

Appendix D

Cost Estimate Supporting
Information

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

GENERAL NOTES AND ASSUMPTIONS

- All costs include equipment, material, and labor, unless otherwise noted.
- Costs do not include fees for legal services, permitting, obtaining access, negotiations, or agency oversight.
- Unit costs are in 2008 dollars and are estimated from standard estimating guides (e.g., Means Site Work and Landscape Cost Data, vendors, professional judgment, and experience from other similar projects).
- All items and unit quantities based on GIS interpretation and manipulation performed by ARCADIS from data files provided by QEA and current site information project understanding.
- Additional guidance in preparing these costs was found in the USACE/EPA publication titled "A Guide to Developing and Documenting Cost Estimates During the Feasibility Study."
- The information in this cost estimate is based on available information regarding the site investigation and the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. ARCADIS is not licensed to provide financial or legal consulting services; as such, this cost estimate information is being provided for the purpose of comparing potential remedial alternatives. Utilization of this cost estimate information beyond the stated purpose is at the risk of the user.

Sediment Alternative

Cost Estimate

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Table 1 - Cost Summary for SED 1

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.0	Mobilization/Site Preparation/Demobilization	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3.0	Removal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.0	Backfill/Capping/Restoration	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5.0	Transportation and Disposal (Staging/Access)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.0	Environmental Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project/Construction Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Engineering and Administration (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Contingency (25%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	SUBTOTAL	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7.0	Annual O & M/Long Term Monitoring Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL OMM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

- There are no costs associated with this alternative.

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Table 2 - Cost Summary for SED 2

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2.0	Mobilization/Site Preparation/Demobilization	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3.0	Removal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4.0	Backfill/Capping/Restoration	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5.0	Transportation and Disposal (Staging/Access)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6.0	Environmental Monitoring	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Project/Construction Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Engineering and Administration (5%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Contingency (25%)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	SUBTOTAL	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
7.0	Annual O & M/Long Term Monitoring Program	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$378,950	\$378,950
	TOTAL OMM	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,962,750	\$4,962,750
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$4,960,000	\$4,960,000

- The net present value of this alternative is estimated to be \$1,750,000

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Table 3 - Cost Summary for SED 3

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$3,342,198	\$394,659	\$188,903	\$0	\$0	\$262,070	\$0	\$0	\$0	\$0	\$4,187,831
2.0	Mobilization/Site Preparation/Demobilization	\$8,879,193	\$2,606,156	\$1,115,606	\$0	\$0	\$510,070	\$0	\$0	\$0	\$0	\$13,111,025
3.0	Removal	\$39,218,758	\$659,050	\$129,500	\$0	\$0	\$210,000	\$0	\$0	\$0	\$0	\$40,217,308
4.0	Backfill/Capping/Restoration	\$19,334,697	\$4,783,877	\$2,480,040	\$0	\$0	\$4,309,760	\$0	\$0	\$0	\$0	\$30,908,375
5.0	Transportation and Disposal (Staging/Access)	\$5,642,268	\$2,133,944	\$1,963,077	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$9,739,288
6.0	Environmental Monitoring	\$2,753,515	\$238,762	\$241,826	\$0	\$0	\$473,630	\$0	\$0	\$0	\$0	\$3,707,734
	Subtotal	\$79,170,630	\$10,816,449	\$6,118,953	\$0	\$0	\$5,765,529	\$0	\$0	\$0	\$0	\$101,871,560
	Project/Construction Management (5%)	\$3,958,531	\$540,822	\$305,948	\$0	\$0	\$288,276	\$0	\$0	\$0	\$0	\$5,093,578
	Engineering and Administration (5%)	\$3,958,531	\$540,822	\$305,948	\$0	\$0	\$288,276	\$0	\$0	\$0	\$0	\$5,093,578
	Contingency (25%)	\$19,792,657	\$2,704,112	\$1,529,738	\$0	\$0	\$1,441,382	\$0	\$0	\$0	\$0	\$25,467,890
	SUBTOTAL	\$106,880,350	\$14,602,206	\$8,260,586	\$0	\$0	\$7,783,464	\$0	\$0	\$0	\$0	\$137,526,606
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$15,000	\$0	\$0	\$0	\$508,950	\$1,118,950
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$75,000	\$0	\$0	\$0	\$6,392,750	\$9,442,750
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$109,000,000	\$15,600,000	\$8,410,000	\$0	\$0	\$7,860,000	\$0	\$0	\$0	\$6,390,000	\$147,000,000

- The net present value of this alternative is estimated to be \$107,000,000

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Table 4 - Cost Summary for SED 4

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$3,350,721	\$1,386,656	\$669,451	\$262,539	\$43,710	\$866,012	\$0	\$0	\$0	\$0	\$6,579,088
2.0	Mobilization/Site Preparation/Demobilization	\$8,887,716	\$3,723,533	\$2,805,603	\$509,539	\$138,710	\$1,114,012	\$0	\$0	\$0	\$0	\$17,179,112
3.0	Removal	\$39,218,758	\$15,041,748	\$203,000	\$189,000	\$24,500	\$6,115,217	\$0	\$0	\$0	\$0	\$60,792,223
4.0	Backfill/Capping/Restoration	\$19,505,152	\$9,282,551	\$10,302,972	\$4,262,416	\$613,461	\$10,075,693	\$0	\$0	\$0	\$0	\$54,042,245
5.0	Transportation and Disposal (Staging/Access)	\$5,531,849	\$3,251,859	\$4,163,985	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$12,947,693
6.0	Environmental Monitoring	\$2,753,515	\$1,071,948	\$746,894	\$552,356	\$141,231	\$881,326	\$0	\$0	\$0	\$0	\$6,147,270
	Subtotal	\$79,247,711	\$33,758,294	\$18,891,905	\$5,775,849	\$961,612	\$19,052,260	\$0	\$0	\$0	\$0	\$157,687,630
	Project/Construction Management (5%)	\$3,962,386	\$1,687,915	\$944,595	\$288,792	\$48,081	\$952,613	\$0	\$0	\$0	\$0	\$7,884,382
	Engineering and Administration (5%)	\$3,962,386	\$1,687,915	\$944,595	\$288,792	\$48,081	\$952,613	\$0	\$0	\$0	\$0	\$7,884,382
	Contingency (25%)	\$19,811,928	\$8,439,574	\$4,722,976	\$1,443,962	\$240,403	\$4,763,065	\$0	\$0	\$0	\$0	\$39,421,908
	SUBTOTAL	\$106,984,409	\$45,573,697	\$25,504,071	\$7,797,396	\$1,298,176	\$25,720,550	\$0	\$0	\$0	\$0	\$212,878,301
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$0	\$0	\$0	\$0	\$580,000	\$1,175,000
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$7,023,250	\$9,998,250
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$109,000,000	\$46,500,000	\$25,700,000	\$7,800,000	\$1,300,000	\$25,700,000	\$0	\$0	\$0	\$7,020,000	\$223,000,000

