

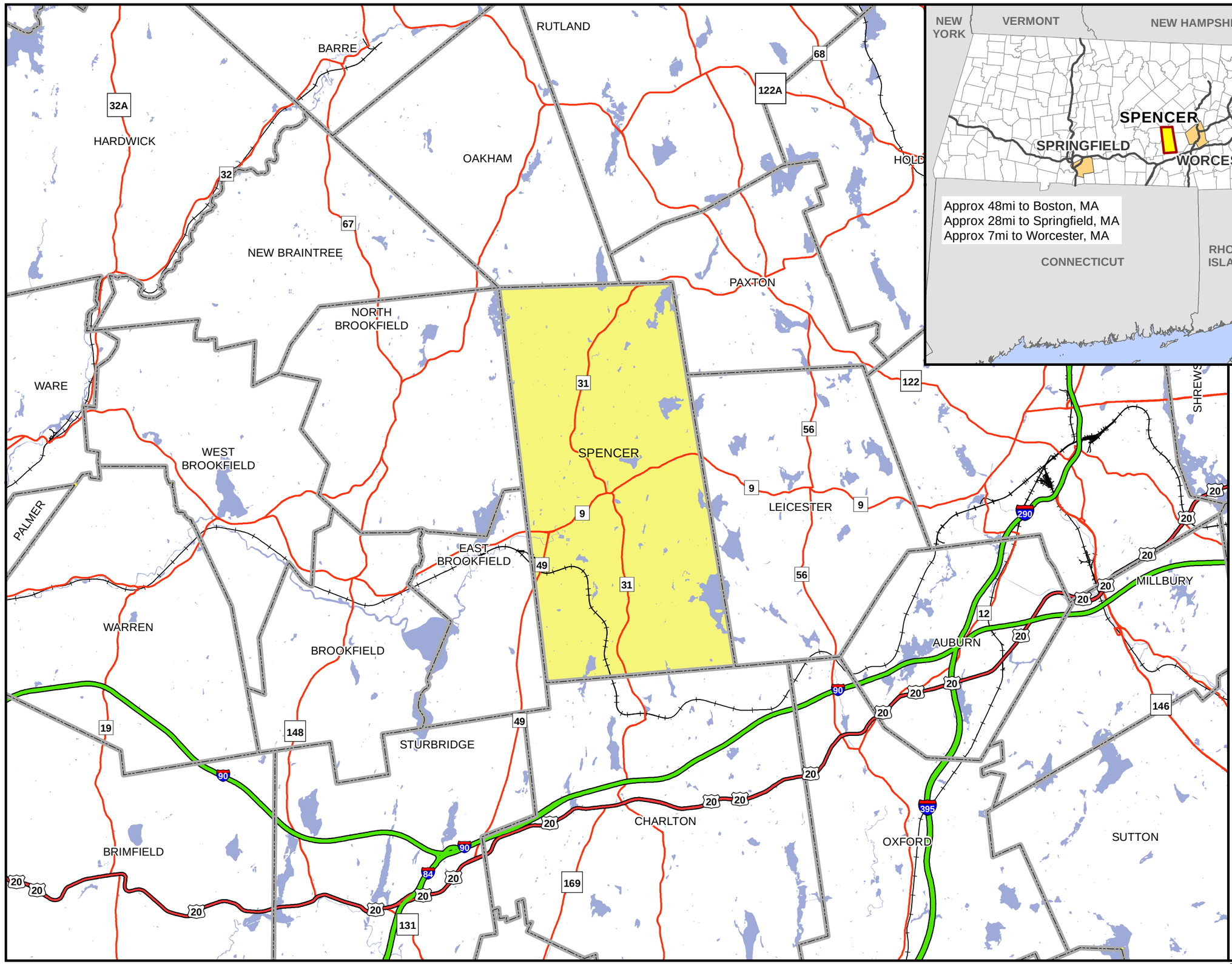
SPENCER OPEN SPACE AND RECREATION PLAN APPENDIX

2021

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   - Map 9 – Habitats
   - Map 10 – Action Plan
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G. ADA Self Evaluation
H. Open Space Implementation Committee Action Items
I. Letters of Approval



