural Recovery (MNR), contingent on current PCB concentrations or future conditions following upstream remediation, then 2-foot removal and full-scale capping for significant areas in excess of lower bound sediment IMPGs. The potential exists for PCB-contaminated suspended sediment loads to increase during remedial activities and be transferred to downstream areas. This may result in higher concentrations of PCBs in downstream reaches than currently exist and increased exposure and effects potential, which should trigger remedial action. This issue should be evaluated during and after remediation of Woods Pond and all upstream floodplain habitat areas.

Reach 7 Impoundments: In areas with PCB concentrations elevated above lower bound sediment IMPGs at depth, conduct 2-foot removal with full-scale capping in shallow areas not subject to scour. Conduct 3-foot removal with backfill and full-scale capping in areas prone to high scouring and with PCB concentrations significantly elevated above the IMPGs at depth. Conduct full-scale in-situ capping in areas deeper than the phototropic zone and not subject to channel flows or scouring.

Reach 8: In areas with PCB concentrations elevated above IMPGs at depth, conduct 2-foot removal with full-scale capping in shallow areas not subject to scour, 3-foot removal with backfill and full-scale capping in areas prone to high scouring and with PCB concentrations significantly elevated above the IMPGs at depth. Conduct full-scale in-situ capping in deep areas not subject to channel flows or scouring.

Reaches 9-16: Conduct MNR, contingent on PCB concentrations following upstream remediation, then 2-foot removal and capping for significant areas in excess of sediment IMPGs. Two-foot removal is warranted for these reaches, and generally in all cases where residual contamination post-excavation will be in excess of IMPGs regardless of whether pre-excavation contamination exists to 2 feet. This should allow adequate protection for biota and preclude the need for additional removal actions based on residual PCB concentrations.

Residual concentrations for all removal/capped areas should not exceed lower bound IMPGs. Exceedance of lower bound IMPGs post-capping due to settling of suspended contaminated sediments should trigger additional remedial actions to satisfy IMPG requirements.

The following are recommendations for remedial alternatives for the floodplain portions of the ROR, based on the seven remediation alternatives, as presented in Table 2-7 and discussed in Section 6:

Floodplains: Remediate all identified vernal pool habitat to at least mean IMPGs for amphibians. Remediate soils to at least mean IMPGs for omnivorous/carnivorous and piscivorous mammals based on re-configured area averaging units, as discussed below. Remediate soils to IMPGs for insectivorous birds based on currently proposed area averaging units. IMPGs were established to provide reasonable effects-based protective levels for indicator biota via a comprehensive Ecological Risk Assessment (ERA). We acknowledge that GE has points of departure from EPA-based lower bound IMPGs and therefore suggest attainment of at least mean IMPGs as a potential compromise. Remediation of floodplain soils will be driven in many areas by human health concerns. Residual risks above human health concerns should be evenly weighted and addressed for protection of biota. Remediation scenarios not based on IMPGs, either upper bound, mean or lower bound values, will leave elevated levels of PCBs in many areas of the floodplain and are not recommended. Floodplain soils should be excavated to a minimum of 2 feet, where relevant and appropriate, and backfilled/capped with at least 1 foot of organic surface soils with a minimum total organic carbon (TOC) content of 5% or higher, dependent on native soils characteristics.

As discussed below, area averaging units need to be adjusted for omnivorous/carnivorous and piscivorous mammals. This may markedly change the predicted level of IMPG achievement for area averages under floodplain alternatives, as presented. Additionally, IMPGs for biota foraging in both riverine and floodplain habitats are based on sediment concentrations ranging from 1-5 ppm. Final riverine sediment concentrations should be determined post-remediation for respective species area averaging units prior to initiation of floodplain remediation so that fully protective floodplain soils concentrations can be achieved.

The following are recommendations for treatment and disposition of removed sediments and soils, as presented in Table 1-3 and discussed in Section 7:

Treatment/disposition: All low moisture sediments/soils should undergo thermal desorption and be re-used as backfill on site in terrestrial settings, dependent on treatment efficiency and PCB concentrations achieved. Treatment for the reduction of PCB concentrations in high moisture soils to recommended concentrations for the protection of human health and the environment should be conducted to the maximum extent possible. Thermal desorption of low-high moisture soils will permanently reduce the overall volume of PCB contamination, alleviate a proportion of the disposal burden and allow for productive re-use of native soils.

All TSCA and non-TSCA level waste that cannot meet thermal desorption moisture requirements should be shipped to a regulated landfill that can accommodate large volumes of low-high level organic and low level inorganic waste. There are no permitted TSCA or non-TSCA waste landfills in the area that can accept the large volume of anticipated remedial waste that will be generated. An out-of-area option is recommended instead of further impacting upland/wetland habitats within the Housatonic River valley, maintaining landfill integrity in perpetuity and potentially contributing additional PCB-laden groundwater or leachate for treatment over the long-term.

The following are comments on overall protection of the environment, as discussed in the text under different remediation alternatives:

Site Preparation: Staging area and access road design and placement should be carefully scrutinized in order to minimize, to the extent practicable, impacts to riparian areas adjacent to riverine and floodplain remedial areas. Careful consideration should be given to avoid impacts to uncommon or rare natural communities and old age sentinel trees of significance. Invasive species should be aggressively managed in all staging and access road areas prior to and during remedial actions to minimize the potential for invasive species transfer into uncolonized habitats, remedial action areas and restored habitats. Maximum use of the railroad corridor adjacent to large portions of the Primary Study Area (PSA) should be conducted. This would minimize vehicular transport traffic in the larger community, contain PCB transport to a smaller footprint in case of residual PCB transfer during shipping, and expedite disposition of large removal volumes.

Control of Sources of Release: Upstream sources of contamination, West Branch and residual PCB concentrations in remediated areas, should be evaluated for their potential to contaminate downstream remediation areas over time under different PCB load transfer scenarios. The fate and transport modeling may evaluate this issue but it is unclear how long-term downstream transfer of residual PCBs into remediated areas may affect pre-remedial decisions in low-risk areas or long-term implications for exposure and effects. Dredging: Hydraulic and mechanical dredging typically result in residual contamination, ranging from 1-8%, due to suspended sediment releases during operations or the inability to capture solid-associated contamination in aqueous environments. These issues should be carefully evaluated and discussed when choosing removal technologies and managing real-time releases or residual risk. Thin-layer capping (TLC): We do not support the use of TLC, as defined, as a long-term remediation technique. In our experience, a 3-to-6-inch thin-layer cap is insufficient to sequester residual PCBs in subsurface sediments or floodplain soils over extended time frames due to groundwater upwelling, currents, wave action, high flow events, biotic perturbations and human recreational and consumptive use. TLC could be used as a short-term tool to prevent exposure and uptake immediately after dredging activities. In the event that TLC is used for short-term reduction of exposure, it should be augmented with full-scale in-situ capping techniques within 30-60 days after dredging and application completion for a given sub-area. Capping: We support the use of low permeability material, in conjunction with standard capping material, for use in all areas where residual PCB concentrations above surficial sediment standards will be left in place at depth. Low permeability materials should consist of at least a 12-inch layer with a bentonite component, similar to AquaBlock^{tm}. The low permeability layer will prevent or decrease the upward migration potential of PCB-laden pore water, act as a more restrictive barrier for direct sediment exposure to benthic invertebrates and other biota, and be a more protective barrier to ice and storm scour. Additional capping material needed to augment cap thickness could consist of more traditional cap materials, similar to subaqueous cap consistency as proposed for Silver Lake, but with a 6-12-inch organic habitat layer on top, where applicable. Riverbed consistency should mimic existing conditions, as practicable, relative to grain size distributions and organic content. Armoring of the riverbed should be avoided to the greatest extent possible except in areas subject to aggressive scour or erosion. In-situ capping in low, moderate and high flow conditions should be discussed, relative to effectiveness and suspended sediment control. Riverbanks: In areas subject to bioengineering restoration, subsurface soils with known elevated PCB levels in excess of IMPGs,

within reasonable proximity of the river, should be remediated for the protection of mink, otter, beaver, muskrats and bank-dwelling birds, such as kingfishers and bank swallows. This will also preclude the transfer of contaminated subsurface soils to remediated portions of the river by bank-dwelling biota. Backwaters: Open water, submerged aquatic and emergent habitat should be restored to the same condition as it was before removal activities. Unavoidable loss of specific habitat types should be quantified, pooled, and compensated for in adjacent areas, if possible, or within the same reach of the river.

Riverbank stabilization: The Housatonic River is characterized by highly erodible banks and episodic water fluctuations. Persistent scouring and erosion of embankments contribute to the high sediment loads in much of the upper river system. This process is integral to organic matter transport and supports abiotic and biotic cycling. Unfortunately, PCB load transport is also associated with this process and needs to be addressed. The nature and extent of PCB contamination in bank soils are crucial for deciding where and to what degree bank soils should be remediated. We recommend that removal of bank soils should be minimized to the greatest extent practicable, based on PCB concentrations and area averaging. Significant overstory trees responsible for maintaining bank stability and providing instream temperature mediation should be retained where possible. When riverbank removal is conducted, stabilization with bioengineering material should be utilized instead of armor stone whenever feasible based on flow dynamics and engineering standards. Bank slope gradients should be reduced wherever possible to accommodate bioengineering use and still attain performance specifications for stabilization. Bioengineering techniques integrated into the use of armoring in areas with greater than 3:1 gradients should also be implemented to facilitate faster naturalization of embankments. The range of naturalized river restoration techniques available should be fully investigated and incorporated into remedial design applications. Bioengineering options should use vegetated structures in all implementation areas possible to maximize naturalization potential (which benefits instream flow dynamics, water quality, aesthetics, etc.), expedite recolonization of desired vegetation, exclude invasive species and accommodate biota utilization. Bank-dwelling vertebrate pro-use areas, free of heavy stone armoring, should be promoted whenever feasible, based on literature frequency use rates, and averaged over suitable habitat areas.

Consideration should be given to riverbed stability across the floodplain over the long-term. It is unclear if modeling efforts captured the expected migration of the river channel through the wide floodplain throughout the PSA. Riverbank height and channel width influence river stability and remedial actions are expected to substantially impact these factors. Additionally, flow velocities, as influenced by the degree of riverbed and bank armoring or proportion of bioengineered embankments, will impact stability features. As evidenced by the large number of oxbows in the system, the river (unless heavily armored) is expected to migrate laterally across the floodplain over time, which has implications for areas of the floodplain where elevated PCBs remain in surface soils or at depth. These issues and others related to channel geomorphology processes, if not addressed by the fate and transport model, need to be addressed in the Proposed Plan.

Residual Risk: Riverbank erosion or floodplain transfer of residual PCB contamination via surface water sheetflow may result in future contamination of remediated areas. These sources may lead to elevated concentrations of PCBs in the river or floodplain areas that have a propensity for sediment accumulation. Residual risk should be calculated for all proposed remedial scenarios by area. Sediment accumulation areas should be preferentially monitored post-remediation.

Woods Pond dam and the other downstream dams, at least to Great Barrington, Massachusetts, present a long-term liability to the stability of residual PCBs in the Housatonic River system post-remediation. Barring total removal of PCBs within the 1 ppm isopleth, elevated capped and uncapped PCBs have the potential to destabilize and migrate downstream in the event of dam failure or purposeful dam removal. Dam removal may be proposed for one or a series of Housatonic River dams in the future in order to restore historic fishery and flow dynamics for a given reach. Additionally, all dams have a limited longevity and are subject to dissolution unless maintained in perpetuity. At some juncture, it may no longer be cost effective for dam owners to maintain their dams which may lead to breaching conditions and sediment destabilization. Massive destabilization may lead to transfer of substantial quantities of elevated PCBs downstream of the Rising Pond dam. Currently, Woods Pond dam is the key component in the Upper Housatonic dam system, relative to containment of downstream PCB migration. Present and foreseeable future status indicates that Woods Pond dam will be maintained. However, that may not be the case over the long-term for the Woods Ponds dam or the other downstream dams which may have more uncertain ownership and stewardship in the future. GE should be responsible in perpetuity for the estimated 5,500 lbs of PCBs present in Reach 7 impoundments and Rising Pond, as cited, should dam removal or dissolution become imminent, in addition to the larger implications for Wood Pond dam stability. Long-term management plans for all dams, including response actions for significant sediment transfer events associated with dam compromise or removal, should be provided in a Proposed Plan. Fate and transport modeling of dam failure implications to downstream reaches should also be included.

Institutional controls should also be discussed for all areas where residual PCB concentrations will exist in surface or sub-surface soils or sediments. Removal activities will potentially remove PCB contamination down to 1-3 feet in select media, depending on which remedial options are selected. Sufficient capping thicknesses will effectively control future exposure under normal situations. Future invasive actions should be regulated and prohibited for all remedial areas exhibiting PCB concentrations above human health or ecological protection criteria in perpetuity.

We are interested in attaining the least amount of residual risk in the shortest time frame practical for the greatest amount of habitat. A time fame of up to 25-50 years to complete remedial activities that promote this concept is unacceptably long. We also do not support the preferred alternative proposed by GE for riverine and floodplain habitat as being protective enough to media or biota over the long-term. Residual risk should be calculated for all indicator species contingent on the final mix of remedial options chosen. There should also be event and monitoring level results that trigger additional actions and these should be comprehensively detailed in a Proposed Plan.

Restoration: Average and maximum floodplain soil concentrations should be carefully evaluated to elucidate where removal of the most elevated tPCB concentrations can most efficiently and effectively reduce area averages. This may allow for habitat preservation of low risk tPCB areas rather than remediation of all areas to satisfy IMPGs, especially where sensitive habitat areas are involved. Uncommon or rare habitat assemblages, especially those that support listed species, and old age sentinel trees, especially roost, nesting and denning trees supporting listed or uncommon species, should be isolated and excluded from remedial impacts, if possible, including riverbank areas. These should be evaluated on an area by area or a case by case basis, relative to the contamination present, engineering options and value of the resource. The concept of leaving habitat islands of varying sizes and habitat types should be explored relative to the value of a specific habitat and PCB area average attainment. Habitat islands may allow isolated refugia of plant and animal species to be retained in removal areas and act as reservoirs for re-colonization during restoration succession. Special restoration considerations for sensitive areas, especially if listed species are involved, should be discussed with federal and state regulatory agencies, the Massachusetts Division of Fisheries and Wildlife (MADFW), and the Natural Resource Trustees. Consultations with MADFW natural heritage and endangered species biologists should be conducted for potential indirect or direct impacts to listed species or their habitats. Temporary relocation of uncommon or listed species, including plants, invertebrates (mussels), and vertebrates (herptiles) could be considered, where feasible, prior to removal actions and under the direction of MADFW.

Pre-existing conditions should be fully characterized prior to remedial action initiation and duplicated post-remediation, to the fullest extent practicable. Woodlot, Inc.'s habitat characterization that was conducted as part of the ERA should be utilized for evaluating removal strategies and potential habitat impact areas. Additionally, ground-truthing of current habitat conditions, especially verification of listed species presence or habitat usage, should be conducted during the planning phase. The MADFW Natural Heritage and Endangered Species Program (NHESP) is currently being funded, by the Natural Resource Trustees through Housatonic Natural Resource Damage funds, to conduct natural community inventories along the Housatonic River corridor. Inventory operations are commencing this summer and progressing over the next two years. Information gathered through these efforts should augment and help guide remedial, restoration and preservation decisions in the floodplain.

Open water, submerged aquatic and emergent habitat should be restored to its original condition post-remediation, relative to depths. Removal and capping activities should strive to replicate pre-remedial elevations for all habitat types, whether aquatic or terrestrial areas are involved. Riverine, backwater and floodplain wetland areas of significance should be replicated with emergent plantings to hasten habitat recovery, where possible. Floodplain and riverbank areas should be restored in an expedited manner that will ensure species assemblages and habitat structure re-establishment in the shortest time frames possible. Instream enhancements should be implemented in certain areas, similar to the 1½-mile restoration, to aid in habitat formation that will benefit varying species of fish and benthic invertebrate assemblages and management of flow dynamics.

A detailed restoration plan for aquatic and terrestrial habitats should be presented for review prior to remedial initiation to insure interagency agreement for remediation/restoration of all areas, especially sensitive habitat areas. Monitoring and maintenance of the restored habitat should follow a plan

similar to that currently in place for the first two miles of the river. However, habitats that are expected to be substantially impacted by remedial activities in ROR are much more complex and valuable to wildlife than those in the first two miles of river. Therefore, enhanced monitoring and maintenance should be required, including prolonged timelines for insuring success criteria. Special attention should be given to exclusion of invasive species from all disturbed/restored habitats.

Wetland mitigation, as suggested, should occur for all wetland areas impacted by staging and access roads if those areas cannot be returned to pre-remedial conditions or if impacts occur over extended time frames, including time to attain pre-remedial conditions. Mitigation should also occur for all loss of habitat type due to unavoidable impacts associated with removal or capping. Additional habitat-specific wetlands could be created within the floodplain in removal areas of low habitat value. This could satisfy wetland mitigation requirements, lessen the amount of backfilling required, and result in time and cost savings. Mitigation should also be required if significant flood storage capacity is lost as a result of capping activities, especially if removal of sediments to accommodate cap thickness is not conducted, as proposed for areas of Woods Pond and downstream impoundments.