- The net present value of this alternative is estimated to be \$141,000,000

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Table 5 - Cost Summary for SED 5

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$3,342,198	\$2,048,647	\$1,106,437	\$337,838	\$53,471	\$881,471	\$0	\$0	\$242,761	\$0	\$8,012,823
2.0	Mobilization/Site Preparation/Demobilization	\$8,879,193	\$4,605,843	\$3,823,448	\$584,838	\$148,471	\$1,129,471	\$0	\$0	\$807,430	\$0	\$19,978,693
3.0	Removal	\$39,218,758	\$26,318,155	\$4,832,083	\$189,000	\$24,500	\$6,195,717	\$0	\$0	\$143,500	\$0	\$76,921,713
4.0	Backfill/Capping/Restoration	\$19,334,697	\$10,328,763	\$13,366,478	\$5,768,404	\$808,682	\$10,228,929	\$0	\$0	\$3,798,060	\$0	\$63,634,015
5.0	Transportation and Disposal (Staging/Access)	\$5,523,411	\$4,344,895	\$3,760,311	\$0	\$0	\$0	\$0	\$0	\$624,377	\$0	\$14,252,993
6.0	Environmental Monitoring	\$2,753,515	\$1,768,829	\$1,213,177	\$552,356	\$141,231	\$956,771	\$0	\$0	\$348,981	\$0	\$7,734,861
	Subtotal	\$79,051,773	\$49,415,132	\$28,101,934	\$7,432,436	\$1,176,355	\$19,392,360	\$0	\$0	\$5,965,108	\$0	\$190,535,098
	Project/Construction Management (5%)	\$3,952,589	\$2,470,757	\$1,405,097	\$371,622	\$58,818	\$969,618	\$0	\$0	\$298,255	\$0	\$9,526,755
	Engineering and Administration (5%)	\$3,952,589	\$2,470,757	\$1,405,097	\$371,622	\$58,818	\$969,618	\$0	\$0	\$298,255	\$0	\$9,526,755
	Contingency (25%)	\$19,762,943	\$12,353,783	\$7,025,484	\$1,858,109	\$294,089	\$4,848,090	\$0	\$0	\$1,491,277	\$0	\$47,633,774
	SUBTOTAL	\$106,719,893	\$66,710,428	\$37,937,611	\$10,033,789	\$1,588,079	\$26,179,685	\$0	\$0	\$8,052,896	\$0	\$257,222,382
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$0	\$0	\$0	\$15,000	\$635,050	\$1,245,050
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$75,000	\$7,535,450	\$10,585,450
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$109,000,000	\$67,700,000	\$38,100,000	\$10,000,000	\$1,590,000	\$26,200,000	\$0	\$0	\$8,130,000	\$7,540,000	\$268,000,000

- The net present value of this alternative is estimated to be \$153,000,000

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Table 6 - Cost Summary for SED 6

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$3,350,721	\$2,055,647	\$2,414,442	\$436,611	\$122,001	\$837,406	\$0	\$300,774	\$300,205	\$0	\$9,817,808
2.0	Mobilization/Site Preparation/Demobilization	\$8,887,716	\$4,612,843	\$4,507,275	\$683,611	\$217,001	\$1,085,406	\$0	\$1,798,694	\$878,882	\$0	\$22,671,429
3.0	Removal	\$39,218,758	\$26,458,155	\$35,030,219	\$3,665,488	\$893,105	\$6,401,411	\$0	\$133,000	\$143,500	\$0	\$111,943,638
4.0	Backfill/Capping/Restoration	\$19,505,152	\$10,328,763	\$9,774,781	\$4,156,630	\$1,233,707	\$9,140,939	\$0	\$3,805,956	\$4,932,945	\$0	\$62,878,874
5.0	Transportation and Disposal (Staging/Access)	\$5,531,849	\$4,883,687	\$4,079,422	\$0	\$0	\$0	\$0	\$1,241,488	\$624,377	\$0	\$16,360,822
6.0	Environmental Monitoring	\$2,753,515	\$1,768,829	\$1,391,016	\$663,107	\$218,208	\$957,779	\$0	\$578,598	\$348,981	\$0	\$8,680,032
	Subtotal	\$79,247,711	\$50,107,925	\$57,197,155	\$9,605,449	\$2,684,022	\$18,422,942	\$0	\$7,858,510	\$7,228,890	\$0	\$232,352,604
	Project/Construction Management (5%)	\$3,962,386	\$2,505,396	\$2,859,858	\$480,272	\$134,201	\$921,147	\$0	\$392,926	\$361,444	\$0	\$11,617,630
	Engineering and Administration (5%)	\$3,962,386	\$2,505,396	\$2,859,858	\$480,272	\$134,201	\$921,147	\$0	\$392,926	\$361,444	\$0	\$11,617,630
	Contingency (25%)	\$19,811,928	\$12,526,981	\$14,299,289	\$2,401,362	\$671,005	\$4,605,736	\$0	\$1,964,628	\$1,807,222	\$0	\$58,088,151
	SUBTOTAL	\$106,984,409	\$67,645,698	\$77,216,159	\$12,967,356	\$3,623,430	\$24,870,972	\$0	\$10,608,989	\$9,759,001	\$0	\$313,676,015
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$0	\$0	\$22,000	\$15,000	\$723,450	\$1,355,450
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$0	\$0	\$110,000	\$75,000	\$8,414,250	\$11,574,250
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$109,000,000	\$68,600,000	\$77,400,000	\$13,000,000	\$3,620,000	\$24,900,000	\$0	\$10,700,000	\$9,830,000	\$8,410,000	\$325,000,000

