

**REFERENCES:**

AERIAL IMAGERY TAKEN FROM GOOGLE EARTH, EUROPA TECHNOLOGY 2010 IMAGERY.

PROPERTY INFORMATION SHOWN APPROXIMATE FOR PLANNING PURPOSES TAKEN FROM BEST AVAILABLE INFORMATION INCLUDING MARKED ONSITE BOUNDARY MARKERS & A DEED RECORDED IN THE TOWN OF EAST GREENWICH LAND EVIDENCE RECORDS AT BOOK 40, PAGE 520.

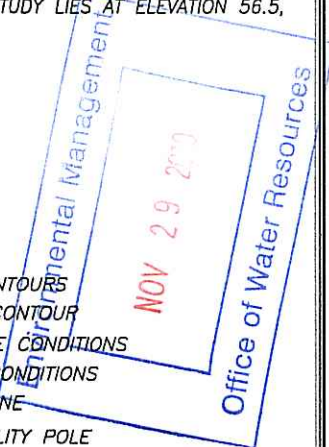
**FLOOD ZONE NOTE:**

THE STREAM CHANNEL HAS AN ASSOCIATED 100-YEAR FLOOD PLAIN, CLASSIFIED BY FEMA AS ZONE A2, BASE FLOOD ELEVATIONS AND HAZARDS DETERMINED, ACCORDING TO (F.I.R.M) FLOOD INSURANCE RATE MAP FOR THE TOWN OF EAST GREENWICH, RHODE ISLAND KENT COUNTY, PANEL 2 OF 7 ON COMMUNITY PANEL NUMBER 44537 0002 C, MAP REVISED: FEBRUARY 16, 1983. THE FLOOD PLAIN IS CONFINED WITHIN THE BANKS OF THE CHANNEL ON THE SOUTHERN SIDE OF THE STREAM, IN THE VICINITY OF THE WORK ZONE AND DWELLING.

FEMA COMPLETED A PRELIMINARY FLOOD INSURANCE STUDY, ON JUNE 5, 2009 44003CV001A OF THE MASKERCHUGG RIVER. THE 100-YEAR FLOOD ELEVATION AS DEPICTED BY THIS STUDY LIES AT ELEVATION 56.5, BED ELEVATION 53.2.

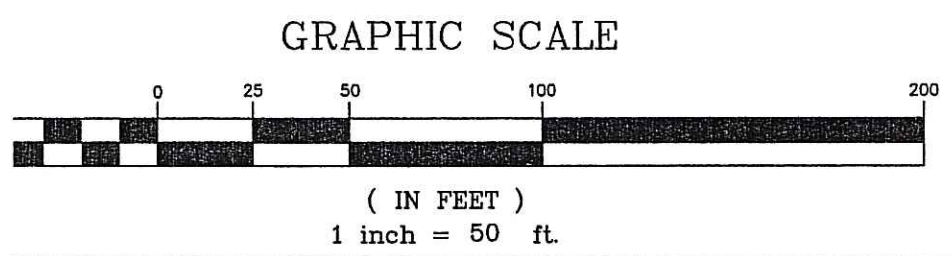
**LEGEND**

- 101 — EXISTING CONTOURS
- 101 — PROPOSED CONTOUR
- — EXISTING SITE CONDITIONS
- — PROPOSED CONDITIONS
- — PROPERTY LINE
- — EXISTING UTILITY POLE
- — EDGE OF STREAM BANK
- — STREAM CENTERLINE
- — TREELINE
- — STONEWALL
- — FENCE (STOCKADE)
- — HYDRANT (EX. / PROP.)
- — WORKZONE LIMIT



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JAN 10 2011 FILE # 10-0198  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Nancy L. Freeman*



