October 21, 2014 Update
Ecosystem Questions to be Considered by the Terrestrial-Wetland Team (CT River Pilot)

This document summarizes the recent decisions made to date related to ecosystem core areas and provides additional information to aid in making final decisions on the remaining questions.

By the conclusion of the September 26 meeting, team members had reached agreement on several questions related to the ecosystem design, with the major remaining issue involving how to scale or stratify the "selection index" used to generate core areas (e.g., by HUC8 or the full watershed). At that time, the major decisions were as follows:

1) The total amount of the landscape to be in ecosystem core areas will be 25%.
2) Weighting will be used for ecosystems (i.e., representation of certain ecosystems will be greater than others; IEI will be weighted more heavily than TNC's terrestrial resilience).
3) Fewer, larger core areas are preferred over more, smaller ones.
4) Rare natural communities (not including floodplains) will be incorporated into the design after core areas are designated. Further discussion was needed on a) incorporating floodplains into the design, and b) how to deal with the fact that some states have restrictions on releasing the location of rare natural communities.

Subsequent discussion among team members including The Nature Conservancy has led us to recommend that all TNC Tier 1 floodplains be incorporated into core areas. We are scheduling a meeting including state agency representatives to further discuss rare natural communities.

We anticipated that shortly after the September 26 meeting, we would request input on the remaining question about the approach to be used for scaling. However, after reviewing the results more carefully, we realized that the scaling approach (used to influence the distribution of core areas across the watershed) affected the weighting results. Similarly, we noticed that the weighting schemes affected the distribution of core areas. Given these interactions, we requested UMass to prepare two additional scenarios to give more options for weighting ecosystems and distributing core areas. The remainder of this document discusses the original and two new scenarios to better consider interactions among ecosystem weighting and distribution. As a reminder, we have identified these three objectives to address our overall ecosystem goal:

1. Ensure the existence of a spectrum of ecosystems that encompasses a full range of biodiversity (genetic, species, and natural community) and supports a multitude of ecosystem functions and services.
2. Ensure that ecosystems are of a size and condition, and situated in a landscape context, that will preserve their long-term resilience.
3. Maintain ecosystems in a well-distributed, interconnected network that 1) facilitates short-term movements and long-term range shifts of a diversity of both aquatic and terrestrial species and 2) allows ecological processes such as aquatic flows to operate at large scales.

Original scenarios (1, 2, and 3) that relate to ecosystem scaling and core area distribution

In September, UMass provided us with 8 scenarios illustrating various options for ecosystem core areas. As shown in Table 1 below, Scenarios 1, 2, and 3 presented alternatives for how the results of the combined "selection index" would be scaled to generate core areas. The selection index is a weighted average of UMass IEI and TNC Terrestrial Resiliency, where IEI in turn has been weighted based on team decisions for macrogroups.

- "Full Connecticut River Watershed" scaling (Scenario 2) means that the selection index is used without modification to generate core areas.
- "HUC" scaling (Scenario 1) means that within each of the 14 HUC8 subwatersheds (Figure 2), the selection index is rescaled, and the rescaled index is the basis for generating core areas.
- "Hybrid" scaling (Scenario 3) means that the two selection indices described previously (for Scenarios 1 and 2) are averaged, and the average is used to generate core areas.

The two new scenarios (9 and 10)

As noted above, in reviewing the results of the original scenarios, we realized that there are conflicts between the goals of achieving higher representation of priority ecosystems and achieving a well-distributed network of core areas. Briefly, Scenario 2 (full watershed scaling) leads to a skewed distribution of core areas that are largest and most concentrated in the northern part of the watershed. This is due in part to the up-weighting of boreal forest (which is restricted to northern portions of the watershed) and in part due to the fact that ecosystem blocks tend to be larger and more intact in the north. Scenario 3 (HUC8 scaling) leads to a much uniform distribution of core areas. However, this distribution largely comes at a cost of boreal forest, which is substantially less-represented in this Scenario (49% of boreal forest in core areas for Scenario 2, 35% in Scenario 3).

Consequently, we asked UMass to try to additional scenarios that might better achieve our goals of well-distributed core areas and preferential weighting for particular ecosystems. These scenarios were also requested based on partner desires to see better representation of southern forests in the design. The scenarios are as follows:

- Scenario 9: full watershed scaling and remove the extra weight for boreal forests. The rationale was that dropping the weight for boreal forest would result in a more even distribution of core areas than Scenario 2, without a huge cost to boreal forest. Furthermore, because boreal forest is the second most common macrogroup type in the watershed, weighting this system has a large impact on the results of the design, perhaps more than anticipated by partners originally. Other weighted ecosystems are ten-fold less common than boreal forest (or even less common) and hence do not have such a large impact on the patterns of the design.
- Scenario 10: full watershed scaling and add weight for central oak-pine forest. The rationale was that increasing weight for central oak-pine forest, which occurs in the southern part of the watershed, would not only lead to better representation of this forest in the design, but also would contribute to a more even distribution of core areas than Scenario 2.

Table 1. Summary description of scenarios.

Name	Core area number and size	Weighting of IEI	Rare communities	Amount of landscape in core areas	Scaling
Scenario 1	Fewer / larger	Weighted	Without	25%	**HUC8**
Scenario 2	Fewer / larger	Weighted	Without	25%	**Full Conn. R. Watershed**
Scenario 3	Fewer / larger	Weighted	Without	25%	**Hybrid**
Scenario 9	Fewer / larger	No boreal weight	Without	25%	**Full Conn. R. Watershed**
Scenario 10	Fewer / larger	Oak-pine weighted	Without	25%	**Full Conn. R. Watershed**

Summary of how the scenarios compare

Below are a series of tables and figures comparing the scenarios. Here we extract some highlights, but everyone is encouraged to review the materials themselves. Regarding the spatial patterns, Figures 4 and 5 are screenshots of the different scenarios; these can be examined in more detail using the on-line Conn. River Pilot group within the North Atlantic LCC's Conservation Planning Atlas (http://nalcc.databasin.org/).

