

**NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**



Content, Format and Data Requirements for EEP Restoration Plans

The purpose of this document is to detail the minimum content and format requirements for EEP restoration plans. This document will be revised and redistributed as changes arise in order to provide clarity for designers and best meet EEP's needs. Plans missing critical information or those that substantially diverge from the most current version of this document will not be approved.

I. General

1. Sections of plans, such as main body of plans, tables, figures, design sheets, and appendices, must be separated by tabs.
2. All data must have units assigned whether in figures, tables or text.
3. The number of data points (n) must be specified where ranges or means are provided.
4. Times New Roman font must be used with a minimum point size of 11 for narrative text. Text in the tables may be as small as 9 pt font.
5. Latitude and longitude of the center point of restored streams and central location of wetlands must be included in plans. They must be reported in decimal degrees using the World Geodetic System of 1984 (WGS84) as the required datum.
6. All photos must be: in color, of adequate quality, and arranged in sequence with captions.
7. All figures and scaled plan view of site must include:
 - a) Size no larger than 11" x 17";
 - b) Figure number and title;
 - c) North arrow;
 - d) Scale;
 - e) Site boundary;
 - f) Appropriate plan footer info including at minimum:
 - Map producer/logo;
 - EEP logo;
 - Project name/number;
 - NC county; and
 - Date of production.
 - g) Labeled stream or wetland layer with the project extent overlain in a distinct color with each project segment identified. Segment/reach distinctions will arise from confluences or differences in the restoration objectives from one area to another (e.g. enhancement I, restoration, relocation etc.).
8. Three (3) hard copies of draft restoration plans must be submitted.
9. Ten (10) hard copies of restoration plans and one (1) digital copy in .pdf format must be submitted.

II. Title Page

The title page must include:

EEP's official site name (subheader: local / informal name), County and SCO project number;
Project photo;
Prepared for: NCDENR-EEP address and logos;
Status of plan (draft restoration plan or restoration plan); and
Submission date.

Back of title page or the page following the title page includes:

Prepared by: Name of design firm;
Address;
Phone and fax numbers; and
Name of project manager and contact information.

III. Contents of Restoration Plans - An organized and detailed restoration plan must include:

Executive Summary

The executive summary is designed to provide summary of the project setting, general site conditions, restoration structure and objectives. It should include at minimum the following:

- 1 Goals (ends) and Objectives (means) need to provide the linkage between the hydrologic, water quality and habitat functions that the proposed project expects to restore or enhance and the systems of measurement that will demonstrate attainment (see figure in section 7.1 below). Specific project goals and objectives (if project is in a local watershed priority (LWP) area, reference the LWP and state which of the LWP goals will be addressed by the project).
- 2 Existing amount of streams and wetlands.
- 3 Amounts and of streams and wetlands designed and their approach.
- 4 State and justify any jurisdictional wetland impacts.

1.0 Project Site Identification and Location

- 1.1 Directions to Project Site
- 1.2 USGS Hydrologic Unit Code and NCDWQ River Basin Designations
- 1.3 Project Vicinity Map
- 1.4 Project components and structure

Delineating the project components/assets should include a properly segmented map (e.g. fig 1.) and corresponding table (Table 1). It is possible to delineate these pieces in the vicinity map (section 1.3), but if clarity is compromised it may require a distinct figure. See the appendix of this document for exhibit figure 1 that provides an example of the desired level of delineation.

Project structure is comprised of restoration components that are contiguous areas or reaches consistent in their restoration level (e.g.. P, C, EI, EII, R etc.), approach (e.g. PI, PII, for streams etc.) and target type (i.e. B, C, E for streams and community system types for wetlands). In the case of streams, a distinct piece of hydrology, such as a tributary will always be treated as a distinct stream project component. For streams, there have been examples in the past where certain restoration

reaches/components have demonstrated an intermingling of restoration approaches (e.g. PII/PIII). A distinct restoration component should be created for any continuous stream segment that demonstrates consistency in the above characteristics for 500 feet or more.

Inflections or changes in other characteristics, which may influence the response or performance within a component delineated according to the above criteria may merit further segmentation. For example, in the case of a stream restoration segment with a consistent level, approach, and type (e.g. R, PI, E), but a distinct inflection in the valley type/characteristics, it would be advisable to create a distinct component in the table given that the valley condition may be expected to yield performance differences. A large increase in the drainage on a project mainstem due to a tributary contribution would be another example. Typically a sustained shift in valley characteristics would often generate a distinct design stream type, negating the need for this additional consideration, but this is not always the case given that multiple valley types can include the same stream type. A distinct shift in soil type longitudinally over the valley may warrant the same kind of consideration or in the case of wetlands, a topographic feature that may isolate 2 BLH tracts from one another may warrant their distinction.

