



GE
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April 6, 2007

Dean Tagliaferro
EPA Project Coordinator and On-Scene Coordinator
U.S. Environmental Protection Agency
c/o Weston Environmental Engineering
One Lyman Street
Pittsfield, MA 01201

**Re: GE Pittsfield/Housatonic River Site
Upper ½-Mile Reach Removal Action (GEC800)
2006 Bank Erosion Inspection Report - Revised**

Dear Mr. Tagliaferro:

Consistent with the requirements set forth in the final *Removal Action Work Plan – Upper ½-Mile Reach of the Housatonic River* (Work Plan; Blasland, Bouck & Lee, Inc. [BBL], August 1999), the General Electric Company (GE) has performed the 2006 inspection of the restored banks of the Upper ½-Mile Reach to assess both the cleared and restored areas of the riverbank for evidence of erosion. This inspection occurred on June 2, 2006 with representatives of the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), GE, and BBL in attendance. The following people performed the inspection:

- Dean Tagliaferro, EPA;
- Randy Sujat, USACE;
- Andrew Silber, GE and
- Mark Graveling, BBL.

This trip report has been prepared to describe the findings of the 2006 bank erosion inspection – i.e., the areas identified with evidence of measurable erosion or armoring material movement – and the response actions proposed to address those areas. (This trip report was originally submitted to EPA on December 14, 2006, and has been revised to take account of EPA comments on that prior version.) Figure 1 illustrates the location of the areas at which measurable erosion or material movement was observed. In addition, in accordance with requirements of the Work Plan, GE has identified, to the extent practicable, the likely cause of the erosion and has evaluated the source, dispersal, and quantity of eroded soil (if any) in the river. This evaluation, and GE's proposed measures to restore the identified areas to previous conditions and to protect against further erosion, are described below for each area, and are summarized in Table 1.

During the June 2, 2006 bank inspection, flow in the river was approximately 199 cubic feet per second (cfs), as measured at U.S. Geological Survey (USGS) River Gauge Station No. 0118700 on the East Branch of the Housatonic River in Coltsville, MA. It should be noted that although the flow in the river was less than 200 cfs at the time of the inspection, an extreme high-flow event had occurred in October of 2005 (several months after the 2005 bank erosion inspection), during which recorded flows at the

Coltsville gauge exceeded approximately 6,300 cfs, a flow which exceeds the calculated 50-year flood in the river.

At the time of the inspection, several areas were noted with either a visually observable loss of bank soil or movement of bank armoring. These areas are identified on Figure 1. Where appropriate, certain areas may require protection from further erosion through the placement of armor stone. Armor stone placed as part of these activities will be similar to that used during the implementation of the Upper ½ Mile Reach Removal Action (i.e., graded riprap, $D_{100}=12$ -inch), as fully described in the Work Plan. GE plans to complete the remedial activities discussed below during the 2007 construction season, and will coordinate scheduling with EPA as the construction season approaches.

Descriptions of areas of erosion identified during the 2006 inspection, along with proposed area-specific response actions, are presented below.

Areas with Measurable Erosion

Area 1 – This area consists of approximately 25 feet of undercut bank, located on the northern bank of the river approximately 200 feet downstream of Building 64X in an area where no remedial activities were performed either in the river or on the riverbank (see Figure 1 and Photo 1). This area of observed erosion is located downstream of rip-rap placed adjacent to sheetpiles installed during past remedial activities, where the bank transitions from riprap to bank soil. In this area, less than 10 cubic yards (cy) of bank soil appear to have eroded from the bank. The source of the eroded material appears to be native material from the low- and mid-bank area directly down-slope from established grassy vegetation. The cause of erosion appears to be a combination of the transition from riprap to unprotected bank soils and the high velocity flows associated with the extreme flood event discussed above. No eroded soil was observed in the adjacent portion of the river and, therefore, no removal activities are planned at this location.

As discussed during the inspection, the proposed response action in this area will consist of placement of armor stone to replace eroded materials and protect against further such erosion. In this area, an approximate 1-ft thick layer of $D_{100}=12$ -inch graded riprap will be placed along the lower portion of the bank extending up the bank to the limit of the undercut. To the extent practicable, armor stone placed in this area will be keyed into the bank, as well as blended with adjacent bank armoring, such that areas receiving armor stone will be restored to previous grades.

Area 2 – Area 2 includes two areas (see Figure 1). The first area consists of approximately 40 feet of undercut bank, located on the southern bank directly across the river from Building 64W in a non-remediated bank area (see Photo 2). In this area, less than 5 cy of bank soil appears to have eroded from the bank. The source of the eroded material appears to be native material from the low- and mid-bank area directly upstream of a riprap swale. The cause of erosion appears to be high velocity water flow, likely associated with the extreme flood event discussed above. No evidence of eroded soil was observed in the adjacent portion of the river and, therefore, no removal activities are planned at this location. As discussed during the inspection, the proposed response action in this area will consist of placement of armor stone to replace eroded materials and protect against further such erosion. In this area, an approximate 1-ft thick layer of $D_{100}=12$ -inch graded riprap will be placed along the lower portion of the bank in this area, extending approximately 4-feet up the bank from the riverbed. To the extent practicable, the installed armor layer will be keyed into the bank such that the eroded areas will be restored to previous grades.