- The net present value of this alternative is estimated to be \$174,000,000

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Table 7 - Cost Summary for SED 7

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$4,132,445	\$2,358,963	\$2,415,113	\$613,241	\$149,926	\$1,294,623	\$0	\$609,016	\$360,158	\$0	\$11,933,485
2.0	Mobilization/Site Preparation/Demobilization	\$9,839,183	\$5,019,897	\$4,521,350	\$860,241	\$244,926	\$1,790,623	\$0	\$2,183,492	\$945,086	\$0	\$25,404,799
3.0	Removal	\$34,156,813	\$21,457,192	\$21,994,020	\$1,055,678	\$109,208	\$2,484,446	\$0	\$472,213	\$91,536	\$0	\$81,821,106
4.0	Backfill/Capping/Restoration	\$39,347,845	\$20,916,576	\$22,810,980	\$10,189,355	\$2,562,108	\$21,851,880	\$0	\$9,153,535	\$6,110,808	\$0	\$132,943,088
5.0	Transportation and Disposal (Staging/Access)	\$6,771,456	\$3,540,749	\$4,132,027	\$0	\$0	\$0	\$0	\$1,726,855	\$748,290	\$0	\$16,919,377
6.0	Environmental Monitoring	\$3,437,493	\$2,144,567	\$1,391,016	\$772,789	\$232,204	\$1,060,125	\$0	\$980,101	\$415,898	\$0	\$10,434,191
	Subtotal	\$97,685,236	\$55,437,943	\$57,264,506	\$13,491,305	\$3,298,372	\$28,481,696	\$0	\$15,125,212	\$8,671,775	\$0	\$279,456,045
	Project/Construction Management (5%)	\$4,884,262	\$2,771,897	\$2,863,225	\$674,565	\$164,919	\$1,424,085	\$0	\$756,261	\$433,589	\$0	\$13,972,802
	Engineering and Administration (5%)	\$4,884,262	\$2,771,897	\$2,863,225	\$674,565	\$164,919	\$1,424,085	\$0	\$756,261	\$433,589	\$0	\$13,972,802
	Contingency (25%)	\$24,421,309	\$13,859,486	\$14,316,127	\$3,372,826	\$824,593	\$7,120,424	\$0	\$3,781,303	\$2,167,944	\$0	\$69,864,011
	SUBTOTAL	\$131,875,068	\$74,841,224	\$77,307,083	\$18,213,262	\$4,452,802	\$38,450,290	\$0	\$20,419,036	\$11,706,896	\$0	\$377,265,661
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$0	\$0	\$22,000	\$15,000	\$700,050	\$1,332,050
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$0	\$0	\$110,000	\$75,000	\$8,250,450	\$11,410,450
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$134,000,000	\$75,800,000	\$77,500,000	\$18,200,000	\$4,450,000	\$38,500,000	\$0	\$20,500,000	\$11,800,000	\$8,250,000	\$389,000,000

- The net present value of this alternative is estimated to be \$182,000,000

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Table 8 - Cost Summary for SED 8

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 5 Large Backwaters	Reach 5 Small Backwaters	Reach 6 - Woods Pond	Reach 7 Channel	Reach 7 Impoundments	Reach 8 - Rising Pond	Long Term Monitoring	Total
1.0	Pre-Design Investigation (5%)	\$4,701,780	\$2,684,597	\$3,196,969	\$2,352,191	\$417,819	\$3,841,534	\$0	\$1,132,273	\$3,138,169	\$0	\$21,465,332
2.0	Mobilization/Site Preparation/Demobilization	\$10,433,325	\$5,443,749	\$5,614,538	\$2,599,191	\$512,819	\$4,337,534	\$0	\$4,407,952	\$4,565,271	\$0	\$37,914,381
3.0	Removal	\$56,315,519	\$33,675,697	\$38,566,688	\$18,262,112	\$3,476,330	\$26,101,303	\$0	\$7,435,584	\$22,600,545	\$0	\$206,433,777
4.0	Backfill/Capping/Restoration	\$27,830,698	\$14,883,036	\$20,411,573	\$25,548,603	\$4,190,016	\$46,327,984	\$0	\$10,082,862	\$35,556,410	\$0	\$184,831,181
5.0	Transportation and Disposal (Staging/Access)	\$7,110,553	\$5,576,481	\$7,154,304	\$0	\$0	\$0	\$0	\$4,990,230	\$3,769,472	\$0	\$28,601,040
6.0	Environmental Monitoring	\$4,157,832	\$2,374,049	\$2,543,557	\$2,986,114	\$595,032	\$3,905,400	\$0	\$1,851,335	\$3,179,313	\$0	\$21,592,633
	Subtotal	\$110,549,707	\$64,637,609	\$77,487,629	\$51,748,211	\$9,192,016	\$84,513,756	\$0	\$29,900,236	\$72,809,180	\$0	\$500,838,344
	Project/Construction Management (5%)	\$5,527,485	\$3,231,880	\$3,874,381	\$2,587,411	\$459,601	\$4,225,688	\$0	\$1,495,012	\$3,640,459	\$0	\$25,041,917
	Engineering and Administration (5%)	\$5,527,485	\$3,231,880	\$3,874,381	\$2,587,411	\$459,601	\$4,225,688	\$0	\$1,495,012	\$3,640,459	\$0	\$25,041,917
	Contingency (25%)	\$27,637,427	\$16,159,402	\$19,371,907	\$12,937,053	\$2,298,004	\$21,128,439	\$0	\$7,475,059	\$18,202,295	\$0	\$125,209,586
	SUBTOTAL	\$149,242,104	\$87,260,772	\$104,608,299	\$69,860,085	\$12,409,222	\$114,093,571	\$0	\$40,365,319	\$98,292,393	\$0	\$676,131,765
7.0	Annual O & M/Long Term Monitoring Program	\$375,000	\$190,000	\$30,000	\$0	\$0	\$0	\$0	\$22,000	\$15,000	\$616,850	\$1,248,850
	TOTAL OMM	\$1,875,000	\$950,000	\$150,000	\$0	\$0	\$0	\$0	\$110,000	\$75,000	\$7,668,050	\$10,828,050
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$151,000,000	\$88,200,000	\$105,000,000	\$69,900,000	\$12,400,000	\$114,000,000	\$0	\$40,500,000	\$98,400,000	\$7,670,000	\$687,000,000