This component tabulation in table 1 has relevance and application beyond cataloging the project components/assets. The components delineated in the table 1 define the segmentation of measurement and monitoring data as well and serve as the projects “analytical units”. This means that data summary tables such as those outlined below for design morphology or tables that summarize wetland gauge performance are populated with data parsed according to the reaches or tracts listed in table 1.

2.0 Watershed Characterization

2.1 Drainage Area, project area, and easement acreage

2.2 Surface Water Classification / Water Quality

2.3 Physiography, Geology and Soils

2.4 Historical Land Use and Development Trends

Watershed Trajectory and Stream Design – The design firm must demonstrate in the narrative and data presentation that they not only understand the state of the watershed, but understand the extent, nature and effects of likely changes as well as their spatial distribution. This has and will continue to involve the designer acquiring municipal and county planning data and making use of EEP and DWQ planning documents where they apply. It may also involve using modeling tools and local watershed models, which may have been developed by others. In addition to connecting these factors to channel evolution, the designer must indicate whether the projected rates and types of change represent a potential threat to the designs sustainability and any stated project goals, and if so, what design considerations were incorporated to address these concerns. It is understood that as with any data, there is uncertainty in watershed planning data, but due rigor with the best available data in hand is a key factor in managing uncertainty and the attendant risks. The degree to which these factors were articulated in prior submissions has been variable and therefore merited additional emphasis here.

- 2.5 Endangered / Threatened Species
- 2.6 Cultural Resources
- 2.7 Potential Constraints
 - 2.7.1 Property Ownership and Boundary
 - 2.7.2 Site Access
 - 2.7.3 Utilities
 - 2.7.4 FEMA / Hydrologic Trespass

3.0 Project Site Streams (existing conditions)

3.1 Existing Conditions Survey

EEP wishes to emphasize the point that great care should be taken to make sure that the sample that contributes to the morphological distributions in the existing conditions survey is representative. For example, it should not be limited to the areas of greatest disturbance nor should it be limited to the measurements from stable zones that simply facilitate design. It must facilitate accurate, meaningful comparisons of the pre-existing distributions with design, As-built and monitoring distributions.

The parameters of primary interest for this pre and post comparison include those found in the morphology summary tables in the format guidance documents for the EEP Mitigation Plan and Monitoring Report. These parameters are either a direct subset or derivations of morphology parameters found in a typical natural channel design table, but have been extracted and formatted with varying degrees of utility in the past. These tables will not actually come into use until the Mitigation Plan (Task 6 in full delivery terminology) and are not intended to replace standard design tables, but are simply referenced here to provide those involved in design survey to understand what parameters will be required to have robust sample distributions for clear, consistent comparisons between the existing and restored condition.

3.2 Channel Classification

3.3 Valley Classification

3.2.1 The valley type must be specified and discussed. Assure the reader in the narrative and data presentation that the proposed channel design is an appropriate match for the valley type.

3.4 Discharge (bankfull, trends)

3.5 Channel Morphology (pattern, dimension, profile)

3.6 Channel Evolution

The design must include a summary of the streams evolutionary trajectory/scenario. <http://www.epa.gov/warsss/sedsource/successn.htm>. Coupled with a proper sample in the existing conditions survey (section 3.1), defining the channel trajectory provides a means to justify the need for the proposed level of intervention (i.e. Restoration Level).

In addition to adequately sampling the existing conditions, the designer must describe the reach(s) evolutionary stage, scenario, and trajectory. EEP wishes to understand whether the measurements surrounding the candidate stream reach(s) exist in a system that is near the beginning, end or some midpoint in the current

phase of deterioration and how the designer's understanding and projections of the watersheds trajectory supports the channels proposed evolutionary scenario. Together with the conditions summary, this will help EEP understand whether the proposed restoration level/effort is appropriate and proportional.

- 3.7 Channel Stability Assessment
- 3.8 Bankfull Verification
- 3.9 Vegetation Community Type(s) Descriptions and Disturbance History

4.0 Reference Streams

- 4.1 Watershed Characterization
- 4.2 Channel Classification
- 4.3 Discharge (bankfull, trends)
- 4.4 Channel Morphology (pattern, dimension, profile)
- 4.5 Channel Stability Assessment
- 4.6 Bankfull Verification
- 4.7 Vegetation Community Type(s) Descriptions and Disturbance History

5.0 Project Site Wetlands (existing conditions)

- 5.1 Jurisdictional Wetlands
- 5.2 Hydrological Characterization
 - 5.2.1 Groundwater Modeling (if needed)
 - 5.2.2 Surface Water Modeling at Restoration Site (if needed)
 - 5.2.3 Hydrologic Budget for Restoration Site
- 5.3 Soil Characterization
 - 5.3.1 Taxonomic Classification (including series)
 - 5.3.2 Profile Description
 - 5.3.3 Hydraulic Conductivity (if needed)
 - 5.3.4 Organic Matter Content (if needed)
 - 5.3.5 Bulk Density (if needed)
- 5.4 Vegetation Community Type(s) Descriptions and Disturbance History

