● Ecology
● Soil & Wetland Studies
● Water Quality Monitoring ● GPS
● Environmental Planning & Management
● Ecological Restoration & Habitat Mitigation
● Aquatic, Wildlife and Listed Species Surveys
● Application Reviews ● Permitting & Compliance

April 4, 2016

Town of Mansfield
Inland Wetlands Agency
14 Park Place
Mansfield, CT 06226-2217

Re: **WETLANDS ASSESSMENT-SUPPLEMENTAL: *FUNCTIONS & VALUES ASSESSMENT***
Lodges at Storrs
Hunting Lodge Road, Mansfield, CT

REMA Job No.: 15-1860-MNS18

Dear Agency Members:

REMA ECOLOGICAL SERVICES, LLC (REMA), is providing herein the results of functions and values assessment using the US Army Corps of Engineers (USACE), Highway Methodology (Descriptive Method). This is the methodology commonly utilized in Connecticut, and the only one authorized by the USACE.

Three wetland ecological units at the above-referenced site, Wetland A (with embedded vernal pool habitat), Wetland B (western hillside seepage wetland), and Wetland C (associated with eastern intermittent stream), were assessed, using baseline data collected in the field October 2015 through April 2016. On-line mapping resources, including Town of Mansfield GIS and CTECO (Connecticut Environmental Conditions Online), provided watershed-level information.

Attached to this report please find the assessment summary page, a detailed rationales matrix for fourteen functions and values, with a column for each wetland assessment unit, and Figure A1, showing their locations on the subject site. Please refer to the March 18th, 2016

REMA Wetlands Assessment report for detailed descriptions and annotated photos of wetland habitats and vegetation.

Respectfully submitted,

REMA ECOLOGICAL SERVICES, LLC

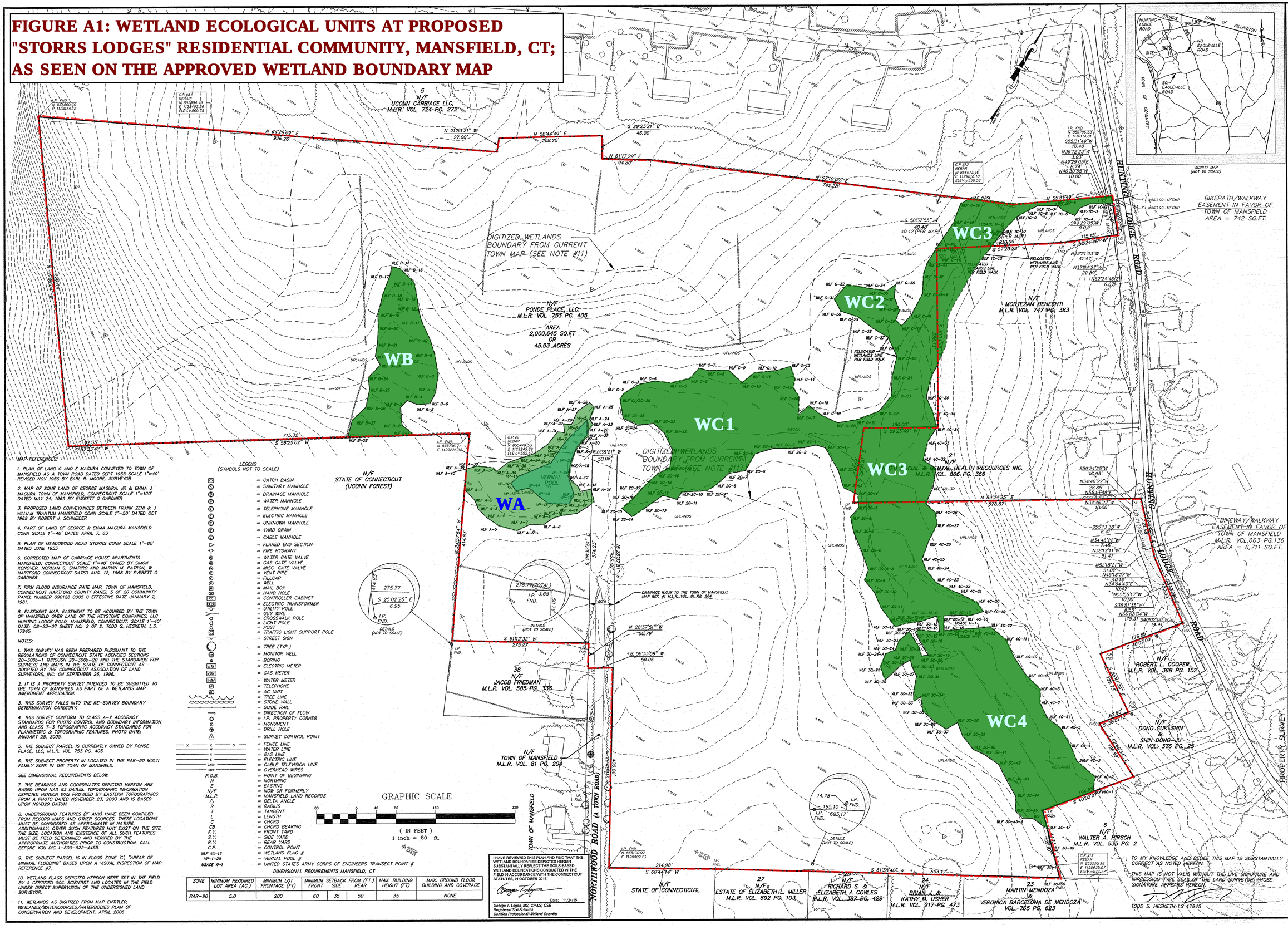
Sigrun N. Gadwa, MS, PWS
Professional Wetland Scientist
Registered Soil Scientist