Additionally, there is a slight undercut that extends for approximately 100 feet downstream of the same drainage swale discussed above and that appears to have involved the erosion of less than 5 cy (see Photo 3). To the extent practicable, GE will place armor stone (similar to above) within this undercut to limit any future erosion from this area.

Area 3 – This area is located on the northern bank, in a non-remediated bank area, approximately 200 feet downstream of Building 64W (see Figure 1). In this area, less than 1 cy of bank soil appears to have eroded from within a 5-foot long slight undercut just above the existing riverbed armor layer (see Photo 4). The source of the eroded material appears to be native material from the mid-bank area. The cause of erosion appears to be high velocity water flow, likely associated with the extreme flood event discussed above. No evidence of eroded soil was observed in the adjacent portion of the river and, therefore, no removal activities are planned at this location. As discussed during the inspection, armor stone will be placed in this area to replace eroded materials and protect against further such erosion. In this area, armor stone (i.e., D_{100} =12-inch graded riprap) will be keyed into the bank to fill the undercut such that the lower bank above the existing riverbed armor layer will be restored to previous grades.

Area 4 – This area consists of a slightly undercut bank, extending over approximately 30 feet of the southern riverbank just upstream of riprap-protected banks, in a non-remediated bank area approximately 200 feet upstream of the eastern edge of the Newell Street Area II Parking Lot (see Figure 1 and Photo 5). In this area, less than 1 cy of bank soil appears to have eroded from the bank. The source of the eroded material appears to be native material from the low-bank area above the existing riverbed armor layer. The cause of erosion appears to be high velocity water flow, likely associated with the extreme flood event discussed above. No evidence of eroded soil was observed in the adjacent portion of the river and, therefore, no removal activities are planned at this location. As discussed during the inspection, armor stone will be placed in this area to replace eroded materials and protect against further such erosion. In this area, armor stone (i.e., D_{100} =12-inch graded riprap) will be keyed into the bank to fill the undercut such that the lower bank above the existing riverbed armor layer will be restored to previous grades.

Area 5 – Area 5 is located on the southern bank adjacent to the Newell Street Area II Parking Lot, and extends from a point approximately 15 feet downstream of the former pedestrian bridge to approximately 500 feet upstream of the bridge (see Figure 1). Within Area 5 there are several intermittent areas of undercut bank, from which soils have been eroded from bank areas above the adjacent existing riverbed armor layer (see Photo 6), and steep, near-vertical slopes are present that potentially could further erode or fail (Photo 7). The observed erosion is likely a result of the high velocity flow associated with the extreme flood event discussed above, but may also be related, to some extent, to settling of the riprap in this area. The sources of eroded materials in this area appear to be native materials or clean backfill, as portions of Area 5 proposed for removal intersect areas that have been previously remediated. No evidence of eroded soil was observed in the adjacent portion of the river and, therefore, no removal activities are planned at this location. During the inspection, it was discussed that this area would likely require excavation of the remaining steep slopes to tie into post-construction Newell Street Area II grades, as well as armor stone placement (tied into the existing riverbed armor layer at the toe of the slope) to restore this area to grade and reduce the potential for further erosion. Any such armor stone will be installed in this area such that it is to provide a continuous line of protection against further erosion.

Following the site visit, GE made a preliminary assessment of the removal of certain bank materials in this area to reduce the grade of the remaining slopes. It was assumed that excavation

of bank materials would be performed to reduce the slope in those areas where undercutting has left near-vertical banks. Figure 2 shows the locations of six representative cross sections drawn through Area 5, as well as the extent of Area 5 where GE proposes to remove bank materials. In addition, Figure 2 shows those areas that have previously been remediated, and the concentrations of polychlorinated biphenyls (PCBs) in remaining bank soils. Figure 3 shows the six cross sections of the Area 5 bank, and provides an illustration of those portions of bank materials that GE proposes to remove.

As shown on Figures 2 and 3, removal is proposed to be conducted between Station 1+20 and Station 4+50, and is anticipated to proceed up the bank such that approximate 2:1 (horizontal to vertical) bank slopes will extend from the upper extent of the removal area to the edge of armoring around the perimeter of the engineered barrier placed over the Newell Street Area II Parking Lot. Total removal of in-situ bank material in this area is estimated to be approximately 220 cy. Removal is anticipated to be performed with conventional equipment from the top-of-bank (with appropriate safeguards to protect the engineered barrier in that area).

At this time, soil removal activities are not anticipated to extend into bank soils where existing sampling data (presented on Figure 2) show PCB concentrations exceeding 50 parts per million (ppm). Most of the sampling results within or adjoining the horizontal extent of the removal area show PCB concentrations below 50 ppm (see Figure 2); and at the few locations where samples containing PCBs greater than 50 ppm are within or adjacent to the horizontal extent of the removal area, those samples appear to have been collected at depths well below the proposed soil removals. As such, the majority of materials removed from this area will be directly loaded into appropriate vehicles for staging in one collective pile located within GE's Building 65. However, because of the proximity of the proposed removal areas to certain soil samples with PCB analytical results above 50 ppm, GE will segregate those materials removed from the vicinity of such sample locations (i.e., SL 0106, SL 0107, SL0111, SL0474, and SL0477). These materials will be removed and directly loaded into appropriate vehicles for transfer to and staging within Building 65 in a separate pile.

