Westbrook Lowgrounds Wetland and Stream Mitigation Project

MITIGATION PLAN

Submitted to:

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Neu-Con Umbrella Wetland and Stream Mitigation Bank
Westbrook Lowgrounds
Site Specific Mitigation Plan

Environmental Banc & Exchange, LLC

Managers, Bankers, and Traders of Environmental Rights

"Finding Environmental Solutions through Economic Incentives"

Executive Summary

The Westbrook Lowgrounds wetland and stream mitigation site is located in Johnston County, approximately one mile east of the town of Bentonville, NC. Ditches on the site were used to promote drainage when the land was under agricultural production. A total of approximately 5,820 feet of ditches currently exist on the site, including the channelized Johannah Creek (4,220 feet). The goal of this project is to restore approximately 5,400 feet of the main channel and 65 acres of wetlands. All acreage to be restored is underlain by "A" list hydric soils and all open field soils have been designed PC (prior converted) by the Natural Resources Conservation Service (see Figure 1.3 for prior-converted cropland map). The Bank Sponsor will also preserve 70 acres of on-site acreage adjacent to Mill Creek (see Figure 1.4). The area will be verified by survey and a plat will be recorded with the conservation easement (Appendix 10). The conservation easement is proposed to be held by the North Carolina Wildlife Habitat Foundation, subject to final approval by the MBRT as a conservation holder. The format of the conservation easement in Appendix 10 is subject to approval by the USACE counsel, prior to recordation.

Land use for the Westbrook Lowgrounds site over the past 50 to 60 years has been row crop agriculture. However, the riparian areas found around the perimeter of the site contain desirable native vegetation, including sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), willow oak (*Quercus phellos*), water oak (*Quercus nigra*), swamp chestnut oak (*Quercus michauxii*) and overcup oak (*Quercus lyrata*). The small tree/shrub layer is dominated by sweetbay magnolia (*Magnolia virginiana*), horse sugar (*Symplocus tinctoria*), giant cane (*Arundinaria gigantea*), elderberry (*Sambucus canadensis*), American holly (*Ilex opaca*), sugarberry (*Celtis laevigata*) and leucothoe (*Leucothoe axillaris*). Therefore, there is potential for restoration of a diverse native vegetation community at the site due to the close proximity of appropriate seed sources.

Water table monitoring data collected from June 2001 through February 2002 indicate that the site currently exhibits hydrologic conditions drier than targeted wetland conditions. Ditches present on the site transport surface and subsurface drainage from the site and keep soil conditions favorable for agricultural production. Examination of the available hydrology and soil data indicates that the site has good potential for the restoration to a productive wetland ecosystem.

The design goal for the Westbrook Lowgrounds property is to restore a "Coastal Plain small stream swamp", as described by Schafale and Weakley (1990). These systems exist as the floodplains of small "blackwater" or "brownwater" streams in which separate fluvial features and associated vegetation are too small or poorly developed to distinguish. To raise the local water table and restore site hydrology, restoration will include returning the natural drainage pattern of the creek, filling drainage ditches, and increasing surface storage. The existing deep drainage ditch, Johannah Creek, will be filled and a new meandering channel will be constructed across the abandoned floodplain. Surface storage will be increased to restore the surface drainage patterns of the site to conditions representative of the reference wetland site.

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1 Introduction

1.1 Project Description

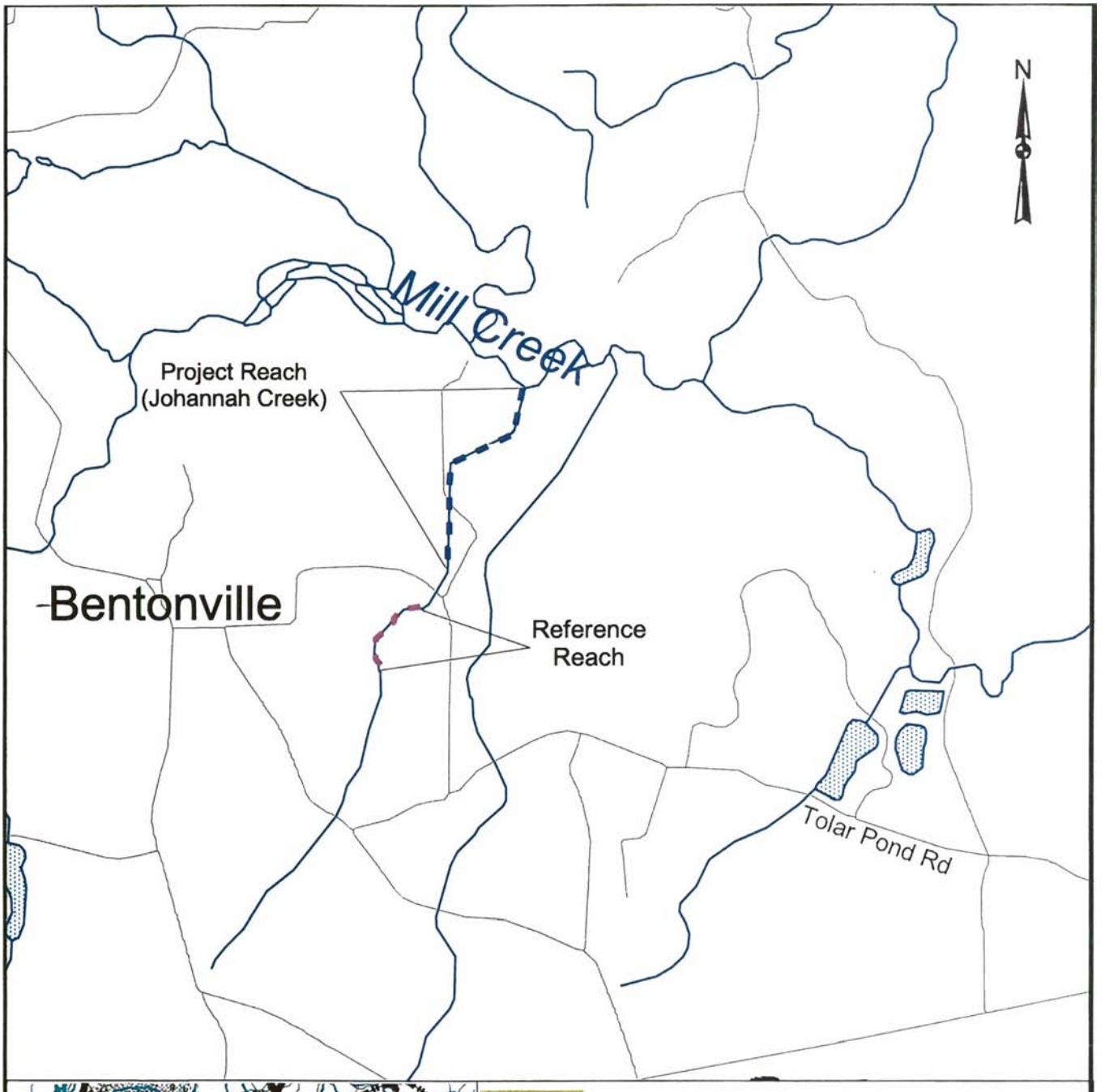
The Westbrook Lowgrounds wetland and stream mitigation site is located in Johnston County, approximately one mile east of the town of Bentonville, NC (see Figure 1.1). The watershed for the project stream reach at its confluence with Mill Creek is approximately 1.18 square miles in size (Figure 1.2). The site has a past history of agricultural use, consisting primarily of row crop agriculture. Ditches on the site were used to promote drainage when the land was under agricultural production (see Figure 1.3 for prior-converted cropland map). The main drainage channel, Johannah Creek (4,220 feet), runs through the center of the site, with approximately 1,600 feet of lateral ditches draining to the creek.

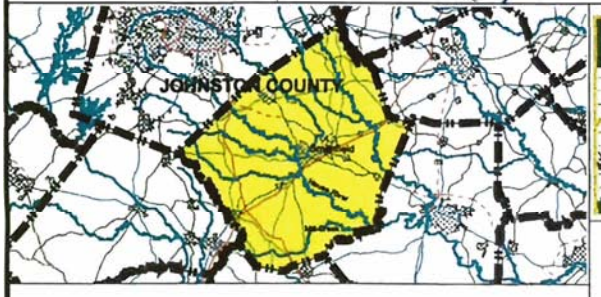
Environmental Banc and Exchange, LLC (EBX) proposes to restore stream dimension, pattern, profile, and wetland functionality to the project site for the purpose of fulfilling stream and wetland mitigation requirements to the North Carolina Department of Transportation. In addition, an additional 70 acres (see Figure 1.4) adjacent to Mill Creek will be preserved and subject to a conservation easement (Appendix 10).

1.2 Study Area

The Westbrook Lowgrounds wetland and stream mitigation site is located in the transitional area between the Coastal Plain and Piedmont physiographic regions in Johnston County, NC. This area is part of the Black Creek Formation, formed during the Cretaceous Period. Topography relief of the area is largely the result of dissection by the Neuse River and its tributary streams (SCS, 1994).

Local relief within the project site is approximately 12 feet, with the highest location at the southwestern corner of the site, and the lowest location at the confluence of Johannah Creek and Mill Creek at the northeastern corner of the site. The surrounding properties are characterized primarily by agriculture and bottomland hardwood stands.





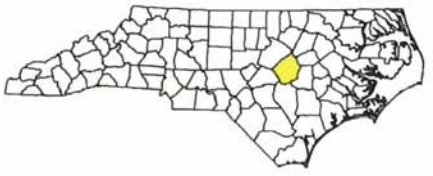


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Figure 1.1
Location of Westbrook Lowgrounds
Wetland and Stream Mitigation Site

2000 0 2000 4000 Feet

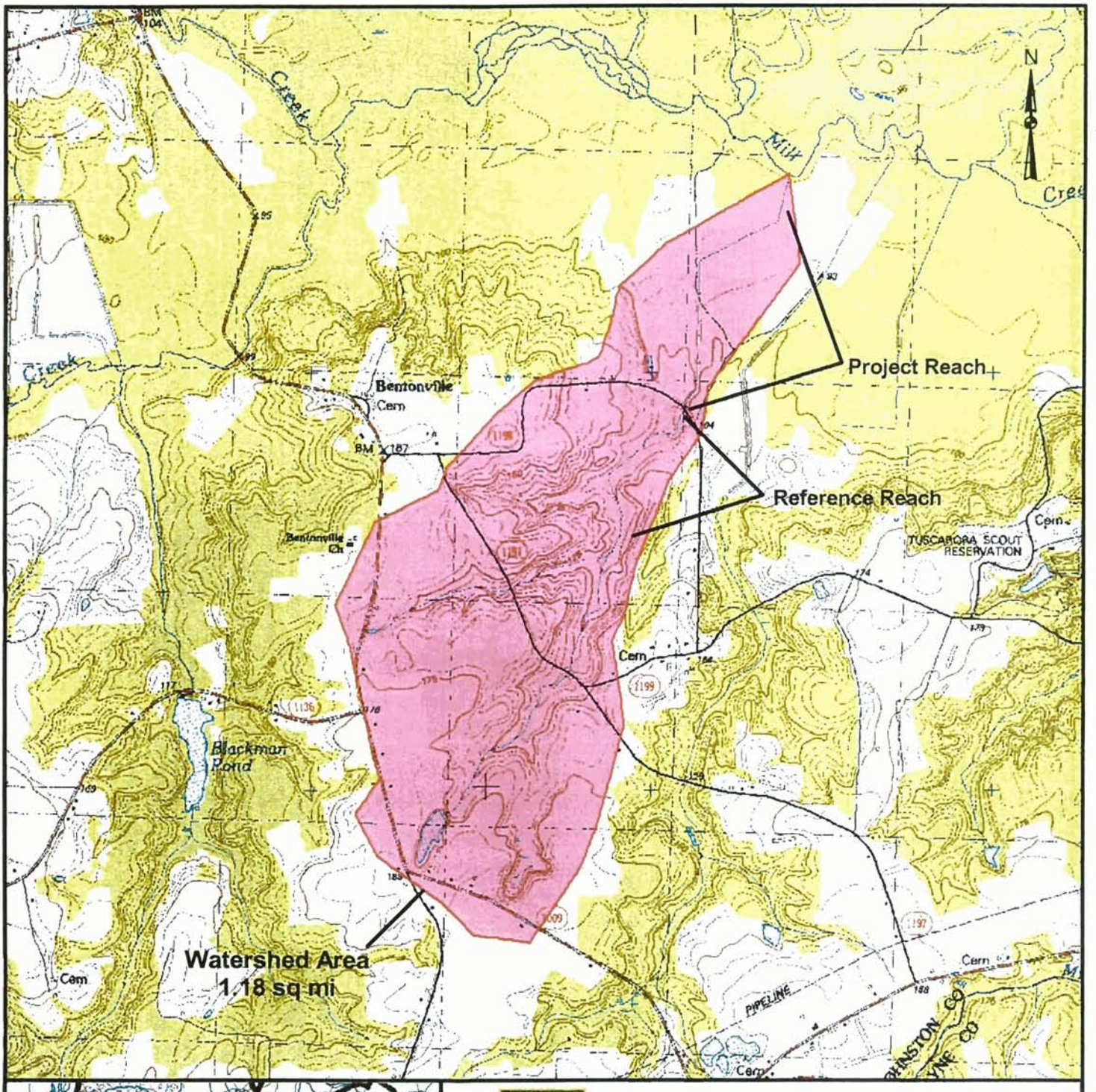

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Figure 1.2
Westbrook Lowgrounds Watershed Area

1950 0 1950 3900 Feet

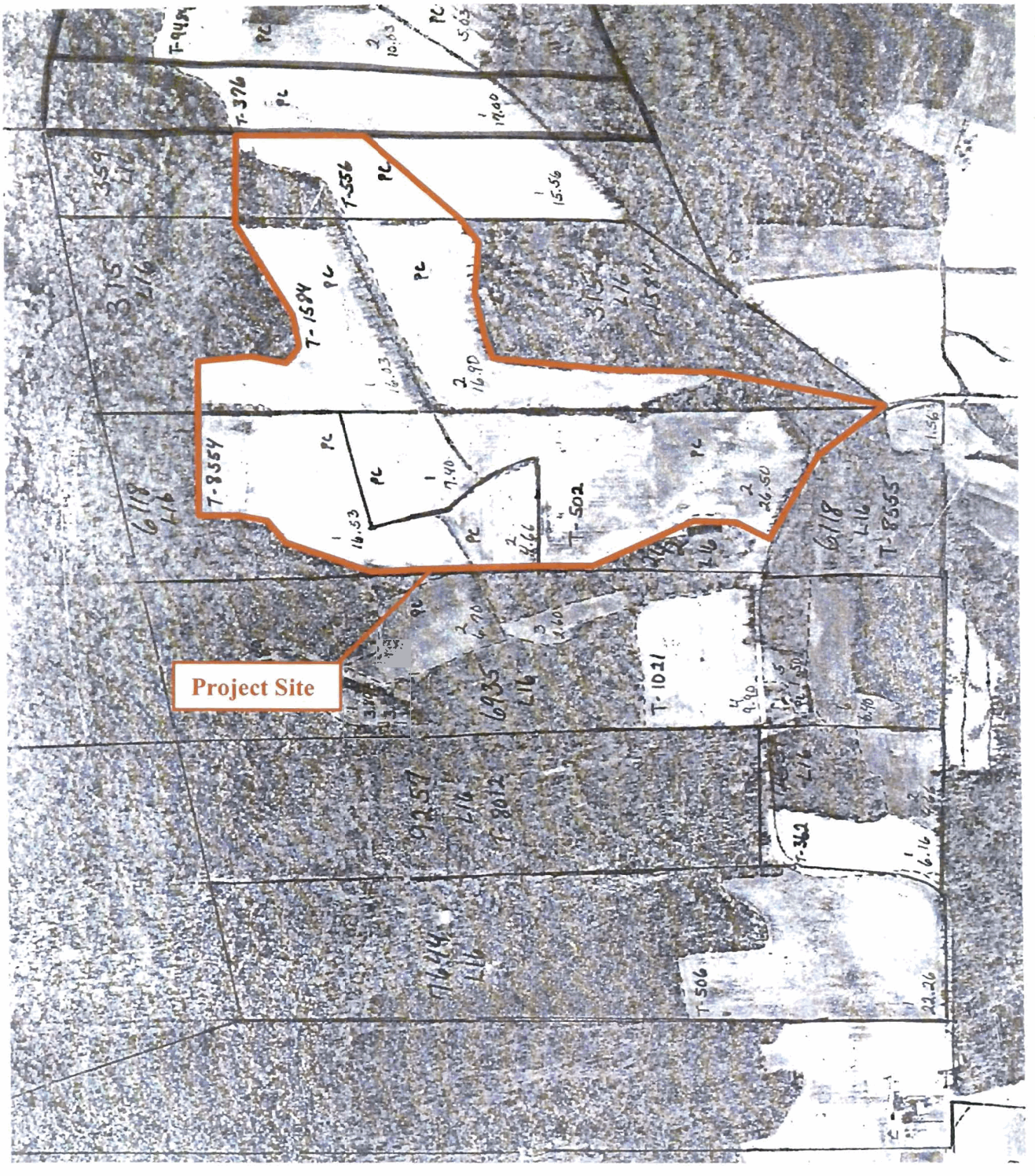

Figure 1-3 Map of prior-converted cropland provided by Natural Resource Conservation Service (NRCS).

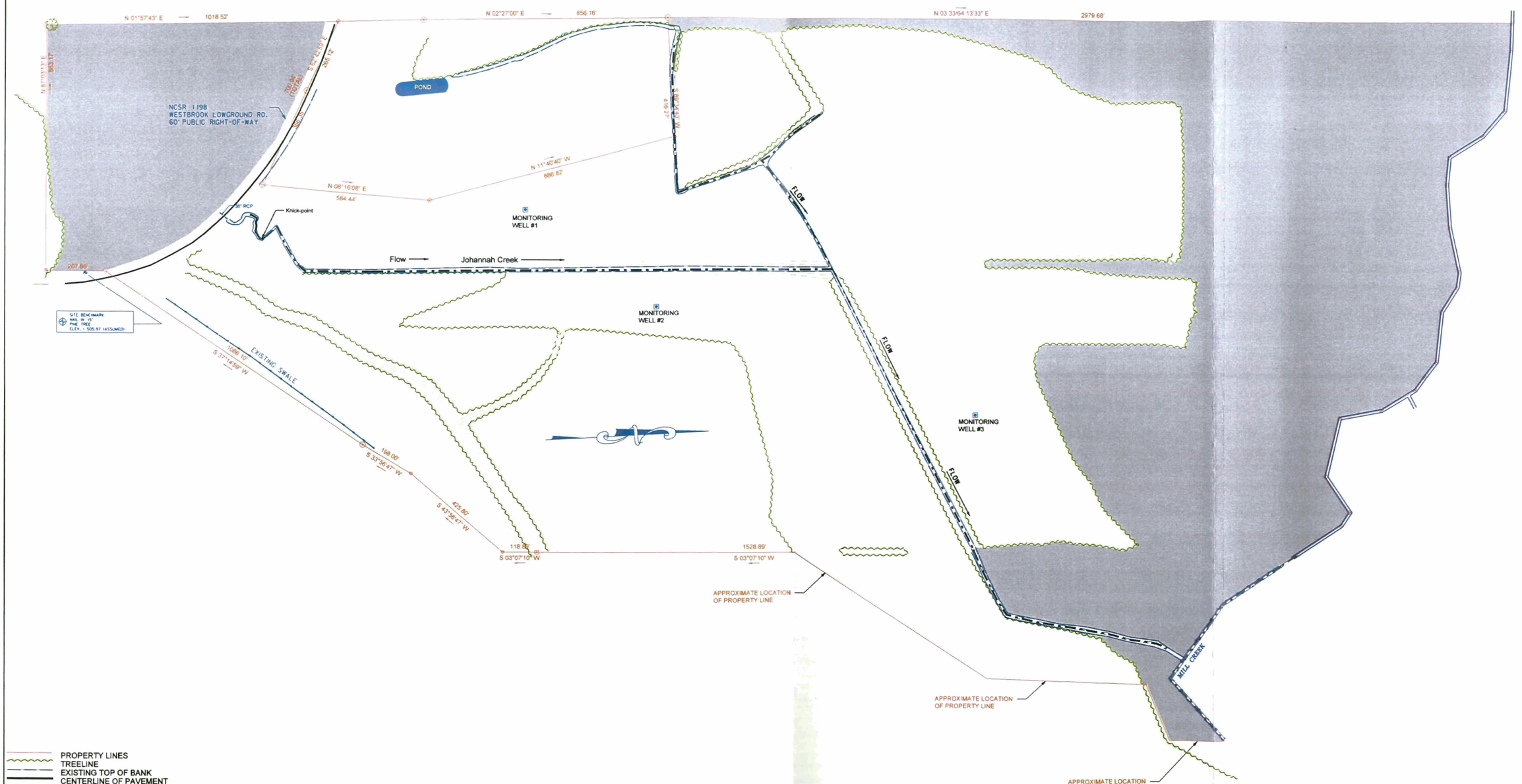

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Figure #: 1.4 | Proposed Preservation Area

Scale: 1" = 350'

2 Existing Site Condition

2.1 Soils

The project site is located near the transitional area between the Coastal Plain and Piedmont physiographic regions of North Carolina. Soil series present on the site include the Pantego, Tarboro, State, and Altavista (SCS, 1994). The Pantego series consists of poorly drained soils typically found on broad stream terraces on the Coastal Plain. In the undrained condition, permeability is moderate, and the seasonal high water table is within one foot of the soil surface in winter and spring. The Pantego soil series is considered an "A" list hydric soil by the Natural Resources Conservation Service (NRCS, 1995).

The Tarboro series consists of nearly level, somewhat excessively drained soils on stream terraces. Permeability is rapid, and the available water capacity is very low to low. The State series consists of well drained soils on stream terraces with moderate permeability and available water capacity. Although not directly included in the area to be restored, the Altavista soil series exists on the edge of the site. The Altavista series is typically found on stream terraces with a small slope (0 to 2 percent), and is moderately well drained. Permeability is moderate with the seasonal high water table depth ranging between 1.5 and 2.5 feet below the soil surface. The Tarboro, State, and Altavista soil series are not listed as hydric by the NRCS (1995).

Soils in all areas identified for restoration have been confirmed to be hydric by Southeast Soil Science, Inc. Boundaries of hydric soil areas were located and GPS coordinates for the boundaries were obtained. Areas of hydric soils to be restored are shown in Figure 2.1.

2.2 Climatic Conditions

Johnston County, North Carolina has an average annual rainfall ranging between 42.3 and 50.7 inches (NRCS WETS Tables for Smithfield, North Carolina). In much of the Coastal Plain of North Carolina, approximately 36 inches of water are lost to evapotranspiration during an average year (Evans and Skaggs, 1985). Since average rainfall exceeds average evapotranspiration losses, the Coastal Plain of North Carolina experiences a moisture excess during most years, meaning that the excess water must leave a given site by groundwater flow, runoff, channelized surface flow, or deep seepage. Annual losses due to deep seepage, or percolation of water to confined aquifer systems, are typically less than 1 inch of water for most Coastal Plain areas and are not a significant loss pathway for excess water. Although groundwater flow can be significant in some systems, most excess water is lost via surface and shallow subsurface flow.

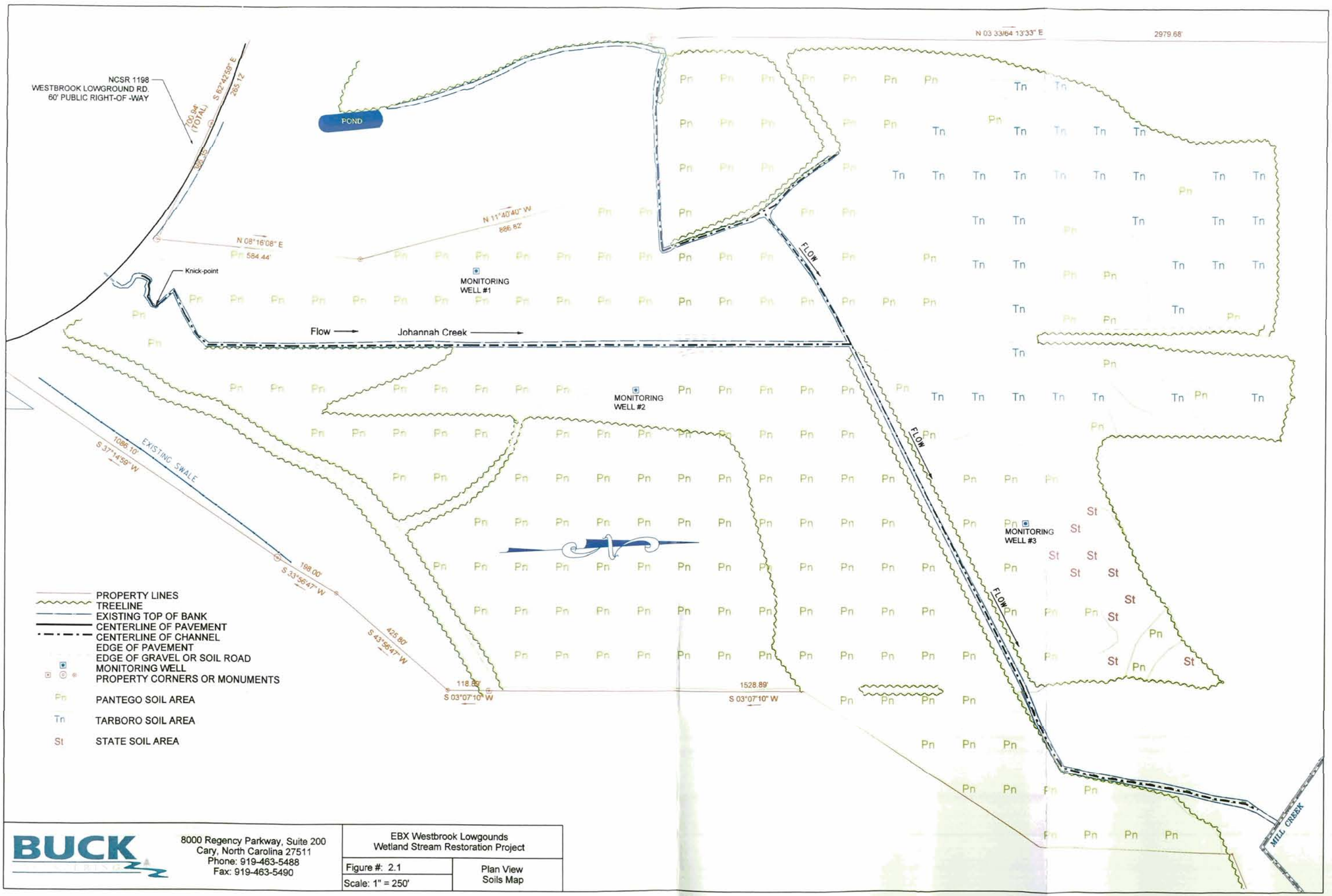

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Figure #: 2.1	Plan View Soils Map
Scale: 1" = 250'	

2.3 Existing Stream Physical Assessment

The stream that flows through the project site is Johannah Creek. The creek enters the property from the south after exiting a culvert beneath SR 1198 (Figure 2.2). For approximately 200 feet, the stream exists as a meandering, unincised, "E5" type stream. This section of channel shows little evidence of alteration and is likely part of the original channel that once flowed through the project site. Approximately 250 feet below the road culvert, the stream drops approximately four feet over a knick-point formed in an area of dense clay and tree roots. Below the knick-point, the stream flows within a man-made channel approximately three to four feet deep until its confluence with Mill Creek at the end of the project site. From the topography, it appears that the stream once followed a different path, flowing through the woods along the south side of the site and connecting with the existing channel farther downstream, as evidenced by the presence of an old abandoned channel in this area. It is likely that the present course of the stream is the result of channel modifications meant to improve the drainage of the site.

Below the knick-point, the stream is a "G5" type stream, typical of a channelized stream (see Table 3.1 for morphological stream parameters). Channel depth is approximately four feet along much of the stream, with bank height ratios greater than two. Within the past two years, the channel has been cleaned of vegetation and blockages, based on the lack of bank vegetation and the trapezoidal shape of the channel in many areas. At the confluence of the main channel and a lateral ditch there is a farm bridge. At this location, the main channel turns and flows in a northeast direction for approximately 1,375 feet. Within this area, approximately 1,075 feet of this section of channel has a narrow (approximately 25 foot wide) wooded buffer on either side of the stream. The remaining 300 feet of channel in this section have a wooded buffer along the left bank only, with mowed vegetation along the right bank. Near the end of the project, the stream turns back north and flows approximately 625 feet to its confluence with Mill Creek. The first 350 feet of this section has a wooded buffer along the left bank, but very sparse vegetation along the right bank due to agricultural maintenance. The remaining 300 feet of this section flows through a wooded area before its confluence with Mill Creek. This lower section of the project reach exhibits recent (within the last 5 years) beaver activity, with several small dams located along the reach. However, there was no indication of beaver activity within the past 1 to 2 years. Bank height ratios increase as the stream cuts through alluvium deposited by Mill Creek. Cross-section and longitudinal profile data are provided in Appendix 1.

The streambed is dominated by particles in the sand size fraction. The channelized sections of stream display few bed features, with some shallow pools created by debris or tree roots in the channel. Due to dredging activities upstream of the farm bridge, water surface and channel slope have been reduced and this section of stream is aggrading. Below the farm bridge, channel and water surface slope increase, however the bed appears stable and shows no signs of aggradation or degradation. On the upstream end of the project site, the first 250 feet of stream upstream of the knick-point have more appropriate bed features with deeper pools in the meander bends and shallow riffles in

between meander bends. On the downstream end near its confluence with Mill Creek, there are several small remnant beaver dams that back water up along the reach, resulting in few riffle areas. However, there was no indication of beaver activity within the past 1 to 2 years. Bed material analyses are provided in Appendix 1.

2.4 Site Hydrology

The presence of hydric soils over much of the project site is evidence that the site historically supported a wetland ecosystem. As is the case in much of the Coastal Plain and lower Piedmont of North Carolina, local drainage patterns have been altered over the last two centuries to increase drainage and promote agricultural production. The main stream through the site, Johannah Creek, has been channelized and straightened to provide drainage for agricultural crops. The stream experiences intermittent flow, with continuous flow during the fall, winter, and spring months. The drainage area of the stream at the outlet of the project area is approximately 1.18 square miles.

Several lateral ditches on the west side of the site come together and drain into Johannah Creek. These ditches receive some surface runoff from adjacent woodland, but flow in the laterals appears to be limited to ephemeral surface runoff. Based on topography information, the ditches intercept surface runoff and shallow subsurface flow from most of the southwestern corner of the project site.

During June 2001, three water table monitoring wells were installed and maintained by Wetland and Natural Resource Consultants, Inc. to monitor water table depth on the project site (see Figure 2.2). The wells were located in areas where hydrology would likely be affected by restoration efforts to provide a base for comparing pre- and post-restoration hydrology. Water table data were collected from June 2001 through February 2002 with hydrographs shown in Figure 2.3.

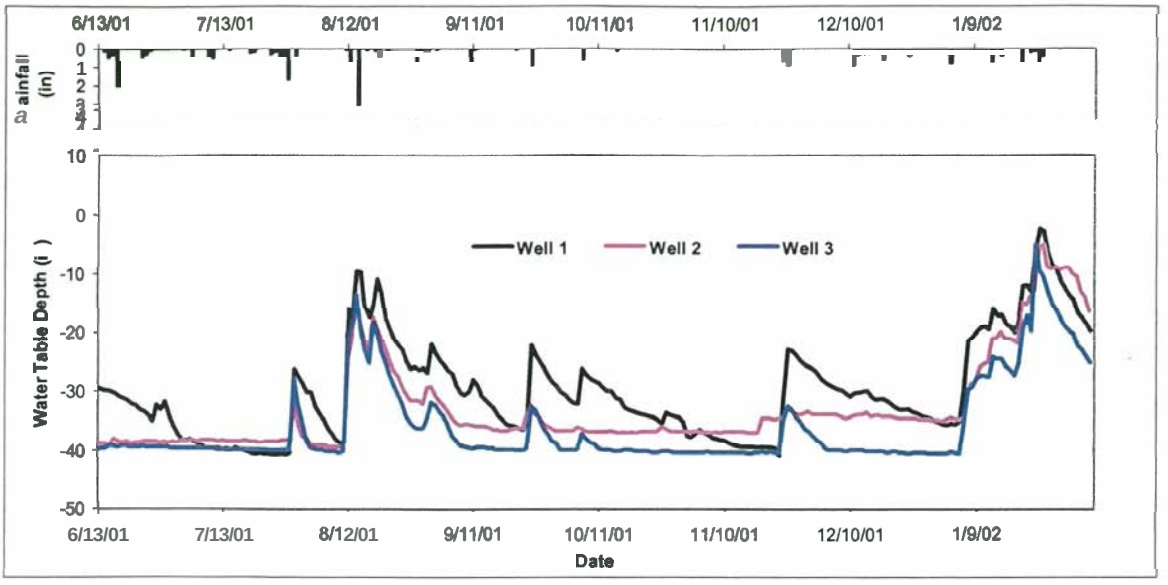

Figure 2-3 Water table data for three monitoring wells located on the project property.

Rainfall data were collected for the monitoring period to correlate climatic conditions with water table hydrology. Rainfall data were obtained fi-om the Smithfield WETS Station. Monthly precipitation amounts fi-om July 2001 through January 2002 are compared with average monthly rainfall (NRCS WETS data) in Table 2.1.

Well data from the project site were analyzed to determine the current hydrologic state of the site. Data were used to determine 1) the longest number of days with the water table less than 12 inches deep during the partial growing season, 2) the number of times that the water table was less than 12 inches deep for at least one day during the partial growing season, 3) the longest number of days with the water table less than 12 inches deep during the entire monitoring period, and 4) the number of times that the water table was less than 12 inches deep for at least 1 day during the entire monitoring period. Calculated values are presented in Table 2.2.

The growing season for Johnston County is 232 days long, beginning on March 17 and ending November 5, according to NRCS WETS data for Johnston County. For the period of monitoring data available, the longest consecutive number of days with the water table less than 12 inches deep during the partial growing season was 2 days (Well #1, 8/14/01 to 8/15/01 or roughly 1% of the partial growing season). This would indicate that the current hydrologic state of the project site is drier than would be expected for a site meeting jurisdictional wetland hydrology requirements. However, drier than average conditions were experienced over much of the monitoring period. To further examine the existing hydrologic condition of the site, simulation models were developed to describe the existing hydrologic condition of the project site.

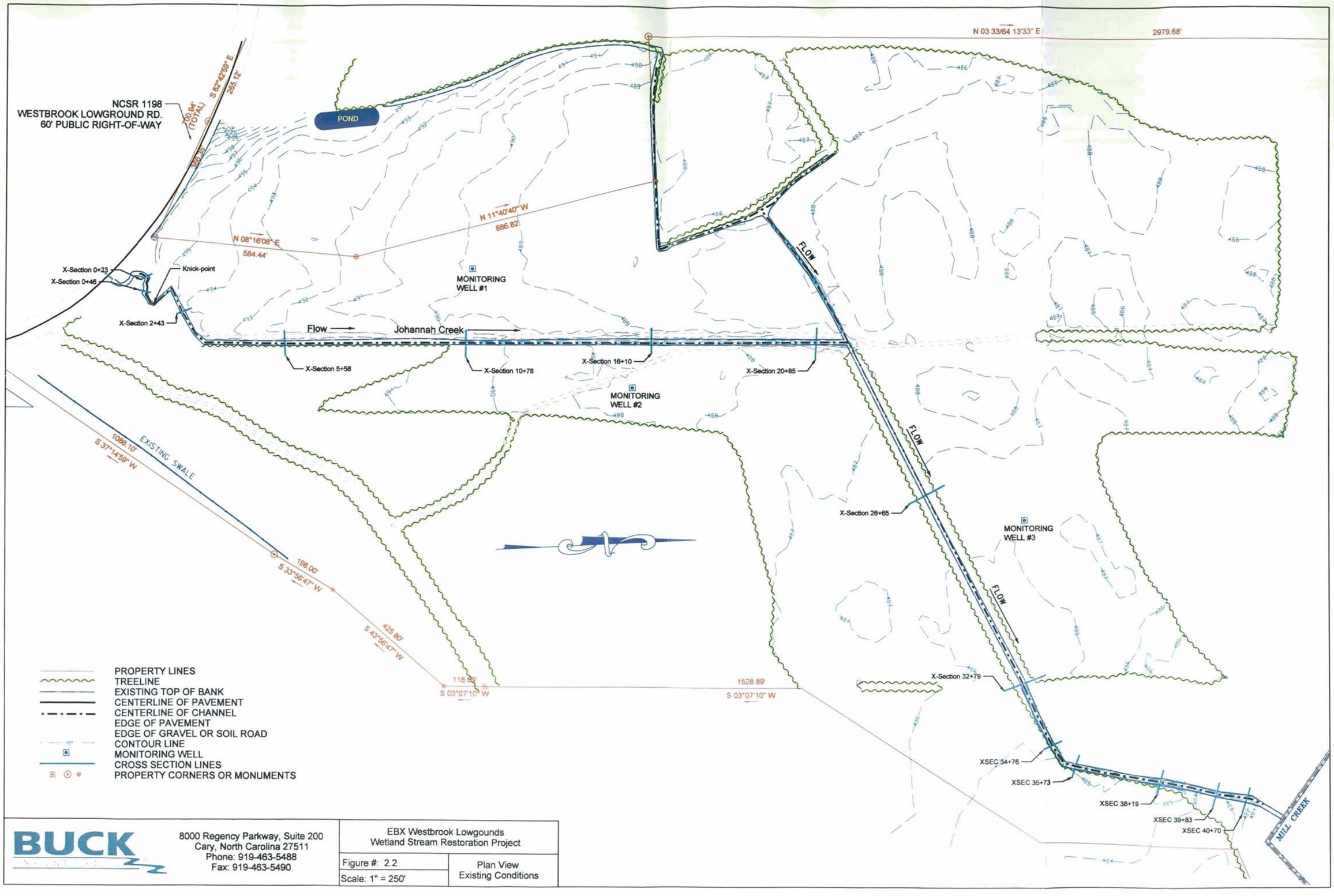

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Figure #: 2.2
Scale: 1" = 250'

Plan View
Existing Conditions

Table 2-1 Comparison between monthly rainfall amounts for the project site and the long-term average.

Month/Year	Observed Monthly Precipitation (in)	Average Monthly Precipitation (in)	Deviation of Observed from Average
July 2001	5.01	5.47	-0.46
August 2001	6.27	4.48	1.79
September 2001	2.87	4.06	-1.19
October 2001	0.76	3.11	-2.35
November 2001	1.62	3.04	-1.42
December 2001	1.03	3.21	-2.18
January 2002	4.58	3.96	0.62
Overall	**22.14**	**27.33**	**-5.19**

Table 2-2 Hydrologic parameters observed for the project site.

Well	Longest consecutive number of days with WT < 12 inches deep from 6/13/01 through 11/5/01 (partial growing season)	Total number of days with WT < 12 inches deep from 6/13/01 through 11/5/01 (partial growing season)	Longest consecutive number of days with WT < 12 inches deep from 6/13/01 through 2/6/02 (entire period of record)	Total number of days with WT < 12 inches deep from 6/13/01 through 2/6/02 (entire period of record)
Well #1	2	3	7	12
Well #2	0	0	10	10
Well #3	0	0	3	3

2.5 Hydrologic Modeling

To further investigate the current hydrologic status of the site and provide a means for evaluating proposed restoration plans, hydrologic models were developed to simulate site hydrology. DRAINMOD v.5.1 was used to develop three (3) hydrologic simulation models to represent conditions at the locations of the three (3) monitoring wells. DRAINMOD is identified as an approved hydrologic tool for assessing wetland hydrology by the US Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS, 1997). For more information on DRAINMOD and its application to high water table soils, the reader is referred to Skaggs, 1980.

Model parameters were selected based on field measurements and professional judgment of site conditions. Rainfall and air temperature information were collected from the Smithfield WETS Station. Field measured parameters were entered into the model and initial model simulations were compared with observed data collected from the

monitoring wells. To calibrate the model, parameters not measured in the field were adjusted within the limits typically encountered under similar soil and geomorphic conditions until model simulations most closely matched observed well data. Results of model simulations are compared with observed data in Figures 2.4 through 2.6. Model inputs are presented in Appendix 2.

Trends in the observed data are well represented by the model simulations. Although hydrograph peaks between observed and simulated data do not match exactly, relative changes in water table hydrology as a result of precipitation events correspond well between observed and modeled data. As noted above, rainfall data was collected from the nearest automated weather station, located in Smithfield, NC. Most of the differences between observed and modeled hydrographs can be explained by the spatial variability of rainfall patterns between the location of the weather station and the project site.

To estimate existing long-term site hydrology, model simulations were run for 30 years using weather data from the Smithfield WETS station. DRAINMOD computes daily water balance information and outputs summaries that describe the loss pathways for rainfall over the model simulation period. Table 2.3 summarizes the average annual amount of rainfall, infiltration, drainage, runoff, and evapotranspiration estimated for the existing condition of the project site. Infiltration represents the amount of the water that percolates into the soil and is lost via drainage or runoff. Drainage is the loss of infiltrated water that travels through the soil profile and is discharged to the drainage ditches or to underlying aquifers. Runoff is water that flows overland and reaches the drainage ditches before infiltration. Evapotranspiration is water that is lost by the direct evaporation of water from the soil or through the transpiration of plants. From the data provided, it is clear that a significant amount of the rainfall that falls on the site is lost via drainage and runoff to the field ditches. Restoration of the site will involve restoring the stream through the site and increasing the amount of surface storage available to pond water. In this way, the respective amounts of drainage and runoff are decreased. The excess water storage will allow the water table to remain higher throughout the year, thus restoring wetland hydrology.

Table 2-3 Water balance for the existing condition of the project site.

Hydrologic Parameter	Average Annual Amount over 30 Year Simulation Period (cm of water)	Average Annual Amount over 30 Year Simulation Period (% of rainfall)
Drainage	37.40	31.3
Runoff	12.48	10.5
Evapotranspiration	69.57	58.3
Precipitation	119.32	100.0

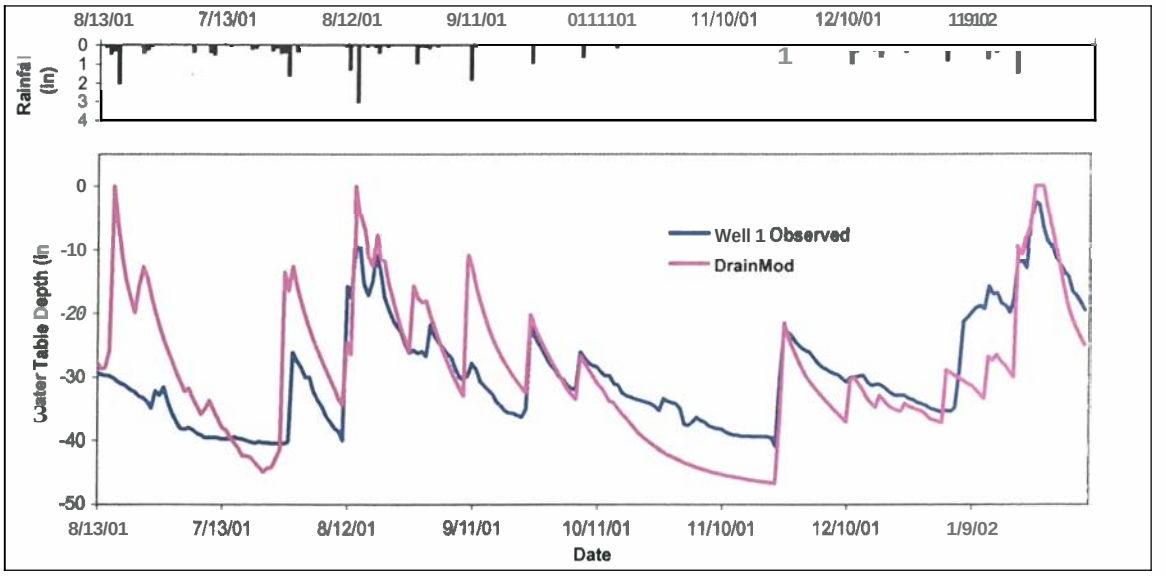


Figure 2-4 Comparison between observed and simulated water table depths for Well 1 for existing condition.

