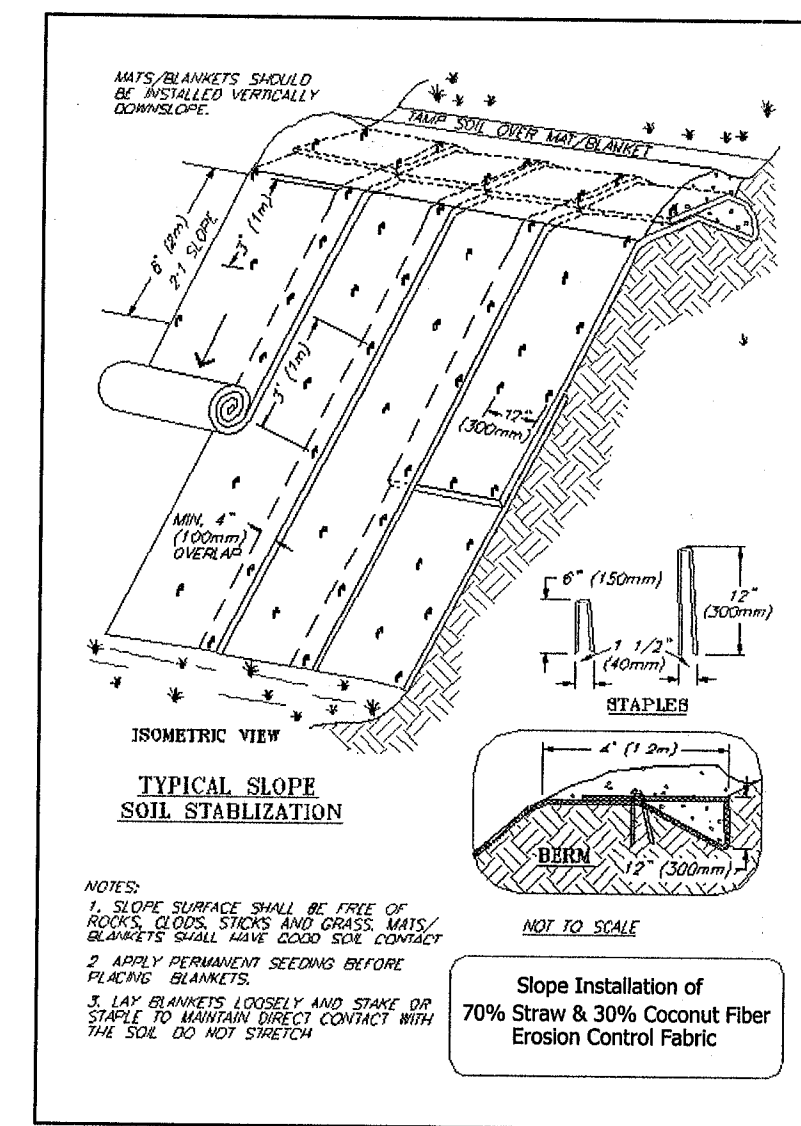