GE will perform post-excavation sampling of both piles of staged materials for determination of appropriate disposal as dictated by either the Toxic Substances Control Act (TSCA) or the Resource Conservation and Recovery Act (RCRA). Ten-point composite samples (i.e., thoroughly mixed composites of aliquots collected at 10 separate locations) will be collected from each of the staged piles, split, and analyzed both for PCBs and using the Toxicity Characteristic Leaching Procedure (TCLP). In the event that either pile of stockpiled materials are considered subject to TSCA or RCRA hazardous waste disposal regulations, they will be transported for disposal at an appropriate off-site facility. If the stockpiled materials are considered non-TSCA and non-RCRA waste, they will be transported to GE's Hill 78 On-Plant Consolidation Area for disposition.

Alternatively, GE may elect to stockpile all removed materials in one location and collect one 10-point composite sample for waste characterization (i.e., PCB and TCLP analyses) as described above.

Following removal, those portions of the approximate 300-foot length of bank above the river bed armor layer subject to removal will be covered with armor stone to replace eroded materials, restore this area to previous grades (i.e., pre-erosion), stabilize these banks, and protect against further such erosion. At this time, it is not anticipated that additional excavation will be required to accommodate armor stone placement. Because this area will include large areas of disturbed

soils, prior to armor stone placement, a layer of non-woven geotextile will be installed over the removal area to enhance slope stability and protect the soils from erosion. Armor stone placement will include an approximate 1-ft thick layer of $D_{100}=12$ -inch graded riprap, as discussed above, that will be tied into existing armoring at the toe of the slope and extend approximately 10 to 15 feet up the bank. In addition, several small areas of slightly undercut banks were observed between Station 0+00 and Station 1+20, and upstream of Station 4+50 (Photo 8). Following completion of bank soil removal activities described above, armor stone will be keyed into the lower portion of the bank in these undercut areas and blended with the existing riverbed armor layer to protect against further such erosion.

At the conclusion of armor stone placement in these areas of removal, any space that remains between the upper extent of bank armoring and the lower extent of the Newell Street Area II Parking Lot excavation and that has been disturbed as a result of removal activities will be replanted in accordance with the planting specifications described in the Work Plan. At this time, it is anticipated that a single band of red-osier dogwoods will be installed along the top of the newly placed armor stone. In accordance with the Work Plan, the red-osier dogwood band will be installed at a density of one plant every four lineal feet. Following installation of the dogwood plants, the area remaining between this dogwood band and the edge of the Newell Street Area II Parking Lot excavation will be planted with replacement trees on an as-needed basis to replace specific plants and species that may be disturbed or removed as a result of soil removal activities. Following installation, all such plants will be maintained in accordance with the requirements in the Work Plan.

Area 6 - This area is located on the northern bank between Building 62 and the Lyman Street Parking Lot (see Figure 1). In this area, an approximate 30-foot long section of the top of bank appears to have sloughed and slid to the bottom of the bank (see Photo 9). Despite this sloughing, there does not appear to have been any erosion or material loss in this area, and there were no observations of eroded materials in the adjacent portion of the river. As discussed during the inspection, the sloughed portions of the bank (less than 5 cy) in this area will be removed; and, as necessary, armor stone will be placed along the bottom of the bank and blended with the existing riverbed armor layer to provide increased stabilization and a continuous line of protection from further erosion. Similar to plantings in Area 5, and in accordance with the Work Plan, a single band of red-osier dogwoods will be installed above the upper extent of armor stone in this area at a planting density of one plant every four lineal feet.

GE has assessed the anticipated changes to the overall flood storage capacity within the Upper ½-Mile Reach as a result of the proposed armoring and bank materials removal (i.e., the volume of bank materials proposed for removal or lost to erosion, minus the volume of backfill proposed for placement). In general, the estimates of the volume of armor stone placement were made considering that, to the extent practicable, armor stone will be keyed into the riverbed or riverbank and tied into existing armoring to provide a continuous line of protection against additional future erosion. Estimates of material losses related to erosion were made based on field observations recorded during performance of the inspection, as well as site survey and topographic information (see Figure 2). Corresponding estimates of armor stone volumes necessary to fill these undercuts were made using overly conservative assumptions based on field observations, assumed dimensions, and existing design parameters (e.g., stone size, armor layer thickness) as described in the Work Plan. A summary of the estimated materials lost to erosion or proposed for removal, as well as the estimated backfill volumes (and underlying assumptions), for each area is provided in Table 2.

As shown in Table 2, the total estimated volume of bank material losses due to erosion plus the proposed soil removal is approximately 242 cy, and the total estimated volume of armor stone that will be placed to fill observed undercut banks and restore areas is approximately 230 cy. As a result, it is estimated that there will be a net gain in flood storage capacity of approximately 12 cy.

Note that in addition to the areas discussed herein, the Natural Resource Trustees previously identified an area on the north bank of the river, immediately downstream of the Newell Street Bridge, as having been eroded and perhaps requiring additional attention. During the inspection discussed herein, this area was not located, and erosion was not noted in the area of the Newell Street Bridge. GE continued to look for this area of erosion throughout the summer of 2006 during the course of routine site inspections, but was unable to locate or identify the area noted by the Trustees. GE will inspect this area again, with EPA collaboration, during the 2007 Annual Restored Banks Erosion Inspection, and, if necessary, will address any erosion identified in this area at that time.