Disposal: The Confined Disposal Facility (CDF) option, as proposed, has some major drawbacks and is not recommended. The four areas proposed, three large backwaters and Woods Pond, have the potential to be influenced in the future by river course changes or extreme episodic events. There is no guarantee that disposal and capping of large volumes of highly elevated PCB sediments in an aquatic setting would not lead to potential releases in the future. Sheetpiling, CDF cover material and berms would have to be maintained in perpetuity in order for this option to be viable. Conducting long-term maintenance, insuring minimal release of PCBs and rectifying issues if and when they arise in an aquatic system suggest high levels of uncertainty and incompatibility with long-term protectiveness. In addition, a CDF would permanently impact large areas of aquatic habitat and flood storage capacity, as stated. The largest sediment removal options would require filling the majority of Woods Pond and one or more of the main backwaters slightly upstream, all of which are valuable habitat areas for fish, waterfowl, and other migratory birds. For these reasons, we are not confident that the CDF option would be protective over the long-term, or be in the best interest of the biotic community dependent on these areas for feeding, breeding, staging and overwintering. If EPA accepts the CDF option, then large-scale mitigation for the lost habitat areas and flood storage capacity would be required and a more rigorous CDF design with stringent monitoring and maintenance requirements would be recommended.

An Upland Disposal Facility (UDF) option should require the minimization of waste volume through thermal desorption prior to landfilling. All soils/sediments that do not meet IMPG standards for re-use after treatment or that cannot be treated due to moisture content or other issues should be disposed of in a UDF. PCB concentrated filter cakes or contaminated by-products of treatment processes should also be disposed of in a UDF. We recommend out of area disposal in pre-existing landfills that are established for these purposes rather than creating more known and potential impacts to area habitat via creation of a local mixed TSCA-certified/non-TSCA landfill. However, if the U.S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MADEP) accept the creation of a local PCB landfill, mitigation for lost function and values of upland habitat in perpetuity, due to landfill site impacts, would be required.

Rigorous monitoring and maintenance requirements would be recommended for a local landfill, with similar or more stringent requirements than those that exist for the Hill 78 disposal area.

The following are assorted section-specific comments:

Section 2.2.2.3: Insectivorous birds: Appendix B: Assumptions: It appears that the wood duck dietary invertebrate proportion only amounts to < 80% of total dietary intake, as proposed for the IMPGs. In order to fully evaluate dietary intake and calculate a final protective goal, a 100% dietary intake could have been modeled, including sediment-soil ingestion.
Piscivorous mammals: Appendix C, Section 2: The assumption is made that the waterfowl component of the mink diet consists solely of insectivorous species (i.e., wood duck, *Aix sponsa*). Piscivorous waterfowl species (i.e., hooded mergansers, *Lophodytes cucullatus*) actively breed and occupy territories similar to wood ducks throughout the PSA. Hooded merganser adults and eggs are expected to have considerably higher PCB loads than wood ducks due to dietary intake and should be mentioned here and in the uncertainty section, relative to average waterfowl concentrations.

Section 3.1.1: It would be helpful to provide a reference table and/or figures of current reach or summary spatial bin data to depth and proposed area average PCB concentration per species to better evaluate the relative effectiveness of exposure and risk reduction for the proposed remedial options. It would also be beneficial to provide figures with habitat characterizations for areas proposed for remedial actions. Evaluation of the existing resources is a key component in determining the need to proceed with removal actions for specific areas.

Section 3.1.4.3: GE is slated to dredge 2.65 million cubic yards of PCB-contaminated sediments from the Hudson River in a time frame of less than 10 years, with a target sediment cleanup concentration of 1 ppm and aggressive productivity criteria. We realize that the two projects have considerable differences in scope and logistical dynamics but projected productivity rates for the Housatonic appear to be under-scaled compared to the Hudson dredging project. It seems that closer comparability in removal productivity might be attained with alteration of remedial techniques and increased work force. The dry removal activities proposed for the upper reach, 5A, constitute a significant expenditure of time. These preclude the progression of downstream remedial activities until their completion, unless simultaneous removal activities can be conducted in downstream reaches or floodplain areas and effectively segregated from upstream suspended sediment load contamination associated with dredging activities or episodic high water events. Wet excavations, although not as conservative relative to removal efficiency and protectiveness, are recommended if they will result in reasonable attainment of media protection goals, minimal increase in residual risk and expedited remedial timelines. The protracted timelines proposed to complete remedial alternatives are a large concern on many levels. Extended remedial efforts increase and prolong impacts to human health and the environment. Furthermore, they do not allow for the initiation of restoration processes which are integral to the return of the river to functional use levels for the general public and biota. All efforts should be made to expedite remedial activities to a shortened time frame while ensuring remedial goals are attained.

Section 3.3.1/5.2.3.3: Insectivorous Birds: Area averaging size appears to increase in acreage moving downriver, culminating with the largest acreage inputs for Woods Pond area. Please clarify why area averaging is not consistent throughout the PSA.

Section 3.3.1/5.2.3.4: Piscivorous mammals: The size of the two area averaging units appears overly liberal and warrants further discussion. It would be pertinent to state the linear distance and total number of acres/hectares of each area averaging unit. Mink females, especially during reproductive cycles, have highly reduced home ranges, 7 to 21 hectares, compared to males, 310 to 777 hectares, as cited in the ERA. Females are the key components in life tables and species propagation and should be the targeted sex for calculation of area averaging unit size, especially when sex-related differences are known and pronounced.

Section 3.3.2: The use of largemouth bass as a surrogate for trout is problematic when modeling fish protection in areas below the PSA. Salmonid species are typically more sensitive to PCBs than centrarchids and may not be adequately evaluated for potential risk in coldwater fishery areas with elevated PCBs. The IMPG for coldwater fish, as stated in Table 2-7, is 14 ppm, versus 55 ppm for warmwater fish. The IMPG for coldwater fish should be used for all viable coldwater habitat areas evaluated downstream of Woods Pond.

Section 4.0: The use of different modeling periods, ranging from 52-81 years as presented, makes it difficult to evaluate modeling outputs relative to years to achieve IMPGs. Please standardize or clarify throughout the document.

Section 5.2.3.2: The use of Minimum Viable Population (MVP) for determining area averaging units is contrary to that used for other indicator species and requires further validation. GE's use of MVP, a liberal interpretation of EPA's perceived intent in their April 13, 2007 directive letter to GE regarding omnivorous mammal area averaging, results in the use of much larger averaging areas for calculation of remedial goals in floodplain soils than the use of standard home range scales. These larger area averaging units will potentially result in more areas in exceedance of IMPGs for omnivorous mammals. The MVP approach utilized proposes a scale of 500 individuals as a conservative measure. As cited, Lehmkuhl 1984 and others state that an MVP within the range of 50-500 individuals is reasonable. Therefore, conservative scaling would infer a much lower MVP than used. Additional discussion on this issue is warranted.

Short-tailed shrews are almost ubiquitous in healthy floodplain habitats during non-inundated periods. Information should be provided on the parameters for the classification of unsuitable shrew habitat.

Section 5.2.3.3/5.2.3.4: The presumptive use of average sediment concentrations of 1 ppm tPCBs to calculate soil remedial levels for biota using aquatic and floodplain habitats to achieve dietary requirements results in higher floodplain habitat cleanup scenarios and should be augmented with figures for higher average sediment tPCB values.

Indicator floodplain biota is excluded from specific habitats based on habitat suitability determinations. Overlap of floodplain indicator species unsuitable habitat areas may result in areas being unassessed for remedial clean up standards and should be addressed.

Section 5.3.3/5.3.4: Areas that are not assessed for floodplain cleanup levels due to IMPG exceedance in sediments should have a default cleanup value applied.

Section 6.0: It is unclear why pertinent tables are lacking Removal Depth, Volume and Area estimates. Please provide where appropriate.

It would be beneficial to include all indicator species on figures depicting removal scenarios, including overlap areas with human health removal areas.

Table 6.15/6.39: It appears that there are inconsistencies in removal volumes and post-remediation exposure point concentrations (EPC) between the less conservative and more conservative removal strategies that require further scrutiny (i.e., 8-VP-2, 23-VP-2, etc.) It is uncertain if these issues exist for all other pertinent removal tables, as well.

Section 7.1.9: It would be beneficial to provide a cost matrix for all sediment and floodplain volume options for Off-Site Disposal in Permitted Landfill - TD1.

As with all large-scale remediation/restoration plans that project long time frames for completion, adaptive management plans are key for successful and efficient implementation of the project. We expect that remediation strategies will evolve as the site progresses to fine-tune projected activities or will include new techniques that may prove effective and efficient or be warranted based on new technological information or site data. We realize that the remedial efforts we propose will result in large-scale impacts to habitat over short-moderate time frames. However, we also realize that the nature and extent of the PCB contamination will result in considerably longer-term impacts if aggressive clean-up actions are not implemented. Less than aggressive clean-up actions will result in too much residual risk, undermine the efforts in remediated areas, and devalue the portions of the ROR that are impacted by remedial activities. We stress the need to consult with both regulatory and natural resource agencies on the methods for remediation and restoration to minimize unnecessary impacts to valuable habitat types. We also stress the importance of expediency in remedial initiation, implementation, and completion. This will allow restoration efforts and successional processes to proceed sooner and result in functional habitat for biota and the public in shorter time frames than proposed.

We look forward to continued discussions on the Corrective Measures Study, the crafting of long-term appropriately protective remedial options and the development of methods that restore the health and productivity of all the natural resources in the river and floodplains.

Please contact Kenneth Munney at 603-223-2541, extension 19, or Kenneth_Munney@fws.gov, if you have questions or concerns about these comments.

Sincerely yours,

Marjorie Snyder
Acting Supervisor
New England Field Office

Housatonic Environmental Action League, Inc.

Post Office Box 21, Cornwall Bridge, CT 06754-0021 860-672-6867

Tuesday, May 20, 2008

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

Sent via email to: <svirsky.susan@epamail.epa.gov>

RE: EPA GE-Housatonic River Site, Corrective Measures Study (CMS), Informal Public Comments

Dear Susan,
Please accept the following comments on behalf of HEAL's board of directors and its members. HEAL is a 501(c)(3) grassroots organization which has a broad-based membership of individual and organizational stakeholders throughout the tri-state Housatonic River watershed. We have been actively involved with this EPA hybrid Superfund site since 1995. We are an all-volunteer organization with no paid staff, and are one of the primary NGOs at the site. One of our primary goals is to attempt to keep our members, other stakeholders, citizens, elected officials and governmental agencies updated on the current events of Housatonic PCB-containment.

As we have historically, upon release of the CMS, HEAL requested an extension of the public comment period and encouraged others to do the same. The CMS and its corresponding documents are over 500 pages and were years in the making. The informal public comment period was extended to May 20th....an addition of a mere 30-days to the original 30-day published period. It appears that from the front of the CMS Fact Sheet, a request for an extension may have already been anticipated by EPA and built into the process. This site has a committed and actively involved stakeholder base, with people who do read these documents. Sixty days is not even sufficient for some of the technical experts to read, analyze and comment on the larger documents. Furthermore, it is most difficult with the time EPA allots, for the various NGOs to 1) adequately disseminate the information to stakeholders throughout the watershed, and 2) to then expect citizens in any numbers to provide meaningful comments. Please review EPA's practices at this site for public comment periods and consider allowing adequate

time, particularly on large and important documents.

HEAL, as a member of the newly formed Housatonic Clean River Coalition (HCRC), helped to draft, and is a signatory to, their CMS comment letter. We support and endorse every point and principle included in the HCRC comments. With the CMS in its current form, we see no other choice but for EPA to "unconditionally disapprove" General Electric's various recommendations for remedying their multi-generational contamination throughout Rest of River.

Dr. Peter deFur of Environmental Stewardship Concepts is the technical expert to the Housatonic River Initiative. HRI is the single EPA-chosen recipient of their Technical Assistance Grant (TAG). From the EPA website: *"**The TAG provides money for activities that helps the community participate in decision making at this eligible Superfund site.**"* It is usually awarded to an actively involved NGO who demonstrates broad stakeholder support and the trust of the community. Dr. deFur's professional fees are paid for with TAG funds.

HEAL supports and endorses Dr. deFur's comments on the CMS.

We look forward to EPA generating a thoughtful "adaptive management" (AM) approach to Rest of River to include PCB-destruction technologies, pilot studies in MA and CT, phased remediation, indefinite monitoring, contingency plans and enhanced public outreach and participation in MA and CT.

We appreciate the 60-day opportunity to participate (albeit informally) during this stage of the CMS.

Respectfully submitted,

Judy Herkimer

healct@snet.net

Tuesday, May 20, 2008

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

Sent via email to: Svirsky.Susan@epamail.epa.gov

RE: EPA GE-HOUSATONIC RIVER SITE, CORRECTIVE MEASURES STUDY PUBLIC COMMENTS

Dear Ms. Svirsky,

We the undersigned urge the Environmental Protection Agency to reject the recommendations of General Electric's *Housatonic River "Rest of River" Corrective Measures Study*. Instead, we ask that the EPA require GE to follow a process that takes full advantage of new science and technology, includes meaningful community input throughout the cleanup process, and truly addresses the entire "rest of the river," from the sources of its ongoing PCB contamination in Berkshire County to its outlet in the Long Island Sound. We represent a broad coalition of environmentalists, sportsmen, municipal and other agencies, and ordinary families who work, play, and live along the river. While we are motivated by a wide range of interests and concerns, we are united in the principles set forth in this letter.

Our goal is simple: We want GE to return the river largely to the condition it was in before they polluted it. We want our families to be able to swim and fish in the river, as they once did, without fear of contamination. We want mink and otter and eagle to live and thrive on the river as they once did. We want the PCBs that GE left behind—which will not break down naturally in our lifetimes—to be permanently neutralized as threats to our communities and our environment. And we don't want all the trees cut down and the river bank turned into a construction site in the process.

WHY GE'S PROPOSAL IS UNACCEPTABLE

We recognize that the economic and technological challenges to achieving this goal are significant. We are not demanding a perfect solution irrespective of practicality and cost. However, GE's proposal will not meet the goal of undoing the damage they have done. Their "solution" is to dig up or cover over large swaths of the Housatonic and dump the highly persistent and highly dangerous contaminants in our communities and along the river itself, using the same techniques that would have been used when Love Canal was a new crisis. Meanwhile, the proposal ignores more than a hundred miles of contaminated river south of Woods Pond and does not eliminate the remaining sources of contamination that continue to release toxins into the river. And after the digging is completed, GE does not provide a credible plan to restore what will be left of the river.

GE's proposal relies heavily on the same methods that were employed 10 or even 20 years ago. It ignores current data and ongoing research supporting the creative use of new technologies. It also ignores the need for further study of the health impacts of the contaminants on the people who have been exposed to them in Massachusetts, Connecticut, and New York. We want to work with GE, and we don't expect miracles. But the current proposal can only be characterized as a failure of "ecomagination."

We are also skeptical that GE's proposal makes sense from a purely economic perspective. GE has not convinced us that dredging the river and moving thousands of tons of contaminated mud will be less expensive than employing new technologies that could potentially treat the PCBs in place. We also aren't convinced that monitoring and maintaining large landfills containing the contaminants for fifty years or more will be cheaper than technologies that may be more expensive at first but don't require the monitoring of toxic waste sites for decades. And we're skeptical that GE's cost estimates fully cover the potential expense and legal liability of leakage from those landfills. In addition to being a bad deal for the people of Massachusetts and Connecticut, the "Rest of River" proposal may very well be a bad deal for GE. We believe that the company could get better results for the community at lower cost if a more creative approach were taken.

WHAT SHOULD BE DONE INSTEAD

GE's proposal extends out fifty years, at the end of which the river will not be fully restored under any of the options that they provide. But we will learn a lot over the course of those fifty years that nobody could plan for today. Scientists will improve upon the new technologies that are becoming available for destroying PCBs, making them cheaper and more effective. We will also learn more about the details of the contamination and the river itself as the cleanup progresses. Even the very best engineers, scientists and computer modelers could not possibly create a plan for this cleanup today that will make sense even fifteen or twenty years from now.

There is a better way**.** The EPA can mandate a phased process that addresses the clean-up a few problem spots at a time. Each phase would include pilot testing of new technologies. At the end of each phase, the EPA and the community would evaluate the results of the experiments together, along with any other new developments, and adjust plans for the next phase. By requiring such a plan, the Agency would be honoring the commitment it made to the community eight years ago as part of the agreement that enabled the original consent decree to go forward. At a press conference in April 2000, Region One Director Mindy Luber explicitly acknowledged that the agreement "includes EPAs commitment to identify and potentially test new and innovative treatment technologies."

We urge the Agency to honor that commitment. Enclosed is a set of principles that we believe could be the basis for a productive and cooperative relationship with GE that would produce better results for the community while improving GE's brand and protecting its bottom line. We hope that the Agency will consider these principles as the foundations for any plan going forward.