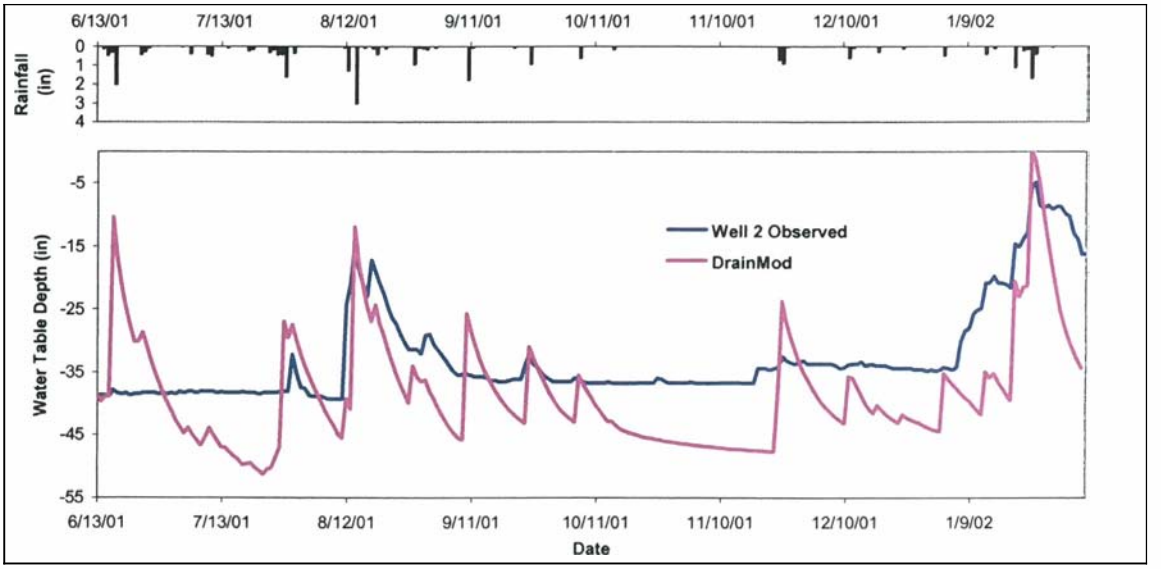


Figure 2-5 Comparison between observed and simulated water table depths for Well 2 for existing condition.

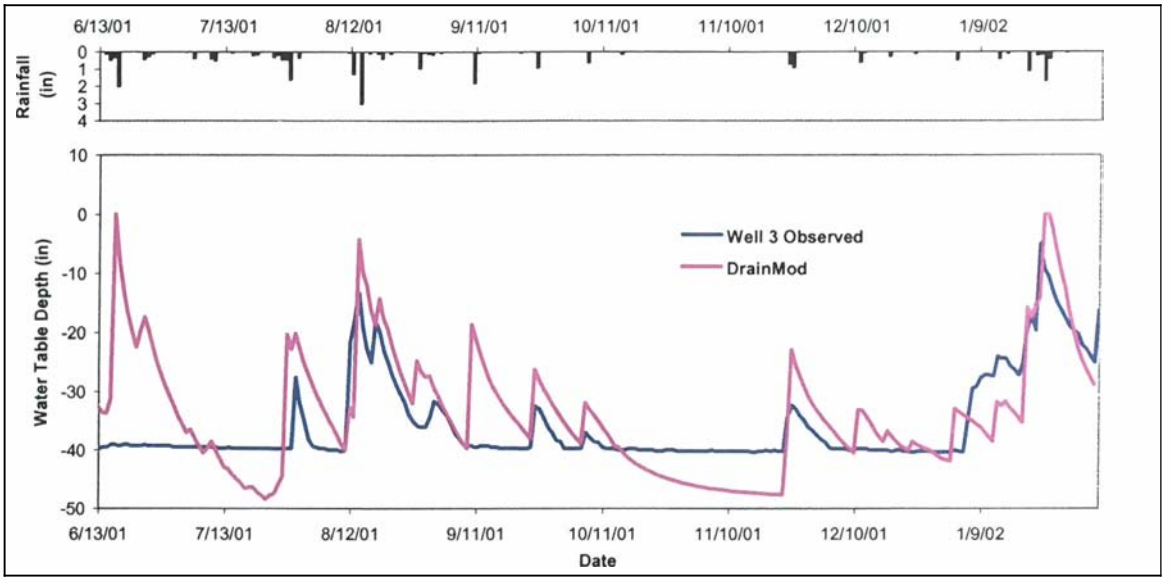


Figure 2-6 Comparison between observed and simulated water table depths for Well 3 for existing condition.

2.6 Vegetation

Land use for the open fields on the Westbrook Lowgrounds site over the past 50 to 60 years has been row crop agriculture. The plant species along reaches of the main channel with significant riparian buffers consist of sweet gum (Liquidambar *styraciflua*), red maple (Acer *rubrum*), willow oak (Quercus phellos), water oak (Quercus nigra), swamp chestnut oak (Quercus *michauxii*) and overcup oak (Quercus lyrata). The small tree/shrub layer is dominated by sweetbay magnolia (Magnolia virginiana), horse sugar (Symplocus tinctoria), giant cane (Arundinaria gigantea), elderberry (*Sambucus* canadensis), American holly (Ilex opaca), sugarberry (Celtis laevigata) and leucothoe (Leucothoe *axillaris*). The herb and vine strata consists of pokeweed (Phytolacca *americana*), rushes (Juncus spp), jewelweed (Impatiens capensis), dog-fennel (Eupatorium capillifolium), green-briar (Smilax spp.) Virginia creeper (Parthenocissus quinquefolia), grape (*Vitis* spp.), and poison ivy (Toxicodendron radicans).

Reaches of the main channel that lack a riparian buffer contain species including goldenrod (Solidago spp.), panic grasses (*Panicum* spp.), rushes (*Juncus* spp.), meadow-beauty (Rhexia spp.), ragweed (Ambrosia artemisiifolia), St. John's wort (*Hypericum* spp.), water primrose (Ludwigia spp.), and sweetgum saplings. The smaller lateral ditches are similar but contain knotweed (Polygonum spp.), water primrose, and goldenrod.

2.7 Existing Condition Stream Benthic Macroinvertebrates

Benthic macroinvertebrate samples were collected at two sites within and upstream of the project area on January 17, 2002. One sampling site is located within the downstream section of the project reach below SR 1198, while the other sampling site (reference reach) is located upstream of the project reach above SR 1198 (Figure 1.2). Sampling was not conducted during the summer months due to drought conditions which resulted in low flow conditions. The sampling methodology followed the Qual-5 protocol listed in the NCDWQ's *Standard Operating Procedures for Benthic Macroinvertebrates*. A summary of the results of benthic macroinvertebrate sampling for the project reach is presented in Table 2.4, with complete results presented in Appendix 3.

Mayflies (Ephemeroptera), stoneflies (Plecoptera), and cadisflies (Trichoptera), collectively referred to as EPT taxa, are considered by aquatic ecologists to be intolerant to pollution or other forms of environmental degradation. Therefore, the presence of substantial numbers of EPT taxa and individuals are considered indicative of relatively undisturbed "higher quality" streams.

Table 2-4 Summary of benthic macroinvertebrate data for the project reach and the reference reach.

Sites	EPT Taxa Richness	EPT Abundance	EPT Biotic Index	Biotic Index	Total Taxa Richness
Project Reach	7	45	4.8	6.5	30
Reference Reach	10	43	4.7	4.5	28

Total taxa richness and EPT Abundance values were slightly higher at the project reach than the reference reach (located upstream of project reach). However, higher EPT taxa richness and lower biotic indices were recorded at the reference reach, indicating better water quality at that site compared to the project reach. The project reach community was composed of 50% chironomidae, which are usually pollution tolerant organisms, compared to 28% chironomidae for the reference reach. The NC Division of Water Quality provided their interpretation of the collected macroinvertebrate data in a memorandum (a copy is provided in Appendix 3). Their analysis of the data concluded that there was a "... very distinct shift in the EPT fauna between locations", and that "... many EPT taxa that were common or abundant in the reference reach were eliminated or reduced in number at the project reach." They also noted that several species considered to be more tolerant taxa were found in greater abundance on the project reach than the reference reach, suggesting that the hydrology of the project reach has been modified.

The downstream section of the project reach was chosen for sampling to comply with NC Division of Water Quality Guidelines. It should be noted that this section of stream, while degraded, displayed the most in-stream habitat of any areas along the project reach, due to a number of debris jams. There are some submerged macrophytes in the middle portion of the project reach which are providing habitat functions, however this habitat is

not characteristic of a small coastal plain swamp system and is further evidence that the system has been significantly altered from its natural state.

Debris jams in the existing incised channel, while providing some habitat functions, are exacerbating many of the problems with bank stability in the lower reaches of the project. In incised channels, debris jams and blockages cause increased hydraulic head upstream of the blockages, often resulting in "blow-outs" around the blockages during higher flows. In unincised channels, such as the proposed restored stream channel, higher flows spread out onto the floodplain and sheet flow around blockages, causing few problems with bank stability and increasing flooding of the adjacent wetland areas.

2.8 Cultural and Resources

In a letter dated October 3, 2001, TRC Garrow Associates requested that the NC Department of Cultural Resources review the project and comment on any possible impact to cultural resources within the project area. The NC Department of Cultural Resources determined, in a letter dated October 23, 2001, that there were no properties of architectural, historic, or archaeological significance that would be affected by the project. See Appendix 4 for a copy of the response from the NC Department of Cultural Resources.

2.9 Natural Resources

Wetland and Natural Resource Consultants, Inc. contacted the NC Natural Heritage Program to determine any possible issues that might emerge with respect to significant natural resources from wetland and/or stream restoration practices on the project site. In a reply letter dated August 9, 2001, the NC Natural Heritage Program issued a "No Effect" determination for the project site. See Appendix 4 for a copy of the response from the NC Natural Heritage Program.

3 Restoration Plan

3.1 Overview

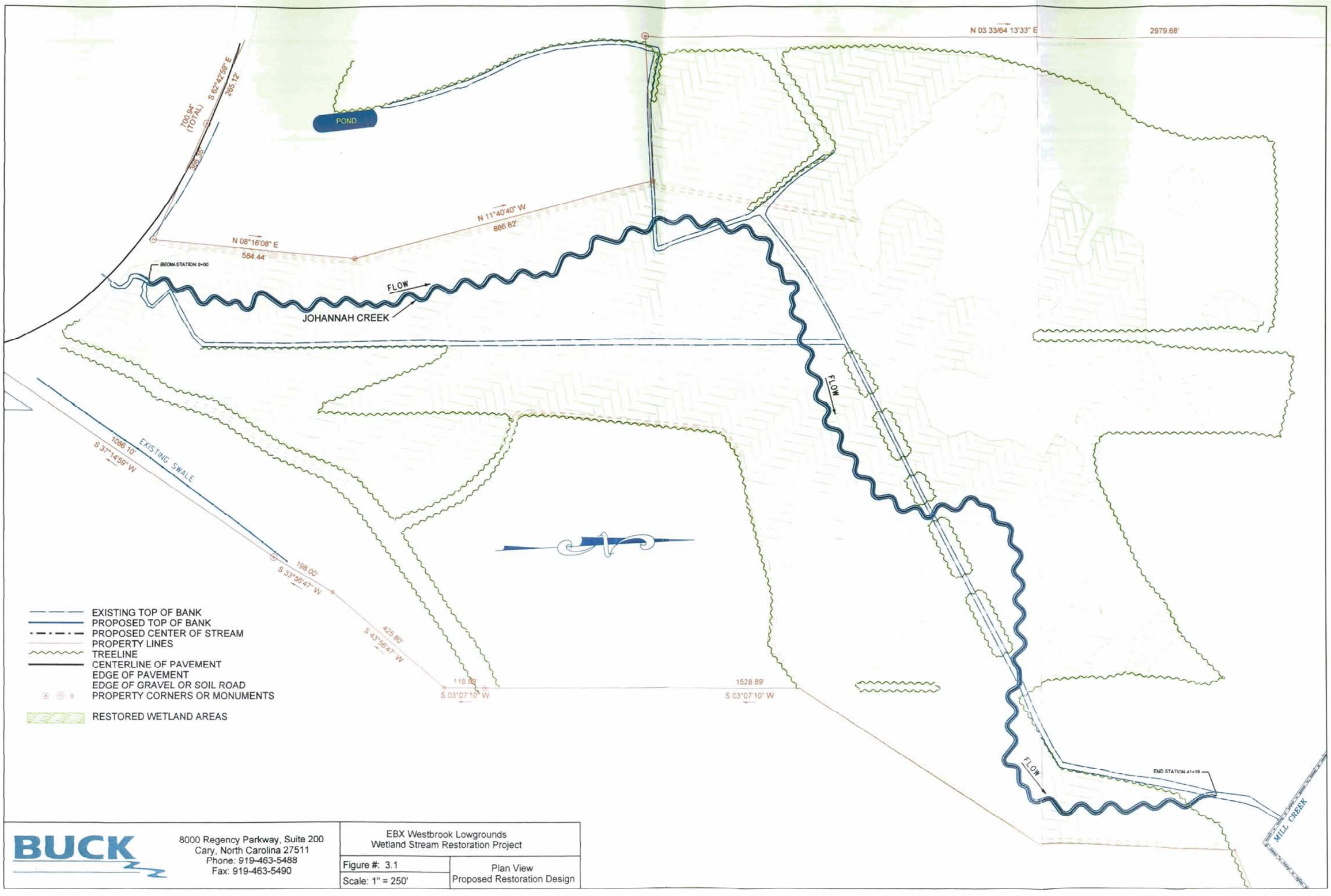
The restoration design for the Westbrook Lowgrounds property is to restore a "Coastal Plain small stream swamp", as described by Schafale and Weakley (1990). The design will involve restoring the natural drainage pattern, filling drainage ditches, and increasing surface storage to raise the local water table and restore site hydrology (Figure 3.1). The existing deep drainage ditch will be filled and a new meandering channel will be constructed across the abandoned floodplain. Surface drainage patterns across the site will be restored to conditions similar to the reference wetland site.

3.2 Stream Restoration

Restoration of site hydrology will involve the restoration of the natural stream and wetland system of the site. In its existing condition, the stream on the site is classified as a Rosgen "G" stream type (see Section 2.3). The design for the restored stream will involve the construction of a new meandering channel across the existing agricultural fields where hydric soils are present (Figure 3.1). The stream type for the restored stream will be a Rosgen "E/C" with design dimensions based on those of the reference reach, as shown in Table 3.1. Total stream length for the project will be increased from 4,220 to approximately 5,400 feet as a result of the increased sinuosity. Actual restored length will be determined after as-built plan sheets have been developed.

Existing versus design cross-sections are presented in Appendix 5. The old stream channel will be filled once the new channel is constructed and water has been turned into the new channel. In the section of existing channel that flows from southwest to northeast (middle portion), sections of the existing narrow buffer will be cleared to provide transplants and rootwads, and to provide access for filling the old channel. The remaining rectangular areas of buffer (shown on Figure 3.1) will be left intact to provide shade to the new channel and a seed source for new vegetation. The design will allow flows larger than the bankfull flow to spread onto the floodplain, dissipating flow energies and reducing the stress on streambanks. Instream structures will be used to control streambed grade, reduce stresses on streambanks, and promote riffle/pool sequences and habitat diversity. The structures will consist of root-wads, log vanes, log weirs, cross-vanes, and other wood structures that will promote a diversity of habitat features in the restored channel (typical construction details are provided in Appendix 13). Streambanks will be stabilized using a combination of erosion matting, live staking, and transplants (a construction detail for live staking is provided in Appendix 13). Transplants will provide immediate shading to the restored stream, as well as living root mass in streambanks to provide stability and holding areas for fish and aquatic biota. The existing bridge crossing on the stream will be removed.

The entire new stream channel will be constructed "in the dry" and all stabilization practices will be placed prior to routing water into the new sections of channel. When it is time to route water into the new channel sections, plugs will be installed in the old channel to turn the water into the new channel. After the water has been routed, the process of filling the old channel will begin immediately.



BUCK

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EBX Westbrook Lowgrounds
Wetland Stream Restoration Project

Figure #: 3.1
Scale: 1" = 250'

Plan View
Proposed Restoration Design

Table 3-1 Natural channel design parameters for the Johannah Creek.

Parameters		Existing	Design	Reference Reach
Rosgen Stream Type		G5	E5/C5	E5/C5
Drainage Area (sq mi)		1.18	1.18	0.9
Reach Length (ft)		4220	~ 5,400	----
Dimension	Bankfull Width (ft)	8	10.4	9.7
	Bankfull Mean Depth (ft)	1.1	0.9	0.8
	Width/Depth Ratio (ft)	7	12	12
	Bankfull Area (sq ft)	9	9	8
	Bankfull Mean Velocity (ft/sec)	1.9	1.9	1.9
	Bankfull Discharge (cfs)	17	17	14
	Bankfull Max Depth (ft)	1.5	1.2	1.1
	Width of Floodprone Area (ft)	12	> 100	>100
	Entrenchment Ratio	1.5	> 2.2	>2.2
	Max Pool Depth (ft)	1.8	2.0	1.5
	Ratio of Pool Depth to Bankfull Depth	1.6	2.2	1.9
	Pool Width (ft)	8	10.4 – 12.5	8 – 10
	Ratio of Pool Width to Bankfull Width	1.0	1.0 – 1.2	0.8 – 1.0
	Pool to Pool Spacing (ft)	NA	26 – 42	16 – 59
	Ratio of Pool to Pool Spacing to Bankfull Width	NA	2.5 – 4	1.6 – 6.1
	Bank Height Ratio	> 2.0	1.0	1.0
Pattern	Meander Length [1] (ft)	NA	52 – 73	50
	Meander Length Ratio	NA	5.0 – 7.0	5.2
	Radius of Curvature [1] (ft)	NA	21 – 31	15 – 27
	Radius of Curvature Ratio	NA	2.0 – 3.0	1.5 – 2.8
	Meander Belt Width [1] (ft)	NA	21 – 31	14 – 20
	Meander Width Ratio	NA	2.0 – 3.0	1.4 – 2.1
	Sinuosity	1.15	1.48	1.22
Profile	Valley Slope (ft/ft)	0.0038	0.0038	0.0027
	WS Slope (ft/ft)	0.0034	0.0025	0.0022
	Pool Slope (ft/ft)	NA	0.0005	0.0005
	Ratio of pool slope to WS slope	NA	0.20	0.23

[1] Existing reach displays no measurable meander geometry.

Bankfull Verification

Correct field identification of bankfull stage is crucial to the natural channel design process. Dimensions for the new channel are based on the bankfull cross-sectional area identified by field assessments. If bankfull is identified incorrectly, the new channel may be designed either too small or too large, resulting in channel instability. For this reason, verification of bankfull stage should be conducted to assure that the bankfull stage has been identified correctly.

A gage survey was conducted to verify the bankfull stage identified for Johannah Creek. The gage survey was conducted on the Little River near the Town of Princeton, approximately 13 miles from the project site, at a U.S. Geological Survey gaging station (# 02088500). Bankfull stage was identified at the gage site and flood frequency data for the gage were used to correlate bankfull stage and discharge to watershed size. This information was plotted on the NC Coastal Regional Curve under development by the NC Stream Restoration Institute at North Carolina State University. The gage was found to correspond well with data collected at other gaged and ungaged stations, as shown in Figure 3.2.

Bankfull stage was identified on the project reach as the upper scour line, or the back of an alluvial bench (see cross-sections in Appendix 1). This information was plotted on the developing NC Coastal Regional Curve (see Figure 3.2). The project reach was found to have a bankfull cross-sectional area lower than would be expected based on the regional curve information and data collected from the Little River gage survey. A thorough examination of the watershed did not reveal any obvious reasons for the low cross-sectional area, such as in-channel reservoirs or water withdrawals. The stream begins as the outlet of a small pond in the headwaters of the watershed, but due to the size and location of the pond it would not significantly affect the formation of the stream channel at the location of the restoration site.

Three nearby streams (less than 10 miles from the project site) were located that are similar to the project stream in watershed size and geomorphologic setting. The chosen sites have a small watershed size (less than 1.5 sq. mi.) and are sand-bed channels with a high amount of bedload. A characteristic riffle cross-section was located on each stream, the bankfull indicator was identified, and bankfull cross-sectional area was measured. Bankfull was identified as either the top of the stream bank (two sites), or the prominent scour line (two sites). The collected data are plotted in Figure 3.2.

The three streams surveyed near the project site also displayed bankfull cross-sectional areas lower than the data presented by the NC Coastal Regional Curve. Therefore, it appears that the lower cross-sectional area documented on the project site is a characteristic of similar size streams in the same geomorphologic setting. There are several possible reasons for this trend. This same trend has been witnessed on watersheds where significant water storage is provided by wetland and swamp areas adjacent to the stream. The wetland areas store runoff from adjacent upland areas and reduce peak runoff rates reaching the stream. Therefore, for a given watershed size and rainfall event,

watersheds with significant wetland areas produce less runoff than watersheds with fewer wetland areas. It appears that only a small percentage of the watershed area above the project site is composed of wetlands, and therefore would not have a significant impact on the formation of the stream channel. It is more likely that the observed stream characteristics are a result of geologic conditions in the area. Soils on the upland portions of the watershed are primarily Blanton, Wagram, and Uchee. Each of these soil series has a sandy texture and is highly permeable, typical of the sandy soils found along the transition area between the Piedmont and Coastal Plain physiographic regions. As a result, these areas have some of the highest groundwater recharge rates in North Carolina (Figure 3.3). The higher amounts of infiltration during rain events would result in lower amounts of runoff than may be experienced on similar sized watersheds in other parts of the Coastal Plain, and therefore lead to lower stream flows for a given watershed size.

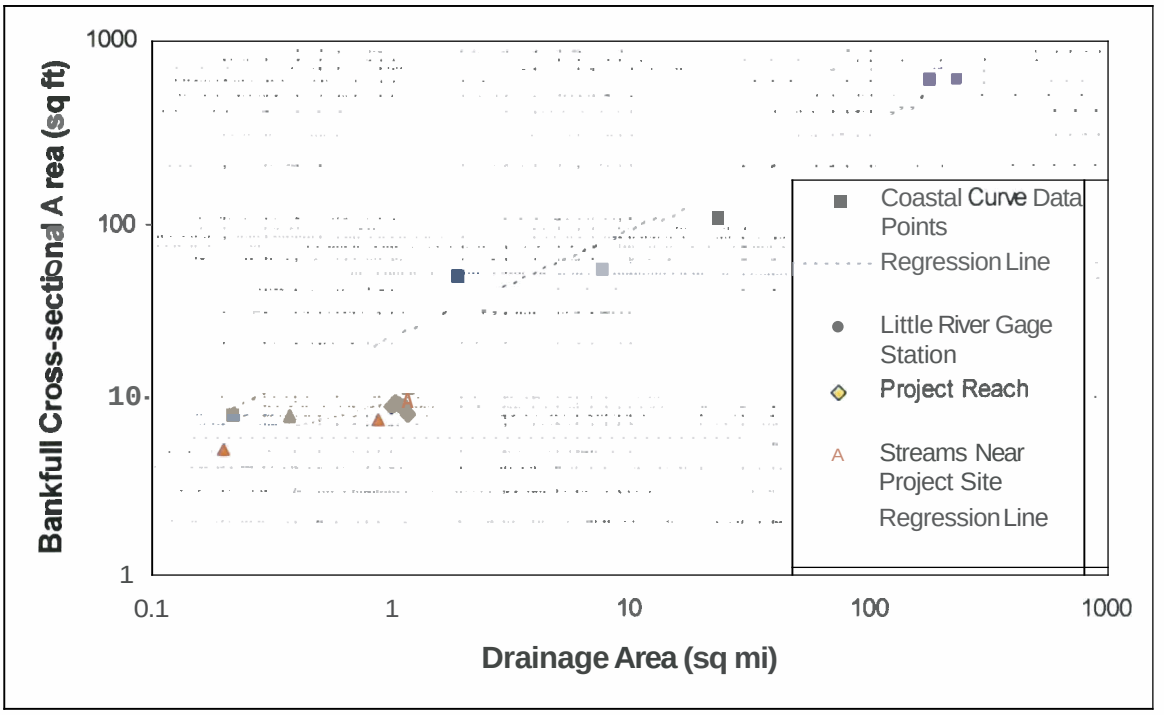


Figure 3-2 North Carolina Coastal Regional Cuwe with data collected from Johannah Creek (regional cuwe data provided by the NC Stream Restoration Institute).

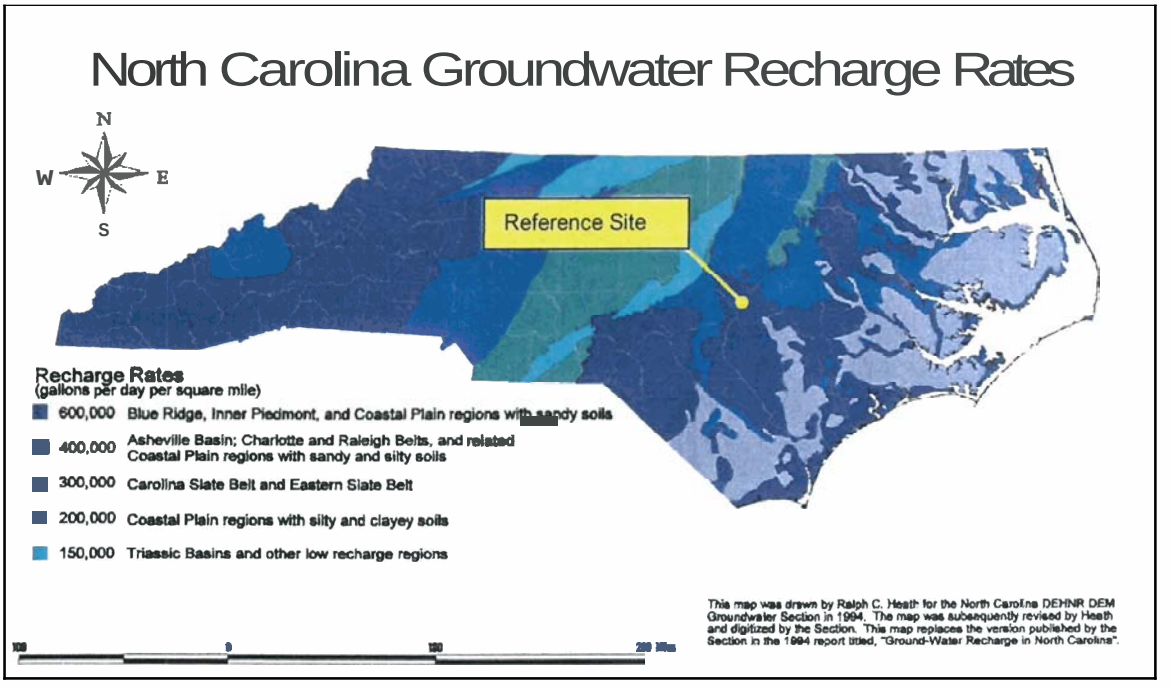


Figure 3-3 Groundwater recharge rate map for North Carolina (provided by the NC Department of Natural Resources, Groundwater Division).

3.3 Sediment Transport Analysis

A stable stream has the capacity to move its sediment load without aggrading or degrading over long periods of time. The total load of sediment transported through a cross-section can be described by bedload and suspended load fractions. Suspended load is normally composed of fine sand, silt and clay particles transported in the water column. Bedload is generally composed of larger particles, such as coarse sand, gravel, and cobbles transported by rolling, sliding, or hopping (saltating) along the bed.

The ability of the stream to transport its total sediment load is quantified through two measures; sediment transport competency and sediment transport capacity. Competency is the ability of the stream to move particles of a given size and is a measure of force, often expressed as shear stress in units of lbs/ft^2. Sediment transport capacity is a stream's ability to move a quantity of sediment and is a measure of stream power, often expressed as units of lbs/(ft*sec). Competency and capacity analyses were conducted for this project to ensure that the design streambed does not aggrade or degrade during bankfull conditions. These two analyses are discussed below.

The shear stress placed on the sediment particles is the force that entrains and moves the particles, given by:

$$\tau = \gamma Rs \qquad \text{[Equation 3.1]}$$

Where,
τ = shear stress (lb/ft^2)
γ = specific gravity of water (62.4 lb/ft^3)
R = hydraulic radius (ft)
s = average channel slope (ft/ft)

Unit stream power, or the ability of the stream flow to perform work, is given by:

$$\omega = \tau V \qquad \text{[Equation 3.2]}$$

Where,
τ = shear stress (lb/ft^2)
V = average flow velocity (ft/sec)

Based on field assessments, the streambeds of the reference reach and the downstream project reach (below the existing farm bridge) show no signs of active aggradation or downcutting. The upstream project reach (above the farm bridge and below the knick-point) is considered unstable, due to dredging activities that have decreased the channel slope and resulted in a backwater effect and aggradation. Therefore, the proposed design seeks to restore stream functions while keeping shear stress and stream power conditions within the range of values calculated for the reference reach and the downstream project reach. This will allow the restored stream to transport its bedload and maintain stream stability.

Boundary shear stress and stream power were calculated for the existing downstream project reach, the reference reach, and the design cross-sections using Equations 3.1 and 3.2. Results are shown in Table 3.2. The design stream shear stresses and stream power values fall within the range of values calculated for the reference reach and the downstream project reach. Therefore, at the bankfull stage the design channel will have the capacity to transport the stream's bedload while remaining stable.

Table 3-2 Boundary shear stresses for existing and design stream cross-sections.

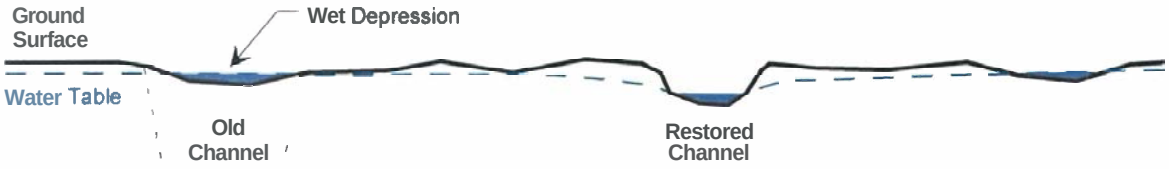
Shear Stress Analysis	Existing Downstream Project Reach	Design Project Reach	Reference Reach
Bankfull Area (sq ft)	9	9	8
Bankfull Width, W (ft)	8	10.4	9.7
Bankfull Mean Depth, D (ft)	1.1	0.9	0.8
Wetted Perimeter = W + 2D (ft)	10.2	12.2	11.3
Hydraulic Radius, R (ft)	0.88	0.74	0.71
Slope (ft/ft)	0.0033	0.0025	0.0022
Manning's n	0.030	0.030	0.030
Flow velocity, V (ft/sec)	2.80	1.9	1.69 – 1.98
Boundary Shear Stress, τ (lb/sq ft)	0.201	0.129	0.085 – 0.108
Stream Power, ω (lb/(ft*sec))	0.563	0.281	0.144 – 0.213

3.4 Restoration of Wetland Hydrology

The existing incised stream channel and lateral drainage ditches will be filled to raise the water table on-site and restore wetland hydrology. Areas to be restored to wetland conditions are shown in Figure 3.1, and a conceptual cross-section through the restored area is shown in Figure 3.4. The old abandoned channel will be filled, and contoured to form wide shallow depressions, which will aid in the restoration of habitat diversity and increased surface storage. Fill material for the old channel of Johannah Creek will be provided from the excavation of the new Johannah Creek channel and from minor grading activities. Minor grading is necessary at the beginning and end of the project to tie into the existing channel on the upper end of the site, and Mill Creek on the lower end of the site. Grading is required to provide a stable slope for the restored channel at the beginning and end of the project, and to insure that the bank height ratios of the restored stream will be equal to 1.0.

Several in-stream grade control structures will be installed along the restored stream to protect the new channel immediately following construction against any head-cutting before the new stream bed has completely stabilized.

CONCEPTUAL CROSS-SECTION THROUGH RESTORATION AREA



VEGETATION SELECTION FOR RESTORED WETLAND AREAS

BARE-ROOT PLANTINGS

willow oak (Quercus phellos)
swamp chestnut oak (Quercus michauxii)
laurel oak (Quercus laurifolia)
blackgum (Nyssa sylvatica)
bald cypress (Taxodium distichum)
overcup oak (Quercus laurifolia)
swamp blackgum (Nyssa biflora)

SEED MIXTURE

Virginia wild rye (Elymus virginicus)
fox sedge (Carex vulpinoidea)
switch grass (Panicum virgatum)

EBX
Environmental Banc and Exchange
10055 Red Run Boulevard, Suite 100
Owings Mills, MD 21117

Figure 3.4
Conceptual Cross-section and Vegetation Planting Plan

The restored stream is designed after the reference reach upstream, and as a result should have a nearly identical flooding regime as that of the reference site. The restored channel is designed to carry the bankfull flow, and to flood (flow out of its banks) at discharges greater than bankfull. Therefore, the proposed restoration practices will restore a wetland system subject to "intermittent, temporary, or seasonal flooding", as described by Schafale and Weakley (1990).

3.5 Hydrologic Model Analyses

The DRAINMOD simulations developed to evaluate the current hydrologic status of the restoration site (Section 2.5) were used to estimate the hydrologic conditions of the site under the proposed restoration practices. Model parameters which describe the depth of stream and topographic surface storage were changed to values representative of the described restoration practices. For example, drain depths were reduced to approximately 37 cm to represent the water level in the restored, meandering channel. Surface storage parameters were increased from two to four cm to represent surface roughing practices. Input files that describe cropping conditions were changed to represent forested conditions.

To estimate the average hydrologic condition of the restored site, a model scenario was evaluated for a location 250 feet from the restored channel with a surface storage of two cm. Since 250 feet is the average distance from the restored stream to the proposed restoration areas, this scenario was chosen to approximate an average location across the restored site, In a similar manner, a maximum surface storage of two cm was chosen based on reference site information and represents typical topographic conditions across the restored site. A thirty-year simulation was run following the procedure described in Section 2.5. Results of the simulation are presented in Figure 3.5, and the DRAINMOD input file is provided in Appendix 6.

The simulation runs indicate that, on average, the water table will be less than 30 cm deep continuously for approximately 9% of the growing season. This scenario can be assumed to represent average conditions across the site, with the majority of the restored acreage on the site being represented by this hydrologic scenario. It is probable that there will be areas slightly drier or slightly wetter than the modeled scenario within the restoration area. The modeled scenario provides a basis for estimating the average hydrologic condition over the restored site, based on the proposed restoration practices. However, it is important to note that the hydrology of the targeted restored wetland system (coastal plain small stream swamp) is highly variable across a given site, supporting the ecological and functional diversity that makes these systems so valuable.

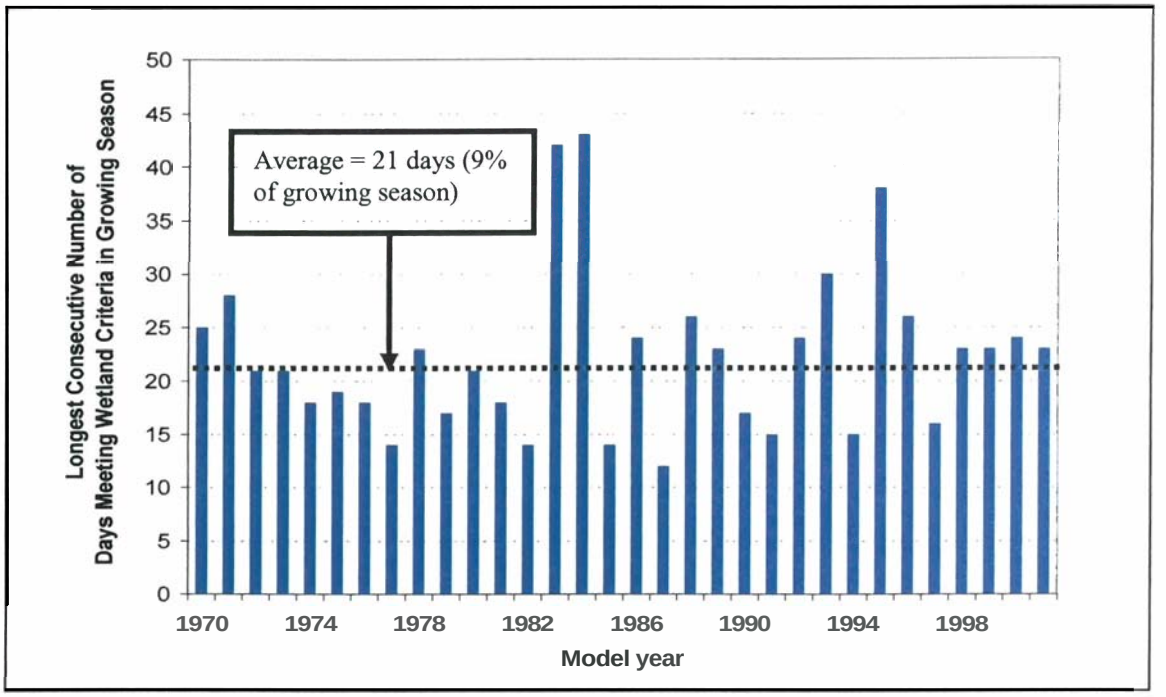


Figure 3-5 Thirty (30) year model simulation showing the longest consecutive number of days meeting wetland criteria for a location representing average conditions across the restoration site.

3.6 Vegetation Plan

The design of the proposed restored project area will most closely resemble the "Coastal Plain Small Stream Swamp" described by Schafale and Weakley (1990), since this is the community type for the upstream reference reach area (see Section 6.1). As discussed in Section 6.1, the site could be classified as either the "blackwater" or "brownwater" subtype of small stream swamp. Therefore, the proposed planting plan is comprised of species listed under the "blackwater" and "brownwater" subtypes, as well as species that currently exist in the upstream reference area. Preferred canopy species to be planted include willow oak (*Quercus* phellos), swamp chestnut oak (*Quercus michauxii*), laurel oak (*Quercus laurifolia*), overcup oak (*Quercus* lyrata), blackgum (Nyssa sylvatica), swamp blackgum (Nyssa *biflora*), and bald cypress (*Taxodium* distichurn). Overcup oak, swamp blackgum, and bald cypress will be planted in the wettest areas.

Several other species typically associated with small stream swamp systems are present in the upstream reference area and wooded areas adjacent to the restoration site, including sweet gum (Liquidambar styraciflua), red maple (Acer rubrum), green ash (Fraxinus pennsylvanica), sweetbay magnolia (Magnolia virginiana), and American holly (Ilex opaca). These species are active colonizers, therefore it is not proposed that these species

be actively planted since over colonization would be a concern. However, it is anticipated that these species will colonize the site over time, resulting in a diverse community that is characteristic of small stream swamp systems.

The permanent seed mixture will be composed of Virginia wild rye (*Elymus virginicus*), switch grass (*Panicum virgatum*), and fox sedge (*Carex vulpinoidea*). This mixture will be spread over areas of disturbed soil to provide for immediate ground cover and erosion control when construction is completed.

Species selected for non-riverine restoration are considered to be weakly to moderately tolerant of flooding. Weakly tolerant species are able to survive and grow on sites in which soil is saturated for relatively short periods during the growing season. Moderately tolerant species are able to survive on soils that are saturated or flooded for several months during the growing season. Flood tolerant species are able to survive on sites in which the soil is saturated or flooded for long indefinite periods during the growing season (Wetlands Reserve Program (WRP) Technical Note VN-RS-4.1).

The occurrence of small hummocks, variations in soil texture and microtopography will result in a heterogeneous plant community with varying hydroperiods. This community type is known to grade into Small Stream Swamps at their headwaters.

The plant community types listed above are derived from *the Classification of the Natural Communities of North Carolina*, Schafale and Weakley (1990). Species selection generally follows tolerances cited in WRP Technical Note VN-RS-4.1 *Species Match Ensures Conversion of Wet Agricultural Fields to Bottomland Hardwood Wetlands*, March 1997. These documents, in combination, suggest a high probability that the selected plants will survive on the hydrologically restored fields of the Westbrook Lowgrounds site and will replicate the targeted natural systems.

Prior to planting, the mitigation area will be inspected for proper elevation and soil suitability. The site will be inspected at the completion of planting to determine that proper planting methods were used; including spacing, species composition, and density.

3.7 Soils

Existing soils within the restoration area are hydric (Pantego, see Section 2.1). Samples of top soil from the site will be collected and tested to determine soil fertility and chemical properties. If necessary, soil amendments (fertilizer, lime, etc.) will be applied at rates appropriate for the target vegetation. Since the land has been in agricultural production for a number of years, it is likely that soil fertility will be high and amendments will not be necessary.

Disking and tillage practices commonly used in agriculture will be used to break the plow pan and reduce compaction of the soil caused by years of agricultural production. Tillage practices will also be used to remove any field crowns, restoring a more natural topography to the site.

3.8 On-Site Preservation

The Bank Sponsor will preserve 70 acres of on-site acreage adjacent to Mill Creek (see Figure 1.4). The area will be verified by survey and a plat will be recorded with a conservation easement (Appendix 10) in the Johnston County Land Records. The easement is proposed to be held by the North Carolina Wildlife Habitat Foundation, subject to final approval by the MBRT. The format of the conservation easement in Appendix 10 is subject to the approval of the Corps counsel prior to recordation.

4 Success Criteria

Factors considered in establishing hydrologic success criteria include the site specific water budget (see Section 3.5 and Figure 3.5), soil types (see Section 3.7), and target wetland systems (see Section 3.1), as well as pertinent scientific literature, such as the quantifiable requirements referenced in documents developed for the purpose of wetland delineation, specifically the *1987 Corps of Engineers Wetlands Delineation Manual.*

Several examples of performance standards are discussed in the WRP Technical Note entitled *Examples of Performance Standards for Wetland Creation and Restoration in Section 404 Permits and an Approach to Developing Performance Standards* (WG-RS-3.3), dated January 1999. Specific and measurable success criteria for plant density within the Neu-Con Wetland and Stream Mitigation Umbrella Bank sites are based on the recommendations found in the WRP Technical Note and correspondence from MBRT members (EPA, June 15, 2001 and USFWS, December 19, 2000).

The proposed success criteria "... refer to practicably measurable or observable attributes that reflect compensatory mitigation objectives", which is consistent with the cited Technical Note (page 12).

4.1 Wetland Hydrologic Success Criteria

Hydrology will be monitored through the use of monitoring wells during each growing season for the first five years of hydrologic monitoring, or until success criteria have been met, whichever occurs later. To meet the hydrologic success criteria, the monitoring data must show that for each normal year within the monitoring period, the site has been inundated or saturated within 12 inches of the soil surface for a minimum of 9% of the growing season (21 consecutive days). WETS tables for Johnston County will be utilized to determine normal precipitation. If the restored site is inundated or saturated within 12 inches of the soil surface for less than 9% of the growing season (21 consecutive days), but the post-restoration monitoring data reflects that the site meets applicable Corps criteria for wetlands, then the Corps and the MBRT may consider the site for mitigation of in-kind impacts on a case-by-case basis.

If a normal year precipitation does not occur during the first five years of monitoring to meet success criteria, the bank sponsor will continue to monitor hydrology on the site until it documents that the site has been inundated or saturated as described above. In the alternative, and at the Corps' and MBRT's discretion, a site may be found to meet the hydrologic success criteria on the basis of comparison of monitoring data taken from the mitigation site, with monitoring data taken from an established reference site that was approved by the Corps and the MBRT. The Corps and the MBRT retain the discretion to find that the hydrologic success criteria are met if such monitoring data from the mitigation site and the reference site are substantially the same. This finding by the Corps and the MBRT may be made during years with or without normal rainfall.

In the event there are years of normal precipitation during the monitoring period, and the data for those years does not show that the site has been inundated or saturated as described above during the normal precipitation year, the Corps and the MBRT may require remedial action. The bank sponsor shall perform such required remedial action and continue to monitor hydrology on the site until it displays that the site has been inundated or saturated as described above.

4.2 Wetland Vegetative Success Criteria

The interim measure of vegetative success for the Westbrook Lowgrounds Mitigation Plan will be the survival of at least 320 3-year old planted trees per acre at the end of year three of the monitoring period. The final vegetative success criteria will be the survival of 260 5-year old planted trees per acre at the end of year five of the monitoring period.

Up to 20% of the site species composition may be comprised of invaders. Remedial action may be required should these species (i.e. Loblolly Pine, Red Maple, Sweet Gum) present a problem and exceed the 20% composition. Beneficial species regeneration should be noted within the monitoring reports.

A listing of preferred canopy species to be planted on the site provided in Section 3.6.

4.3 Reference Site

If the rainfall data for any given year during the monitoring period is not normal, and if the desired hydrology for the Westbrook Lowgrounds site is not on a trajectory to achieve success, then the reference wetland data can be accessed to determine if there is a positive correlation between the underperformance of the restoration site and the natural hydrology of the reference site.

The procedure described in Section 4.1 will be used to determine if normal rainfall has not occurred in any given year.

4.4 Stream Restoration Success Criteria

Bankfull Events

Two (2) bankfull flow events must be documented within the 5-year monitoring period. The two bankfull events must occur in separate years. Otherwise, the stream monitoring will continue until two bankfull events have been documented in separate years.

Cross Sections

There should be little change in as-built cross-sections. If changes do take place they should be evaluated to determine if they represent a movement toward a more unstable condition (down-cutting, erosion) or are minor changes that represent an increase in stability (settling, vegetative changes, deposition along the banks, decrease in width/depth ratio). Cross-sections shall be classified using the Rosgen stream

classification method and all monitored cross-sections should fall within the quantitative parameters defined from "E" or "C" type channels.

Longitudinal Profiles

The longitudinal profiles should show that the bedform features are remaining stable, e.g. they are not aggrading or degrading. The pools should remain deep with flat water surface slopes and the riffles should remain steeper and shallower than the pools. Bedforms observed should be consistent with those observed in "E" and "C" type channels.