George T. Logan, MS, PWS, CE
Professional Wetland Scientist
Registered Soil Scientist, Certified Senior Ecologist

VIA E-MAIL & HAND-DELIVERY

Attachments: Functions and Values Assessment Summary Form, Rationales Matrix, and location map (Figure A1)

FIGURE A1: WETLAND ECOLOGICAL UNITS AT PROPOSED "STORRS LODGES" RESIDENTIAL COMMUNITY, MANSFIELD, CT; AS SEEN ON THE APPROVED WETLAND BOUNDARY MAP



MAP REFERENCES:

1. PLAN OF LAND G AND E MAGURA CONVEYED TO TOWN OF MANSFIELD AS A TOWN ROAD DATED SEPT 1955 SCALE 1"=40' REVISED NOV 1956 BY EARL R. MOORE, SURVEYOR
2. MAP OF SOME LAND OF GEORGE MAGURA, JR & EMMA J. MAGURA TOWN OF MANSFIELD, CONNECTICUT SCALE 1"=100' DATED MAY 24, 1965 BY EVERETT O GARDNER
3. PROPOSED LAND CONVEYANCES BETWEEN FRANK ZENI & J. WILLIAM TRANTUM MANSFIELD CONN SCALE 1"=50' DATED OCT 1969 BY ROBERT J. SCHNEIDER
4. PART OF LAND OF GEORGE & EMMA MAGURA MANSFIELD CONN SCALE 1"=40' DATED APRIL 7, 63
5. PLAN OF MEADOWOOD ROAD STORRS CONN SCALE 1"=80' DATED JUNE 1955
6. CORRECTED MAP OF CARRIAGE HOUSE APARTMENTS MANSFIELD, CONNECTICUT SCALE 1"=40' OWNED BY SIMON KONOVER, NORMAN S. SHAPIRO AND MARVIN M. PATRON, W. HARTFORD CONNECTICUT DATED AUG. 12, 1968 BY EVERETT O GARDNER
7. FIRM FLOOD INSURANCE RATE MAP, TOWN OF MANSFIELD, CONNECTICUT HARTFORD COUNTY PANEL 5 OF 20 COMMUNITY PANEL NUMBER 090128 0005 C EFFECTIVE DATE JANUARY 2, 1981.
8. EASEMENT MAP, EASEMENT TO BE ACQUIRED BY THE TOWN OF MANSFIELD OVER LAND OF THE KEYSTONE COMPANIES, LLC HUNTING LODGE ROAD, MANSFIELD, CONNECTICUT, SCALE 1"=40' DATE: 08-23-07 SHEET NO: 2 OF 2, TODD S. HESKETH, L.S. 17945.

NOTES:

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20-300b-1 THROUGH 20-300b-20 AND THE STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
2. IT IS A PROPERTY SURVEY INTENDED TO BE SUBMITTED TO THE TOWN OF MANSFIELD AS PART OF A WETLANDS MAP AMENDMENT APPLICATION.
3. THIS SURVEY FALLS INTO THE RE-SURVEY BOUNDARY DETERMINATION CATEGORY.
4. THIS SURVEY CONFORM TO CLASS A-2 ACCURACY STANDARDS FOR PHOTO CONTROL AND BOUNDARY INFORMATION AND CLASS T-3 TOPOGRAPHIC ACCURACY STANDARDS FOR PLANIMETRIC & TOPOGRAPHIC FEATURES. PHOTO DATE: JANUARY 28, 2005.
5. THE SUBJECT PARCEL IS CURRENTLY OWNED BY PONDE PLACE, LLC, M.L.R. VOL. 753 PG. 405.
6. THE SUBJECT PROPERTY IN LOCATED IN THE RAR-90 MULTI FAMILY ZONE IN THE TOWN OF MANSFIELD.

SEE DIMENSIONAL REQUIREMENTS BELOW.