Overall similarities and differences among the scenarios

There is considerable overlap among the different scenarios (Table 2, Figure 1); the scenarios are more similar to each other than different. Nearly 20% of the undeveloped portion of the watershed (out of a goal of 25%) occurs in all 5 scenarios. Thus, the scenarios are really about how the remaining 5% of the target is allocated. In all 5 scenarios, core areas are relatively well-distributed across the watershed, with the exception of the heavily developed and agricultural zone of Greater Hartford and Springfield. For much of the watershed, differences are a result of the degree to which core areas are enlarged/combined, rather than entirely different core areas being identified. More substantial differences are seen in the Miller, Chicopee and Farmington watersheds, and the Lower Connecticut to some degree.

Table 2. Spatial similarity among scenarios (approx. degree of overlap).

	Scenario 2	Scenario 3	Scenario 9	Scenario 10
Scenario 1	84%	91%	83%	85%
Scenario 2		91%	92%	90%
Scenario 3			90%	89%
Scenario 9				88%
Overlap in core areas: 62% (total area of all 5 scenarios that occurs in every scenario)				
Undeveloped Connecticut River Watershed area occurring in all 5 scenarios: 19.5%				

Scenario 1 (HUC8)

- By design, leads to the most uniform distribution of core areas across watershed (at a cost of loss of some higher integrity areas in less-developed areas of the watershed).
- Of the weighted macrogroups and ecological systems, has the least representation (compared to the other 4 scenarios) of boreal upland forest (especially the lower elevation systems), alpine tundra, and calcareous cliffs and outcrops.
- Also considering weighted macrogroups and ecological systems, has the greatest representation of emergent marshes (though none of the scenarios differ greatly). Also the second greatest representation of central oak-pine (not originally upweighted).

Scenario 2 (full watershed scaling; original ecosystem weights)

- The least even distribution of core areas of any of the scenarios; core areas encompass 2-3 times higher proportion of undeveloped area in the four northernmost subwatersheds as most of the southernmost subwatersheds (Table 5).
- Least representation of emergent marsh and wet meadow / shrub marsh (though none of the scenarios differ greatly). Also the least representation of central oak-pine.
- Greatest representation of boreal upland forest and alpine tundra.

Scenario 3 (hybrid)

- As expected, intermediate between scenarios 1 and 3 in its evenness of distribution and how weighting is reflected in the design.
- Does not reflect the greatest or least representation of any of the common macrogroups. Relatively even balance for how the weighted macrogroups are reflected in the design.

Scenario 9 (drop boreal weighting)

- Slightly more even distribution of core areas than Scenario 2 but not nearly as even as Scenarios 1 and 3.
- Similar representation to Scenario 2, but less boreal forest.
- Greatest representation of wet meadow / shrub marsh and northern peatland and fens.
- Nearly the least representation of central oak-pine.

Scenario 10 (increase central oak-pine weighting)

- Intermediate in distribution of core areas between Scenarios 2 and 9 on the one hand (most skewed toward the north) and Scenarios 1 and 3 on the other (most even distributions).
- Also tends to be intermediate in how weighted ecosystems are represented. As expected, highest representation of central oak-pine forest; also second highest representation of boreal forest.
- Some of the gain in central oak-pine forest may be due to reductions northern hardwood forest, so it is worth a close look in the southern part of the watershed to see if forest patches are actually larger / more numerous as desired, compared to other scenarios. Similarly, it is worth examining whether there is a loss of forest in the central part of the watershed due to the lack of either boreal or central oak-pine forest.

Fig. 1. Core Area Overlap:

Blue = where all 5 scenarios overlap
Light blue = 4 scenarios
Green = 3 scenarios
Yellow = 2 scenarios
Orange = 1 scenario

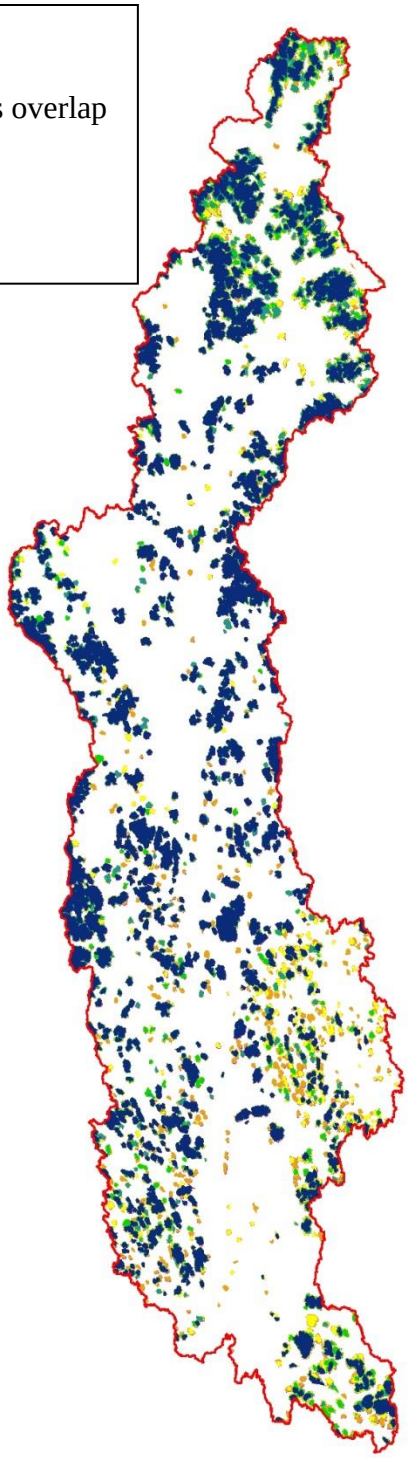

Table 3. "**Bold**" indicates team up-weighted entire macrogroup; red text indicates <15% of macrogroup is in cores; blue text indicates >40% of macrogroup in cores