Bed Material Analyses

The project stream reach is composed of bedforms in the sand size sediment fractions. Since the Wolman pebble count was created and tested in gravel bed streams, it is not applicable for a sand bed channel. It is highly unlikely that a pre- and post-restoration difference in the grain size distribution would be detectable in a sand bed channel. Therefore, we are recommending that a post-restoration bed material analysis be omitted from the monitoring plan.

Photo Reference Stations

Photographs will be used to subjectively evaluate channel aggradation or degradation, bank erosion, success of riparian vegetation and effectiveness of erosion control measures. Longitudinal photos should indicate the absences of developing bars within the channel or an excessive increase in channel depth. Lateral photos should not indicate excessive erosion or continuing degradation of the bank over time. A series of photos over time should indicate successional maturation of riparian vegetation.

5 Monitoring Plan

An as-built report documenting both stream and wetland restoration will be submitted to the MBRT within 60 days of the planting completion and well installation. The report will include elevations, photographs, well and sampling plot locations, and a description of initial species composition by community type. The report will also include a list of the species planted and the associated densities.

The monitoring program will be implemented to document system development and progress toward achieving the success criteria referenced in Sections 4.1, 4.2, and 4.4. Wetland hydrology and vegetation as well as the restored stream morphology will be assessed to determine the success of the mitigation. The monitoring program will be undertaken for 5 years or until the final success criteria are achieved, whichever is longer.

Monitoring Reports will be completed on the schedule found in the approved EBX-Neuse I Mitigation Banking Instrument (MBI) at Section V Maintenance and Monitoring of the Bank:

> Sponsor agrees to perform all necessary work to monitor the Bank and to demonstrate compliance with the Success criteria established in this Banking Instrument and the Site Specific Mitigation Plan(s). Members of the MBRT may conduct, at their own expense and in coordination with other Federal and State resource agencies, field investigations to determine the functions and values of the Bank. The MBRT's best professional judgment shall be used to determine wetland, upland and habitat functions and values. Reports resulting from such investigations will be promptly provided to Sponsor and its designated agents. The Sponsor may conduct field investigations at its own expense to determine the functions and values of the Bank. Reports resulting from such investigations will be promptly provided to members of the MBRT.

A. **Monitoring Reports.**

1. The Sponsor shall submit to each member of the MBRT, an annual report describing the condition of the Bank Site... in relation to the site specific Success Criteria. The report... will be prepared between July 1 and November 15 and shall include vegetation and hydrologic data.... The report... will indicate the dates at which all information in the report was collected. Monitoring reports will be submitted on or before November 30th of each monitoring year and shall contain the following:

(a) A U.S. Geological Survey map showing locations of the Bank Sites;

(b) A detailed narrative summarizing the condition of the Bank Sites and all regular maintenance activities;

(c) Appropriate topographic maps (e.g., 1-2 feet-contour intervals) showing location of sampling plots, permanent photo points, location of transacts, etc.;

(d) Digital photos showing views of the Bank Sites taken from fixed-point stations from a height of approximately five to six feet. Permanent markers shall be established to ensure that the same locations (and view directions) on the site are monitored in each monitoring period;

(e) Hydrologic information, as specified in each Site Specific Mitigation Plan[;]

(f) Vegetation Data, as specified in each Site Specific Mitigation Plan[;]

(g) Soils Data (if required)…[;]

(h) Identify any invasion by undesirable plant species. Quantify the extent of invasion of undesirable plants by either stem counts, percent cover, or area, whichever is appropriate[;]

(i) Describe and/or quantify damage done by animals[;]

(j) Wildlife observations: For casual observations, record the date of observation, number of individuals, presence of juveniles and use of the site by wildlife[; and]

[(k) Reference wetland hydrology data.]

2. Reports shall be required for each phase of the Bank following the end of the first growing season after planting and in accordance with the following schedule:

Once during first year after completion of construction (Year 1)
Once during second year after construction completion (Year 2)
Once during third year after construction completion (Year 3)
Once during fourth year after construction completion (Year 4)
Once during fifth year after construction completion (Year 5)

B. **Remedial Actions.**

In the event the Bank or a specific phase of the Bank fails to achieve the Success Criteria specified in the Site Specific Mitigation Plans, the Sponsor shall develop necessary adaptive management plans and/or implement appropriate remedial actions for the Bank for that phase in coordination with the MBRT. The MBRT shall review the reports described above, and may, at any time, after consultation with the Sponsor and the MBRT, direct the Sponsor to take remedial action at the Bank site. Remedial action required by the Corps shall be designed to achieve the Success Criteria specified in this Site Specific Mitigation Plans, and shall include a work schedule and monitoring criteria that will take into account physical and climactic conditions. Sponsor shall implement any remedial measures required pursuant to this paragraph.

5.1 Hydrology

The hydrologic success criterion is defined in section 4.1.

In order to determine if the criteria is achieved, three (3) automated and (2) manual groundwater-monitoring stations will be installed at the mitigation site and monitored year-round.

Ground water monitoring stations will follow the USACE standard methods found in WRP Technical Notes ERDC TN-WRAP-00-02, July 2000 as per MBRT recommendations (stations installed prior to September 2001 were installed following Technical Note HY-IA3.1, August 1993).

In order to determine if the rainfall is normal for the given year, rainfall amounts will be tallied using data obtained from the Johnston County WETS Station.

5.2 Vegetation

The vegetation success criteria is defined in Section 4.2.

Successful restoration of the vegetation on a wetland mitigation site is dependent upon hydrologic restoration, active planting of preferred canopy species, and volunteer regeneration of the native plant community.

In order to determine if the criteria are achieved, vegetation-monitoring stations will be installed on approximately 2% of the restoration site, for a total of 13 monitoring plots. The size of individual monitoring plots will be 0.1 acre. Vegetation monitoring will occur in spring after leaf-out has occurred. Individual plot data for woody species will be provided. Plot data will not be averaged over the entire site to obtain a single figure for stem density. Permanent plots for the sampling of planted species shall be randomly located in each of the target communities. The enumeration of the density of planted species will equal the number of remaining stems in the plot divided by the plot (in acres). Individual seedlings will be marked such that they can be found in succeeding monitoring years. Mortality will be determined from the difference between the previous year's living planted seedlings and the current year's living planted seedlings.

The monitoring reports will be consistent with the Neu-Con MBI, as referenced above. At the end of the first growing season, species composition, density, and survival will be evaluated. For each subsequent year, until the final success criteria is achieved, the sites will be evaluated between July and November.

The Corps and the MBRT retain the discretion to find that the vegetative success criteria are met by evaluating all site data regarding vegetative success, including the data from the vegetative monitoring plots.

5.3 Stream Restoration

The stream restoration success criteria are defined in Section 4.4.

Bankfull Events

The occurrence of bankfull events within the monitoring period will be documented by the use of a crest gage and photographs. The crest gage will be installed on the floodplain within 5 feet of the restored channel. The crest gage will record the highest watermark between site visits, and the gage will be checked each time there is a site visit to determine if a bankfull event has occurred. Photographs will be used to document the occurrence of debris lines on the floodplain during monitoring site visits.

Cross Sections

Two (2) permanent cross-sections will be installed per 1,000 linear feet of stream restoration work, with one (1) of the locations being a riffle cross-section and one (1) location being a pool cross-section. Each cross section will be marked on both banks with permanent pins to establish the exact transect used. A common benchmark will be used for cross-sections and consistently used to facilitate easy comparison of year-to-year data. The annual cross section survey will include points measured at all breaks in slope, including top of bank, bankfull, inner berm, edge of water, and thalweg. Riffle cross sections will be classified using the Rosgen stream classification system.

Longitudinal Profiles

A complete longitudinal profile will be completed in years one, three, and five. The profile will be conducted for a length of restored channel at least 3,000 feet in length. Measurements will include thalweg, water surface, inner berm, bankfull, and top of low bank. Each of these measurements will be taken at the head of each feature, e.g. riffle, run, pool, and glide, and the max pool depth. The survey will be tied to a permanent benchmark.

Photo Reference Stations

Photographs will be used to visually document restoration success. Reference stations will be photographed before construction and continued for at least 5 years following construction. Reference photos will be taken once a year. After construction has taken place, reference stations will be marked with wooden stakes.

Lateral reference photos: Reference photo transects will be taken at each permanent cross section. Photographs will be taken of both banks at each cross section. The survey tape will be centered in the photographs of the bank. The water line will be located in the lower edge of the frame and as much of the bank as possible included in each photo. Photographers should make an effort to consistently maintain the same area in each photo over time.

Structure photos: Photographs will be taken at each grade control structure along the restored stream. Photographers should make every effort to consistently maintain the same area in each photo over time.

Benthic Macroinvertebrates

Benthic macroinvertebrate data will be collected from the reference reach (upstream of project reach) and within the project reach. Monitoring will be conducted prior to initiation of stream restoration practices (data provided in Section 2.7). Post-restoration sampling will begin one year after construction activities have been completed, and annually thereafter for a total of three years. Sampling will be conducted each year between November and February, since the stream in the past has experienced periods of very low flow during summer months. Data will be collected at the same time as fish sampling data, during similar seasonal periods for each year of analysis.

Sample collection will follow protocols described in the standard operating procedures of the Biological Assessment Unit of the NC Division of Water Quality. The Qual-4 collection method will be used for this project. A NC certified laboratory will conduct the identification of the biological samples. The metrics to be calculated will include total and EPT taxa richness, EPT abundance and biotic index values. In the years that data are collected, data will be provided to the MBRT with the annual monitoring reports.

Fish Sampling

Fish sampling will be conducted on a 100 meter long section of the reference reach (upstream of project reach) and on a 100 meter long section of the restored project reach. Monitoring will be conducted prior to initiation of stream restoration practices. Post-restoration sampling will begin in the third year after construction activities have been completed, and annually thereafter in years four and five. Fish sampling will be conducted in the specified years between November and February, since the stream in the past has experienced periods of very low flow during summer months. Data will be collected at the same time as benthic macroinvertebrate data, during similar seasonal periods for each year of analysis.

Sample collection will follow protocols described in the standard operating procedures of the Biological Assessment Unit of the NC Division of Water Quality. One backpack sampling unit will be used to shock the sample reach, and two passes will be made with the shocker in each reach. All species collected will be identified along with the number of species collected and size. In the years that data are collected, data will be provided to the MBRT with the annual monitoring reports.

6 Reference Wetland and Stream Site

6.1 Overview of the Reference Site

The reference site for this project is located approximately 1,000 feet upstream along the same stream (Johannah Creek) that flows through the project site (see Figure 1.1). The site is an example of a "Coastal Plain small stream swamp", as described by Schafale and Weakley (1990). These systems exist as the floodplains of small "blackwater" and "brownwater" streams in which separate fluvial features and associated vegetation are too small or poorly developed to distinguish. It is difficult to define whether the site is of the "brownwater" or "blackwater" subtype, since the site exhibits features of both subtypes. Schafale and Weakley characterize the "brownwater" subtype as having its headwater originating in the Piedmont, while the "blackwater" subtype originates in the Coastal Plain. Although the reference site lies very near the fall line between the Piedmont and Coastal Plain physiographic regions, most delineations of the fall line boundary would place the origin of the reference site stream in the Coastal Plain, and therefore the system would be considered the "blackwater" subtype. Hydrology of these systems is palustrine, intermittently, temporarily, or seasonally flooded. Flows tend to be highly variable, with floods of short duration, and periods of very low flow. The "Coastal Plain small stream swamp" wetland system would be typical for the watershed size and the geomorphologic setting of the site.

It appears that the site has experienced little disturbance in recent time and is believed to be representative of undisturbed conditions on the project site. The reference site will be used as a template for the restoration of the project site. Wetland data forms for the site are provided in Appendix 7.

6.2 Reference Site Soils

The reference site is located in the transition area between the Coastal Plain and Piedmont physiographic regions of North Carolina just upstream of the project site. Soils located within the wetland areas of the reference site are mapped as the Bibb and Pantego series (SCS, 1994). The Bibb series consists of poorly drained soils typically found on floodplains along streams in the Coastal Plain. Permeability is moderate, and the seasonal high water table is within 0.5 to 1.5 feet of the soil surface. The Pantego series consists of poorly drained soils typically found on broad stream terraces on the Coastal Plain and is the same soil that underlies all of the restoration acreage. In the undrained condition, permeability is moderate, and the seasonal high water table is within one foot of the soil surface in winter and spring. The Pantego and Bibb soil series are listed as "A" list hydric soils by the Natural Resources Conservation Service (NRCS, 1995). On the upslope areas adjacent to the wetland areas, soils of the Uchee, Blanton, and Bonneau series are found.

Two auger hole tests were performed within the wetland area to verify soil information obtained from the Johnston County soil survey maps. These tests revealed that the soils on the reference site match most closely with the soil description for the Pantego series,

which is the primary soil found on the restoration site. The reference site soils have a deep, dark loamy layer to a depth of approximately two to three feet, underlain by a layer of sandy clay loam material to a depth of approximately 4.5 feet. At a depth of approximately 4.5 feet, a layer of sand is reached and extends to an undetermined depth.

Saturated hydraulic conductivity measurements were conducted in the reference site using the method described by van Beers (1970). Hydraulic conductivity in the surface layers (0 – 0.6 m depth) was approximately 3 – 4 m/day, while the underlying layers (0.6 – 1.5 m depth) was 1 – 2 m/day.

6.3 Reference Site Hydrology

Climatic conditions of the reference site are the same as those described for the project site (Section 2.2). The reference site is classified as a "Coastal Plain small stream swamp" (Shafale and Weakley, 1990). It is difficult to distinguish the site as either the "blackwater" or "brownwater" subtype, as the site displays characteristics of both communities. Small stream swamp communities are palustrine with variable flows and are intermittently, temporarily, or seasonally flooded (Shafale and Weakly, 1990). Site hydrology is controlled by the main stream channel that flows through the site, as well as several small drainages that flow onto the site and provide additional water to the floodplain areas during wet periods. Due to the shallow, unincised condition of the main stream through the site and drainage from upland side slopes, high water table conditions are sustained across the active floodplain (see Figure 6.1).

A water table monitoring well was installed within the reference site and maintained by Wetland and Natural Resources Consultants, Inc. Monitoring data were collected from June 2001 through February 2002 and are provided in Figure 6.2. Based on the data collected, the site exhibits wetland hydrology, and will likely exhibit a high degree of saturation and wetness during the wetter periods of the year (late fall, winter, and early spring). For the period of record provided, the longest consecutive number of days with the water table less than 12 inches deep during the growing season was approximately 47 days.

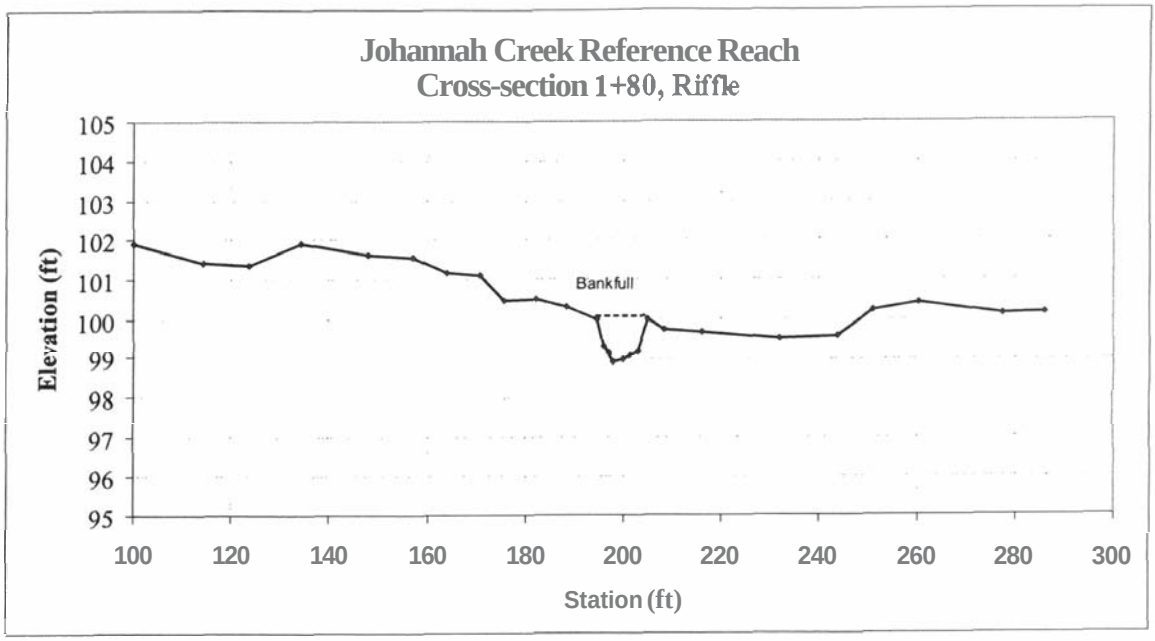


Figure 6-1 Cross-section of reference reach stream and floodplain. Locations of wetland edges were based on soil profiles (elevations are relative to arbitrary benchmark on site).

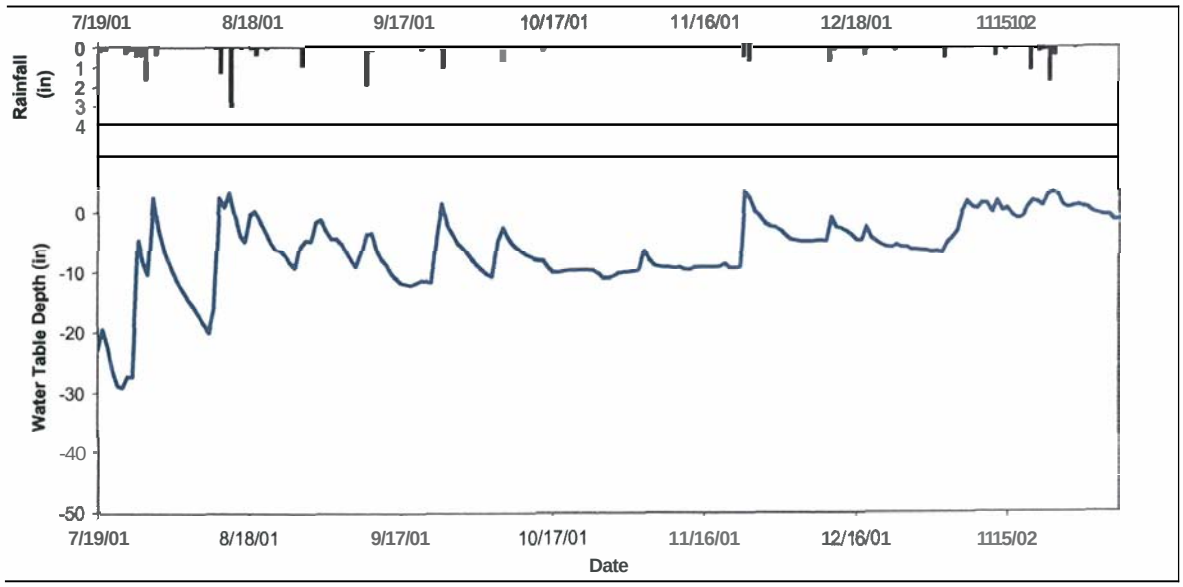


Figure 6-2 Water table depths recorded in a monitoring well installed within the reference site.

6.4 Reference Stream Assessment

The stream flowing through the reference site is a small, meandering, sand-bed channel. The drainage area for the stream is approximately 0.9 sq. mi. in size and land use in the watershed is primarily forest with some agriculture on the upland terraces. Along nearly the entire length from its headwaters to the reference site, the stream is wooded. One paved road crosses the stream (Bentonville Road, SR 1197) approximately 3,000 feet upstream of the reference site.

Field surveys of the reference site were conducted in the summer of 2001. Survey data were used to evaluate the natural channel parameters describing the dimension, pattern, and profile of the stream. Natural channel parameters are summarized in the Table 3.1.

The stream is classified as an "E5/C5" channel using the Rosgen Stream Classification method (Rosgen, 1994). Longitudinal profile and cross-sections are presented in Appendix 7. The channel is classified as an "E/C" channel since the average width/depth ratio is 12, the breakpoint between classifying a channel as an "E" (< 12) or "C" (> 12). "E" type channels typically have a low width/depth ratio (< 12) and are only slightly entrenched. "E" type streams are commonly found in the Coastal Plain where nearly level land slopes and dense vegetation promote the establishment of a meandering, low width/depth ratio stream channel. "C" type channels are more typical of higher gradient gravel-bed stream systems which meander through alluvial valleys. "C" type streams typically form point-bar features as a result of the relatively high amount of bedload that is transported. For both type streams, out-of-bank flooding occurs at stages greater than the bankfull flow. The "5" indicates that the stream is a sand bed system. Median particle size of the bed material is approximately 0.7 mm (see Appendix 7 for particle size distribution data). The reference reach stream has appropriate bed features for a sand-bed system, with shallow pools in the meander bends, and deeper pools formed by scour features such as roots and debris jams.

Unlike many other stream systems located in agricultural watersheds, the section of channel surveyed for the reference reach shows no evidence of having been altered or channelized in the recent past. Trees can be found within the riparian area that appear to be in excess of 50 years of age. The channel has good meander pattern with low bank heights. As a result, flooding of the adjacent riparian wetland areas occurs frequently.

Bankfull Verification

Bankfull verification for the reference reach followed the same procedure as described for the project reach (Section 3.2). For the reference reach section, the field indicator of bankfull stage was the top of the streambank. Bankfull cross-section areas were plotted on the same regional curve information presented in Section 3.2, as shown in Figure 6.3 below. The plotted cross-sectional areas match closely with the local data and the project reach data, indicating that bankfull was correctly identified in the field.

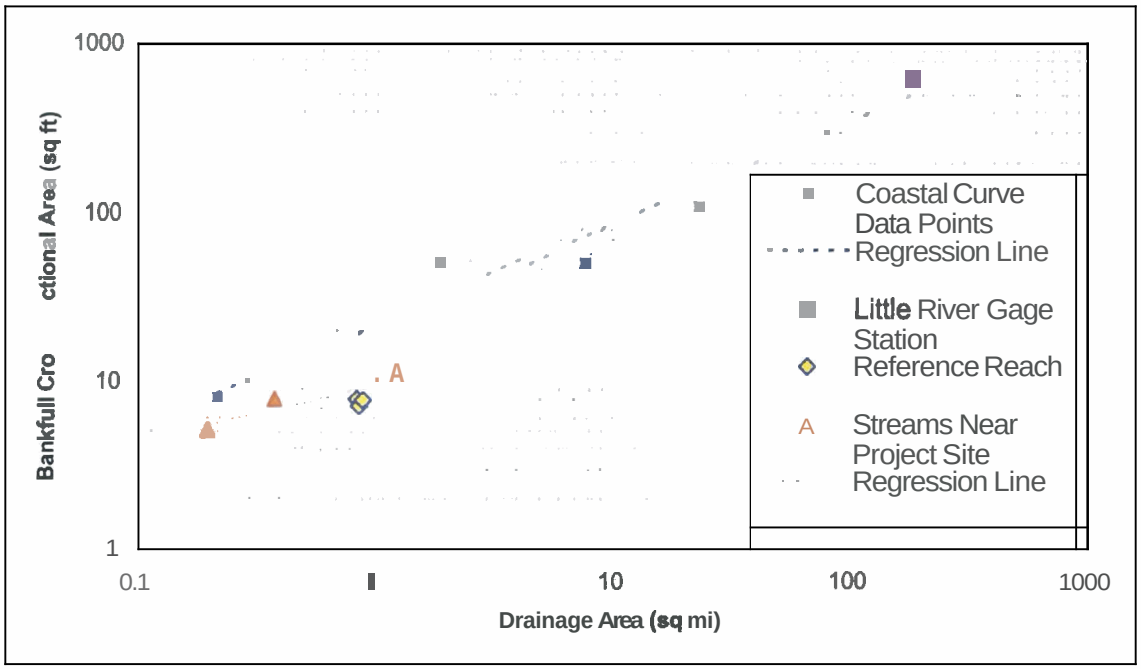


Figure 6-3 North Carolina Coastal Regional Curve with data collected from the Johannah Creek reference reach (regional cuwe data provided by the NC Stream Restoration Institute).

6.5 Reference Site Vegetation

The reference site is well buffered along both stream banks with tree species that include sweet gum *(Liquidambar styraciflua)*, red maple *(Acer rubrum)*, willow oak *(Quercus phellos)*, water oak *(Quercus nigra)*, swamp chestnut oak *(Quercus michauxii)* and green ash *(Fraxinus pennsylvanica)*. The small tree/shrub layer is dominated by sweetbay magnolia *(Magnolia virginiana)*, American holly *(Ilex opaca)*, sugarberry saplings *(Celtis laevigata)*, giant cane *(Arundinaria gigantea)*, elderberry *(Sambucus canadensis)*, leucothoe *(Leucothoe axillaris)*, sweet pepperbush *(Clethra alnifolia)*, beautyberry (*Callicarpa americana)*, and blackberry *(Rubus* spp.). The herb and vine strata contain false nettle *(Boehmeria cylindrica)*, jewel-weed *(Impatiens capensis)*, cinnamon fern *(Osmunda cinnamomea)*, sensitive fern *(Onoclea sensibilis)*, green-briar *(Smilax* spp.) Virginia creeper *(Parthenocissus quinquefolia)*, grape *(Vitis* spp.), poison ivy *(Toxicodendron radicans)*, and honeysuckle *(Lonicera japonica)*.

6.6 Benthic Macroinvertebrates

Benthic macroinvertebrate samples were collected at two sites within and upstream of the project area on January *17, 2002.* One sampling site is located within the downstream section of the project reach below SR *1198,* while the other sampling site (reference reach) is located upstream of the project reach above SR *1198* (Figure *1.2).* Sampling was not conducted during the summer months due to drought conditions which resulted

in low flow conditions in the stream. The sampling methodology followed the Qual-5 protocol listed in the NCDWQ's *Standard Operating Procedures for Benthic Macroinvertebrates*. A summary of the benthic macroinvertebrate sampling results at each location is presented in Table 2.4, with complete results presented in Appendix 3.

Discussion of the sampled macroinvertebrate data is presented in section 2.7. In addition, a memorandum written by NC Division of Water Quality describing their interpretation of the macroinvertebrate data is also provided in Appendix 3.

7 Administrative and Regulatory

7.1 HUC Service Area

The site will serve impacts in HUC 03020201. (See Appendix 8)

7.2 Credit Release for Wetland Restoration

The schedule of credit availability will be dictated by the provisions of IV E.1(a) of the Neu-Con MBI. It provides as follows:

1. Schedule of Credit Availability:

    a. Advance Credits: Fifteen percent (15%) of the projected credit total for each site (other than preservation acreage) shall be available for advance sale and debiting, provided the following minimum requirements have been satisfied with regard to the Bank: (i) the Banking Instrument has been approved; (ii) the Site Specific Mitigation Plan has been approved; and (iii) a conservation easement is placed on a Bank Site or on approved phase of a Bank Site; and (iv) appropriate financial assurances of a type and amount acceptable to the Corps and the MBRT have been established. Initial physical and biological improvements necessary to achieve projected credits available for advance sale shall be initiated no later than the first year following initial debiting from the Bank.

    For preservation acreage, the projected credit total shall be available for sale and debiting provided the restoration requirements have been met and the following minimum requirements have been satisfied with regard to the Bank: (i) the Banking instrument is executed and the Site Specific Mitigation Plan has been approved by the MBRT; (ii) credits are established consistent with Section I.F.3 and the Site Specific Mitigation Plan; (iii) a conservation easement is placed on the Bank Site or approved phase of a Bank Site that generates the preservation credits; and (iv) appropriate financial assurances of a type and amount acceptable to the Corps and the MBRT have been established, only if such preservation acreage is used in conjunction with restoration, creation or enhancement acreage and such financial assurance is necessary for the restoration, creation and enhancement acreage.

    b. Credit Release Schedule:

    -10% after first year, if interim success measures are met (total 25%)
    -10% after second year; if interim success measures are met (total 35%)
    -10% after third year; if interim success measures are met (total 45%)
    -15% after fourth year; if interim success measures are met (total 60%)
    -15% after fifth year; if Success Criteria are met (total 75%); and

-25% after fifth year, if Bank Site or an approved phase of a Bank Site meets the overall objectives and Success Criteria set forth in Site Specific Mitigation Plan (total 100%).

If the monitoring period suggests that progress for the Success Criteria is being met, then the credits shall be released consistent with the above schedule. The MBRT shall review and make its determination with respect to the Success Criteria within 60 days after receipt of the Sponsor's report. If one or more Success Criteria is not being met, then the Sponsor will evaluate opportunities for adaptive management or remedial bio-engineering. Adaptive management may include, but not be limited to, installation of additional plant material, supplementation of the vegetative community, control of undesirable invasive exotic species, control of herbivores, modification of hydrologic regime, or possible revision of Success Criteria based on reference site data or literature.

2. Compliance with Success Criteria:

Except as provided in Section IV.E.1.a, each unit of credit release as referenced in Section III.E.1.b above shall be accepted into the Bank (available for debit) and the appropriate transaction recorded as described in Section III.G upon delivery of the Annual Monitoring Report. If one or more Success Criteria is not being met, then the Sponsor will evaluate opportunities for adaptive management or remedial bio-engineering as deemed appropriate by MBRT.

7.3 Credit Release for Stream Restoration

The schedule of credit availability will be dictated by the provisions of IV E.1(a) of the Neu-Con MBI, which provides, in part, that the MBRT will determine the credit release schedule.

7.4 Credit Ratios

The credit ratios for the Westbrook Lowgrounds site, as stated in the Neu-Con MBI, are as follows:

"The credit composition formula and procedures provided herein are designed to ensure that there is no net loss of wetlands due to the use of this Bank. Credits will be evaluated using the following standard:

		Ratio
Restoration Acres	= R	(1:1)
Creation Acres	= C	(3:1)
Enhancement Acres	= E	(2:1)
Preservation Acres	= P	(5:1)

Stream restoration credits will be assessed as specified by MBRT."

The stream restoration credit ratio will be assessed at 1:1 (linear feet) consistent with applicable guidelines.

A total of 65 acres of restoration is proposed and therefore 65 credits are proposed to be generated for the wetland acreage. A total of 70 acres of on-site preservation is proposed and therefore a total of 14 credits are proposed to be generated from the preservation acreage. A total of 79 credits will be generated from 135 acres of the Westbrook Lowgrounds site. A total of 5,400 linear feet of stream restoration is proposed and therefore 5,400 linear feet of credits will be generated for the stream.

Table 7-1 Wetland and Stream Credit Chart

Credit		Wetlands		Streams		Total			
Type	Ratio	Acres	Credits	Linear Feet	Credits	Acres	Linear Feet	W Credits	S Credits
Restored Wetlands	1:1	65	65	---	---	65	---	65	---
Preserved Wetlands	5:1	70	14	---	---	70	---	14	---
Restored Stream	1:1	---	---	5,400	5,400	---	5,400	---	5,400
Total	---	135	79	5,400	5,400	135	5,400	79	5,400

7.5 Credit Accounting

Credit accounting will follow the procedures set forth in Section G of the Neu-Con MBI, as follows: (See Appendix 9 for Credit Accounting Ledger)

A. **Crediting/Debiting and Accounting Procedures**

1. Each credit for compensatory wetland mitigation shall be comprised of acreage consistent with the terms of Section I.F. of this Banking Instrument. Each credit for stream mitigation shall be consistent with the MBRT guidelines. Areas that are available for stream restoration crediting may be considered separately from the area available for wetlands mitigation crediting. Applicants may purchase credits from the Bank to compensate for unavoidable wetland or stream impacts caused by projects authorized by the Corps or by any North Carolina agency when the permitting agency determines that compensatory mitigation is necessary or appropriate and that the Bank is appropriate for use.

2. Sponsor will establish and maintain an accounting system which documents the activity of the accounts and the location of the credits used from the Bank. As part of this accounting system, Sponsor will record the sale of credits used to compensate for impacts to wetlands

and the sale of credits used to compensate for impacts to streams. A ledger will be submitted to identify the location of the actual wetland acreage or stream footage associated with the credits. Statements will be generated each time an approved debit/credit transaction occurs and at the end of each season in which restoration and/or creation occurs. Sponsor will furnish copies of all statements generated from an approved debit/credit transaction to each member of the MBRT. Sponsor also will compile an annual report on activity in the Bank and distribute a copy of such report to each member of the MBRT.

7.6 Conservation Easement

Consistent with Section III G of the Neu-Con MBI, a conservation easement will be placed over the preservation, restoration, enhancement, or creation acreage in its entirety, in perpetuity, prior to the release of any credits from the site. The easement will be recorded in the chain of title and will be held by a qualified land trust, non-profit organization or government entity. A copy of a sample Conservation Easement is attached (see Appendix 10). Consistent with Section III G.2, to the extent a conservation easement is placed on acreage that is approved for credit release and the Bank Sponsor determines that such acreage will not be debited or used, such acreage may be released from the preservation requirement upon written notice to and approval from the MBRT.

The Bank Sponsor has identified as the potential easement holder for the project property the North Carolina Wildlife Habitat Foundation.

7.7 Financial Assurances

The financial assurances shall be consistent with the provisions set forth in III.F of the Neu-Con MBI. It provides as follows:

F. Financial Assurance Requirements:

1. ...The sponsor will provide financial assurance in a form and amount acceptable to the Corps and the MBRT. The financial assurance shall be sufficient to cover the cost of the following in the event of Sponsor default or Bank failure at sites from which credits have been debited, where wetlands or streams are being restored, created or enhanced:

   a. Actions necessary for the debited, pre-sold wetland areas, streams and riparian corridor (exclusive of preservation acreage) in accordance with the Banking Instrument and Site Specific Mitigation Plans. These shall include costs of site design, topographic and boundary surveys, manipulation of site hydrology, monitoring well installation, grading, planting, as-built surveys, and an amount deemed appropriate by the MBRT to cover potential remedial actions in the event Success Criteria are not met.

b. Maintenance of completed wetland areas, streams and riparian corridor (exclusive of preservation acreage) in accordance with the Banking Instrument and Site Specific Mitigation Plans, including sediment control, control of the undesirable plant species, maintenance of hydrologic control structures and maintenance of monitoring wells.

c. Monitoring and reporting as required by Section V of this Banking Instrument.

2. Upon completion of the Bank or any site or segment thereof:

a. Financial assurance required by this Section III.F. may be reduced for the Bank or for any completed phase upon demonstration by the Sponsor, to the satisfaction of the Corps and the MBRT, that the Bank, site or any approved phase of a Bank Site has satisfied the Success Criteria;

b. Financial assurance required by this Section III.F. may be further reduced or eliminated for the Bank or for an approved phase of a Bank Site when Sponsor demonstrates, to the satisfaction of the Corps and the MBRT, that the Bank, segment or site is self-sustaining in its ability to maintain compliance with the Success Criteria.

EBXN-I attaches hereto in Appendix 11, financial assurances that exceed the requirements set forth in III.F of the Neu-Con MBI.

7.8 Title

A title opinion for the sale of real property that constitutes the Westbrook Lowgrounds mitigation site is attached as Appendix 12.

8 References

Evans, R. O. and R. W. Skaggs. 1985. Agricultural water management for Coastal Plain soils. Published by the North Carolina Agricultural Extension Service. Paper AG-355.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina, Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, NCDEHNR, Raleigh, North Carolina.

Skaggs, R. W. 1980. DRAINMOD Reference Report: Methods for design and evaluation of drainage-water management systems for soils with high water tables. U. S. Department of Agriculture, Soil Conservation Service. 329 pp.

US Army Corp of Engineers. 1987. Corp of Engineers Wetland Delineation Manual. Technical Report Y-87-1. US Army Corp of Engineers, Waterways Experiment Station

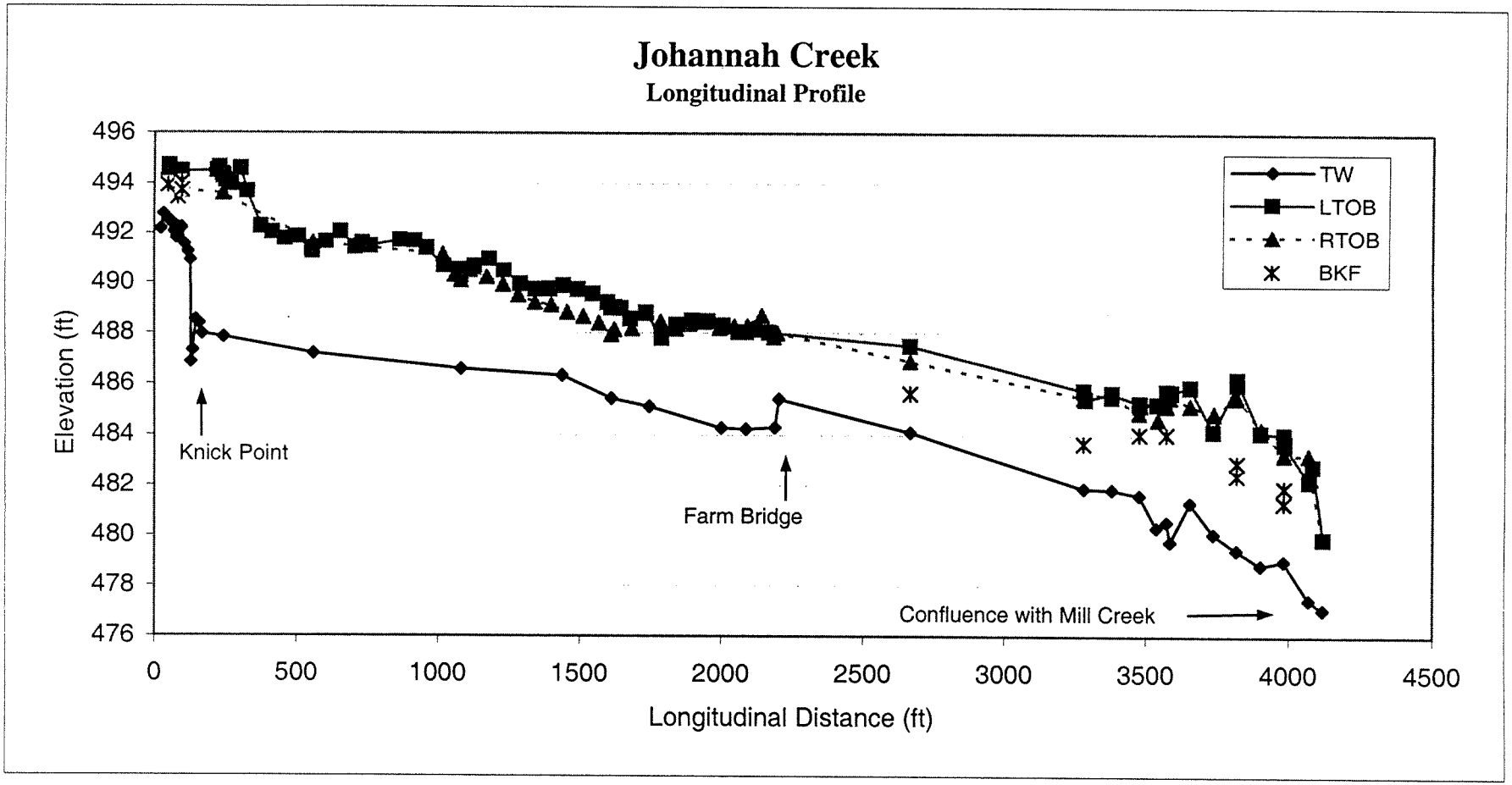
U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), Soil Survey Division. 1995. Hydric Soils of North Carolina.

US Department of Agriculture, Natural Resources Conservation Service (NRCS). 1997. Part 650, Chapter 19 of the NRCS Engineering Field Handbook: Hydrology Tools for Wetland Determination.

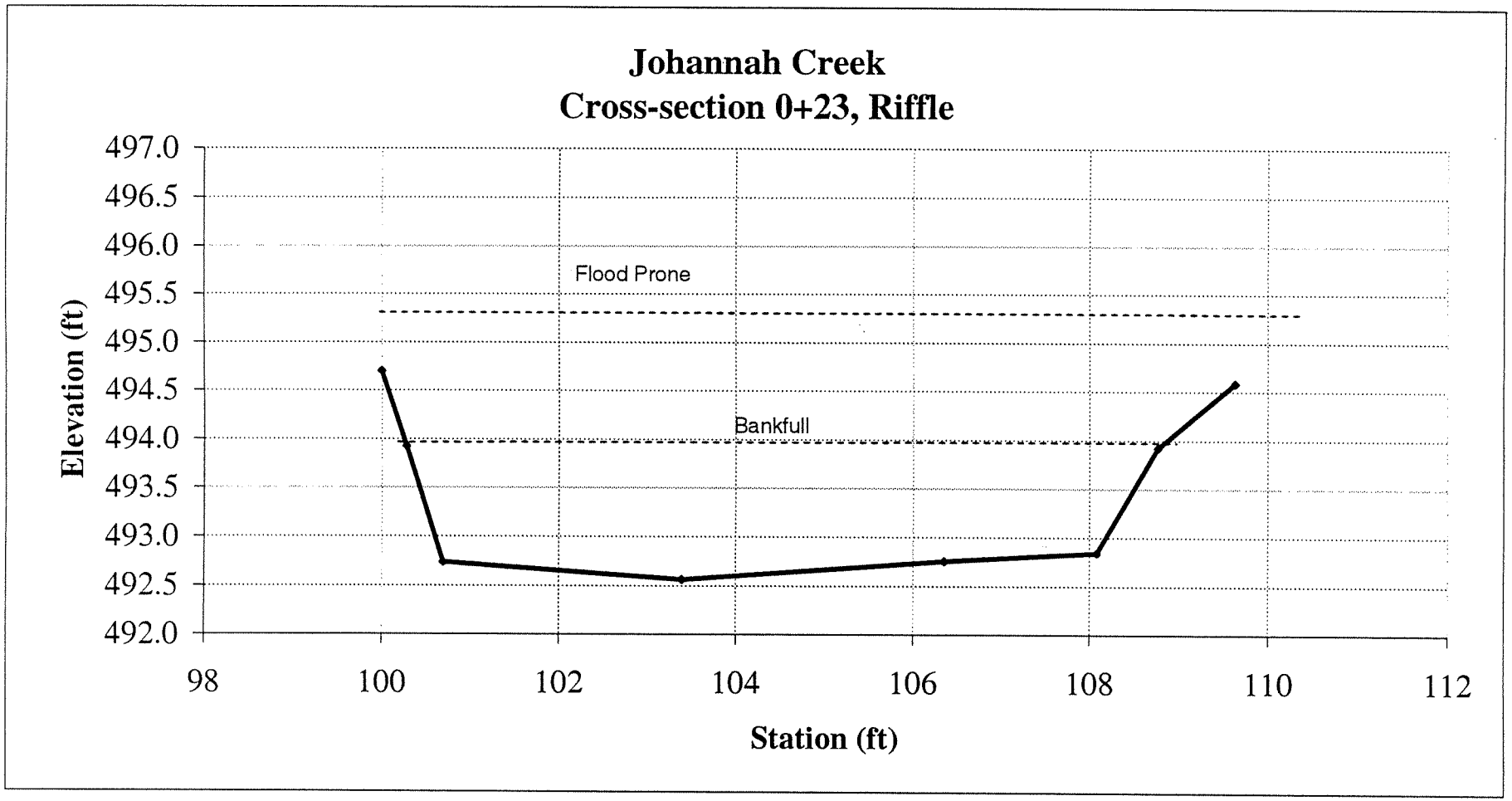
U.S. Department of Agriculture, Soil Conservation Service (SCS). 1994. Soil Survey of Johnston County, North Carolina.

van Beers, W. F. J. 1970. The auger-hole method: a field measurement of hydraulic conductivity of soil below the water table. Rev. ed. ILRI Bulletin 1, Wageningen, 32 pp.