PREPARED FOR:  
**HOWARD & CAROLINA GOLDMAN**  
 115 MIDDLE ROAD  
 EAST GREENWICH, RHODE ISLAND

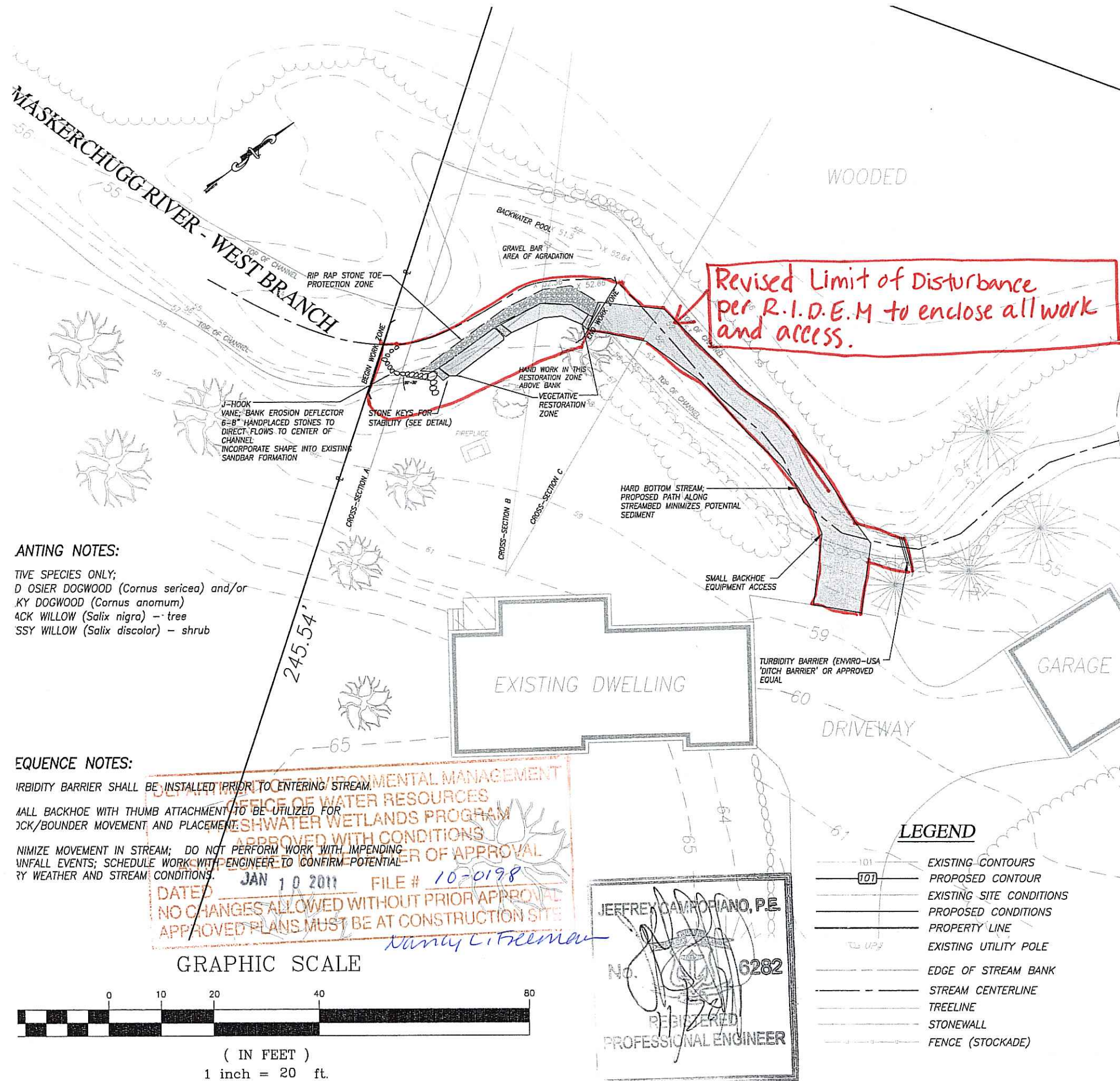
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**SITE PLAN**  
**STREAMBANK PROTECTION PLAN**  
 115 MIDDLE ROAD  
 MAP 64 / PLAT 9 / LOT 3  
 EAST GREENWICH, RHODE ISLAND

NO.	DATE	REVISIONS
1	11/10	LOD; NOTES

DATE: 9/22/10  
 SCALE: 1"=50'

*R.I.D.E.M. COPY*



**ANTING NOTES:**

PLANT SPECIES ONLY;  
 DOGWOOD (Cornus sericea) and/or  
 COMMON DOGWOOD (Cornus anomum)  
 BLACK WILLOW (Salix nigra) - tree  
 DISCOLOR WILLOW (Salix discolor) - shrub