REGIONAL CONTEXT MAP

Town of Spencer, Massachusetts

Legend

- Town Boundary
- Active Railroad
- Interstate
- U.S. Route
- State Route

N W E S

1 in = 2 miles

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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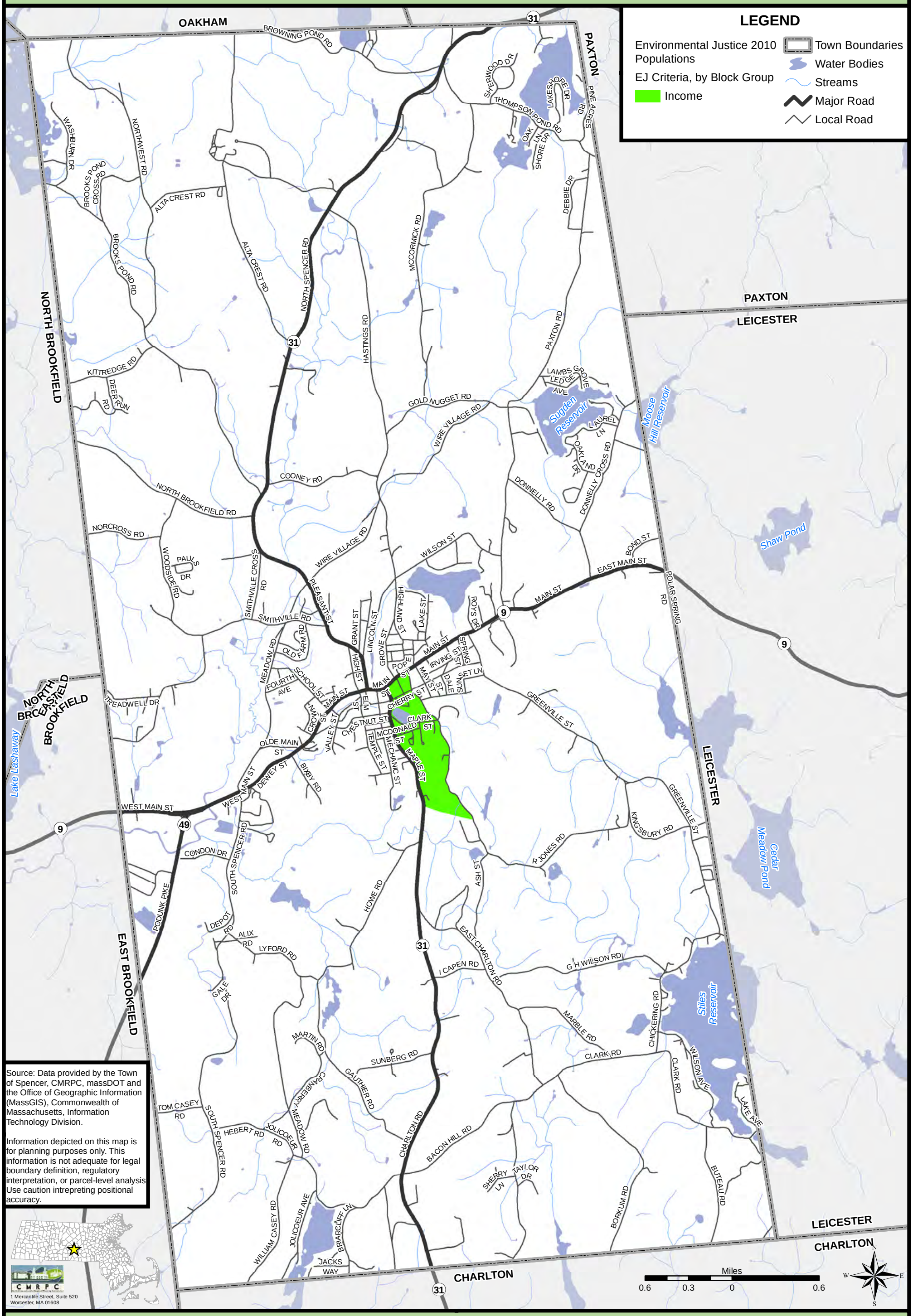
Produced by

C M R P C
Central Massachusetts Regional Planning Commission
One Mercantile Street, Suite 520 Worcester, MA 01608

Date: 9/26/2018 Path: H:\Projects\O_Spencer_GIS\m280_Locus_11x17.mxd

ENVIRONMENTAL JUSTICE MAP

OPEN SPACE AND RECREATION PLAN



Town of Spencer, Massachusetts

Date: 4/24/2019 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_02_EJ_11x17.mxd

ZONING DISTRICTS & OVERLAYS

OPEN SPACE AND RECREATION PLAN

LEGEND

- Town Boundaries
- Water Bodies
- Streams
- Major Road
- Local Road

Overlay Districts

- Aquifer Protection District
- Residential Business Overlay District
- Floodplain District

Zoning Districts

- RR - Rural Residential
- SR - Suburban Residential
- LR - Lake Residential
- VR - Village Residential
- TC - Town Center Mixed Use
- C - Commercial
- I - Industrial