GE will continue to conduct inspections in accordance with the requirements of the Work Plan. The remaining schedule for bank erosion inspections includes one final inspection to be performed in 2007 before a long-term monitoring plan is proposed.

Please contact me if you have any questions.

Sincerely,



Andrew T. Silfer, P.E.
GE Project Coordinator

Attachments

cc: Holly Inglis, USEPA
Tim Conway, USEPA
Rose Howell, USEPA (without attachments)
K.C. Mitkevicius, USACE
R. Goff, USACE
Linda Palmieri, Weston
Dale Young MA EOE
Susan Steenstrup, MDEP (2 copies)
Jane Rothchild, MDEP (without attachments)
Anna Symington, MDEP (without attachments)
Nancy Harper, MA AG (without attachments)
Mayor James Ruberto, City of Pittsfield
Michael Carroll, GE (without attachments)
Rod McLaren, GE (without attachments)
Mark Graveling, BBL
Todd Cridge, BBL
Mike Chelminski, Woodlot Alternatives
James Bieke, Goodwin Procter
Public Information Repositories
GE Internal Repositories

TABLE 1
2006 RESTORED BANK EROSION INSPECTION SUMMARY
UPPER 1/2-MILE REACH REMOVAL ACTION MONITORING

GENERAL ELECTRIC COMPANY - PITTSFIELD MASSACHUSETTS

Area	Description	Approximate Size	Action
Areas with Measurable Erosion			
1 - North bank of river, directly across from Hibbard Playground	Erosion of soil and undercut banks. Non-remediated bank area. No evidence of eroded soil in river.	~25-ft of undercut banks	Restoration activities to include installation of armor stone to protect against further erosion.
2 - South bank of river, ~200' downstream of Hibbard Playground	Erosion of soil and slightly undercut banks. Non-remediated bank area. No evidence of eroded soil in river.	Two areas: total of ~140-ft of slightly undercut banks	Restoration activities to include installation of armor stone to protect against further erosion.
3 - North bank of river, behind Building 63	Erosion of soil and undercut banks above riverbed armor layer. Non-remediated bank area. No evidence of eroded soil in river.	~5-ft of undercut banks	Restoration activities to include installation of armor stone to protect against further erosion.
4 - South bank of river, directly upstream of the Newell St. II parking lot	Erosion of soil from lower banks above riverbed armor layer. Non-remediated bank area. No evidence of eroded soil in river.	~30-ft of undercut banks	Restoration activities to include installation of armor stone to protect against further erosion.
5 - South bank of river, directly behind Newell St. II parking lot	Erosion of soil and undercut banks above riverbed armor layer. Remediated and non-remediated bank areas. No evidence of eroded soil in river.	Several areas: total of ~510-ft of undercut banks	Restoration activities to include removal and re-grading of bank materials and installation of armor stone to protect against further erosion.
6 - North bank of river, directly upstream of Lyman St. parking lot	Sloughing of top-of-bank: sloughed materials have slid to bottom of slope. Remediated bank areas. No evidence of eroded soils in river.	~300 ft ² (an approximate 30-ft long section of the top-of-bank)	Remove sloughed materials, regrade affected areas and install additional riprap at toe of slope, if necessary, to stabilize remaining bank materials.

TABLE 2
2006 REMOVAL ACTION FLOOD STORAGE COMPENSATION SUMMARY
UPPER 1/2-MILE REACH REMOVAL ACTION MONITORING

GENERAL ELECTRIC COMPANY - PITTSFIELD MASSACHUSETTS

Area	Approximate Size	Estimated Quantity of Bank Material Proposed for Excavation or Lost to Erosion ¹ (cy)	Estimated Quantity of Material Proposed for Backfill ² (cy)	Estimated Net Change in Flood Storage Capacity (cy)
1 - North bank of river, directly across from Hibbard Playground	~25-ft of undercut banks	<10 (See Note 1)	4	4
2 - South bank of river, ~200' downstream of Hibbard Playground	Two areas: total of ~140-ft of slightly undercut banks	<10 (See Note 1)	20	-12
3 - North bank of river, behind Building 63	~5-ft of undercut banks	1	1	0
4 - South bank of river, directly upstream of the Newell St. II parking lot	~30-ft of undercut banks	1	3	-2
5 - South bank of river, directly behind Newell St. II parking lot	Several areas: total of ~510-ft of undercut banks	220	200	20
6 - North bank of river, directly upstream of Lyman St. parking lot	~300 ft ² (an approximate 30-ft long section of the top-of-bank)	<5 (See Note 1)	2	2
Total		242	230	12

Notes:

1. Material loss volumes are estimated based on conservative field observations made during the 2006 Erosion Inspection. Note that for those areas where the estimated volume of materials lost is not explicitly stated, 80% of the number shown above has been assumed for calculation purposes.

2. Armor stone volumes are estimated as follows:

Area 1: assumes a 2-ft by 2-ft sloped area at the toe of bank, and a 1-ft thick armor layer extending approximately 2-ft up the bank over the entire approximate 25-ft length.

Area 2: assumes a 2-ft by 2-ft sloped area at the toe of bank, and a 1-ft thick armor layer extending approximately 2-ft up the bank over the entire approximate 140-ft length.