7. THE BEARINGS AND COORDINATES DEPICTED HEREON ARE BASED UPON NAD 83 DATUM. TOPOGRAPHIC INFORMATION DEPICTED HEREON WAS PROVIDED BY EASTERN TOPOGRAPHICS FROM A PHOTO DATED NOVEMBER 23, 2003 AND IS BASED UPON NGVD29 DATUM.
8. UNDERGROUND FEATURES (IF ANY) HAVE BEEN COMPILED FROM RECORD MAPS AND OTHER SOURCES. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE. THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.
9. THE SUBJECT PARCEL IS IN FLOOD ZONE 'C', "AREAS OF MINIMAL FLOODING" BASED UPON A VISUAL INSPECTION OF MAP REFERENCE #7.
10. WETLAND FLAGS DEPICTED HEREON WERE SET IN THE FIELD BY A CERTIFIED SOIL SCIENTIST AND LOCATED IN THE FIELD UNDER DIRECT SUPERVISION OF THE UNDERSIGNED LAND SURVEYOR.
11. WETLANDS AS DIGITIZED FROM MAP ENTITLED, WETLANDS/WATERCOURSES/WATERBODIES PLAN OF CONSERVATION AND DEVELOPMENT, APRIL 2006

LEGEND (SYMBOLS NOT TO SCALE)

- = CATCH BASIN
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = WATER MANHOLE
- = TELEPHONE MANHOLE
- = ELECTRIC MANHOLE
- = UNKNOWN MANHOLE
- = YARD DRAIN
- = CABLE MANHOLE
- = FLARED END SECTION
- = FIRE HYDRANT
- = WATER GATE VALVE
- = GAS GATE VALVE
- = MISC. GATE VALVE
- = VENT PIPE
- = FILLCAP
- = WELL
- = MAIL BOX
- = HAND HOLE
- = CONTROLLER CABINET
- = ELECTRIC TRANSFORMER
- = UTILITY POLE
- = GUY WIRE
- = CROSSWALK POLE
- = LIGHT POLE
- = POST
- = TRAFFIC LIGHT SUPPORT POLE
- = STREET SIGN
- = TREE (TYP.)
- = MONITOR WELL
- = BORING
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = TELEPHONE
- = AC UNIT
- = TREE LINE
- = STONE WALL
- = GUIDE RAIL
- = DIRECTION OF FLOW
- = I.P. PROPERTY CORNER
- = MONUMENT
- = DRILL HOLE
- = SURVEY CONTROL POINT
- = FENCE LINE
- = WATER LINE
- = GAS LINE
- = ELECTRIC LINE
- = CABLE TELEVISION LINE
- = OVERHEAD WIRES
- = POINT OF BEGINNING
- = NORTHING
- = EASTING
- = NOW OR FORMERLY
- = MANSFIELD LAND RECORDS
- = DELTA ANGLE
- = RADIUS
- = TANGENT
- = LENGTH
- = CHORD
- = CHORD BEARING
- = FRONT YARD
- = SIDE YARD
- = REAR YARD
- = CONTROL POINT
- = WETLAND FLAG #
- = VERNAL POOL #
- = UNITED STATES ARMY CORPS OF ENGINEERS TRANSECT POINT #

P.O.B., N, E, N/F, M.L.R., Δ, R, T, L, C, CB, F.Y., S.Y., R.Y., C.P., WLF 40-17, VP=1-20, USACE W-1

DIMENSIONAL REQUIREMENTS MANSFIELD, CT

ZONE	MINIMUM REQUIRED LOT AREA (AC.)	MINIMUM LOT FRONTAGE (FT)	MINIMUM SETBACK FROM (FT.) FRONT	SIDE	REAR	MAX. BUILDING HEIGHT (FT)	MAX. GROUND FLOOR BUILDING AND COVERAGE
RAR-90	5.0	200	60	35	50	35	NONE

I HAVE REVIEWED THIS PLAN AND FIND THAT THE WETLAND BOUNDARIES DEPICTED HEREIN SUBSTANTIALLY REFLECT THE SOILS-BASED WETLAND DELINEATIONS CONDUCTED IN THE FIELD IN ACCORDANCE WITH THE CONNECTICUT STATUTES, IN OCTOBER 2016.

George T. Logan

Date: 11/24/15

George T. Logan, MS, CPMS, CSE
Registered Soil Scientist
Certified Professional Wetland Scientist

TO MY KNOWLEDGE AND BELIEF, THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

THIS MAP IS NOT VALID WITHOUT THE LIVE SIGNATURE AND IMPRESSION TYPE SEAL OF THE LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

TODD S. HESKETH- LS 17945

F. A. Hesketh & Associates, Inc.
6 Creamery Brook, East Granby, CT 06026
Civil & Traffic Engineers · Surveyors · Planners · Landscape Architects
Phone (860) 653-8000
Fax (860) 844-8600
e-mail mail@fahesketh.com

Revisions:

No.	Date	Description
1	06-27-07	MISC
2	10-27-15	WETLANDS / TRLE UPDATED
3	11-30-2015	WETLANDS MAP AMENDMENT/TITLE
4	01-08-16	REVISED WETLAND LINE PER FIELD WALK

PROPERTY SURVEY
WETLAND MAP AMENDMENT
ON PROPERTY OF
PONDE PLACE, LLC.
HUNTING LODGE ROAD
MANSFIELD, CONNECTICUT

Date: 02-07-05 | Drawn by: RM | Job no: 04161
Scale: 1" = 80' | Checked by: TSH | Sheet no: 1 OF 1