6.0 Reference Wetlands

- 6.1 Hydrological Characterization
 - 6.1.1 Gauge Data Summary
- 6.2 Soil Characterization
 - 6.2.1 Taxonomic Classification (including series)
 - 6.2.2 Profile Description
 - 6.2.3 Hydraulic Conductivity (if needed)
 - 6.2.4 Organic Matter Content (if needed)
 - 6.2.5 Bulk Density (if needed)
- 6.3 Vegetation Community Type(s) Descriptions and Disturbance History
 - 6.3.1 Community Description(s) – All Strata

7.0 Project Site Restoration Plan

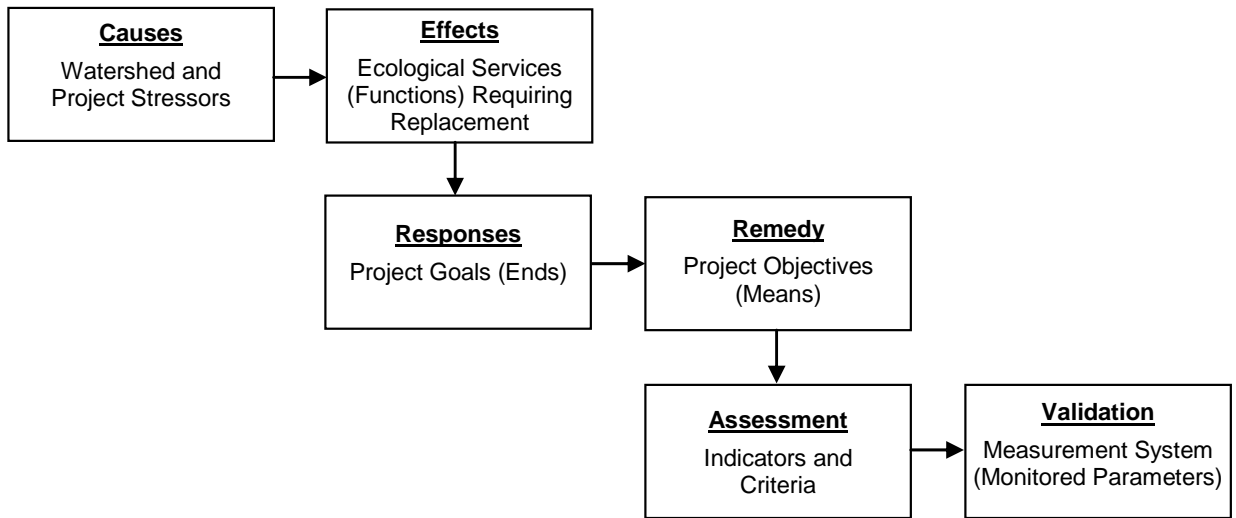
7.1 Notes on Stream Design:

Within the context of the requirements of a technically thorough stream design, the best examples make it evident that the designer has thoughtfully optimized the design in terms of cost and risk benefit (e.g. \$\$ in - sustainable functional uplift out). It is

evident that the design is coherent by demonstrating convergence between different lines of evidence providing confidence in the approach and design targets. That is, the final design demonstrates convergence between site indicators, reference data, hydraulic geometry relationships, sediment transport assessments, and process models or any other techniques, tools, and approaches utilized in the design. Just as important, when some divergence is encountered there is a defensible rationale for how and why the design has been influenced and adjusted. The most useful designs in terms of review and approval include a narrative in the restoration plan that makes all of this clear, tying the various data streams together and clearly describing the expected functional yields.

7.2 Restoration Project Goals and Objectives

Goals (ends) and Objectives (means) need to provide the linkage between the hydrologic, water quality and habitat functions that the proposed project expects to restore or enhance and the systems of measurement that will demonstrate attainment.



Although goals tend to be more overarching than objectives, it is often observed that this relationship can be taken to an extreme and goals can be too broadly stated and overly standardized, ignoring specific site or watershed conditions. In addition, goal statements often do not consider the systems and practical constraints necessary for their measurement. For these reasons, watershed planning and other relevant resources/data should be consulted thoroughly in the development of project goals. Understanding the issues, stressors, and concerns specific to the project and its watershed is not only essential for developing an appropriate project design, but is instrumental in the first step of that process, which is the development of tailored, measurable and achievable goals.