What's unique about scenario?		*HUC8*	*orig. wts.*	*hybrid*	*No boreal wt.*	*Wt. oak-pine*
		Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 9**	**Scenario 10**
Macrogroup	Total ha	% in cores	% in cores	% in cores	% in cores	% in cores
Northern Hardwood & Conifer	1,749,969	29.2	29.9	30.0	30.0	28.4
Boreal Upland Forest	**168,630**	**34.8**	**48.6**	**40.9**	**38.0**	**46.5**
Central Oak-Pine	145,586	40.7	24.8	34.1	25.7	44.3
Lotic	85,992	20.3	20.4	19.5	20.7	20.7
Northern Swamp	80,673	26.4	20.3	23.5	22.5	23.2
Lentic	51,924	17.6	14.0	14.9	15.2	20.3
Outcrop & Summit Scrub	21,155	49.8	58.1	55.4	52.9	53.7
Wet Meadow / Shrub Marsh	**20,960**	**28.3**	**24.7**	**27.2**	**29.6**	**27.0**
Cliff & Talus	16,505	32.7	34.8	34.5	34.8	37.5
Emergent Marsh	**10,267**	**33.6**	**27.8**	**32.3**	**30.3**	**28.7**
Ruderal Shrubland & Grassland	10,205	17.6	14.8	16.5	15.9	19.5
Central Hardwood Swamp	4,800	16.5	11.7	15.5	11.1	10.4
Northern Peatland & Fens	**3,044**	**33.5**	**45.0**	**37.9**	**47.6**	**46.9**
FreshwaterTidal Riverine	2,852	45.3	21.3	35.8	29.0	30.0
Estuarine Subtidal Unconsolidated Bottom	2,208	10.4	5.0	5.6	6.6	10.5
Estuarine Intertidal Emergent	1,011	40.0	19.3	20.0	25.0	31.4
Glade & Barren & Savanna	680	49.2	51.6	51.2	56.8	55.0
Alpine	**553**	**24.2**	**34.8**	**27.3**	**26.3**	**34.1**
Ruderal Shrub Swamp	505	13.2	7.9	10.2	10.0	11.1
Northeastern Floodplain Forest	**469**	**6.8**	**8.1**	**6.8**	**8.1**	**6.8**
Estuarine Intertidal Unconsolidated Shore	183	41.0	25.3	26.7	15.4	21.2
Coastal Plain Peat Swamp	78	25.2	4.6	25.0	2.1	22.8
Estuarine Intertidal Rocky Shore	26	51.2	43.9	43.9	43.9	43.9
Coastal Grassland & Shrubland	**22**	**33.2**	**33.2**	**33.2**	**11.5**	**13.5**
Estuarine Intertidal Scrub Shrub	0	0.0	0.0	0.0	0.0	0.0
Various developed (including roads)	322,686	3.1	2.8	2.7	2.7	3.5
Pasture/hay	135,518	1.7	0.9	1.2	0.9	1.8
Cultivated crops	48,233	0.5	0.4	0.4	0.4	0.5
	2,378,299	25.0	25.1	25.3	24.7	25.4
*Revised TNC macrogroups, which consolidates large river floodplain examples of swamps and marshes within "floodplains"						
Large River Floodplain	**6,904**	**26.0**	**17.0**	**20.8**	**20.7**	**18.8**
Northern Swamp	76,915	26.7	20.7	23.9	22.8	23.5
Emergent Marsh	**9,473**	**33.3**	**28.7**	**32.5**	**31.3**	**29.7**
Wet Meadow / Shrub Marsh	**19,078**	**27.3**	**24.1**	**26.6**	**29.1**	**26.7**

Table 4. "**Bold**" indicates team up-weighted ecological system; red text indicates <15% of system is in cores; blue text indicates >40% of system in cores