PS-1

Q:\2004\04161\Survey\WETLAND AMENDMENT 3.dwg, WMA, Jan. 12, 2016 - 11:19:59 AM

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach

(US Army Corps of Engineers New England Division 1995)

Project: ***Lodges at Storrs, Mansfield, Connecticut: Proposed Student Residence Community***

Summary of Wetland Characteristics *(from summary form)*

Wetland A:	Seasonally flooded wooded swamp with overflow towards Cedar Swamp Brook
Wetland B:	Hillside wetland draining to Cedar Swamp Brook
Wetland C:	Riparian corridor of intermittent Eagleville Brook tributary

Total Area of wetland: *A: 0.73 acres* *B: 0.75 acres* *C: 5.22 acres*

Part of a wildlife Corridor ? A: *Yes* B: *Yes* C: *Yes* Habitat Island? A: *No* B: *No* C: *No*

Adjacent Land use: A: *Forest, single family residential;* *B: Forest, C: Forest, single family residential*

Distance to nearest roadway/other development: *A: 200'* *B: 500'* C: 160'

Dominant Wetland Systems: *A: PFO1* *B: PFO1* *C: R3UB1, PFO1*

Contiguous undeveloped buffer zone: *A: Yes* *B: Yes* *C: Yes*

Is the wetland a separate hydraulic system? A: *No* *B: No* *C: No*

If not, where does wetland lie in drainage basin? *A: upper* *B: upper* *C: upper*

How many tributaries contribute to the wetland? *A: 0* *B: 1* *C: 2*

Wildlife and Vegetation Diversity and abundance: (*See report)*

Summary of Assessment Results *(rationales in following pages)*

		Wetland A	Wetland B	Wetland C
1	GROUNDWATER RECHARGE/DISCHARGE	Y	P	P
2	FLOODFLOW ALTERATION (Storage & Desynchronization)	Y	Y	P
3	FISH AND SHELLFISH HABITAT	N	N	N
4	SEDIMENT/TOXICANT/PATHOGEN RETENTION	N	N	Y
5	NUTRIENT REMOVAL/RETENTION/TRANSFORMATION	Y	Y	P
6	PRODUCTION EXPORT (Nutrient)	P	Y	P
7	SEDIMENT/SHORELINE STABILIZATION	N	Y	Y
8	WILDLIFE HABITAT	P	Y	P
9	RECREATION	P	Y	P
10	EDUCATIONAL/SCIENTIFIC VALUE	Y	Y	Y
11	UNIQUENESS/HERITAGE	N	N	N
12	VISUAL QUALITY/AESTHETICS	P	Y	P
13	ENDANGERED SPECIES HABITAT	N	N	N
14	FISH AND SHELLFISH HABITAT (Supporting marine resources)	N	N	N

Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach

Numbers correspond to numbers on ACOE Functional Values summary form.

GROUNDWATER RECHARGE/DISCHARGE

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
Y	Y	Y	1. Public or private wells occur downstream of the wetland.	*No public wellfields*
Y	Y	Y	2. Potential exists for public or private wells downstream of the wetland.	
N	N	N	3. Wetland is underlain by stratified drift.	
N	N	N	4. Gravel or sandy soils present in/or adjacent to the wetland.	
N	N	N	5. Fragipan does not occur in the wetland.	
Y	Y	Y	6. Fragipan, impervious soils, or bedrock, does occur in the wetland.	
Y	Y	Y	7. Wetland is associated with a perennial or intermittent watercourse.	
Y	Y	Y	8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.	
Y	N	N	9. Wetland is associated with a watercourse, but lacks a defined outlet or contains a constricted outlet.	
Y	Y	N	10. Wetland contains only an outlet.	
Y	Y	Y	11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.	*No stratified drft aquifer within wetland or close enough for assessment.*
Y	Y	Y	12. Quality of water associated with the wetland is high.	
N	Y	Y	13. Signs of groundwater discharge are present (e.g. springs).	
			14. Water temperature suggests it is a discharge site.	*Temperatures not measured*
Y	Y	Y	15. Wetland shows signs of variable water levels.	
N	N	N	16. Gravel or sandy soils present in or adjacent to wetland.	
			17. Piezometer data demonstrates discharge.	*No peizometer data*
			18. Other	

Y	**P**	**P**	Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

FLOODFLOW ALTERATION (Storage & Desynchronization)