7.2.1 Designed Channel Classification (narrative) and / or Wetland Type

7.2.2 Target Wetland Communities / Buffer Communities

- 7.3 Sediment Transport Analysis
 - 7.3.1 Methodology
 - 7.3.2 Calculations and Discussion
- 7.4 HEC-RAS Analysis
 - 7.4.1 No-rise, LOMR, CLOMR
 - 7.4.2 Hydrologic Trespass (for wetland and Priority 1 stream restoration projects)
- 7.5 Stormwater Best Management Practices
 - 7.5.1 Narrative of Site-Specific Stormwater Concerns
 - 7.5.2 Device Description and Application
- 7.6 Hydrological Modifications (for wetland restoration or enhancement)
 - 7.6.1 Narrative of Modifications
 - 7.6.2 Scaled Schematic of Modifications
- 7.7 Soil Restoration
 - 7.7.1 Narrative & Soil Preparation and Amendment
 - 7.7.2 Table 7. Soil Preparation and Amendment Summary per Community Type or Zone.
- 7.8 Natural Plant Community Restoration
 - 7.8.1 Narrative of plant community restoration that correlates with the Planting Plan as depicted on the Restoration Plan Design Sheets.
 - 7.8.2 Table 8. Seeding Plan Summary for Vegetation Communities and Zones
 - 7.8.3 Table 9. Planting Plan Summary for Vegetation Communities and Zones
 - 7.8.4 Narrative of invasive species management

8.0 Performance Criteria – For general guidance on developing success criteria see the EEP Mitigation/Template Plan guidance document on the EEP website.
http://www.nceep.net/pages/designer_info.htm

- 8.1 Streams
- 8.2 Stormwater Management Devices
- 8.3 Wetlands
- 8.4 Vegetation
- 8.5 Schedule / Reporting

Preliminary Monitoring – For guidance on establishing monitoring plans, see the EEP Guidance/Template documents for the EEP Mitigation Plan and Monitoring reports.
http://www.nceep.net/business/monitoring/Monitoring_report_web/Projects_in_Monitoring.htm
http://www.nceep.net/pages/designer_info.htm

10.0 References

11.0 Tables

- Table 1. Project Components and Structure
- Table 2. Project timetable/history
- Table 3. Project contacts
- Table 4. Project Attributes
- Table 5. Morphological Design Table
- Table 6. BEHI/NBS and Sediment Export Estimate for Project Site Streams
- Table 7. Planting Summary for Vegetative Communities and Zones
- Table 8. Seeding Summary for Permanent Vegetation per Community Type or Planting Zone.
- Table 9. Planting Summary for Temporary Sediment and Erosion Control Seed Mix per Community Type or Planting Zone.

12.0 Figures (no larger than 11" x 17") – All figures need title, N arrow and scale

Figure 1. Project Site Vicinity Map (name of USGS Quad Sheet)

Figure 2. Project Site Watershed Map

Figure 3. Project Site NRCS Soil Survey Map

Figure 4. Project Site Hydrological Features Map with Gauge Locations

Figure 5. Project Site Wetland Delineation Map

Figure 6. Reference Site Vicinity Map

Figure 7. Reference Site Watershed Map

Figure 8. Reference Site NRCS Soil Survey Map

Figure 9. Reference Site Wetland Determination Sample Locations with Gauge Locations

Figure 10. Reference Site Vegetative Communities Map

12.0 Designed Sheets

Sheet 1. Existing Channel or Site Conditions

Sheet 2. Designed Channel Alignment and / or Site Conditions

Sheet 3. Longitudinal Profile

Sheet 4. Designed Vegetative Communities Map (by zone)

13.0 Appendices

Appendix 1. Project Site Photographs

Appendix 2. Project Site USACE Routine Wetland Determination Data Forms

Appendix 3. Project Site NCDWQ Stream Classification Forms

Appendix 4. Reference Site Photographs

Appendix 5. Reference Site USACE Routine Wetland Determination Data Forms

Appendix 6. Reference Site NCDWQ Stream Classification Forms

Appendix 7. Hydrologic Gauge Data Summary, Groundwater and Rainfall Information

Appendix 8. HEC-RAS Analysis

Appendix 9. EEP floodplain requirements checklist

IV. Report and Data Submission Format

1. Submit 3 hardcopies of the report and plan sheets for review. Upon approval send 3 final copies and the electronic deliverables below.

2. Create a master folder to house all e-files using the following naming convention:

Project Name-Number-RestPlan (e.g. UT_Rocky_River-123456-RP) Project # supplied by EEP

3. Under a subfolder named "Report" include the following PDF components formatted to provide the best balance of quality and file size, sectioned as per the example below:

As an example: Jumping Run, Project number 29, Calendar year 2007, Restoration Plan Submission

1JumpingRun_29_2007_RP_Main Body.pdf

2JumpingRun_29_2007_RP_AppA.pdf

3JumpingRun_29_2007_RP_AppB.pdf

4JumpingRun_29_2007_RP_AppX.pdf etc.