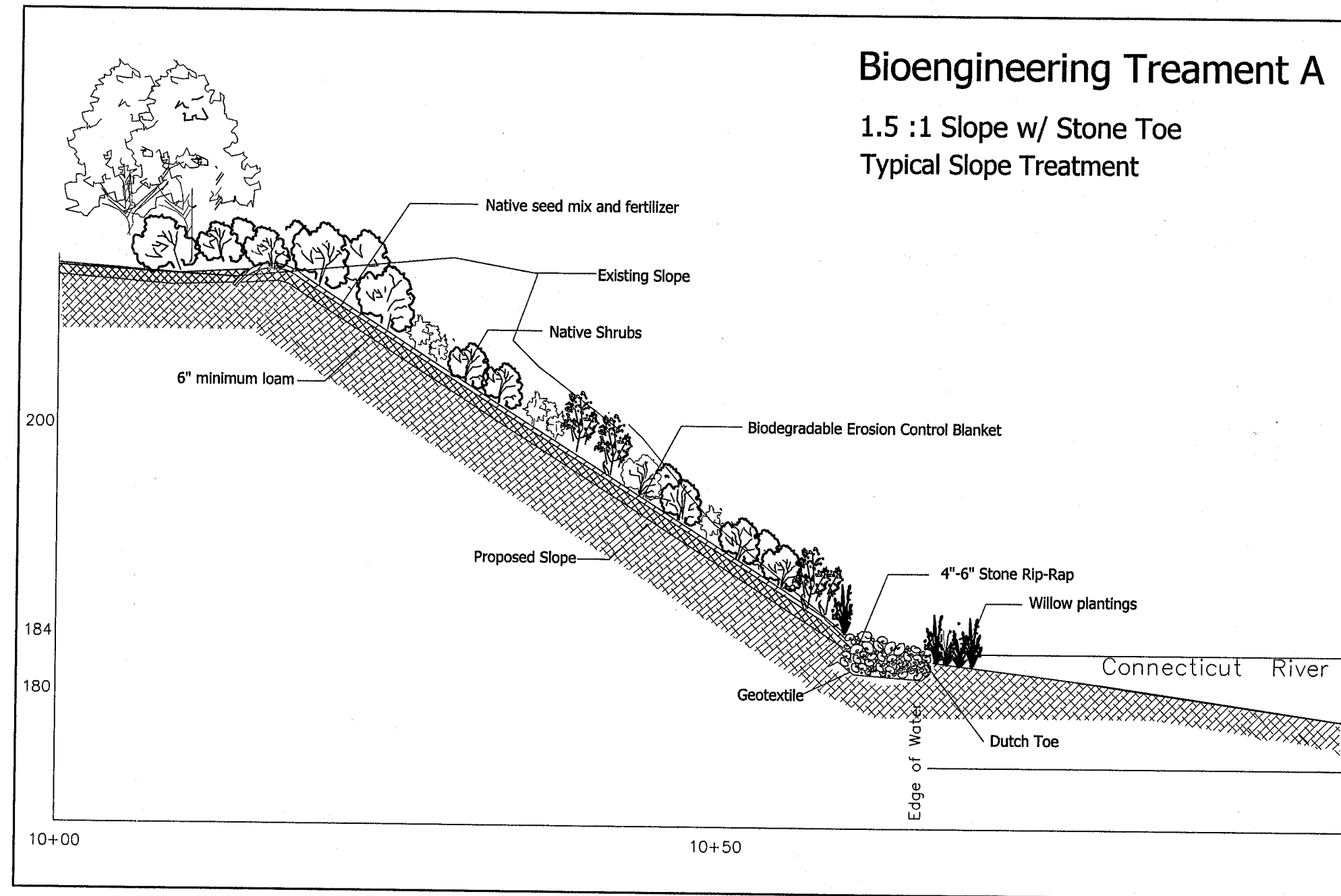