Respectfully submitted,

Berkshire County League of Sportsmen - Mark Jester

Berkshire Environmental Action Team - Jane Winn

Berkshire Environmental Education Network - Jane S. Burke

Berkshire Natural Resource Council - Bryan Emmett

Berkshire Regional Planning Commission - Nat Karns

Berkshire-Litchfield Environmental Council - Star Childs

Citizens for PCB Removal - Charlie and Barbara Cianfarini

Community Development Corporation, South Berkshire - Tim Geller

Green Berkshires Inc, - Eleanor Tillinghast

Housatonic Environmental Action League - Audrey Cole, President

Housatonic River Commission - William Tingley, President

Housatonic River Initiative, Housatonic Riverkeeper - Timothy Gray

Lee Land Trust - Jan Kegler

Town of Lenox, Board of Health

Town of Lenox, Planning Board

Northwest Conservation District - Jean Cronauer, Executive Director

Stratford Action for the Environment - Charles Perez, President

Taconic Chapter of Trout Unlimited - Gene Chague

Town of Sheffield, Board of Selectmen

Rene Wendell, Conservation Ranger, Bartholomew's Cobble

Dr. Don Roeder, Berkshire Environmental Research Center

Jay Baver

Olga Weiss

Lynn Fowler

Woods and Mary Lou Sinclair

Sarah Flynn

Valerie Andersen

Michael Feldstein

Kathy Kessler

Richard T. Delmastro

Barbara Kellogg

David Martindale

Edward Jordon and Family

Al and Nancy Bertelli

Alan Silverstein

Mary Berle

Enclosures (1)

TEN PRINCIPLES FOR A BETTER RIVER CLEANUP

The Housatonic Clean River Coalition (HCRC) proposes that GE, the EPA, and the communities in the contaminated areas work together through a cleanup process that would benefit everyone by following these basic principles:

1. Long-term health and environmental goals for the project should be described clearly and simply at the beginning of the clean-up.

2. Areas of contamination should be attacked a few at a time in phases rather than all at once.

3. Each phase should include pilot projects to test new technologies.

4. Plans should be reviewed and revised at the end of each phase.

5. The community should have a formal and substantial role in planning each new phase.

6. Planning for each phase should be guided by limits on environmental disruption and cost established at the beginning of the process.

7. A comprehensive health study should be conducted by an independent body, and the results of that study should influence planning and priorities.

8. The entire river, including areas downstream in Connecticut, should be evaluated for remediation in each phase.

9. Sources of continuing contamination of the river should be identified, evaluated, and remediated.

10. If the EPA mandates dredging, lined, upland landfills should be utilized only as purely temporary measures.

Comments on
Housatonic River
Corrective Measures Study Report
Prepared by
Environmental Stewardship Concepts
On Behalf of
The Housatonic River Initiative
May 19, 2008

Issues/Recommendations

- **Contrary to GE's claims, PCBs in and around the Housatonic River present a major threat to humans and wildlife**
- **Monitored natural recovery (MNR) is not an effective approach to dealing with persistent pollutants like PCBs in or out of the river**
- **Technologies such as phytoremediation and sediment washing are viable alternatives to placing contamination in landfills and can reduce PCB concentrations to safe levels**
- **Under the approach selected by GE, the Housatonic River would remain a catch and release fishery indefinitely**
- **EPA should force GE to take a more aggressive approach that uses new technologies and will reduce PCB contamination in the environment and wildlife to safe levels**

General Comments

The Corrective Measures Study, or CMS, presents a series of options for how GE might cleanup the PCB contamination from the Housatonic River. EPA has published a summary of the CMS and explains each method. The remedies selected by GE are not effective and they fail to properly evaluate other alternatives.

This document should be viewed with extreme skepticism. Based on GE's previous actions and their own statements, they obviously have no intention of implementing an effective cleanup. The CMS makes a point to note GE's disagreements with both the EPA and the scientific community regarding the risks from PCBs. GE argues that PCBs pose no human health or ecological risks, even though there is overwhelming evidence to the contrary (ATSDR, Rice et al. 2003). Reviewers should not forget that this is the second attempt GE has made to create an acceptable CMS- the first was judged so unsuitable by EPA that they demanded it be significantly revised.

There are several reasons to believe that little has changed with this new draft. An excellent example is GE's gross misrepresentation of the Biogenesis sediment washing technology (TD 4). GE's evaluation of the process both overestimated costs and underestimated effectiveness. GE also assigned risks

like spills during transport to this remediatial option that were not considered for other alternatives like upland disposal in a landfill that would have an equal or greater chance of these accidents happening. GE was clearly biased against the use of this technology, even though it demonstrated tremendous potential for the cleanup of the Housatonic River.

The CMS is generally deficient in not considering any new methods or approaches. There is no in-depth consideration of in place treatment of PCBs using bacteria, plants, or animal extracts. Nor is there any money set aside to develop new treatments. If GE and EPA had devoted more money in the year 2000, then the past 8 years may have yielded some innovative methods. Potentially effective alternative technologies were never investigated. Phytoremediation has shown some promise for removing PCBs from contaminated soils at other sites. One study performed by Kelly Hurt at a Mississippi scrap yard took PCB concentrations down from the hundreds of parts per million down to approximately 1 ppm (Hurt 2008). An evaluation of this approach should be included in the CMS.

The cleanup remedies selected by GE (SED 3, FP 3, and TD 3) do not significantly reduce risk, and what reductions that do occur will not be realized for several decades. GE estimates the PCB levels in fish under various cleanup options, described as options Sed 1-8 for the river, as FP 1-5 for the floodplain and T 1-3 for the treatments. The fish tissue levels under sediment treatment options are presented in a number of figures, using the EPA model for the river. Note that under SED 3, the option desired by GE, tissue levels do not decline for many decades.

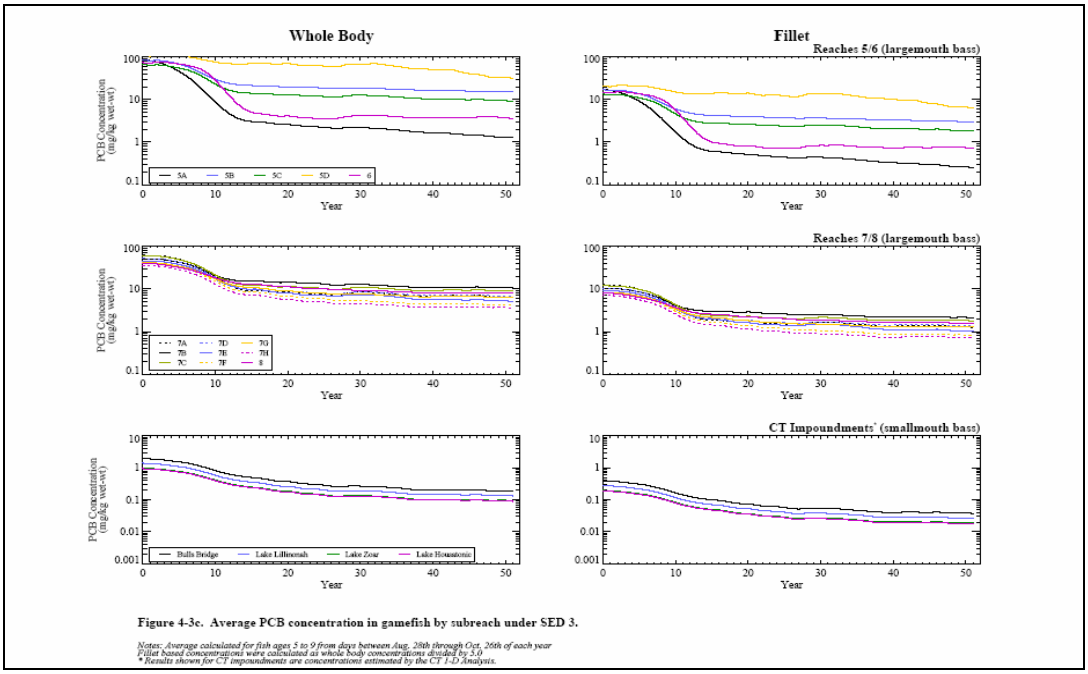

Figure 4-3c. Average PCB concentration in gamefish by subreach under SED 3.

Notes: Average calculated for fish ages 5 to 9 from days between Aug. 28th through Oct. 26th of each year
Fillet based concentrations were calculated as whole body concentrations divided by 5.0
** Results shown for CT impoundments are concentrations estimated by the CT 1-D Analysis.*

The figures above below are taken from the CMS. These figures show the rate at which PCBs decline in fish in the Housatonic over the course of the 60 years after the cleanup. The figure below indicates that the two unrealistic options will do little or nothing for cleanup. The option GE selected, SED 3, will result in fish tissue PCBs at levels above the health consumption advisory- in other words, GE has admitted that the Housatonic will forever be a catch and release fishery.

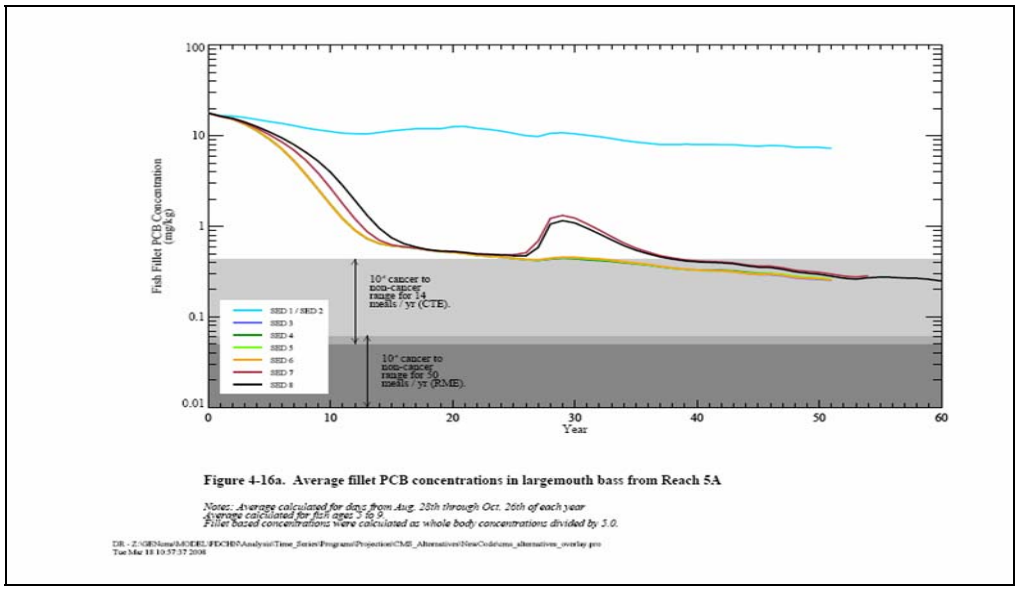

Figure 4-16a. Average fillet PCB concentrations in largemouth bass from Reach 5A

Notes: Average calculated for days from Aug. 28th through Oct. 26th of each year
Average calculated for fish ages > to 9
Fillet based concentrations were calculated as whole body concentrations divided by 3.0.

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Tue Mar 18 10:57:37 2008

The cleanup will take a long time under any scenario, whether there is dredging, capping, or no action taken. Of course, if nothing is done (options 1 and 2) then PCBs will forever remain at concentrations unacceptably high for humans and wildlife.

The spatial analysis of contamination levels in and around the Housatonic River does not have enough resolution to result in an effective cleanup. Some of the spatial bins used in the evaluations were over a half mile in length. To achieve the proper level of resolution, GE needs to be able to estimate sediment and soil concentrations in 50m intervals. Doing so would actually save GE money by preventing the unnecessary dredging or capping of areas with little to no contamination while simultaneously ensuring that “hotspots” of high levels of PCBs are adequately addressed. GE has the means to effectively model contamination at this resolution and future versions of the CMS should include this level of modeling.

The alternatives selected by GE are unlikely to result in an effective cleanup. They will leave dangerous concentrations of PCBs both within the Housatonic River as well as in the floodplain that will continue to exert their toxic effects on wildlife and eventually humans. Monitored natural recovery is essentially the same as “no action,” and capping only isolates the contamination (which will not degrade significantly) until the cap’s eventual failure. Neither of these approaches have been documented to be effective over the long term (20+

years), and in the case of monitored natural recovery the evidence indicates that it is in fact not effective (see below).

The options selected by GE are not the only ones that EPA can and will consider. EPA can take different combinations of methods that GE did not put together in any of their options. Under such a case, EPA would have to tell GE to modify the CMS and do something that they have already chosen to not do or to reject. EPA said at the public meetings that there are 3 options: accept the CMS as is (and accept GE's selected options); make modifications to the CMS and send to GE; or take over the CMS from GE and then invoice them and let the lawyers and courts determine the costs and responsibility.

The first option is completely unacceptable because the CMS does not adequately address contamination and what little is done will take much longer to achieve than other alternatives. If the third option is selected, the cleanup could be delayed and hampered indefinitely as the legal battles play out slowly in court, and as a result we would prefer this option remain one of last resort. However, given GE's poor response to EPA's previous call for revisions, EPA should be prepared to move quickly to take over the cleanup if GE is unwilling to take responsibility and clean the river up to appropriate standards.

Review of Remedial Alternatives

Below is a summary of the various remedial options evaluated in the CMS either individually or in combination with one another throughout the river.

Riverbed Remediation:

No Action (SED 1): This option would leave existing contaminated sediments in place with no monitoring or follow up actions. Contrary to GE's claims, this option presents tremendous risks to both human health and wildlife. Contamination will remain in place forever and continue to impact human and ecological health.

Monitored Natural Recovery (MNR) (SED 2-8): This option is essentially the same as "No Action," except that GE and regulatory agencies would measure PCBs that will continue to impact human health and the environment. There is no evidence that PCBs break down or can be isolated from the environment using MNR (more detail below).

Thin Layer Capping (SED 3-7): A thin layer of sediment to be placed over PCBs in the riverbed would not provide the protection needed to isolate PCBs in the long-term. Erosion and scour from significant rain events would quickly remove this thin layer and allow for the continuing PCB exposures. We are opposed to any remedy that utilizes this approach.

Capping (SED 4-7): Simply covering up the PCB problem in the Housatonic River is not acceptable. There is no evidence that this approach can work in the long-term. Even “armored” caps can fail under the stresses caused by major storms like noreasters and hurricanes. Under caps, PCBs will not degrade to any significant degree- ever. Therefore, any cap would have to maintain its integrity forever. There is no evidence that any cap design can achieve this. For a comparable cost, PCBs can be removed and treated to eliminate these risks permanently, and much better alternatives are available.

Dredging/Sediment Removal (SED 3-8): Physically removing contaminated sediments is a known method to reduce PCBs in fish and lower exposures. PCBs do not break down in any appreciable way naturally. Great care must be taken when dredging to make sure that contaminated sediments are not released into the water column and spread to other parts of the river. Once sediments have been removed, they are still contaminated and treating them is the best alternative for their disposal.

Rechannelization (limited unspecified areas): Altering the course of the river is not practical and is really just a more extreme version of capping. The PCBs that remain in the original riverbed can still be transported during major flood events, and will continue to contaminate the river. This approach could have a number of unintended consequences since it would affect the normal path of water drainage in the area. Altering the path of the Housatonic River is inadvisable at a time when the Army Corps of Engineers is actively working to undo channel alterations all over the United States because of these risks.

Floodplain Remedial Options

The following approaches are proposed either individually or in combination with each other at various points along the river.

Armor/Stone: Armoring the riverbanks changes the natural flow patterns of the river and would actually increase scouring on the river bottom. Natural runoff would also carry PCBs from the floodplain into the river, simply going around the armor in many places. The creation of these structures would not only be unsightly but also disrupt the natural flow of the river.

Access Restrictions: Restrictions only keep some residents, not all, out of contaminated areas. Wildlife will still be exposed and PCBs will remain in the soil where they will be transported into the river. It is the same as “No Action.”

Activity and Use Restrictions: This option presents the same problems as “Access Restrictions,” and again does not address the real problem that PCBs remain in the floodplain and continue to be transported into the river.

Conditional Solutions: This approach assumes that the properties will continue to be used in the same fashion in the future, placing a burden on communities in how they plan and develop their own land. These controls restrict how they will develop based on GE's desire to save money and not clean areas to standards, punishing communities for GE's actions.

Consumption Advisories: Advisories are another form of use restriction, and cannot be adequately enforced. Subsistence fishing is common in many areas, and advisories do not help the most vulnerable to the effects of PCBs. Since actual contamination is not addressed, advisories will remain indefinitely (see figures above).

Mechanical Extraction and Replacement: Removing contaminated soils is the next best option to treating them in place. Contrary to GE's claims, if done at a reasonable pace and combined with vegetation restoration there is no reason why this approach would not work. If undertaken, these efforts should be performed prior to any in-stream sediment removal to ensure that any contaminated runoff is captured and removed.

Covers: Plain soil covers will not contribute to the break down of PCBs, and will eventually wash away. Once this happens, the situation will be the same as if no action were ever taken since PCBs will not degrade under the cover.

Engineered Barriers: This solution has the same problem as regular covers, but could be potentially even worse. Erosion around the cover would eventually compromise it. Paved covers destroy valuable habitat and may still suffer the same fate as other forms of engineered covers.

Soil and Sediment Treatment Technologies:

Off-Site Disposal (TD 1): Landfills are not the best option for the disposal of PCB contaminated sediments, since the PCBs will remain active and toxic indefinitely. Considering the very limited landfill space available and public opposition to any new landfills, treatment is a far more preferable option.

Disposal in a Confined Disposal Facility (TD 2): Confined disposal facilities (CDFs) have a notoriously bad track record for containing contaminated materials, and still leave PCBs close to the water. This option contains many of the flaws of landfilling while adding even more risk by surrounding them by water and increasing the chances for leakage in comparison to landills.

Upland Disposal (TD 3): While preferable to disposal in a CDF, landfills do not eliminate harmful PCBs and risk spreading them during transport. Creating a landfill on-site to dispose of these soils and sediments has been soundly rejected by communities, environmental groups, and local officials. Even if this were a

more preferable option to treatment (which it is not), it is completely infeasible due to its strong public opposition.