Macrogroup	Ecological System	Total ha	Scenario 1 % in cores	Scenario 2 % in cores	Scenario 3 % in cores	Scenario 9 % in cores	Scenario 10 % in cores
Alpine	**Acadian-Appalachian Alpine Tundra**	**553**	**24.2**	**34.8**	**27.3**	**26.3**	**34.1**
Cliff & Talus	Laurentian-Acadian Acidic Cliff and Talus	5,427	43.4	49.1	47.1	44.9	45.5
Cliff & Talus	**Laurentian-Acadian Calcareous Cliff and Talus**	**4,076**	**36.7**	**41.6**	**39.7**	**40.7**	**37.7**
Cliff & Talus	North-Central Appalachian Acidic Cliff and Talus	3,678	22.8	22.4	23.0	26.0	32.8
Cliff & Talus	North-Central Appalachian Circumneutral Cliff and Talus	3,325	21.3	16.7	20.4	20.6	29.5
Glade & Barren & Savanna	Central Appalachian Alkaline Glade and Woodland	680	49.2	51.6	51.2	56.8	55.0
Outcrop & Summit Scrub	**Laurentian-Acadian Calcareous Rocky Outcrop**	**5,567**	**40.8**	**45.7**	**44.4**	**44.0**	**42.7**
Outcrop & Summit Scrub	Northern Appalachian-Acadian Rocky Heath Outcrop	15,588	52.9	62.6	59.3	56.1	57.6
Ruderal Shrubland & Grassland	NLCD 52/71: shrublands/grasslands	10,205	17.6	14.8	16.5	15.9	19.5
Coastal Grassland & Shrubland	**North Atlantic Coastal Plain Heathland and Grassland**	**13**	**0.7**	**0.7**	**0.7**	**0.0**	**0.0**
Coastal Grassland & Shrubland	**Northern Atlantic Coastal Plain Dune and Swale/Sandy Beach**	**9**	**84.2**	**84.2**	**84.2**	**29.5**	**34.7**
Boreal Upland Forest	**Acadian Low Elevation Spruce-Fir-Hardwood Forest**	**79,209**	**13.2**	**23.7**	**17.1**	**19.2**	**23.0**
Boreal Upland Forest	**Acadian Sub-boreal Spruce Flat**	**16,997**	**12.7**	**24.4**	**16.2**	**22.7**	**25.4**
Boreal Upland Forest	**Acadian-Appalachian Montane Spr-Fir-Hwd Forest**	**72,424**	**63.7**	**81.5**	**72.7**	**62.1**	**77.1**
Central Oak-Pine	Central Appalachian Dry Oak-Pine Forest	16,570	46.9	37.6	42.8	40.3	61.1
Central Oak-Pine	Central Appalachian Pine-Oak Rocky Woodland	5,549	39.9	35.5	38.9	38.8	49.2
Central Oak-Pine	North Atlantic Coastal Plain Hardwood Forest	11,833	44.2	28.2	36.7	29.4	57.7
Central Oak-Pine	North Atlantic Coastal Plain Maritime Forest	36	11.0	9.2	10.2	0.0	0.0
Central Oak-Pine	Northeastern Interior Dry-Mesic Oak Forest	110,964	39.6	22.2	32.5	**22.6**	**40.4**
Central Oak-Pine	**Northeastern Interior Pine Barrens**	**634**	**0.0**	**1.1**	**0.6**	1.0	0.0
Northern Hardwood & Conifer	Appalachian (Hemlock)-Northern Hardwood Forest	585,310	26.7	21.0	24.1	23.0	23.4
Northern Hardwood & Conifer	Laurentian-Acadian Northern Hardwood Forest	675,372	40.3	48.0	44.7	46.1	43.5
Northern Hardwood & Conifer	Laurentian-Acadian Pine-Hemlock-Hardwood Forest	390,504	16.8	15.1	16.6	15.9	13.4
Northern Hardwood & Conifer	Laurentian-Acadian Red Oak-Northern Hardwood Forest	88,298	16.9	18.1	18.5	18.0	14.9

Northern Hardwood & Conifer	Northeastern Coastal and Interior Pine-Oak Forest	10,486	15.8	5.7	10.0	6.8	7.0
Central Hardwood Swamp	North-Central Interior Wet Flatwoods Undifferentiated	4,800	16.5	11.7	15.5	11.1	10.4
Coastal Plain Peat Swamp	North Atlantic Coastal Plain Basin Peat Swamp Isolated/headwater streams	78	25.2	4.6	25.0	2.1	22.8
Northeastern Floodplain Forest	**Laurentian-Acadian Floodplain Forest Larger river floodplain**	**469**	**6.8**	**8.1**	**6.8**	**8.1**	**6.8**
Northern Swamp	Laurentian-Acadian Alkaline Conifer-Hardwood Swamp Isolated	2,859	27.9	30.6	30.1	30.7	28.5
Northern Swamp	Laurentian-Acadian Alkaline Conifer-Hardwood Swamp Lake/pond: any size	257	19.6	39.7	23.2	34.3	32.6
Northern Swamp	Laurentian-Acadian Alkaline Conifer-Hardwood Swamp Smaller river riparian	3,741	27.2	38.5	34.8	43.7	39.0
Northern Swamp	**Laurentian-Acadian Alkaline Conifer-Hardwood Swamp Larger river floodplain**	**480**	**1.3**	**4.4**	**1.8**	**3.6**	**3.9**
Northern Swamp	North-Central Appalachian Acidic Swamp Isolated	10,801	22.6	13.1	17.9	14.3	18.4
Northern Swamp	North-Central Appalachian Acidic Swamp Lake/pond: any size	59	8.0	6.2	7.3	6.2	14.8
Northern Swamp	North-Central Appalachian Acidic Swamp Smaller river riparian	20,770	21.4	11.3	16.6	12.6	16.2
Northern Swamp	**North-Central Appalachian Acidic Swamp Larger river floodplain**	**1,545**	**38.5**	**13.7**	**26.2**	**14.1**	**14.8**
Northern Swamp	North-Central Interior and Appalachian Rich Swamp Isolated	4,164	30.2	14.6	22.8	17.3	23.5
Northern Swamp	North-Central Interior and Appalachian Rich Swamp Lake/pond: any size	18	100.0	96.6	96.6	96.6	100.0
Northern Swamp	North-Central Interior and Appalachian Rich Swamp Smaller river riparian	7,196	26.2	11.8	18.8	12.9	17.4
Northern Swamp	**North-Central Interior and Appalachian Rich Swamp Larger river floodplain**	**232**	**19.7**	**0.7**	**10.0**	**9.7**	**4.3**
Northern Swamp	Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp Isolated	11,552	32.5	29.4	30.6	29.7	27.2
Northern Swamp	Northern Appalachian-Acadian Conifer-Hardwood Acidic Swamp Lake/pond: any size	880	26.8	48.9	40.7	47.6	48.0
Northern Swamp	Northern Appalachian-Acadian Conifer-Hardwood Acidic Sw. Smaller river riparian	14,616	31.5	30.5	31.4	35.7	31.3
Northern Swamp	**Northern Appalachian-Acadian Conifer-Hardwood Acid. Sw. Larger river floodplain**	**1,501**	**6.4**	**13.8**	**7.5**	**23.5**	**20.8**
Emergent Marsh	**Laurentian-Acadian Freshwater Marsh Isolated**	**3,323**	**32.7**	**30.6**	**31.8**	**31.0**	**30.5**
Emergent Marsh	**Laurentian-Acadian Freshwater Marsh Lake/pond: any size**	**298**	**23.9**	**25.0**	**23.1**	**23.9**	**24.7**
Emergent Marsh	**Laurentian-Acadian Freshwater Marsh Smaller river riparian**	**5,852**	**34.1**	**27.9**	**33.3**	**31.9**	**29.5**
Emergent Marsh	**Laurentian-Acadian Freshwater Marsh Larger river floodplain**	**795**	**37.2**	**16.5**	**30.0**	**18.1**	**16.7**
Ruderal Shrub Swamp	Ruderal Shrub Swamp	505	13.2	7.9	10.2	10.0	11.1
Wet Meadow / Shrub Marsh	**Laurentian-Acadian Wet Meadow-Shrub Swamp Isolated**	**5,325**	**26.2**	**23.6**	**25.7**	**24.7**	**23.7**
Wet Meadow / Shrub Marsh	**Laurentian-Acadian Wet Meadow-Shrub Swamp Lake/pond: any size**	**463**	**19.5**	**23.3**	**23.7**	**22.6**	**21.5**
Wet Meadow / Shrub Marsh	**Laurentian-Acadian Wet Meadow-Shrub Swamp Smaller river riparian**	**13,290**	**28.0**	**24.3**	**27.1**	**31.1**	**28.1**