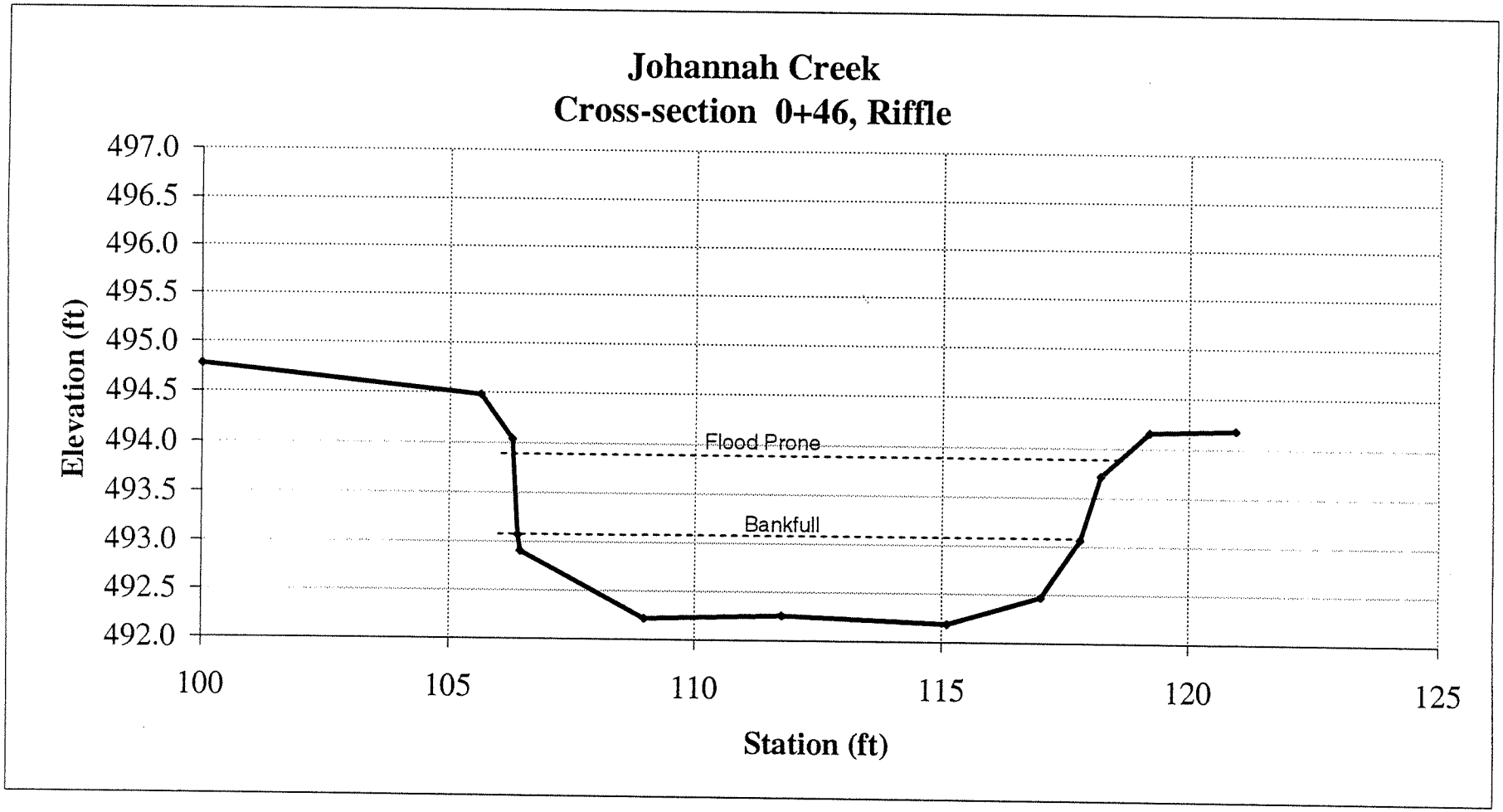
Appendix 1. Existing Condition Profile, Cross Sections, and Bed Material Analyses for Johannah Creek


Johannah Creek
Longitudinal Profile
Elevation (ft)
496
494
492
490
488
486
484
482
480
478
476
0
500
1000
1500
2000
2500
3000
3500
4000
4500
Longitudinal Distance (ft)
TW
LTOB
RTOB
BKF
Knick Point
Farm Bridge
Confluence with Mill Creek

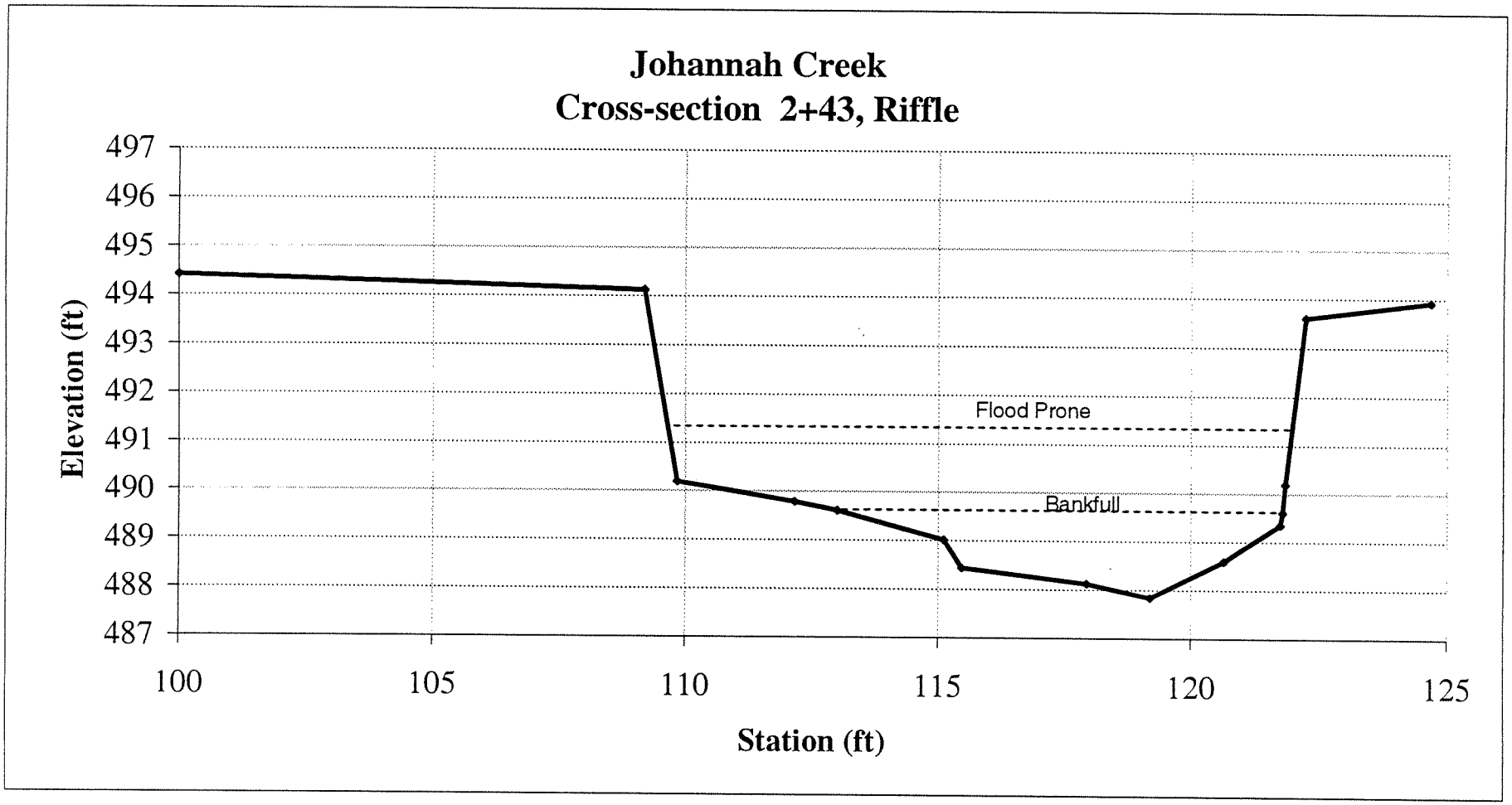
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	E	100	100.3	108.8	493.92	8.5	1.1	7.7	9.4	1.4	11.8	1.5



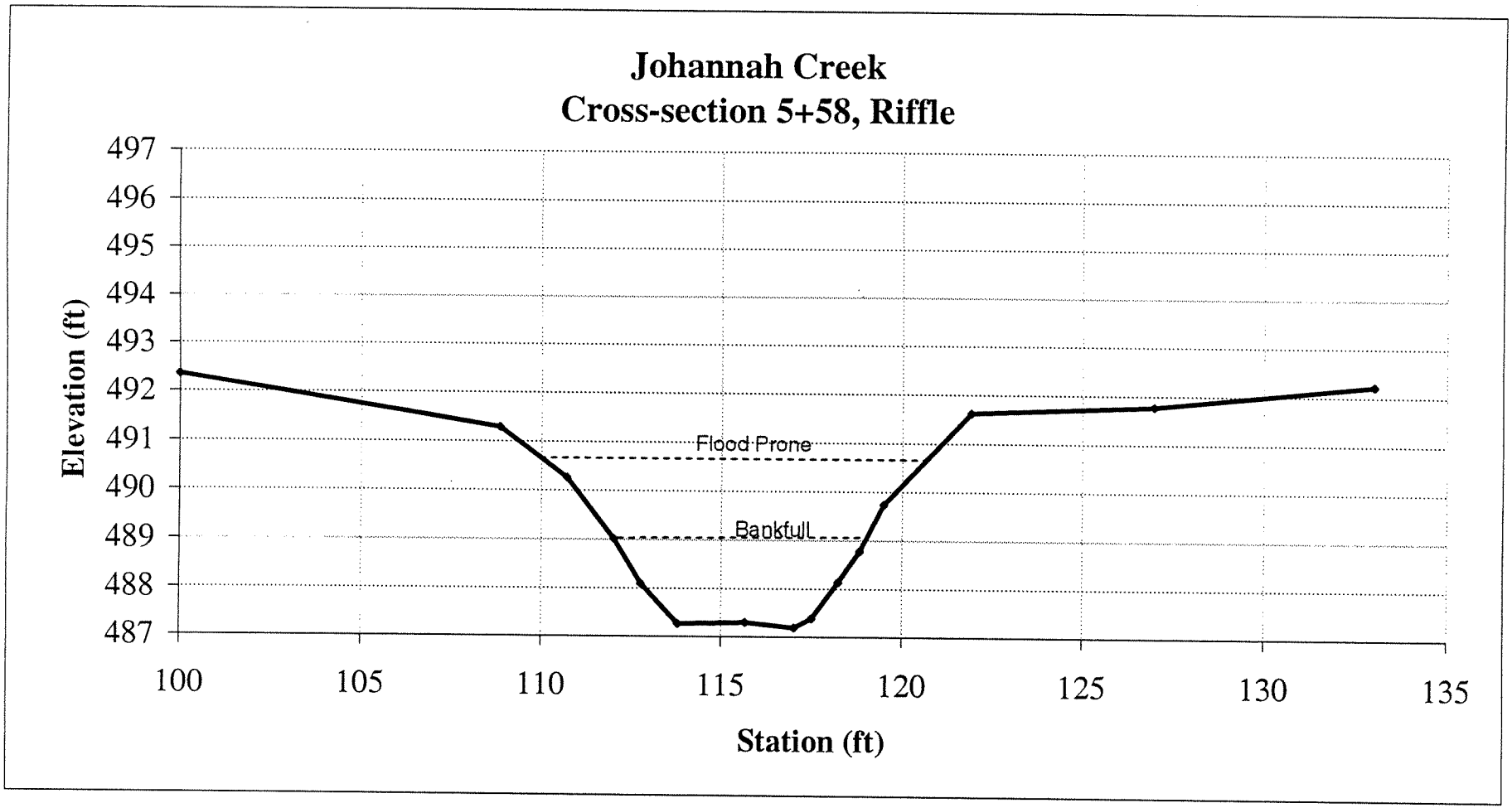
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	F	12.4	106.4	117.8	493.07	11.4	0.7	16.0	8.1	0.9	1.1	2.2



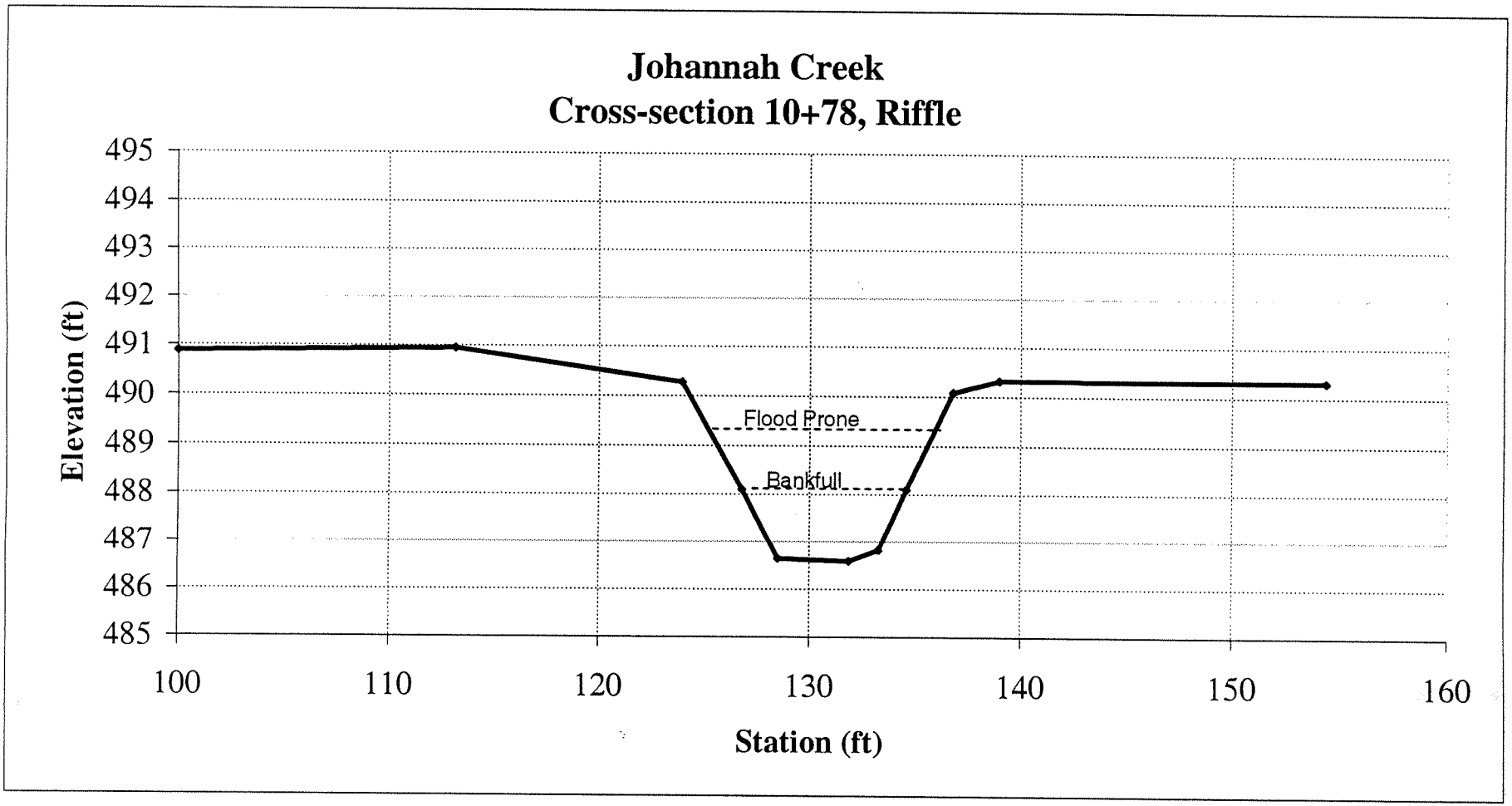
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	12.3	113.0	121.8	489.60	8.8	1.0	8.7	8.9	1.8	1.4	3.3



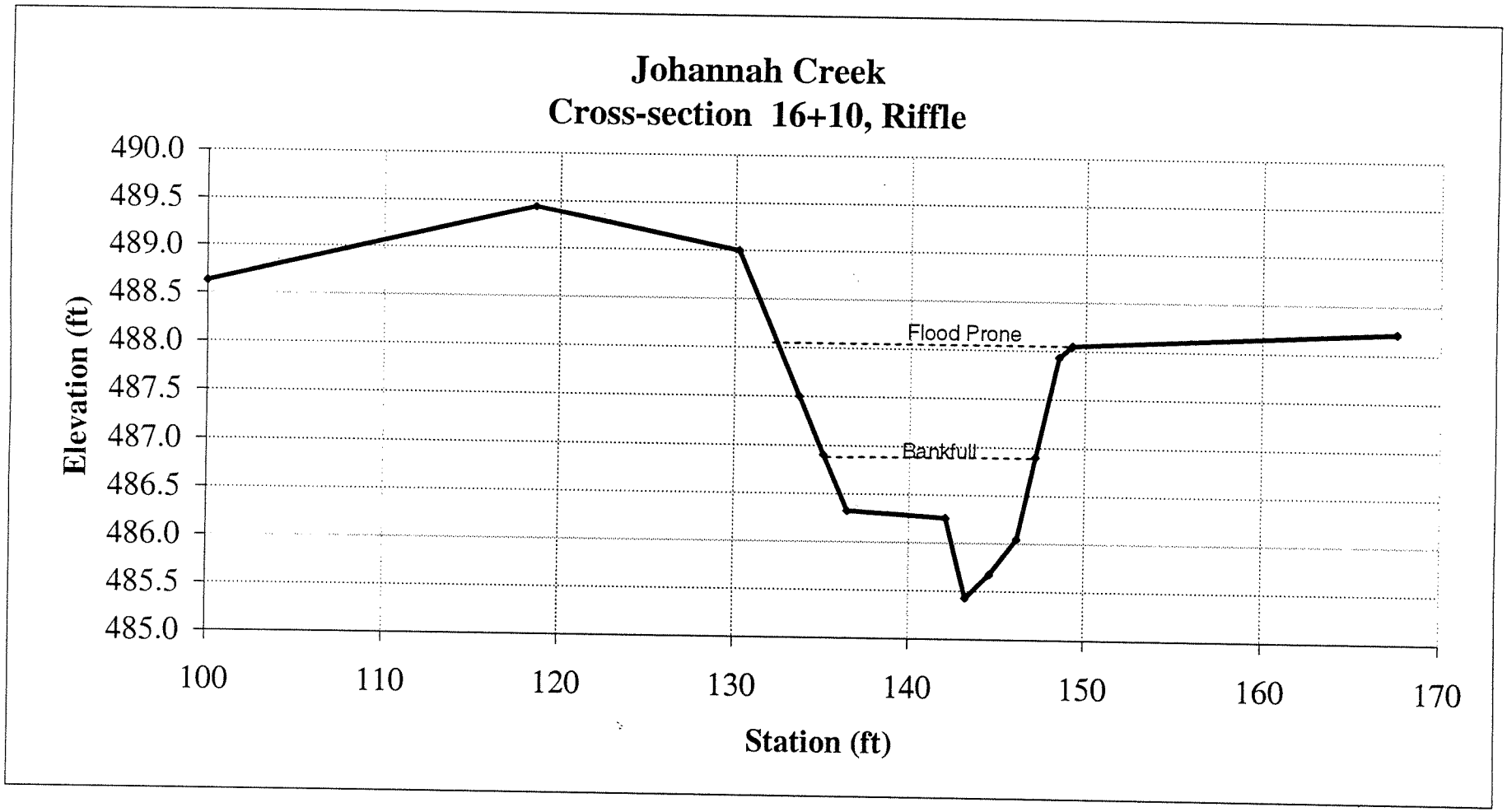
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	11	112.0	119.5	489.01	7.5	1.3	5.9	9.4	1.8	1.5	2.2



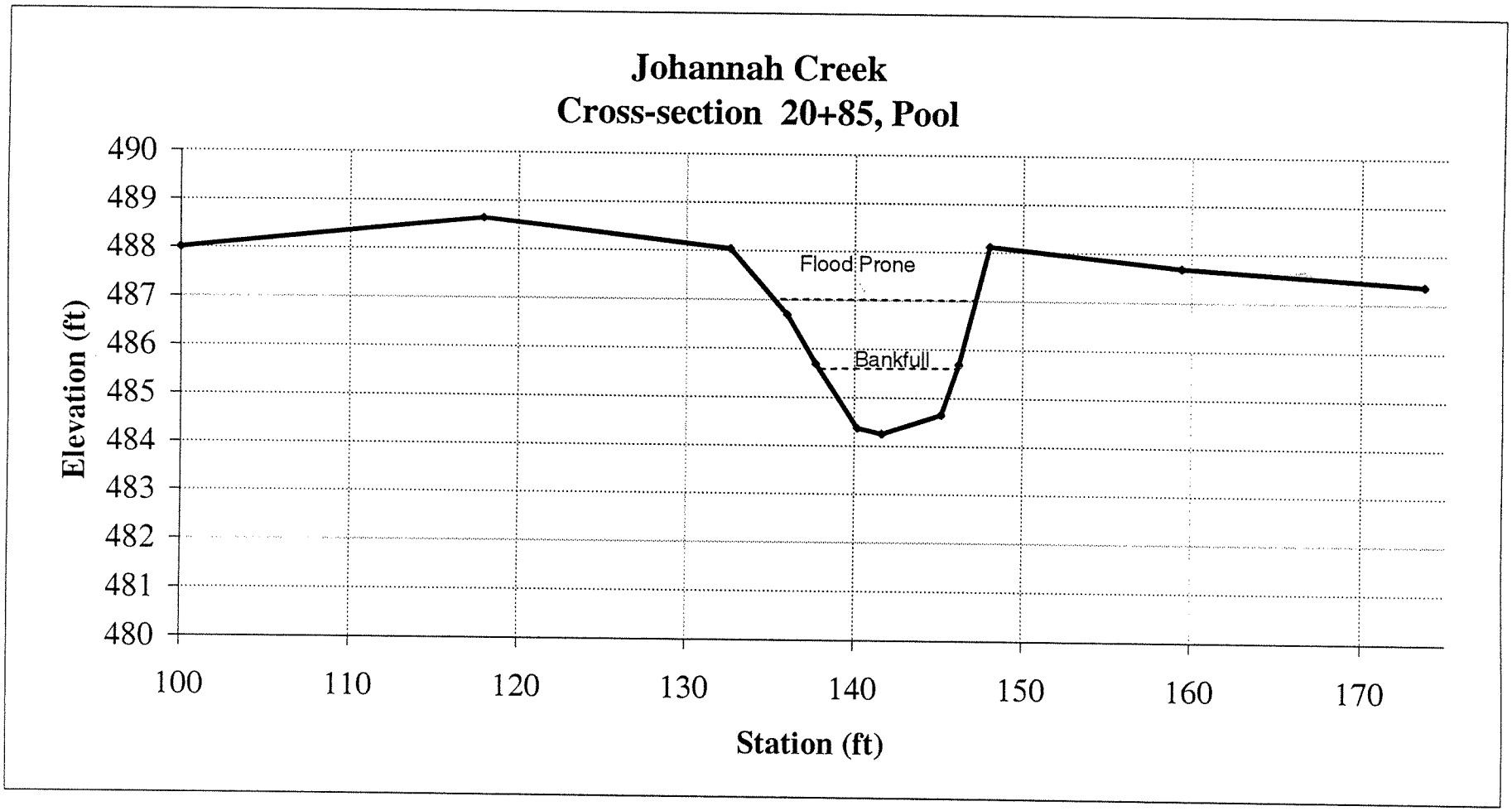
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	11	126.8	134.6	488.10	7.8	1.2	6.7	9.1	1.5	1.4	2.3



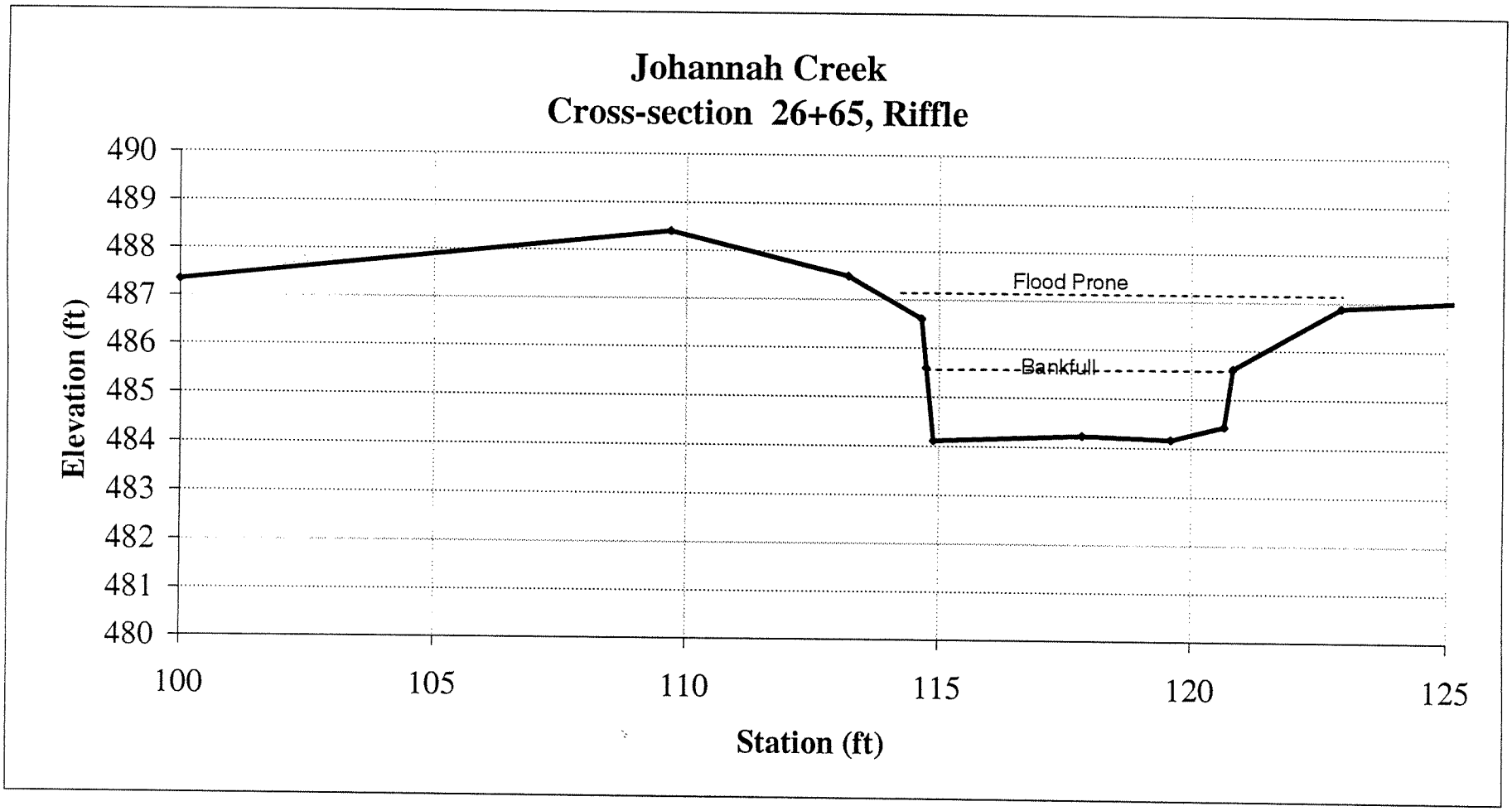
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	17.2	135.1	147.2	486.90	12.1	0.7	16.3	9.0	1.5	1.4	1.7



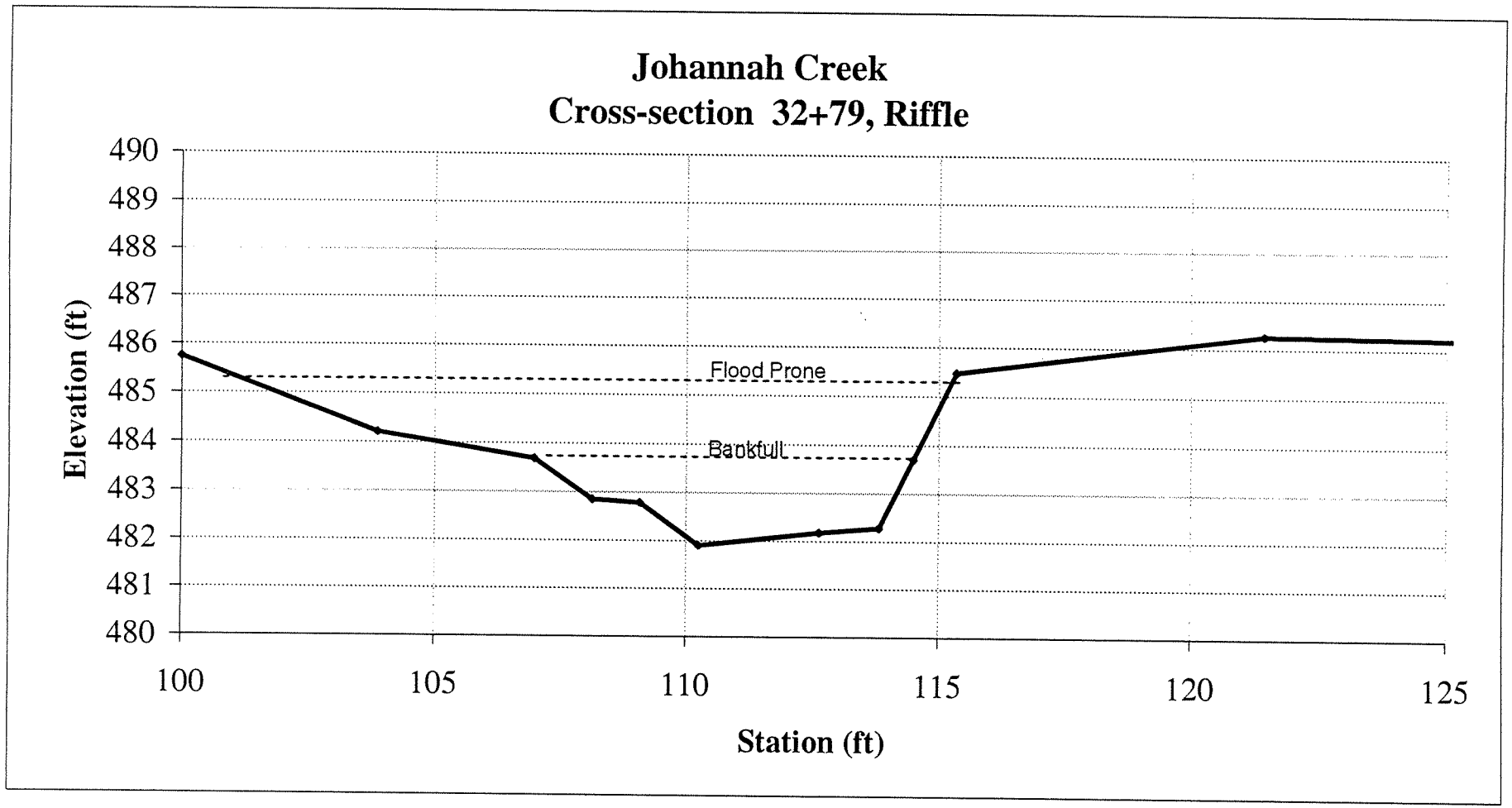
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	12	137.7	146.2	485.70	8.5	1.0	8.4	8.6	1.5	1.4	2.6



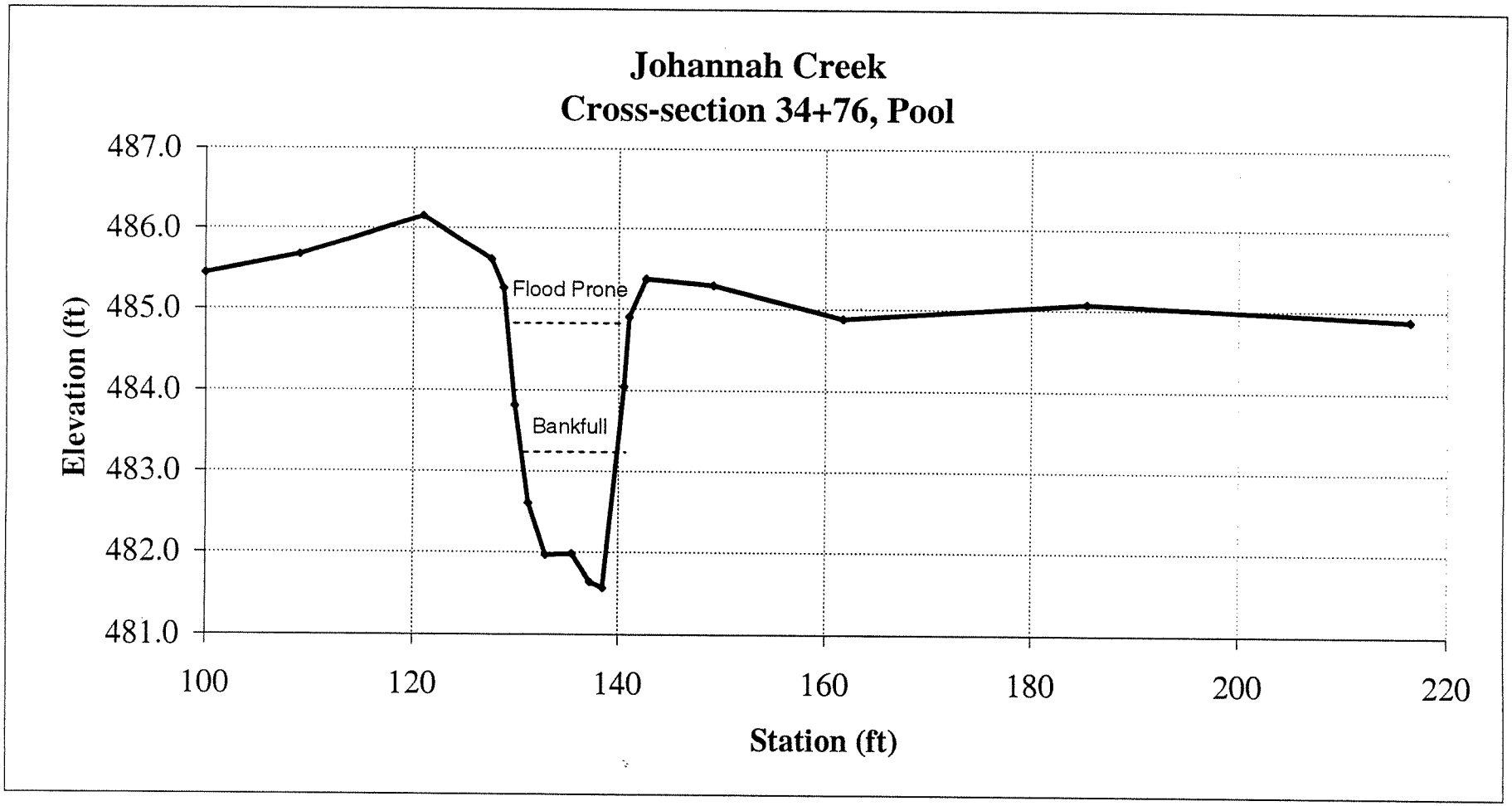
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	E	100	114.8	120.8	485.60	6.1	1.3	4.5	8.2	1.5	16.5	1.9



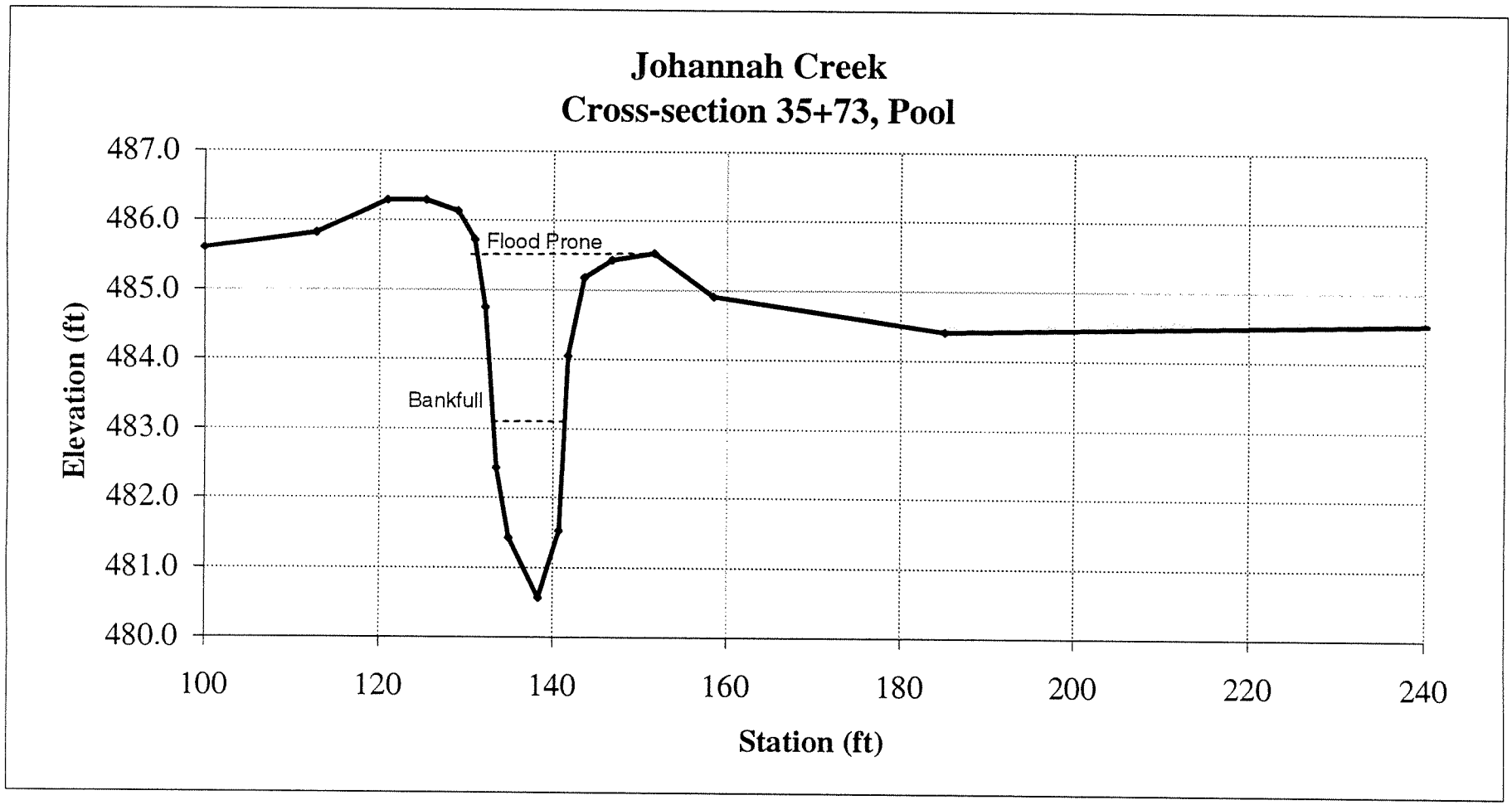
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	B	14.3	107.0	114.5	483.68	7.5	1.1	6.7	8.5	1.8	1.9	2.0



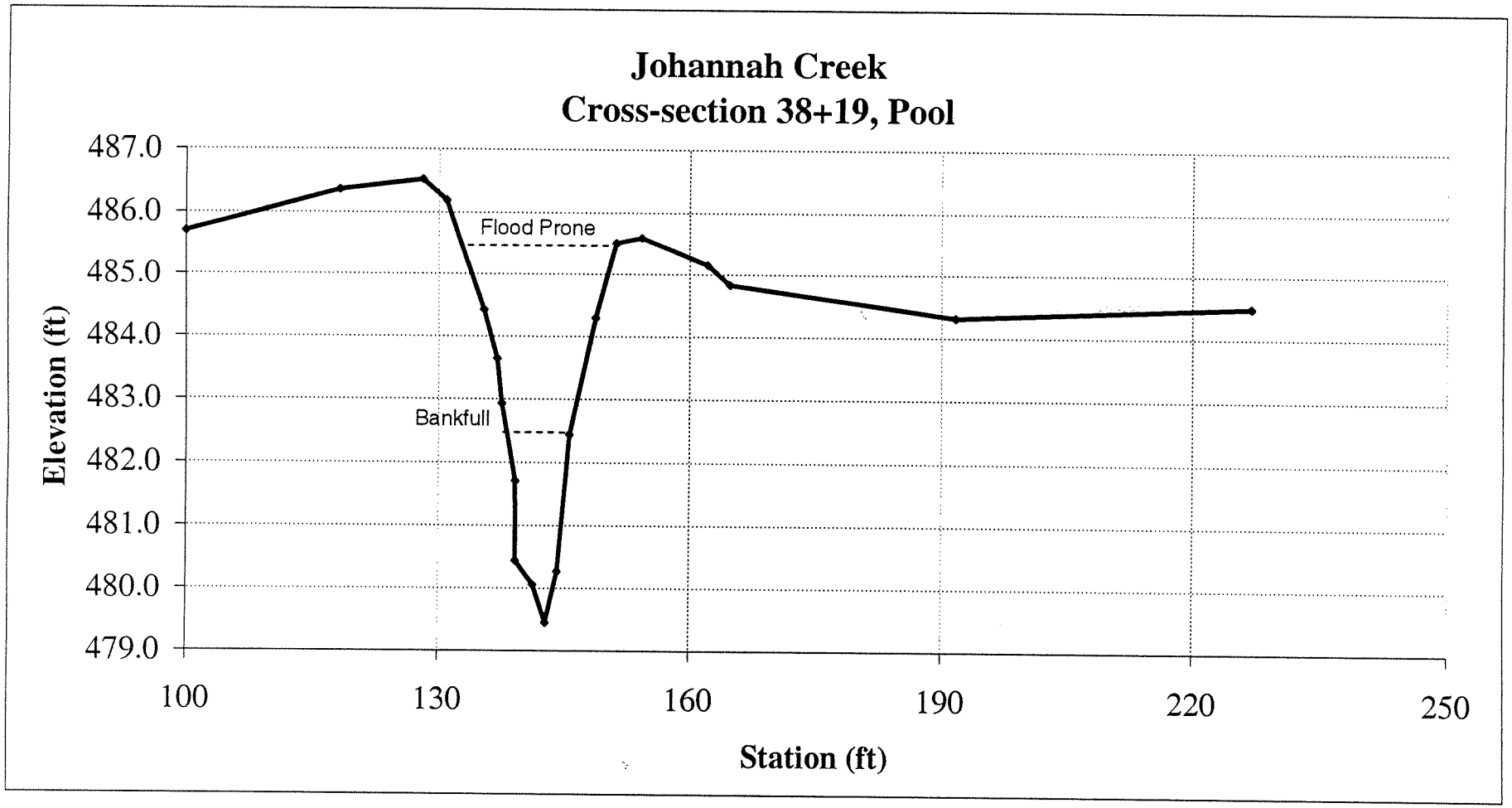
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	12	130.6	139.8	483.20	9.2	1.1	8.2	10.4	1.6	1.3	2.2



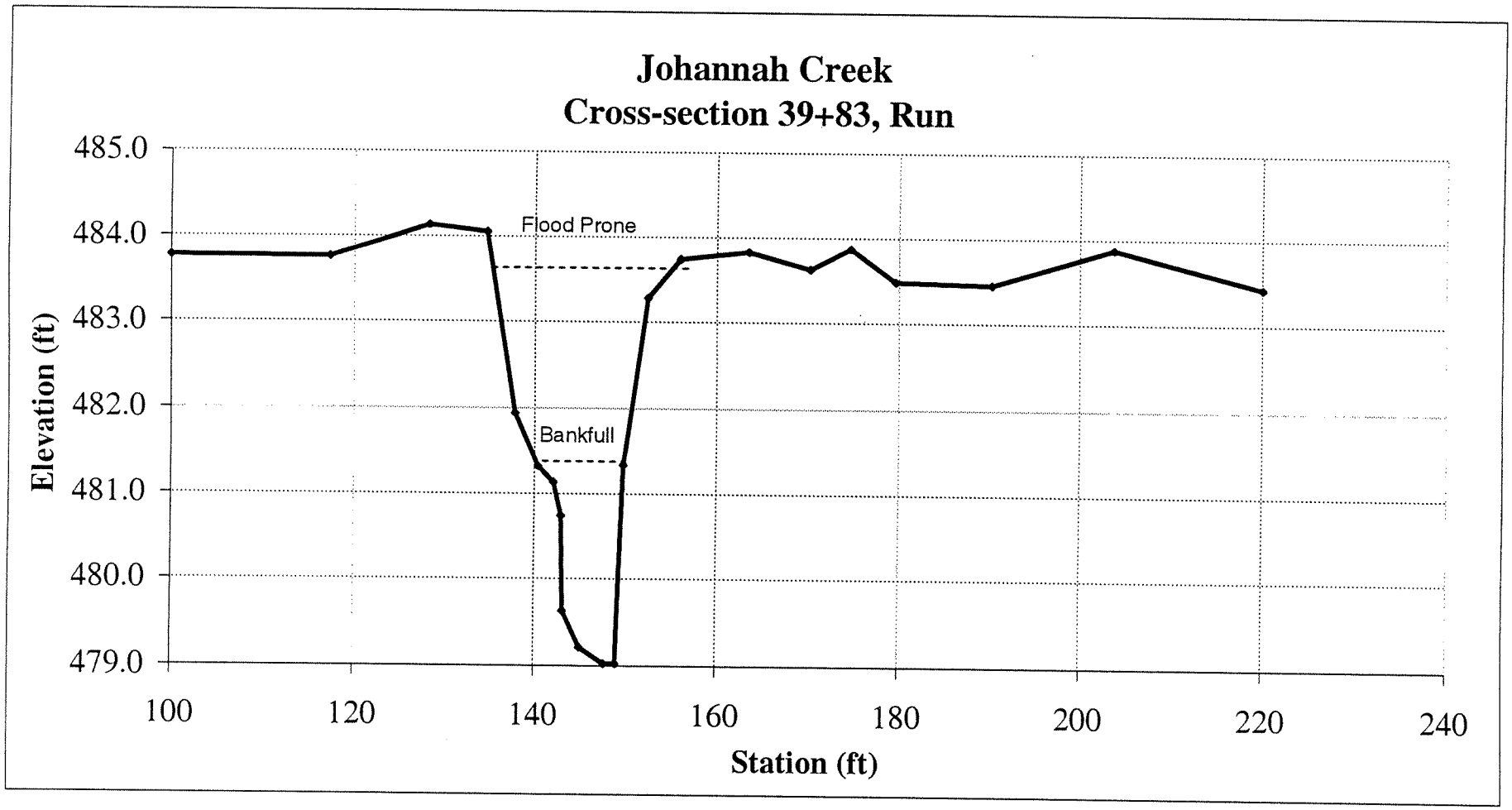
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	14.4	133.1	141.4	483.10	8.2	1.8	4.7	14.4	2.5	>29.44	1.9