**SEQUENCE NOTES:**

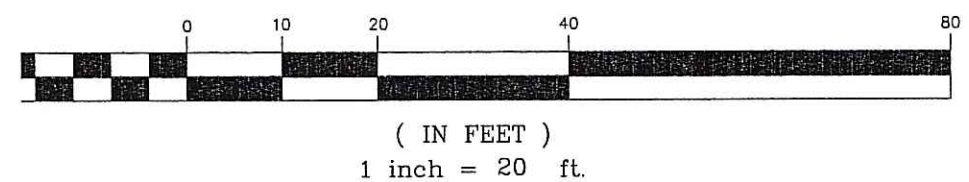
TURBIDITY BARRIER SHALL BE INSTALLED PRIOR TO ENTERING STREAM.  
 ALL BACKHOE WITH THUMB ATTACHMENT TO BE UTILIZED FOR  
 BACKHOE/BOUNDER MOVEMENT AND PLACEMENT.  
 MINIMIZE MOVEMENT IN STREAM; DO NOT PERFORM WORK WITH IMPENDING  
 RAINFALL EVENTS; SCHEDULE WORK WITH ENGINEER TO CONFIRM POTENTIAL  
 WEATHER AND STREAM CONDITIONS.

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 No. 6282  
 REGISTERED PROFESSIONAL ENGINEER

**GRAPHIC SCALE**



**LEGEND**

— 101 —	EXISTING CONTOURS
— 107 —	PROPOSED CONTOUR
---	EXISTING SITE CONDITIONS
---	PROPOSED CONDITIONS
---	PROPERTY LINE
— U P —	EXISTING UTILITY POLE
---	EDGE OF STREAM BANK
---	STREAM CENTERLINE
---	TREELINE
---	STONEWALL
---	FENCE (STOCKADE)

**NOTES:**

CONTRACTOR SHALL TAKE CARE TO PROPERLY PLAN & SCHEDULE WORK. CONSTRUCTION MUST BE SEQUENCED SO THAT THE RIPRAP IS PUT IN PLACE AND BANK STABILIZED IMMEDIATELY FOLLOWING THE INITIAL SLOPE PREPARATION.

**BASE PREPARATIONS:** THE SUBGRADE FOR THE RIPRAP SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. OBJECTIONABLE AND ORGANIC MATERIAL SHALL BE REMOVED. SLOPES SHALL BE GRADED TO AN APPROXIMATE SLOPE OF 1.5:1 (HORIZONTAL: VERTICAL). ANY FILL REQUIRED IN THE UNDERCUT ZONE SHALL BE COMPACTED TO A DENSITY OF 95% AS DETERMINED BY THE STANDARD PROCTOR DENSITY TEST. FILL SHALL MEET THE REQUIREMENTS IN THE MATERIAL SECTION.

**TRENCH EXCAVATION:** A TRENCH SHALL BE EXCAVATED AT THE TOE OF THE SLOPE TO KEY IN THE RIPRAP. THE KEY SHALL BE AT LEAST 24" WIDE X 24" DEEP.

**FILTER FABRIC PLACEMENT:** PLACEMENT OF THE FILTER FABRIC SHALL BE DONE IMMEDIATELY AFTER SLOPE PREPARATION. EDGES OF THE SHEETS SHALL OVERLAP BY AT LEAST 12" ANCHOR ACCORDING TO MANUFACTURER'S INSTRUCTIONS. THE UPPER END OF THE CLOTH SHALL BE BURIED A MINIMUM OF 12" DEEP. THE LOWER END SHALL EXTEND INTO THE KEY AND BE TOED IN AGAINST NATIVE SOIL. CARE SHALL BE TAKEN NOT TO DAMAGE THE CLOTH WHILE PLACING RIPRAP. WHEN PLACING STONES LARGER THAN 12", OR AS DESIRED BY THE CONTRACTOR FOR SMALLER STONES, A 4" LAYER OF GRAVEL SHOULD BE USED TO PREVENT DAMAGE TO THE CLOTH.

**STONE PLACEMENT:** PLACEMENT OF RIPRAP SHALL FOLLOW IMMEDIATELY AFTER ANCHORING FILTER FABRIC. RIPRAP SHALL BE PLACED SO THAT IT PRODUCES A DENSE WELL-GRADED MASS OF STONE WITH A MINIMUM OF VOIDS. THE RIP-RAP SHOULD BE PLACED TO ITS FULL THICKNESS IN ONE OPERATION. THE RIP RAP SHALL NOT BE PLACED IN LAYERS NOR DUMPED AS THIS SEGREGATES THE VARIOUS STONE SIZES. THE FINISHED SLOPE SHALL BE FREE OF POCKETS OR SMALL STONES OR CLUSTERS OF LARGE STONES.