4. Under a second subfolder named "Support Files" create subfolders (for projects that apply) to house the following:

4.1 Summary Tables: (Excel File with all data summary tables – e.g. design tables)

- 4.2 Raw design data tables and plots for cross sections and longitudinal profiles
- 4.3 Figures: (All figures as PDF) and any GIS shape or geodatabase files
- 4.4 Plan Sheets: Single PDF of all preliminary design sheets and digital drawing files
CAD, Microstation, and any GIS files. See formatting requirements for digital drawing files: http://www.nceep.net/pages/designer_info.htm
- 4.5 Photos: JPEGs of pre-construction data
- 4.6 Any River Morph Files with csv, txt, or EXCEL spreadsheet outputs
- 4.7 Any stream gauge hydrographs (USGS proxy or site transducer) and raw data files.
- 4.8 Precipitation and wetland hydrology data and plots
- 4.9 Any modeling files (e.g. HEC-RAS)
 - FEMA related
 - Design process models

V. Tables and Figures (Exhibit Samples)

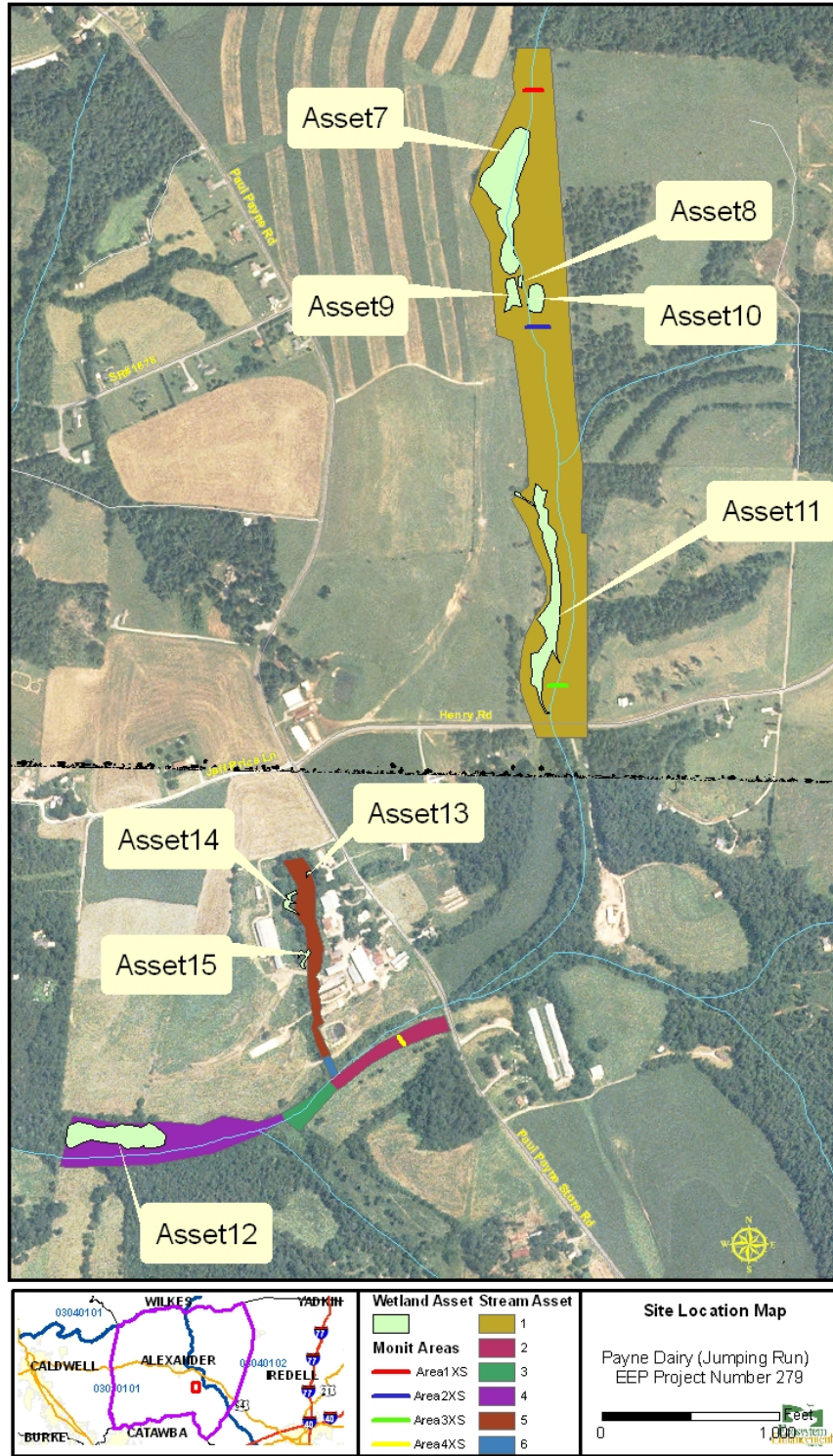


Exhibit Figure 1. Combination vicinity and restoration component/asset map. Just an example, a second figure at another scale may be needed/advisable.

Table 1 describes the projects structure and components.