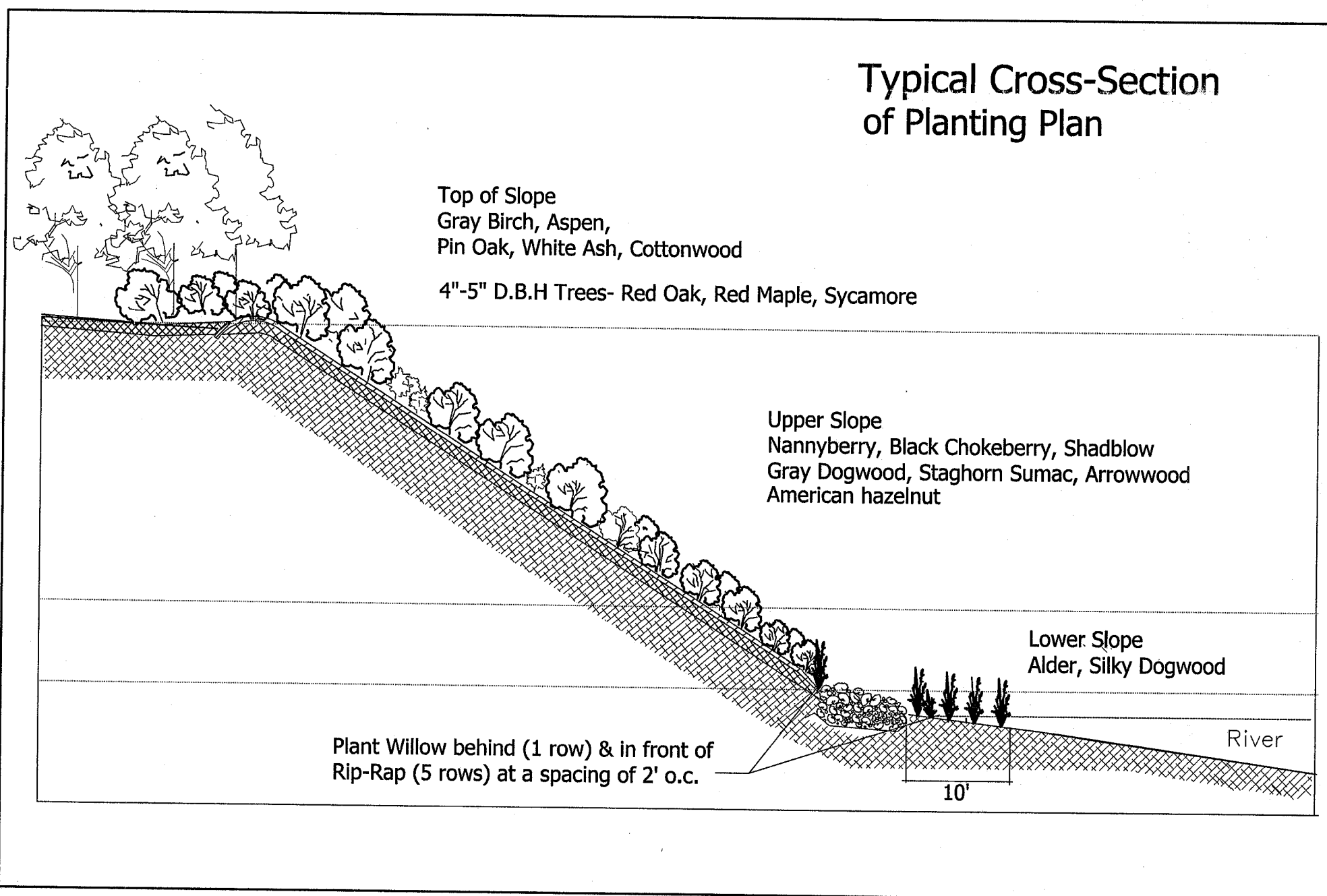
APPENDIX 2
Bioengineering Treatment Details and Cross-Sections Plan