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
Y	N	Y	1. Area of this wetland is large relative to its watershed.	*Broad terraces in WC*
Y	Y	Y	2. Wetland occurs in the upper portions of its watershed.	
Y	Y	N	3. Effective flood storage is small or non-existent upslope of or above the wetland.	
N	N	N	4. Wetland watershed contains a high degree of impervious surfaces.	
Y	Y	Y	5. Wetland contains hydric soils that are able to absorb and detain water.	
Y	N	Y	6. Wetland exists in a relatively flat area that has flood storage potential.	
Y	Y	Y	7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.	
Y	N	Y	8. During flood events, this wetland can retain higher volumes of water than under normal or average	*WA: deep ponding*
Y	Y	Y	9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.	*WB: at base of hill*
N	N	Y	10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.	
Y	Y	Y	11. Valuable properties, structures or resources are located in or near the floodplain downstream from the wetland.	
N	N	N	12. The watershed has a history of economic loss due to flooding.	*Flooding history not known for downstream rivers*
N	Y	Y	13. This wetland is associated with one or more watercourses.	
N	N	Y	14. This wetland watercourse is sinuous or diffuse.	
Y	Y	Y	15. This wetland outlet is constricted.	*WC3: Small pipe through old farm crossing & small field stone culvert, S. end*
Y	Y	Y	16. Channel flow velocity is affected by this wetland.	
Y	Y	Y	17. Land uses downstream are protected by this wetland.	*Among many others.*
Y	N	Y	18.This wetland contains a high density of vegetation.	*Dense invasives in lower part of WB*
			19.Other	
Y	**Y**	**Y**	Present? (Y/N) Principal? (P)	

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

FISH AND SHELLFISH HABITAT

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
Y	Y	Y	1. Forest land dominant in the watershed above this wetland.
Y	Y	Y	2. Abundance of cover objects present.
			STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A PERENNIAL WATERCOURSE
			3. Size of this wetland is able to support large fish/shellfish populations.
			4. Wetland is part of a larger, contiguous watercourse. *WC3 & WC4 associated with small intermittent watercourse*
			5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retains some open water during winter.
			6. Stream width (bank to bank) is more than 50 feet.
			7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
			8. Streamside vegetation provides shade for the watercourse.
			9. Spawning areas are present (submerged vegetation or gravel beds).
			10. Food is available to fish/shellfish populations within this wetland.
			11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing, etc.) are absent from the stream reach associated with this wetland.
			12. Evidence of fish is present. *No fish observed*
			13. Wetland is stocked with fish.
			14. The watercourse is persistent. *Localized saturation year round, but channel is only 18-24" wide*
			15. Man-made streams are absent.
			16. Water velocities are not too excessive for fish usage.
			17. Defined stream channel is present.
			18. Other *Watershed is only 51.33 acres as stream exits site, low numbers of small fish m* ay visit.
N	**N**	**N**	Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

SEDIMENT/TOXICANT/PATHOGEN RETENTION

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
N	N	Y	1. Potential sources of excess sediment are in the watershed above the wetland.	
N	N	Y	2. Potential or known sources of toxicants are in the watershed above the wetland.	
Y	N	Y	3. Opportunity for sediment trapping by slow moving water or deepwater habitat is present in this wetland.	
Y	Y	Y	4. Mineral, fine grained, or organic soils are present.	
Y	N	Y	5. Long duration water retention time is present in this wetland.	*WC: Water retained in soil, not ponded very long*
Y	Y	Y	6. Public or private water sources occur downstream.	*just private water sources*
Y	Y	Y	7. The wetland edge is broad and intermittently aerobic.	
Y	Y	Y	8. The wetland is known to have existed for more than 50 years.	
Y	Y	N	9. Drainage ditches have not been constructed in the wetland.	*WC: Excavation associated with causeway*
			STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.	
	Y	Y	10. Wetland is associated with an intermittent or perennial stream, or a lake.	
	N	Y	11. Channelized flows have visible velocity decreases in the wetland.	*Velocity decreases at base of WB*
	Y	Y	12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.	
	N	Y	13. No indicators of erosive forces are present. No high water velocities are present.	
	Y	Y	14. Diffuse water flows are present in the wetland.	
	N	Y	15. Wetland has a high degree of water and vegetation interspersion.	
	N	Y	16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation is present by dense vegetation.	*WB: woody stems of dense J. barberry not effective at trapping sed.*
			17. Other	*WA: Only during large events when stream overtops defined channel, do wetlands trap sediment carried by the stream. Otherwise sediment trapping limited to overland flow.*
N	**N**	**Y**	Present? (Y/N) Principal? (P)	*Opportunity is lacking for WB. Potential is present, buit low.*

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
Y	N	Y	1. Wetland is large relative to the size of its watershed.	
Y	N	N	2. Deep water or open water habitat exists.	Present just upstream of WA in Beaver Pond
Y	Y	Y	3. Overall potential for sediment trapping exists in the wetland.	*Fine Sediment coats rocks*
N	N	Y	4. Potential sources of excess nutrients present in the watershed above the wetland.	
Y	N	Y	5. Wetland saturated for most of the season. Ponded water is present in the wetland.	
N	N	Y	6. Deep organic/sediment deposits are present.	
Y	Y	Y	7. Slowly drained mineral, fine grained, or organic soils, are present.	
N	Y	Y	8. Dense vegetation is present.	*In WB locally dense woody, but not herbaceous vegetation*
N	Y	Y	9. Emergent vegetation and/or dense woody stems are dominant.	
Y	N	N	10. Aquatic diversity/abundance sufficient to utilize nutrients.	*WC:Macroinvertebtrates not abundant*
Y	Y	Y	11. Opportunity for nutrient attenuation exists.	*Mostly nutrients of natural origin*
Y	Y	Y	12. Vegetation diversity/abundance sufficient to utilize nutrients.	*Many deep-rooted trees, shrubs*
			STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.	
	Y	N	13. Waterflow through this wetland is diffuse.	*WC: not streamflow; WB: Through lower portion (not steep)*
	N	Y	14. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.	
	N	Y	15. Water moves slowly through this wetland.	Moves slowly across stream terraces & in WC1 & WC2
			16. Other	*Setbacks to yards wide enough, that opportunity is low, except from upper watershed*

