Appendix V – Forms

Mitigation Plan Check List
STREAM CHANNEL MITIGATION PLANNING CHECKLIST
(08APRIL02)

ACTION ID:_____

SITE/BANK NAME:_____

LOCATION/STREAM/COUNTY:_____

USGS QUAD(S):_____

WARMWATER____ COOLWATER____ COLDWATER____

PREPARED BY:_____ DATE:_____

I. INTRODUCTION

A. Type of Mitigation (Circle/A separate checklist may be prepared if more than one type)

1. Restoration Enhancement Preservation

a. In-Kind Out-of-Kind Both (i.e. warm for warm, cold for warm, etc.)

b. On-Site Off-Site Both

2. Up-Front Concurrent After-The-Fact Bank In-Lieu-Fee

B. Stream type/s and linear feet Impacted/ Attach or Describe: _____

_____

C. Stream types and linear footage Mitigated/ Attach or Describe:_____

_____

D. Describe mitigation Ratios: _____

_____

E. Will any Endangered Species, Archeological Resources, or Haz/Tox sites be impacted by this effort? Y/N___

F. Has stream class been determined on both the impacted stream and the mitigation site? Y/N___

Explain:_____

_____

II. TARGET GOALS AND FUNCTIONS

A. Are there stated GOALS? Y/N___

Describe:_____

_____

B. Describe Success Criteria:_____

_____

_____

		YES	NO
Are they:	1.Specific	___	___
	2.Measurable	___	___
	3.Attainable	___	___

C. Target **FUNCTIONS** chosen and indicated? Y/N___

Describe:_____

_____

D. Was a Stream Reference Reach Evaluated/Surveyed(RE) report prepared?
(Attach reference reach data) Y/N___

Describe comparison between the RE and the Mitigation Plan:_____

_____

NOTES:_____

_____

_____

_____

_____

III. STRUCTURAL COMPONENTS AND MORPHOLOGY

A. **HYDROLOGY**:

1. What is the current and proposed stream classification based on water quality, morphology, and hydrology?

Describe:_____

_____

2. Are natural channel design concepts and methods to be utilized for the proposed channel construction activity? Y/N___

Describe:_____

_____

3. Have reference and/or regional curves for stream morphology and discharge been applied to this channel design? Y/N___

Describe:_____

_____

Describe the drainage area above the mitigation site:_____

_____

_____

4. Has sediment transport equilibrium been addressed in the design: Y/N__

Describe the method used:_____

_____

5. Have water quality concerns been addressed in this plan: Y/N__

Describe: _____

_____

B. **INSTREAM BANK STABILIZATION HABITAT STRUCTURES**

1. Are bank and channel stabilization structures planned? Y/N_

Describe:_____

_____

_____ (attach typical plan)

2. Are separate fish or other aquatic habitat structures planned? Y/N___

Describe:_____

_____

_____

3. Will native/natural materials be used for stabilization, habitat, and other general channel construction? Y/N___

List:_____

_____

C. **VEGETATION**

1. Is streamside/riparian revegetation planned? Y/N___

Describe:_____

_____

2. Is there a plan or need to expand the riparian buffer/corridor? Y/N___

Describe:_____

_____

3. Are the proposed riparian' plantings listed to species? Y/N___

4. Are "local" (200 Miles North/South) propagules to be planted and verified by a nursery certificate? Y/N___

5. Have diversity and densities of species within the RE been considered in the plan? Y/N___

6. Will vegetative plantings and the channel construction area be protected from off site impacts? (i.e. livestock, vegetation cutting, etc.) Y/N___

Describe:_____

_____

7. Discuss Quality Control during planting:_____

_____

_____

IV. MONITORING

A. Name and number of person responsible for the success of this project:_____

(__)_____

B. Is there a Monitoring Plan? Y/N___

Describe:_____

_____

_____

_____

C. As Built Report provided? Y/N___

D. Procedure to account for beneficial natural regeneration? Y/N___

Describe:_____

_____

_____

V. CONSIDERATION OF CAUSES OF FAILURE

A. How does project rate regarding the following:

1. **Elevation**:_____

_____

	YES	NO	N/A
a. Have **Biological Benchmarks** been established?	___	___	___
b. Is there a **Grading Plan**?	___	___	___
c. Is the grading plan specific?	___	___	___
d. Is discing or ripping proposed after grading and prior to planting?	___	___	___