Chemical Extraction (TD 4): This method is by far the best option for treating dredged contaminated soils and sediments. It is the only option that actually destroys PCBs permanently and prevents the possibility of future exposures. Please refer to the General Comments section above for more information.

Thermal Desorption (TD 5): One of the main problems with this treatment is that the high temperatures required for the process create even more toxic dioxins out of the PCBs it is intended to treat. Dioxins are then released in the emissions of the facility and spread even more dangerous pollutants over a much broader area. If this approach can be implemented in a way that eliminates dioxin production, then it could be viable.

The Toxicity of Polychlorinated Biphenyls

The extreme toxicity and the effects of PCBs have been well documented by both the scientific community and regulatory agencies. However, GE continues to insist that these compounds have little to no toxicity. To quote:

> "GE believes, based on the weight of scientific evidence from human studies, that PCBs have not been shown to cause cancer in humans or adverse non-cancer effects in humans at environmental levels. Further, GE does not believe that the evidence reveals significant adverse effects of PCBs on the Rest of River ecosystem; indeed, field surveys by both EPA and GE contractors have demonstrated abundant, diverse, and thriving fish and wildlife populations and communities in the Rest of River area despite decades of exposure to PCBs."

GE's statements simply do not match with reality. GE has been incredibly reluctant to acknowledge these realities and is one reason why they were required to revise the original CMS. However, GE has not changed its position, and therefore a review of the toxicology of PCBs in both humans and wildlife is required.

PCB toxicity has been documented in a number of different wildlife species, and many of the species in the Housatonic watershed are particularly sensitive. The long term effects of PCBs on wildlife do not manifest themselves as steep population declines in most instances, so population levels measures such as abundance or diversity are not appropriate endpoints to measure or consider. The cumulative effects of stress have lead to sudden and sharp declines in animal populations after a certain threshold is crossed (deFur et al. 2007, supplemental material).

A reproducing population is not healthy if the individual members of the population are unhealthy, despite their reproductive capability. According to the Guidelines for Ecological Risk Assessment, EPA protects at the level of the

population (EPA, 1998), not at the level of the individual. Carried to the extreme, this position will allow a population of animals to suffer any range of ill effects so long as enough animals reproduce and the next generations continue as before, regardless of the health of the individuals or the population age structure.

This problem of protecting the population and allowing the individuals within the population to remain or become unhealthy, poorly functioning, etc., is unacceptable. This issue is not new and is described in some detail by Van Veld and Nacci (2003) for several sites. One of the most well known sites that has this same problem is the Elizabeth River in Virginia that is contaminated with PAH's. Mummichog populations in the Elizabeth River are severely affected by the PAH contamination – all the fish in the population develop liver cancer and die, but not before reproducing. The result is a sustaining population of sick, cancerous fish. This outcome is **not** the sign of a healthy population or healthy ecosystem.

Nor is the Elizabeth River in Virginia the only case of such responses of individuals to persistent contamination by highly toxic contaminants, PCB's especially. The literature contains documentation of the responses of other species to chronic PCB exposure, with metabolic effects on liver function especially.

Chronic exposure to PCBs has been documented to adversely affect fish, particularly cold water species such as trout that can be found in the Housatonic River (Rice et al. 2003). Trout with PCB body burdens of as little as 0.33 mg/kg produce eggs with significantly higher rates of fry mortality and deformations (Eisler 1986). Adverse effects on the reproductive success of individuals such as these are of particular concern when evaluating population level risks and vulnerabilities (Newman 2008).

Reproductive and developmental problems in response to PCBs are well documented in a wide variety of species, including humans. Laboratory experiments birds have demonstrated reductions in hatching rates and decreases in survival rates of hatchlings after females were exposed to as little as 10 µg/kg in their food prior to egg laying (Britton and Huston 1973,). Low levels of PCBs in eggs (23 ng/g fresh weight) were found to cause beak deformations in the American Kestrel, considered a substitute for evaluating the bald eagle (Hoffman et al. 1996). Young mink fed 24 ng/g of PCBs in their diet developed jaw deformities within 31 to 69 days (Render et al. 2000). Mink reared from females exposed to 0.5 µg/g had higher rates of mortality and lower body weights than control animals (Restum et al. 1998).

Similar trends have been identified in humans their laboratory animal surrogates. EPA considers PCBs to be "probable human carcinogens" based on occupational studies and a wealth of data from laboratory experiments (EPA 1997). Children are particularly sensitive, and alterations in reproductive organs

can be expected as a result of PCB exposure to this age group (ATSDR 2000). PCBs have also been linked to neurological problems (Schantz et al. 2003), reduced immune function (Selgrade 2007), and increases in cancer later in life (Martinez et al. 2005).

Contrary to GE's assertions, the weight of evidence in the scientific literature clearly points to significant PCB toxicity in both humans and wildlife. EPA has performed admirably in resisting GE's continuous claims of reduced toxicity, and should continue to do so in the future. GE clearly isn't interested in an objective examination of these topics. EPA has a responsibility to push back strongly against such assertions, if only to prevent wilder and more ridiculous claims from being raised by other potentially responsible parties across the nation.

Monitored Natural Recovery

GE has proposed the use of MNR over large stretches of contamination as a method for reducing risks to humans and wildlife from PCBs. MNR does essentially nothing to address these risks, and takes decades to achieve it. Despite GE's heavy reliance on this option in its final remedy, the CMS lacks any data that demonstrate its effectiveness over time.

MNR is based on the depositional nature of larger waterways. Over time, sediments from upstream are deposited in contaminated locations, theoretically isolating the pollutants on the stream or river bottom from the water column and wildlife over time (EPA 2005). Once isolated, the pollutants can then begin to degrade. Regulatory officials evaluate on a site specific basis the amount of time that it takes for the pollutants to break down depends on a number of variables such as sediment chemistry (% organic carbon, etc.), the constituents and concentrations of the chemical mixture in question, and temperature. Often, the timeframe selected is greater than 20 years. Currently, there are no sites where MNR is in use that have implemented the remedy for the requisite amount of time.

<u>Mechanisms of the Breakdown of POPs</u>

The breakdown of toxic compounds is generally defined as any transformation that reduces the toxicity of the pollutant. For most POPs (or persistent organic pollutants) such as PCBs and dioxins, this is accomplished through the removal of the chlorine atoms bound to the molecule that give them their toxicity. Unfortunately, this is much easier said than done and a whole industry has been created trying to create new and innovative ways to accomplish this reaction. To date, these efforts have been met with limited success.

POPs, as their name implies, are incredibly long-lived in the environment. They resist biological breakdown by bacteria and other microbes, and were often

created and used because of their stability and lack of reactivity with other compounds. Many are also quite resistant to thermal breakdown, with some congeners of dioxins requiring temperatures in excess of 700°C (1,292°F) for decomposition (Rice et al 2003). When POPs enter aquatic systems such as streams and rivers, they become even more stable and difficult to break down.

The two most effective processes for the natural degradation of POPs like dioxins and PCBs are exposure to sunlight and decomposition by some anaerobic bacteria. Anaerobic (no oxygen) metabolism by microbes has been shown to have a limited ability to dechlorinate toxic POPs (Adriaens et al 1995, Ballerstedt et al 1997, Barkovskii and Adriaens 1996, Bedard et al 2007). Unfortunately, when the compounds are bound to sediments this ability is greatly reduced (Albrecht et al 1999).

Light does not have the opportunity to act on PCBs during MNR since the principle behind the approach requires that contaminated sediments be buried and isolated from the environment over time. However, when the sediments are isolated in this fashion it prevents sunlight from reaching and breaking down contaminants. Therefore, once POPs are bound to sediment and subsequently buried, they are effectively isolated from any natural processes that work to break them down.

The Interplay of Water and Sediments in Aquatic Systems

Even though POPs bind tightly with sediments and are not soluble in water, they are not completely immobile in aquatic systems even once they are buried beneath layers of sediment. Many aquatic environments, particularly streams and rivers, are quite dynamic. Conditions vary significantly over both temporal and spatial scales, and can have significant effects on sediments within the water body. These changes are critical in understanding the spatial distribution and concentrations of POPs within these systems.

Conditions change substantially the further one goes upstream in a river system. Large rivers are mostly depositional, murky with sediments that have runoff from its watershed. This turbidity acts to substantially limit the penetration of light into the river, and prevents submerged plant communities from becoming established. As one goes upstream, erosion becomes more significant than deposition (Paul and Meyer 2001). Flash flooding becomes more common because streambeds are smaller and have a reduced capacity to accept runoff. There are significant and regular interactions between the floodplain and the stream in these smaller systems. Scouring of the streambed is common in these streams, particularly in highly developed areas accepting large amounts of sediments. These low order streams are much more dynamic than large rivers, and conditions change constantly.

This is not to say that large rivers are static. Large flooding events can move significant amounts of sediment downstream and bring large debris into the river that can cause significant scouring of the riverbed. One flood in the Colorado River increased the stream bed by nearly five feet (Leopold 1962). In colder climates, ice can also disturb the bottom of even large rivers. In the lower Fox River in WI, ice scours as much as four feet deep have been recorded (WDNR 2006). The creation of frazil ice, or ice crystals that are formed within the water column in turbulent waters at very cold temperatures can also cause significant scouring of sediments.

Rivers and watersheds are the primary pathways of sediment transport in most areas. Events both large and small have the potential to disturb streambed sediments. Most of these events happen with enough frequency that it is not so much a matter of if but when they will occur.

Long-Term Effectiveness

There is little information on the long-term effectiveness of MNR. Preliminary data indicate that these techniques may not be as effective as predicted. One example is the James River in Richmond, VA. Illegal dumping of the pesticide Kepone contaminated the river and resulted in a ban on fishing in 1975. The pesticide is incredibly toxic and also stable in the environment in ways similar to PCBs and dioxins. The ban was replaced in 1988 with a fish consumption advisory which remains in place to this day. While the average concentration of Kepone in James River fish have declined to below FDA action levels, the pesticide is still regularly detected in fish tissue at levels high enough to warrant continuing the advisory. Tissue concentrations have remained approximately constant since the fishing ban was lifted in 1988 (VA DEQ Fish Data, 1988-2004). It can reasonably be concluded that over 30 years after the initial contamination, natural depositional processes have not isolated Kepone enough to prevent fish in the James River from being exposed to significant concentrations.

This should not be surprising given the extreme persistence in the environment of many of these compounds. The same processes that isolate contaminated sediments from aquatic organisms also serve to prevent or inhibit natural recovery mechanisms. Considering that many POPs have the potential to remain in sediment for over 100 years, it is almost a statistical certainty that a significant scouring event (such as a 100 year flood event) will occur during the timeframe required for MNR to run its course. These events redistribute the essentially undegraded POPs and make them readily accessible to aquatic organisms such as fish where they can enter and accumulate in the food chain. The long-term effectiveness of MNR is countered by many of the same natural processes that it wishes to exploit. In most cases MNR is not a desirable remedial option, particularly if the objective is to reduce fish tissue concentrations below levels that require consumption advisories.

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STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

May 20,2008

Ms. Susan Svirsky
Rest of River Project Manager
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10 Lyman Street
Pittsfield, MA 01201

Dear Ms. Svirsky:

The Connecticut Department of Environmental Protection (CTDEP) appreciates the opportunity to provide comments on the Corrective Measures Study for the GE/Housatonic River Site; Rest of River dated March 2008. This report evaluates various remedial alternatives and disposal options for sediment as well as riverbank and floodplain soil and provides the General Electric Company with the opportunity to state a preferred alternative. Selection of a final remedial alternative, to be made by EPA, based on the CMS report and public comments received, is key to the successful remediation and restoration of the Housatonic River, both in Massachusetts and Connecticut. The Connecticut Department of Environmental Protection (CTDEP) looks forward to working with EPA, trustee agencies, the State of Massachusetts and General Electric to establish a remedial process that will lead to the eventual reduction of risks to human and ecological communities and support full restoration of water quality and attainment of designated uses for the river.

The Housatonic River is currently listed on Connecticut's impaired waters list due to impairments resulting from the presence of PCBs in the watershed. We are critically interested in the selection of remedial actions for the river as we are relying on these actions to provide for the eventual restoration of the river and attainment of water quality standards, criteria and designated uses for the waterbody. The impaired waters listing along with the conclusions of the human health and ecological risk assessment conducted on the Rest of River portion of the Housatonic River by EPA, indicate that within our state, remediation and restoration activities must primarily focus on activities that will reduce the PCB body burden within fish populations in the river. Currently, consumption of fish from the Connecticut portion of the river poses unacceptable risks to both people as well as piscivorous wildlife. Additionally, we believe that the remedial process must comprehensively address other ramifications from the presence of PCBs within sediments in Connecticut, such as potential effects on the management or maintenance of dams or effects on other in-river projects within the Housatonic River.

In order to provide for successful restoration of the river within Connecticut, we believe that the final remedy selection must focus on the General Standards specified in the RCRA permit for the GE facilities, part of the Consent Decree, in which the development of the CMS document is required. These standards specify that the final selected remedial alternative must be protective of human health and the environment, control the sources and releases of PCBs to the river and comply with applicable federal and state requirements.

For Connecticut, the most efficacious remedial alternative will be one that eliminates or reduces to the greatest degree possible the level of contamination within the Massachusetts portion of the river. PCB contamination exists within our state because of the downstream transport of PCBs from the GE facility in Pittsfield MA and the affected portions of the river within Massachusetts. Without substantial remedial actions to address these sources, it will not be possible to reduce the risks within Connecticut to an acceptable level and restore the river. The proposal advanced by General Electric, SED3, would only address a small portion of the total mass of PCBs within Massachusetts, leaving large repositories of PCBs intact and available for continued transport downstream to Connecticut. The SED3 option is unacceptable for it provides for either superficial treatment or no remediation of the majority of the PCBs within the river system. We have seen from past occurrences that the PCB contamination within Massachusetts cannot be assumed to be static. Sediment moves. Dams fail. Such occurrences have kept PCB concentrations at unacceptable levels in Connecticut or have caused spikes in PCB concentrations within Connecticut biota. Leaving large amounts of PCBs bedded in sediments upstream from our border will constantly expose aquatic organisms in Connecticut to unacceptable PCBs concentrations and perpetuate the risks to people and ecological populations. Additionally, it leaves our state vulnerable to further contamination on a continual basis or potentially in catastrophic amounts in the event of a dam failure or unintended mobilization of sediments within Massachusetts. The final remedial alternative selected for the river must include active remediation to address the PCBs within the river at a minimum down to and including Reach 8, Rising Pond. Such remediation should not include Thin Layer Capping, as we do not believe that this technology will not provide a reliable and permanent sequestration of PCBs within the river sediments.

Additionally, the CMS document neglects to include sufficient controls on the release of PCBs from the GE facility in Pittsfield. While substantial remediation has occurred at the facility and within adjacent portions of the Housatonic River, the facility is still permitted to release significant quantities of PCBs under a NPDES permit. The final remedial action plan for Rest of River must include a requirement for the investigation and remediation of remaining sources of PCBs at the facility with the stated requirement of eliminating further releases of PCBs from the facility.

Within Connecticut, the CMS proposes Monitored Natural Recovery. We concur that this is a critical component of the remedial action plan. However, the proposed monitoring included within the CMS document is insufficient to adequately monitor PCB concentrations within ecological populations in Connecticut. It would not provide

sufficient data to determine the efficacy of the remedial activities within Massachusetts as related to the remediation and restoration of the river within Connecticut. Under previous Cooperative Agreements, GE has conducted ambient monitoring activities within Connecticut. This monitoring has provided data to monitor the status of PCBs in fish in Connecticut and support the evaluation by the Connecticut Department of Public Health (CTDPH) for the need for fish consumption advisories. The monitoring currently proposed within the CMS reduces the level of monitoring from that currently conducted within the Cooperative Agreements. We propose that monitoring and other activities in support of Monitored Natural Recovery include, at a minimum the following:

- Sampling on a two-year cycle until 4 years after active remediation is completed at which time the monitoring frequency could be reduced to a four-year cycle. Such monitoring shall continue until the Connecticut portion of the river is fully restored, including but not limited to the removal of any fish consumption advisories, as determined by the Commissioner of CTDEP, in conjunction with the Commissioner of the CTDPH.

- GE shall continue to contract with the Academy of Natural Sciences of Philadelphia (ANSP) or an equally qualified independent third party that is acceptable to GE and CTDEP to conduct theses monitoring studies and prepare associated reports. Any request to change contracting firms shall be submitted to the Commissioner of CTDEP for review and written approval.

- For all sampling programs, field sampling protocols and quality assurance project plans shall be submitted for review and written approval by the Commissioner of CTDEP. Any changes to these documents shall be submitted for review and approval by the Commissioner of CTDEP. Such changes are limited to changes in field collection methodology and shall not propose a reduction in the scope of the monitoring required under the approved CMS.

- The benthic community shall be sampled during May or June of each sampling year. Samples shall be collected from the established monitoring station at West Cornwall and shall include collection of sufficient material to allow for analysis for 2 composite samples each of caddisflies, dobsonflies, and perlid stroneflies. PCB results shall be reported on a percent lipid basis.

- The fish communities shall be sampled during August or October of any sampling year. Samples shall be collected from the following locations: Falls Village, West Cornwall, Bulls Bridge, Candlewood Lake, Lake Lillinonah, Lake Zoar and Lake Housatonic. Species to be sampled shall include, but not be limited to smallmouth bass, brown trout northern pike, bullheads, catfish, white perch and large-mouth bass. Additional species may be added by CTDEP in the future if there is evidence of increased importance or utilization of other fish species within the river.