Plant List for Urgiel Upstream (Site #4)

1,200 Linear feet of bank. 60,000 s.f to be planted.

Sym	Common Name	Scientific Name	Quantity	Size	Spacing	Location
AI	Speckled Alder	<i>Alnus incana</i>	110	1 gal	6' o.c.	Lower Slope
CAM	Silky Dogwood	<i>Cornus amomum</i>	110	1 gal	6' o.c.	Lower Slope
SD	Pussy Willow	<i>Salix discolor</i>	1200	rooted cutting	2' o.c.	Toe of Slope
SP	Purple-osier Willow	<i>Salix purpurea</i>	1200	rooted cutting	2' o.c.	Toe of Slope
SE	Sandbar Willow	<i>Salix exigua</i>	1200	rooted cutting	2' o.c.	Toe of Slope
VL	Nannyberry	<i>Viburnum lentago</i>	210	1 gal	6' o.c.	Upper Slope
AM	Black Chokeberry	<i>Aronia melanocarpa</i>	210	1 gal	6' o.c.	Upper Slope
CA	American Hazelnut	<i>Corylus americana</i>	210	1 gal	6' o.c.	Upper Slope
AC	Shadblow	<i>Amelanchier canadensis</i>	210	1 gal	6' o.c.	Upper Slope
CR	Gray Dogwood	<i>Cornus racemosa</i>	210	1 gal	6' o.c.	Upper Slope
RT	Staghorn Sumac	<i>Rhus typhina</i>	210	1 gal	6' o.c.	Upper Slope
VD	Arrowwood	<i>Viburnum dentatum</i>	210	1 gal	6' o.c.	Upper Slope
BP	Gray Birch	<i>Betula populifolia</i>	16	4'-5'	15' o.c.	Top of Slope
PT	Quaking Aspen	<i>Populus tremuloides</i>	16	4'-5'	15' o.c.	Top of Slope
QP	Pin Oak	<i>Quercus palustris</i>	16	4'-5'	15' o.c.	Top of Slope
FA	White Ash	<i>Fraxinus americana</i>	16	4'-5'	15' o.c.	Top of Slope
PD	Cottonwood	<i>Populus deltoides</i>	16	4'-5'	15' o.c.	Top of Slope
QR	Red Oak	<i>Quercus rubra</i>	2	4"-5" DBH	200' o.c.	Top of Slope
AR	Red Maple	<i>Acer rubrum</i>	2	4"-5" DBH	200' o.c.	Top of Slope
PA	Sycamore	<i>Platanus acerifolia</i>	2	4"-5" DBH	200' o.c.	Top of Slope
New England Erosion Control Seed Mix			11b/1000s.f.	Throughout		