OAKHAM
PAXTON
NORTH BROOKFIELD
EAST BROOKFIELD
LEICESTER
CHARLTON
Lake Lashaway
Sugden Reservoir
Moose Hill Reservoir
Shaw Pond
Cedar Meadow Pond
Stiles Reservoir
BROWNING POND RD
SKYERWOOD D R
LAKESHORE DR
PINE ACRES RD
THOMPSON POND RD
OAK LN
SHORE DR
WASHBURN DR
NORTHWEST RD
BROOKS POND CROSS RD
ALTA CREST RD
BROOKS POND RD
DEBBIE DR
MCCORMICK RD
NORTH SPENCER RD
HASTINGS RD
PAXTON RD
KITTREDGE RD
DEER RUN RD
LAMBS GROVE LEDGE AVE
GOLD NUGGET RD
WIRE VILLAGE RD
LAUREL LN
OAKLAND DR
DONNELLY CROSS RD
COONEY RD
DONNELLY RD
NORTH BROOKFIELD RD
NORCROSS RD
PAUL S DR
WOODSIDE RD
SMITHVILLE CROSS RD
WILSON ST
BOND ST
EAST MAIN ST
PLEASANT ST
GRANT ST
LINCOLN ST
HIGHLAND ST
LAKE ST
ROYS DR
MAIN ST
POLAR SPRING RD
SMITHVILLE RD
OLD FARM RD
MEADOW RD
HIGH ST
GROVE ST
POPE ST
IRVING ST
SPRING ST
MAY ST
DALE ST
SUNSET LN
FOURTH AVE
SCHOOL ST
MAIN ST
ELM ST
CHERRY ST
CROSS ST
VALLEY ST
CHESTNUT ST
CLARK ST
MCDONALD ST
TEMPLE ST
MECHANIC ST
MAPLE ST
TREADWELL DR
OLDE MAIN ST
DEWEY ST
BIXBY RD
WEST MAIN ST
GREENVILLE ST
KINGSBURY RD
CONDON DR
SOUTH SPENCER RD
PODUNK PIKE
DEPOT RD
ALIX RD
LYFORD RD
GALE DR
HOWE RD
ASH ST
R JONES RD
EAST CHARLTON RD
G H WILSON RD
I CAPEN RD
MARTIN RD
SUNBERG RD
GAUTHIER RD
CRANBERRY MEADOW RD
CHARLTON RD
BACON HILL RD
MARBLE RD
CHICKERING RD
CLARK RD
WILSON AVE
LAKE AVE
BUTEAU RD
BORKUM RD
SHERRY LN
TAYLOR DR
TOM CASEY RD
SOUTH SPENCER RD
HEBERT RD
JOLICOEUR RD
WILLIAM CASEY RD
JOLICOEUR AVE
BRIARCLIFF LN
JACKS WAY
31
9
49

Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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N W E S

Town of Spencer, Massachusetts

Date: 4/24/2019 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_03_Zoning_11x17.mxd

SOILS & GEOLOGIC FEATURES

OPEN SPACE AND RECREATION PLAN

LEGEND

- Town Boundaries
- Major Road
- Water Bodies
- Local Road
- Streams
- AUL Location*
- Prime Farmland Soils (NRCS Soils-WORC. S)
- MassDEP Tier 21E Sites**

NRCS SSURGO-Certified Soils (WORC. S)
(Dominant Drainage Class)

- Excessively drained
- Moderately well drained
- Somewhat excessively drained
- Poorly drained
- Very poorly drained
- Well drained
- Not Classified

* The DEP Oil or Hazardous Materials Sites with Activity and Use Limitation (AUL) datalayer is a statewide point dataset containing the approximate location of oil or hazardous material release/disposal sites where an AUL has been filed. The sites mapped in this datalayer represent only a subset of the total reported release sites tracked by MassDEP BWSC.

An AUL provides notice of the presence of oil and/or hazardous material contamination remaining at the location after a cleanup has been conducted pursuant to Chapter 21E and the MCP.
--Description From MassGIS website
http://www.mass.gov/mgis/aul.htm.
Data current as of 01/2019

**Location data contained in this datalayer are based on MassDEP staff interpretation of information provided by PRPs and their LSPs. Point features in this datalayer should ONLY be considered as an "approximation" or "best estimate" of site locations based on the information submitted to the MassDEP BWSC. The accuracy and completeness of the information submitted has not been verified by MassDEP.
----Description From MassGIS website
See the MassGIS data layer description page for full data disclaimer.
http://www.mass.gov/mgis/c21e.htm
Data current as of 01/2019

Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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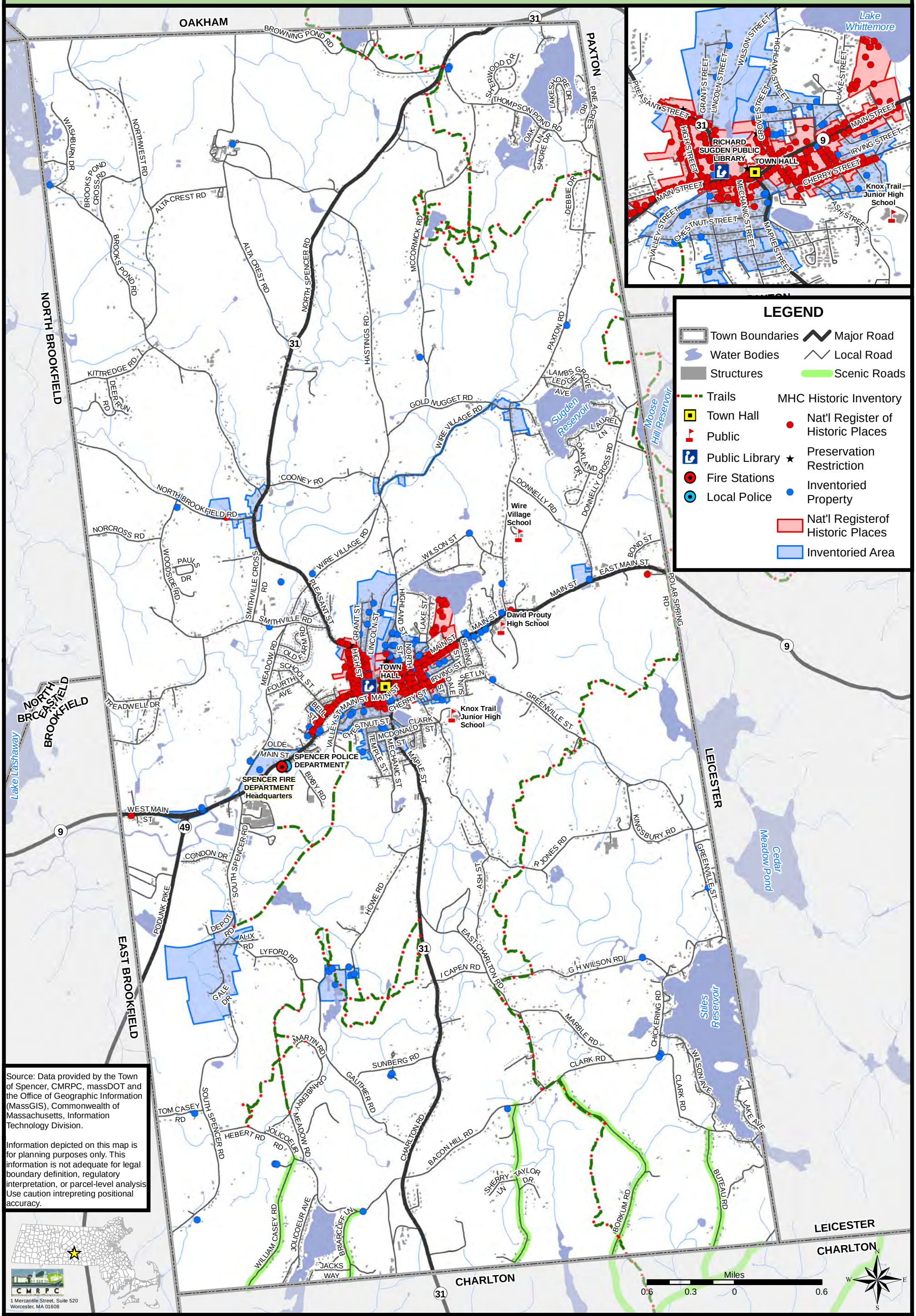
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Town of Spencer, Massachusetts

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UNIQUE FEATURES

OPEN SPACE AND RECREATION PLAN



Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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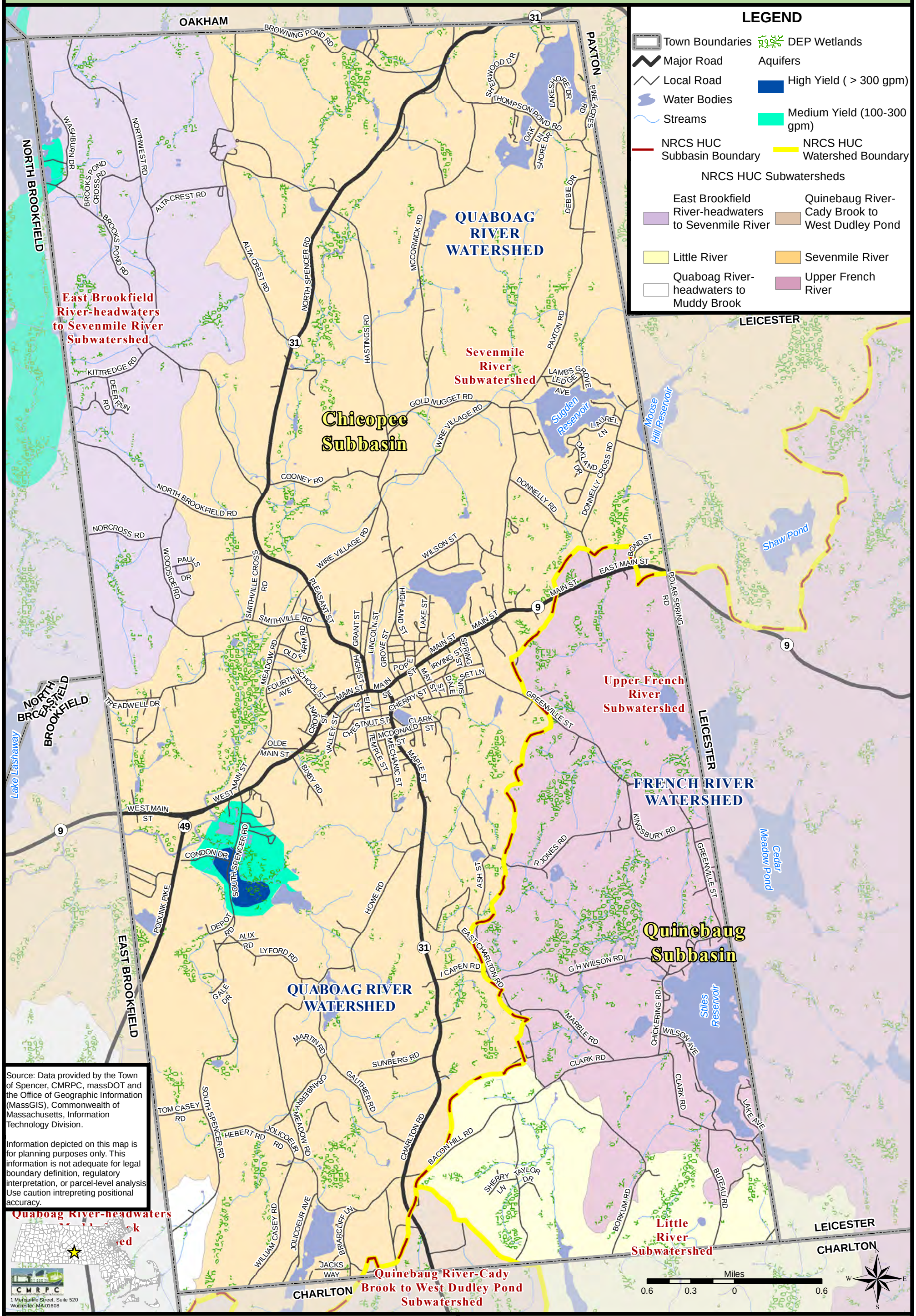
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Worcester, MA 01608