Y	**Y**	**P**	Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

PRODUCTION EXPORT (Nutrient)

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
Y	Y	Y	1. Wildlife food sources grow within this wetland.
Y	Y	Y	2. Detritus development is present within this wetland
Y	Y	Y	3. Economically or commercially used products found in this wetland. *Lumber, firewood*
Y	Y	Y	4. Evidence of wildlife use found within this wetland. *Food chain: foliage insects; tree seeds & fruits*
Y	Y	Y	5. Higher trophic level consumers are utilizing this wetland. *Owls, fox expected*
Y	Y	Y	6. Fish or shellfish develop or occur in this wetland. *Small fish may visit WC*
N	Y	Y	7. High vegetation density is present. *Closed tree canopy,good regeneration; dense herbs in WC4 & WC3*
Y	Y	Y	8. Wetland exhibits high degree of plant community structure/species diversity.
Y	N	N	9. High aquatic diversity/abundance is present. WA: Productive vernal pool - wood frog tadpoles
N	Y	Y	10. Nutrients exported in wetland watercourses (permanent outlet present). *Nutrients from Leaf litter detritus*
N	Y	Y	11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland. *Leaf detritus*
Y	Y	Y	12. Wetland contains flowering plants that are used by nectar-gathering insects. *Most spring ephemerals*
Y	Y	Y	13. Indications of export are present. Denser & more diverse vegetation in WC, hence more export
Y	Y	Y	14. High production levels occurring however, no visible signs of export (assumes export is attenuated).
Y	Y	Y	15. Other *WC is a large system. WC3: Export of Japanese barberry fruits not desirable*

P	**Y**	**P**	Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

SEDIMENT/SHORELINE STABILIZATION

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
N	N	Y	1. Indications of erosion or siltation present. *In WC1*
N	Y	N	2. Topographical gradient is present in wetland. *In Wetland B; brook in WC is low-gradient & wetlands nearly level.*
N	N	N	3. Potential sediment sources are present up-slope. *Sediment is discharged in to WB from Southford Rd*
N	Y	N	4. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
Y	N	Y	5. A distinct step between the open waterbody or stream and the adjacent land exists (i.e. sharp bank) with dense roots throughout.
Y	Y	Y	6. Wide wetland (>10') bordering watercourse, lake, or pond.
N	Y	N	7. High flow velocities in the wetland. *Only on the steeper slopes in Wetland B*
N	N	Y	8. Potential sediment sources present upstream. *Sedimetn sources in ~100-acre upper watershed, partly developed*
N	Y	Y	9. The watershed is of sufficient size to produce channelized flow.
Y	N	N	10. Open water fetch is present. *Open water in vernal pool (Wetland A) is too small for erosive wave build-up*
N	N	N	11. Boating activity is present.
Y	Y	Y	12. Dense vegetation is bordering watercourse, lake, or pond.
Y	Y	Y	13. High percentage of energy absorbing emergents and/or shrubs bordering watercourse, lake or pond.
Y	Y	Y	14. Vegetation comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet). Both woody & herbaceous shoreline vegetation is dense.
Y	Y	Y	15. Vegetation comprised of dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events. *Shear stress minimal in WA, WC*
N	Y	Y	16. Other *If flow volumes increased substanially due to future urbanization, WB & WC banks would be stabilized.*

N	**Y**	**Y**	Present? (Y/N) Principal? (P)

The Highway Methodology Workbook:
Wetland Functions and Values, a Descriptive Approach
(Continued)