- Ten fish of each species shall be collected from each reach of the river to be monitored, unless additional samples are requested to support CTDPH fish consumption advisories. Weight, length and gender shall be measured and reported for each fish. PCB results shall be reported for each individual fish on a percent lipid basis for both edible fillets (skin-on) as well as whole body.

- GE shall conduct creel and economic surveys every 5 years to evaluate usage of aquatic resources within the river and determine whether additional fish species should be collected. Such surveys shall be conducted in accordance with the methodology used during the creel and economic survey conducted by CTDEP for the Housatonic River in 1984. Additionally, the following questions shall be added to the survey: Are you aware of the fish consumption advisory that is in place for the Housatonic River? If so, do you follow this advice?

- GE shall maintain appropriate signage along the river and provide additional public informational materials, including but not limited to pamphlets and videos, in support of the fish consumption advisory established by the CTDEP and CTDPH until such time as these agencies determine that the fish consumption advisory is no longer required. Such signage and informational materials shall be provided in multiple languages including English, Spanish, Cambodian and Vietnamese. Signs shall be placed and maintained at the locations specified by CTDEP. The Commissioner of CTDEP in consultation with CTDPH shall approve all signs and other informational materials in writing before such materials are deployed or distributed.

- Waterfowl shall be sampled at 3-year intervals. Samples collected monthly during November through January from three areas of Housatonic River in Connecticut: 1) From Bull's Bridge, north to the CT/MA border; 2) Lake Zoar; and 3) Lake Lillinonah. Breast meat, including the skin and associated fatty tissues, from common mergansers and mallards shall be collected and analyzed for PCBs with data reported on a percent lipid basis. A minimum of 10 samples of each species shall be collected each month during the specified sampling season. CTDEP Wildlife staff will assist GE with information about contacting sportsmen who could contribute ducks for the analysis. The weight, age and gender of each bird shall be determined and reported. GE may request a reduction in the monitoring program for waterfowl after active remediation of sediments in Massachusetts is completed if data consistently shows concentrations that breast meat samples are below detection or do not pose a risk for consumption. Such request shall be submitted to the CTDEP for review and approval by the Commissioner after consultation with CTDPH.

- A minimum of 5 samples of surface water and 10 samples of sediment must be collected and analyzed from depositional areas within each impoundment on the Housatonic River in Connecticut concurrent with sampling activities for the biota monitoring program described above. Surface water samples

shall be analyzed for total suspended solids in addition to PCBs. Sediment samples shall also be analyzed for grain size and total organic carbon.

- PCBs in all samples, including both biotic and abiotic media, shall be reported on both a congener and total arochlor basis using methods sufficient to achieve the lowest possible detection limit.

In addition to the remedial activities within Massachusetts and the monitoring within Connecticut, the final remedial action plan must include provisions to address sediments behind dams within Connecticut. Sediments are sequestered behind dams and large deposits may accumulate over time, depending on the size and nature of the structure. We know that PCBs are present in the sediments behind the dams within Connecticut and that, in general, PCB concentrations are higher in the deeper sediments in comparison to surficial sediments. It is also recognized that any action taken to maintain or modify or remove a dam may result in the mobilization of the accumulated sediments, which is unacceptable as it would add to the already unacceptable concentrations of PCBs which are biologically available within the river. The final remedial action plan must require General Electric to manage PCB concentrations in sediments potentially affected by any activities planned for dams on the Connecticut portion of the river. This includes the responsibility to conduct necessary samples, sediment controls or removal as needed in support of actions to be taken at the dams. General Electric should be required to submit and execute a plan for the coordination of the dam related activities to the Commissioner of CTDEP for review and approval. Such plan shall include steps to coordinate with owners of the dams and with other appropriate regulatory agencies, including but not limited to the Federal Energy Regulatory Commission.

Additionally, the decree of characterization of PCBs within sediments in Connecticut was minimal and insufficient to comprehensively evaluate local environmental conditions within discrete reaches of the river. This places an unacceptable burden on members of the public who may wish to conduct permitted activities within the river, such as installation of approved river structures. People or groups wishing to conduct such projects within the river will need to understand the nature and distribution of PCBs within their project area. In addition to the expense of conducting the necessary characterization, the presence of PCBs may cause added project expense with regard to measures needed to address the PCBs during the execution of the project. General Electric should be required to develop and implement a protocol, after review and approval by the Commissioner of CTDEP, to provide the necessary support for PCB characterization and management during the planning and execution of these permitted activities.

Finally, the table of Applicable or Relevant and Appropriate Requirements (ARARs) included in the CMS omitted Connecticut Statutes addressing endangered and threatened species which need to be included (CGS Section 26-303 through 26-316).

The remediation and restoration of the Housatonic River is of paramount importance to Connecticut. The CT DEP supports a more aggressive remediation of PCBs within the river in Massachusetts and at the GE facility in Pittsfield as the primary means to eliminate or reduce the continual transport of PCBs downstream to Connecticut. A combination of comprehensive monitoring of biota and active responsibility on GE's part to address sediments behind dams and sediment disturbance associated with permitted in-river activities within Connecticut is needed to fully address the PCBs within the river. We appreciate the opportunity to provide comment on the Corrective Measures Study prepared by GE and are ready to work with EPA, trustee agencies and the State of Massachusetts to affect a comprehensive clean up and restoration of the Housatonic River.

Sincerely,

Betsey Wingfield
Bureau Chief
Water Protection and Land Reuse

PITTSFIELD BOARD OF HEALTH

Ms. Susan Svirsky
EPA Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street, Suite 2
Pittsfield, MA 01201

May 13, 2008

Dear Ms Svirsky:

The Pittsfield Board of Health has been involved with the health and safety issues related to the OPCAs in the Allendale School area. We were not involved with the consent decree. However, we have been proactive by advocating for the continual monitoring of the sites to ensure that the area does not become a threat to the health and safety of the school or the neighborhood. We have worked closely with the Massachusetts Department of Public Health to ensure that the inside of the school did not have any levels that would be harmful to the health and safety of the students and staff.

We are familiar with the plans set forth by General Electric for dredging the "rest of the Housatonic River." We would like to make it clear that Pittsfield can not have another location for a waste site. We also do not want the current waste sites at Hill 78 to be a repository for any of the PCB's other than what was part of the consent decree. The Pittsfield Board of Health opposes another waste site that will need to be monitored in perpetuity.

We also strongly encourage the EPA and GE to look at alternative technologies other then dredging the river.

At our May 7, 2008 Board of Health meeting, the board voted unanimously to send this letter. My signature affirms that this vote was taken and represents the opinion of all of the board members listed on the letterhead.

Respectfully submitted,

Philip Adamo MD

Philip Adamo, M.D., MPH
Chairman

COMMONWEALTH OF MASSACHUSETTS
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LAURIE BURT
MassDEP Commissioner

MARY B. GRIFFIN
DFG Commissioner

By Hand Delivery

May 20, 2008

Robert W. Varney
Regional Administrator
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114-2023

RE: Comments of the Massachusetts Departments of Fish and Game and Environmental Protection on the Housatonic River – Rest of River Corrective Measures Study (March, 2008), prepared by General Electric Company

Dear Mr. Varney:

Enclosed are comments from the Division of Fisheries and Wildlife ("DFW") within the Massachusetts Department of Fish and Game ("DFG") and the Massachusetts Department of Environmental Protection ("MassDEP"). These comments review the March, 2008 Corrective Measures Study ("CMS") Report prepared by the General Electric Company ("GE") for the "Rest of River" ("ROR") cleanup of the downstream portions of the Housatonic River from the confluence of the East and West Branches in Pittsfield in Berkshire County, Massachusetts, to Long Island Sound in Connecticut. Our comments address the CMS Report with respect to the proposed ROR cleanup within Massachusetts. It is our understanding that the Massachusetts Department of Conservation and Recreation ("DCR") and the Massachusetts Department of Agricultural Resources ("DAR") will also be submitting comments on the CMS Report under separate cover letters that identify similar themes and concerns.

This letter is intended to highlight the complementary interests and common concerns within the Commonwealth with respect to the CMS Report and the proposed ROR cleanup. DFG has a direct and substantial interest in the ROR cleanup, and therefore, in the adequacy of the CMS Report. Our DFW has the authority and duty to protect inland wildlife and fisheries resources and habitats of the Commonwealth, including state-listed rare species

pursuant to the Massachusetts Endangered Species Act ("MESA"). DFG and DFW have primary responsibility for protecting the biodiversity of fish and wildlife habitat in the Commonwealth. DFW also owns and operates the 818 acre George Darey Wildlife Management Area that runs the approximately 10 mile length of Reaches 5 and 6 of the ROR, where the majority of the remaining PCB contamination is located. This Wildlife Management Area has exceptional value to the Commonwealth from the perspective of biological diversity wildlife and fisheries resources and recreational use, and is the culmination of years of work and the dedication of substantial public resources. MassDEP has responsibility for numerous state environmental programs, including wetlands protection, water quality, and protection of ecological resources. MassDEP also has primary responsibility in the Commonwealth to ensure that the proposed ROR cleanup is protective of human health, public safety and welfare and the environment.

The Commonwealth's goal for the ROR is to find an appropriate balance among the public health, ecological, recreational and cultural considerations that best serve the Commonwealth's citizens now and in the future. We cannot hope to reach this goal based upon the information currently provided in the CMS Report. To that end, we urge you to require GE to develop a supplemental CMS Report that analyzes in a more comprehensive and explicit manner the range of areas and concerns identified by our agencies.

The ROR is a wild, largely natural river system that encompasses numerous state-listed rare species and other diverse wildlife and fisheries resources, and is heavily utilized by the public for outdoor recreation and enjoyment purposes. With these considerations in mind, the Commonwealth's vision for the ROR cleanup is one that preserves and improves this valuable natural and recreational resource now and for future generations and does not leave the legacy of a polluted river. The cleanup must be one that minimizes to the greatest extent possible impacts to the ROR environment, and includes genuine ecological restoration for any cleanup impacts that cannot be avoided.

We cannot find an appropriate balance in the "all or nothing" proposal that GE has proposed in the CMS Report. As more thoroughly detailed in the enclosed comment letters, we need additional supporting information and justification relative to complying with Applicable or Appropriate and Relevant Requirements ("ARARs"), which analysis must include MESA and the Massachusetts Wetlands Protection Act, and M.G.L. c. 91, among others. A thorough evaluation is needed on how and the extent to which each alternative will result in the preservation, restoration and replication of impacts to the ecological landscape and wildlife and fisheries habitats and resources. An expanded and updated evaluation of the proposed remediation techniques is also warranted, including review of in situ remediation methods. We also strongly encourage EPA to require a further evaluation of the long term viability of the alternatives in light of climate change considerations, including relative to sediment and dam stability.

In addition, the matrix of alternatives contained in the CMS Report is deficient in numerous respects. Without more information as to scale and type of cleanup options, a balanced consideration of the benefits and detriments to the resources cannot be performed. EPA should require GE to redo the alternatives analysis in the CMS Report based on this more comprehensive assessment of the true costs of the alternatives. Finally, our agencies

request that the public be given a full and reasonable opportunity to provide comments on the revised and supplemental CMS Report.

In closing, thank you for soliciting our input on the CMS Report, and for your consideration of our comment letters.

Sincerely,

Laurie Burt
Commissioner
Massachusetts Department
of Environmental Protection

Mary Griffin
Commissioner
Massachusetts Department
of Fish and Game

cc: Ian Bowles, Secretary of Energy and Environmental Affairs
Susan Svirsky, EPA Region 1
Holly Inglis, EPA
Dean Tagliaferro, EPA
Wayne F. MacCallum, Director, Division of Fisheries and Wildlife

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

May 19, 2008

Ms. Susan Svirsky
United States Environmental Protection Agency
Rest of River Project Manager
c/o Weston Solutions
10 Lyman Street
Pittsfield MA 01201

Project Name:	*General Electric, Housatonic, Rest of River Remediation*
Proponent:	*General Electric Company*
Location:	Housatonic River, from the confluence south to the Connecticut border
Document Reviewed:	General Electric Company, Pittsfield, Massachusetts, Housatonic River – Rest of River Corrective Measure Study Report dated March 2008, submitted to the U.S. Environmental Protection Agency
DFW Tracking No.	*08-24442*
MA DEP No.	Site No. GECD850; Housatonic River Rest of River

Dear Ms. Svirsky:

Thank you for the opportunity to provide comments on the above-noted Corrective Measures Study Report ("CMS"). We understand that this is an informal public comment period and appreciate the chance to provide constructive guidance as you move forward in the decision making process.

The Division of Fisheries & Wildlife's Interest

The Housatonic River watershed is one of the most biologically rich and unique regions of the Commonwealth. The limestone bedrock creates an exceptional hydrological base, supporting rich, calcareous soils and wetlands found only in this region. These rich soils and wetlands of the valley floor support a unique ecosystem which supports many

species found no where else in Massachusetts. The Massachusetts Division of Fisheries and Wildlife (the "Division") has been acquiring property over the past several decades to protect this valuable habitat and its wildlife resources and owns one or both sides on approximately 85% of the land along river's bank in Reaches 5 and 6. As discussed in more detail below, the Division is responsible for the protection of state-listed animal and plant species and their habitats pursuant to the Massachusetts Endangered Species Act, M.G.L. c. 131A, ("MESA") and the MESA regulations at 321 CMR 10.00. Under M.G.L. c. 131, the Division is also responsible for the protection and management of inland fisheries resources and wildlife throughout Massachusetts.

Resources within the Rest of River Cleanup Area

The CMS evaluates remedial alternatives for the final "Rest of River" ("ROR") phase of the Housatonic River cleanup. The ROR cleanup will cover the downstream portions of the River from the confluence of the East and West Branches in Pittsfield to Long Island Sound in Connecticut. As discussed below, the ROR cleanup area encompasses a dynamic river system with an abundance of diverse and ecologically sensitive wildlife and fisheries resources.

The Housatonic River has a characteristic braided, wide floodplain with slow moving water that supports diverse wetlands, seasonally flooded areas with the associated flora and fauna. Even the artificial impoundments maintained by dams provide habitat for some state-listed plant species. The ROR itself supports 68 state-listed species of plants and 25 state-listed species of animals that are protected pursuant to the MESA; at least eight (8) of these species are restricted to ROR in Massachusetts (see Appendix I). An additional 25 species of plants are being carefully monitored for potential future protection pursuant to the MESA. As shown on GIS Map No. 1 (attached), the ROR contains a number of Priority Habitats for the state-listed species that have been delineated by the Division pursuant to MESA. In addition to the large number of state-listed species located in the ROR, there are 13 high priority Natural Communities, 12 certified vernal pools and up to 107 potential vernal pools (see Appendix I).

The Housatonic River is a substantial fisheries and recreational resource in western Massachusetts. Thirty-seven species of fish have been found in the ROR and its supporting waters (see Appendix II). Moreover, the ROR supports coldwater habitat including the Housatonic River and its direct tributaries, as listed in Appendix III and illustrated in GIS Map No. 2 (attached). These waters are protected under 314 CMR 4.06 of the MA Surface Water Quality Standards ("MA WQS") as coldwater habitat. The MA WQS require that both the fish population and habitat be protected and maintained as designated or existing uses. Streams not specifically identified in the ROR as coldwater fishery resources may, in fact, contain coldwater habitat that has not

yet been confirmed. This list will be periodically updated as additional coldwater habitat are identified and confirmed.

Coldwater fish species are particularly vulnerable to habitat degradation caused by activities that adversely impact the water quality and quantity. Coldwater fish rely on high quality streams for spawning and thermal refuge. Coldwater fish also utilize the main stem of the Housatonic River during certain portions of their life cycle. In short, the Housatonic River and its tributaries contain numerous habitats that support sensitive coldwater fish populations that are entitled to the highest protection under the MA WQS.

The Housatonic River also supports important, valuable and diverse recreational fisheries for both warm and coldwater species. Countless angling hours are spent in the Massachusetts section of the ROR. Woods Pond in Lenox, MA is consistently one of the most heavily ice-fished waters in Massachusetts, while the Catch and Release sections of the Housatonic River attract anglers from throughout the Northeast.

The George Darey Wildlife Management Area

The George Darey Wildlife Management Area (the "Darey WMA") located within Reach 5 and 6 of the ROR is owned and managed by the Division for biological diversity and wildlife-dependent outdoor recreation. See GIS Map No. 3 (attached). The Darey WMA includes approximately 818 acres spread across multiple parcels consisting largely of river-front and floodplain. The Division has invested substantial resources on behalf of the Commonweath to protect this open space as habitat for fish and wildlife and it provides a wide range of recreational opportunities for the public. In that regard, the Darey WMA is one of western Massachusetts' most heavily utilized wildlife management areas for all types of passive recreation including hunting, fishing, trapping, hiking, canoeing/kayaking, bird watching, and wildlife viewing. Wildlife and outdoor recreation has significant and far-reaching benefits to the economy of the surrounding region. Thus, the long-term management of the Darey WMA to support biodiversity and recreational use is critical to achieving the statutory responsibilities of the Division. For these reasons, the ROR remediation and its effect on the fisheries and wildlife resources are of principal importance to the Division.