Town of Spencer, Massachusetts

Date: 5/21/2020 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_05_Unique_Features_11x17.mxd

WATER RESOURCES MAP (PART A)

OPEN SPACE AND RECREATION PLAN

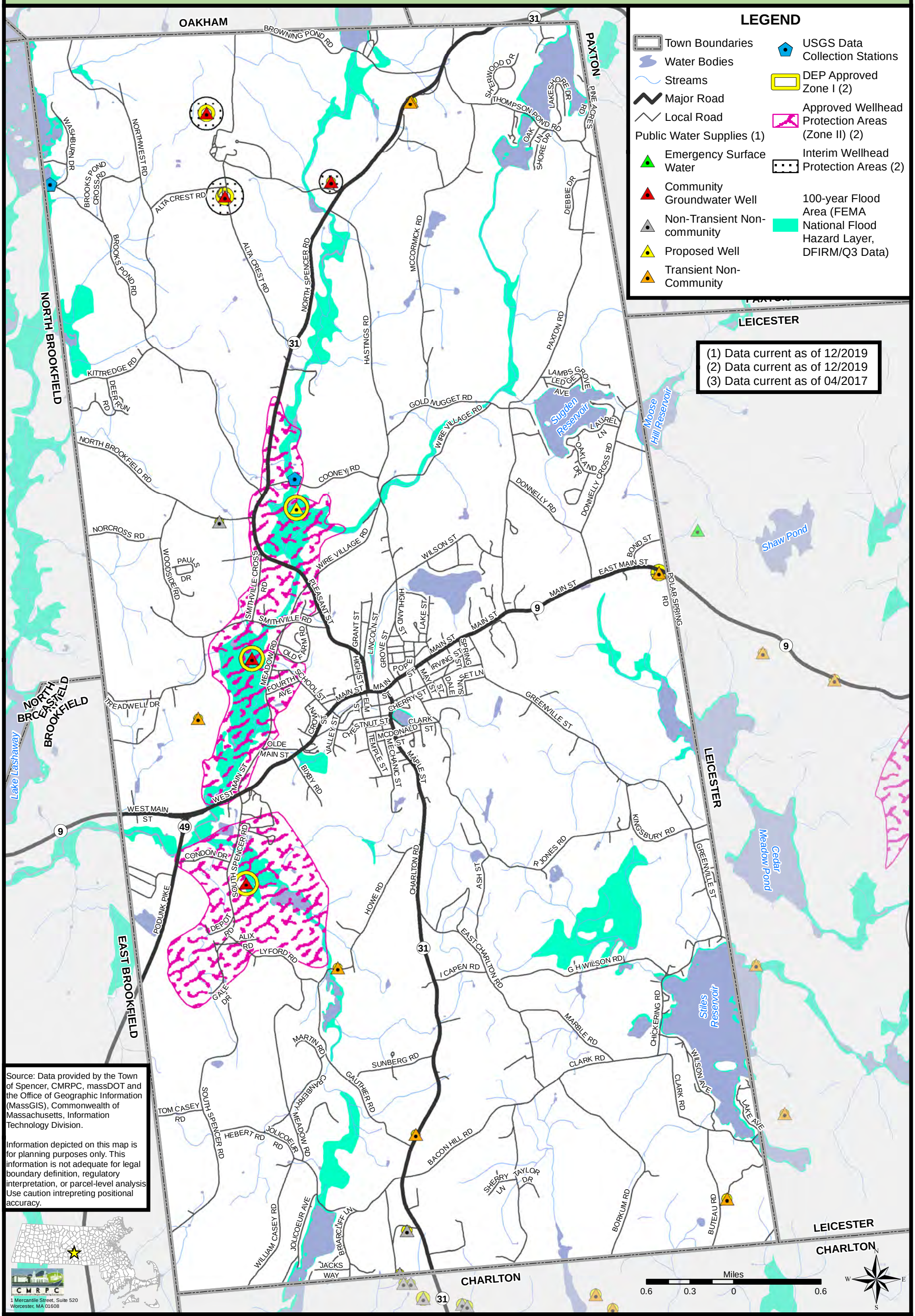


Town of Spencer, Massachusetts

Date: 5/6/2020 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_06_Water_Resources_A_11x17.mxd

WATER RESOURCES MAP (PART B)

OPEN SPACE AND RECREATION PLAN



LEGEND

- Town Boundaries
- Water Bodies
- Streams
- Major Road
- Local Road

Public Water Supplies (1)

- Emergency Surface Water
- Community Groundwater Well
- Non-Transient Non-community
- Proposed Well