WILDLIFE HABITAT

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
Y	Y	Y	1. Wetland is not degraded by human activity.
Y	Y	Y	2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards. *Nutrient levels in vernal pool slightly elevated after winter decompostion*
Y	Y	Y	3. Wetland is not fragmented by development.
Y	Y	Y	4. Upland surrounding this wetland is undeveloped. *Wetlands are all well buffered.*
Y	Y	Y	5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, wood land, active farmland, or idle land) at least 500 feet in width.
Y	Y	Y	6. Wetland contiguous with other wetland systems connected by watercourse or lake.
Y	Y	Y	7. Wildlife overland access to other wetlands is present.
Y	Y	Y	8. Wildlife food sources are within this wetland or are nearby.
Y	N	Y	9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
N	N	Y	10. Two or more islands or inclusions of upland within the wetland are present. WC: old causeway
Y	Y	Y	11. Dominant wetland class includes deep or shallow marsh or wooded swamp. *Wooded swamp*
N	N	N	12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland are present. *Nearby beaver pond*
Y	Y	Y	13. Density of the wetland vegetation is high.
Y	N	Y	14. Wetland exhibits a high degree of plant species diversity.
Y	N	Y	15. Wetland exhibits a high degree of diversity in plant community structure (e.g. tree, shrub, vine, grasses, mosses, etc.) Few herbs under barberry shrubs at base of WB
Y	Y	Y	16. Plant/animal indicator species present. *Golden ragwort indicates clean mineral-rich ground-water*
Y	N	Y	17. Animal signs observed (tracks, scats. nesting areas, etc.) *Wood frog egg masses in WA*
Y	Y	Y	18. Seasonal uses vary for wildlife, and wetland appears to support varied population diversity/abundance during different seasons.
Y	Y	Y	19. Wetland contains or has potential to contain a high population of insects. *Espcially foliage & bark insects*

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WILDLIFE HABITAT *(Continued)*

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
Y	Y	Y	20. Wetland contains or has potential to contain large amphibian populations.	Wood frogs, stream sals & red-back sals
N	N	N	21. Wetland has a high avian utilization or its potential.	*Moderate, not high avian potential - Habitat "island"*
Y	Y	Y	22. Indications of less disturbance-tolerant species present.	*Seepage plant species in WC4, e.g.Swamp saxifrage*
N	N	N	23. Signs of wildlife habitat enhancement present (birdhouses, nesting boxes, food sources, etc.).	
Y	Y	Y	24. Other	*Diverse, mature trees with dense foliage screen neighboring residential properties to south & east*
P	**Y**	**P**	Present? (Y/N) Principal? (P)	

RECREATION

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
N	N	N	1. Wetland is part of a recreation area, park, forest, or refuge.	*Privately owned*
N	N	N	2. Fishing is available within or from the wetland.	
N	N	N	3. Hunting is permitted in the wetland.	
Y	Y	Y	4. Hiking occurs or has potential to occur within the wetland.	*Trails present, easy walking, thin underbrush*
Y	Y	Y	5. Wetland is a valuable wildlife habitat.	
Y	Y	Y	6. The watercourse, pond, or lake, associated with the wetland is unpolluted.	*Some sedimentation in WC3*
Y	Y	Y	7. High visual/aesthetic quality of this potential recreation site.	*Tall, fine trees, barberry locally dense in WC3*
N	N	N	8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.	
N	N	N	9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.	
Y	Y	Y	10. Off-road public parking available at the potential recreation site.	*Unpaved terminus of Northwood Road*
Y	Y	Y	11. Accessibility and travel ease is present at this site.	
Y	Y	Y	12. The wetland is within a short drive or safe walk from highly populated public and private areas.	
Y	Y	Y	13. Other	*Tree diversity makes for outstanding fall color*
P	**Y**	**P**	Present? (Y/N) Principal? (P)	

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EDUCATIONAL/SCIENTIFIC VALUE

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
Y	Y	Y	1. Wetland contains or is known to contain threatened, rare, or endangered species.	
Y	Y	Y	2. Little or no disturbance is occurring in this wetland.	*Some Invasive barberry, by historic fill sites*
			3. Potential educational site contains a diversity of wetland classes that are accessible or potentially	
Y	Y	Y	accessible.	*All are forested wetlands, but there is a range of hydrogic regimes, geomorphic settings*
Y	Y	Y	4. Potential educational site is undisturbed and natural.	*Japanese barberry impairs parts of WB, WC3*
Y	Y	Y	5. Wetland is considered to be a valuable wildlife habitat.	*Developed landscape setting limits bird diversity*
Y	Y	Y	6. Wetland is located within a nature preserve or wildlife management area.	*Shelter Falls Park-walking distance*
N	N	N	7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).	
N	N	N	8. Off-road parking at potential educational site suitable for school bus access in or near wetland.	
Y	Y	Y	9. Potential educational site is within safe walking distance or a short drive to schools.	
Y	Y	Y	10. Potential educational site within safe walking distance to other plant communities.	
N	N	N	11. Direct access to perennial stream at potential educational site available.	*Ed. Value limited by small size*
Y	N	N	12. Direct access to pond or lake at potential educational site available.	*WA: Vernal pool has educ. value*
Y	Y	Y	13. No known safety hazards within the potential educational site.	*Rocky footing in WB*
Y	Y	Y	14. Public access to the potential educational site is controlled.	
N	N	N	15. Handicap accessibility is available.	*Could be developed : gentle grades and existing dirt roads*
N	N	N	16. Site is currently used for educational or scientific purposes.	
Y	Y	Y	17. Other	*WC4: Diverse herbs and mosses of seepage wetlands of botanical interest*

Y	**Y**	**Y**	Present? (Y/N) Principal? (P)