STONE PLACEMENT SHOULD START AT THE TOE TRENCH AND WORK UPWARDS, MAKING SURE THE ARMOR LAYER IS AT LEAST TWO STONES THICK AND COMPLETELY COVERS THE FABRIC OR STONE FILTER. AN EXCAVATOR BUCKET MAY BE USED TO COMPACT THE STONE INTO A SOLID INTERLOCKING MASS.

ONCE THE STONE EMBANKMENT IS COMPLETED THE V-WEIR SHALL BE COMPLETED, HAND-PLACEMENT OF STONES IN THE CENTER PORTION OF THE STREAM BED MAY BE REQUIRED.

**UPPER BANK RESTORATION**  
 SEED AND INSTALL VEGETATIVE MEASURES ON UPPER BANK IMMEDIATELY FOLLOWING RIP-RAP INSTALLATION. A 4" LAYER OF LOAM SHALL BE PLACED ON SLOPE, FOLLOWED IMMEDIATELY BY MULCH AND EROSION CONTROL BLANKETS. THE ROOTMASS OF NATIVE SHRUBS (WILLOWS, DOGWOOD) ARE THE MOST EFFECTIVE MEANS OF VEGETATIVE CONTROL; BUT WILL REQUIRE SEVERAL SEASONS TO BECOME EFFECTIVE. SHRUBS SHALL BE HAND PLANTED AS CUTTINGS AS SHOWN IN THE DETAILS. SEED ALL DISTURBED AREAS WITH A TEMPORARY FAST GROWING CONSERVATION GRASS MIXTURE.

- ALL DISTURBED SLOPES SHALL BE RESEDED OR PROTECTED PRIOR TO OCTOBER 15. AFTER THIS DATE, WINTER MULCHING SHALL BE PROVIDED IN AREAS WHERE VEGETATION HAS NOT BEEN ESTABLISHED.

- TEMPORARY WINTER MULCHING TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH OR OTHER PROTECTIVE COVERS, SUCH AS A JUTE MESH, MATS, OR OTHER WOVEN NETTING. STRAW OR HAY MULCHES SHALL BE APPLIED AT THE RATE OF 2 TONS/ACRE.

**MAINTENANCE:** REPAIRS MAY BE REQUIRED PERIODICALLY UNTIL THE BANK IS FULLY STABILIZED. SLOPES SHALL BE INSPECTED QUARTERLY AND AFTER SEVERE STORMS FOR SLIDING OR SEEPAGE PROBLEMS. SPECIAL ATTENTION MUST BE GIVEN NEAR THE RIPRAP EDGE WHERE EROSION CAN BE ACCELERATED. PROPER PLACEMENT OF THE V-WEIR SHOULD PREVENT THIS TYPE OF FAILURE.

- VEGETATION SHALL BE PRESENT IN ALL REQUIRED AREAS. GRASSES SHALL BE RE-SEDED AND PLANTINGS REPLANTED AS REQUIRED TO THE INTENT OF THESE PROVISIONS. NO PESTICIDES, HERBICIDES, OR FERTILIZERS SHALL BE USED.

- ANY SEDIMENTS OR DEPOSITED MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