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Wet Meadow / Shrub Marsh	**Laurentian-Acadian Wet Meadow-Shrub Swamp Larger river floodplain**	**1,882**	**38.5**	**30.0**	**32.8**	**34.0**	**30.1**
Northern Peatland & Fens	**Boreal-Laurentian Bog Isolated**	**62**	**96.4**	**100.0**	**100.0**	**48.6**	**84.8**
Northern Peatland & Fens	**Boreal-Laurentian-Acadian Acidic Basin Fen Undifferentiated**	**2,745**	**30.9**	**45.5**	**37.1**	**49.6**	**47.9**
Northern Peatland & Fens	**Laurentian-Acadian Alkaline Fen Isolated/headwater streams**	**37**	**19.9**	**20.4**	**18.7**	**20.9**	**20.4**
Northern Peatland & Fens	**North-Central Interior and Appalachian Acidic Peatland Undifferentiated**	**200**	**52.4**	**25.6**	**32.8**	**25.2**	**26.2**
Lotic	Lotic	85,992	20.3	20.4	19.5	20.7	20.7
Lentic	Lentic	51,924	17.6	14.0	14.9	15.2	20.3
FreshwaterTidal Riverine	Freshwater Tidal Riverine	2,852	45.2	21.3	35.8	29.0	29.9
Estuarine Intertidal Emergent	Estuarine Intertidal Emergent	1,011	40.0	19.3	20.0	25.0	31.4
Estuarine Intertidal Rocky Shore	Estuarine Intertidal Rocky Shore	26	51.2	43.9	43.9	43.9	43.9
Estuarine Intertidal Scrub Shrub	Estuarine Intertidal Scrub Shrub	0	0.0	0.0	0.0	0.0	0.0
Estuarine Intertidal Unconsolidated Shore	Estuarine Intertidal Unconsolidated Shore	183	41.0	25.3	26.7	15.4	21.2
Estuarine Subtidal Unconsolidated Bottom	Estuarine Subtidal Unconsolidated Bottom	2,208	10.3	5.0	5.6	6.6	10.5
Cultivated crops	Cultivated crops	48,233	0.5	0.4	0.4	0.4	0.5
Pasture/hay	Pasture/hay	135,518	1.7	0.9	1.2	0.9	1.8
Various developed (including roads)		322,686	3.1	2.8	2.7	2.7	3.5
		2,884,737		24.97%	25.07%	25.31%	24.68%	25.40%