- The net present value of this alternative is estimated to be \$203,000,000

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

SEDIMENT ALTERNATIVE NOTES AND ASSUMPTIONS

1. Pre-design investigation includes a 5% allowance for costs related to preparing, performing, and reporting pre-design investigation activities.
2. Mobilization/site preparation/demobilization includes costs related to mobilizing and demobilizing of equipment and personnel to and from the site; material, labor, and equipment costs related to the construction and maintenance of staging areas for the duration of construction; and other construction-related controls, such as water trucks, silt fence, oil booms, and silt curtains, are also included.
3. Removal costs include labor and equipment costs to remove sediment from the designated areas, including costs for debris removal; sheeting installation; dewatering; water treatment; and blending removed material with 5% stabilization agent for mechanical removal in the dry and 10% stabilization agent for mechanical removal in the wet and hydraulic removal.
4. Backfill/capping/restoration costs include material, labor, and equipment costs to place fill material in removal areas, place capping material in capping areas, and perform bank stabilization (one-third of the bank would be stabilized by each of three methods: rip rap, revetment mats, and bioengineering). Backfilling and engineered capping include placing sand over the surface to within 1 foot of the original grade with up to 1 foot of stone over the sand. Thin-layer capping includes placing 6 inches of sand over the surface. Material placement would be conducted with a shore-based excavator in the dry or a barge-mounted excavator in the wet. Also includes costs for restoring areas disturbed areas disturbed for staging areas and access roads (grading, placement of topsoil, seeding, mulching, and tree/shrub planting) and survey.
5. Transportation and disposal includes costs to transport and dispose of materials generated during the removal of staging areas and access roads after construction is complete. Transportation and disposal of removed sediment/soil is included separately in the treatment/disposition alternatives.
6. Environmental monitoring costs include equipment and labor for environmental and health and safety monitoring for the duration of the project. Air monitoring consists of three monitors operating continuously throughout the duration of construction. Air monitoring parameters include particulates and PCBs. Laboratory analysis would be performed once per month for each monitor. Water monitoring consists of one monthly grab sample for laboratory analytical testing and four continuous turbidity monitors.
7. A 5% allowance is included to provide for project and construction management costs during construction.
8. A 5% allowance is included to provide for engineering design and engineering administration costs during construction.
9. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
10. Annual O & M costs include equipment and labor to inspect and maintain the restored bank and sediment cap areas. Costs are incurred once annually for 5 years starting with the year following the end of construction.
11. Long-term monitoring costs include performing long-term, post-closure monitoring and maintenance activities for 100 years following the completion of construction, including the MNR programs. The MNR program includes visual inspection or remediated areas, and periodic collection of sediment, surface water, and fish samples for laboratory analysis.

Floodplain Alternative

Cost Estimate

Appendix D

Table 9 - Cost Summary for FP 1

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$0	\$0	\$0	\$0	\$0	\$0
2.0	Mobilization/Site Preparation/Demobilization	\$0	\$0	\$0	\$0	\$0	\$0
3.0	Removal	\$0	\$0	\$0	\$0	\$0	\$0
4.0	Backfill/Restoration	\$0	\$0	\$0	\$0	\$0	\$0
5.0	Transportation and Disposal (Staging/Access)	\$0	\$0	\$0	\$0	\$0	\$0
6.0	Environmental Monitoring	\$0	\$0	\$0	\$0	\$0	\$0
	Subtotal	\$0	\$0	\$0	\$0	\$0	\$0
	Project/Construction Management (5%)	\$0	\$0	\$0	\$0	\$0	\$0
	Engineering and Administration (5%)	\$0	\$0	\$0	\$0	\$0	\$0
	Contingency (25%)	\$0	\$0	\$0	\$0	\$0	\$0
	SUBTOTAL	\$0	\$0	\$0	\$0	\$0	\$0
7.0	Annual O & M	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL OMM	\$0	\$0	\$0	\$0	\$0	\$0
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$0	\$0	\$0	\$0	\$0	\$0

- *There are no costs associated with this alternative.*

Appendix D

Table 10 - Cost Summary for FP 2

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$371,128	\$47,294	\$34,140	\$9,613	\$80,540	\$542,714
2.0	Mobilization/Site Preparation/Demobilization	\$828,655	\$170,756	\$130,545	\$8,718	\$184,208	\$1,322,881
3.0	Removal	\$1,400,492	\$108,346	\$65,603	\$38,303	\$246,743	\$1,859,487
4.0	Backfill/Restoration	\$1,532,558	\$197,284	\$146,184	\$40,392	\$369,307	\$2,285,726
5.0	Transportation and Disposal (Staging/Access)	\$779,629	\$86,864	\$35,000	\$1,476	\$465,168	\$1,368,137
6.0	Environmental Monitoring	\$135,138	\$20,198	\$16,135	\$13,525	\$45,407	\$230,404
	Subtotal	\$5,047,600	\$630,741	\$427,607	\$112,028	\$1,391,373	\$7,609,349
	Project/Construction Management (5%)	\$252,380	\$31,537	\$21,380	\$5,601	\$69,569	\$380,467
	Engineering and Administration (5%)	\$252,380	\$31,537	\$21,380	\$5,601	\$69,569	\$380,467
	Contingency (25%)	\$1,261,900	\$157,685	\$106,902	\$28,007	\$347,843	\$1,902,337
	SUBTOTAL	\$6,814,260	\$851,501	\$577,269	\$151,238	\$1,878,353	\$10,272,622
7.0	Annual O & M	\$25,000	\$15,000	\$15,000	\$15,000	\$15,000	\$85,000
	TOTAL OMM	\$125,000	\$75,000	\$75,000	\$75,000	\$75,000	\$425,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$6,940,000	\$927,000	\$652,000	\$226,000	\$1,950,000	\$10,700,000