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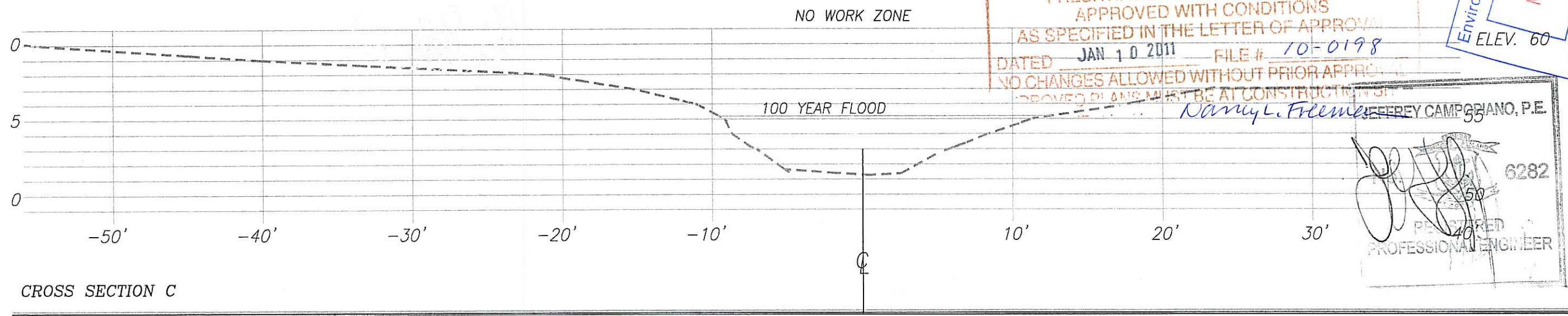
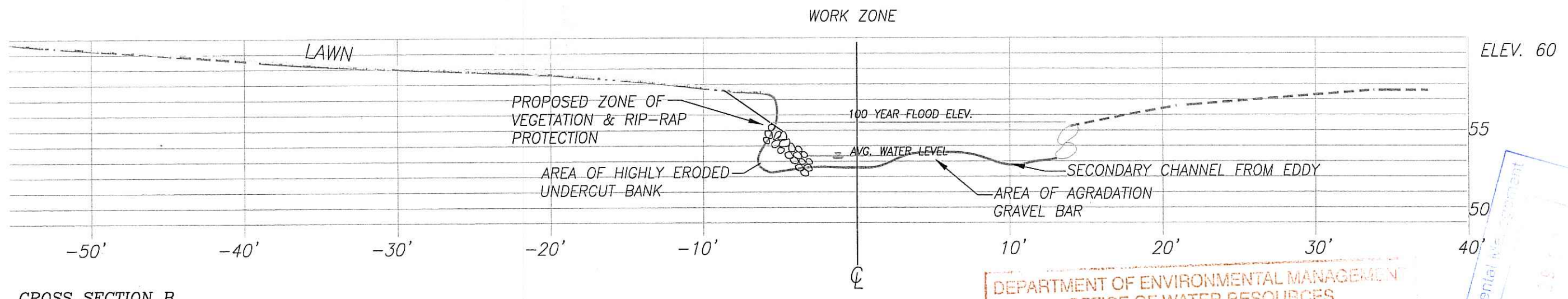
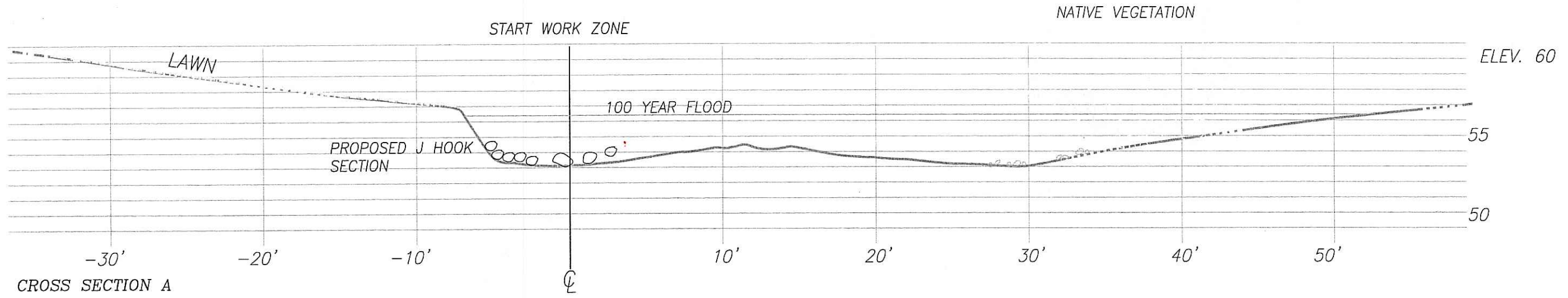
GENERAL WORK PLAN  
 STREAMBANK PROTECTION PLAN

115 MIDDLE ROAD  
 MAP 64 / PLAT 9 / LOT 3  
 EAST GREENWICH, RHODE ISLAND

NO.	DATE	REVISIONS
1	1/17/10	TOP NOTES
2	10/13/2010	ENVIRONMENTAL MANAGEMENT

DATE: 9/22/10  
 SCALE: 1"=20'

**2**  
 SHEET 2 OF 5



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 NOV 15 2010  
 Office of Water Resources