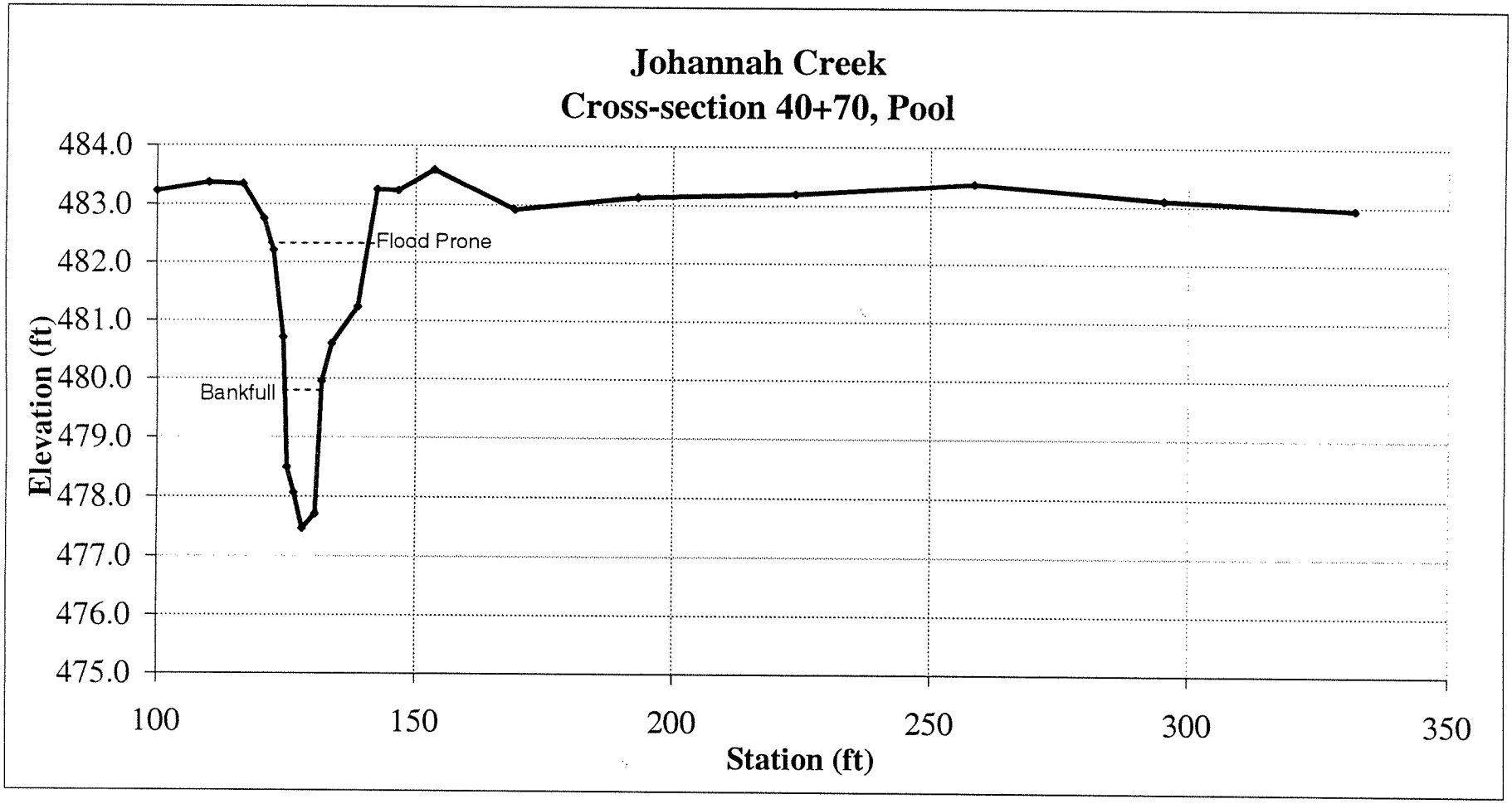
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	19	138.2	145.7	482.44	7.5	1.9	3.9	14.2	3.0	2.4	2.0



	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Run	G5	20	140.3	149.8	481.34	9.5	1.5	6.3	14.3	2.3	2.1	2.0



	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	18	124.2	131.7	479.84	7.5	1.7	4.4	12.9	2.4	2.4	2.3



Appendix 2. DrainMod Input Files Used to Model Existing Condition

DRAINMOD .SIN File Used to Model the Westbrook Site.

```
1320
  0.39300      0.0
  0.37000     -5.0
  0.35700    -10.0
  0.33800    -30.0
  0.32100    -80.0
  0.32000   -100.0
  0.30000   -200.0
  0.26000   -700.0
  0.25000  -1000.0
  0.21400  -3000.0
  0.18600  -7000.0
  0.17500 -10000.0
  0.16300 -15000.0
   0.0000   0.0000   0.2500
   3.0000   0.0210   0.2500
   6.0000   0.0820   0.2500
   9.0000   0.1700   0.2500
  12.0000   0.2790   0.2139
  15.0000   0.3970   0.1207
  20.0000   0.6130   0.0555
  25.0000   0.8520   0.0298
  30.0000   1.1150   0.0180
  35.0000   1.3740   0.0113
  40.0000   1.6230   0.0079
  45.0000   1.8790   0.0061
  60.0000   2.6420   0.0039
  75.0000   3.4420   0.0030
  90.0000   4.3090   0.0026
 120.0000   5.7790   0.0000
 150.0000   7.3520   0.0000
 200.0000  10.2830   0.0000
 500.0000  31.5130   0.0000
1000.0000 100.0000   0.0000
10
    0.00    0.00    1.10
   10.00    0.01    1.10
   20.00    0.02    1.10
   40.00    0.02    0.95
   60.00    0.03    0.95
   80.00    0.03    0.95
  100.00    0.03    0.95
  150.00    0.09    0.95
  200.00    0.09    0.95
 1000.00    0.09    0.95
0
0
```

DRAINMOD .GEN File Used to Simulate the Existing Hydrology at Well 1.

```
*** Job Title ***
EBX Westbrook Lowgrounds Mitigation Site - Well 1 Existing Condition Simulations
Smithfield Weather Data - Jan 1970 to Early February 2002
*** Printout and Input Control ***
 3 101 C:\Drainmod\outputs
*** Climate ***
100000 L:\PROJECTS\043. EBX-WESTBROOK\DRAINMOD\SMITHFIELD_1970-2002.RAI
100000 L:\PROJECTS\043. EBX-WESTBROOK\DRAINMOD\SMITHFIELD_1970-2002.TEM
1970  1 2002  2 3530  77 0
 2.01 2.32 2.10 1.72 1.23 1.00  .86  .82  .92 1.05 1.22 1.44
*** Drainage System Design ***
 1    .00
    116.00     66.57  13420.00       .70      2.50       .50      6.98     20.00
           0    2.000000E-02    10000.000000
           0      130.000000       10.000000    1.000000E-03
           0    0.000000E+00    0.000000E+00    0.000000E+00    0.000000E+00
    120.00      1.00       .00
 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120
*** Soils ***
    183.00     10.00
  10. 2.00  45. 2.00  70.10.00 140.15.00 183.15.00
99     .00
*** Trafficability ***
 4 1 5 1 820               3.9       1.2       2.0
12321232 820               3.9       1.2       2.0
*** Crop ***
      .190
 410 818       30.00
 410 818
11
 1 1  3.00 416  3.00 5 4  4.00 517 15.00 6 1 25.00 620 30.00 718 30.00 820 20.00
 924 10.00 925  3.001231  3.00
*** Wastewater Irrigation ***
 0    1 1  10   1  6
 0 0       0 0       0 0       0 0
   7.00000   1.00000  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40
WET *** Wetlands Information ***
 1
  81 304
 30.0  27
COM *** Combo Drainage Weir Settings ***
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
FPE *** Fixed Avg Daily PET for the month(cm) ***
    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
MRA *** Monthly Ranking ***
 0
FAC *** Daily PET Factors ***
 0
```

```
STM *** Soil Temperature ***
      ZA       ZB      TKA      TKB       TB     TLAG    TSNOW    TMELT     CDEG     CICE
    .000     .000     .000     .000       .0       .0       .0       .0       .0       .0
Initial Soil Temperature
 0
Initial snow depth(m) & density(kg/m3)
      .00      .00
Freezing characteristic curve
 0
```

DRAINMOD .GEN File Used to Simulate the Existing Hydrology at Well 2.

```
*** Job Title ***
EBX Westbrook Lowgrounds Mitigation Site - Well 2 Existing Condition Simulations
Smithfield Weather Data - Jan 1970 to Early February 2002
*** Printout and Input Control ***
 3 101 C:\DRAINMOD\outputs
*** Climate ***
100000 L:\PROJECTS\043. EBX-WESTBROOK\DRAINMOD\SMITHFIELD_1970-2002.RAI
100000 L:\PROJECTS\043. EBX-WESTBROOK\DRAINMOD\SMITHFIELD_1970-2002.TEM
2001  1 2002  2 3530  77 0
 2.01 2.32 2.10 1.72 1.23 1.00  .86  .82  .92 1.05 1.22 1.44
*** Drainage System Design ***
 1    .00
    116.00      95.49   8500.00        .70       2.50        .50       6.73      20.00
            0    2.000000E-02    10000.000000
            0      130.000000       10.000000    1.000000E-03
            0    0.000000E+00    0.000000E+00    0.000000E+00    0.000000E+00
    120.00       1.00        .00
 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120
*** Soils ***
    214.00      10.00
  10. 2.00  45. 2.00  70.10.00 140.15.00 183.15.00
99     .00
*** Trafficability ***
 4 1 5 1 820                3.9       1.2       2.0
12321232 820                3.9       1.2       2.0
*** Crop ***
      .190
 410 818        30.00
 410 818
11
 1 1  3.00 416  3.00 5 4  4.00 517 15.00 6 1 25.00 620 30.00 718 30.00 820 20.00
 924 10.00 925  3.001231  3.00
*** Wastewater Irrigation ***
 0    1 1  10   1  6
 0 0       0 0       0 0       0 0
   7.00000   1.00000  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40
WET *** Wetlands Information ***
 1
  81 304
 30.0  27
COM *** Combo Drainage Weir Settings ***
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
FPE *** Fixed Avg Daily PET for the month(cm) ***
    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
MRA *** Monthly Ranking ***
 0
FAC *** Daily PET Factors ***
```

```
 0
STM *** Soil Temperature ***
      ZA       ZB      TKA      TKB       TB     TLAG    TSNOW    TMELT     CDEG     CICE
    .000     .000     .000     .000       .0       .0       .0       .0       .0       .0
Initial Soil Temperature
 0
Initial snow depth(m) & density(kg/m3)
      .00      .00
Freezing characteristic curve
 0
```

DRAINMOD .GEN File Used to Simulate the Existing Hydrology at Well 3.

```
*** Job Title ***
EBX Westbrook Lowgrounds Mitigation Site - Well 3 Existing Condition Simulations
Smithfield Weather Data - Jan 1970 to Early February
*** Printout and Input Control ***
 3 101 C:\DRAINMOD\outputs
*** Climate ***
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100000 L:\PROJECTS\043. EBX-WESTBROOK\DRAINMOD\SMITHFIELD_1970-2002.TEM
2001  1 2002  2 3530  77 0
 2.01 2.32 2.10 1.72 1.23 1.00  .86  .82  .92 1.05 1.22 1.44
*** Drainage System Design ***
 1    .00
    120.00     62.66  13420.00       .70      2.50       .50      7.13     20.00
           0    2.000000E-02    10000.000000
           0      130.000000       10.000000    1.000000E-03
           0    0.000000E+00    0.000000E+00    0.000000E+00    0.000000E+00
    120.00      1.00       .00
 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120
*** Soils ***
    183.00     10.00
  10. 2.00  45. 2.00  70.20.00 140.25.00 183.25.00
99     .00
*** Trafficability ***
 4 1 5 1 820               3.9       1.2       2.0
12321232 820               3.9       1.2       2.0
*** Crop ***
      .190
 410 818       30.00
 410 818
11
 1 1  3.00 416  3.00 5 4  4.00 517 15.00 6 1 25.00 620 30.00 718 30.00 820 20.00
 924 10.00 925  3.001231  3.00
*** Wastewater Irrigation ***
 0    1 1  10   1  6
 0 0       0 0       0 0       0 0
   7.00000   1.00000  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40
WET *** Wetlands Information ***
 1
  81 304
 30.0  27
COM *** Combo Drainage Weir Settings ***
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
FPE *** Fixed Avg Daily PET for the month(cm) ***
    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
MRA *** Monthly Ranking ***
 0
FAC *** Daily PET Factors ***
 0
STM *** Soil Temperature ***
      ZA      ZB      TKA      TKB      TB     TLAG    TSNOW    TMELT     CDEG     CICE
    .000    .000    .000     .000      .0       .0       .0       .0       .0       .0
```

```
Initial Soil Temperature
 0
Initial snow depth(m) & density(kg/m3)
      .00       .00
Freezing characteristic curve
 0
```

Appendix 3. Benthic Macroinvertebrate Data and NCDWQ Biological Tracking Form

Benthic Macroinvertebrate Data Collected for Westbrook Lowgrounds Project

SPECIES	Project Reach Downstream of SR 1198	Reference Reach Upstream of SR 1198	T.V.*	F.F.G.**
MOLLUSCA				
Gastropoda				
Basommatophora				
Ancylidae				
Ferrissia rivularis		R	6.55	SC
Physidae				
Physella sp.	A	R	8.84	CG
Planorbidae				
Menetus dilatatus	R		8.23	SC
ANNELIDA				
Oligochaeta				
Haplotaxida				
Lumbricidae		R		CG
Tubificidae w.h.c.	R		7.11	CG
Lumbriculida				
Lumbriculidae	R		7.03	CG
ARTHROPODA				
Crustacea				
Amphipoda				
Crangonyctidae				
Crangonyx sp.	A	C	7.87	CG
Decapoda				
Cambaridae	A	A		OM
Insecta				
Ephemeroptera				
Caenidae				
Caenis sp.	R		7.41	CG
Ephemerellidae				SC
Eurylophella sp.	C	R	4.34	SC
Heptageniidae				SC
Stenonema modestum		A	5.5	SC
Isonychiidae				FC
Isonychia sp.		R	3.45	FC
Leptophlebiidae				CG
Leptophlebia sp.	A		6.23	CG
Odonata				
Calopterygidae				P
Calopteryx sp.	C		7.78	P
Gomphidae				P
Progomphus obscurus		R	8.22	P
Plecoptera				

SPECIES	Project Reach Downstream of SR 1198	Reference Reach Upstream of SR 1198	T.V.*	F.F.G.**
Perlodidae				P
Clioperla clio	A	A	4.72	P
Taeniopterygidae				SH
Taeniopteryx sp.		R	5.37	SH
Megaloptera				
Corydalidae				P
Nigronia serricornis		R	4.95	P
Trichoptera				
Calomoceratidae				
Heteroplectron americanum		C	3.23	SH
Hydropsychidae				FC
Cheumatopsyche sp.	A	A	6.22	FC
Limnephilidae				SH
Pycnopsyche sp.	A	C	2.52	SH
Philopotamidae				FC
Wormaldia sp.		R	0.65	FC
Psychomyiidae				CG
Lype diversa		C	4.05	SC
Rhyacophilidae				P
Rhyacophila sp.	R		1	P
Diptera				
Ceratopogonidae				P
Bezzia/Palpomyia gp.		R	6.86	P
Chironomidae				
Apsectrotanypus sp.	R			
Cricotopus sp.	A	R	7	CG
Corynoneura sp.	R		6.01	CG
Paramerina sp.	C		4.29	P
Parametriocnemus lundbecki	R	R	3.65	CG
Phaenopsectra sp.	R		6.5	SC
Polypedilum flavum		C	4.93	SH
Polypedilum fallax	C	C	6.39	SH
Polypedilum halterale	R		7.31	SH
Polypedilum illinoense	R		9	SH
Procladius sp.	R		9.1	P
Rheocricotopus robacki	R		7.28	CG
Tanytarsus sp.	R		6.76	FC
Thienemanniella xena		R	5.86	CG
Thienemannimyia gp.	A	A	8.42	P
Tribelos sp.	C	R	6.31	CG
Xylotopus par	R		5.99	SH
Simuliidae				FC

SPECIES	Project Reach Downstream of SR 1198	Reference Reach Upstream of SR 1198	T.V.*	F.F.G.**
Simulium sp.		R	4	FC
Tipulidae				SH
Hexatoma sp.		R	4.31	P
Tipula sp.	A	A	7.33	SH
TOTAL TAXA RICHNESS	30	28		
EPT RICHNESS	7	10		
EPT ABUNDANCE	45	43		
BIOTIC INDEX	6.5	4.5		
EPT BIOTIC INDEX	4.8	4.7		

*T.V. – Tolerance Values: ranges from 0 (least tolerant to organic pollution) to 10 (most tolerant to organic pollution).

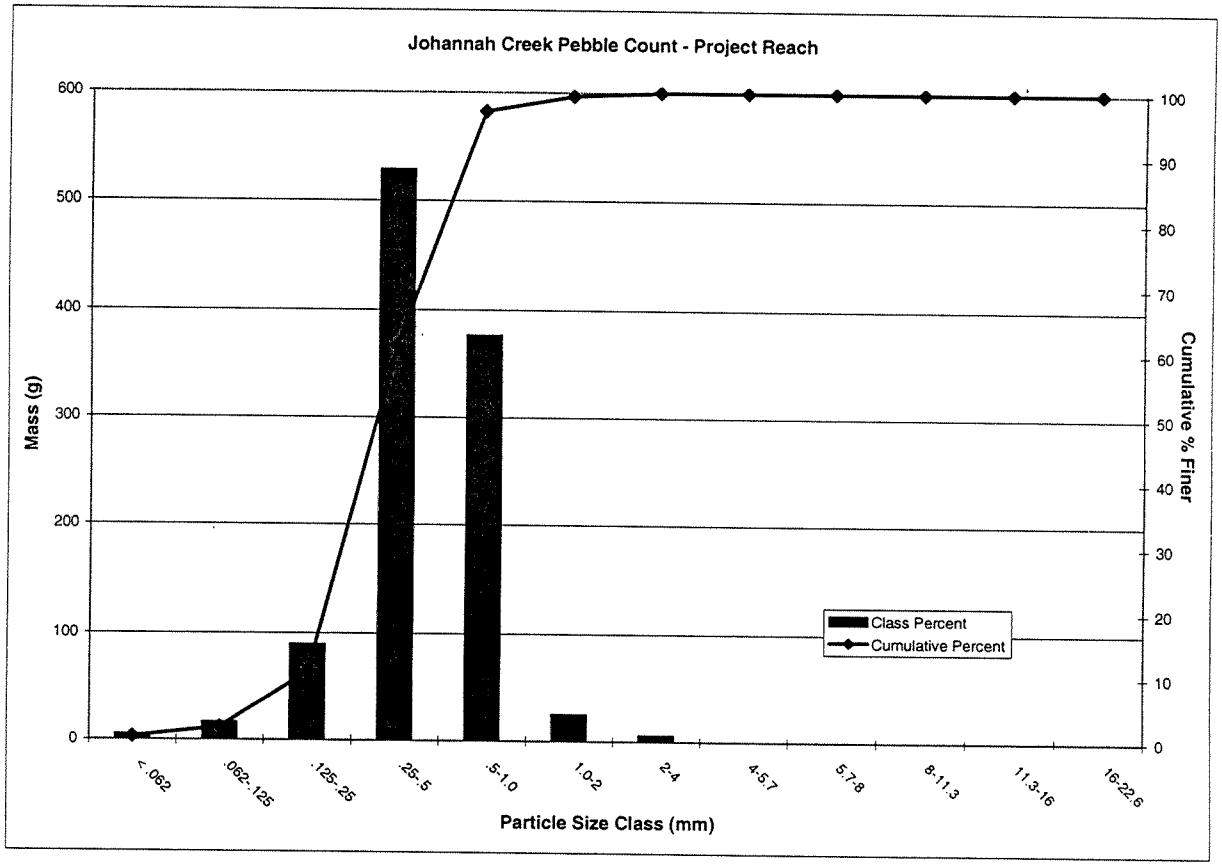
**F.F.G – Functional Feeding Group: CG = Collector-Gatherer, FC = Filterer-Collector, OM = Omnivore, P = Predator, SC = Scraper, SH = Shredder,

Project: Westbrook Lowgrounds **Reach:** Johanna Creek - Project Reach
Party: Tweedy, Price, Varnell **Date** 7/17/01

Size Distribution	mm
D16	0.28
D35	0.37
D50	0.44
D84	0.82
D95	0.97

CUMULATIVE DATA:

particle	millimeters		Total #	Cumul. %
silt/clay	< .062	SAND	4.93	0.5
very fine	.062-.125		16.53	2.0
fine	.125-.25		89.34	10.6
medium	.25-.5		528.49	61.1
coarse	.5-1.0		376.54	97.0
very coarse	1.0-2		24.97	99.4
very fine	2-4		6.05	100.0
fine	4-5.7			100.0
fine	5.7-8	GRAVEL		100.0
medium	8-11.3			100.0
medium	11.3-16			100.0
coarse	16-22.6			100.0
coarse	22.6-32			100.0
very coarse	32-45			100.0
very coarse	45-64			100.0
small	64-90	COBBLE		100.0
small	90-128			100.0
large	128-180			100.0
large	180-256			100.0
small	256-362	BOULDER		100.0
small	362-512			100.0
medium	512-1024			100.0
large-very la	1024-2048			100.0
bedrock	bedrock	BEDROCK		100.0



BIOLOGICAL TRACKING – STREAM RESTORATION PROJECTS

North Carolina Division of Water Quality
Wetlands1401 Certification Unit

A. Project Name: Westbrook Lowgrounds Mitigation
B. Stream Name: UT to Mill Creek (Johanna Creek is the proposed new name).
C. DWQ Project Number:
D. Restoration Map Number:
E. Emregion, County and Location Information:
Inner Coastal Plain, Johnston County, from SR 1198 near Bentonville, NC to confluence with Mill Creek
F. Coordinates and USGS Quad Name: N35°21.459' W78°16.602' downstream section, Newton Grove North Quad
G. Stream Classification Type (Rosgen):

The UT to Mill Creek in the project area starts out as an E5 channel for the first 200 feet and then changes to an incised G5 channel for the remaining project length. The reference reach is upstream of the project reach above SR 1198 and is an E5/C5 channel.

H. Length of Project: 4,118 linear feet
I. Urban or Rural Catchment: Rural
J. Catchment size: 1.18 sq mi at lower end of the project area
K. Who conducted the biological monitoring? Buck Engineering (Greg Price and Jessica Rohrbach)
L. Applicant Information:
1. Name and Company: Environmental Banc Exchange (EBX)
2. Telephone Number: (410) 356-5159
3. Contact: George Kelly

M. Consultant Information:
1. Name and Company: Greg Price, Buck Engineering
2. Telephone Number: (919) 459-9009
3. Email Address: gprice@buckengineering.com

N. Project Status:

Buck Engineering is preparing a Draft Mitigation Plan for client review. Pre-construction biological surveys have been completed by Buck Engineering and are summarized in the Mitigation Plan.

Photographs:

Project reach downstream of SR 1198

Reference reach upstream of SR 1198

NC Division of Water Quality
Wetlands/401 Unit

April 29, 2002

Memorandum

To: John Dorney

From: Dave Penrose

Subject: Review of the Draft Mitigation Plan for the Westbrook Lowgrounds Wetland and Stream Mitigation Plan. Buck Engineering.

The Westbrook Lowgrounds mitigation site is located in Johnston County approximately one mile east of the town of Bentonville. The plan calls for the restoration of approximately 4,121 linear feet of Johannah Creek. In preparation for the application benthic macroinvertebrate samples were collected from two sites; a reference reach above the proposed restoration and a site in the existing channel which would be within the restoration reach (this site is called the project reach in the report). Unfortunately these data did not accurately determine the need for this project as the benthos data noted very little difference between the reference reach and the project reach. These data were questioned and commented on by both Ronald Mikulak of EPA Region IV and Garland Pardue of the Fish and Wildlife Service.

There are subtle differences in the structure of the benthic community that are not summarized accurately, or completely, in the table in Table 6.1 of the mitigation plan. EPT taxa richness values were slightly higher in the reference reach when compared to the project reach (10 versus 7). However, there is a very distinct shift in the composition of the EPT fauna between locations suggesting that that stream *functionality* has been altered. Many EPT taxa that were common or abundant in the reference reach were eliminated or reduced in number at the project reach. These taxa include the mayfly Stenonema modestum, and the caddisflies Heteroplectron americanum, Wormaldia and Lype diversa. These taxa are associated with large woody debris (LWD) which they use for habitat. The fact that they were not collected downstream suggests that LWD have been eliminated as a habitat. In some instances EPT taxa were replaced at the downstream site but by more tolerant taxa. For example, Stenonema was the only abundant mayfly upstream, whereas Leptophlebia was the only abundant mayfly downstream. We often collect Leptophlebia in very low flow streams and have often found them in small first order systems. Their abundance downstream in the project reach and their absence upstream suggests that the hydrology of this stream has been modified.

Table 6.1 also notes very little difference between total taxa richness between the reference site (28) and the project site (30). What table 6.1 does not illustrate is that 50% of the 30 taxa at the project site are chironomidae (and only 28% were chironomidae at the reference reach). Chironomidae are often considered tolerant organisms and Appendix 3 (not 6 as noted in the text) notes that Cricotopus was abundant in the project reach but only rare at the reference reach. If species level identifications were conducted it's very possible that this species of Cricotopus may have affected the biotic index values, as many Cricotopus are extremely tolerant.

North Carolina Division of Water Quality; Wetlands/401 Unit
1650 Mail Service Center; Raleigh, NC 27699-1650
2321 Crabtree Blvd., Raleigh, NC 27604-2260
Telephone: (919) 733-1786; Fax: (919) 733-9959
http://h2o.enr.state.nc.us/ncwetlands

NC Division of Water Quality
Wetlands/401 Unit

Larry recalculated by hand the biotic indices that were listed in Table 6.1 in the mitigation plan and got different values. He found that the numbers were slightly lower (better water quality) for the reference site and somewhat higher (lower water quality) for the project site. The difference in values may be due to the actual values used for calculation. I suspect that the values that were used in the mitigation plan were not the same as those listed in the Standard Operation Procedures document of DWQ.

	Biotic Index		Biotic Index EPT	
	Mitigation plan	New	Mitigation plan	New
Reference Site	5.4	4.5	4.8	4.7
Project Site	6.1	6.5	4.8	4.8

Finally it appears to me that the reference reach selected for this comparison is sediment stressed. The photograph attached to the Biological Tracking Form (Appendix 3) clearly illustrates a highly sinuous channel, but one that appears to be sediment stressed. I would recommend that data from this monitoring location be compared to a regional reference location.

The biological data summary in Table 6.1 of the mitigation plan lists the data collected from two sites as part of the application for this project. These data illustrate very subtle differences in the benthic fauna of these two locations. However, there appear to be significant shifts in the structure of the communities between sites that may reflect the biological functions of these two sites. It appears to me that Table 6.1 in the mitigation plan does not accurately summarize the shift in community structure between the two monitoring locations. Perhaps it would have been more informative to have a more detailed discussion of these changes in the text of the mitigation plan.

CC: Larry Eaton, Wetlands Unit

North Carolina Division of Water Quality; Wetlands/401 Unit
1650 Mail Service Center; Raleigh, NC 27699-1650
2321 Crabtree Blvd., Raleigh, NC 27604-2260
Telephone: (919) 733-1786; Fax: (919) 733-9959
http://h2o.enr.state.nc.us/ncwetlands

Appendix 4. Letters from the NC Natural Heritage Program and NC Department of Cultural Resources

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

October 23, 2001

Paul A. Webb
TRC Garrow Associates
501 Washington Street, Suite F
Durham, NC 27701

Re: Archaeological Survey Report, Westbrook low grounds & stream mitigation bank, Johnston County, ER 01-9789l, ER 02-7835

Dear Mr. Webb:

Thank you for your letter October 3, 2001, of transmitting the archaeological survey report by TRC Garrow Associates for the above project.

We have reviewed the subject archaeological survey report and offer our comments. For purposes of compliance of Section 106 of the National Historic Preservation Act, we concur that no properties eligible for inclusion for the National Register of Historic Places will be affected by the proposed project. Sites 31JT344, 31JT345, 31JT346, 31JT347, 31JT348 and 31JT349 will be avoided according to current project plans. Should these sites be affected by a change of plans, or by future development they should be tested to determine their eligibility and establish mitigation plans, if necessary.

The report meets our guidelines and those of the Secretary of the Interior.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

Sincerely,

Renee Gledhill-Earley

David Brook

DB:kgc

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 •733-8653
Restoration	515 N. Blount St, Raleigh , NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 •715-4801
Survey & Planning	515 N. Blount St, Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 •715-4801

North Carolina
Department of Environment and Natural Resources
Division of Parks and Recreation

Michael F. Easley, Governor
William G. Ross Jr., Secretary
Philip K. McKnelly, Director

August 9, 2001

Mr. Christopher Huysman
Wetland and Natural Resource Consultants, Inc.
11 South College Ave., Suite 203
P.O. Box 224
Newton, NC 28658

Subject: Neu-Con Wetland Mitigation and Stream Restoration Sites, Johnston [Westbrook Lowgrounds] and Jones [Marston Metts] counties

Dear Mr. Huysman:

The Natural Heritage Program has no record of rare species, significant natural communities, or priority natural areas at the sites nor within a mile of the sites. Each of the two property boundaries lie adjacent to sites identified as significant aquatic habitats, with rare aquatic animals several miles downstream. The Marston Metts site borders the Trent River, and the Westbrook Lowgrounds borders Mill Creek. In addition, the Westbrook site borders the State significant Howell Woods preserve operated by Johnston Community College; this large preserve lies on the north side of Mill Creek.

You may wish to check the Natural Heritage Program database website at <www.ncsparks.net/nhp/search.html> for a listing of rare plants and animals and significant natural communities in the county and on the topographic quad map. Please do not hesitate to contact me at 919-715-8687 if you have questions or need further information.

Sincerely,

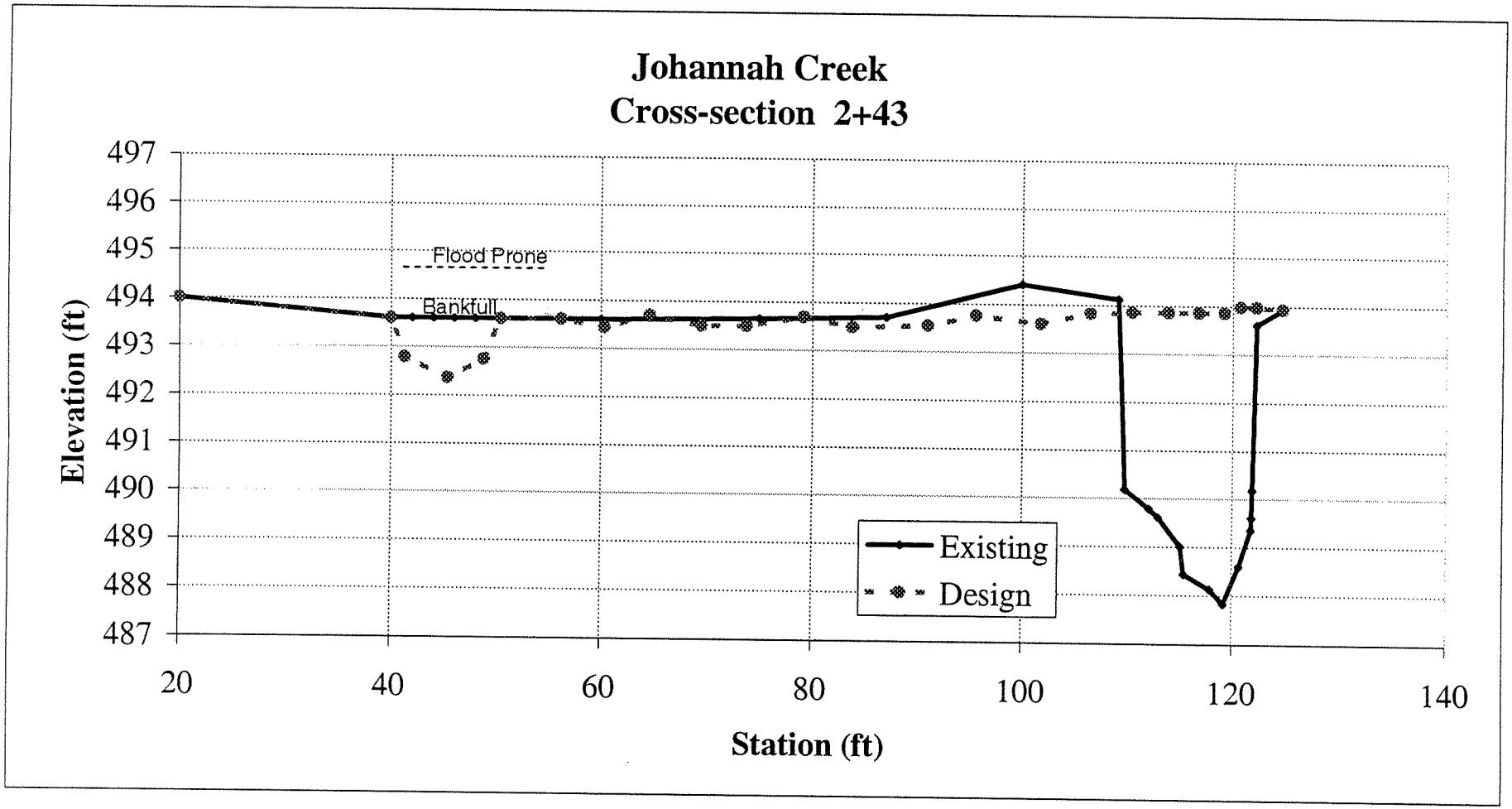
Harry E. LeGrand, Jr.

Harry E. LeGrand, Jr., Zoologist
Natural Heritage Program

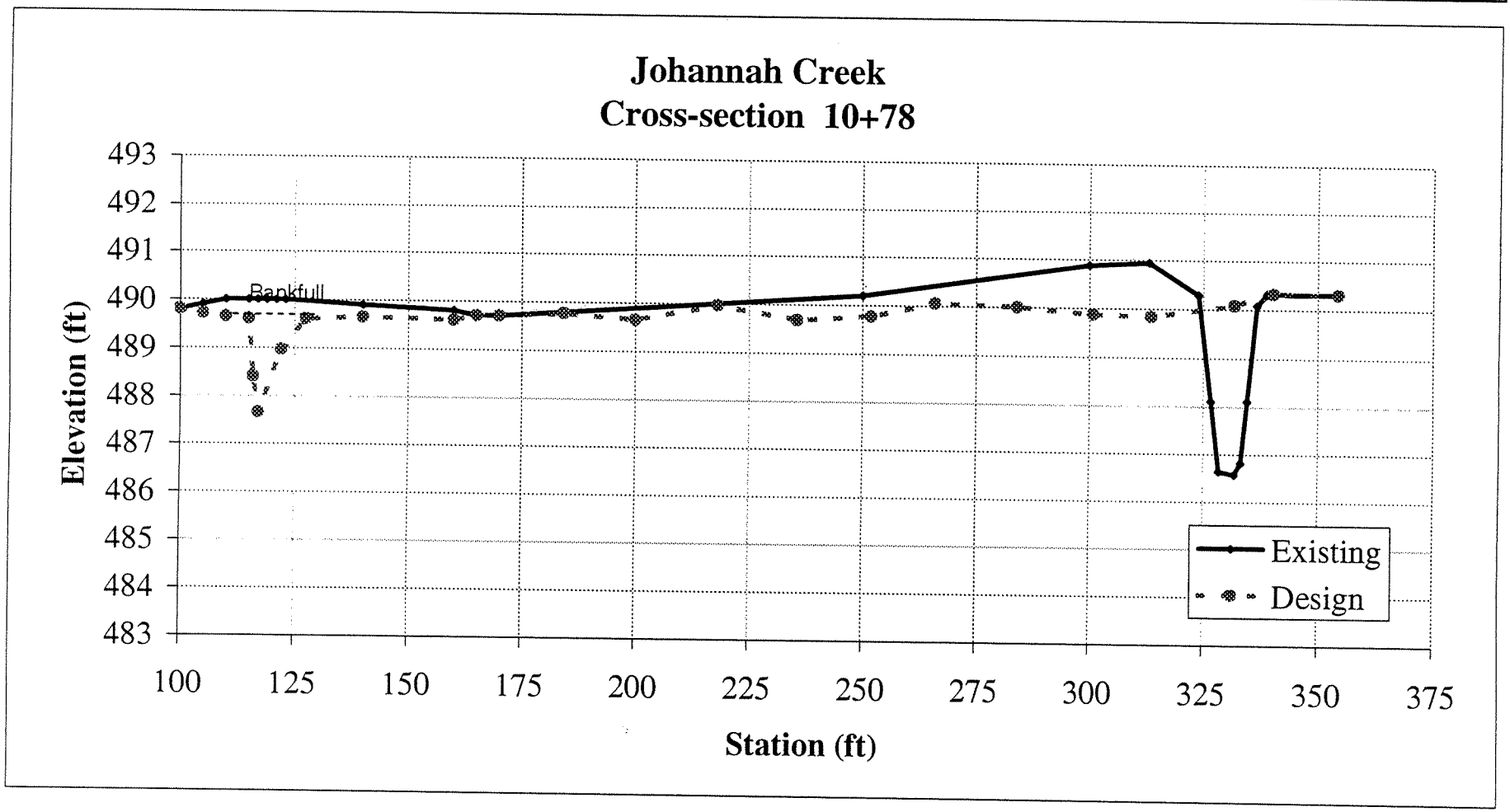
HEL/hel

Appendix 5. Existing and Design Cross-sections for Johannah Creek

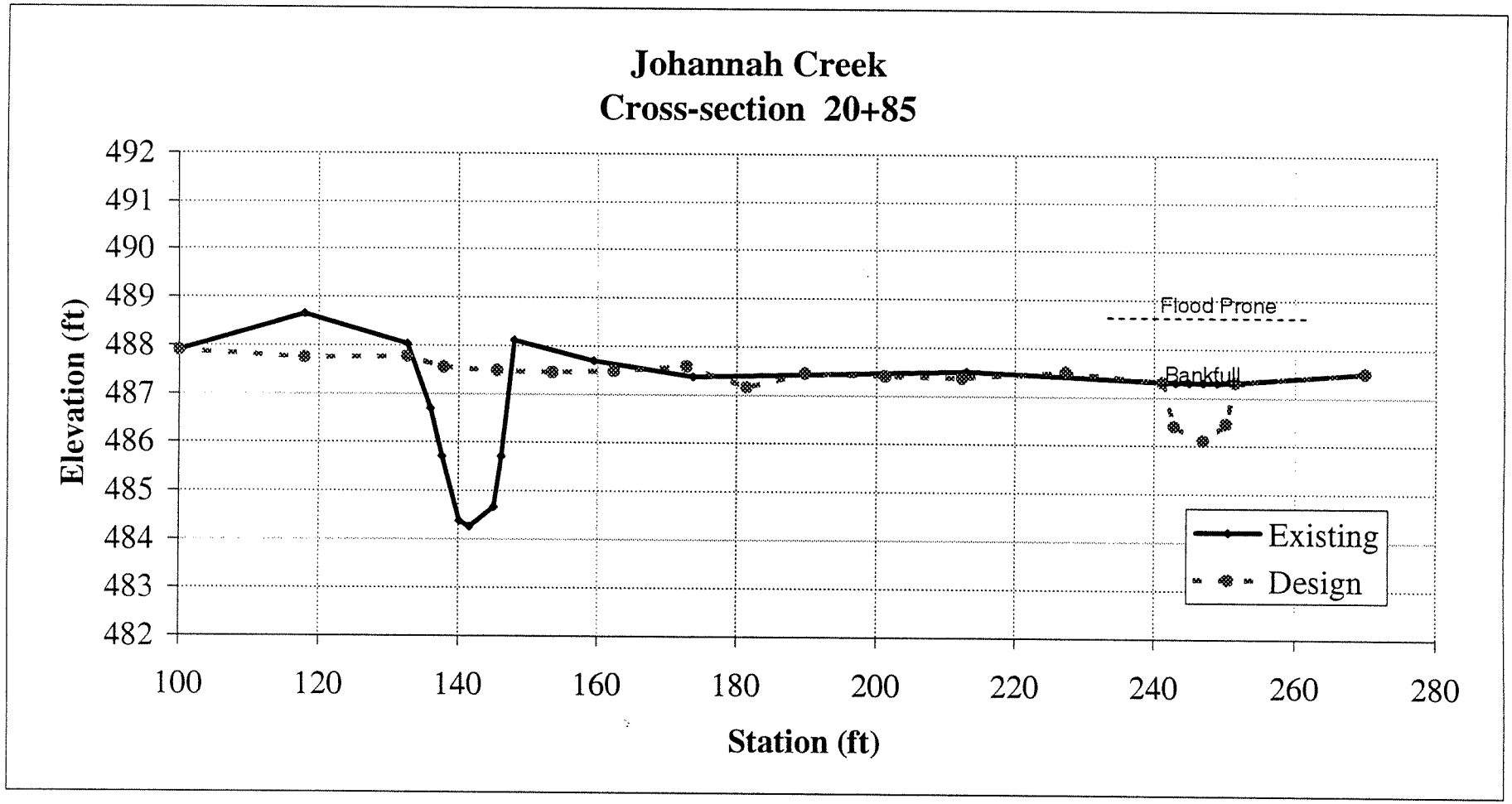
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	12.3	113.0	121.8	489.60	8.8	1.0	8.7	8.9	1.8	1.4	3.6
Design	Riffle	E/C	100	40.0	50.4	493.60	10.4	0.9	12.0	9.0	1.2	9.6	1.0



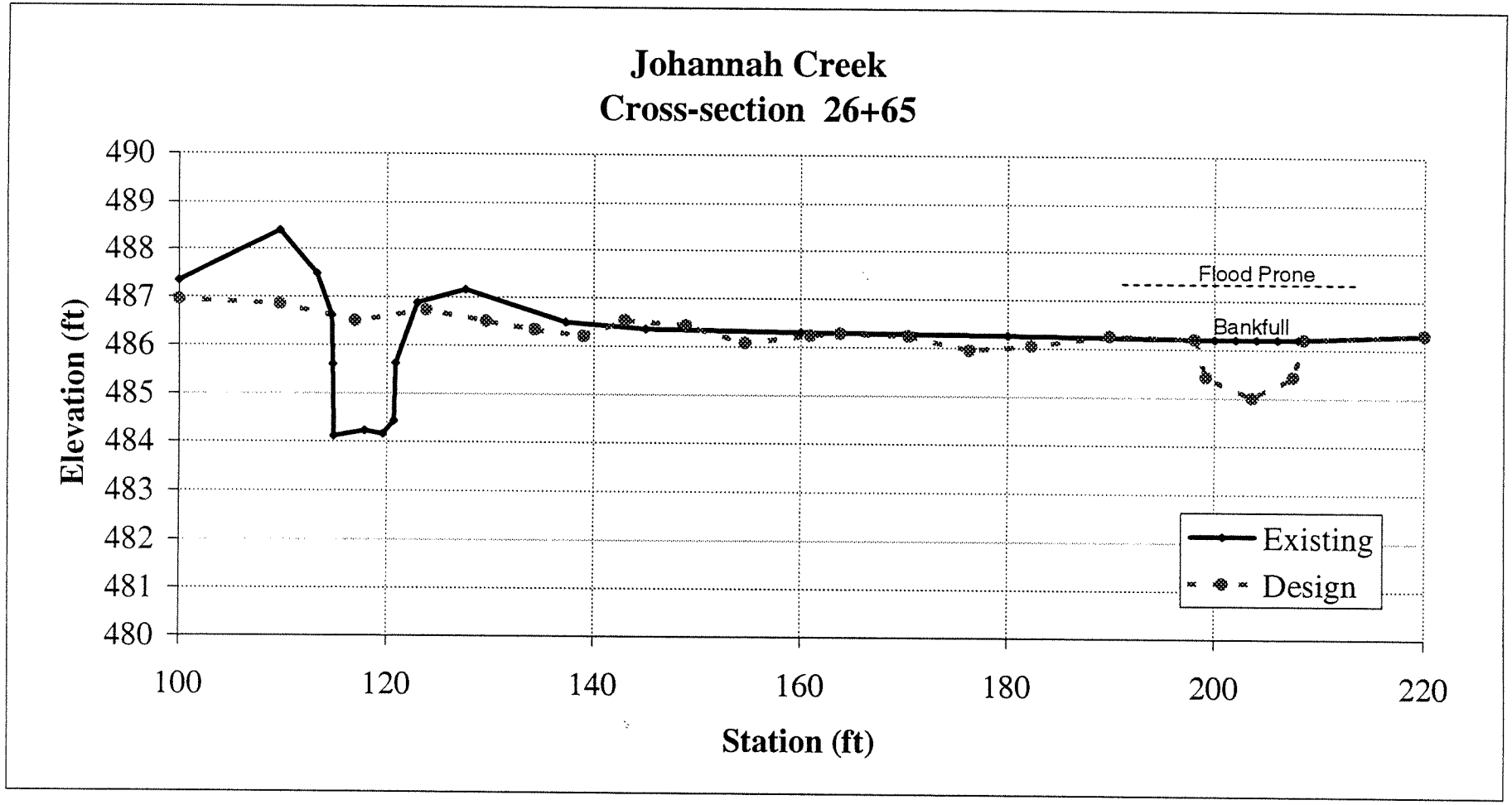
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	G	11	326.8	334.6	488.10	7.8	1.2	6.7	9.1	1.5	1.4	2.4
Design	Pool	----	100	115.0	127.6	489.60	12.6	0.8	15.0	10.6	2.0	7.9	1.0



	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Pool	----	12	137.7	146.2	485.70	8.5	1.0	8.4	8.6	1.5	1.4	2.6
Design	Riffle	E/C	100	241.2	251.6	487.30	10.4	0.9	12.0	9.0	1.2	9.6	1.0



	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	E	100	114.8	120.8	485.60	6.1	1.3	4.5	8.2	1.5	16.5	1.9
Design	Riffle	E/C	100	198.1	208.5	486.20	10.4	0.9	12.0	9.0	1.2	9.6	1.0



Appendix 6. DrainMod Input File Used to Model the Proposed Restoration Practices of the Project Site

DRAINMOD .GEN File Used to Simulate the Proposed Restoration Hydrology.

```
*** Job Title ***
EBX Westbrook Lowgrounds Mitigation Site - Design, 250 ft from stream
Smithfield Weather Data - Jan 1970 to Mid October 2001
*** Printout and Input Control ***
 3 101 C:\DRAINMOD\outputs
*** Climate ***
100000 C:\DRAINMOD\WEATHER\SMITHFIELD_1970-2002.RAI
100000 C:\DRAINMOD\WEATHER\SMITHFIELD_1970-2002.TEM
2000  1 2001 12 3530  77 0
 2.01 2.32 2.10 1.72 1.23 1.00  .86  .82  .92 1.05 1.22 1.44
*** Drainage System Design ***
 1    .00
     40.00    136.49  15000.00      4.00      2.50      4.00      5.49     20.00
           0    2.000000E-02    10000.000000
           0      130.000000       10.000000    1.000000E-03
           1       12.000000      150.000000     7500.000000        2.000000
    120.00      1.00       .00
 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120 1120
*** Soils ***
    183.00      5.00
  10. 2.00  45. 2.00  70.25.00 140.30.00 183.30.00
99     .00
*** Trafficability ***
 4 1 5 1 820               3.9       1.2       2.0
12321232 820               3.9       1.2       2.0
*** Crop ***
      .190
 410 818       30.00
 410 818
11
 1 1  3.00 416  3.00 5 4  4.00 517 15.00 6 1 25.00 620 30.00 718 30.00 820 20.00
 924 10.00 925  3.001231  3.00
*** Wastewater Irrigation ***
 0    1 1  10   1  6
 0 0       0 0       0 0       0 0
   7.00000   1.00000  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40  .40
WET *** Wetlands Information ***
 1
  76 309
 30.0  29
COM *** Combo Drainage Weir Settings ***
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
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 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
 0  0  0    .0
FPE *** Fixed Avg Daily PET for the month(cm) ***
    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00    1.00
MRA *** Monthly Ranking ***
 0
FAC *** Daily PET Factors ***
 0
STM *** Soil Temperature ***
      ZA      ZB      TKA      TKB      TB     TLAG    TSNOW    TMELT     CDEG     CICE
    .000    .000    .000     .000      .0       .0       .0       .0       .0       .0
```

```
Initial Soil Temperature
 0
Initial snow depth(m) & density(kg/m3)
      .00       .00
Freezing characteristic curve
 0
```

Appendix 7. Reference Wetland and Stream Data

Delineation Performed by: Wetland and Natural Resource Consultants, Inc.
11 South College Ave, Suite 203
PO Box 224
Newton, NC 28658
Office Phone: (828) 465-3035 Fax: (828) 465-3050

WETLAND DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: **WESTBROOK REFERENCE SITE** Date: **SEPTEMBER, 2001**
Applicant/Owner: **EBX NEUSE I** County: **JOHNSTON**
Investigator: **HUYSMAN** State: **NC**

Do normal circumstances exist on the site? **YES** Community ID: **COASTALPLAIN SMALL STREAM**
Is the site significantly disturbed? **NO** Transit ID: _____
(Atypical situation)
Is the area a potential problem area? **NO** No Plot ID: _____
(If needed, explain on reverse.)