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UNIQUENESS/HERITAGE

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
Y	Y	Y	1. Upland surrounding wetland primarily urban.
Y	Y	Y	2. Upland surrounding wetland developing rapidly. *Housing for U Conn Storrs*
N	N	N	3. More than 3 acres of shallow permanent open water occur in wetlands (less than 6.6 feet deep) including streams.
N	N	N	4. Three or more wetland classes present.
Y	Y	Y	5. Deep and/or shallow marsh, or wooded swamp dominant.
Y	Y	Y	6. High degree of interspersion of vegetation and/or open water occurring in this wetland.
N	Y	Y	7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
Y	Y	Y	8. Potential educational site is within a short drive or a safe walk from schools. *U.Conn is v. short drive away*
N	N	N	9. Off-road parking at potential educational site is suitable for school buses.
Y	N	Y	10. No known safety hazards exist within this potential educational site. *WB2 rocky steep terrain*
N	N	N	11. Direct access to perennial stream or lake at potential educational site. *WC4 stream has 61.2-ac. Wshd*
N	N	N	12. Two or more wetland classes visible from primary viewing locations.
N	N	N	13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) visible from primary viewing locations.
N	N	Y	14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
Y	Y	Y	15. Large area of wetland is dominated by flowering plants, or plants that turn vibrant colors in different seasons. *Red maples, violets,*
Y	Y	Y	16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
Y	Y	Y	17. Overall view of the wetland is available from the surrounding upland. *In winter at least*

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UNIQUENESS/HERITAGE *(Continued)*

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
Y	Y	Y	18. Quality of the water associated with the wetland is high. *Road pollutants in upper portion of WC3*
Y	Y	Y	19. Opportunities for wildlife observations are available.
N	N	N	20. Historical buildings occur within the wetland.
Y	N	Y	21. Presence of pond or pond site and remains of a dam occur within the wetland. *vernal pool*
N	N	N	22. Wetland within 50 yards of the nearest perennial watercourse.
N	Y	Y	23. Visible stone or earthen foundations, berms, dams, standing structures or associated features occur within the wetland. Stone wall at S. end of WB. *Old stone culvert at far south end of WC4*
N	N	N	24. Wetland contains critical habitat for a state or federally listed threatened or endangered species.
N	N	N	25. Wetland is known to be a study site for scientific research.
N	N	N	26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
Y	Y	Y	27. Wetland has local significance because it serves several functional values.
N	N	Y	28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique. *WC4: Saturated stream terrace with deep peat and seepage plants*
N	N	N	29. Wetland is known to contain an important archaeological site.
N	N	N	30. Wetland is hydrologically connected to a state or federally designated scenic river.
Y	Y	Y	31. Wetland is located in an area experiencing a high wetland loss rate.
N	N	N	32. Other *Stream macroinvertebrate community in WC is limited by intermittent flow*

N	**N**	**N**	Present? (Y/N) Principal? (P)

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VISUAL QUALITY/AESTHETICS

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
N	N	N	1. Multiple wetland classes visible from primary viewing locations.
N	N	N	2. Emergent marsh and/or open water visible from primary viewing locations.
Y	Y	Y	3. Diversity of vegetation species visible from primary viewing locations. *Large trees from road*
Y	Y	Y	4. Wetland dominated by flowering plants, or plants that turn vibrant colors in different seasons.
Y	Y	Y	5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
Y	Y	Y	6. Visible surrounding land use form contrasts with wetland. *Level brook terrace contrasts with forested slopes*
Y	Y	Y	7. Wetland views absent of trash, debris, and signs of disturbance. *Old irregular fill by upland island*
Y	Y	Y	8. Wetland is considered to be a valuable wildlife habitat.
Y	N	Y	9. Wetland is easily accessed. *WB: Terrain steep and somewhat rocky*
Y	Y	Y	10. Low noise level at primary viewing locations.
Y	Y	Y	11. Unpleasant odors absent at primary viewing locations.
Y	Y	Y	12. Relatively unobstructed sight line exists through wetland. *In winter season*
N	N	N	13. Other *Localized Japanese barberry & Asiatic bittersweet infestations mar wetlands' beauty*

P	**Y**	**P**	Present? (Y/N) Principal? (P)

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ENDANGERED SPECIES HABITAT

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS
N	N	N	1. Wetland contains or is known to contain threatened or endangered species.
N	N	N	2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.
			3. Other

N	**N**	**N**	Present? (Y/N) Principal? (P)

FISH AND SHELLFISH HABITAT (Supporting marine resources)

Wetland A	Wetland B	Wetland C	CONSIDERATIONS/QUALIFIERS	
N	N	N	1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.	
N	N	N	2. Suitable spawning habitat is present at the site or in the area.	*Gravel beds*
N	N	N	3. Commercially or recreationally important species are present or suitable habitat exists.	
N	N	N	4. The wetland/waterway supports prey for higher trophic level marine organisms.	
N	N	N	5. The waterway provides migratory habitat for anadromous fish.	*Scotland dam (Shepaurg R.) lacks fishway*
N	N	N	6. Other	

N	**N**	**N**	Present? (Y/N) Principal? (P)