Fig. 2. HUC8 Watersheds of the Connecticut River Watershed

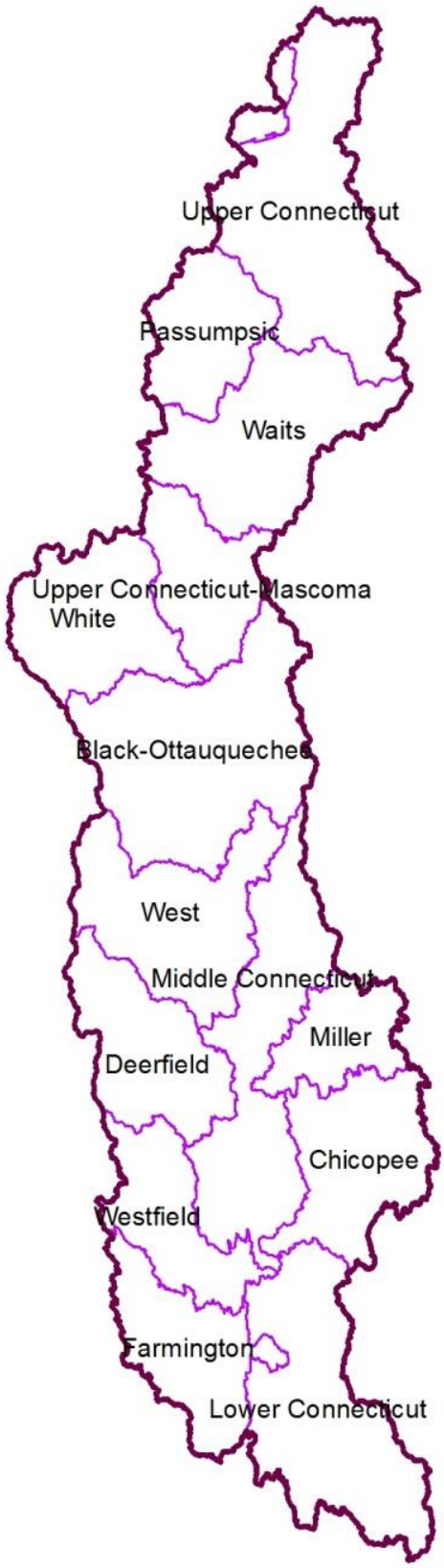

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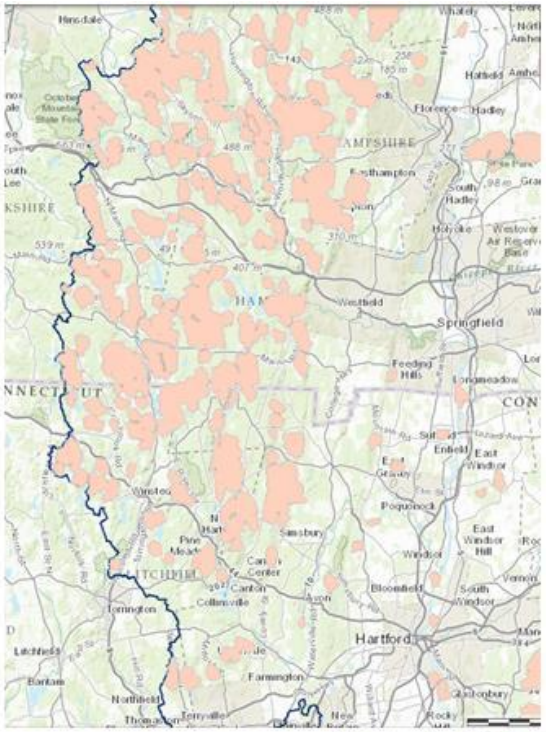
Table 5.

			HUC8	*orig. wts.*	*hybrid*	*No boreal wt*	*Wt. oak-pine*
Percent <u>Undeveloped</u> in Core Areas*							
HUC 8 Watershed	**Acres (Thousand)**	**Percent Developed or Agriculture**	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 9**	**Scenario 10**
01 Upper Connecticut	836	7.3	40	65	50	58	62
02 Passumpsic	325	15.1	41	65	50	65	63
03 Waits	591	12.1	43	60	50	57	55
04 Upper Conn.-Mascoma	331	14.0	43	49	47	47	43
05 White	456	13.9	36	35	37	33	30
06 Black-Ottauquechee	846	14.7	35	36	38	36	33
07 West	543	13.4	52	60	58	62	56
08 Middle Connecticut	652	21.9	40	41	42	44	42
09 Deerfield	425	12.7	38	48	45	48	44
10 Miller	249	14.7	57	21	36	25	20
11 Chicopee	463	19.2	44	17	29	20	31
12 Westfield	332	17.0	49	36	42	39	36
13 Farmington	388	22.4	39	25	32	28	32
14 Lower Connecticut	694	41.5	35	18	27	18	33
Grand Total	7,130	17.4					

Table 6.

			HUC8	*orig. wts.*	*hybrid*	*No boreal wt.*	*Wt. oak-pine*
Percent of <u>entire HUC area</u> in Core Areas*							
HUC 8 Watershed	**Acres (Thousand)**	**Percent Developed or Agriculture**	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 9**	**Scenario 10**
01 Upper Connecticut	836	7.3	37	61	46	54	57
02 Passumpsic	325	15.1	35	55	43	55	53
03 Waits	591	12.1	38	53	44	50	48
04 Upper Conn.-Mascoma	331	14.0	37	42	41	40	37
05 White	456	13.9	31	30	32	29	26
06 Black-Ottauquechee	846	14.7	30	31	32	31	28
07 West	543	13.4	45	52	50	53	49
08 Middle Connecticut	652	21.9	31	32	33	35	32
09 Deerfield	425	12.7	34	42	39	42	39
10 Miller	249	14.7	49	18	30	22	17
11 Chicopee	463	19.2	35	14	24	16	25
12 Westfield	332	17.0	40	30	35	32	30
13 Farmington	388	22.4	30	20	25	21	25
14 Lower Connecticut	694	41.5	20	10	16	10	19
Grand Total	7,130	17.4					

*Percentages approx., represent some double-counting where core areas cross HUC8 watersheds.