VEGETATION

1. ***QUERCUS PHELLOS***	FACW	TREE	9. ***SAMBUCUC CANADENSIS***	FACW-	SHRUB
2. ***ACER RUBRUM***	FAC	TREE	10. ***LEUCOTHOE AXILLARIS***	FACW	SHRUB
3. ***LIQUIDAMBAR STYRAC.***	FAC+	TREE	11. ***ARUNDINARIA GIG.***	FACW	HERB
4. ***QUERCUS NIRGA***	FAC	TREE	12. ***CAREX***	FAC+	HERB
5. ***QUERCUS MICHAUXII***	FACW-	TREE	13. ***JUNCUS EFF.***	FCW+	HERB
6. ***FRAXINUS PENNSYLVA.***	FACW	TREE	14. ***IMPATIENS CAPENSIS***	FACW	HERB
7. ***MAGNOLIA VIRGINIANA.***	FCW+	SHRUB	15. ***ONOCLEA SENSIBILIS***	FACW	HERB
8. ***ILEX OPACA***	FAC-	SHRUB	16. ***OSMUNDA CINNAMOMEA***	FCW+	HERB

Percent of dominant species that are OBL, FACW or FAC (excluding FAC-): **100%**

Remarks: **VEGETATION CONSISTENT WITH COASTALPLAIN SWAMP FOREST.**

HYDROLOGY

- ☐ Recorded Data (describe in remarks)
- ☐ Stream, Lake or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other
- ☒ No Recorded Data Available

Field Observations:

Depth of Surface Water: **NONE**(in.)

Depth to Free Water in Pit: **LESS 1**(in.)

Depth to Saturated Soil: **LESS 1** (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ☐ Inundated
- ☒ Saturated in Upper 12 Inches
- ☒ Water Marks
- ☐ Drift Lines
- ☒ Sediment Deposits
- ☒ Drainage Patterns in Wetlands

Secondary Indicators: (2 or more required)
- ☒ Oxidized Root Channels in Upper 12 Inches
- ☒ Water-Stained Leaves
- ☒ Local Soil Survey Data
- ☒ FAC Neutral Test
- ☐ Other (explain in remarks)

Remarks: **HYDROLOGY CRITERIA MET**

Project #

SOILS

Map Unit Name
(Series and Phase):**PANTEGO**

Drainage Class: **POORLY DRAINED**
Field Observations: _____

Taxonomy (Subgroup):**TYPIC UMBRAQUUALT**

Confirm Mapped Type? **SOIL SURVEY**

Profile Description:

Depth (ins.)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure etc.
0-30	**A**	**10YR 2/1**	_____	_____	**LOAM**
30-50	**BTG**	**10YR 4/1**	**10YR 6/1**	**FEW**	**SANDY CLAY LOAM**
50 +	**BC**	**10YR 4/2**	_____	_____	**SANDY LOAM**
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☒ Reducing Conditions
- ☒ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soil
- ☐ Organic Streaking in Sandy Soils
- ☒ Listed on Local Hydric Soils List **
- ☒ Listed on National Hydric Soils List
- ☐ Other (explain in remarks)

Remarks: **HYDRIC SOILS FIELD CONFIRMED**

Wetland Determination
(yes or no)

Hydrophytic Vegetation Present? **YES**
Wetland Hydrology Present? **YES**
Hydric Soils Present? **YES**

Is This Sampling Point Within a Wetland? **YES**

Remarks: _____

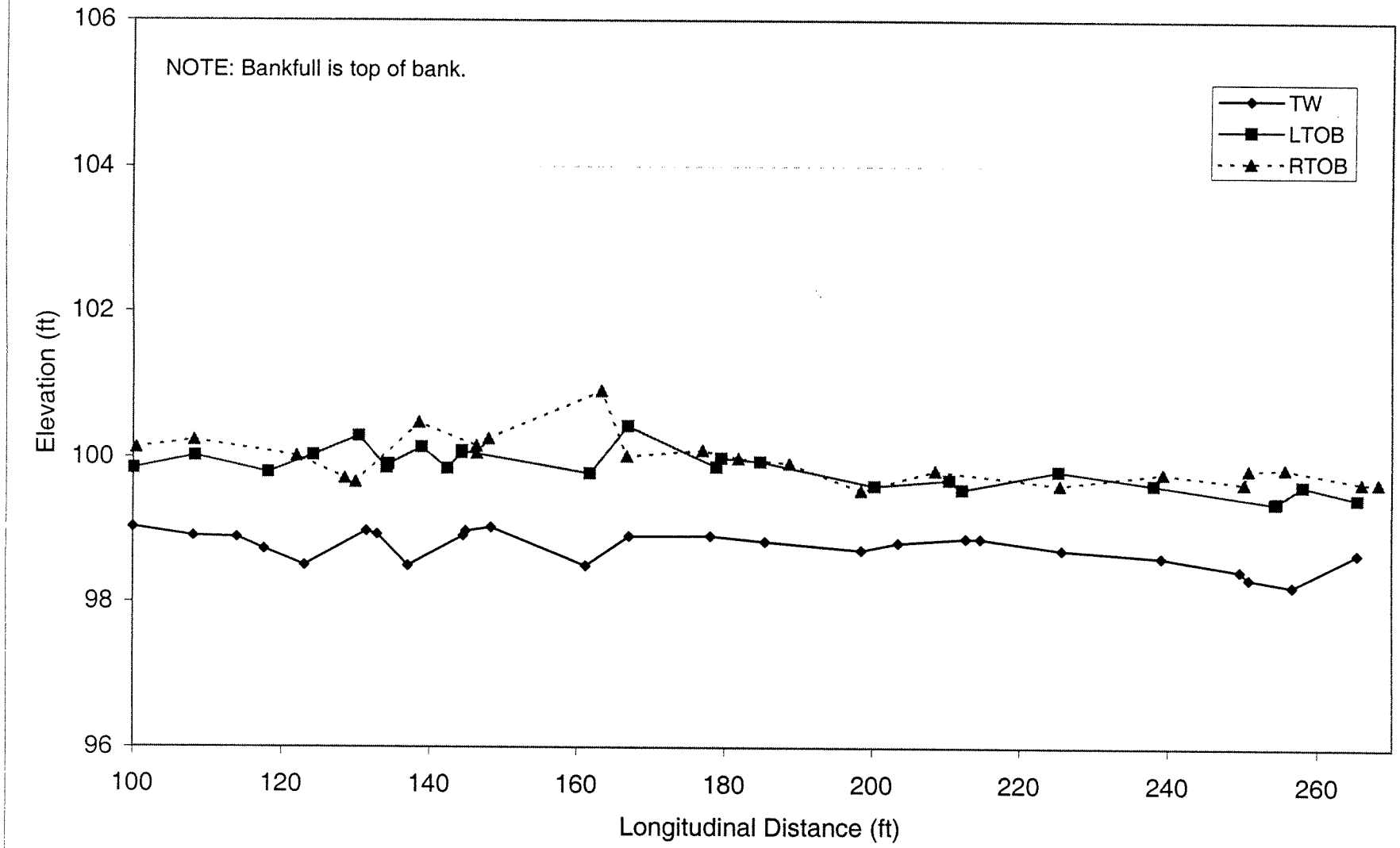
Reference Reach Information for:

Johannah Creek Reference Reach - Johnston County, NC

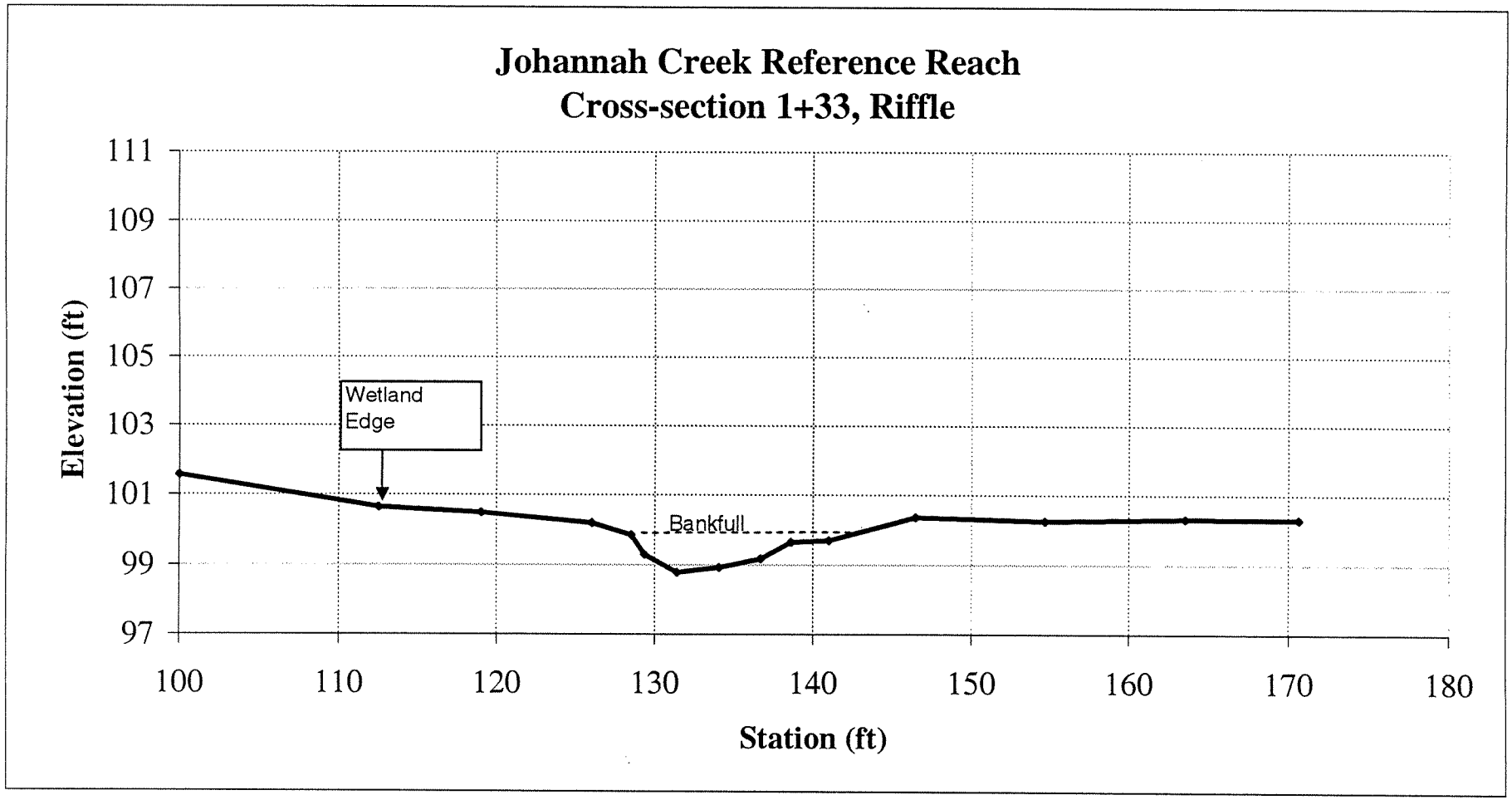
Rosgen Stream Type		E5/C5
Drainage Area (sq mi)		1
Reach Length Surveyed (ft)		165
Dimension	Bankfull Width (ft)	9.7
	Bankfull Mean Depth (ft)	0.8
	Width/Depth Ratio	12
	Bankfull Area (sq ft)	8
	Bankfull Max Depth (ft)	1.1
	Width of Floodprone Area (ft)	100
	Entrenchement Ratio	> 2.2
	Max Pool Depth (ft)	1.5
	Ratio of Max Pool Depth to Bankfull Depth	1.9
	Pool Width (ft)	8 - 10
	Ratio of Pool Width to Bankfull Width	0.8 - 1.0
	Pool to Pool Spacing (ft)	16 - 59
	Ratio of Pool to Pool Spacing to Bankfull Width	1.6 - 6.1
	Bank Height Ratio	1
Pattern	Meander Length (ft)	50
	Meander Length Ratio	5.2
	Radius of Curvature (ft)	15 - 27
	Radius of Curvature Ratio	1.5 - 2.8
	Meander Belt Width (ft)	14 - 20
	Meander Width Ratio	1.4 - 2.1
	Sinuosity	1.22
Profile	Valley Slope (ft/ft)	0.0027
	WS Slope (ft/ft)	0.0022
	Pool Slope (ft/ft)	0.0005
	Ratio of Pool Slope to WS Slope	0.23

Johannah Creek Reference Reach Survey

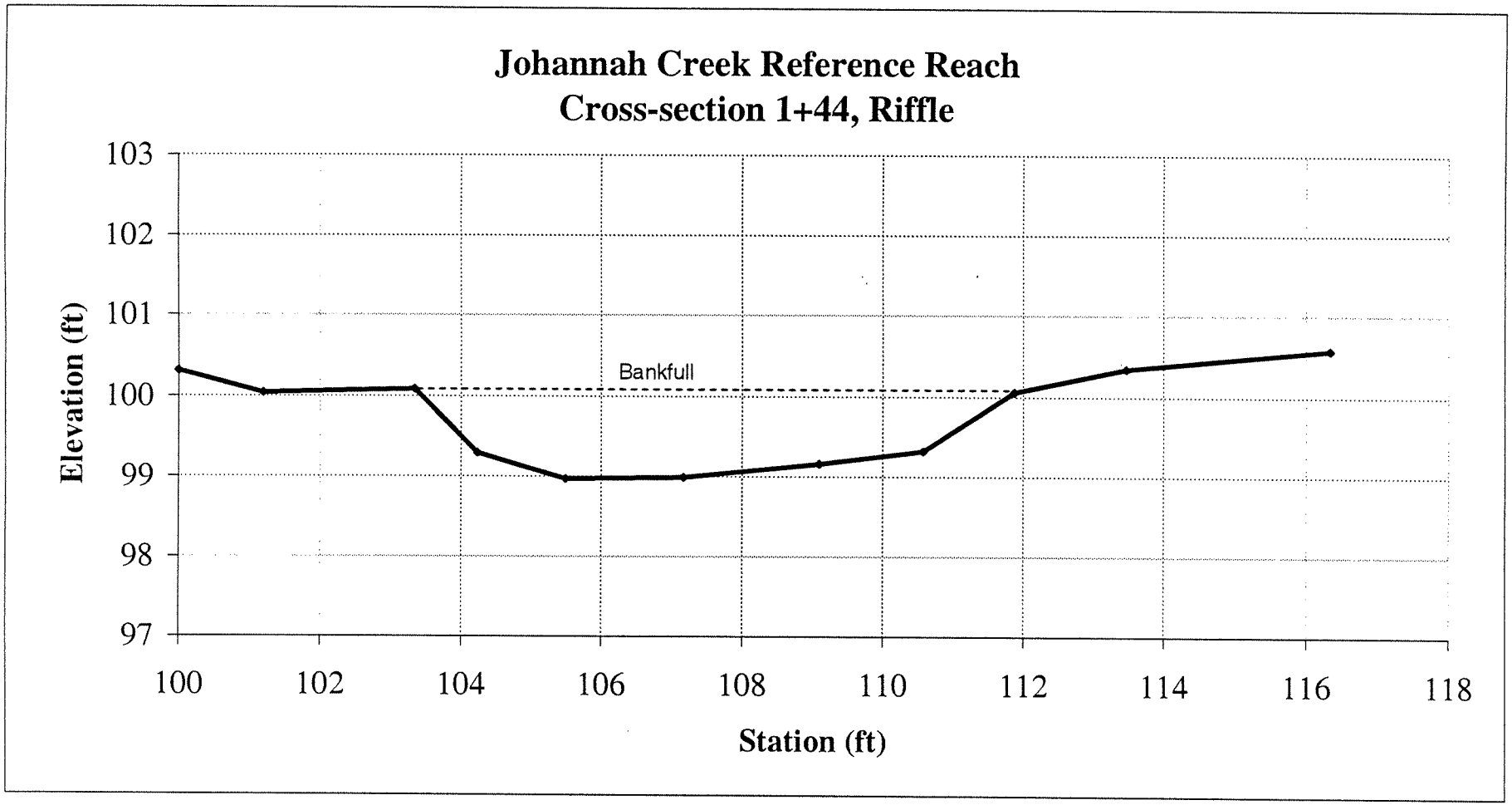
Longitudinal Profile



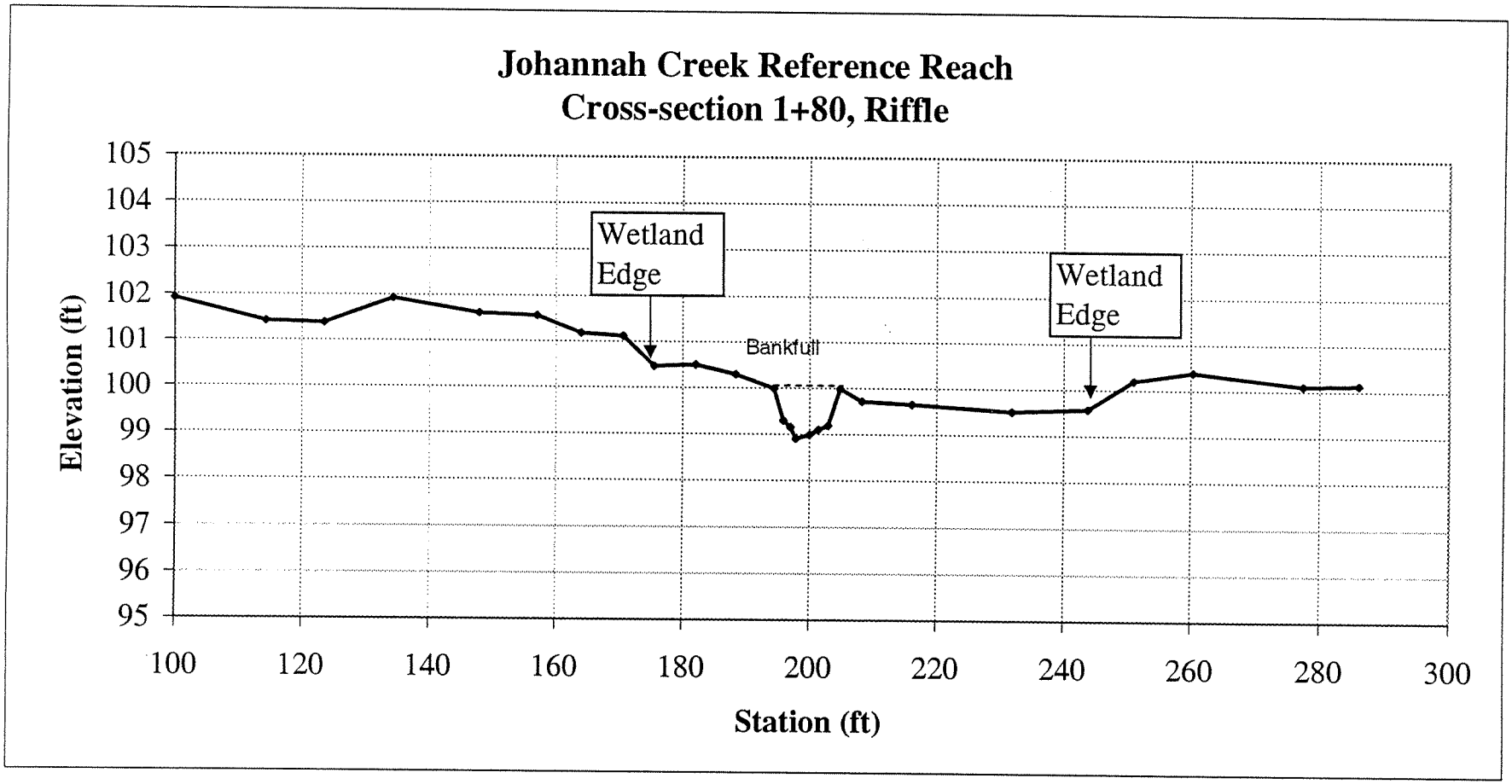
	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	C5	100	128.5	141.0	99.85	12.5	0.6	19.7	7.9	1.1	8.0	1.0

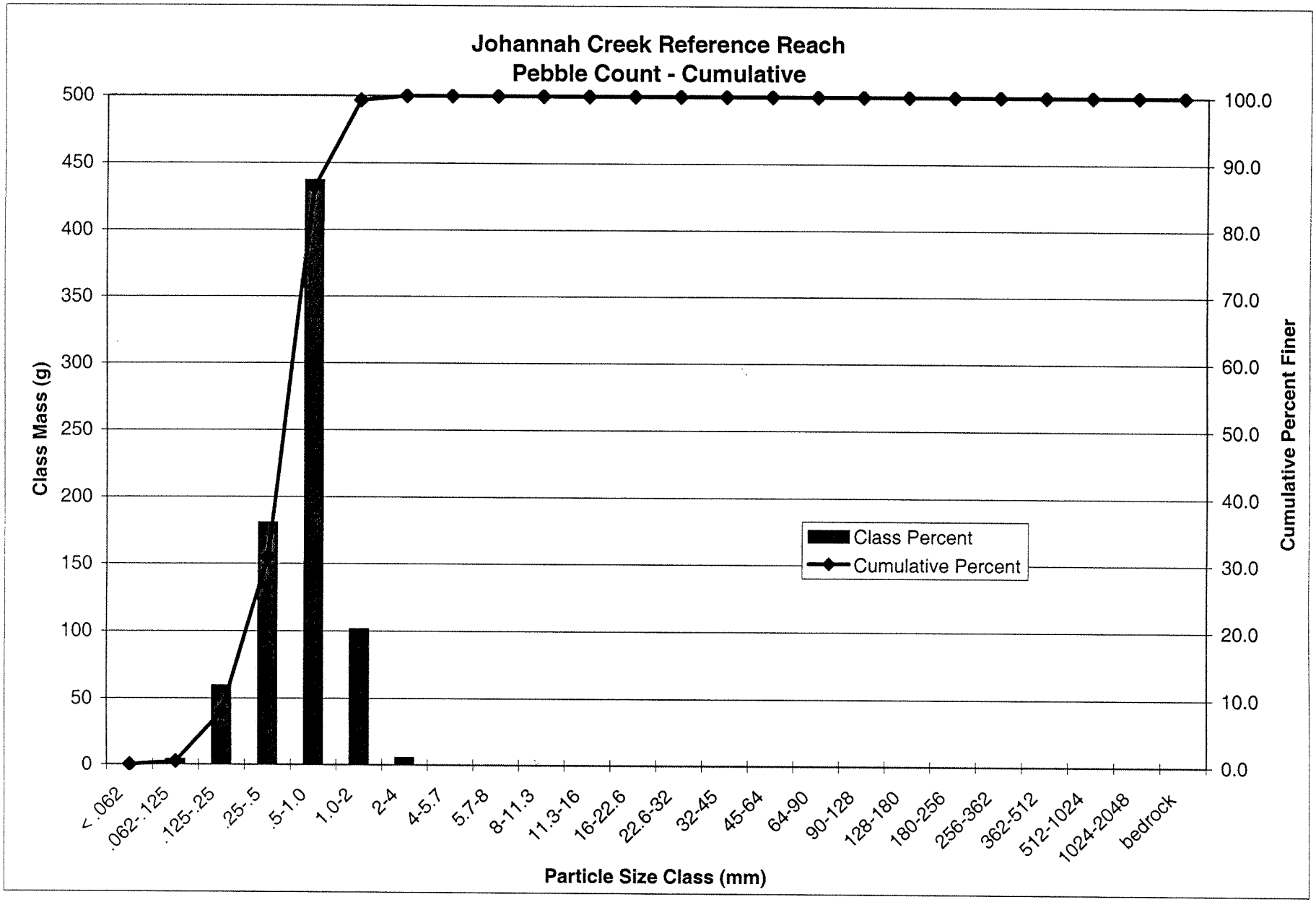


	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	E5	100	103.3	111.9	100.08	8.5	0.8	10.1	7.2	1.1	11.7	1.0

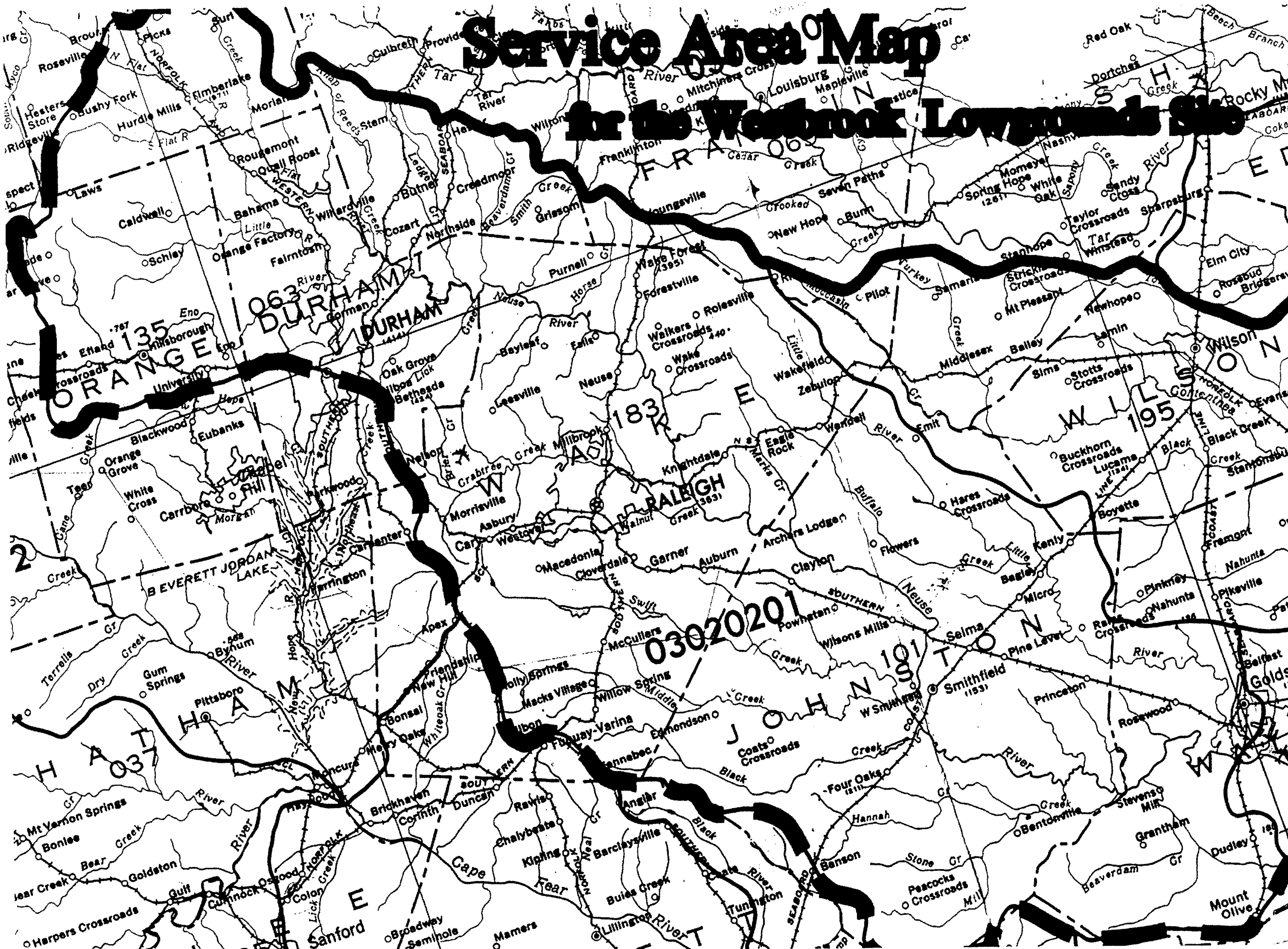


	Feature	Type	Wfpa	LBKF	RBKF	ELbkf	Wbkf	Dbkf	W/D	Abkf	Dmax	ER	BHR
Existing	Riffle	C5	100	194.4	204.8	99.99	10.4	0.8	13.8	7.8	1.1	9.6	1.0




Johannah Creek Reference Reach
Pebble Count - Cumulative
Class Mass (g)
Cumulative Percent Finer
Particle Size Class (mm)
Class Percent
Cumulative Percent
500
450
400
350
300
250
200
150
100
50
0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
< .062
.062-.125
.125-.25
.25-.5
.5-1.0
1.0-2
2-4
4-5.7
5.7-8
8-11.3
11.3-16
16-22.6
22.6-32
32-45
45-64
64-90
90-128
128-180
180-256
256-362
362-512
512-1024
1024-2048
bedrock

Appendix 8. Hydrologic Unit Code Service Area Map



Service Area Map
for the Westbrook Lowgrounds Site
ORANGE 135
DURHAM 063
DURHAM
WAKE 183
RALEIGH
JOHNSTON 101
WILSON 195
CHATHAM 037
FRANKLIN
LEE
03020201
B EVERETT JORDAN LAKE
Louisburg
Wilson
Smithfield
Selma
Goldsboro
Sanford
Pittsboro
Chapel Hill
Carrboro
Hillsborough
Apex
Cary
Garner
Clayton
Benson
Fuquay-Varina
Morrisville
Wendell
Zebulon
Knightdale
Rolesville
Wake Forest
Youngsville
Franklinton
Creedmoor
Butner
Neuse
Cape Fear River

Appendix 9. Credit Accounting Ledger Sheet

Neu-Con Wetland and Stream Mitigation Umbrella Bank

Worksheets for Accounting of Mitigation Bank Credits & Debits **Sheet No. _____**

Westbrook Lowgrounds Site, HUC 03020201

			Riverine Restoration			Non-Riverine Restoration			Preservation			Stream Restoration		
Date	Transaction Description	Permit Number	Debits(-)	Credits(+)	Balance	Credits(+)	Debits(-)	Balance	Credits(+)	Debits(-)	Balance	Credits(+)	Debits(-)	Balance
											Ending/Beginning Balance			

Appendix 10. Sample Conservation Easement

DRAWN BY AND AFTER
RECORDING RETURN TO:

_____

NORTH CAROLINA
_____ COUNTY

THIS CONSERVATION EASEMENT ("Conservation Easement") made this ____ day of _____, 2002, by and between _____, with an address of ("Grantor") and _____ with an address of _____ ("Grantee").

The designation Grantor and Grantee as used herein shall include said parties, their personal representatives, heirs, executors, successors and assigns, and shall include singular, plural, masculine, feminine or neuter as required by context.

RECITALS

WHEREAS, Grantor owns in fee simple approximately _____ (_____) acres of certain real property situate, lying and being in _____ County, North Carolina, and more particularly as the Conservation Easement Area and Access Easement Area on the plat recorded in Map _____, Page _____ in the Lenoir County, North Carolina Registry of Deeds Exhibit A (the "Property");

WHEREAS, Grantor and Grantee recognize the conservation value of the Property in its present state as a scenic, natural and rural area that has not been subject to significant development and as a significant area that provides a "relatively natural habitat for fish, wildlife, or plants or similar ecosystem" as that phrase is used in Section 170(h)(4)(A)(ii) of the Internal Revenue Code;

WHEREAS, Grantor and Grantee further recognize the conservation and open space value of the Property in its present state, the preservation of which (a) is pursuant to local, state and federal government policy and will provide for scenic enjoyment of the general public and (b) will yield significant public benefit;

WHEREAS, pursuant to the Mitigation Agreement between North Carolina Department of Transportation ("NCDOT") and EBX-Neuse I, LLC, EBX-Neuse I, LLC paid Grantor to restrict land use on the Property consistent with this Conservation Easement and EBX-Neuse I in turn will be using the Property to mitigate unavoidable stream and wetlands impacts detailed in one or more permits (the "Permits") which may be issued hereafter by the United States Army Corps of Engineers, Wilmington District (the "Corps") for Wetland and / or Stream impacts by the North Carolina Department of Transportation ("NCDOT"), and

WHEREAS, Grantor has agreed to grant and convey a perpetual conservation easement over the Property, thereby restricting and limiting the use of the Property on the terms and conditions and for the purposes hereinafter set forth;

NOW, THEREFORE, for and in consideration of the covenants and representations contained herein for other good and valuable consideration, the receipt and legal sufficiency of which is hereby acknowledged, Grantor hereby unconditionally and irrevocably grants and conveys unto Grantee, its successors and assigns, forever and in perpetuity a fully transferable Conservation Easement of the nature and character and to the extent hereinafter set forth, over the Property together with the right to preserve and protect the conservation values thereof, as follows:

ARTICLE I.
PURPOSES

The purposes of this Conservation Easement are to preserve and protect the conservation values of the Property and the natural character of the Property. To achieve these purposes, the parties hereto agree to the conditions and restrictions set forth hereunder.

ARTICLE II.
DURATION OF EASEMENT

This Conservation Easement shall be perpetual. This Conservation Easement is an easement in gross, runs with the land, is fully assignable, and is enforceable by Grantee, its successors or assigns, against Grantor, Grantor's personal representatives, heirs, executors, successors and assigns, lessees, agents, invitees and licensees.

ARTICLE III.
PROHIBITED AND RESTRICTED ACTIVITIES

Any activity on, or use of, the Property inconsistent with the purposes of this Conservation Easement is prohibited. The Property shall be preserved in its natural condition and restricted from any development that would impair or interfere with the conservation values of the Property.

Without limiting the generality of the foregoing, the following activities and uses are expressly prohibited, restricted or reserved unless otherwise authorized by the Corps:

A. Disturbance of Natural Features. Any change, disturbance, alteration or impairment of the natural features of the Property or any introduction of non-native plants and/or animal species is prohibited.

B. Construction and Residential Use. There shall be no constructing or placing of any building, mobile home, asphalt or concrete pavement, billboard or other advertising display, antenna, utility pole, tower, conduit, line, pier, landing, dock or any other temporary or permanent structure or facility on or above the Property. Residential use of the Property is prohibited.

C. Industrial and Commercial Use. Industrial and/or commercial activities, including any right of passage used in conjunction with commercial or industrial activity, are prohibited on the Property.

D. Agricultural, Grazing and Horticultural Use. Agricultural, grazing, and horticultural use of the Property is prohibited.

E. Silvicultural Use and Land Clearing. There may be no destruction or cutting of trees or plants on the Property, except to control insects and disease or except as otherwise provided herein.

F. Signage. Display of billboards, signs or advertisements is prohibited on or over the Property, except the posting of no trespassing signs, signs identifying the conservation values of the Property or other permitted use of the Property and/or signs identifying the Grantor as owner of the Property and Grantee as the holder of a Conservation Easement on the Property.

G. Dumping or Storage. Dumping or storage of soil, trash, ashes, garbage, waste, abandoned vehicles, appliances, machinery or hazardous substances, or toxic or hazardous waste, or any placement of underground or aboveground storage tanks or other materials on the Property is prohibited.

H. Mineral Use, Excavation, Dredging. There shall be no grading, filling, excavation, dredging, mining or drilling; no removal of topsoil, sand, gravel, rock, peat, minerals or other materials, and no change in the topography of the land in any manner on the Property, except to restore natural topography or drainage patterns.

I. Water Quality and Drainage Pattern. There shall be no activities conducted on the Property that would be detrimental to water purity or any of the plants or habitats within the Property or that would alter natural water levels, drainage, sedimentation and/or flow in or over the Property, or cause soil degradation or erosion.

J. Subdivision. Subdivision, partitioning, or dividing the Property is prohibited.

K. Vegetative Cutting. Cutting, removal, mowing, burning, harming or destruction of vegetation on the Property is prohibited except: (1) in instances where such activities are deemed necessary for the health and safety of nearby residents or the general public, but only if such activities are approved by the Grantee, (2) when considered necessary for the continued maintenance of wetland functions as approved by the Grantee, or (3) mowing existing paths or roadways.

ARTICLE IV.
GRANTOR'S ADDITIONAL RESERVED RIGHTS

The Grantor and its personal representatives, heirs, executors, successors and assigns hereby reserves the right to quiet enjoyment of the Property, the rights to ingress and egress to the Property, the right to continue such uses as exist as of the date of this grant not inconsistent with this Conservation Easement and as shown on the survey recorded in Map Book _____, Page _____ of the County Registry and the right to sell, transfer, gift or otherwise convey the Property in whole or in part, provided such sale, transfer, gift or conveyance is subject to the terms of, and shall specifically reference, this Conservation Easement and written notice is provided to Grantee in accordance with the provisions herein below.

It is expressly understood and agreed that Grantor, including but not limited to its licensees, guests, employees, representatives, successors, heirs and assigns, retains the right and privilege, which rights and privileges shall not be abridged and/or restricted by any conservation activities by Grantee, its successors, heirs and assigns pursuant to this agreement, to continue as shown on the survey recorded in Map Book _____, Page ____ of the _____ County Registry wildlife activities presently enjoyed on the property, specifically hunting, fishing, trapping and hiking. Furthermore, it is understood and agreed that Grantor has established certain means of ingress, egress, and regress on and through the property and certain other improvements for purposes of hunting, fishing, trapping and hiking (i.e., deer stands, etc.) to permit Grantor to enjoy these wildlife activities. Accordingly, Grantor, including but not limited to its licensees, guests, employees, representatives, successors, heirs and assigns, shall remain entitled to maintain these means of egress, ingress, and regress, and certain other improvements, in their present condition without regard to the other terms and conditions contained herein.

ARTICLE V.
GRANTEE'S RIGHTS

Grantee is granted the right to preserve and protect in perpetuity the existing condition of the Property. Consistent with these rights, Grantee may monitor the Property to ensure compliance with the terms of the Agreement to ensure that the existing conditions of the Property have not been altered. Grantee is also granted the right to enter the Property for the purposes of implementing and monitoring the Property and otherwise monitoring compliance with the term of this Agreement.

ARTICLE VI.
ENFORCEMENT AND REMEDIES

A. Upon any breach of the terms of this Conservation Easement by Grantor, its agents, personal representatives, heirs, executors, successors, or assigns, which comes to the attention of the Grantee, the Grantee may notify the Grantor in writing of such breach. The Grantor shall have thirty (30) days after receipt of such notice to undertake actions that are reasonably calculated to promptly correct the conditions constituting such breach. If the breach remains uncured after thirty (30) days; the Grantee may exercise any, or all, or none of the following remedies:

1. Institute suits to enjoin any breach or enforce any covenant by temporary and/or permanent injunctions either prohibitive or mandatory and/or to recover any damages from injury to any conservation values protected by this Conservation Easement, including damages for the loss of scenic; aesthetic, historic or environmental values and attorneys fees if Grantee prevails; and

2. Require that the land be restored promptly to the condition required by this Conservation Easement.

B. The Grantee has the right, but not the obligation, to prevent any activity on or use of the Property that is inconsistent with the purpose of this Conservation Easement. Grantee's remedies shall be cumulative and shall be in addition to any other rights and remedies available to Grantee at law or equity. If Grantee, in its sole discretion, determines that circumstances require immediate action to prevent or mitigate significant damage to the conservation values of the Property, the Grantee may pursue its remedies without prior notice to Grantor, but shall exercise reasonable efforts to notify Grantor.

C. No failure on the part of Grantee to enforce any covenant or provision hereof shall discharge or invalidate such covenant or any other covenant, condition or provision hereof or affect the right to Grantee to enforce the same in the event of a subsequent breach or default.

D. Nothing contained in this Conservation Easement shall be construed to entitle Grantee to bring any action against Grantor for any injury or change in the Property resulting from causes beyond the Grantor's control, including, without limitation, fire, flood, storm, war, acts of God or third parties, except Grantor's lessees or invitees; or from any prudent action taken in good faith by Grantor under emergency conditions to prevent, abate, or mitigate significant injury to life, damage to property or harm to the Property resulting from such causes.

E. It is agreed by the parties hereto that the covenants, conditions, terms and restrictions contained herein shall be binding upon the parties, their personal representatives, heirs, executors, successors and assigns and shall continue as a servitude running in perpetuity with the Property. It is expressly understood and agreed that Grantee shall have the absolute right, from time to time, to assign, sell, transfer or encumber its right, title and interest in and to this Conservation Easement and/or the Property, in whole or in part, as to all or part of the Property, to any person or entity without the consent of Grantor.

ARTICLE VII.
PUBLIC ACCESS

The making and imposition of this Conservation Easement does not convey to the public the right to enter the Property for any purpose whatsoever.

ARTICLE VIII.
EXHIBIT, DOCUMENTATION AND TITLE

A. Legal Description. Exhibit A, identifying the Property, is attached hereto and made a part hereof by reference.

B. Title. Grantor covenants and represents that Grantor is the sole owner of and is seized of the Property in fee simple and has good right to make, declare and impose the aforesaid Conservation Easement; that the Property is free and clear of any and all encumbrances, except easements, leases, restrictions, rights of way, if any, and government regulations of record.