2. Describe provisions for **Drainage**:_____

_____

3. Describe **Erosion** Control Measures:_____

_____

4. Describe management of **human impacts and livestock:** _____

_____

5. Describe management of **Herbivory/Noxious Plants**:_____

_____

_____

B. Are there **Contingency Plans** built into the proposal to address these factors? Y/N___

Describe when and how will these contingencies be implemented:_____

_____

_____

VI. SITE MANAGEMENT

A. Describe **Final Disposition** of the property:_____

_____

_____

B. Who will manage the site after the mitigation effort is deemed A success?_____(___)_____

C. Describe **Financial Assurances** that will be established:_____

_____

_____

D. Will stream functions be impacted by current or future land use patterns? Y/N___

Describe:_____

_____

E. Will this site have the opportunity to function as planned? Y/N___

Describe:_____

F. Describe how this project rates ecologically:_____

NOTES:_____

- - - ----------

HIGHLIGHT AND ADDRESS ALL PROBLEMS AND/All INADEQUACIES WITH THE MITIGATION PLAN/SITE AS INDICATED BY THIS CHECKLIST.

Site Selection Determination Form (Under Development)

Suggested Reference Channel Data Sheet (Under Development)

Channel Mitigation Monitoring Sheets I, II, III, AND IV

Monitoring Data Record

Project Title: _____ COE Action ID: _____
Stream Name: _____ DWQ Number: _____
City, County and other Location Information: _____
Date Construction Completed: _____ Monitoring Year: ( ) of 5
Ecoregion: _____ 8 digit HUC unit _____
USGS Quad Name and Coordinates: _____
Rosgen Classification: _____
Length of Project: _____ Urban or Rural: _____ Watershed Size: _____
Monitoring DATA collected by: _____ Date: _____
Applicant Information:
Name: _____
Address: _____
Telephone Number: _____ Email address: _____
Consultant Information:
Name: _____
Address: _____
Telephone Number: _____ Email address: _____
Project Status: _____

Monitoring Level required by COE and DWQ (404/Sect. 10 permit/ 401 Cert.: Level 1 2 3 *(circle one)*
Monitoring Level 3 requires completion of *Section 1*
Monitoring Level 2 requires completion of *Section 1 and Section 2*
Monitoring Level 1 requires completion of *Section 1, Section 2 and Section 3*
If biological monitoring is required by DWQ, then Section 4 should also be completed

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Section 1. PHOTO REFERENCE SITES

(Monitoring at all levels must complete this section)

Attach site map showing the location and angle of all reference photos with a site designation (name, number, letter, etc.) assigned to each reference photo location. Photos should be provided for all structures and cross section locations, should show both banks and include an upstream and downstream view. Photos taken to document physical stability should be taken in winter. Photos taken to document vegetation should be taken in summer (at representative locations). Attach photos and a description of each reference photo or location. We recommend the use of a photo identification board in each photo to identify location.

Total number of reference photo locations at this site: _____
Dates reference photos have been taken at this site: _____
Individual from whom additional photos can be obtained (name, address, phone): _____
Other Information relative to site photo reference: _____

If required to complete Level 3 monitoring only stop here; otherwise, complete section 2.

Section 2. PLANT SURVIVAL

Attach plan sheet indicating plots and sample area locations and reference photos.

Survival plots:

DATE:					
Area within the easement is:					
Area sampled by survival plots:					
Number of survival plots sampled:					
Random or nonrandom site selection:					
% Coverage within survival plots is:					
Photos of reference plots taken: yes/no					

Provide a written description of specific data or findings and photos as needed for clarity.

Live Stake counts:

DATE:					
Area within the easement is:					
Area sampled for stake survival:					
Number of plots sampled:					
Random or nonrandom site selection:					
Average number of surviving stakes:					
Range of survival for all plots:					

Provide a written description of specific data or findings as needed for clarity.