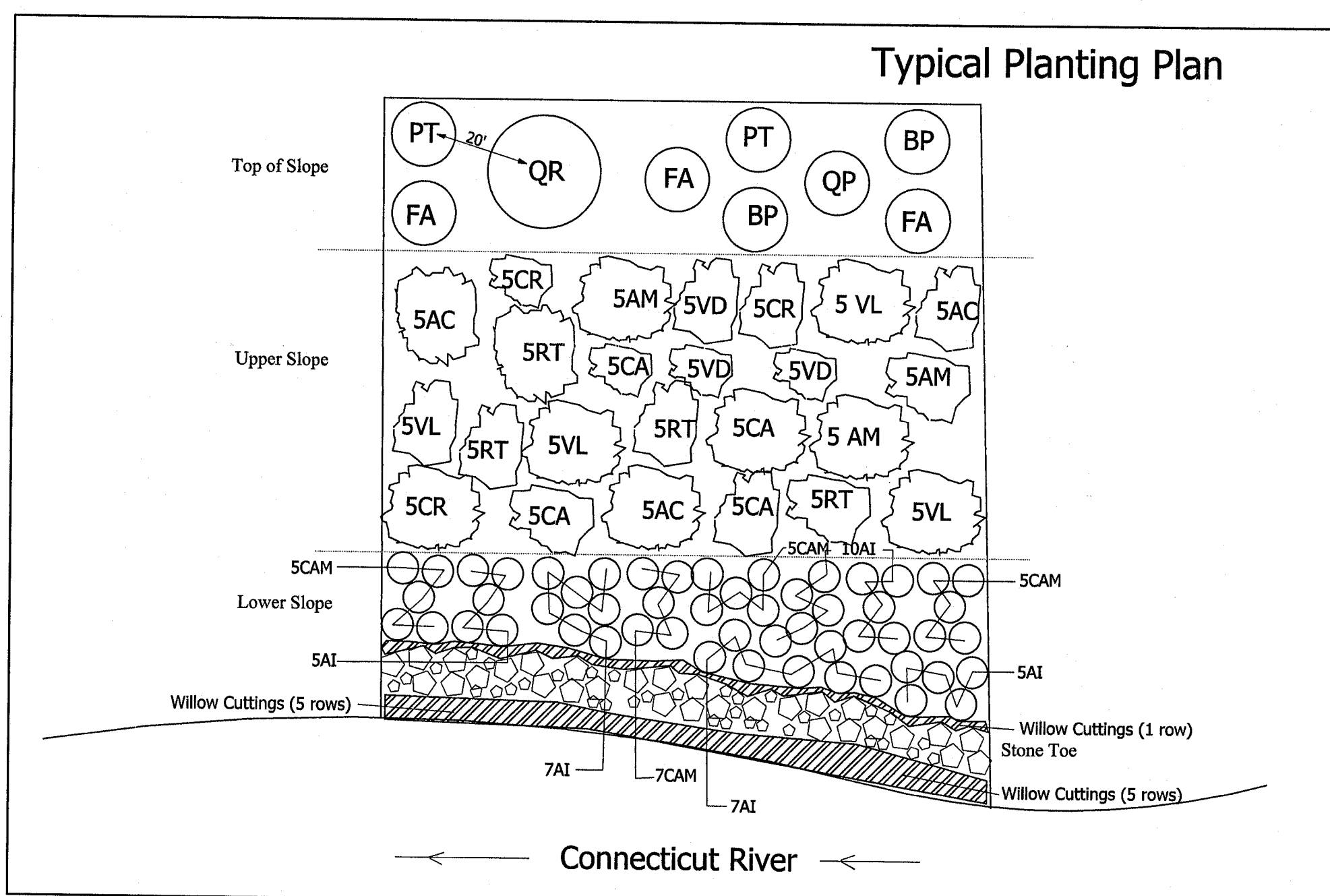


Construction Notes

- No work shall begin until all local, state, and federal environmental permits have been issued.
- Obtain prior approval of the Landowner for the establishment of the construction staging area. Staging area shall be located more than 100' from the edge of the river.
- Install turbidity curtain within Connecticut River adjacent to bank work prior to any slope excavation.
- Clear slopes of existing vegetation. Remove woody material from the site.
- Excavate slope to a grade of 1.5:1
- Place non-woven geotextile fabric at toe of slope (below elevation 185'), and place 4"-6" stone rip rap
- Place 6" minimum loam topsoil on slope
- Seed slope with specified seed mix at a rate of 1 lb/1000 square feet
- Fertilize slope with 10-10-10 fertilizer at a rate of 1 lb/1000 square feet
- Cover slope with erosion control blanket (70% straw, 30% coconut) in a biodegradable netting. Anchor to slope with 6" wire turf staples, key in top of blanket in trench, key in bottom of blanket in stone rip rap.
- Plant specified willows at a spacing of 2 feet on center in five rows on the river side of the stone toe, and one row behind the stone toe.
- Plant specified alder and dogwood at a spacing of 6 feet on center in the lower slope in a planting zone within six feet of the stone rip rap
- Plant remaining shrubs throughout the slope in accordance to the planting plan, or as directed by the project supervisor or Bioengineer.
- Plant trees at the top of the slope in the area cleared for construction. Large trees are to be planted at a spacing of 200' o.c.
- Restore any access roads or staging areas upon completion of construction
- Reseed any bare areas on the slope after two months of initial seeding. Fertilize entire slope at a rate of 1 lb/1000 square feet.
- No bank access via southern ravine is permitted.
- Obtain prior approval from the project supervisor or Bioengineer prior to any change of these plans.

Native Seed Mix for Riverbank Slope Stabilization and Restoration

Common Name	Species	Percent
Creeping Red Fescue	<i>Festuca rubra</i>	20
Deertongue	<i>Panicum clandestinum</i>	10
Switchgrass	<i>Panicum virgatum</i>	10
Big Bluestem	<i>Andropogon gerardi</i>	10
Indiangrass	<i>Sorghastrum nutans</i>	10
Little Bluestem	<i>Schizachyrium scoparium</i>	10
Canada Wild-rye	<i>Elymus canadensis</i>	10
Silky Wild-rye	<i>Elymus villosus</i>	5
Sand Dropseed	<i>Sporobolus cryptandrus</i>	5
Side-oats Gramma-grass	<i>Bouteloua curtipendula</i>	5
Annual Rye-grass	<i>Lolium multiflorum</i>	5



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Date: 12/18/00
Scale: As Indicated
Drawn by: GSL
Checked by: MJM
NEE File # 00-1745
DEP # 162-46

Bioengineering Treatment- Details & Cross Sections
Connecticut River Bioengineering
Urgiel Property- North
Site #4
Gill, MA

REVISIONS	DATE	BY
Plant List Additions	3/23/01	NIE