- The net present value of this alternative is estimated to be \$10,300,000

Appendix D

Table 11 - Cost Summary for FP 3

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$898,585	\$389,563	\$276,998	\$20,645	\$80,138	\$1,665,929
2.0	Mobilization/Site Preparation/Demobilization	\$1,924,440	\$793,759	\$540,747	\$23,196	\$175,990	\$3,458,132
3.0	Removal	\$2,776,621	\$1,273,479	\$870,684	\$75,435	\$250,839	\$5,247,059
4.0	Backfill/Restoration	\$4,320,770	\$1,832,570	\$1,364,562	\$101,073	\$368,782	\$7,987,757
5.0	Transportation and Disposal (Staging/Access)	\$760,351	\$317,787	\$701,816	\$9,021	\$453,073	\$2,242,048
6.0	Environmental Monitoring	\$413,306	\$190,605	\$132,488	\$17,065	\$45,838	\$799,301
	Subtotal	\$11,094,073	\$4,797,764	\$3,887,295	\$246,434	\$1,374,659	\$21,400,226
	Project/Construction Management (5%)	\$554,704	\$239,888	\$194,365	\$12,322	\$68,733	\$1,070,011
	Engineering and Administration (5%)	\$554,704	\$239,888	\$194,365	\$12,322	\$68,733	\$1,070,011
	Contingency (25%)	\$2,773,518	\$1,199,441	\$971,824	\$61,609	\$343,665	\$5,350,056
	SUBTOTAL	\$14,976,999	\$6,476,981	\$5,247,848	\$332,686	\$1,855,790	\$28,890,305
7.0	Annual O & M	\$75,000	\$35,000	\$20,000	\$15,000	\$15,000	\$160,000
	TOTAL OMM	\$375,000	\$175,000	\$100,000	\$75,000	\$75,000	\$800,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$15,400,000	\$6,650,000	\$5,350,000	\$408,000	\$1,930,000	\$29,700,000

- The net present value of this alternative is estimated to be \$26,700,000

Appendix D

Table 12 - Cost Summary for FP 4

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$1,491,654	\$597,780	\$408,300	\$33,859	\$72,656	\$2,604,248
2.0	Mobilization/Site Preparation/Demobilization	\$3,107,727	\$1,152,841	\$782,208	\$32,682	\$112,485	\$5,187,942
3.0	Removal	\$4,487,072	\$1,956,529	\$1,260,494	\$111,414	\$246,743	\$8,062,251
4.0	Backfill/Restoration	\$7,401,711	\$2,871,881	\$2,054,900	\$190,913	\$358,249	\$12,877,653
5.0	Transportation and Disposal (Staging/Access)	\$1,170,150	\$553,597	\$1,066,767	\$16,008	\$178,784	\$2,985,305
6.0	Environmental Monitoring	\$665,852	\$295,444	\$189,545	\$20,511	\$45,407	\$1,216,759
	Subtotal	\$18,324,165	\$7,428,072	\$5,762,212	\$405,387	\$1,014,324	\$32,934,159
	Project/Construction Management (5%)	\$916,208	\$371,404	\$288,111	\$20,269	\$50,716	\$1,646,708
	Engineering and Administration (5%)	\$916,208	\$371,404	\$288,111	\$20,269	\$50,716	\$1,646,708
	Contingency (25%)	\$4,581,041	\$1,857,018	\$1,440,553	\$101,347	\$253,581	\$8,233,540
	SUBTOTAL	\$24,737,623	\$10,027,897	\$7,778,986	\$547,272	\$1,369,337	\$44,461,115
7.0	Annual O & M	\$125,000	\$50,000	\$35,000	\$15,000	\$15,000	\$240,000
	TOTAL OMM	\$625,000	\$250,000	\$175,000	\$75,000	\$75,000	\$1,200,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$25,400,000	\$10,300,000	\$7,950,000	\$622,000	\$1,440,000	\$45,700,000

•The net present value of this alternative is estimated to be \$40,800,000

Appendix D

Table 13 - Cost Summary for FP 5

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$981,140	\$411,704	\$706,909	\$43,636	\$0	\$2,143,388
2.0	Mobilization/Site Preparation/Demobilization	\$1,905,119	\$862,677	\$1,300,253	\$40,714	\$0	\$4,108,762
3.0	Removal	\$3,164,532	\$1,328,652	\$2,242,028	\$168,322	\$0	\$6,903,533
4.0	Backfill/Restoration	\$4,762,190	\$1,935,667	\$3,547,561	\$223,199	\$0	\$10,468,616
5.0	Transportation and Disposal (Staging/Access)	\$828,877	\$328,745	\$1,468,695	\$53,034	\$0	\$2,679,351
6.0	Environmental Monitoring	\$470,125	\$195,900	\$332,698	\$25,943	\$0	\$1,024,666
	Subtotal	\$12,111,982	\$5,063,345	\$9,598,143	\$554,847	\$0	\$27,328,317
	Project/Construction Management (5%)	\$605,599	\$253,167	\$479,907	\$27,742	\$0	\$1,366,416
	Engineering and Administration (5%)	\$605,599	\$253,167	\$479,907	\$27,742	\$0	\$1,366,416
	Contingency (25%)	\$3,027,995	\$1,265,836	\$2,399,536	\$138,712	\$0	\$6,832,079
	SUBTOTAL	\$16,351,175	\$6,835,516	\$12,957,494	\$749,044	\$0	\$36,893,228
7.0	Annual O & M	\$105,000	\$35,000	\$70,000	\$15,000	\$0	\$225,000
	TOTAL OMM	\$525,000	\$175,000	\$350,000	\$75,000	\$0	\$1,125,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$16,900,000	\$7,010,000	\$13,300,000	\$824,000	\$0	\$38,000,000