State-listed Species

The northern part of the Housatonic River through Reach 5 and 6 of the ROR were surveyed for state-listed species by Woodlot Alternatives, Inc. ("Woodlot") six (6) years ago, as described in Woodlot's 2002 Report, Ecological Characteristics Study of the Primary Study Area. It appears that less survey effort has been expended south of Reach 6 to the Connecticut border. It is the Division's expectation that populations of

state-listed species, natural communities, and vernal pools are likely to be more diverse south of the confluence and throughout the ROR as compared to areas north of the confluence. In that regard, the Division's Natural Heritage and Endangered Species Program ("NHESP") was recently awarded a grant from the Natural Resource Damages ("NRD") Trustee pursuant to the GE Consent Decree for a project that includes, at the outset, conducting surveys to complete an updated and more detailed inventory of state-listed species and their habitats along the Housatonic River. The NHESP has commenced work on a two year field study in anticipation of completing a final updated inventory report in the Spring of 2011. The CMS process does not need to await the completion of this updated inventory work, primarily because of the existing range of information developed by the NHESP on state-listed species occurrences and priority habitats under MESA. The Division believes, however, that this refined inventory information will be helpful to GE and EPA, from a remedy design and restoration standpoint, as the cleanup moves forward.

The selection of the preferred Corrective Measures by EPA should take into consideration impacts to state-listed species and communities, while still achieving cleanup objectives. As discussed below, the remedy selection, in turn, must be based on a thorough analysis of the alternatives in the CMS that expressly analyzes in detail how each component (e.g., the remediation technique used, the sequencing of the construction schedules, the scope and location of staging areas, the plans for restoration) avoid, minimize or mitigate temporary and permanent impacts to state-listed species, as required by MESA. Moreover, unlike stable or "common" species, state-listed species are often characterized by limited distribution and population size. For many of the state-listed species found within the ROR, there are very limited or no up-river populations to serve as a recolonization sources. Therefore, the selected ROR remedy and the related restoration plans in particular need to include collection and storage of state-listed plant materials to ensure that they are directly utilized to recolonize these species with genotypes native to the area. For state-listed species like the Black Maple and other plants unique to the Housatonic, a balance should be achieved to meet the remediation goals while allowing reservoirs of these species to remain unharmed. For example, the Eastern Veined White butterfly population within the river represents the only known, extant population within southern New England. It has been thriving for at least the past 10 years, therefore remediation within its habitat needs to be carefully planned and implemented. If not, the entire population could be lost from the Commonwealth.

Vernal Pools

Vernal pools constitute a unique and increasingly vulnerable type of wetland. Vernal pools are inhabited by many species of wildlife, some of which are totally dependent on vernal pools for their survival. Several amphibians have evolved breeding strategies to

make use of the short hydroperiod of these pools. Certain invertebrates, such as fairy shrimp are wholly dependant upon the annual filling and drawing down of the pool for their lifecycle. Invertebrates are both important predators and prey in vernal pool ecosystems. Vernal pools are an important habitat resource for many birds, mammals, reptiles and amphibians, including many state-listed species.

As noted above, the ROR contains 12 certified vernal pools and up to 107 potential vernal pools. Many of these vernal pools are found within the floodplain and are largely filled by flooding river water and seasonal high water. Remedy alternatives should be sensitive to perturbations to hydraulic connectivity between floodplain pools and the river to ensure these hydraulic connections are maintained. Remedies also need to allow movement of vertebrates within and between the river and vernal pools in order for these unique habitats to be functional. Not only do certain vertebrates rely on the vernal pools for breeding habitat, but many others make long riverine and overland movements to both forage and aestivate in these areas. Care should be taken to ensure that these vertebrates can continue to safely and effectively move through the landscape.

Non-native, Invasive Plants

Like many rivers throughout the United States, populations of invasive plant species are found throughout the ROR. These plants may be benefited by the disturbance, soil movement, soil turning and spreading associated with the implementation of the ROR remedy. Materials brought to the ROR from other locations could introduce new invasive species or enhance existing populations. As part of the selected ROR remedy, EPA should require careful identification and eradiation of invasive plant materials during work. More specifically, offsite materials need to be carefully sourced and treated to avoid introduction of invasive species. Trucks and equipment should be inspected and washed to avoid moving invasive plant materials along the river or from the river to off-site locations. Restoration must include a careful monitoring of disturbed areas with adequate funding to control any observed invasive plants. Otherwise the end result from a biological perspective could be a riverine system overcome by non-native species and lacking strong, healthy native species populations.

Status of MESA as an ARAR

Section 2.13 of the CMS states that the third General Standard specified in the RCRA Permit requires an evaluation of how each remedial alternative would meet Applicable or Relevant and Appropriate Requirements ("ARARs") under federal and state law. The CMS explains that in order for state requirements to constitute an ARAR, they must be promulgated requirements of general applicability, legally enforceable, and more stringent than federal requirements. In addition, compliance is limited to the

"substantive" requirements, as opposed to the "administrative" requirements of an ARAR. The CMS acknowledges, however, that in many cases the regulatory provisions identified as ARARs include a mixture of substantive and administrative requirements. As noted below, the Division believes that the substantive character of certain state ARARs such as MESA necessarily includes obtaining the input and approval of the state regulator.

The CMS properly identifies the MESA and the Division's MESA regulations as location-specific state ARARs. See Section C in Table 2-2 ("Critical Habitat for Threatened and Endangered Species"[1]). The relevant comments associated with MESA in Table 2-2 states that MESA applies to "activities in a State-designated Priority Habitat in MA" and "would also apply to activities affecting State-designated Significant Habitat in MA; however, no such habitat has been designated." The comments accurately state that, to date, the Division has not designated Significant Habitat in MA pursuant to MESA. Instead, the MESA regulations provide that any project or activity that will take place in Priority Habitat must be reviewed by the Division prior to the commencement of work in the Priority Habitat. The purpose of this review is for the Division to determine whether the project or activity will result in a "take"[2] of a state-listed species. See 321 CMR 10.18. However, there are also circumstances where a project or activity that is not located in Priority Habitat may still be reviewed by the Division to determine whether it will cause a take, including when the Division receives new information on the occurrence of a state-listed species prior to the project's completion of permitting milestones specified in the regulation. See 321 CMR 10.13. Thus, the extent to which ROR remedial activities must comply with the substantive requirements of MESA is not necessarily limited to whether they will occur in Priority Habitat.

If the Division determines that a take will occur under MESA, the project or activity must either be modified to eliminate the take or the proponent must obtain a conservation and management permit from the Division pursuant to 310 CMR 10.23. The Division acknowledges that GE would not be required to obtain an actual conservation and management permit from the Division to carry out ROR remedial activities that cause a take under MESA. GE will be required, however, to meet all of the substantive requirements of MESA applicable to a take. More specifically, in

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[1] The Division notes that in addition to "endangered species" and "threatened species," MESA also protects a third category of rare animals and plant species – "species of concern," which are any species that has been documented by biological research and inventory to have suffered a decline that could threaten a species.

[2] "Take" is broadly defined in the MESA regulations to include the killing or harming of such animals as well as the disruption of nesting, breeding, feeding or migratory activity resulting from the destruction, modification or degradation of their habitat. "Take" also includes the killing, collection and picking of rare plants. See 321 CMR 10.01.

addition to showing that the impacts from the remedial action have been avoided, minimized and mitigated, three substantive performance standards must be met in order to authorize a take under MESA:

1. there has been an adequate assessment of alternatives to both temporary and permanent impacts;

2. only an insignificant portion of the local population of the affected state-listed species will be impacted, and

3. a Division-approved conservation and management plan provides for the long-term Net Benefit[3].

See 321 CMR 10.23(2).

As highlighted above and in the appendices to this letter, the ROR hosts a multitude of state-listed animal and plant species that are protected under MESA. Given the potential scope of impact to state-listed species and their habitats, MESA is a critical ARAR for assessing the viability and relative merits of the range of alternatives identified in the CMS Report. Moreover, an integral component of the substantive requirements of MESA involves the Division's review and approval of activities potentially affecting state-listed species, particularly with respect to take determinations and compliance with the above performance standards.

Consequently, the CMS Report needs to do more than acknowledge MESA as an ARAR. Consistent with the third General Standard in GE's RCRA permit, the CMS needs to be revised and supplemented to explain in more detail how each remedial alternative will meet the substantive requirements of MESA. The revised CMS evaluation should place particular emphasis on the compliance of each remedial alternative with above substantive performance standards associated with authorizing a take under MESA. This means setting forth specific proposals on how compliance with the long-term Net Benefit standard (i.e., ensuring that the conservation contribution to the impacted species exceeds the harm caused by the take) will be achieved.

A comprehensive analysis and description in the revised CMS addressing the above issue would also more definitively establish whether or the extent to which a particular remedial alternative is predicated on waiving some or all of the substantive

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[3] "Net Benefit" is defined in the MESA regulations to mean (1) an action(s) that contribute significantly to the long-term conservation of a state-listed species, and (2) that conservation contribution exceeds the harm caused by the proposed project or activity. See 321 CMR 10.01.

requirements of MESA. That consideration, in turn, is an important criterion for determining the appropriateness of the remedial alternative.

Finally, as discussed in more detail below, the revised CMS must contain a thorough description of the restoration components of each remedy alternative, which includes but is not limited to, addressing restoration for impacts to state-listed species and their habitats.

Flow Model

The growing evidence of Global Climate Change suggests that the frequency and intensity of storms causing higher flow levels and velocities may increase dramatically in the next 50 -100 years. Therefore, the Division recommends that EPA review the CMS flow model and selected alternatives in light of global climate change predictions. For example, under the Sediment and Erodible Riverbanks alternative number 3 (SED-3), the model included an extreme high flow event that would result in a 5% erosion in the Thin-layer Cap in Woods Pond. If multiple extreme flow events occur in the coming years as some global climate experts predict, it is likely the cumulative effect may be more significant than described in the CMS and, in the case of Woods Pond, cause destabilization and eventual mobilization of PCB contaminated sediments.

Further, the 50 year projected time frame is quite short in the life of the river and flora and faunal populations. We expect that whatever remedy is chosen, its impacts will persist in the ROR on the order of centuries rather than decades. Finally, the CMS evaluated the effect of each remediation action independent of the other remediation actions. For example, the Sediment and Erodible Riverbanks are considered a stand-alone event relative to the Floodplain Soils and the Treatment/Disposition of Removed Sediments and Soils. GE acknowledges that these activities would likely be conducted temporally and/or spatially in combination, yet none of the modeling appears to determine how these activities could interact nor how work conducted upstream will affect downstream. Also, there does not appear to be any intention to re-apply the model based on actual conditions as portions of the remediation occur. The Division is concerned that this approach may fail to adequately predict the post-remediation conditions.

The CMS' Evaluation of Remediation Techniques, Use of a CDF, and Supporting Facilities

The CMS is lacking in supporting documentation for the proposed remediation techniques. The references cited in several sections include few long-term studies of the proposed alternatives or studies relevant to river systems. For example, any application of capping should consider biological disturbance (e.g. carp, rooted aquatic

macrophytes, turtles, etc.) but this issue is not addressed in the CMS. For these reasons, the CMS should be supplemented to include an analysis of the proposed remediation techniques based on a broader range of more relevant studies, as well as expressly address the issue of biological disturbances associated with the use of capping.

The Division would not support an in-water Confined Disposal Facility ("CDF") due to the habitat loss and likelihood of failure within the Housatonic River system. As discussed above, the 818 acre Darey WMA has exceptional value to the Commonwealth from the perspective of biological diversity, wildlife and fisheries resources and recreational use, and is the culmination of years of work by the Division and the dedication of substantial public resources. Consequently, the Division is also strongly opposed to locating an upland disposal facility on the Darey WMA or in other areas that would directly impact the Darey WMA.

Finally, when evaluating remedial alternatives as part of GE's CMS and pursuant to the RCRA permit, one of the selection decision factors is an alternative's short-term effectiveness. This factor assesses the impacts to the environment, nearby communities and workers during the implementation of the remedy. An important aspect of that assessment involves the location, number and acreage associated with the number of access roads, staging areas and related equipment proposed in connection with each of the relevant remedial alternatives. While the Division generally recognizes the need for these supporting facilities, we believe that the CMS does not provide a thorough enough explanation and supporting analysis for the conclusions reached by GE in this area. For example, GE should be required to support and justify in more detail in a supplemental CMS why it needs as many of the above supporting facilities in each of the proposed locations, and how impacts to state-listed species and their habitats can be avoided or minimized through the redesign or relocation of access roads and staging areas. It is premature for EPA to come to any conclusions regarding this critical selection decision factor without significantly more analysis and supporting information from GE.

Restoration

As emphasized above, the short and long term effects of the ROR remediation on the Housatonic River, the array of diverse wildlife and fisheries resources (including state-listed species), and the effect of the remedy on the Darey WMA, are of paramount importance to the Division. The cleanup of the first 2 miles of the River involved a relatively straight channel located within a highly urbanized area of Pittsfield. In contrast, Reaches 5 and 6, which our WMA runs the length of, is a complex river channel encompassing numerous and productive populations of state-listed species and

other wildlife and habitats. The ROR is also relatively undeveloped and heavily utilized by the public for recreational purposes.

The ROR cleanup will likely have major impacts on this rich and ecologically sensitive environment. By illustration, even the set of remedial alternatives determined by GE to be "best suited" as a result of the CMS [SED 3/FP 3/local upland disposal facility] includes:

- Removal of 250,000 tons of river sediments/bank soils over 42 acres from Reach 5A and banks in 5B;
- Placement of 6-inch cap over an additional 97 acres in part of 5C and in Woods Pond;
- Removal of 90,000 tons of floodplain soil over 38 acres;
- Removal area by habitat includes 12 acres of upland forest (50-75 years to replace mature trees); and 20 acres of wetlands, including v.p.;
- Disposal in an upland landfill near the River but outside the 100 year floodplain; and
- Will take 10 years to implement.

In our March 28, 2007 comments on the CMS proposal, the Division highlighted the absence of a meaningful evaluation of the post-remediation condition or of planned restoration components of each remedial alternative, particularly as proposed for stream banks and floodplain resources. We emphasized the need for the upcoming CMS to address the long-term feasibility of remedial alternatives in terms of species habitat needs and the restoration of ecological communities impacted by the remedy. In our view, the resulting CMS does not address this core concern of the Division, and makes the task of assessing the validity of the alternatives analysis in the CMS unnecessarily difficult. In short, GE's failure to meaningfully address the post-remediation conditions and proposed restoration associated with the remedial alternatives is a fundamental deficiency in the CMS, and EPA should not rely on the CMS as the basis for its remedy selection.

The Division, after reviewing the CMS, has no indication of post-remediation conditions and proposed restoration associated with the remedial alternatives. For example, it is unclear from the CMS what assumptions GE made regarding the specific scope and types of restoration envisioned for the key resource areas (e.g., stream banks, floodplain, wildlife habitats), or if restoration costs are included in the cost estimates for

the alternatives. If so, the CMS does not break out or explain the basis for the restoration costs in any detail.

Presumably, GE intends to propose specific restoration plans at the design phase of the project. However, the success of the project from the Division's perspective depends very much on the post-remediation habitat conditions. Thus, it is critical to the integrity of the alternatives analysis in the CMS that the restoration component of each alternative be adequately described, analyzed and vetted based on public input before EPA makes its final remedy selection. We think this means requiring GE to further revise and supplement the CMS with detailed restoration plans for all impacted fisheries and wildlife resources, demonstrating, as applicable, how such restoration will comply with the MESA performance standards. The restoration plans must also include adequate information on monitoring and the use of best management practices to ensure the long-term viability of restored habitats and other resource areas. GE should then redo the alternatives analysis based on this more complete picture of the true "cost" of each alternative.

Moreover, it is important that in developing a supplemental CMS addressing this issue, there be no conflicting assumptions as to what constitutes appropriate restoration. Remedy work should include restoration of existing ecosystem and habitat features in similar configuration and frequency as in the pre-work condition. Ecosystem changes that cause shifts in biologic communities can be problematic to local populations. For example, loss of appropriate host fishes for mussel larvae could decimate these mussel populations' ability to survive and re-colonize the river. Shifts in native macrofaunal invertebrate assemblages can cause fundamental shift native populations.

In that regard, the CMS, in discussing the habitat impact of armor stone in the remediated Pittsfield section, states that these areas were rapidly colonized by macro-invertebrates. However, the Division's view is that this outcome likely represents short-term colonization by a limited number of species that either prefer this microhabitat or are more tolerant of the change. It is suggestive of a likely loss of the normal invertebrate assemblages and a rapid colonization of disturbance-tolerant invertebrate species. Thus, the armoring technique represents more the introduction or alteration of a habitat rather than achieving adequate restoration of a previous habitat value. Additionally, any temporary increase in macro-invertebrate numbers would be more than offset by the removal of the natural lateral connectivity of the river caused by the hardening, a permanent condition.

For the above reasons, the CMS should be supplemented to include a more thorough analysis of the scope and types of bioengineering techniques that should be applied whenever possible to minimize the use of hard structure, particularly for bank stabilization purposes. The Division's larger point is that any remedial action taken in

the ROR should have an overarching restoration goal of returning the wildlife and fisheries habitats to their current condition. The CMS, in its present form, does not demonstrate that the alternatives analysis contained therein was predicated on achieving this goal.

Conclusion

The Division has a direct and substantial interest in the proposed ROR cleanup, and therefore, in the adequacy of the CMS. Our interest is based on our statutory and regulatory authority and duty to protect inland wildlife and fisheries resources of the Commonwealth, including state-listed rare species pursuant to MESA. Moreover, the Division owns and operates the 818 acre Darey WMA that runs the length of Reaches 5 and 6 of the ROR, which has been impacted by the PCB contamination of the River and will be directly affected by the upcoming cleanup of the ROR.