Table 1. Project Components Project Name/Number (XYZ)							
Project Component or Reach ID	Existing Feet/Acres	Restoration Level	Approach	Footage or Acreage	Stationing	Buffer Acres	Comment
Reach I	920	R	P1	1000 lf	00+00 – 10+00	1.2	Includes 600 lf of channel relocation
Reach II	350	R	P2	400 lf	10+00 – 14+00	-	Reach II consists of a mix of P2 and P3 with a dominance of the approaches indicated over the stationing indicated.
Reach II	400	EI	P3	400 lf	14+00 – 18+00	0.4	
Reach III – Trib	500	P	-	500 lf	00+00 – 05+00	0.5	Rootwads and re-slope, stabilization
Riverine Wetland Tract I	4.0	R		5.4 Ac			Restored aerial extent of riparian wetland spanning adjacent stream stationing indicated
Non-Rip Wetland Tract 2	1.0	E		1.2			

Component Summations							
Restoration Level	Stream (lf)	Riparian Wetland (Ac)		Non-Ripar (Ac)	Upland (Ac)	Buffer (Ac)	BMP
		Riverine	Non-Riverine				
Restoration	1400	5.4					
Enhancement				1.2			
Enhancement I	400						
Enhancement II							
Creation							
Preservation	500						
HQ Preservation							
		5.4	0.0				
Totals	2300	5.4		1.2	0.0	2.1	BMP Count

	= Non - Applicable
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Table 2 & 3 Describes project history and participants.

Table 2. Project Activity and Reporting History Project Name/Number (XYZ)		
Activity or Report	Data Collection Complete	Completion or Delivery
Restoration Plan	June 2001	Dec 2001
Final Design – Construction Plans	NA	May 2002
Construction	NA	July 2002
Temporary S&E mix applied to entire project area	NA	Aug 2002
Permanent seed mix applied to reach/segments 1& 2	NA	Aug 2002
Containerized and B&B plantings for reach/segments 1&2	NA	Sep 2002
Mitigation Plan / As-built (Year 0 Monitoring – baseline)	Oct 2002	Dec 2002
Year 1 monitoring	Nov 2003	Jan 2004
Year 2 Monitoring	Sep 2004	Feb 2005
Structural maintenance (bench expansion, vane) Reach 1	NA	July 2005
Year 3 Monitoring	Dec 2005	March 2006
Supplemental planting of containerized material reach/segment 1	NA	
Year 4 Monitoring		
Etc.		

Bolded items represent those events or deliverables that are variable. Non-bolded items represent events that are standard components over the course of a typical project. Be advised that these are obviously not the extent of potential relevant project activities, but are just provided for example as part of this exhibit.

Table 3. Project Contact Table Project Name/Number (XYZ)	
Designer	Firm Information / Address
Primary project design POC	POC name and phone
Construction Contractor	Firm Information / Address
Construction contractor POC	POC name and phone
Planting Contractor	Firm Information / Address
Planting contractor POC	POC name and phone
Seeding Contractor	Company Information / Address
Planting contractor point of contact	POC name and phone
Seed Mix Sources	Company and Contact Phone
Nursery Stock Suppliers	Company and Contact Phone
Monitoring Performers	Firm Information / Address
Stream Monitoring POC	POC name and phone
Vegetation Monitoring POC	POC name and phone
Wetland Monitoring POC	POC name and phone

Table 4 summarizes project components attributes.

Table 4. Project Attribute Table
Project Name/Number (XYZ)

Project County	
Physiographic Region	
Ecoregion	
Project River Basin	
USGS HUC for Project (14 digit)	
NCDWQ Sub-basin for Project	
Within extent of EEP Watershed Plan?	Name the plan document
WRC Class (Warm, Cool, Cold)	
% of project easement fenced or demarcated	
Beaver activity observed during design phase?	

Restoration Component Attribute Table

	Reach 1a	Reach 1b	Reach 2a	Reach 2b	Tract 1a	Tract 1b
Drainage area						
Stream order						
Restored length (feet)						
Perennial or Intermittent						
Watershed type (Rural, Urban, Developing etc.)						
Watershed LULC Distribution (e.g.)						
Residential						
Ag-Row Crop						
Ag-Livestock						
Forested						
Etc.						
Watershed impervious cover (%)						
NCDWQ AU/Index number						
NCDWQ classification						
303d listed?						
Upstream of a 303d listed segment?						
Reasons for 303d listing or stressor						
Total acreage of easement						
Total vegetated acreage within the easement						
Total planted acreage as part of the restoration						
Rosgen classification of pre-existing						
Rosgen classification of As-built						
Valley type						
Valley slope						
Valley side slope range (e.g. 2-3.%)						
Valley toe slope range (e.g. 2-3.%)						
Cowardin classification						
Trout waters designation						
Species of concern, endangered etc.? (Y/N)						
Dominant soil series and characteristics						
Series						
Depth						
Clay%						
K						
T						

Use N/A for items that may not apply. Use "--" for items that are unavailable and "U" for items that are unknown

Table 4 will describe morphology characteristics of existing conditions and designed conditions of streams, and morphology characteristics of reference reach as well. (Please note the sample table is incomplete.)