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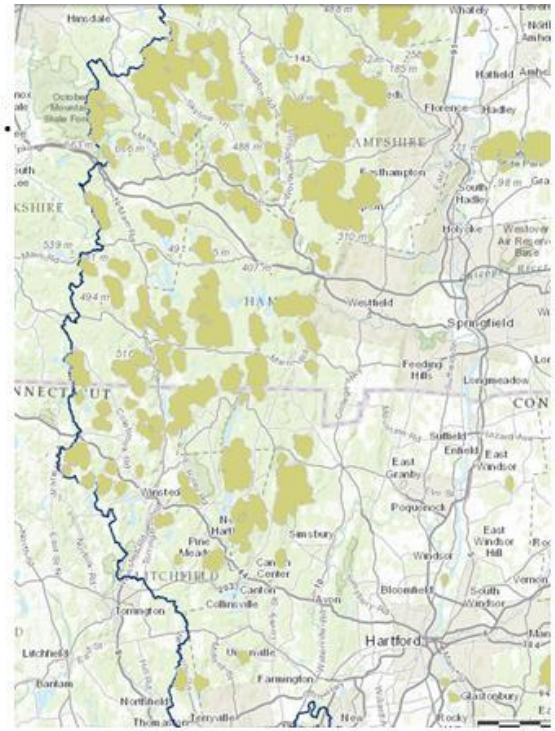

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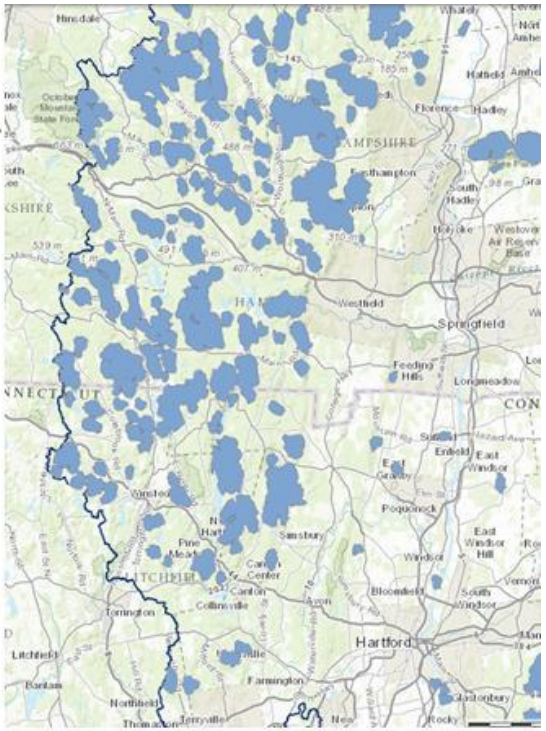

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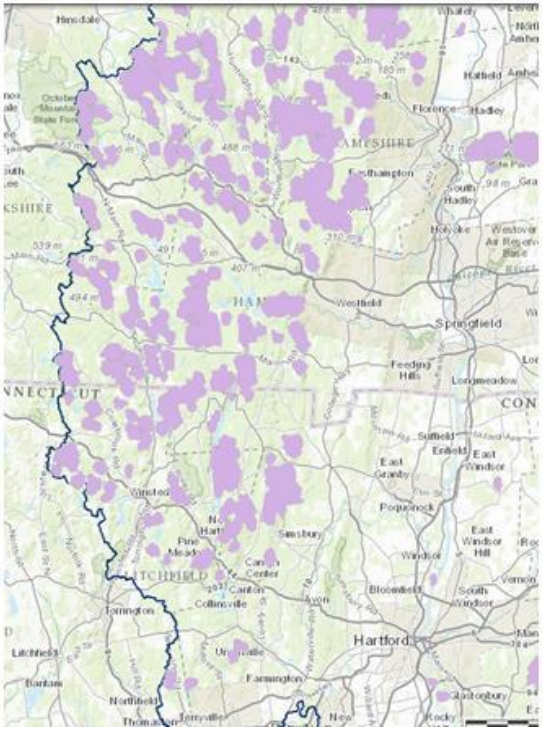

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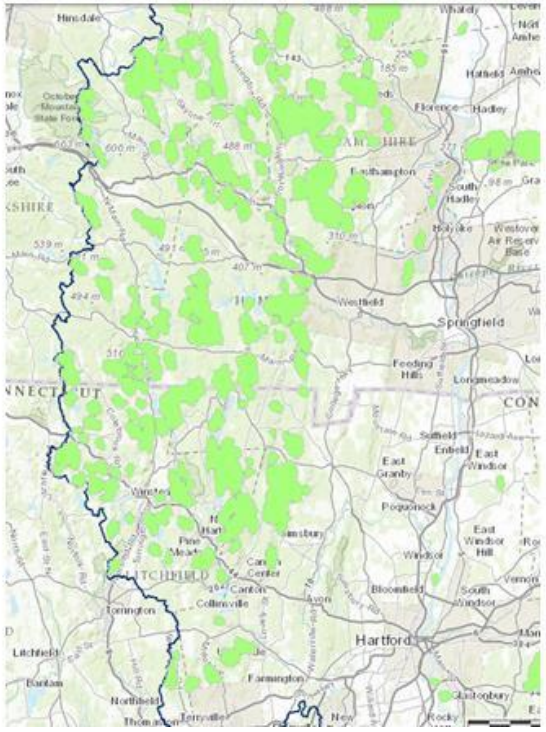
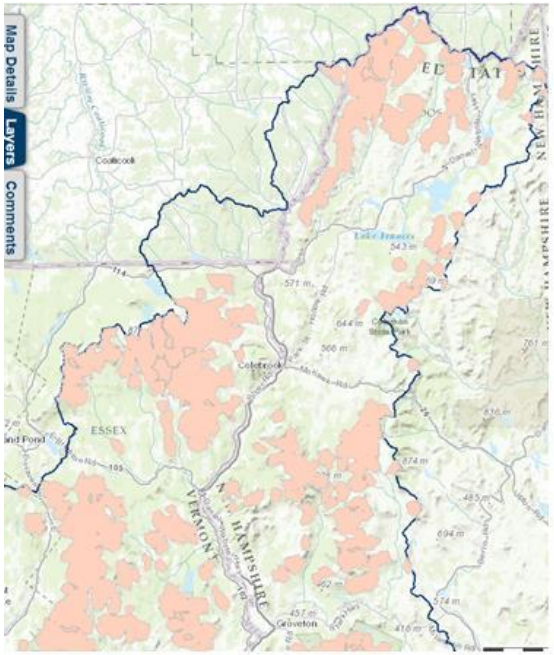


10.