Unlike the cleanup of the first 2 miles of the River, the ROR involves a much larger, more complex river and cleanup area that is rich in wildlife and fisheries resources, including numerous state-listed species, and high recreational and aesthetic values. It is therefore critical that the selected cleanup remedy minimize impacts to important endangered species, fisheries and wildlife habitats to the greatest extent practical, while still achieving clean-up objectives. It is equally important that EPA's ultimate remedy selection be based on a thorough and detailed evaluation of alternatives that includes careful consideration of the extent to which an alternative will comply with an key state ARAR such as MESA and will result in the restoration of impacted wildlife and fisheries resources and habitats. In our view, restoration means that existing wildlife and fisheries habitats are maintained and/or re-created; it does not mean replacing them with functions and habitats that do not currently exist in the ROR.

As explained above, the Division believes that the CMS is fundamentally deficient, and that rather than rely this CMS as the basis for its final remedy selection, EPA should require GE to develop a supplemental CMS that addresses in a more comprehensive and explicit manner the areas identified in the Division's comment letter, including:

- how and the extent to which each alternative will comply with substantive requirements of MESA, particularly the performance standards applicable to a take of a state-listed species;

- how each alternative will result in the long-term restoration of impacted wildlife and fisheries resources and habitat as contemplated by MESA and other relevant environmental statutes and regulations;

- a more thorough analysis and justification for the proposed location, number and acreage associated the proposed support facilities (access roads, staging areas, etc.) for each remedial alternative;

- a reapplication of a revised Flow Model based on actual site and cleanup conditions as the phases of the ROR remediation are completed, which also accounts for the potential effects of global climate change; and

- an expanded evaluation of the proposed remediation techniques, based on additional and more relevant studies, including the use of bioengineering techniques.

The Division further requests that the public be given another reasonable opportunity to provide comments on a revised and supplemental CMS.

Lastly, once EPA makes its final remedy selection, to the extent that some habitat impacts may be unavoidable, it is critical that even more detailed habitat restoration and monitoring plans be developed early in the planning process, and that the Division and other state agencies responsible for administering the statutes and regulations identified as ARARs for the remedy weigh in on their adequacy. Consistent with the Division's request for a supplemental CMS, the selected remedy should allow for adaptation and fine-scale adjustments to protect localized resources, address events outside of model predictions, incorporate cumulative changes as work proceeds, and consider technological advances. The Division is hopeful that the EPA will ultimately select a remedy for the ROR that ensures the continued ecological viability of the Rest of River while meeting remediation goals. Our request that GE do more work on the CMS is for the purpose of achieving that shared goal.

Thank you for your consideration. If you have any questions on the Division's comments, please contact Dr. Mark S. Tisa of my staff at (508) 389-6328.

Very truly yours,

Wayne F. MacCallum

Wayne F. MacCallum
Director

cc: Mary B. Griffin, Commissioner, DFG
Richard Lehan, General Counsel, DFG
Fisheries and Wildlife Board

Attachments:

Appendix I: State-Listed Species
Appendix II: List of Fish Species
Appendix III: List of Coldwater Fisheries Habitats
GIS Map No. 1: Priority Habitats for State-Listed Species
GIS Map No. 2: Coldwater Fisheries Habitats
GIS Map No. 3: George Darey Wildlife Management Area, Reaches 5 and 6 in the Rest of River Cleanup Area

APPENDIX I: RARE SPECIES AND NATURAL COMMUNITIES WITHIN THE REST OF RIVER STUDY AREA OF THE HOUSATONIC RIVER WITHIN MASSACHUSETTS (AS OF JANUARY 2008)

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
MUSSELS					
Alasmidonta undulata	Triangle Floater	SC	3	2	-
Strophitus undulatus	Creeper	SC	2	2	-
DRAGONFLY AND DAMSELFLIES					
Neurocordulia yamaskanensis	Stygian Shadowdragon	SC	1	0	-
Ophiogomphus carolus	Riffle Snaketail	T	1	0	-
Stylurus scudderi	Zebra Clubtail	E	2	0	-
Stylurus spiniceps	Arrow Clubtail	T	3	0	-
WETLAND BUTTERFLIES & MOTHS					
Pieris oleracea	Eastern Veined White	T	1	4	unique
AQUATIC MACRONVERTEBRATES					
Gammarus pseudolimnaeus	Northern Spring Amphipod	SC	1	0	-
Limnadia lenticularis	American Clam Shrimp	SC	1	0	-
FISH					
Catostomus catostomus	Longnose Sucker	SC	3	2	-
Lota lota	Burbot	SC	0	1	-
Percopsis omiscomaycus	Trout-perch	SC	2	0	-
Notropis bifrenatus	Bridle Shiner	SC	6[C]	0	-
AMPHIBIANS					
Ambystoma jeffersonianum	Jefferson Salamander	SC	4	0	-
Hemidactylium scutatum	Four-toed Salamander	SC	2	0	-
BIRDS					
Botaurus lentiginosus	American Bittern	E	4	0	-
Circus cyaneus	Northern Harrier	T	0	1	-

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
BIRDS (cont.)					
Cistothorus platensis	Sedge Wren	E	1	0	-
Gallinula chloropus	Common Moorhen	SC	3	0	-
Haliaeetus leucocephalus	Bald Eagle	E	2	1	-
Ixobrychus exilis	Least Bittern	E	0	1	-
Podilymbus podiceps	Pied-billed Grebe	E	0	1	-
MAMMAL					
Sorex palustris	Water Shrew	SC	1	0	-
REPTILES					
Glyptemys insculpta	Wood Turtle	SC	9	0	-
Terrapene carolina	Eastern Box Turtle	SC	0	1	-
AQUATIC PLANTS					
Nuphar microphylla	Tiny Cow-lily	E	1	0	-
Potamogeton friesii	Fries' Pondweed	E	0	1	-
Potamogeton strictifolius	Straight-leaved Pondweed	E	1	0	-
BANK PLANT					
Veronica catenata	Sessile Water-speedwell	E	0	1	unique
WETLAND					
Agrimonia parviflora	Small-flowered Agrimony	E	1	0	unique
Cardamine pratensis var. palustris	Fen Cuckoo Flower	T	1	0	-
Carex tetanica	Fen Sedge	SC	1	2	-
Conioselinum chinense	Hemlock Parsley	SC	2	0	-
Gentiana andrewsii	Andrews' Bottle Gentian	E	2	0	-
Lobelia siphilitica	Great Blue Lobelia	E	4	0	-
Malaxis monophyllos var. brachypoda	White Adder's-mouth	E	1	1	-
Thuja occidentalis	Arborvitae	E		1	YES

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
RIVER BAR OR ISLAND					
Eleocharis intermedia	Intermediate Spike-sedge	T	3	0	-
Eragrostis frankii	Frank's Lovegrass	SC	2	2	-
Symphyotrichum prenanthoides	Crooked-stem Aster	T	1	0	-
FLOODPLAIN					
Acer nigrum	Black Maple	SC	2	3	-
Arisaema dracontium	Green Dragon	T	3	0	-
Cardamine douglassii	Purple Cress	E		1	unique
Carex alopecoidea	Foxtail Sedge	T	3	0	-
Carex davisii	Davis's Sedge	E	1	0	unique
Carex grayi	Gray's Sedge	T	5	0	-
Carex tuckermanii	Tuckerman's Sedge	E	1	0	-
Claytonia virginica	Narrow-leaved Spring Beauty	E	2	0	-
Elymus villosus	Hairy Wild Rye	E	2	0	-
Equisetum scirpoides	Dwarf Scouring-rush	SC	1	2	-
Hypericum ascyron	Giant St. John's-wort	E	1	0	-
Platanthera flava var. herbiola	Pale Green Orchis	T	1	0	-
Quercus macrocarpa	Mossy-cup Oak	SC	4	3	-
Ranunculus pensylvanicus	Bristly Buttercup	T	4	0	-
Sagittaria cuneata	Wapato	T	10	0	-
Sanicula odorata	Long-styled Sanicle	T	3	0	-
Veronicastrum virginicum	Culver's-root	T	2	0	-
FOREST					
Carex hitchcockiana	Hitchcock's Sedge	SC	1	0	
Morus rubra	Red Mulberry	E	0	1	
Panax quinquefolius	Ginseng	SC	1	0	Globally rare[C]
Quercus muehlenbergii	Yellow Oak	T	1	0	unique
LEDGES AND OUTCROPS, OPEN					
Chamaelirium luteum	Devil's-bit	E	0	1	Unique
Chenopodium foggii	Fogg's Goosefoot	E	1	0	Globally rare

	COMMON NAME	STATE RANK[A]	NUMBER OF EXTANT POPULATIONS	NUMBER OF HISTORIC POPULATIONS	UNIQUE TO ROR OR GLOBALLY RARE[B]
LEDGES AND OURCROPS; OPEN (cont.)					
Cynoglossum virginianum var. boreale	Northern Wild Comfrey	E	0	1	0
Desmodium cuspidatum	Large-bracted Tick-trefoil	T	0	1	0
Panicum philadelphicum ssp. gattingeri	Gattinger's Panic-grass	SC	1	0	0
Sporobolus neglectus	Small Dropseed	E	1	0	unique
NATURAL COMMUNITIES					
FRESHWATER COMMUNITY	Black ash-red maple-tamarack calcareous seepage swamp	S2	1		
	Calcareous sloping fen	S2	1		
	Hemlock-hardwood swamp	S4	1		
	Major-river floodplain forest	S2	4		
	Small-river floodplain forest	S2	1		
	Transitional floodplain forest	S2	2		
	Wet meadow	S4	1		
TERRESTRIAL COMMUNITY	Calcareous rock cliff community	S3			
	Deep emergent marsh	S4	1		
			1		
VERNAL POOLS	Certified	not ranked	12		
	Potential	not ranked	107		

NOTES:

A - STATE RANK:

- **"Endangered" (E)** species are native species which are in danger of extinction throughout all or part of their range, or which are in danger of extirpation from Massachusetts, as documented by biological research and inventory.
- **"Threatened" (T)** species are native species which are likely to become endangered in the foreseeable future, or which are declining or rare as determined by biological research and inventory.

- "**Special concern**" **(SC)** species are native species which have been documented by biological research or inventory to have suffered a decline that could threaten the species if allowed to continue unchecked, or which occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become threatened within Massachusetts.
- **"Historic" (H)** species or communities occurred historically in Massachusetts, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 25 years. Populations that have become Historic are no longer protected under the Massachusetts Endangered Species Act.
- "**Critically Imperiled" (S1)** because of extreme rarity (often 5 or fewer occurrences), or because of factor(s) such as very steep declines, making it especially vulnerable to extirpation from the state.
- "**Imperiled" (S2)** in the state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the state.
- "**Vulnerable" (S3)** in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- "**Apparently Secure" (S4)** is uncommon but not rare; some cause for long-term concern due to declines or other factors.
- "**Secure" (S5)** is common, widespread, and abundant in the state.

B – "Globally Rare" species are those with an estimate of extinction risk of G3, G2, or G1 according to NatureServe. Ranks are based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5).

C – Bridle Shiner records noted in the above table are from tributaries and impoundments flowing into the Rest of River section.

Appendix II. FISH SPECIES WITHIN THE ROR AND ITS SUPPORTING WATERS (AS OF JANUARY 2008).

Banded killifish (*Fundulus diaphanous*)
Black crappie (*Pomoxis nigromaculatus*)
Blacknose dace (*Rhinichthys atratulus*)
Bluegill (*Lepomis macrochirus*)
Bluntnose minnow (*Pimephales notatus*)
* Bridle shiner (*Notropis bifrenatus*)
Brook trout (*Salvelinus fontinalis*)
Brown bullhead (*Ameiurus nebulosus*)
Brown trout (*Salmo trutta*)
* Burbot (*Lota lota*)
Carp (*Cyprinus carpio*)
Chain pickerel (*Esox niger*)
Common shiner (*Notropis cornutus*)
Creek chub (*Semotilus atromaculatus*)
Creek chubsucker (*Erimyzon oblongus*)
Fallfish (*Semotilus corporalis*)
Fathead minnow (*Pimephales promelas*)
Golden shiner (*Notemigonus crysoleucas*)
Goldfish (*Carassius auratus*)
Green sunfish (*Lepomis cyanellus*)
Largemouth bass (*Micropterus salmoides*)
Longnose dace (*Rhinicthys cataractae*)
* Longnose sucker (*Catastomus catastomus*)
Northern pike (*Esox lucius*)
Pumpkinseed (*Lepomis gibbosus*)
Rainbow trout (*Oncorhynchus mykiss*)
Redbreast sunfish (*Lepomis auritus*)
Redfin pickerel (*Esox americanus*)
Rock bass (*Ambloplites rupestris*)
Slimy sculpin (*Cottus cognatus*)
Smallmouth bass (*Micropterus dolomieu*)
Spottail shiner (*Notropis hudsonius*)
Tessellated darter (*Etheostoma olmstedi*)
Tiger muskellunge (*Esox lucius* x *Esox masquinongy*)
White sucker (*Catastomus commersoni*)
Yellow Bullhead (*Ameiurus natalis*)
Yellow perch (*Perca flavescens*)

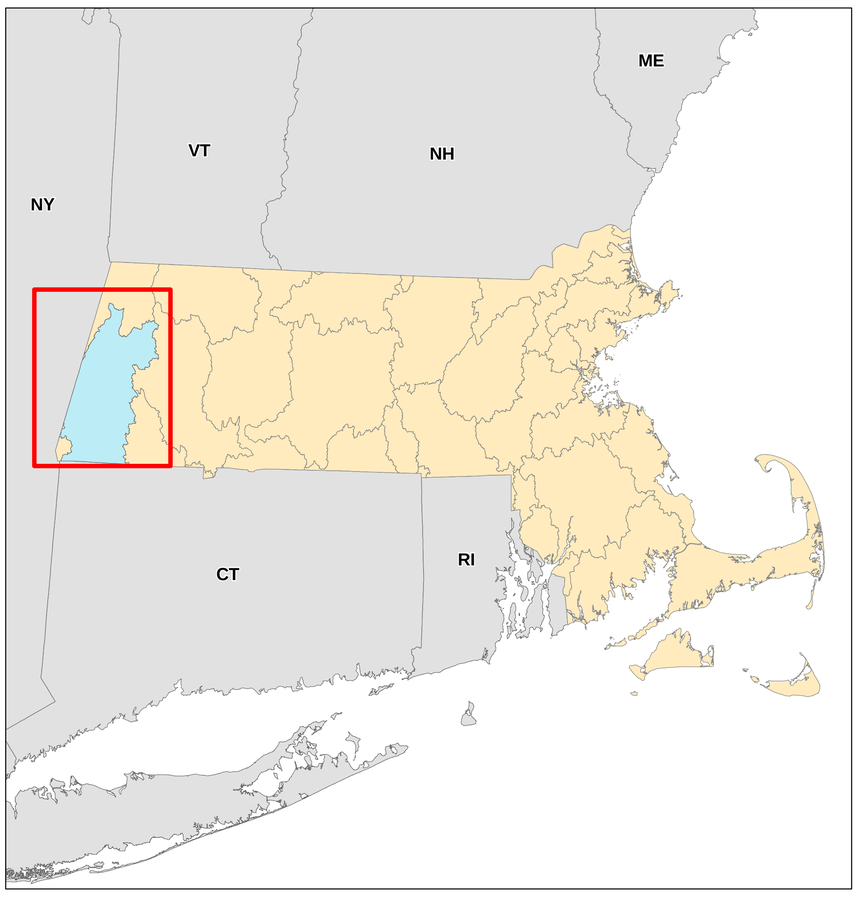
Sources: Division of Fisheries and Wildlife fisheries database and *Inland Fishes of Massachusetts* (Hartel et. al, 2002).

* Species protected pursuant to the MA Endangered Species Act

Appendix III. Coldwater Habitat

The Housatonic River, its branches and the following tributaries to the ROR, are either designated as coldwater or protected under the anti-degradation clause of the MA surface water quality standards (314 CMR 4.06).