**Table 5. Morphological Table
Project Number 123456 (UT to Crooked Creek)**

Item	Existing Conditions	Designed Conditions	Reference Reach
LOCATION	UT to Crooked Creek	UT to Crooked Creek	South Unnamed Trib. To Marks Creek
STREAMS TYPE	F5	C5	C5
DRAINAGE AREA, Ac	341.00 Ac	380.00 Ac	65.02 Ac
BANKFULL WIDTH (W_{bkf}), ft	16.4 ft	15.0 ft	11.1 ft
BANKFULL MEAN DEPTH (d_{bkf}), ft	0.81 ft	1.15 ft	0.72 ft
WIDTH/DEPTH RATIO (W_{bkf}/d_{bkf})	20.2	13.0	15.4
BANKFULL X-SECTION AREA (A_{bkf}), ft ²	13.3 ft ²	17.3 ft ²	8.0 ft ²
BANKFULL MEAN VELOCITY, fps	4.3 fps	3.9 fps	2.1 fps
BANKFULL DISCHARGE, cfs	56.6 cfs	61.2 cfs	17.2 cfs
BANKFULL MAX DEPTH (d_{max}), ft	1.91 ft	1.50 ft	1.80 ft
WIDTH Flood-Prone Area (W_{fpa}), ft	24.8 ft	67.5 ft	59.1 ft
ENTRENCHMENT RATION (ER)	1.5	4.5 – 4.6	5.3
MEANDER LENGTH (L_m), ft	6 – 29 ft	45.0 – 135.0 ft	19.7 – 42.0 ft

Table 7. Soil Preparation and Amendment Summary per Community Type or Zone.

Community Type, or Zone 1							Acres	6.50
Mechanical Treatment	Approx. Date	Ground Cover Fabric	Mulch Type	Mulch Density / Thickness	Nutrient Amendments	Nutrient Total lbs		
Disking 1	01/08-02/08	Coir	Wheat Straw	75% Cover	Pellet Fertilizer	600		
Etc.								
						Total	600	
Community Type, or Zone 2							Acres	3.30
Mechanical Treatment	Approx. Date	Ground Cover Fabric	Mulch Type	Mulch Density / Thickness	Nutrient Amendments	Nutrient Total lbs		
Disking 1	01/08-02/08	NA	NA		Ground Limestone	350		
Disking 2	02/08	NA	Wheat Straw	75% Cover	Pellet Fertilizer	600		
Etc.								
						Total	950	
Community Type, or Zone 3							Acres	1.50
Mechanical Treatment	Approx. Date	Ground Cover Fabric	Mulch Type	Mulch Density / Thickness	Nutrient Amendments	Nutrient Total lbs		
Herbicide 1	06/07	NA	NA	NA	NA			
Herbicide 2	08/07	NA	NA	NA	NA			
Roto Till 1	01/08-02/08	NA	NA	NA	Organic Fertilizer	600		
Roto Till 2	02/08	NA	Wood/Bark	3"	Compost	6000		
Etc.								
						Subtotal	6600	
						Total	8150	
							12.8	

Table 8 Seeding Summary for Permanent Vegetation per Community Type or Planting Zone.

Community Type, or Zone 1					Acres	6.50
Approved Date	Species Name	Stratum	Common Name	Total lbs		
Jan 1-May 15	<i>Secale cereale</i>	Herb	Rye Grain	50		
May 15-Aug 15	<i>Setaria itallica</i>	Herb	German Millet	50		
Aug 15-Dec 31	<i>Secale cereale</i>	Herb	Rye Grain	50		
NA	<i>Betula nigra</i>	Canopy	River Birch	10		
NA	<i>Sambucus canadensis</i>	Shrub	Elderberry	15		
NA	<i>Rhus typhina</i>	Shrub	Staghorn Sumac	15		
Etc.						
				Subtotal	190	
Community Type, or Zone 2					Acres	3.30
Approved Date	Species Name	Stratum	Common Name	Total lbs		
Jan 1-May 15	<i>Secale cereale</i>	Herb	Rye Grain	50		
May 15-Aug 15	<i>Setaria itallica</i>	Herb	German Millet	50		
Aug 15-Dec 31	<i>Secale cereale</i>	Herb	Rye Grain	50		
NA	<i>Panicum clandestinum</i>	Herb	Deer Tongue Grass	5		
NA	<i>Saururus cernuus</i>	Herb	Lizard's Tail	5		
Etc.						
				Subtotal	160	
				Total	172	9.80

Table 9. Planting Summary for Temporary Sediment and Erosion Control Seed Mix per Community Type or Planting Zone.