- Transient Non-Community
- USGS Data Collection Stations
- DEP Approved Zone I (2)
- Approved Wellhead Protection Areas (Zone II) (2)
- Interim Wellhead Protection Areas (2)
- 100-year Flood Area (FEMA National Flood Hazard Layer, DFIRM/Q3 Data)

(1) Data current as of 12/2019
(2) Data current as of 12/2019
(3) Data current as of 04/2017

Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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Worcester, MA 01608

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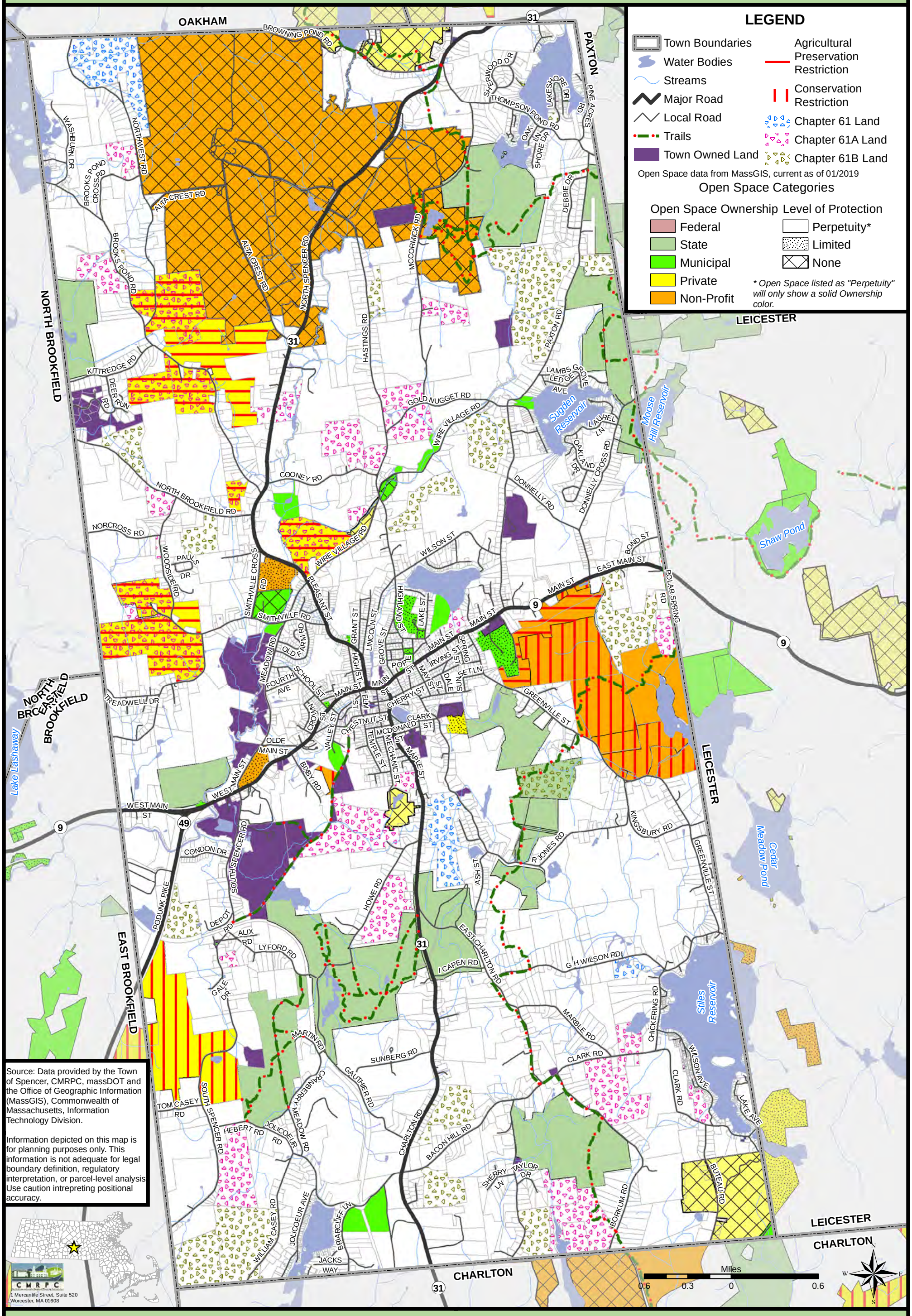
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Town of Spencer, Massachusetts