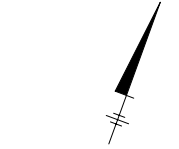
Area 3: assumes a 1-ft thick armor layer extending approximately 2-ft up the bank from the existing riverbed armor layer over the entire approximate 5-ft length.

Area 4: assumes 1-ft thick armor layer extending approximately 2-ft up the bank from the existing riverbed armor layer over the entire approximate 30-ft length.

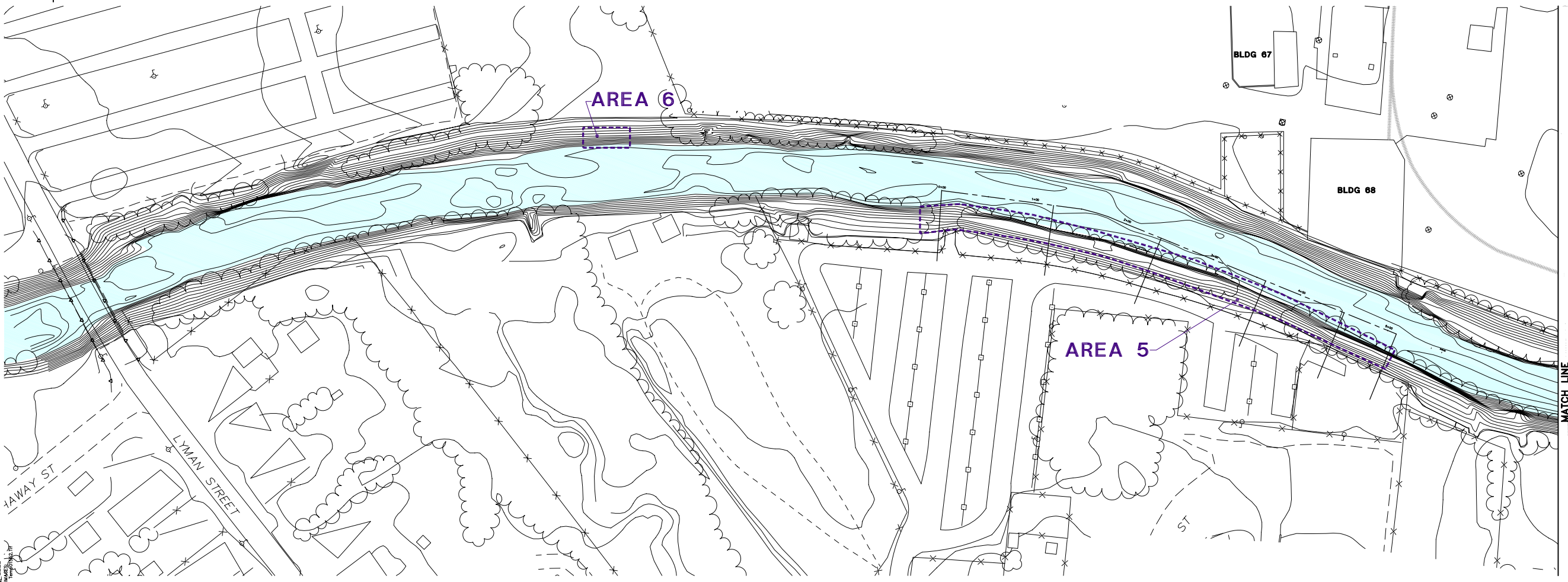
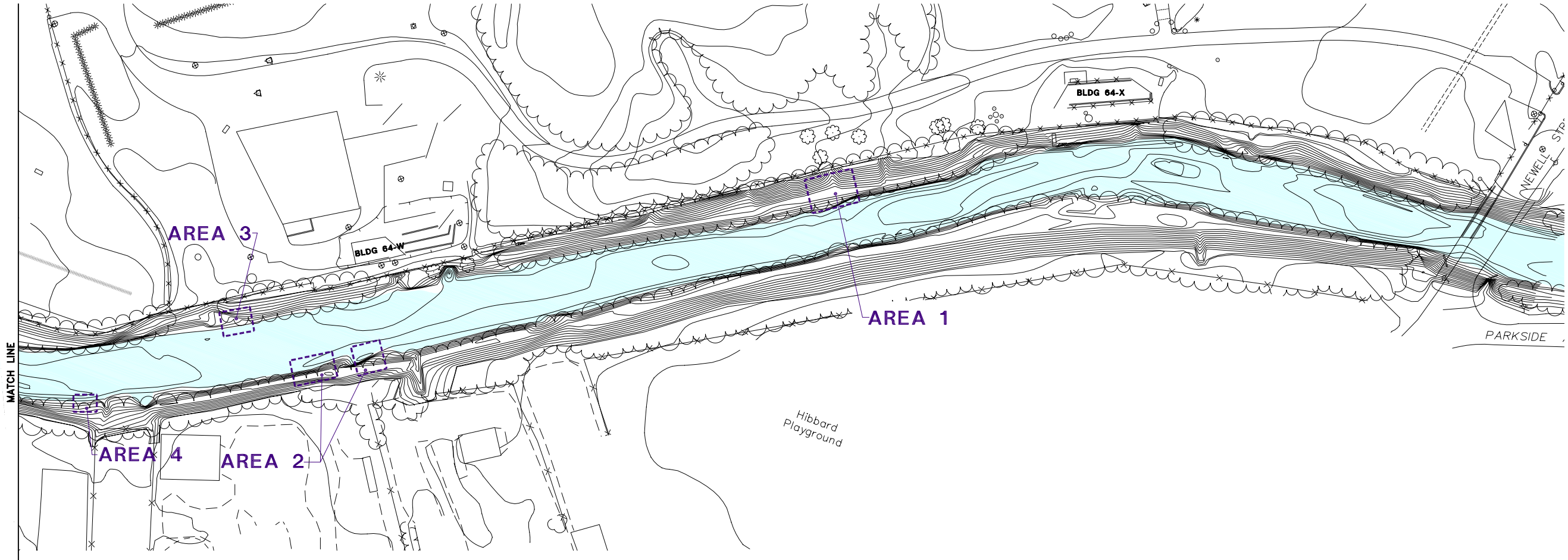
Area 5: assumes a 1-ft thick armor layer extending approximately 15-ft (maximum) up the bank from the existing riverbed armor layer over the approximate 300-ft long area subject to removal, tapered to meet a 1-ft thick armor layer extending approximately 2-ft up the bank in the remaining 210-ft on either side of the removal area.