<i>Community Type, or Zone 1</i>								Acres	6.50
Species	Common Name	Max Spacing	Unit Type*	Size**	Stratum	Indiv. Spacing	# of Stems	Total lbs	
<i>Salix nigra</i>	Black Willow	2'	L	2-3'	Subcanopy	4 ft.	600		
<i>Cornus amomum</i>	Silky Dogwood	2'	L	2-3'	Shrub	4 ft.	600		
Etc.									
							Subtotal	1200	
<i>Community Type, or Zone 2</i>								Acres	3.30
Species	Common Name	Max Spacing	Unit Type*	Size**	Stratum	Indiv. Spacing	# of Stems	Total lbs	
<i>Quercus nigra</i>	Willow Oak	10'	B	3" Cali.	Canopy	40'	15		
<i>Ilex Opaca</i>	American Holly	10'	P	5 Gal	SubCanopy	20'	10		
<i>Plantanus Occidentalis</i>	Sycamore	10'	R	2-3'	Canopy	10'	50		
<i>Lindera benzoin</i>	Spice Bush	10'	P	2-3 Gal	Shrub	10'	50		
<i>Panicum clandestinum</i>	Deer Tongue Grass	NA	S	NA	Herb	NA		5	
<i>Saururus cernuus</i>	Lizard's Tail	NA	S	NA	Herb	NA		5	
Etc.									
							Subtotal	125	10
							Total	1325	10
									9.80

* Unit Type choices include: Transplant (T), Lives stake (L), Ball and Burlap (B), Pot (P), Tubling (T), Bare Root (R), Mechanically Planted (M), and Seed (S)

** Size units may vary, but must be stated.

Appendix 9.



EEP Floodplain Requirements Checklist

This form was developed by the National Flood Insurance program, NC Floodplain Mapping program and Ecosystem Enhancement Program to be filled for all EEP projects. The form is intended to summarize the floodplain requirements during the design phase of the projects. The form should be submitted to the Local Floodplain Administrator with three copies submitted to NFIP (attn. Edward Curtis), NC Floodplain Mapping Unit (attn. John Gerber) and NC Ecosystem Enhancement Program.

Project Location

Name of project:	
Name if stream or feature:	
County:	
Name of river basin:	
Is project urban or rural?	
Name of Jurisdictional municipality/county:	
DFIRM panel number for entire site:	
Consultant name:	
Phone number:	
Address:	

Design Information

Provide a general description of project (one paragraph). Include project limits on a reference orthophotograph at a scale of 1" = 500".

Summarize stream reaches or wetland areas according to their restoration priority.

Example

Reach	Length	Priority
<i>Example: Reach A</i>	<i>1000</i>	<i>One (Restoration)</i>
<i>Example: Reach B</i>	<i>2000</i>	<i>Three (Enhancement)</i>

Floodplain Information

<p>Is project located in a Special Flood Hazard Area (SFHA)?</p> <p><input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>If project is located in a SFHA, check how it was determined:</p> <p><input type="checkbox"/> Redelineation</p> <p><input type="checkbox"/> Detailed Study</p> <p><input type="checkbox"/> Limited Detail Study</p> <p><input type="checkbox"/> Approximate Study</p> <p><input type="checkbox"/> Don't know</p>
<p>List flood zone designation:</p>
<p>Check if applies:</p> <p><input checked="" type="checkbox"/> AE Zone</p> <p style="padding-left: 20px;"><input type="checkbox"/> Floodway</p> <p style="padding-left: 20px;"><input type="checkbox"/> Non-Encroachment</p> <p style="padding-left: 20px;"><input checked="" type="checkbox"/> None</p> <p><input type="checkbox"/> A Zone</p> <p style="padding-left: 20px;"><input type="checkbox"/> Local Setbacks Required</p> <p style="padding-left: 20px;"><input type="checkbox"/> No Local Setbacks Required</p>

<p>If local setbacks are required, list how many feet:</p>
<p>Does proposed channel boundary encroach outside floodway/non-encroachment/setbacks?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Land Acquisition (Check)</p> <p><input type="checkbox"/> State owned (fee simple)</p> <p><input type="checkbox"/> Conservation easment (Design Bid Build)</p> <p><input type="checkbox"/> Conservation Easement (Full Delivery Project)</p> <p>Note: if the project property is state-owned, then all requirements should be addressed to the Department of Administration, State Construction Office (attn: Herbert Neily, (919) 807-4101)</p>
<p>Is community/county participating in the NFIP program?</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Note: if community is not participating, then all requirements should be addressed to NFIP (attn: Edward Curtis, (919) 715-8000 x369)</p>
<p>Name of Local Floodplain Administrator:</p> <p>Phone Number:</p>

Floodplain Requirements

This section to be filled by designer/applicant following verification with the LFPA

- No Action
- No Rise
- Letter of Map Revision
- Conditional Letter of Map Revision
- Other Requirements

<p>List other requirements:</p>

<p>Comments:</p>

Name: _____ Signature: _____

Title: _____ Date: _____