Tree counts:

DATE:					
Area within the easement is:					
Area sampled for tree survival:					
Number of plots sampled:					
Random or nonrandom site selection:					
Average number of surviving trees:					
Range of survival for all plots:					

Provide a written description of specific data or findings as needed for clarity.

Bankfull Events:

Date measured:					
Method of Verification:					

COMMENTS: _____

_____

_____

_____

If required to complete Level 1 and Level 2 monitoring <u>only</u> stop here; otherwise, complete section 3.

Section 3. CHANNEL STABILITY

Attach plan sheet(s) indicating the locations of cross-sections and beginning and ending of longitudinal profiles if the entire reach is not profiled. Year to year changes in cross-sections, longitudinal profile and bed material should be plotted and submitted. Comparison overlays from previous years for profile and cross-section monitoring should be provided.

Cross-sections: attach plots of each cross-section showing year to year changes.
Provide the following data for each cross-section:

Date measured					
Cross-section being measured					
Cross-sectional area: as-built/present					
Bankfull width: as-built/present					
Floodprone Width: as-built/present					
Width/depth: as-built/present					
Entrenchment ratio: as-built/present					
Stream Type: as-built/present*					

* only required for riffle cross-sections

Longitudinal profiles: attach plots of the longitudinal profile showing year to year changes and the locations of installed or natural structures that affect profile.

Date measured	
Avg. slope riffles: as-built/present	
Avg. slope pools: as-built/present	
Number of riffles: as-built/present	
Number of pools: as-built/present	

Pebble counts: Attach a printout of pebble count data and a graphical plot of bed material showing the cumulative % finer than X millimeters and the number of particles in standard size classes. Year to year changes in bed material should also be plotted and provided.

Date measured					
Cross-section being measured					
D16: as-built/present					
D50: as-built/present					
D84: as-built/present					

Visual Inspection: The entire stream project as well as each instream structure and bank stabilization/revetment structure must be evaluated and problems addressed.

Date Inspected	Station Number	Station Number	Station Number	Station Number	Station Number
Structure Type					
Is water piping through or around structure?					
Head cut or down cut present?					
Bank or scour erosion present?					
Other problems noted?					

NOTE: Attach separate narrative sheets to each monitoring report describing/discussing the overall monitoring results. Include the identification of specific problem areas/channel failures, estimated cause and proposed/required remedial action. This should include a brief discussion of any parameter that has changed significantly from as-built. (See success criteria discussion in Section 11.)

In performing monitoring Level 1, determine if the DWQ Certification conditions require biological monitoring. Should conditions require monitoring of biological communities, complete section 4; otherwise, stop here.

Section 4. <u>BIOLOGICAL INDICATORS</u> (<u>may be</u> required for monitoring level 1, see permit requirements)

Attach a map and narrative showing locations where biological samples were collected, list of taxa collected, explaining conditions during sampling, the types of samples taken, an explanation of the data collected and all other information pertinent to understanding this data set. If the sample is a follow-up too earlier samples discuss any differences found or statistical comparisons.

Invertebrate populations

Date sampled:												
Site	1	2	3	4	1	2	3	4	1	2	3	4
Qualitative Metrics:												
EPT Taxa Richness												
EPT Abundance												
Total Taxa Richness												
Biotic Index value												
Quantitative Metrics:												
Standing Crop/Density (#/$m^{2)}$												
Biomass (g/$m^{2)}$												
Biotic Index value												
Species (taxa) Diversity												

Fish populations

Date sampled:												
Site	1	2	3	4	1	2	3	4	1	2	3	4
Qualitative Metrics:												
Number of fish												
Number of species												
% of tolerant fish sp.												
% of intolerant fish sp.												
% with disease or wounds												
Catch per unit effort												
NC IBI score												
NC IBI rating												
Quantitative Metrics:												
Standing Crop/Density (#/m^2)												
Biomass (g/m^2)												
Species (taxa) Diversity												

Stream Quality Assessment Worksheet

(Under Development)