Area 6: assumes 1-ft thick armor layer extending approximately 2-ft up the bank from the existing riverbed armor layer over the entire approximate 30-ft length.

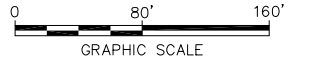
MATCH LINE



LEGEND:
TOP OF BANK
APPROXIMATE LOCATION OF IMPACTED AREAS NOTED DURING INSPECTION



NOTE:
ALL FEATURES AND LOCATIONS SHOWN ARE APPROXIMATE.



GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
UPPER 1/2-MILE REACH OF THE HOUSATONIC RIVER

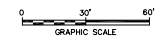
**2006 BANK
EROSION INSPECTION**

FIGURE
1

DATE: 08/24/07
 PROJECT: 06-001-001
 DRAWING: 06-001-001-01
 SCALE: 1"=100'
 SHEET: 1 OF 1
 PROJECT: 06-001-001
 DRAWING: 06-001-001-01
 SCALE: 1"=100'
 SHEET: 1 OF 1
 PROJECT: 06-001-001
 DRAWING: 06-001-001-01
 SCALE: 1"=100'
 SHEET: 1 OF 1

- LEGEND:**
- TOP OF BANK
 - 3+60 TRANSECT LOCATION AND STATION NUMBER
 - APPROXIMATE WATER LINE
 - PREVIOUS 2 FEET BANK SOIL REMOVAL AREA
 - PREVIOUS 3 FEET BANK SOIL REMOVAL AREA
 - PROPOSED REMOVAL AREA
 - SL0172 LOCATION OF PREVIOUS BANK SOIL SAMPLE LOCATION

- NOTES:**
1. ALL FEATURES AND LOCATIONS SHOWN ARE APPROXIMATE.
 2. FULL DETAILS RELATED TO THE BANK SOIL ANALYTICAL DATA CAN BE FOUND IN THE 1/2-MILE REMOVAL ACTION WORK PLAN.



