DETAILED PROJECT REPORT AND DRAFT ENVIRONMENTAL ASSESSMENT WATAUGA SECTION 206 AQUATIC ECOSYSTEM RESTORATION PROJECT TOWN OF BOONE, NORTH CAROLINA

APPENDIX B
Habitat Analysis

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This appendix shows the spreadsheet calculations for the habitat suitability indices for each indicator species: spotted newt, wood duck, veery, and brook trout. The procedure and development of the HSI calculations is outlined in the main report and available in detail as the "blue book" HSI for each individual species published by the Fish And Wildlife Service.

Habitat Evaluation Procedure, Spotted Newt

spotted newt SI tables

%water area <2m deep	siv1
0	0
100	1

% aq veg cover in littoral	SIV2
0	0
75	1
100	1

dist to forested cover type (m)	SIV3
0	1
50	1
150	0
200	0

% tree canopy cover	SIV4
0	0
25	0
75	1
100	1

% trees deciduous	SIV5
0	0

with project

%water area <2m deep	SIV1
100	1

% aq veg cover in littoral	SIV2
60	0.8

dist to forested cover type (m)	SIV3	(only use if terrestrial stage present)
50	1	

SIAH (aquatic HSI) **0.8**

hsi for wetland

% tree canopy cover	SIV4
60	0.7

% trees deciduous	SIV5
90	0.9

100	1
100	1
100	1

% < 19.1 dbh	SIV6
0	0
0	0
75	1
100	1

% < 19.1 dbh	SIV6
50	0.666667

% herb. Canopy	SIV7
0	0
20	1
40	1
100	0

% herb. Canopy	SIV7
50	0.833333

Dist to perm water (m)	SIV8
0	1
100	1
1000	0
10000000	0

Dist to perm water (m)	SIV8
333	0.741111

% standing water apr-sep	SIV9
0	1
25	1
100	0
100	0

% standing water apr-sep	SIV9
20	1

SITH (forested HSI)
0.411754

plot	**Avg. distance to wetland**	**HSI**
R1	no adjacent wetland	**0**
R2	no adjacent wetland	**0**

B5		67	**0.56**
B6		100	**0.56**
B4		100	**0.56**
B9		100	**0.56**
R2		200	**0.49**
B3		33	**0.56**
B1		33	**0.56**
B2		233	**0.47**
B8		333	**0.41**
R3		333	**0.41**
w/o proj.	no wetland		**0**

Habitat Evaluation Procedure, Veery

with project			**Without project (riparian)**			Without project (w1)		
Percent cover type flooded		V1	Percent cover type flooded		V1	Percent cover type flooded		V1
	50	0.5		0	1		0	1
Soil moisture		V2	Soil moisture		V2	Soil moisture		V2
A		1	A		1	A		1
% deciduous shrub crown cover		V3	% deciduous shrub crown cover		V3	% deciduous shrub crown cover		V3
	60	0.8		80	1		5	0
.			.			.		

avg. height dec. shrubs (m)	V4	avg. height dec. shrubs (m)	V4	avg. height dec. shrubs (m)	V4
2	1	1	0.5	2	1

% herbaceous canopy cover	V5	% herbaceous canopy cover	V5	% herbaceous canopy cover	V5
50	0.364	70	0.72727	100	1

Avg height herb. Canopy (cm)	V6	Avg height herb. Canopy (cm)	V6	Avg height herb. Canopy (cm)	V6
30	1	30	1	20	0.666667

	With project HSI		**Without project HSI**		**Without project HSI**
wetland	**0.598**	**Riparian**	**1**	**wetland 1**	**0.408248**
non-wetland riparian	**1**	**grass/field**	**0**		

Habitat Evaluation Procedure, wood duck

density nest sites/ha	V3	density nest sites/ha	V3
0	0	5	1
0	0		
5	1		
1000	1		

% water surf covered by brood cover	V4	% water surf covered by brood cover	V4
0	0	60	1

50	1
75	1
100	0

% water surf covered by winter cover	V5
0	0
50	1
75	1
100	0

% water surf covered by winter cover	V5
60	1

dist. Between cover types (km)	V6
0	1
0.8	1
3.2	0
1000	0

dist. Between cover types (km)	V6
0.5	1
	(used to multiply % area if <1)

% area eqiv. Opt. nesting habitat	V7
0	0
20	1
100	1
100	1

% area eqiv. Opt. nesting habitat	V7
100	**1**

% area eqiv. Opt. brood rear habitat	V8
0	0
0	0
100	1
100	1

% area eqiv. Opt. brood rear habitat	V8
100	**1**

	HSI
With project riparian/bottomland	**1**
With project wetland	**1**

Without project (no wetlands present)	**0**

Habitat Evaluation Procedure, brook trout

Species tables		**w/o proj. unstable banks**		**with project**		**w/o proj @ stable bank**	
average % veg. for alloncthonus input	V11	average % veg. for alloncthonus input	V11	average % veg. for alloncthonus input	V11	average % veg. for alloncthonus input	V11
0	0.05	0	0.05	200	1	100	0.7
25	0.1						
125	0.9						
150	1						
500	1						
Average % rooted veg & stable ground	V12	Average % rooted veg & stable ground	V12	Average % rooted veg & stable ground	V12	Average % rooted veg & stable ground	V12
0	0.2	0	0.2	80	1	50	0.767
15	0.3						
60	0.9						
75	1						
100	1						
% shaded area between 10-2:00 for warm productive	V17	% shaded area between 10-2:00 for warm productive	V17	% shaded area between 10-2:00 for warm productive	V17	% shaded area between 10-2:00 for warm productive	V17
0	0.3	10	0.44	70	1	30	0.72
50	1						
75	1						
100	0.4						

	Unstable banks now	with project banks	Stable banks now
	1		
V1	1	1	1

	V2	1	1	1
	V3	1	1	1
	V4	1	1	1
	V5	1	1	1
	V6	1	1	1
	V7	1	1	1
	V8	1	1	1
	V9	1	1	1
	V10	1	1	1
allocthonus input veg	V11	0.05	1	0.7
stable cover on bank	V12	0.2	1	0.766666667
	V13	1	1	1
	V14	1	1	1
	V15	1	1	1
	V16	1	1	1
% shaded	V17	0.44	1	0.72
		w/o project unstable	With project banks	without project stable
	C0	0.59172494	1	0.877413649
	HSI	**0.769236596**	**1**	**0.936703608**