Fig. 3. Example of scenarios in southern part of watershed



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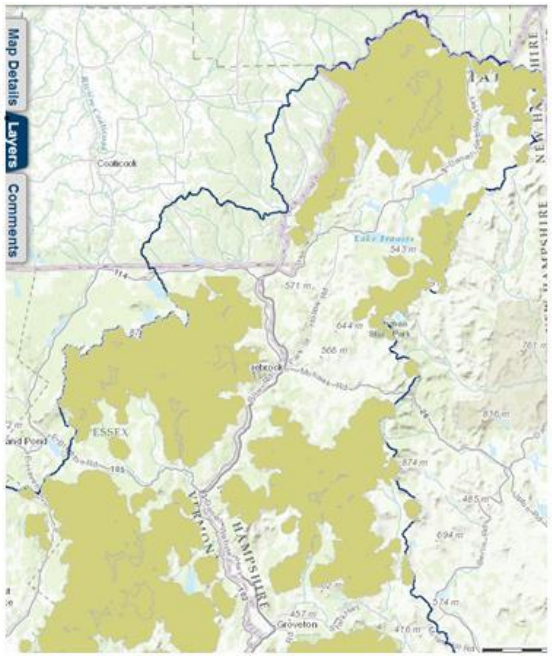

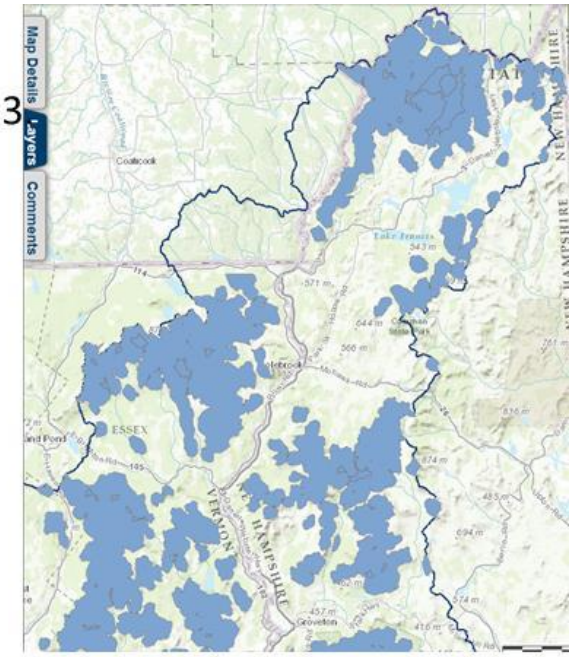

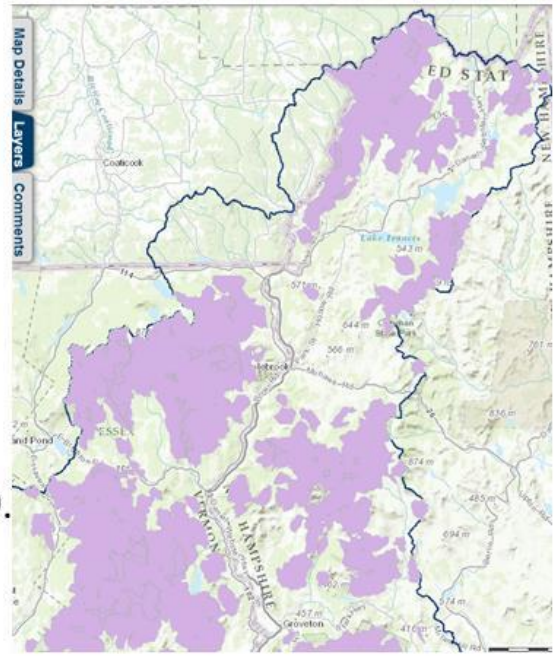

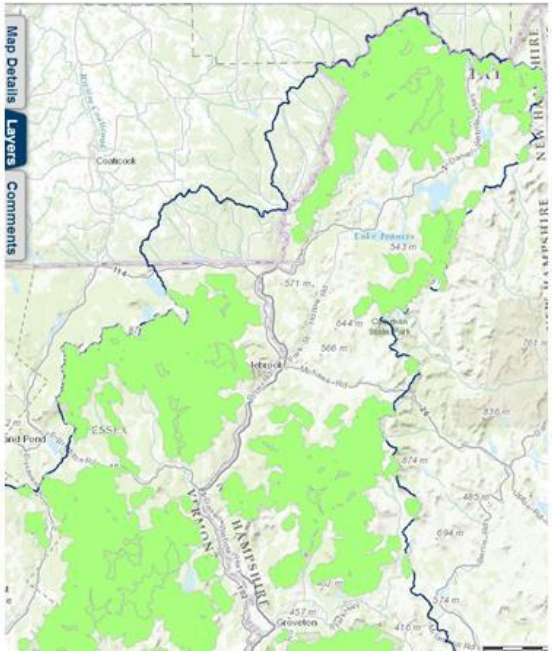

10.

Fig. 4. Example of scenarios in northern part of watershed