APPROXIMATE EXTENT OF AREA 5 TO BE ARMORED AT TOE OF SLOPE ONLY

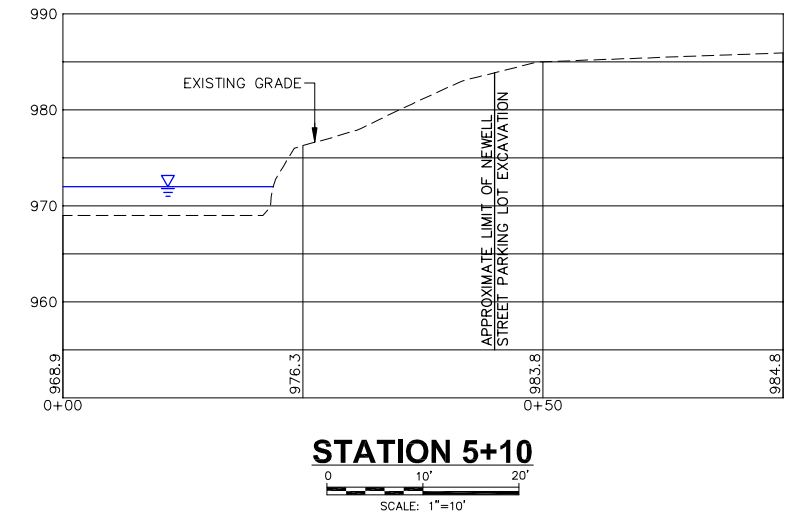
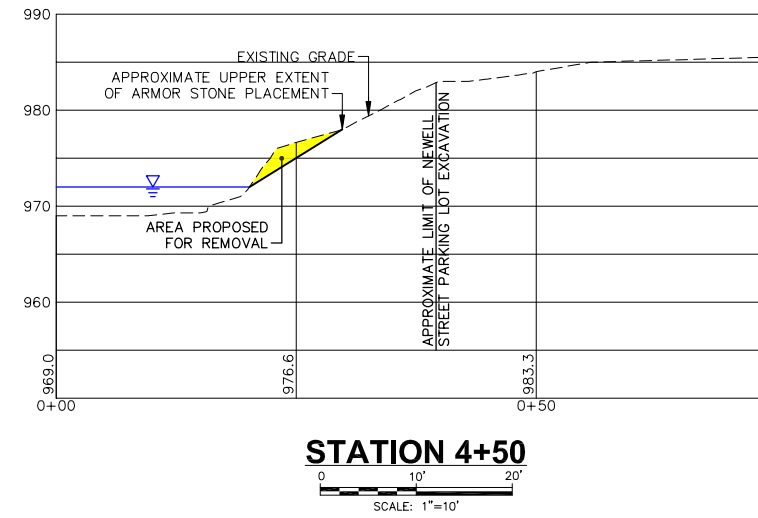
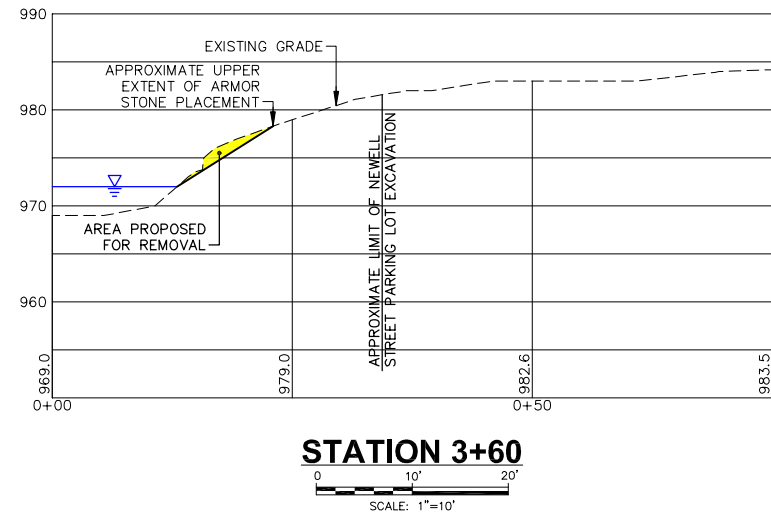
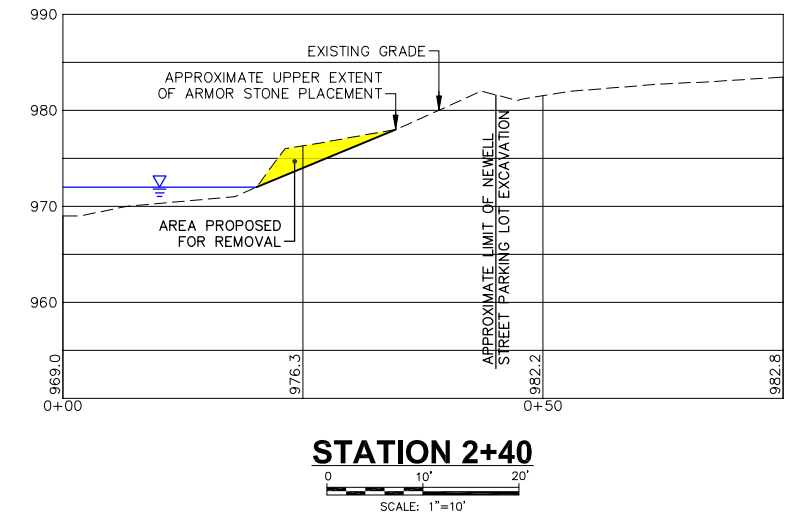
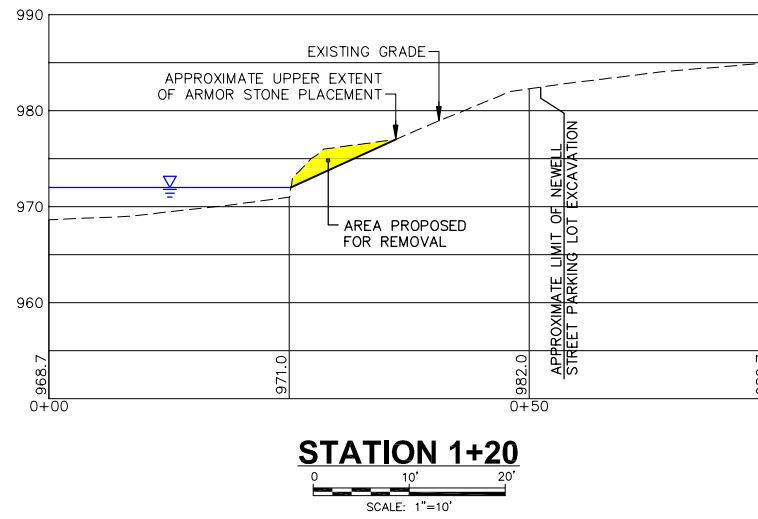
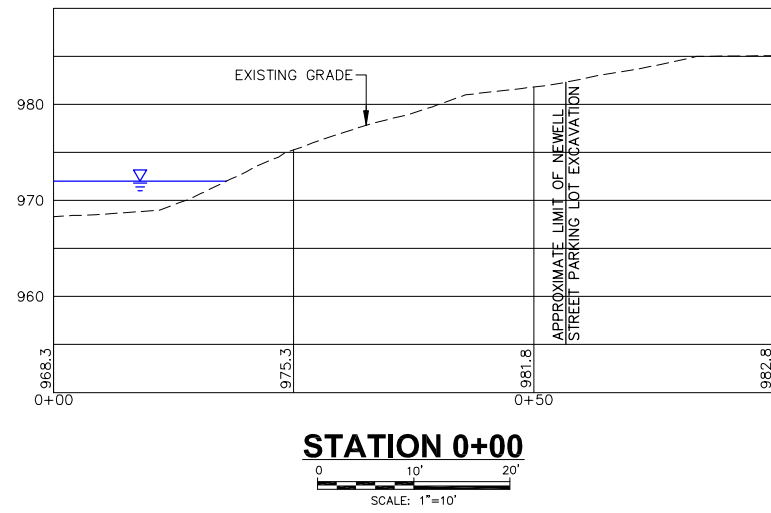
Transect	Depth (ft)	Conc.
SL0119 - T45	0 - 0.5	12.4 [8.72]
	1 - 1.5	4.5
	2 - 2.5	9.4
SL0120 - T45	0 - 0.5	6.1
	1 - 1.5	24.2
	2 - 2.5	38
SL0121 - T45	0 - 0.5	3.3
	1 - 1.5	20.2
	2 - 2.5	88
SL0482 - T44	0 - 0.5	5.29
	1 - 1.5	21.3
	2 - 2.5	17
SL0483 - T44	0 - 0.5	9.98
	1 - 1.5	22.3
	2 - 2.5	54.7
SL0484 - T44	0 - 0.5	ND(0.527) [0.788]
	1 - 1.5	3.41
	2 - 2.5	2.84
SL0111 - T43	0 - 0.5	5.8
	1 - 1.5	16.9
	2 - 2.5	55 [96]
SL0479 - T42	0 - 0.5	2.21
	1 - 1.5	14.8
	2 - 2.5	5.69
SL0116 - T41	0 - 0.5	5.3
	1 - 1.5	14.5
	2 - 2.5	17
SL0117 - T41	0 - 0.5	22.6 [20.8]
	1 - 1.5	32.1
	2 - 2.5	21.4
SL0476 - T40	0 - 0.5	2.54
	1 - 1.5	6.2J
	2 - 2.5	2.01
SL0477 - T40	0 - 0.5	0.922
	1 - 1.5	9.1 [12.2]
	2 - 2.5	195.2
SL0106 - T39	0 - 0.5	12.9
	1 - 1.5	19
	2 - 2.5	59
SL0107 - T39	0 - 0.5	9.7
	1 - 1.5	75
	2 - 2.5	60
SL0108 - T39	0 - 0.5	7.5
	1 - 1.5	29 [41.2]
	2 - 2.5	156
SL0104 - T37	0 - 0.5	4.8
	1 - 1.5	5.2
	2 - 2.5	7
SL0473 - T38	0 - 0.5	2.08
	1 - 1.5	19.23
	2 - 2.5	28.03
SL0474 - T38	0 - 0.5	9.28
	1 - 1.5	98.2
	2 - 2.5	58.2 [65.3] [95.8]
SL0470 - T36	0 - 0.5	11.95 [10.8]
	1 - 1.5	42
	2 - 2.5	30
SL0471 - T36	0 - 0.5	56.5
	1 - 1.5	8.1
	2 - 2.5	10.19
SL0472 - T36	0 - 0.5	5.2
	1 - 1.5	1.55
	2 - 2.5	1.34