ARTICLE IX.
MISCELLANEOUS

A. Subsequent Transfers. Grantor, for itself and his personal representatives, heirs, executors, successors and assigns regarding the Property, further declares that the matters set forth in this Conservation Easement shall run with the land comprising the Property and be binding thereon, without the necessity to make specific reference to this Conservation Easement in a separate paragraph of any subsequent lease, deed, or other legal instrument by which any interest in the Property is conveyed.

B. Conservation Purpose.

1. Grantor, for itself, his personal representatives, heirs, executors, successors and assigns, declares that this Conservation Easement is established exclusively for conservation purposes, as defined in 26 U.S.C. Section 170(h)(4)(a).

2. Grantor declares that the terms of this Conservation Easement shall survive any merger of the fee and easement interests in the Property or any portion thereof and shall not be amended, modified or terminated without the prior written consent and written approval of the Grantee and the Corps.

C. Construction of Terms. This Conservation Easement shall be construed to promote the purposes of the North Carolina enabling statute set forth in N.C.G.S. § 121-34 et seq., which authorizes the creation of conservation easements for purposes including the conservation purposes of this Conservation Easement, including such purposes as are defined in 26 U.S.C. Section 170(h)(4)(A).

D. Recording. Grantee or Grantor shall record this instrument and any amendment hereto or assignment of Grantee's rights hereunder in the Registry of _____ County, North Carolina and may re-record it at any time as may be required to preserve its right under this Conservation Easement.

E. Hazardous Waste. The Grantor covenants and represents that, to the best of Grantor's knowledge, no hazardous substance or hazardous or toxic waste exists nor has been generated, treated, stored, used, disposed of, or deposited in or on the Property.

F. Notices. Any notices given under this Conservation Easement shall be in writing and shall be delivered by depositing same in the U.S. Mail, certified, return receipt requested, postage prepaid and addressed to the parties as set forth above, or to such other addresses any such party may establish in writing to the others, pursuant to this notice provision.

G. Amendments. This Easement may be amended only by a writing, signed by Grantor and Grantee, subject to approval of the Corps, and any such amendment(s) shall be effective upon recording of such writing in the Registry of _____ County, North Carolina.

H. Severability. Should any provision of this Conservation Easement be declared by any tribunal of competent jurisdiction to be illegal, invalid or unenforceable, the legality, validity and enforceability of the remaining parts, terms or provisions shall not be affected thereby, and

said illegal, unenforceable, or invalid part, term, or provision shall be deemed not to be a part of this Conservation Easement.

I. Governing Law. This Conservation Easement shall be governed by and construed in accordance with the laws of the State of North Carolina.

J. Headings. The headings contained in this Conservation Easement are for reference purposes only and shall not affect the meaning or interpretation hereof.

K. Access Easement. In addition to the easement and other rights and privileges granted by Grantor to Grantee and its successors and assigns pursuant to Article V of this Agreement, Grantor hereby grants and conveys to Grantee and its successors and assigns a perpetual, non-exclusive easement in, over and upon the area designated in Exhibit C for the purpose of entering upon and using all or any portion of the Property to the limited extent necessary to perform and enjoy the obligations imposed upon, and the benefits granted to, Grantee and its successors and assigns with respect to the Property as provided in Article V of this Agreement (the "Access Easement"). Grantee agrees that in the event Grantee enters upon and/or uses all or any portion of the Adjacent Property pursuant to the Access Easement, it shall do so in a manner that minimizes, to the extent reasonably possible, the interference with Grantor's use and enjoyment of the Adjacent Property, and after any such entry and/or use, it shall restore any portion of the Adjacent Property disturbed by Grantee to its condition prior to such entry and/or use or as near thereto as is reasonably practicable, or to such other condition as may be agreed upon by Grantor and Grantee.

L. Eminent Domain. If the whole or any part of, or any interest in, the Property be acquired or condemned by eminent domain or like power for any public or quasi-public use or purpose, then this Conservation Easement shall be subject to the applicable statutory and common law authorities regarding the condemnation, but only as to the part of the Property or interest in the Property so taken. All damages awarded for the acquisition or condemnation of the Property, or any part or interest therein, shall become the sole and absolute property of the of the owner of the interest in land acquired or condemned by eminent domain at the time of consideration.

TO HAVE AND TO HOLD unto _____, its successors and assigns forever. The covenants agreed to and the terms, conditions, restrictions and purposes imposed as aforesaid shall be binding upon Grantor, Grantor's personal representatives, heirs, executors, successors and assigns, and shall continue as a servitude in perpetuity with the Property.

IN WITNESS WHEREOF, the Grantor and Grantee hereto have set their hand and seals and caused these presents to be executed in their respective names by authority duly given, and, to the extent required, their corporate seal affixed, the day and year above first written.

GRANTOR:

(CORPORATE SEAL) By:_____

GRANTEE:

By:_____

(CORPORATE SEAL)

ATTEST:

STATE OF NORTH CAROLINA, COUNTY OF _____

I, _____, a Notary Public in and for the County and State aforesaid, do hereby certify that _____ personally came before me this day and acknowledged that he is Secretary of _____, and that by authority duly given and as an act of _____, the foregoing instrument was signed by _____, its President, attested by himself as Secretary, and sealed with the common seal of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and notaries seal this _____ day of _____, 200__.

Notary Public

My commission expires:_____

STATE OF NORTH CAROLINA, COUNTY OF _____

I, _____, a Notary Public in and for the County and State aforesaid, do hereby certify that _____ personally came before me this day and acknowledged that he is Secretary of _____, and that by authority duly given and as an act of _____, the foregoing instrument was signed by _____, its President, attested by himself as Secretary, and sealed with the common seal of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and notaries seal this _____ day of _____, 200__.

Notary Public

My commission expires:_____

Appendix 11. Financial Assurances

THE AMERICAN INSTITUTE OF ARCHITECTS

Bond #53SB103291475

AIA Document A312

Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):
EBX-Neuse I, LLC
10055 Red Run Blvd, Suite 130
Owings Mills, MD 21117

SURETY (Name and Principal Place of Business):
Travelers Casualty & Surety Company of America
Hartford, Connecticut 06183-9062

OWNER (Name and Address):
North Carolina Department of Transportation
Room 462 Transportation Building
P O Box 25201
Raleigh, NC 27611

CONSTRUCTION CONTRACT
Date:
Amount: $6,742,296.00
Description (Name and Location): Neu-Con Mitigation Project - Performance Agreement with North Carolina Department of Transportation

BOND
Date (Not earlier than Construction Contract Date): October 5, 2000
Amount: $6,742,296.00
Modifications to this Bond: ☒ None ☐ See Page 3

CONTRACTOR AS PRINCIPAL
Company: (Corporate Seal)
EBX-Neuse I, LLC

Signature: Gary M. Kelly
Name and Title: Manager

SURETY
Company: (Corporate Seal)
Travelers Casualty & Surety Company of America

Signature: Glen G. Roddey
Name and Title: Alex G. Roddey, Attorney-in-Fact

(Any additional signatures appear on page 3)

(FOR INFORMATION ONLY—Name, Address and Telephone)
AGENT or BROKER:
BB&T Givens & Williams Insurnace Services
3975 Fair Ridge Drive, #110
Fairfax, VA 22033
Phone: 703-352-2222

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

1 The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3 If there is no Owner Default, the Surety's obligation under this Bond shall arise after:

3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and

3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and

3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.

4 When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or

4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or

4.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or

4.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.

5 If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

6 After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and

6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

7 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators or successors.

8 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

9 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation avail-

able to sureties as a defense in the jurisdiction of the suit shall be applicable.

10 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.

11 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12 DEFINITIONS

12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.

12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

MODIFICATIONS TO THIS BOND ARE AS FOLLOWS:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		SURETY	
Company:	(Corporate Seal)	Company:	(Corporate Seal)
Signature: _____		Signature: _____	
Name and Title:		Name and Title:	
Address:		Address:	

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
TRAVELERS CASUALTY AND SURETY COMPANY
FARMINGTON CASUALTY COMPANY
Hartford, Connecticut 06183-9062
TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS
Naperville, Illinois 60563-8458

POWER OF ATTORNEY AND CERTIFICATE OF AUTHORITY OF ATTORNEY(S)-IN-FACT

KNOW ALL PERSONS BY THESE PRESENTS, THAT TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY and FARMINGTON CASUALTY COMPANY, corporations duly organized under the laws of the State of Connecticut, and having their principal offices in the City of Hartford, County of Hartford, State of Connecticut, and **TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS,** a corporation duly organized under the laws of the State of Illinois, and having its principal office in the City of Naperville, County of DuPage, State of Illinois, (hereinafter the **"Companies"**) hath made, constituted and appointed, and do by these presents make, constitute and appoint: **Patrick A. Givens, Sidney H. Williams, III, Ernest DeConti, Jr., Philip A. Colclough, Jr., Alex G. Roddey or Dorothy J. Outlaw * ***

of **Fairfax, VA,** their true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred to sign, execute and acknowledge, at any place within the United States, or, if the following line be filled in, within the area there designated
the following instrument(s):
by his/her sole signature and act, any and all bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking and any and all consents incident thereto

and to bind the Companies, thereby as fully and to the same extent as if the same were signed by the duly authorized officers of the Companies, and all the acts of said Attorney(s)-in-Fact, pursuant to the authority herein given, are hereby ratified and confirmed.

This appointment is made under and by authority of the following Standing Resolutions of said Companies, which Resolutions are now in full force and effect:

VOTED: That the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her.

VOTED: That the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary.

VOTED: That any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary, or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority.

This Power of Attorney and Certificate of Authority is signed and sealed by facsimile under and by authority of the following Standing Resolution voted by the Boards of Directors of TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS, which Resolution is now in full force and effect:

VOTED: That the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

IN WITNESS WHEREOF, TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS have caused this instrument to be signed by their Senior Vice President, and their corporate seals to be hereto affixed this 21st day of September, 1999.

STATE OF CONNECTICUT
) SS. Hartford
COUNTY OF HARTFORD

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
TRAVELERS CASUALTY AND SURETY COMPANY
FARMINGTON CASUALTY COMPANY
TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS

By _____
George W. Thompson
Senior Vice President

On this 21st day of September, 1999 before me personally came GEORGE W. THOMPSON to me known, who, being by me duly sworn, did depose and say: that he/she is Senior Vice President of TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS, the corporations described in and which executed the above instrument; that he/she knows the seals of said corporations; that the seals affixed to the said instrument are such corporate seals; and that he/she executed the said instrument on behalf of the corporations by authority of his/her office under the Standing Resolutions thereof.

Marie C. Tetreault
NOTARY PUBLIC
CONNECTICUT

Marie C Tetreault
My commission expires June 30, 2001 Notary Public
Marie C. Tetreault

CERTIFICATE

I, the undersigned, Assistant Secretary of TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY and FARMINGTON CASUALTY COMPANY, stock corporations of the State of Connecticut, and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS, stock corporation of the State of Illinois, DO HEREBY CERTIFY that the foregoing and attached Power of Attorney and Certificate of Authority remains in full force and has not been revoked; and furthermore, that the Standing Resolutions of the Boards of Directors, as set forth in the Certificate of Authority, are now in force.

Signed and Sealed at the Home Office of the Company, in the City of Hartford, State of Connecticut. Dated this 5th day of October, 2000.

By _____
Brian Hoffman
Assistant Secretary, Bond

General Agreement Of Indemnity

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
Hartford, Connecticut 06183

This General Agreement of Indemnity ("Agreement") is entered into by the undersigned ("Indemnitor") and Travelers Casualty and Surety Company of America ("Company"), witnesseth:

WHEREAS, in the transaction of business, certain Bonds have heretofore been and may hereafter be required by, for, or on behalf of the Indemnitor or any one or more of the parties included in the designation Indemnitor. Application has been made and will hereafter be made to the Company to execute such Bonds. As a prerequisite to the execution of such Bonds, the Company requires complete indemnification.

NOW, THEREFORE, as an inducement to the Company and in consideration of the execution and delivery by the Company of one or more Bonds, and for other good and valuable consideration, the Indemnitors do, for themselves, their heirs, executors, administrators and assigns, jointly and severally agree with the Company as follows:

1. **Definitions:** "Bond" Any and all contractual obligations which have been or will be undertaken by the Company on behalf of or at the request of Indemnitor, including renewals and extensions. "Company" Travelers Casualty and Surety Company of America, its affiliated companies, successors, assigns, parents and subsidiaries whether now existing or formed hereafter. "Indemnitor" Any one, or combination of any or all of the entities or individuals set forth below. "Corporate Indemnitors" are defined as the entity named below and their successors, assigns, subsidiaries, parents, affiliates, partnerships, joint ventures, or as co-venturer with others, whether now existing or formed hereafter. "Contract" An agreement of the Indemnitor for which the Company executes a Bond, procures a Bond, or has guaranteed performance. "Default" Any of the following shall constitute a Default: (a) a declaration of Contract default by the obligee or entity for whom a Contract is performed; (b) actual breach or abandonment of any Contract; (c) a breach of any provision of this Agreement; (d) failure to make payment of a properly due and owing bill in connection with any Contract; (e) the establishment by the Company in good faith of a reserve; (f) improper diversion of Contract funds or Indemnitor assets to the detriment of Contract obligations; (g) any Indemnitor becomes the subject of any proceeding or agreement of bankruptcy, receivership, insolvency, creditor assignment or actually becomes insolvent; (h) Indemnitor dies, becomes legally incompetent, is imprisoned, is convicted of a felony, or disappears and cannot be located; (i) any representation furnished to the Company by or on behalf of the Indemnitor proves to have been materially false or misleading when made.
2. **Payment of Premium:** The Indemnitor shall pay to the Company all premiums for every Bond executed and all renewals and extensions thereof, until the Company is discharged and fully released in writing from each such Bond.
3. **Indemnification and Hold Harmless:** The Indemnitor shall exonerate, indemnify and save the Company harmless from and against every claim, loss, damage, demand, liability, cost, charge, suit, judgment, attorney's fee, and expense which the Company incurs in consequence of having executed, or procured the execution of such Bonds. Expense includes the cost of procuring or attempting to procure release from liability, or in bringing suit to enforce this Agreement against any Indemnitor.
4. **Claim Settlement:** The Company shall have the right, in its sole discretion, to determine for itself and the Indemnitor whether any claim or suit brought against the Company or the Indemnitor upon any such Bond shall be paid, compromised, settled, defended or appealed, and its decision shall be binding and conclusive upon the Indemnitor. An itemized statement thereof sworn to by an employee of the Company or a copy of the voucher of payment shall be prima facie evidence of the propriety and existence of Indemnitor's liability. The Company shall be entitled to reimbursement for any and all payments made by it under the belief it was necessary or expedient to make such payments.
5. **Collateral Security:** Indemnitor agrees to pay the Company, upon demand, an amount sufficient to discharge any claim or demand made against the Company on any Bond. Indemnitor further agrees to pay the Company, upon demand, an amount equal to the value of improperly diverted Indemnitor assets or Contract Funds. These sums may be used by the Company to pay such claim or be held by the Company as collateral security against any loss, claim, liability or unpaid premium on any Bond. The Company shall have no duty to invest, or provide interest on the deposit.
6. **Remedies:** In the event of a Default, Indemnitor assigns, conveys, and transfers to the Company all of the rights and interest growing in any manner out of the Contracts and assigns all right, title, and interest of all of Indemnitor's plant, tools, vehicles, machinery, equipment and materials, to be effective as of the date of such Contracts. In addition, in the event of a Default, the Company shall have a right at its sole discretion to:

   (a) Take possession of the work under any Contract and to complete said Contract, or cause, or consent, to the completion thereof;

   (b) Take possession of the Indemnitor's equipment, tools, machinery, vehicles, materials, office equipment, books, records, documents, and supplies at the site of the work or elsewhere and utilize them for the completion of the work under the Contracts without payment for such use;

   (c) Assert or prosecute any right or claim in the name of the Indemnitor and to settle any such right or claim as the Company sees fit;

(d) Execute in the name of the Indemnitor any instruments deemed necessary or desirable by the Company to: (a)provide the Company with title to assets, (b)take immediate possession of Contract funds whether earned or unearned, (c)collect such sums as may be due Indemnitor and to endorse in the name of the Indemnitor, and (d)collect on any negotiable instruments;

(e) Take possession of the Indemnitor's rights, title and interest in and to all Contracts, subcontracts let and insurance policies in connection therewith;

(f) Be subrogated to all the rights, remedies, properties, funds, securities and receivables of the Indemnitor on said Contract or any other contract of Indemnitor and have the right to offset losses on any Contract or Bond against proceeds, funds, or property due from another contract or Bond.

7. **Joint and Several Liability:** The obligations of each Indemnitor hereunder are joint and several. The Company is authorized to settle with any one or more of the Indemnitors individually, and without reference to the others, and such settlement shall not bar or prejudice actions against or affect the liability of the others.

8. **Decline Execution:** The Company has the right to refuse to provide any Bond, including final Bonds where the Company provided a bid bond, without incurring any liability whatsoever to Indemnitor.

9. **Trust Fund:** All payments due, received for or on account of any Contract shall be held in trust as trust funds by Indemnitor for the benefit and payment of all obligations for which the Company as beneficiary may be liable under any Bond issued by the Company. Company may open a trust account or accounts with a bank for the deposit of the trust funds. Upon demand, Indemnitor shall deposit therein all trust funds received. Withdrawals from such trust accounts shall require the express consent of the Company.

10. **Books, Records and Credit:** Indemnitor shall furnish, and the Company shall have the right to free access at reasonable times to all the books, records, documents, and accounts of Indemnitor for the purpose of examining and copying them. Indemnitor expressly authorizes Company access to its credit records for underwriting purposes as well as, upon the establishment of a reserve, debt collection.

11. **Attorney in Fact:** Indemnitor constitutes, appoints and designates the Company as their attorney in fact with the right, but not the obligation, to exercise all rights of the Indemnitor assigned or granted to the Company and to execute and deliver any other assignments or documents deemed necessary by the Company to exercise its rights under this Agreement in the name of the Indemnitor.

12. **Security Interest:** As security, the Indemnitor hereby grants to Company a security interest in all of its equipment, machinery, vehicles, tools, and material, as well as sums due or to become due in connection with any contract. This Agreement shall constitute a Security Agreement and a Financing Statement for the benefit of the Company in accordance with the Uniform Commercial Code and all similar statutes and may be filed by the Company without notice to perfect the security interest granted herein. The Company may add schedules or other documents to this Agreement as necessary. The security interests are effective as of the date of each Contract for that Contract.

13. **Termination:** This is a continuing Agreement which remains in full force and effect until terminated. The sole method available to an Indemnitor to terminate its participation in this Agreement is by giving written notice to the Company of the Indemnitor's intent to terminate. The "Termination Date" shall be 30 days after the Company receives such notice. The obligation and liability of the particular Indemnitor giving such notice shall be limited to Bonds furnished before the Termination Date.

14. **Other Sureties:** If the Company procures the execution of Bonds by other sureties, executes Bonds with cosureties or obtains reinsurance, the provisions of this Agreement inure to the benefit of such other surety, cosurety or reinsurer.

15. **Nature of Rights:** If any provision or portion of this Agreement shall be unenforceable, this Agreement shall not be void, but shall be construed and enforced with the same effect as though such provision or portion were omitted. Assent or refusal to assent to changes in any Contract or Bond by the Company shall not affect the obligations of the Indemnitor to the Company. The Company's rights under this Agreement are in addition to all other rights of the Company however derived. The rights and remedies afforded to the Company by the terms of this Agreement can only be modified by a rider in writing to this Agreement signed by an authorized representative of the Company. If any Indemnitor fails to execute or improperly executes this Agreement, such failure shall not affect the obligations of any Indemnitor. The failure to sign or the improper execution of a Bond shall not affect the Company's rights under this Agreement.

16. Addendum 1 attached regarding Limited Indivdual Indemnity Rider.

WE HAVE READ THIS INDEMNITY AGREEMENT CAREFULLY. THERE ARE NO SEPARATE AGREEMENTS OR UNDERSTANDINGS WHICH IN ANY WAY LESSEN OUR OBLIGATIONS AS ABOVE SET FORTH.

IN TESTIMONY HEREOF, the Indemnitors have hereunto set their hands and fixed their seals this _____ day of _____, _____.

IMPORTANT:

1. PRINT OR TYPE NAMES UNDER EACH SIGNATURE.
2. EACH INDEMNITOR'S SIGNATURE MUST BE ACKNOWLEDGED BY A NOTARY WHO IS NOT AN EMPLOYEE OR FAMILY MEMBER OF AN INDEMNITOR.
3. EACH PERSONAL INDEMNITOR MUST PROVIDE A RESIDENTIAL ADDRESS AND SOCIAL SECURITY NUMBER AND EACH CORPORATION INDEMNITOR MUST PROVIDE AN ADDRESS AND TELEPHONE NUMBER.
4. CORPORATIONS MUST BE ATTESTED TO BY A DULY AUTHORIZED CORPORATE OFFICER.

CORPORATE or PARTNERSHIP INDEMNITORS

Attest R. Dixon H. Harvey Jr
Print Name And Title CEO

By George W. Kelly (Seal)
Print Company Name EBX-NEUSE, I LLC
Officer/Partner's Name George W. Kelly
Title Member
Phone # and Address 10055 Red Run Blvd., Suite 130, Owings Mills, MD 21117-4860

Attest R. Dixon H. Harvey Jr
Print Name And Title CEO

By George W. Kelly (Seal)
Print Company Name Environmental Banc & Exchange, LLC
Officer/Partner's Name George W. Kelly
Title Member
Phone # and Address 10055 Red Run Blvd., Suite 130, Owings Mills, MD 21117-4860

Attest
Print Name And Title

By Ely J. Perry, III (Seal)
Print Company Name Perry Wet Lands, LLC
Officer/Partner's Name Ely J. Perry, III
Title ~~Member~~ Manager
Phone # and Address 518 Plaza Boulevard, Kinston, NC 28503

Attest
Print Name And Title

By (Seal)
Print Company Name Perry's, Inc.
Officer/Partner's Name Ely J. Perry, III
Title Member President
Phone # and Address 518 Plaza Boulevard, Kinston, NC 28503

Attest
Print Name And Title

By (Seal)
Print Company Name
Officer/Partner's Name
Title
Phone # and Address

INDIVIDUAL INDEMNITORS (Including Sole Proprietorships)

Attest
Print Name

By
Print Name
SS #
Address

Attest
Print Name

By
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Address

ACKNOWLEDGMENTS

State of Maryland, County of Baltimore, On this 4th day of October in the year 2000, before me personally appeared George W. Kelly personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.

Witness my hand and official seal

Signature _____ Seal

State of North Carolina, County of Lenoir, On this 12th day of October in the year 2000, before me personally appeared Ely J. Perry III personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.

My Commission Expires: 4-17-05

Witness my hand and official seal

Signature Shelley J Long Seal

State of North Carolina, County of Lenoir, On this 12th day of October in the year 2000, before me personally appeared Ely J. Perry, Jr. personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.

My Commission Expires: 4-17-05

Witness my hand and official seal

Signature Shelley J Long Seal

State of _____, County of _____, On this _____ day of _____ in the year _____, before me personally appeared _____ personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.

Witness my hand and official seal

Signature _____ Seal

State of _____, County of _____, On this _____ day of _____ in the year _____, before me personally appeared _____ personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.

Witness my hand and official seal

Signature _____ Seal

State of _____, County of_____, On this_____day of _____ in the year_____, before me personally appeared _____ personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.
Witness my hand and official seal

Signature_____ Seal

State of _____, County of_____, On this_____day of _____ in the year_____, before me personally appeared _____ personally known or proven to me to be the person whose name is subscribed to the instrument herein and acknowledged to me all that he/she executed the same in his/her authorized capacity, and that by his/her signature on the instrument the entity upon behalf of which the person acted, executed the instrument.
Witness my hand and official seal

Signature_____ Seal

Bond 53SB103291474

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that we, EBX-Neuse I, LLC, as Principal, and TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, licensed to do business in the State of Connecticut, as Surety, are held and firmly bound unto North Carolina Department of Transporation (Obligee), in the penal sum of Three Hundred Seventeen Thousand, Three Hundred Thirty Four & (($ 317,334.00) Dollars, lawful money of the United States of America, for the payment of which sum, well and truly to be made, the Principal and Surety do bind themselves, their heirs, executors, administrators, and successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the above bounden Principal has entered into a certain written Contract with the above named Obligee, effective the ___ day of _____, _____, and terminating the ___ day of _____, _____, for Neu-Con Mitigation Project - Monitoring Agreement with North Carolina Department of Transportation and more fully described in said Contract, a copy of which is attached, which Agreement is made a part hereof and incorporated herein by reference, except that nothing said therein shall alter, enlarge, expand or otherwise modify the term of the bond as set out below.

NOW, THEREFORE, if Principal, its executors, administrators, successors and assigns shall promptly and faithfully perform the Contract, according to the terms, stipulations or conditions thereof, then this obligation shall become null and void, otherwise to remain in full force and effect. This bond is executed by the Surety and accepted by the Obligee subject to the following express condition:

Notwithstanding the provisions of the Contract, the term of this bond shall apply from April 1, 2000, until December 31, 2007, and may be extended by the Surety by Continuation Certificate. However, neither nonrenewal by the Surety, nor the failure or inability of the Principal to file a replacement bond in the event of nonrenewal, shall itself constitute a loss to the obligee recoverable under this bond or any renewal or continuation thereof. The liability of the Surety under this bond and all continuation certificates issued in connection therewith shall not be cumulative and shall in no event exceed the amount as set forth in this bond or in any additions, riders, or endorsements properly issued by the Surety as supplements thereto.

Sealed with our seals and dated this 5th day of October, 2000.

EBX-Neuse I, LLC
(Principal) (Seal)

By: George W. Kelly
Managing Member
(Title)

_____
(Witness)

Travelers Casualty and Surety Company of America

Alex G. Roddey, (Attorney-in-Fact)

(Attest)

Agreed and acknowledged this ___ day of _____, _____.

S-5025 (7/98)

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
TRAVELERS CASUALTY AND SURETY COMPANY
FARMINGTON CASUALTY COMPANY
Hartford, Connecticut 06183-9062
TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS
Naperville, Illinois 60563-8458

POWER OF ATTORNEY AND CERTIFICATE OF AUTHORITY OF ATTORNEY(S)-IN-FACT

KNOW ALL PERSONS BY THESE PRESENTS, THAT TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY and FARMINGTON CASUALTY COMPANY, corporations duly organized under the laws of the State of Connecticut, and having their principal offices in the City of Hartford, County of Hartford, State of Connecticut, and **TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS,** a corporation duly organized under the laws of the State of Illinois, and having its principal office in the City of Naperville, County of DuPage, State of Illinois, (hereinafter the **"Companies")** hath made, constituted and appointed, and do by these presents make, constitute and appoint: **Patrick A. Givens, Sidney H. Williams, III, Ernest DeConti, Jr., Philip A. Colclough, Jr., Alex G. Roddey or Dorothy J. Outlaw * ***

of **Fairfax, VA,** their true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred to sign, execute and acknowledge, at any place within the United States, or, if the following line be filled in, within the area there designated
the following instrument(s):
by his/her sole signature and act, any and all bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking and any and all consents incident thereto

and to bind the Companies, thereby as fully and to the same extent as if the same were signed by the duly authorized officers of the Companies, and all the acts of said Attorney(s)-in-Fact, pursuant to the authority herein given, are hereby ratified and confirmed.

This appointment is made under and by authority of the following Standing Resolutions of said Companies, which Resolutions are now in full force and effect:

VOTED: That the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her.

VOTED: That the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary.

VOTED: That any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary, or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority.

This Power of Attorney and Certificate of Authority is signed and sealed by facsimile under and by authority of the following Standing Resolution voted by the Boards of Directors of TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS, which Resolution is now in full force and effect:

VOTED: That the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking to which it is attached.

(8-97)

IN WITNESS WHEREOF, TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS have caused this instrument to be signed by their Senior Vice President, and their corporate seals to be hereto affixed this 21st day of September, 1999.

STATE OF CONNECTICUT

}SS. Hartford

COUNTY OF HARTFORD

TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA
TRAVELERS CASUALTY AND SURETY COMPANY
FARMINGTON CASUALTY COMPANY
TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS

By_____
George W. Thompson
Senior Vice President

On this 21st day of September, 1999 before me personally came **GEORGE W. THOMPSON** to me known, who, being by me duly sworn, did depose and say: that he/she is Senior Vice President of **TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY, FARMINGTON CASUALTY COMPANY and TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS**, the corporations described in and which executed the above instrument; that he/she knows the seals of said corporations; that the seals affixed to the said instrument are such corporate seals; and that he/she executed the said instrument on behalf of the corporations by authority of his/her office under the Standing Resolutions thereof.

Marie C Tetreault

My commission expires June 30, 2001 Notary Public
Marie C. Tetreault

CERTIFICATE

I, the undersigned, Assistant Secretary of **TRAVELERS CASUALTY AND SURETY COMPANY OF AMERICA, TRAVELERS CASUALTY AND SURETY COMPANY and FARMINGTON CASUALTY COMPANY**, stock corporations of the State of Connecticut, and **TRAVELERS CASUALTY AND SURETY COMPANY OF ILLINOIS**, stock corporation of the State of Illinois, DO HEREBY CERTIFY that the foregoing and attached Power of Attorney and Certificate of Authority remains in full force and has not been revoked; and furthermore, that the Standing Resolutions of the Boards of Directors, as set forth in the Certificate of Authority, are now in force.

Signed and Sealed at the Home Office of the Company, in the City of Hartford, State of Connecticut. Dated this 5th day of October ,2000 .

By_____
Brian Hoffman
Assistant Secretary, Bond

Appendix 12. Title

Stewart Property

FATIC 519
ALTA Owner's Policy (10/17/92)

Policy No. **FA-32-** 113950

POLICY OF TITLE INSURANCE

ISSUED BY

First American Title Insurance Company

COINSURANCE CONTRACT

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIRST AMERICAN TITLE INSURANCE COMPANY, a California corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule A, sustained or incurred by the insured by reason of:

1. Title to the estate or interest described in Schedule A being vested other than as stated therein;
2. Any defect in or lien or encumbrance on the title;
3. Unmarketability of the title;
4. Lack of a right of access to and from the land;

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

First American Title Insurance Company

BY Gary L. Kennett PRESIDENT

ATTEST Mark R Arneson SECRETARY

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

4. Any claim, which arises out of the transaction vesting in the insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that is based on:
   (a) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or
   (b) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:
      (i) to timely record the instrument of transfer; or
      (ii) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS.

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE.

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT.

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in this paragraph shall terminate any liability of the Company under this policy as to that claim.

6. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY.

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

(i) To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees, and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

(ii) Upon the exercise by the Company of this option, all liability and obligations to the insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees, and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees, and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b)(i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE CLAUSE.

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A; or,

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) The Company's Rights Against Non-insured Obligors.

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION.

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is in excess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT.

(a) This policy together with all endorsements, if

and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE.

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose. Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE.

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage.

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the land, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the insured estate or interest at Date of Policy; or

(ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement.

The provisions of this paragraph shall not apply to costs, attorneys' fees, and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees, and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. APPORTIONMENT.

If the land described in Schedule A consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. LIMITATION OF LIABILITY.

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY.

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. LIABILITY NONCUMULATIVE.

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. PAYMENT OF LOSS.

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. SUBROGATION UPON PAYMENT OR SETTLEMENT.

(a) The Company's Right of Subrogation.

Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

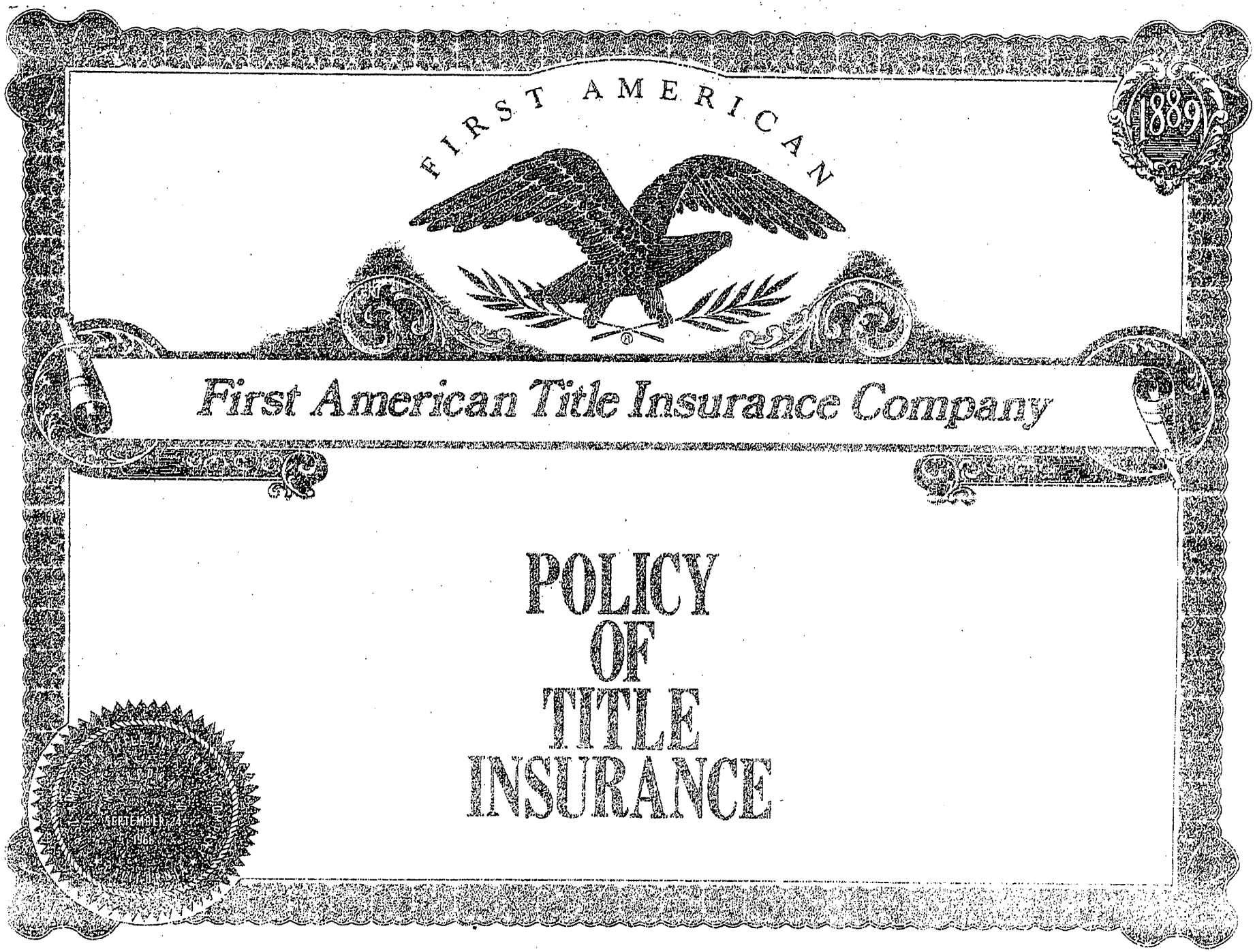
(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY.

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT.

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company, Attention: Claims Department, 1 First American Way, Santa Ana, California 92707, or to the office which issued this policy.


FIRST AMERICAN
1889
First American Title Insurance Company
POLICY
OF
TITLE
INSURANCE

First American Title Insurance Company

Residential Owner Policy

Schedule A

Policy ID: FA-32-113950

Coverage: $111,200.00 Premium: $218.00

Policy Date: August 7, 2001 at 11:25am in Johnston County

1. The Insured in whom title to the fee simple estate or interest in the land is vested at the policy date in:

   E. B. X. Neuse I, L.L.C.

2. The land referred to in this policy is in the County of Johnston, and is described as follows:

   For a description of the insured land, see Exhibit A attached hereto and made a part hereof.

First American Title Insurance Company

Residential Owner Policy

Schedule B

This policy does not insure against loss or damage by reason of the following:

1. Taxes for the year 2001 and subsequent years, not yet due and payable.

2. Easement to South River EMC recorded in Book 1554, Page 78, Johnston County Registry.

3. Easment to North Carolina Department of Transportation, recorded in Book 2047, Page 175, Johnston County Registry.

4. Such state of facts as would be disclosed by a current and accurate survey and inspection of the land.

5. The Company does not insure the exact amount of acreage or square footage of the land described in Schedule A hereof.

6. Rights of others in and to the path along the eastern side reserved in commissioner's report recorded in Book 509, Page 607, Johnston County Registry.

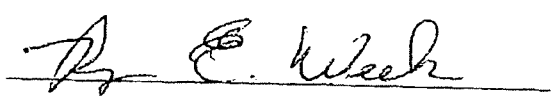
Authorized Signature: 

EXHIBIT "A"

W. C. STEWART and wife, MARY A. STEWART, Grantors

E.B.X. NEUSE I, L.L.C., Grantee

BEING Tract 2B, containing 22.24 acres, including right of way, according to a plat by The East Group, dated 7/30/01, described as follows:

BEGINNING at an existing iron pipe found in the right of way of NCSR 1198 (Westbrook Lowgrounds Road) and runs thence North 08 degrees 16 minutes 08 seconds East 584.44 feet to a stake; thence North 11 degrees 40 minutes 40 seconds West 886.82 feet to a stake; thence North 89 degrees 34 minutes 43 seconds East 201.48 feet to an existing iron pipe; thence North 17 degrees 50 minutes 06 seconds West 313.02 feet to an existing iron pipe; thence North 36 degrees 40 minutes 54 seconds West 251.05 feet to an existing iron pipe; thence North 06 degrees 14 minutes 44 seconds West 414.22 feet to an existing iron pipe; thence North 75 degrees 31 minutes 57 seconds East 632.00 feet to an existing iron pipe, control corner; thence South 02 degrees 46 minutes 59 seconds West 4,350.40 feet to an existing iron stake (drive shaft), control corner; thence North 62 degrees 40 minutes 13 seconds West 334.59 feet to an existing iron pipe found, and the point of BEGINNING.

Allen Property

Coinsurance Contract

Owner's Policy of Title Insurance

Fidelity National Title Insurance Company of New York
A Stock Company

POLICY NUMBER

OWNER'S POLICY OF TITLE INSURANCE

SUBJECT TO THE EXCLUSIONS FROM COVERAGE, THE EXCEPTIONS FROM COVERAGE CONTAINED IN SCHEDULE B AND THE CONDITIONS AND STIPULATIONS, FIDELITY NATIONAL TITLE INSURANCE COMPANY OF NEW YORK, a New York corporation, herein called the Company, insures, as of Date of Policy shown in Schedule A, against loss or damage, not exceeding the Amount of Insurance stated in Schedule a, sustained or incurred by the insured by reason of:

1. *Title to the estate or interest described in Schedule A being vested other than as stated herein;*
2. *Any defect in or lien or encumbrance on the title;*
3. *Unmarketability of the title;*
4. *Lack of a right of access to and from the land.*

The Company will also pay the costs, attorneys' fees and expenses incurred in defense of the title, as insured, but only to the extent provided in the Conditions and Stipulations.

IN WITNESS WHEREOF, FIDELITY NATIONAL TITLE INSURANCE COMPANY OF NEW YORK, has caused this policy to be signed and sealed by its duly authorized officers as of Date of Policy shown in Schedule A.

FIDELITY NATIONAL TITLE INSURANCE COMPANY
OF NEW YORK

SEAL

By: _____
President

Attest: Charles H. Wimer
Secretary

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building and zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating to (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or a notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.

2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.

3. Defects, liens, encumbrances, adverse claims or other matters:

   (a) created, suffered, assumed or agreed to by the insured claimant;

   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;

   (c) resulting in no loss or damage to the insured claimant;

   (d) attaching or created subsequent to Date of Policy; or

   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the estate or interest insured by this policy.

4. Any claim which arises out of the transaction vesting in the Insured the estate or interest insured by this policy, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights law, that is based on:

   (i) the transaction creating the estate or interest insured by this policy being deemed a fraudulent conveyance or fraudulent transfer; or

   (ii) the transaction creating the estate or interest insured by this policy being deemed a preferential transfer except where the preferential transfer results from the failure:

      (a) to timely record the instrument of transfer; or

      (b) of such recordation to impart notice to a purchaser for value or a judgment or lien creditor.

CONDITIONS AND STIPULATIONS

1. DEFINITION OF TERMS

The following terms when used in this policy mean:

(a) "insured": the insured named in Schedule A, and, subject to any rights or defenses the Company would have had against the named insured, those who succeed to the interest of the named insured by operation of law as distinguished from purchase including, but not limited to, heirs, distributees, devisees, survivors, personal representatives, next of kin, or corporate or fiduciary successors.

(b) "insured claimant": an insured claiming loss or damage.

(c) "knowledge" or "known": actual knowledge, not constructive knowledge or notice which may be imputed to an insured by reason of the public records as defined in this policy or any other records which impart constructive notice of matters affecting the land.

(d) "land": the land described or referred to in Schedule A, and improvements affixed thereto which by law constitute real property. The term "land" does not include any property beyond the lines of the area described or referred to in Schedule A, nor any right, title, interest, estate or easement in abutting streets, roads, avenues, alleys, lanes, ways or waterways, but nothing herein shall modify or limit the extent to which a right of access to and from the land is insured by this policy.

(e) "mortgage": mortgage, deed of trust, trust deed, or other security instrument.

(f) "public records": records established under state statutes at Date of Policy for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without knowledge. With respect to Section 1(a)(iv) of the Exclusions From Coverage, "public records" shall also include environmental protection liens filed in the records of the clerk of the United States district court for the district in which the land is located.

(g) "unmarketability of the title": an alleged or apparent matter affecting the title to the land, not excluded or excepted from coverage, which would entitle a purchaser of the estate or interest described in Schedule A to be released from the obligation to purchase by virtue of a contractual condition requiring the delivery of marketable title.

2. CONTINUATION OF INSURANCE AFTER CONVEYANCE OF TITLE

The coverage of this policy shall continue in force as of Date of Policy in favor of an insured only so long as the insured retains an estate or interest in the land, or holds an indebtedness secured by a purchase money mortgage given by a purchaser from the insured, or only so long as the insured shall have liability by reason of covenants of warranty made by the insured in any transfer or conveyance of the estate or interest. This policy shall not continue in force in favor of any purchaser from the insured of either (i) an estate or interest in the land, or (ii) an indebtedness secured by a purchase money mortgage given to the insured.

3. NOTICE OF CLAIM TO BE GIVEN BY INSURED CLAIMANT

The insured shall notify the Company promptly in writing (i) in case of any litigation as set forth in Section 4(a) below, (ii) in case knowledge shall come to an insured hereunder of any claim of title or interest which is adverse to the title to the estate or interest, as insured, and which might cause loss or damage for which the Company may be liable by virtue of this policy, or (iii) if title to the estate or interest, as insured, is rejected as unmarketable. If prompt notice shall not be given to the Company, then as to the insured all liability of the Company shall terminate with regard to the matter or matters for which prompt notice is required; provided, however, that failure to notify the Company shall in no case prejudice the rights of any insured under this policy unless the Company shall be prejudiced by the failure and then only to the extent of the prejudice.

4. DEFENSE AND PROSECUTION OF ACTIONS; DUTY OF INSURED CLAIMANT TO COOPERATE

(a) Upon written request by the insured and subject to the options contained in Section 6 of these Conditions and Stipulations, the Company, at its own cost and without unreasonable delay, shall provide for the defense of an insured in litigation in which any third party asserts a claim adverse to the title or interest as insured, but only as to those stated causes of action alleging a defect, lien or encumbrance or other matter insured against by this policy. The Company shall have the right to select counsel of its own choice (subject to the right of the insured to object for reasonable cause) to represent the insured as to those stated causes of action and shall not be liable for and will not pay the fees of any other counsel. The Company will not pay any fees, costs or expenses incurred by the insured in the defense of those causes of action which allege matters not insured against by this policy.

(b) The Company shall have the right, at its own cost, to institute and prosecute any action or proceeding or to do any other act which in its opinion may be necessary or desirable to establish the title to the estate or interest, as insured, or to prevent or reduce loss or damage to the insured. The Company may take any appropriate action under the terms of this policy, whether or not it shall be liable hereunder, and shall not thereby concede liability or waive any provision of this policy. If the Company shall exercise its rights under this paragraph, it shall do so diligently.

(c) Whenever the Company shall have brought an action or interposed a defense as required or permitted by the provisions of this policy, the Company may pursue any litigation to final determination by a court of competent jurisdiction and expressly reserves the right, in its sole discretion, to appeal from any adverse judgment or order.

(d) In all cases where this policy permits or requires the Company to prosecute or provide for the defense of any action or proceeding, the insured shall secure to the Company the right to so prosecute or provide defense in the action or proceeding, and all appeals therein, and permit the Company to use, at its option, the name of the insured for this purpose. Whenever requested by the Company, the insured, at the Company's expense, shall give the Company all reasonable aid (i) in any action or proceeding, securing evidence, obtaining witnesses, prosecuting or defending the action or proceeding, or effecting settlement, and (ii) in any other lawful act which in the opinion of the Company may be necessary or desirable to establish the title to the estate or interest as insured. If the Company is prejudiced by the failure of the insured to furnish the required cooperation, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such cooperation.