•The net present value of this alternative is estimated to be \$35,100,000

Appendix D

Table 14 - Cost Summary for FP 6

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$2,790,199	\$1,699,397	\$1,524,631	\$195,278	\$79,000	\$6,288,505
2.0	Mobilization/Site Preparation/Demobilization	\$3,668,838	\$2,358,927	\$2,147,580	\$209,020	\$66,000	\$8,450,364
3.0	Removal	\$11,326,314	\$6,265,083	\$5,480,870	\$756,079	\$307,000	\$24,135,347
4.0	Backfill/Restoration	\$12,942,440	\$8,295,764	\$7,570,462	\$973,666	\$403,000	\$30,185,332
5.0	Transportation and Disposal (Staging/Access)	\$2,174,524	\$1,531,930	\$2,131,896	\$272,839	\$59,000	\$6,170,188
6.0	Environmental Monitoring	\$1,359,501	\$923,891	\$809,716	\$111,653	\$52,000	\$3,256,761
	Subtotal	\$34,261,816	\$21,074,992	\$19,665,155	\$2,518,535	\$966,000	\$78,486,498
	Project/Construction Management (5%)	\$1,713,091	\$1,053,750	\$983,258	\$125,927	\$48,300	\$3,924,325
	Engineering and Administration (5%)	\$1,713,091	\$1,053,750	\$983,258	\$125,927	\$48,300	\$3,924,325
	Contingency (25%)	\$8,565,454	\$5,268,748	\$4,916,289	\$629,634	\$241,500	\$19,621,624
	SUBTOTAL	\$46,253,452	\$28,451,239	\$26,547,959	\$3,400,022	\$1,304,100	\$105,956,772
7.0	Annual O & M	\$300,000	\$185,000	\$160,000	\$25,000	\$15,000	\$685,000
	TOTAL OMM	\$1,500,000	\$925,000	\$800,000	\$125,000	\$45,000	\$3,395,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$47,800,000	\$29,400,000	\$27,300,000	\$3,530,000	\$1,350,000	\$109,000,000

•The net present value of this alternative is estimated to be **\$74,400,000**

Appendix D

Table 15 - Cost Summary for FP 7

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

Item #	Description	Reach 5A	Reach 5B	Reach 5C	Reach 6	Reach 7	Total
1.0	Pre-Design Investigation (10%)	\$4,307,771	\$2,172,613	\$2,161,873	\$158,921	\$2,443,306	\$11,244,484
2.0	Mobilization/Site Preparation/Demobilization	\$5,004,386	\$2,675,663	\$2,864,113	\$141,508	\$3,112,959	\$13,798,630
3.0	Removal	\$15,687,083	\$8,146,938	\$7,753,127	\$614,267	\$9,321,974	\$41,523,390
4.0	Backfill/Restoration	\$22,220,832	\$10,787,286	\$10,936,975	\$814,696	\$11,833,968	\$56,593,757
5.0	Transportation and Disposal (Staging/Access)	\$3,567,914	\$1,917,662	\$1,835,054	\$95,220	\$3,155,015	\$10,570,866
6.0	Environmental Monitoring	\$2,319,293	\$1,202,552	\$1,145,451	\$98,203	\$1,385,807	\$6,151,305
	Subtotal	\$53,107,279	\$26,902,714	\$26,696,594	\$1,922,815	\$31,253,029	\$139,882,431
	Project/Construction Management (5%)	\$2,655,364	\$1,345,136	\$1,334,830	\$96,141	\$1,562,651	\$6,994,122
	Engineering and Administration (5%)	\$2,655,364	\$1,345,136	\$1,334,830	\$96,141	\$1,562,651	\$6,994,122
	Contingency (25%)	\$13,276,820	\$6,725,678	\$6,674,148	\$480,704	\$7,813,257	\$34,970,608
	SUBTOTAL	\$71,694,827	\$36,318,664	\$36,040,401	\$2,595,801	\$42,191,589	\$188,841,282
7.0	Annual O & M	\$480,000	\$240,000	\$215,000	\$15,000	\$260,000	\$1,210,000
	TOTAL OMM	\$2,400,000	\$1,200,000	\$1,075,000	\$75,000	\$1,300,000	\$6,050,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$74,100,000	\$37,500,000	\$37,100,000	\$2,670,000	\$43,500,000	\$195,000,000

• The net present value of this alternative is estimated to be \$97,200,000

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

FLOODPLAIN ALTERNATIVE NOTES AND ASSUMPTIONS

1. Pre-design investigation includes a 10% allowance for costs related to preparing, performing, and reporting pre-design investigation activities.
2. Mobilization/site preparation/demobilization includes costs related to mobilizing and demobilizing of equipment and personnel to and from the site; material, labor, and equipment costs related to the construction and maintenance of staging areas for the duration of construction; and other construction-related controls, such as water trucks and silt fence.
3. Removal costs include labor and equipment costs to remove soil from the designated areas. Assumes saturated soils would be gravity dewatered in the staging areas and no additional blending or dewatering costs are necessary. Includes costs for water treatment, as appropriate.
4. Backfill/restoration costs include material, labor, and equipment costs to place fill and topsoil in removal areas. Assumes fill would be placed to within 6 inches of the original grade with 6 inches of topsoil over the fill. Also includes costs for restoring disturbed areas (grading, placement of topsoil, seeding, mulching, and tree/shrub planting) and survey (two full-time onsite surveyors plus office support for the duration of construction).
5. Transportation and disposal includes costs to transport and dispose of materials generated during the removal of staging areas and access roads once construction is complete. Transportation and disposal of removed soil is included separately in the treatment/disposition alternatives.
6. Environmental monitoring costs include equipment and labor for environmental and health and safety monitoring for the duration of the project. Air monitoring consists of three monitors operating continuously through the duration of construction. Air monitoring parameters include particulates and PCBs and laboratory analysis would be performed once per month for each monitor.
7. A 5% allowance is included to provide for project and construction management costs during construction.
8. A 5% allowance is included to provide for engineering design and engineering administration costs during construction.
9. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
10. Annual O & M costs include equipment and labor to inspect and maintain the restored areas. Costs are incurred once annually for 5 years starting with the year following the end of construction.