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RIVER CROSS SECTIONS  
 STREAMBANK PROTECTION PLAN  
 115 MIDDLE ROAD  
 MAP 64 / PLAT 9 / LOT 3  
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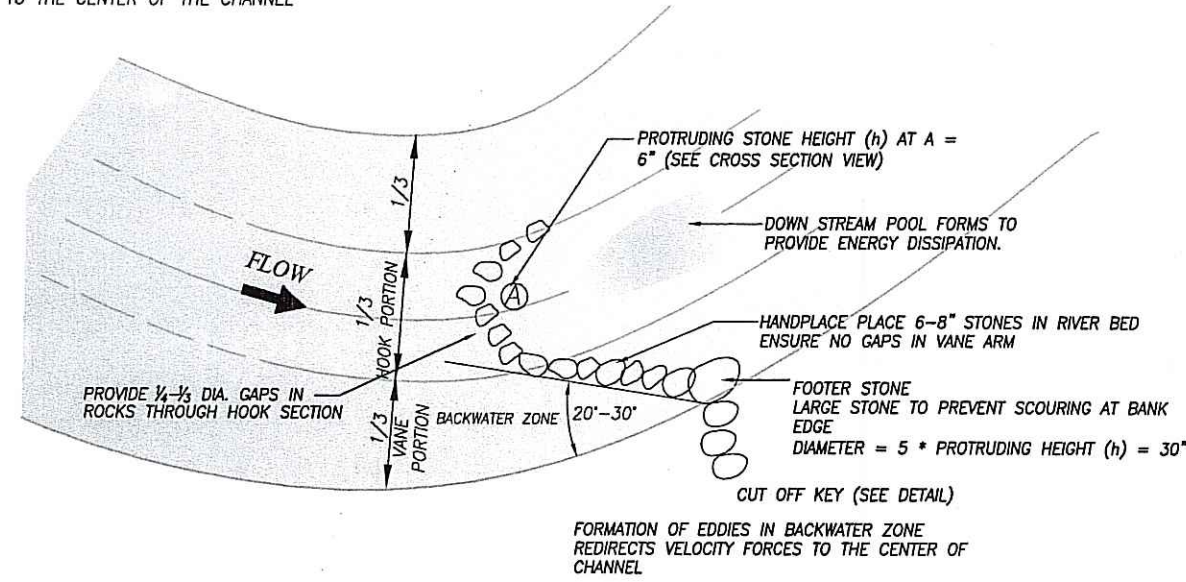
NO.	DATE	REVISIONS

DATE: 9/22/10  
 SCALE: 1"=7'

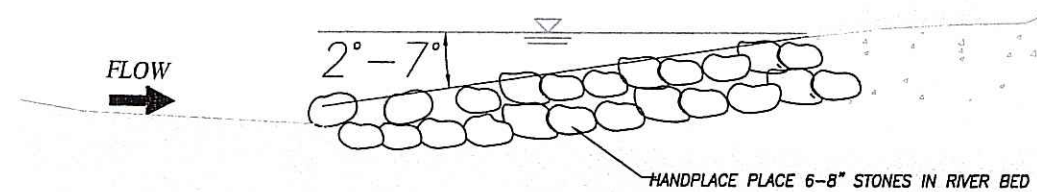


# J-HOOK VANE - BANK DEFLECTION DETAIL

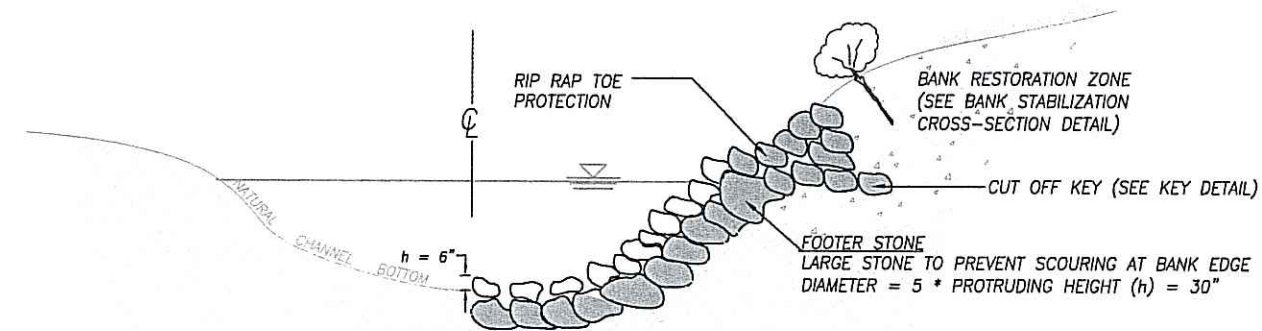
GENTLE SLOPING STRUCTURE USED ON THE UPSTREAM SIDE OF STREAM BEDS TO REDUCE HIGH EROSION STRESSES IN NEAR BANK REGIONS. STRUCTURE SHALL REDIRECT HIGH VELOCITY FLOWS TO THE CENTER OF THE CHANNEL.