Date: 5/19/2020 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_07_Water_Resources_B_11x17.mxd

OPEN SPACE INVENTORY

OPEN SPACE AND RECREATION PLAN



LEGEND

- Town Boundaries
- Water Bodies
- Streams
- Major Road
- Local Road
- Trails
- Town Owned Land
- Agricultural Preservation Restriction
- Conservation Restriction
- Chapter 61 Land
- Chapter 61A Land
- Chapter 61B Land

Open Space data from MassGIS, current as of 01/2019

Open Space Categories

Open Space Ownership	Level of Protection
Federal	Perpetuity*
State	Limited
Municipal	None
Private	
Non-Profit	

** Open Space listed as "Perpetuity" will only show a solid Ownership color.*

Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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Worcester, MA 01608

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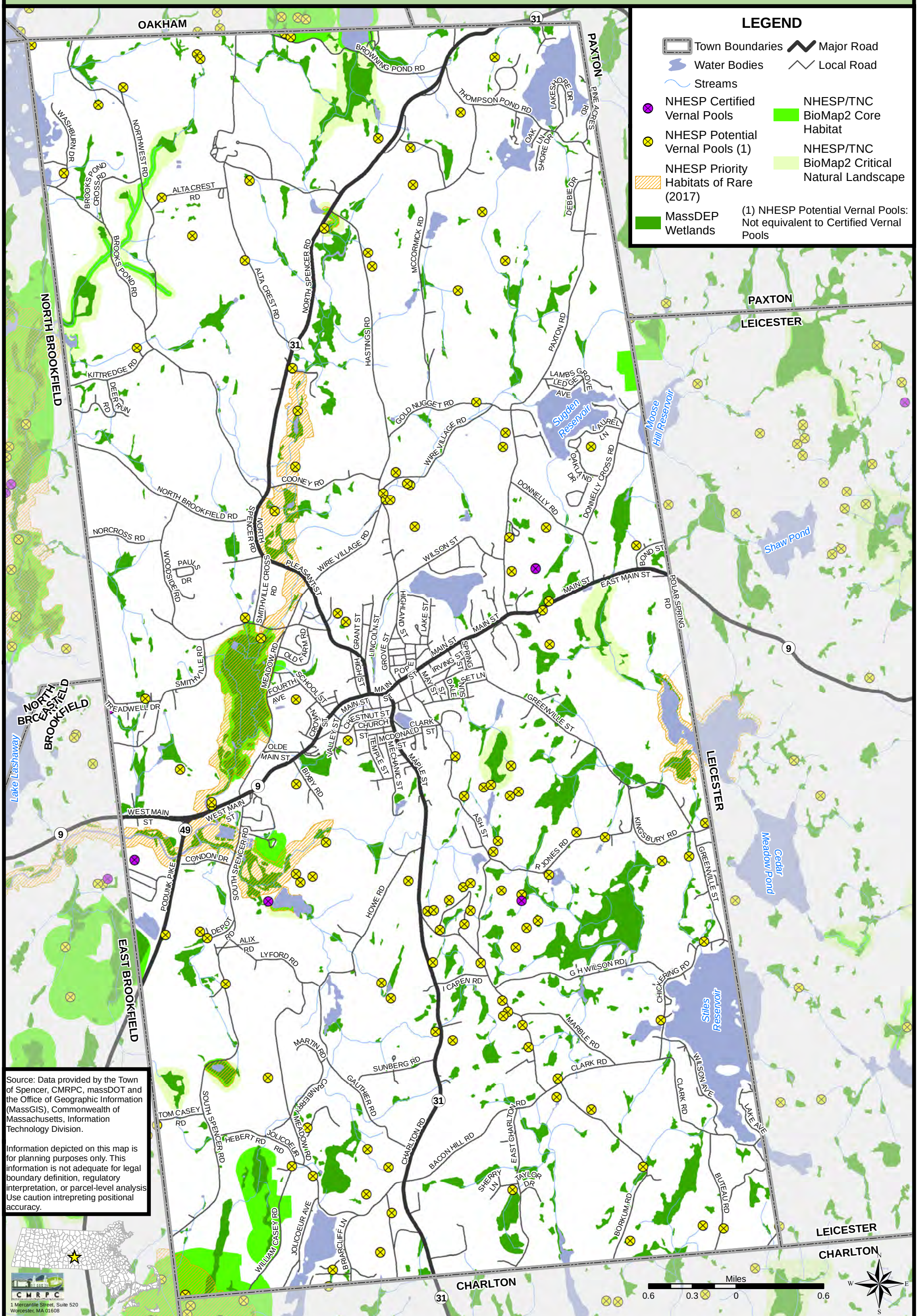
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Town of Spencer, Massachusetts