ARCADIS

**Treatment and Disposal
Alternative**

Cost Estimate

Appendix D
Table 16 - Cost Summary for TD 1

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA

Item #	Description	Minimum (SED3 & FP2)	Maximum (SED8 & FP7)
1.0	Off-Site Transport and Disposal	\$38,912,760	\$595,827,000
	Subtotal	\$38,912,760	\$595,827,000
	Project/Construction Management (5%)	\$1,945,638	\$29,791,350
	Engineering and Administration (5%)	\$1,945,638	\$29,791,350
	Contingency (25%)	\$9,728,190	\$148,956,750
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$53,000,000	\$804,000,000

- *The updated net present value of these alternatives are estimated to be \$40,000,000 and, \$222,000,000, respectively.*

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 1 NOTES AND ASSUMPTIONS

1. Includes costs to transport and dispose of TSCA materials at a licensed facility in Model City, New York. Includes costs to transport and dispose of non-TSCA materials at a licensed facility in High Acres, New York.
2. A 5% allowance is included to provide for project and construction management costs during construction.
3. A 5% allowance is included to provide for engineering and administration costs during construction.
4. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.

Appendix D

Table 17 - Cost Summary for TD 2

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
 General Electric Company - Pittsfield, MA

m #	Description	Minimum (SED 6 & FP 2)	Maximum (SED 8 & FP 7)
1.0	Pre-Design Investigation	\$288,499	\$827,743
2.0	Mobilization/Demobilization	\$288,499	\$827,743
3.0	CDF Construction	\$5,769,973	\$16,554,861
	Subtotal	\$6,346,970	\$18,210,347
	Project/Construction Management (5%)	\$317,349	\$910,517
	Engineering and Administration (5%)	\$317,349	\$910,517
	Contingency (25%)	\$1,586,743	\$4,552,587
	SUBTOTAL	\$8,568,410	\$24,583,969
4.0	Annual Operations	\$1,194,429	\$1,194,429
	Total Operations	\$6,616,523	\$24,424,721
5.0	Annual O & M	\$202,400	\$402,400
	Total O & M	\$11,660,000	\$19,780,000
6.0	Total Transportation and Disposal	\$72,518,537	\$422,335,867
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$99,000,000	\$491,000,000

- *The updated net present value of these alternatives are estimated to be \$46,000,000 and \$125,000,000, respectively.*

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 2 NOTES AND ASSUMPTIONS

1. Pre-design investigation includes a 5% allowance for costs related to preparing, performing, and summarizing pre-design investigation activities for the CDF.
2. Mobilization/demobilization includes a 5% allowance for costs related to mobilizing and demobilizing equipment and personnel to and from the site.
3. CDF construction costs include equipment, labor, and material costs to construct CDF and support facilities in selected Reach 5 Backwaters and/or Reach 6 (Woods Pond). Includes costs to construct a final cover for the facility.
4. A 5% allowance is included to provide for project and construction management costs during construction.
5. A 5% allowance is included to provide for engineering and administration costs during construction.
6. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
7. Daily operation costs include equipment and labor for daily tasks during the facility's operation. Tasks include material placement and environmental and health and safety monitoring for the duration of the project. Monitored parameters include, but are not limited to, particulates and PCBs.
8. Annual O & M costs include equipment and labor to inspect and maintain the facility following construction. Includes a part-time care taker. Costs are incurred once annually for 100 years starting with the year following the end of construction.
9. Transportation and disposal costs include costs to transport and dispose of removed materials that are not placed in the CDF at an appropriately-licensed off-site facility.

Appendix D

Table 18 - Cost Summary for TD 3

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Minimum (SED 3 & FP 2)	Maximum (SED 8 & FP 7)
1.0	Pre-Design Investigation	\$820,862	\$5,531,279
2.0	Mobilization/Demobilization	\$410,431	\$2,765,640
3.0	Upland Disposal Facility Construction	\$8,208,616	\$55,312,792
	Subtotal	\$9,439,909	\$63,609,711
	Project/Construction Management (5%)	\$471,995	\$3,180,486
	Engineering and Administration (5%)	\$471,995	\$3,180,486
	Contingency (25%)	\$2,359,977	\$15,902,428
	SUBTOTAL	\$12,743,877	\$85,873,110
4.0	Annual Daily Operations	\$365,815	\$889,509
5.0	Annual Materials Handling and Transport	\$451,548	\$716,922
	Total Operations	\$6,130,223	\$50,441,934
6.0	Annual Post-Closure O & M	\$239,700	\$345,600
	Total Post Closure O & M	\$11,430,000	\$17,070,000
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$30,000,000	\$153,000,000

•The net present value of these alternatives are estimated to be \$17,000,000 to \$49,000,000, respectively.

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 3 NOTES AND ASSUMPTIONS

1. Pre-design investigation includes a 10% allowance for costs related to preparing, performing, and summarizing pre-design investigation activities for the Upland Disposal Facility.
2. Mobilization/demobilization includes a 5% allowance for costs related to mobilizing and demobilizing of equipment and personnel to and from the site.
3. Upland Disposal Facility construction costs include equipment, labor, and material costs to construct the Upland Disposal Facility at a location near the site. Includes separate support and security facilities from the remedial construction. Includes costs to construct a final cover for the facility.
4. A 5% allowance is included to provide for project and construction management costs during construction.
5. A 5% allowance is included to provide for engineering and administration costs during construction.
6. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
7. Daily operation costs include equipment and labor for daily tasks during the facility's operation. Tasks include placing/removing tarps, grading, and environmental and health and safety monitoring for the duration of the project. Monitored parameters include, but are not limited to, particulates and PCBs.
8. Annual O & M costs include equipment and labor to inspect and maintain the facility following construction. Includes activities such as mowing and reseeding. Includes a part-time care taker. Maintenance costs are incurred annually for 100 years following the end of construction. Associated post-closure inspection and groundwater monitoring activities are performed periodically (i.e., 34 events) over 100 years.