PLAN



PROFILE



CROSS SECTION

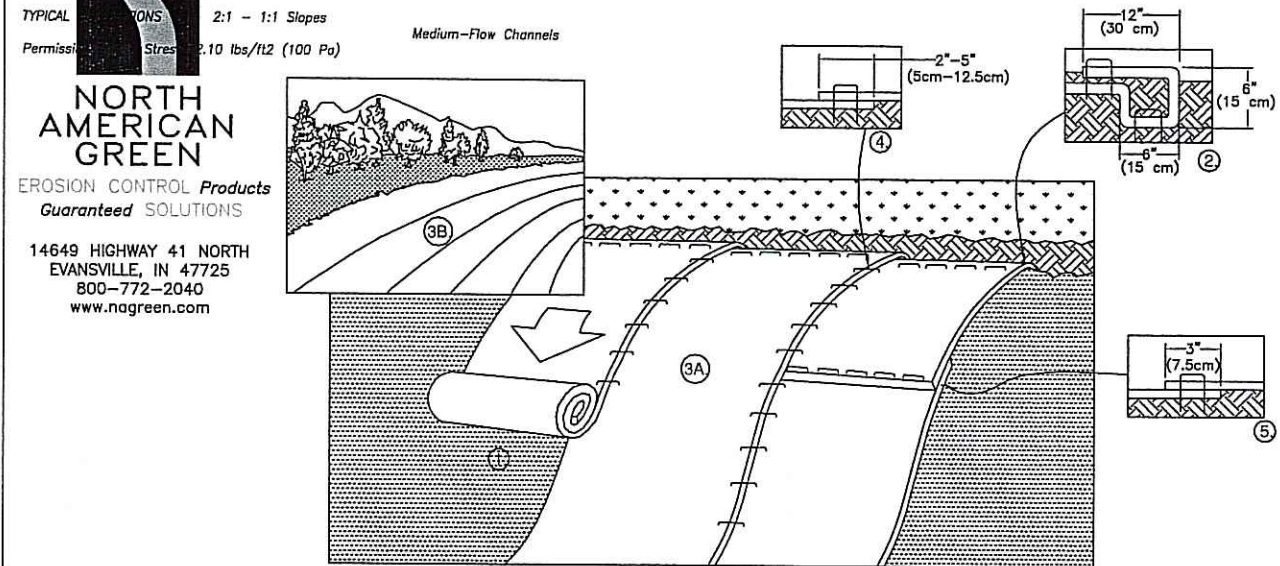
PROTRUDING HEIGHT OF CENTER STONE TO MEASURED AT TOP OF HOOK (LOCATION A)

# BioNet SC150BN Double Net Straw-Coconut Blanket

TOP NET: Leno woven, 100% biodegradable jute fiber 9.30 lbs/1000 ft<sup>2</sup> (4.53 kg/100 m<sup>2</sup>) approx wt  
 STRAW/COCONUT MATRIX:  
 70% straw at 0.35 lbs/yd<sup>2</sup> (0.19 kg/m<sup>2</sup>)  
 30% coconut at 0.15 lbs/yd<sup>2</sup> (0.08 kg/m<sup>2</sup>)  
 BOTTOM NET: Woven, 100% biodegradable jute fiber 7.70 lbs/1000 ft<sup>2</sup> (3.76 kg/100 m<sup>2</sup>) approx wt  
 THREAD: Biodegradable  
 STANDARD ROLL SPECIFICATIONS  
 Width: 6.67 ft (2.03 m)  
 Length: 80 ft (24.38 m)  
 Area: 80 ft x 6.67 ft = 533.6 ft<sup>2</sup> (49.3 m<sup>2</sup>)  
 Approx. Weight: 13.59 kg

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## SLOPE INSTALLATION



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 EROSION CONTROL Products  
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1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.  
 NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
  2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
  3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
  4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
  5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.
- NOTE:  
 \*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

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BANK STABILIZATION DETAILS  
 STREAMBANK PROTECTION PLAN  
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NO.	DATE	REVISIONS

DATE: 9/22/10  
 SCALE: NTS

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