5. PROOF OF LOSS OR DAMAGE

In addition to and after the notices required under Section 3 of these Conditions and Stipulations have been provided the Company, a proof of loss or damage signed and sworn to by the insured claimant shall be furnished to the Company within 90 days after the insured claimant shall ascertain the facts giving rise to the loss or damage. The proof of loss or damage shall describe the defect in, or lien or encumbrance on the title, or other matter insured against by this policy which constitutes the basis of loss or damage and shall state, to the extent possible, the basis of calculating the amount of the loss or damage. If the Company is prejudiced by the failure of the insured claimant to provide the required proof of loss or damage, the Company's obligations to the insured under the policy shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, with regard to the matter or matters requiring such proof of loss or damage.

In addition, the insured claimant may reasonably be required to submit to examination under oath by any authorized representative of the Company and shall produce for examination, inspection and copying, at such reasonable times and places as may be designated by any authorized representative of the Company, all records, books, ledgers, checks, correspondence and memoranda, whether bearing a date before or after Date of Policy, which reasonably pertain to the loss or damage. Further, if requested by any authorized representative of the Company, the insured claimant shall grant its permission, in writing, for any authorized representative of the Company to examine, inspect and copy all records, books, ledgers, checks, correspondence and memoranda in the custody or control of a third party, which reasonably pertain to the loss or damage. All information designated as confidential by the insured claimant provided to the Company pursuant to this Section shall not be disclosed to others unless, in the reasonable judgment of the Company, it is necessary in the administration of the claim. Failure of the insured claimant to submit for examination under oath, produce other reasonably requested information or grant permission to secure reasonably necessary information from third parties as required in the above paragraph shall terminate any liability of the Company under this policy as to that claim.

6. OPTIONS TO PAY OR OTHERWISE SETTLE CLAIMS; TERMINATION OF LIABILITY

In case of a claim under this policy, the Company shall have the following additional options:

(a) To Pay or Tender Payment of the Amount of Insurance.

To pay or tender payment of the amount of insurance under this policy together with any costs, attorneys' fees and expenses incurred by the insured claimant, which were authorized by the Company, up to the time of payment or tender of payment and which the Company is obligated to pay.

Upon the exercise by the Company of this option, all liability and obligations to the insured under this policy, other than to make the payment required, shall terminate, including any liability or obligation to defend, prosecute, or continue any litigation, and the policy shall be surrendered to the Company for cancellation.

(b) To Pay or Otherwise Settle With Parties Other than the Insured Or With the Insured Claimant.

(i) to pay or otherwise settle with other parties for or in the name of an insured claimant any claim insured against under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay; or

(ii) to pay or otherwise settle with the insured claimant the loss or damage provided for under this policy, together with any costs, attorneys' fees and expenses incurred by the insured claimant which were authorized by the Company up to the time of payment and which the Company is obligated to pay.

Upon the exercise by the Company of either of the options provided for in paragraphs (b)(i) or (ii), the Company's obligations to the insured under this policy for the claimed loss or damage, other than the payments required to be made, shall terminate, including any liability or obligation to defend, prosecute or continue any litigation.

7. DETERMINATION, EXTENT OF LIABILITY AND COINSURANCE

This policy is a contract of indemnity against actual monetary loss or damage sustained or incurred by the insured claimant who has suffered loss or damage by reason of matters insured against by this policy and only to the extent herein described.

(a) The liability of the Company under this policy shall not exceed the least of:

(i) the Amount of Insurance stated in Schedule A; or,

(ii) the difference between the value of the insured estate or interest as insured and the value of the insured estate or interest subject to the defect, lien or encumbrance insured against by this policy.

(b) In the event the Amount of Insurance stated in Schedule A at the Date of Policy is less than 80 percent of the value of the insured estate or interest or the full consideration paid for the estate or interest, whichever is less, or if subsequent to the Date of Policy an improvement is erected on the land which increases the value of the insured estate or interest by at least 20 percent over the Amount of Insurance stated in Schedule A, then this Policy is subject to the following:

(i) where no subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that the amount of insurance at Date of Policy bears to the total value of the estate or interest at Date of Policy; or

(ii) where a subsequent improvement has been made, as to any partial loss, the Company shall only pay the loss pro rata in the proportion that 120 percent of the Amount of Insurance stated in Schedule A bears to the sum of the Amount of Insurance stated in Schedule A and the amount expended for the improvement.

The provisions of this paragraph shall not apply to costs, attorneys' fees and expenses for which the Company is liable under this policy, and shall only apply to that portion of any loss which exceeds, in the aggregate, 10 percent of the Amount of Insurance stated in Schedule A.

(c) The Company will pay only those costs, attorneys' fees and expenses incurred in accordance with Section 4 of these Conditions and Stipulations.

8. APPORTIONMENT

If the land described in Schedule A consists of two or more parcels which are not used as a single site, and a loss is established affecting one or more of the parcels but not all, the loss shall be computed and settled on a pro rata basis as if the amount of insurance under this policy was divided pro rata as to the value on Date of Policy of each separate parcel to the whole, exclusive of any improvements made subsequent to Date of Policy, unless a liability or value has otherwise been agreed upon as to each parcel by the Company and the insured at the time of the issuance of this policy and shown by an express statement or by an endorsement attached to this policy.

9. LIMITATION OF LIABILITY

(a) If the Company establishes the title, or removes the alleged defect, lien or encumbrance, or cures the lack of a right of access to or from the land, or cures the claim of unmarketability of title or otherwise establishes the lien of the insured mortgage, all as insured, in a reasonably diligent manner by any method, including litigation and the completion of any appeals therefrom, it shall have fully performed its obligations with respect to that matter and shall not be liable for any loss or damage caused thereby.

(b) In the event of any litigation, including litigation by the Company or with the Company's consent, the Company shall have no liability for loss or damage until there has been a final determination by a court of competent jurisdiction, and disposition of all appeals therefrom, adverse to the title as insured.

(c) The Company shall not be liable for loss or damage to any insured for liability voluntarily assumed by the insured in settling any claim or suit without the prior written consent of the Company.

10. REDUCTION OF INSURANCE; REDUCTION OR TERMINATION OF LIABILITY

All payments under this policy, except payments made for costs, attorneys' fees and expenses, shall reduce the amount of the insurance pro tanto.

11. LIABILITY NONCUMULATIVE

It is expressly understood that the amount of insurance under this policy shall be reduced by any amount the Company may pay under any policy insuring a mortgage to which exception is taken in Schedule B or to which the insured has agreed, assumed, or taken subject, or which is hereafter executed by an insured and which is a charge or lien on the estate or interest described or referred to in Schedule A, and the amount so paid shall be deemed a payment under this policy to the insured owner.

12. PAYMENT OF LOSS

(a) No payment shall be made without producing this policy for endorsement of the payment unless the policy has been lost or destroyed, in which case proof of loss or destruction shall be furnished to the satisfaction of the Company.

(b) When liability and the extent of loss or damage has been definitely fixed in accordance with these Conditions and Stipulations, the loss or damage shall be payable within 30 days thereafter.

13. SUBROGATION UPON PAYMENT OR SETTLEMENT

(a) The Company's Right of Subrogation.

Whenever the Company shall have settled and paid a claim under this policy, all right of subrogation shall vest in the Company unaffected by any act of the insured claimant.

The Company shall be subrogated to and be entitled to all rights and remedies which the insured claimant would have had against any person or property in respect to the claim had this policy not been issued. If requested by the Company, the insured claimant shall transfer to the Company all rights and remedies against any person or property necessary in order to perfect this right of subrogation. The insured claimant shall permit the Company to sue, compromise or settle in the name of the insured claimant and to use the name of the insured claimant in any transaction or litigation involving these rights or remedies.

If a payment on account of a claim does not fully cover the loss of the insured claimant, the Company shall be subrogated to these rights and remedies in the proportion which the Company's payment bears to the whole amount of the loss.

If loss should result from any act of the insured claimant, as stated above, that act shall not void this policy, but the Company, in that event, shall be required to pay only that part of any losses insured against by this policy which shall exceed the amount, if any, lost to the Company by reason of the impairment by the insured claimant of the Company's right of subrogation.

(b) The Company's Rights Against Non-insured Obligors.

The Company's right of subrogation against non-insured obligors shall exist and shall include, without limitation, the rights of the insured to indemnities, guaranties, other policies of insurance or bonds, notwithstanding any terms or conditions contained in those instruments which provide for subrogation rights by reason of this policy.

14. ARBITRATION

Unless prohibited by applicable law, either the Company or the insured may demand arbitration pursuant to the Title Insurance Arbitration Rules of the American Arbitration Association. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. All arbitrable matters when the Amount of Insurance is $1,000,000 or less shall be arbitrated at the option of either the Company or the insured. All arbitrable matters when the Amount of Insurance is in excess of $1,000,000 shall be arbitrated only when agreed to by both the Company and the insured. Arbitration pursuant to this policy and under the Rules in effect on the date the demand for arbitration is made or, at the option of the insured, the Rules in effect at Date of Policy shall be binding upon the parties. The award may include attorneys' fees only if the laws of the state in which the land is located permit a court to award attorneys' fees to a prevailing party. Judgment upon the award rendered by the Arbitrator(s) may be entered in any court having jurisdiction thereof.

The law of the situs of the land shall apply to an arbitration under the Title Insurance Arbitration Rules.

A copy of the Rules may be obtained from the Company upon request.

15. LIABILITY LIMITED TO THIS POLICY; POLICY ENTIRE CONTRACT

(a) This policy together with all endorsements, if any, attached hereto by the Company is the entire policy and contract between the insured and the Company. In interpreting any provision of this policy, this policy shall be construed as a whole.

(b) Any claim of loss or damage, whether or not based on negligence, and which arises out of the status of the title to the estate or interest covered hereby or by any action asserting such claim, shall be restricted to this policy.

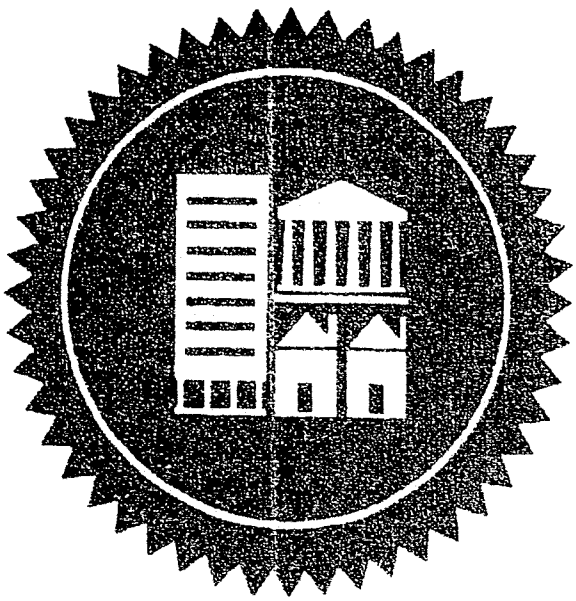
(c) No amendment of or endorsement to this policy can be made except by a writing endorsed hereon or attached hereto signed by either the President, a Vice President, the Secretary, an Assistant Secretary, or validating officer or authorized signatory of the Company.

16. SEVERABILITY

In the event any provision of the policy is held invalid or unenforceable under applicable law, the policy shall be deemed not to include that provision and all other provisions shall remain in full force and effect.

17. NOTICES, WHERE SENT

All notices required to be given the Company and any statement in writing required to be furnished the Company shall include the number of this policy and shall be addressed to the Company at: 2 Park Avenue, New York, NY 10016



Fidelity National Title Insurance Company of New York

2 Park Avenue
New York, NY 10016

FIDELITY NATIONAL TITLE
Insurance Company of New York
P.O. Box 2209, Raleigh, NC 27602
919 829-0200 (WATS: 800 662-7729)

OWNER'S POLICY
SCHEDULE A

Policy Amount: $245,000.00
Policy Date : 05 JUL 2001 at 9:50AM in Johnston County

1. Insured:
   EBX-NEUSE I, LLC

2. The estate or interest in the land described herein and which is covered by this policy is a Fee Simple and at the policy date the Fee is vested in the insured.

3. The land referred to in this policy is described as follows:

   Being that same property as described in that certain Deed from Thomas Hugh Allen and wife, Doris S. Allen, to EBX-Neuse I, LLC, dated July 3, 2001, and recorded on July 5, 2001 at 9:50AM, in Book 2082, Page 236, Johnston County Registry

   The land referred to in this Policy is located in Johnston County, State of North Carolina, and more particularly described as follows: (See attached Exhibit "A")

NOTE: The parties to this contract of insurance declare that it is their joint and mutual intention that this contract shall not be construed as creating a third party beneficiary contract.

SCHEDULE B - EXCEPTIONS

This policy does not insure against loss or damage by reason of the following EXCEPTIONS:

1. The lien of all taxes for the year 2001 and thereafter, which are not yet due and payable.

2. Building restriction lines, easements and any other facts as shown on Map or Plat recorded in Land Book 3, Page 450, Johnston County Registry. (as to Parcel One)

3. Subject property has no independent means of access, but rather is dependent upon adjoining property presently owned by Thomas Hugh Allen. (as to Parcels One and Two)

4. Easement(s) for public/private utilities.

5. Right-of-way to South River Electric Membership corporation, recorded in Book 1100, Page 544, Johnston County Registry. (as to Parcel One)

(continued on next page)

FIDELITY NATIONAL TITLE
Insurance Company of New York
P.O. Box 2209, Raleigh, NC 27602
919 829-0200 (WATS: 800 662-7729)

6. Permit to Carolina Telephone and Telegraph Company recorded in Book 605, Page 314, Johnston County Registry. (as to Parcels Two and Three)

7. Right-of-way to the N.C. Department of Transportation for S.R. 1198, recorded in Book 2047, Page 174, Johnston County Registry. (as to Parcels Two and Three)

8. Terms, conditions and reservations set forth in Deed recorded in Book 2082, Page 236, Johnston County Registry.

9. No tobacco poundage.

10. Rights or claims of tenants in possession under unrecorded leases, if any, as tenants only with no purchase rights.

11. Rights of others in and to the continued uninterrupted flow of Mill Creek.

12. Riparian rights are neither guaranteed nor insured.

13. Rights of adjoining property owners in and to ditches affecting subject property.

14. Any portion of the property lying within the bounds of any streets, roads, highways, pathways, cartway, etc., or rights of way thereof.

15. No insurance is afforded as to the exact amount of acreage contained in the property described in the Deed described in Schedule A hereof.

16. Any encroachments, overlaps, boundary line disputes, easements, measurements, variations in area or content, party walls or other facts which a correct survey and inspection of the premises would show.

Countersigned and Validated:

By: Mary E Douglas
Authorized Representative

07-19-01 r
Par 1-82.75A, Par 2-16A, Par 3-46.5A Johnston Cnty

Policy No. **01R169309-O**

FIDELITY NATIONAL TITLE
Insurance Company of New York
P.O. Box 2209, Raleigh, NC 27602
919 829-0200 (WATS: 800 662-7729)

Policy No. **01R169309**

EXHIBIT "A"

The land referred to in this policy is located in Johnston County, State of North Carolina and is described as follows:

PARCEL ONE:

BEING Lot #7 containing 102 3/4 acres, of the Pocosin tract allotted to Susen White in the division of the land of John Benton made December 23, 1875, recorded in Land Book 3, page 450, of the Office of the Clerk of Superior Court of Johnston County.

Being one of the tracts of land conveyed to J. H. Hill and J. H. Benton by deed dated May 5, 1890, recorded in Book V-5, page 522, and being the first tract described in the deed from J. H. Benton to J. H. Hill and dated December 30, 1896, recorded in Book W-6, page 242, of the Johnston County Registry.

There is however excepted from this 102 3/4 acre tract known as Lot #7 of the Pocosin tract, that portion thereof containing 20 acres, more or less, which was conveyed to G. R. Britt by J. H. Hill and wife, by deed recorded in Book H-6, page 114, and also by deed from J. H. Benton and wife, to G. R. Britt by deed recorded in Book E-6, page 179. See also deed for the same 20 acre tract of land conveyed to G. R. Britt by Susen White by deed recorded in Book J-4, page 347. This leaves the remainder of said Lot #7 containing 82 3/4 acres conveyed by this deed.

See also Book 440, page 528, of the Johnston County Registry, and also quitclaim deed from J. P. Rose and wife, Katie Rose, dated December 29, 1958. See Book 575, page 89, of the Johnston County Registry. Also Will of Mildred S. Allen in File 99-E-337, in Office of Clerk of Superior Court of Johnston County. For further chain of title information, see Book 2002, page 512, Johnston County Registry.

FIDELITY NATIONAL TITLE
Insurance Company of New York
P.O. Box 2209, Raleigh, NC 27602
919 829-0200 (WATS: 800 662-7729)

Policy No. **01R169309**

EXHIBIT "A"

The land referred to in this policy is located in Johnston County, State of North Carolina and is described as follows:

PARCEL TWO:

BEGINNING at a stake, H. V. Rose's corner in Earl Westbrook's line, and runs with Earl Westbrook's line North 87 degrees West 863 feet to a stake, L. L. Cole's corner in Earl Westbrook's line; thence with Cole's line North 3 degrees 1000 feet to a stake in the center of the path, Lela G. Raynor's line; thence with Lela G. Raynor's line, passing her corner and with Vinnie Raynor's and Edsel Raynor's line South 62 degrees 40 minutes East 966 feet to a stake, corner in Norwood Smith's line; thence South 3 degrees 15 minutes West 594 feet to the beginning, containing 16 acres.

PARCEL THREE:

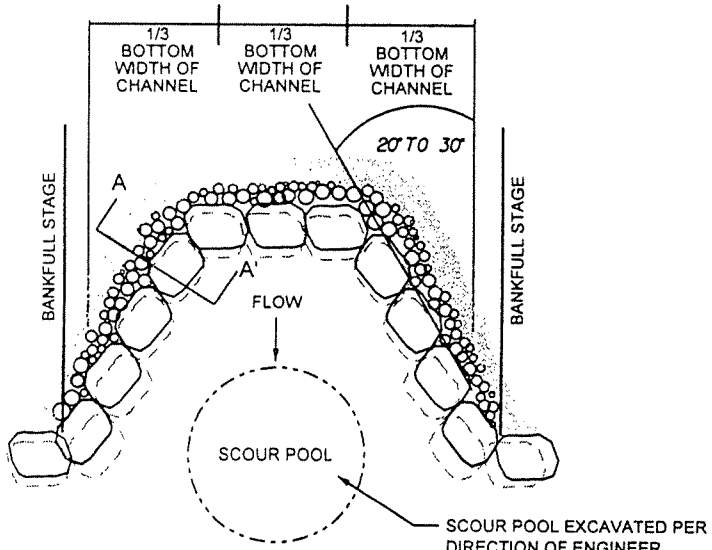
BEGINNING at a stake, Lela G. Raynor's corner in L. L. Cole's line, and runs with Cole's line North 3 degrees 2963 feet to a stake on Mill Creek; thence down the run of Mill Creek to a stake, Norwood Smith's corner; thence with Smith's line South 3 degrees 15 minutes West 1655 feet to a stake, Edsel Raynor's corner; thence with Edsel Raynor's and Vinnie Raynor's line South 76 degrees West 632 feet to a stake, Vinnie Raynor's corner; thence with her line South 5 degrees 40 minutes East 414 feet to a stake; South 27 degrees 15 minutes East 100 feet, South 41 degrees 50 minutes East 153 feet, and South 17 degrees 20 minutes East 313 feet to a stake, Vinnie Raynor's corner; thence with her line and past her corner and with Lela G. Raynor's line West 618 feet to the beginning, containing 46.5 acres, more or less.

For chain of title information, see Book 1795, page 399 (Tracts VII and VIII), Johnston County Registry.

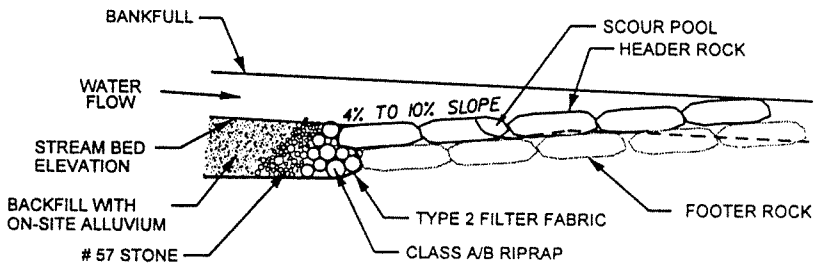
No tobacco poundage is conveyed by this instrument. Grantor, Thomas Hugh Allen, retains hunting rights for his lifetime.

Appendix 13. Agency Review Letters

Appendix 14. Construction Details



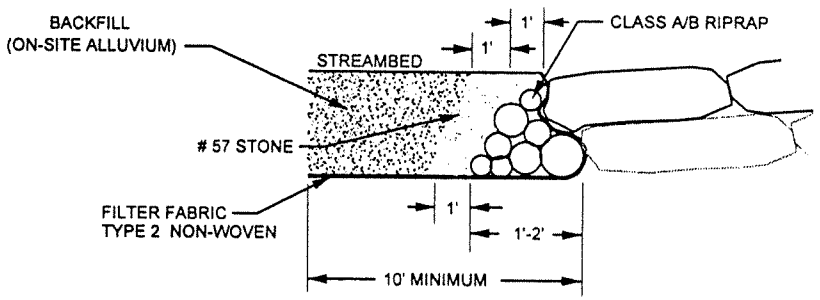
PLAN VIEW



PROFILE VIEW

NOTES:

1. BOULDERS MUST BE AT LEAST 4' x 3' x 2'.
2. INSTALL FILTER FABRIC BEGINNING AT THE MIDDLE OF THE HEADER ROCKS AND EXTEND DOWNWARD TO THE DEPTH OF THE BOTTOM FOOTER ROCK, AND THEN UPSTREAM TO A MINIMUM OF TEN FEET.
3. USE CLASS A/B RIP RAP TO FILL GAPS ON UPSTREAM SIDE OF BOULDERS, AND #57 STONE TO FILL GAPS ON UPSTREAM SIDE OF CLASS A/B RIP RAP.
4. AFTER ALL STONE HAS BEEN PLACED, FILL IN THE UPSTREAM SIDE OF THE STRUCTURE WITH SOIL TO THE ELEVATION OF THE TOP OF THE HEADER ROCK COMPLETELY COVERING THE CLASS A/B RIP RAP AND #57 STONE.

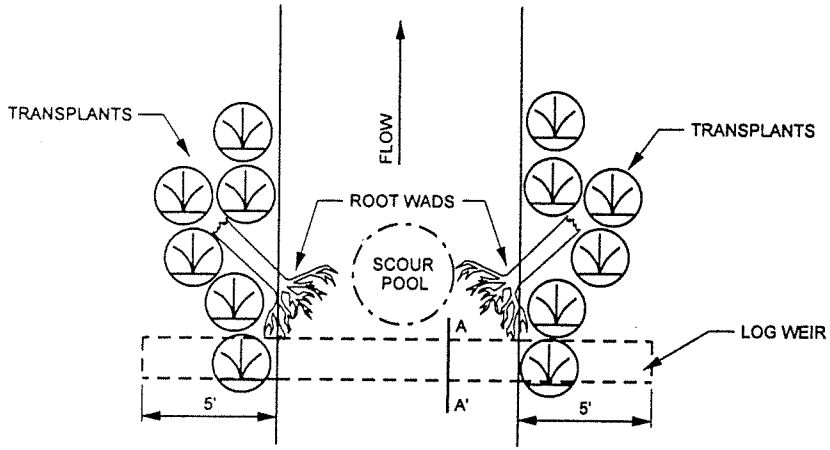


SECTION A-A'

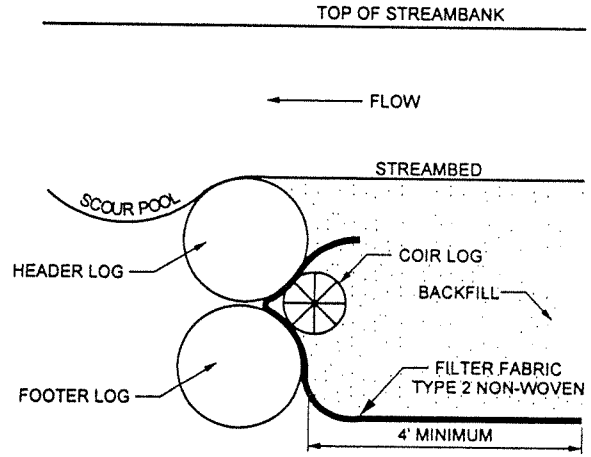
BUCK

TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

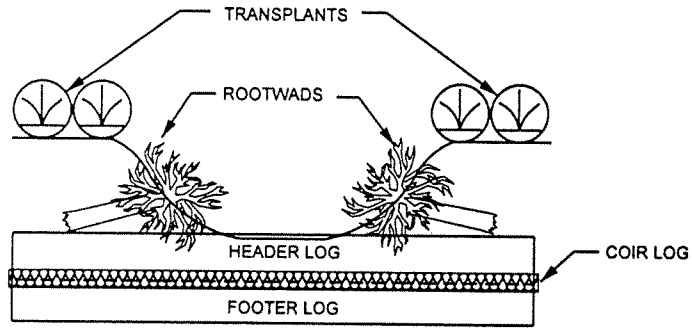
ROCK CROSS VANE



PLAN VIEW



SECTION A-A'



CROSS SECTION VIEW

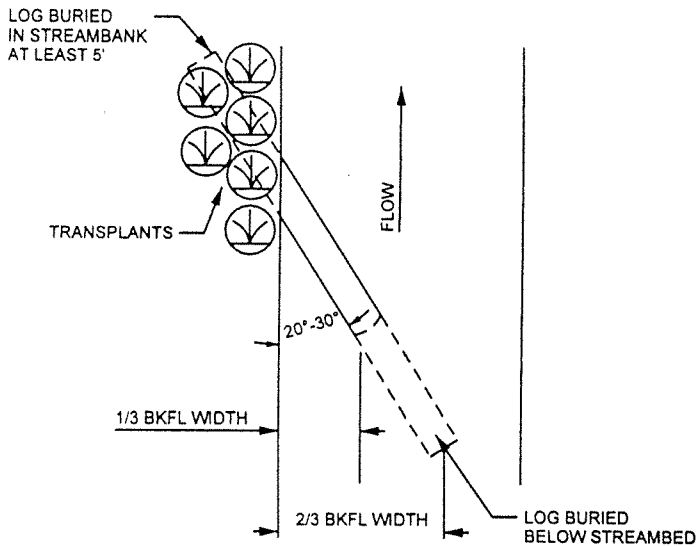
NOTES:

1. LOGS SHOULD BE AT LEAST 10 INCHES IN DIAMETER, RELATIVELY STRAIGHT, HARDWOOD, AND RECENTLY HARVESTED.
2. TOP OF HEADER LOG SHOULD BE SET AT SAME ELEVATION AS THE STREAMBED.
3. DIAMETER OF COIR LOG SHOULD BE APPROXIMATELY 1/2 DIAMETER OF LOGS.
4. USE FILTER FABRIC WITH COIR LOGS TO SEAL GAPS BETWEEN LOGS.
5. NAIL FILTER FABRIC USING 3" 10D GALVANIZED COMMON NAIL EVERY 2' ALONG THE LOG.
6. NAIL COIR LOG TO HEADER AND FOOTER LOGS USING 8" GALVANIZED SMOOTH SPIKE ON 3' SPACING.
7. PLACE ROOT WADS AS CLOSE AS POSSIBLE TO LOG WEIRS TO PROTECT AGAINST BANK EROSION.

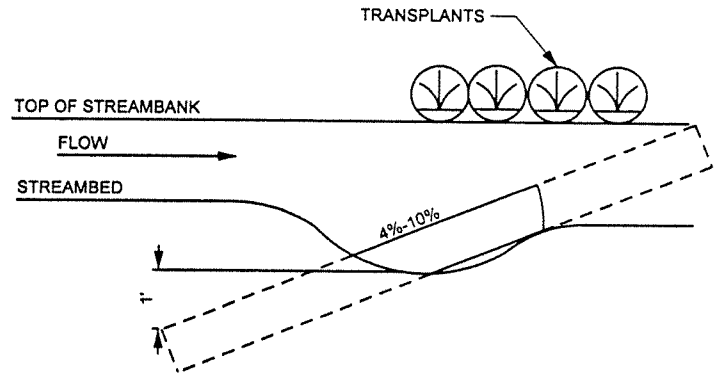
BUCK

TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

LOG WEIR



PLAN VIEW



PROFILE VIEW

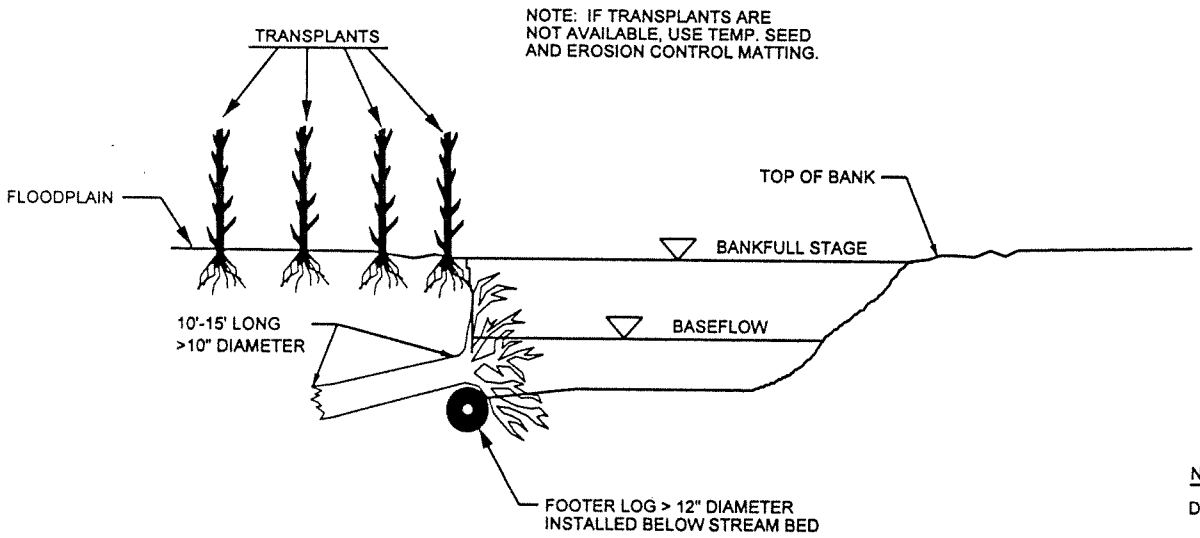
NOTES:

1. LOGS SHOULD BE AT LEAST 10" IN DIAMETER, RELATIVELY STRAIGHT, HARWOOD, AND RECENTLY HARVESTED.
2. SOIL SHOULD BE COMPACTED WELL AROUND BURIED PORTIONS OF LOG
3. TRANSPLANTS ARE PLACED ALONG THE TOP OF THE BANK OVER THE BURIED LOG VANE TO PROTECT AGAINST EROSION DURING HIGH FLOWS.

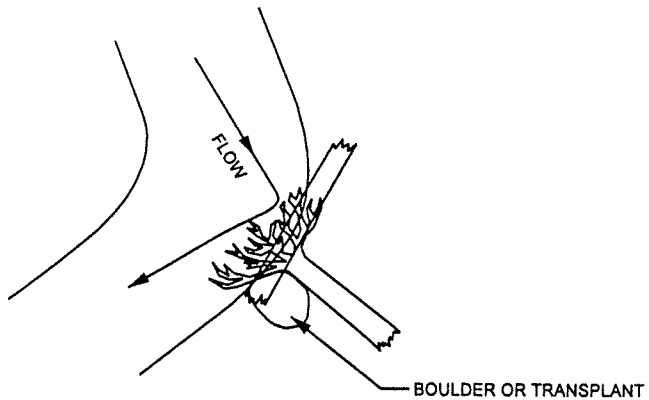
BUCK

TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

LOG VANE



ROOT WAD CROSS-SECTION



PLAN VIEW

NOTES:

DRIVE POINT METHOD:

1. SHARPEN THE END OF THE LOG WITH A CHAINSAW BEFORE "DRIVING" IT INTO THE BANK.
2. ORIENT ROOT WADS UPSTREAM SO THAT THE STREAM FLOW MEETS THE ROOT WAD AT A 90-DEGREE ANGLE, DEFLECTING THE WATER AWAY FROM THE BANK.
3. A BOULDER SHOULD BE PLACED ON THE DOWNSTREAM SIDE OF THE ROOT WAD IF A BACK EDDY IS FORMED BY THE ROOT WAD. THE BOULDER SHALL BE APPROXIMATELY 4' X 3' X 2'.

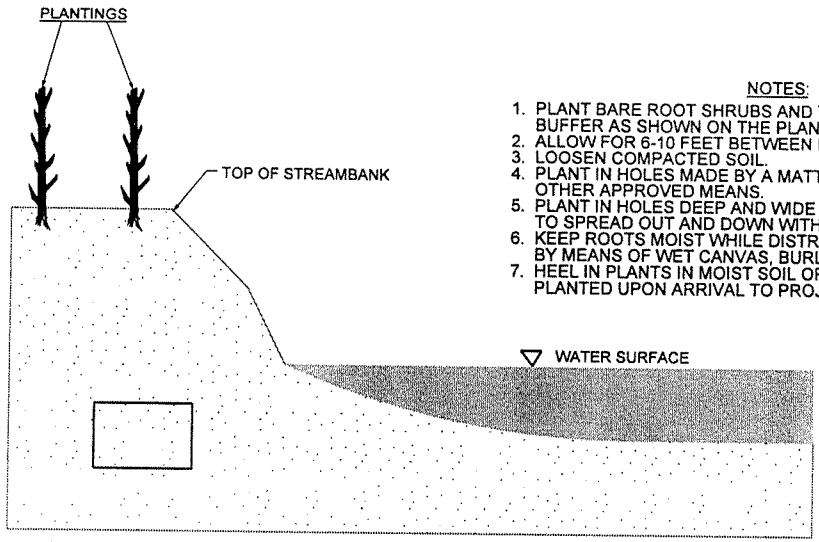
TRENCHING METHOD:

1. IF THE ROOT WAD CANNOT BE DRIVEN INTO THE BANK OR THE BANK NEEDS TO BE RECONSTRUCTED, THE TRENCHING METHOD SHOULD BE USED. THIS METHOD REQUIRES THAT A TRENCH BE EXCAVATED FOR THE LOG PORTION OF THE ROOT WAD.
2. A FOOTER LOG SHOULD BE INSTALLED UNDERNEATH THE ROOT WAD IN A TRENCH EXCAVATED PARALLEL TO THE BANK AND WELL BELOW THE STREAMBED.
3. ONE-THIRD OF THE ROOT WAD SHOULD REMAIN BELOW NORMAL BASE FLOW CONDITIONS.

BUCK

TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

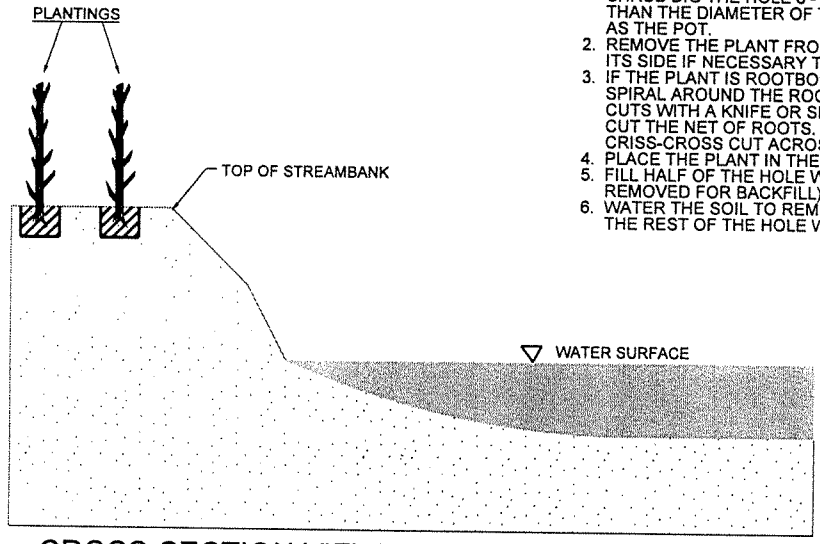
ROOT WADS



NOTES:

1. PLANT BARE ROOT SHRUBS AND TREES TO THE WIDTH OF THE BUFFER AS SHOWN ON THE PLANS.
2. ALLOW FOR 6-10 FEET BETWEEN PLANTINGS, DEPENDING ON SIZE.
3. LOOSEN COMPACTED SOIL.
4. PLANT IN HOLES MADE BY A MATTOCK, DIBBLE, PLANTING BAR, OR OTHER APPROVED MEANS.
5. PLANT IN HOLES DEEP AND WIDE ENOUGH TO PERMIT THE ROOTS TO SPREAD OUT AND DOWN WITHOUT J-ROOTING.
6. KEEP ROOTS MOIST WHILE DISTRIBUTING OR WAITING TO PLANT BY MEANS OF WET CANVAS, BURLAP, OR STRAW.
7. HEEL IN PLANTS IN MOIST SOIL OR SAWDUST IF NOT PROMPTLY PLANTED UPON ARRIVAL TO PROJECT SITE.

CROSS-SECTION VIEW OF BARE ROOT PLANTING



NOTES:

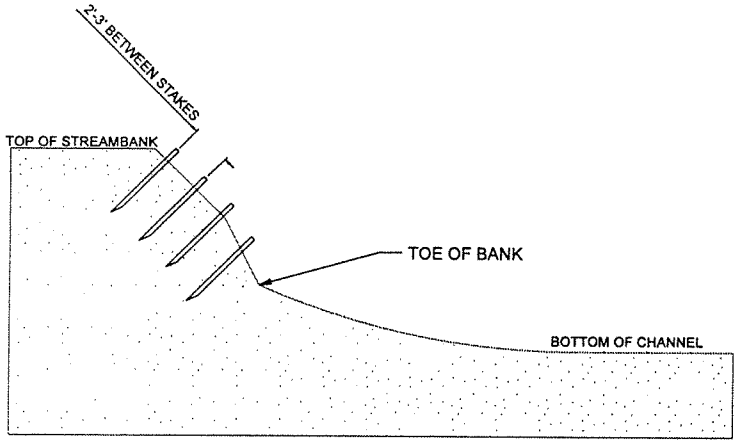
1. WHEN PREPARING THE HOLE FOR A POTTED PLANT OR SHRUB DIG THE HOLE 8 - 12 INCHES LARGER THAN THE DIAMETER OF THE POT AND THE SAME DEPTH AS THE POT.
2. REMOVE THE PLANT FROM THE POT. LAY THE PLANT ON ITS SIDE IF NECESSARY TO REMOVE THE POT.
3. IF THE PLANT IS ROOTBOUND (ROOTS GROWING IN A SPIRAL AROUND THE ROOT BALL), MAKE VERTICAL CUTS WITH A KNIFE OR SPADE JUST DEEP ENOUGH TO CUT THE NET OF ROOTS. ALSO MAKE A CRISS-CROSS CUT ACROSS THE BOTTOM OF THE BALL.
4. PLACE THE PLANT IN THE HOLE.
5. FILL HALF OF THE HOLE WITH SOIL (SAME SOIL REMOVED FOR BACKFILL).
6. WATER THE SOIL TO REMOVE AIR POCKETS AND FILL THE REST OF THE HOLE WITH THE REMAINING SOIL.

CROSS-SECTION VIEW OF CONTAINER PLANTING

BUCK

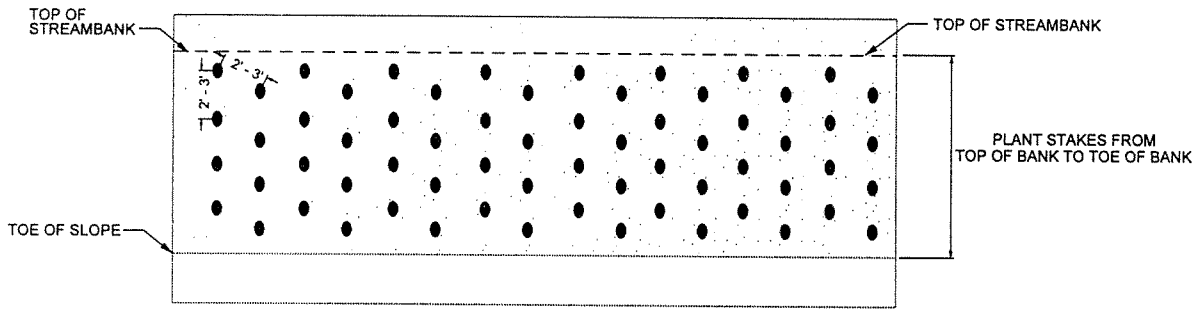
TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

BARE ROOT / CONTAINER PLANTING

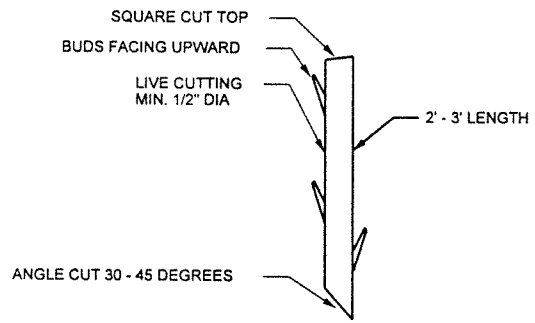


CROSS-SECTION VIEW OF LIVE STAKING SPECIFICATION

NOTES:
1. STAKES SHOULD BE CUT AND INSTALLED ON THE SAME DAY.
2. DO NOT INSTALL STAKES THAT HAVE BEEN SPLIT.
3. STAKES MUST BE INSTALLED WITH BUDS POINTING UPWARDS.
4. STAKES SHOULD BE INSTALLED PERPENDICULAR TO BANK.
5. STAKES SHOULD BE 1/2 TO 2 INCHES IN DIAMETER AND 2 TO 3 FT LONG.
6. STAKES SHOULD BE INSTALLED LEAVING 1/5 OF STAKE ABOVE GROUND.



PLAN VIEW OF LIVE STAKING SPECIFICATION



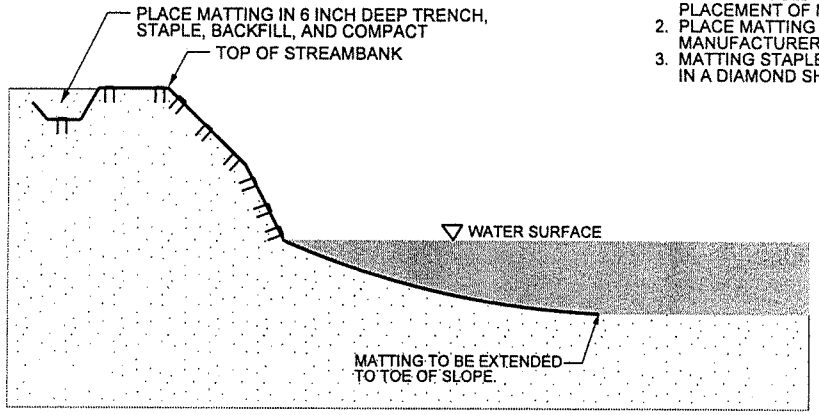
LIVE STAKE DETAIL

BUCK ENGINEERING

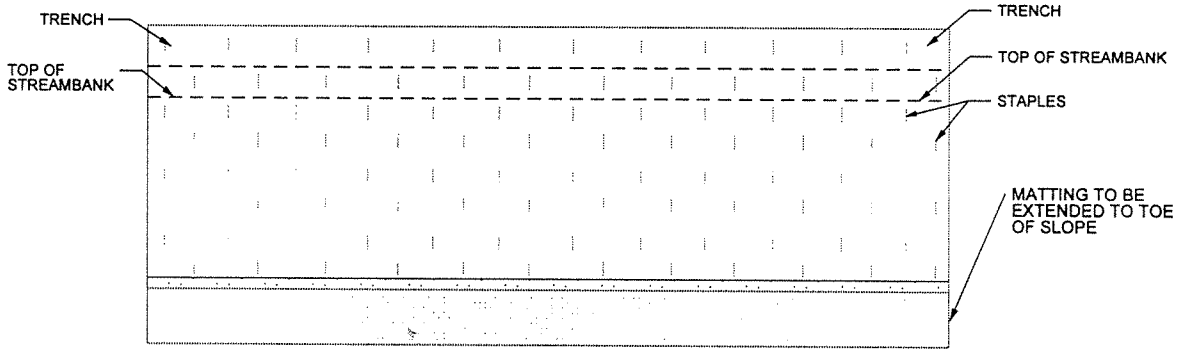
TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

LIVE STAKING

NOTES:
1. BANKS SHOULD BE SEEDED PRIOR TO PLACEMENT OF MATTING.
2. PLACE MATTING ACCORDING TO MANUFACTURER RECOMMENDATIONS.
3. MATTING STAPLES SHOULD BE PLACED IN A DIAMOND SHAPE PATTERN.



CROSS-SECTION VIEW



PLAN VIEW

BUCK

TYPICAL DESIGN
(NOT FOR CONSTRUCTION)

EROSION CONTROL MATTING