GENERAL ELECTRIC COMPANY
PITTSFIELD, MASSACHUSETTS
UPPER 1/2-MILE REACH OF THE HOUSATONIC RIVER

**AREA 5
TRANSECT LOCATIONS**



DATE: 08/14/2018 10:58 AM USER: JAVIER L. GARCIA PROJECT: 17202A MA PITTSFIELD GEOTECHNICAL INVESTIGATION - AREA 5
 FILENAME: 17202A MA PITTSFIELD GEOTECHNICAL INVESTIGATION - AREA 5 - TRANSECT LOCATIONS.dwg PLOT DATE: 08/14/2018 10:58 AM PLOT BY: JAVIER L. GARCIA
 PLOT SCALE: 1"=30' PLOT SHEET: 2 OF 2



NOTE:

ARMOR STONE IS ANTICIPATED TO BE INSTALLED AND KEYED INTO BANK MATERIALS TO RESTORE ERODED AREAS TO PRE-EROSION GRADES SUCH THAT NO CHANGE IN EXISTING FLOOD STORAGE OR CONVEYANCE CAPACITY IS ANTICIPATED.

GENERAL ELECTRIC COMPANY
 PITTSFIELD, MASSACHUSETTS
 UPPER 1/2-MILE REACH OF
 HOUSATONIC RIVER

**PROPOSED REMOVAL -
 AREA 5**





Photo 1 – Area 1: Approximately 25 feet of undercut bank at the end of a section of rip-rap.



Photo 2 – Area 2: Approximately 40 feet of undercut bank upstream of swale.



Photo 3 – Area 2: Approximately 100 feet of slight undercut downstream of swale.



Photo 4 – Area 3: Slight undercut above rip-rap.



Photo 5 – Area 4: Slight undercut between rip-rap.



Photo 6 – Area 5: Several small areas undercut above rip-rap.



Photo 7 – Area 5: Example of near vertical face proposed for removal.



Photo 8 – Area 5: Slight undercut proposed to be armored.



Photo 9 – Area 6: Bank sloughing, no erosion evident.