Goose Pond Brook
Williams River
Green River
Hubbard Brook
Konkapot River
Ironwork Brook
Thomas & Palmer Brook
Mohawk Brook
Beartown Brook
Hop Brook
Washington Mt. Brook
Yokun Brook
Felton Brook
Mill Brook
Sackett Brook
Wahconah Falls Brook
Cleveland Brook
Bennett Brook
Cady Brook
Secum (Sechum) Brook
Town Brook
Smith Brook
Jacoby Brook



GIS Map (No. 1)-
Priority Habitat in the Housatonic Watershed

- Housatonic River and Branches
- NHESP Priority Habitats
- Lakes/Ponds
- Other Streams

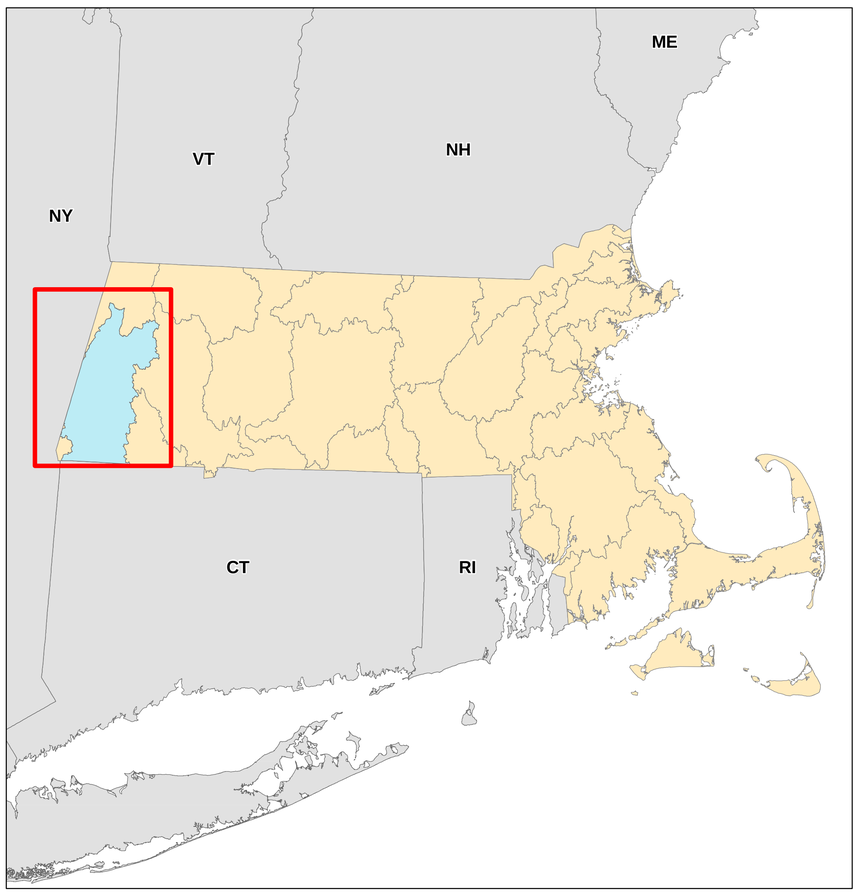
Print Date: May 9, 2008

WILLIAMSTOWN
FLORIDA
ADAMS
NEW ASHFORD
SAVOY
CHESHIRE
HANCOCK
LANESBOROUGH
WINDSOR
DALTON
West Branch
PITTSFIELD
East Branch
Southwest Branch
East Branch
HINSDALE
PERU
Southwest Branch
Housatonic River
WORTHINGTON
RICHMOND
LENOX
WASHINGTON
Wood's Pond Dam
MIDDLEFIELD
WEST STOCKBRIDGE
Housatonic River
STOCKBRIDGE
LEE
BECKET
CHESTER
ALFORD
Housatonic River
TYRINGHAM
GREAT BARRINGTON
OTIS
MONTEREY
BLANDFORD
EGREMONT
SANDISFIELD
GRANVILLE
SHEFFIELD
NEW MARLBOROUGH
MOUNT WASHINGTON
Housatonic River
TOLLAND
GRANVILLE

10
Kilometers
5
Miles

N

EXECUTIVE OFFICE of ENERGY & ENVIRONMENTAL AFFAIRS
Commonwealth of Massachusetts Department of Fish & Game
COMMONWEALTH of MASSACHUSETTS DIVISION of FISHERIES & WILDLIFE



GIS Map (No. 2)-
Coldwater Habitat in the Housatonic Watershed

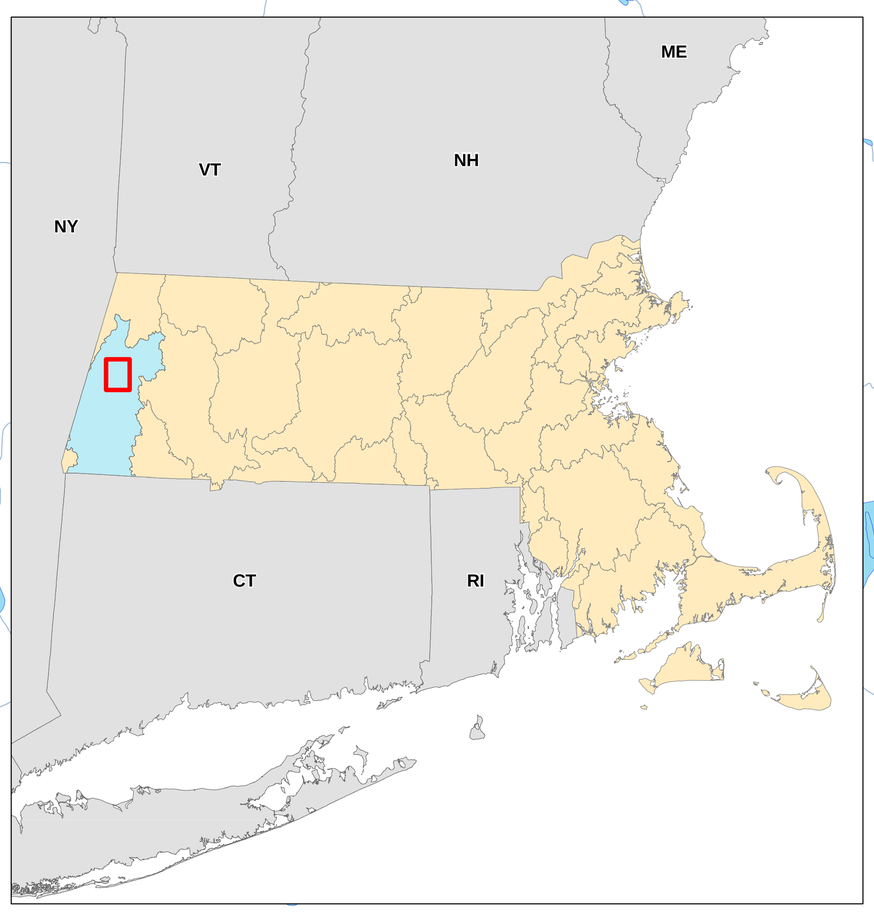
- Known Coldwater Habitat in the ROR and Its Direct Tributaries
- Other Known Coldwater Habitat in the Housatonic Watershed
- Other Streams **(some may contain coldwater habitat, which has not yet been confirmed)

Print Date: May 9, 2008

WILLIAMSTOWN
FLORIDA
ADAMS
NEW ASHFORD
SAVOY
CHESHIRE
HANCOCK
LANESBOROUGH
WINDSOR
DALTON
West Branch
CUMMINGTON
PITTSFIELD
East Branch
East Branch
HINSDALE
Sackett Brook
PERU
Housatonic River
WORTHINGTON
Mill Brook
Yokun Brook
RICHMOND
LENOX
WASHINGTON
Felton Brook
Wood's Pond Dam
Washington Mt. Brook
MIDDLEFIELD
WEST STOCKBRIDGE
Housatonic River
Williams River
STOCKBRIDGE
LEE
Mohawk Brook
Goose Pond Brook
BECKET
CHESTER
Beartown Brook
Hop Brook
ALFORD
Housatonic River
TYRINGHAM
GREAT BARRINGTON
Thomas & Palmer Brook
OTIS
Green River
MONTEREY
BLANDFORD
Konkapot River
EGREMONT
Hubbard Brook
Ironwork Brook
GRANVILLE
SANDISFIELD
SHEFFIELD
NEW MARLBOROUGH
MOUNT WASHINGTON
TOLLAND
Housatonic River
Konkapot River
GRANVILLE

10
Kilometers
5
Miles

N



GIS Map (No. 3)-
Rest-of-River (ROR) Reaches 5 and 6

George L. Darey Housatonic River Valley WMA

Housatonic River and Its Branches

Direct Coldwater Tributaries

Other Streams **(some may contain coldwater habitat, which has not yet been confirmed)

Print Date: May 12, 2008

West Branch

East Branch

Housatonic River

PITTSFIELD

Sackett Brook

Housatonic River

New Lenox Road

Yokun Brook

Canoe Access

Mill Brook

LENOX

WASHINGTON

Felton Brook

Wood's Pond Dam

Wood's Pond

LEE

Housatonic River

STOCKBRIDGE

1

Kilometers

1

Miles

N

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENERGY AND
ENVIRONMENTAL AFFAIRS
Department of Agricultural Resources
251 Causeway Street, Suite 500, Boston, MA 02114
617-626-1700 fax 617-626-1850 www.Mass.gov/AGR

Massachusetts Department of Agricultural Resources

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

IAN A. BOWLES
Secretary

DOUGLAS W. PETERSEN
Commissioner

May 20, 2008

By Hand Delivery
Robert W. Varney
Regional Administrator
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114-2023

Re: Comments from the Massachusetts Department of Agricultural Resources on the Housatonic River – Rest of the River Corrective Measure Study

Dear Mr. Varney:

The Massachusetts Department of Agricultural Resources (DAR) is pleased to submit these comments to the Environmental Protection Agency (EPA) in connection with the Housatonic River – Rest of River – Corrective Measures Study (CMS), dated March 2008 and prepared on behalf of the General Electric Company (GE). DAR agrees with the comments that have been submitted by the Massachusetts Department of Fish and Game (DFG) and the Massachusetts Department of Environmental Protection (DEP), as well as the Massachusetts Department of Conservation and Recreation (DCR), and writes to provide further comments with respect to the cleanup of the Rest of the River (ROR) area and its potential impacts to DAR's Agricultural Preservation Restrictions (APR) properties along the Housatonic River.

The Department of Agricultural Resources Agricultural Preservation Restriction program provides for the protection, in perpetuity, of working farmland and landscapes with prime, state and locally important soils. DAR's purpose in part is to ensure a ready and available food source and to maintain a vibrant agricultural economy within the Commonwealth. To that end, the APR program seeks to keep the land available, viable and affordable for landowners to continue agriculture activity and use into the future. This land is a finite resource and must be steadfastly protected to ensure its availability for agricultural use for generations to come. Because DAR's responsibility is to preserve and protect this agricultural land, including soils, from any activity detrimental to agriculture, DAR has a substantial interest in the corrective measures being evaluated for the ROR.

The Department of Agricultural Resources has identified at least nine APR properties along the Housatonic River corridor. These properties include: the 110-acre Noble APR located in Pittsfield Massachusetts; a 141-acre APR located in Lee; two restricted properties totaling 473 acres in Great Barrington; and four APR properties consisting of 654 acres located in Sheffield. These farm properties represent some of the finest agricultural resources in the

Commonwealth and include amongst their agricultural endeavors the raising of commercial livestock, forage crops and commercial vegetables. DAR is also currently considering the acquisition of additional restrictions in the ROR area of the Housatonic River for its APR program. DAR therefore has a significant interest in ensuring that any cleanup activities implemented in the ROR avoid potential negative impacts to current and future agricultural activities on the above referenced properties.[1] Any remedy must minimize the potential impact to our valuable agricultural land resources, which are an intricate part of the Berkshire economy and beautiful scenic landscape, and any impacts that cannot be avoided must be addressed through a comprehensive mitigation process. Unfortunately, the CMS prepared by GE does not allow us to sufficiently evaluate these considerations at this time.

DAR strongly supports the concerns raised by the Massachusetts DEP, DFG, and DCR that more information is needed to fully evaluate the alternatives presented in GE's corrective measures study. We therefore join DEP, DFG and DCR's request for a supplemental CMS report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the Massachusetts environmental agencies, including our concerns about impacts to agricultural interests.

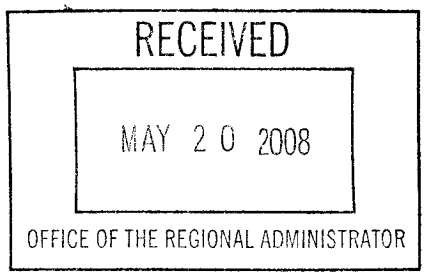
DAR commends EPA for the work that has been done on this important matter, and I thank you for considering our comments.

Sincerely,

Douglas W. Petersen, Commissioner
Department of Agricultural Resources

[1] DAR also notes that several of the APR properties have involvement and rights with our Federal partners at USDA's Natural Resource Conservation Service, through its Farm and Ranch Lands Protection program.

dcr
Massachusetts



May 20, 2008

Via Hand Delivery
Robert W. Varney
Regional Administrator
U.S. Environmental Protection Agency
One Congress Street
Boston, MA 02114-2023

RE: Comments of the Massachusetts Department of Conservation and Recreation on the Housatonic River – Rest of River Corrective Measures Study (March, 2008), prepared by General Electric Company

Dear Mr. Varney:

The Commonwealth of Massachusetts Department of Conservation and Recreation ("DCR"), is pleased to submit these comments to the Environmental Protection Agency (EPA) in connection with the Housatonic River – Rest of River – Corrective Measures Study (the Report), dated March 2008 and prepared on behalf of the General Electric Company (GE). The Report outlines the conditions under which GE proposes to remediate the "Rest of River" ("ROR") area, which is delineated as the downstream portion of the Housatonic River from the confluence of the East and West Branches in Pittsfield in Berkshire County, Massachusetts, to Long Island Sound in Connecticut.

The historical and environmental background for the Report is more particularly described in the comment letters submitted by the Massachusetts Departments of Environmental Protection (MassDEP) and Fish and Game (DFG). Upon review of the Report and comments by MassDEP and DFG, DCR has identified that it is the owner of a 23.6 acre parcel of land that is situated within Beartown State Forest, off Meadow Street (Route 102) in South Lee, and therefore within the ROR area. Additionally, DCR has identified three dams within the ROR area that are subject to regulation by DCR pursuant to G. L. c. 253, §§ 44-48 and DCR's Dam Safety Regulations set forth at 302 CMR 10.00. In light of DCR's authority and duty to exercise general care and oversight of the Commonwealth's natural resources and regulate dams within the Commonwealth, DCR has a direct and substantial interest in the ROR cleanup. Accordingly, DCR submits these comments in support of the concerns and observations raised by MassDEP and DFG; and requests EPA to require GE to develop a supplemental CMS Report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the environmental agencies.

COMMONWEALTH OF MASSACHUSETTS · EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

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I. Mitigating or Avoiding Impacts to Habitats of State-Listed Rare Species and Other Significant Habitats

As noted above, DCR owns a certain 23.6 acre parcel of land within the Beartown State Forest, which is situated along the Housatonic River, and downstream of the confluence of the East and West Branches on the south side of the Housatonic River in Pittsfield, MA (ROR). DCR's ownership interest in the Beartown property is in keeping with its statutory authority to exercise general care and oversight of the natural resources of the commonwealth and adjacent waters. See G. L. c. 21, § 1. DCR is also responsible for acquiring and maintaining land and water areas for conservation purposes within the state parks under G. L c. 184, §§ 31-33, and G. L. c. 132A, §§ 2A, 3 and 3A.

The Beartown property is situated entirely within the floodplain and consists of a mixture of open wet meadow, open fields, a floodplain forest and an oxbow, which is a unique feature of the property that should be maintained or otherwise restored as part of any remediation of this parcel. This parcel is within a priority habitat for rare species and estimated habitat for rare wildlife. This parcel also supports various non-native invasive plant species such as barberry, honeysuckle and multiflora rose. Consistent with the concerns raised by DFG, we urge EPA to fashion remediation measures that avoids any impact to these species and related habitats; and prevents the spread of these non-native invasive plant species. Moreover, given DCR's interest in the preservation of its habitat species, DCR endorses DFG and MassDEP's request that EPA's selected ROR remedy be based on a more thorough analysis of the alternatives in the CMS that would minimize or mitigate any temporary and permanent impacts to these identified habitat species.

II. Mitigating or Avoiding Impacts to Environmental Contaminants at the Dams

In addition to the foregoing, DCR has identified the following dams within the ROR area that are subject to DCR jurisdiction:

Rising Paper Co. Dam, owned by Neenah Paper, Inc. in Great Barrington, MA;
Columbia Mill, owned by Schwitzer-Mauduit, Inc. in Lee, MA; and
Woods Pond Dam, owned by General Electric Co., in Lee, MA.

In keeping with its authority under G. L. c. 253, §§ 44-48 and DCR's Dam Safety Regulations set forth at 302 CMR 10.00, DCR's Office of Dam Safety (ODS) issued a Certificate of Non-Compliance and Dam Safety Orders to Schwitzer-Mauduit, Inc., advising the owner that its

Columbia Mill dam is unsafe and has serious structural deficiencies. The Certificate and Order accordingly requires the owner to take actions to bring the dam into compliance with DCR's dam safety regulations. To address the structural deficiencies, DCR anticipates that the Columbia Mill dam will require significant structural work or will need to be breached. DCR further notes that while the other two dams are currently considered safe, they will nevertheless require structural repairs or need to be breached in the future. Such activities are likely to face significant scrutiny and impediments given the overall concern that these dams are likely to contain PCB laden silt behind them. The remedial design of any remedial alternative ultimately selected for the ROR needs to keep these dam safety considerations in mind. These concerns are consistent with MassDEP's request that GE's CMS adequately address any future utility maintenance, installation projects, bridge maintenance projects or channel or impoundment maintenance activities to minimize the impacts of any potential disturbance and re-suspension of contaminated sediments during any of these activities.

Based on the foregoing, DCR requests EPA to require GE to develop a supplemental CMS Report that analyzes in a more comprehensive and explicit manner the range of concerns identified by the Massachusetts environmental agencies. Thank you for soliciting our input on the CMS Report, and for your consideration of our comment letters.

Sincerely yours,

Richard K. Sullivan, Jr.
Commissioner

cc: Ian Bowles, Secretary of Energy and Environmental Affairs
Susan Svirsky, EPA Region 1
EPA contact for submittal of comments
Laurie Burt, Commissioner, MassDEP
Mary Griffin, Commissioner, Mass DFG