Appendix D

Table 19 - Cost Summary for TD 4

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Minimum (SED 3 & FP 2)	Maximum (SED 8 & FP 7)
1.0	Pre-Design Investigation	\$597,625	\$697,338
2.0	Treatment System	\$11,952,500	\$13,946,765
	Subtotal	\$12,550,125	\$14,644,103
	Project/Construction Management (5%)	\$627,506	\$732,205
	Engineering and Administration (5%)	\$627,506	\$732,205
	Contingency (25%)	\$3,137,531	\$3,661,026
	SUBTOTAL	\$16,942,669	\$19,769,539
4.0	Annual Operations	\$3,854,405	\$6,977,581
	Total Operations	\$31,220,681	\$363,880,863
5.0	Annual O & M	\$25,000	\$25,000
	Total O & M	\$75,000	\$75,000
6.0	Total Transportation and Disposal	\$37,921,074	\$591,100,652
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$86,000,000	\$975,000,000

- *The updated net present value of these alternatives are estimated to be \$67,000,000 and \$266,000,000, respectively.*

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 4 NOTES AND ASSUMPTIONS

1. Treatment facility costs include labor, materials, and equipment costs to construct and operate an onsite treatment facility. Includes costs to handle and treat water generated during the liquid/solid separation process. Includes costs to install and transfer sediment to storage facilities.
2. A 5% allowance is included to provide for project and construction management costs during construction.
3. A 5% allowance is included to provide for engineering and administration costs during construction.
4. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
5. Chemical extraction treatment facility operation and maintenance costs include labor, material, and utility costs for operating and maintaining the facility throughout the project.
6. Total costs assume that all treated material would be classified as non-TSCA regulated waste and include provisions for transportation to and disposal at a licensed facility in High Acres, New York.

Appendix D

Table 20 - Cost Summary for TD 5A (with Reuse)

**Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA**

Item #	Description	Minimum (SED 3 & FP 2)	Maximum (SED 8 & FP 7)
1.0	Pre-Design Investigation	\$613,394	\$7,221,068
2.0	Treatment System	\$14,721,466	\$173,305,620
	Subtotal	\$15,334,860	\$180,526,688
	Project/Construction Management (5%)	\$644,064	\$7,582,121
	Engineering and Administration (5%)	\$644,064	\$7,582,121
	Contingency (25%)	\$3,833,715	\$45,131,672
	SUBTOTAL	\$19,843,309	\$240,822,601
3.0	Annual Operations	\$5,394,009	\$12,784,289
	Total Operations	\$43,691,472	\$666,700,650
4.0	Annual O & M	\$25,000	\$25,000
	Total O & M	\$75,000	\$75,000
5.0	Additional Pre-Treatment Handling	\$4,937,677	\$61,883,723
6.0	Total Transportation and Disposal	\$35,130,643	\$509,377,037
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$104,000,000	\$1,479,000,000

- *The net present value of these alternatives are estimated to be \$80,900,000 and \$560,000,000, respectively.*

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 5A NOTES AND ASSUMPTIONS

1. Thermal treatment facility fixed costs include labor, materials, and equipment costs to construct an onsite treatment facility.
2. A 5% allowance is included to provide for project and construction management costs during construction.
3. A 5% allowance is included to provide for engineering and administration costs during construction.
4. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
5. Thermal treatment facility operation and maintenance costs include labor, material, and utility costs for operating and maintaining the facility throughout the project.
6. Transportation and disposal costs assume that all treated material would be non-TSCA regulated wastes and would be transported to and disposed of at a licensed facility in High Acres, New York. Total disposal cost based on the assumption that there is an approximate 10% loss of mass as a result of the thermal treatment process. Costs also assume that a portion of the treated materials could be used as floodplain backfill and would not require disposal.

Appendix D

Table 21 - Cost Summary for TD 5B (without Reuse)

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River
General Electric Company - Pittsfield, MA

Item #	Description	Minimum (SED 3 & FP 2)	Maximum (SED 8 & FP 7)
1.0	Pre-Design Investigation	\$613,394	\$7,221,068
2.0	Treatment System	\$14,721,466	\$173,305,620
	Subtotal	\$15,334,860	\$180,526,688
	Project/Construction Management (5%)	\$644,064	\$7,582,121
	Engineering and Administration (5%)	\$644,064	\$7,582,121
	Contingency (25%)	\$3,833,715	\$45,131,672
	SUBTOTAL	\$19,843,309	\$240,822,601
3.0	Annual Operations	\$5,394,009	\$12,784,289
	Total Operations	\$43,691,472	\$666,700,650
4.0	Annual O & M	\$25,000	\$25,000
	Total O & M	\$75,000	\$75,000
5.0	Additional Pre-Treatment Handling	\$4,937,677	\$61,883,723
6.0	Total Transportation and Disposal	\$37,172,552	\$573,030,381
	TOTAL COST OF ALTERNATIVE (ROUNDED)	\$106,000,000	\$1,542,000,000

- *The net present value of these alternatives are estimated to be \$82,400,000 and \$577,000,000, respectively.*

Appendix D - Cost Estimates

Response to EPA Interim Comments on CMS Report, Housatonic River - Rest of River General Electric Company - Pittsfield, MA

TD 5B NOTES AND ASSUMPTIONS

1. Thermal treatment facility fixed costs include labor, materials, and equipment costs to construct an onsite treatment facility.
2. A 5% allowance is included to provide for project and construction management costs during construction.
3. A 5% allowance is included to provide for engineering and administration costs during construction.
4. A 25% contingency allowance is included to provide for unforeseen circumstances or variability in estimated areas, volumes, and unit costs.
5. Thermal treatment facility operation and maintenance costs include labor, material, and utility costs for operating and maintaining the facility throughout the project.
6. Transportation and disposal costs assume that all treated material would be non-TSCA regulated wastes and would be transported to and disposed of at a licensed facility in High Acres, New York. Total disposal cost based on the assumption that there is an approximate 10% loss of mass as a result of the thermal treatment process.