Date: 5/6/2020 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_08_Open_Space_11x17.mxd

HABITAT FEATURES

OPEN SPACE AND RECREATION PLAN



Town of Spencer, Massachusetts

Date: 6/3/2020 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_09_Habitat_11x17.mxd

ACTION PLAN
OPEN SPACE AND RECREATION PLAN

Goal 3: Enhance Recreation Opportunities for Town residents and visitors

Objectives:

1. Increase awareness and enjoyment of recreation facilities and programs
2. Provide for maintenance and improvement of existing Town recreation facilities.
3. Improve water quality in Lake Whittemore
4. Enhance and expand Spencer's trail network where appropriate to provide access to existing parks, historic sites and conservation lands.
5. Develop financial plan to support expansion of recreation opportunities.

Goal 4: Preserve Spencer's Open Spaces and Natural Heritage

Objectives:

1. Protect Open Spaces for Wildlife Habitat
2. Preserve farmlands and forest lands
3. Enhance and increase amount of conservation lands
4. Protect and enhance lands available for hunting and fishing

Goal 2: Preserve Spencer's rural, small-town character

Objectives:

1. Manage land uses along major roads (For example, Routes 31 and 9).
2. Preserve and enhance the Town center.
3. Preserve and enhance the Town gateways.
4. Develop tools to manage Town growth.
5. Preserve the Town's historic character.

Goal 1: Protect valuable water resources from adverse impacts.

Objectives:

1. Protect the Town's water supply
2. Preserve watersheds, including those of rivers, lakes, and streams.
3. Preserve the lands adjacent to rivers, lakes and streams.

- NHESP Certified Vernal Pools
- Public Water Supplies (1)
- Dams
- Trails
- Town Owned Land
- Scenic Road
- Agricultural Preservation Restriction
- Conservation Restriction
- Chapter 61 Land
- Chapter 61A Land
- Chapter 61B Land
- Approved Wellhead Protection Areas (Zone II) (1)
- Interim Wellhead Protection Areas (1)
- NHESP Priority Habitats of Rare (2017)
- Nat'l Registerof Historic Places
- Inventoried

(1) Data current as of 12/2019

Source: Data provided by the Town of Spencer, CMRPC, massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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CMRPC
1 Mercantile Street, Suite 520
Worcester, MA 01608

Open Space data from MassGIS, current as of 01/2019

Open Space Ownership	Level of Protection
Federal	Perpetuity*
State	Limited
Municipal	None
Private	
Non-Profit	

** Open Space listed as "Perpetuity" will only show a solid Ownership color.*

Town of Spencer, Massachusetts

Date: 2/4/2021 Document Path: H:\Projects\O_Spencer_GIS\Subprojects\m280_osrp\osrp280_10_Action_Plan_11x17.mxd

SPENCER PARKS & RECREATIONAL FACILITIES

ID	Parks & Trails
1	Bemis Memorial Park
2	Burncoat Pond Wildlife Sanctuary
3	Camp Marshall
4	Four Chimneys WMA
5	Luther Hill Park
6	Moose Hill WMA
7	O'Gara Park
8	Powder Mill Park
9	Isaac Prouty Park
10	Ralph Warren Park
11	Sibley/Warner Farms CR
12	Spencer State Forest
13	Depot Rail Trail

ID	LAKES & PONDS
A	Brooks Pond
B	Cranberry Meadow Pond
C	Howe Pond
D	Sugden Reservoir
E	Thompson Pond
F	Lake Whittemore
G	Stiles Reservoir

Legend

- Town Boundary
- Water Bodies
- Streams
- Major Road
- Local Road
- Active Railroad
- The Midstate Trail
- Spencer Depot Rail Trail

1 in = 0.6 miles

Last Updated: 1/19/2016

Source: Data provided by the Central Massachusetts Regional Planning Commission (CMRPC), massDOT and the Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, Information Technology Division.

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Produced by
CMRPC
2 Washington Square,
Union Station
Worcester, MA 01604

What makes a Scenic Road?

Any road, other than a numbered route or state highway may be designated as a scenic road by the town. However, a numbered route may only be designated if its entire length is contained within the boundaries of the town, and no part of it is owned or maintained by the commonwealth.

When & How

A request from the Historical Commission of Spencer to have the following roads designated as scenic roads passed with a vote from the town residents during a town meeting held on May 19, 1977.

- **Borkum Road**
- **Buteau Road**
- **Wm Casey Road**
- **E. Charlton Road**
- **Cranberry Meadow Road**

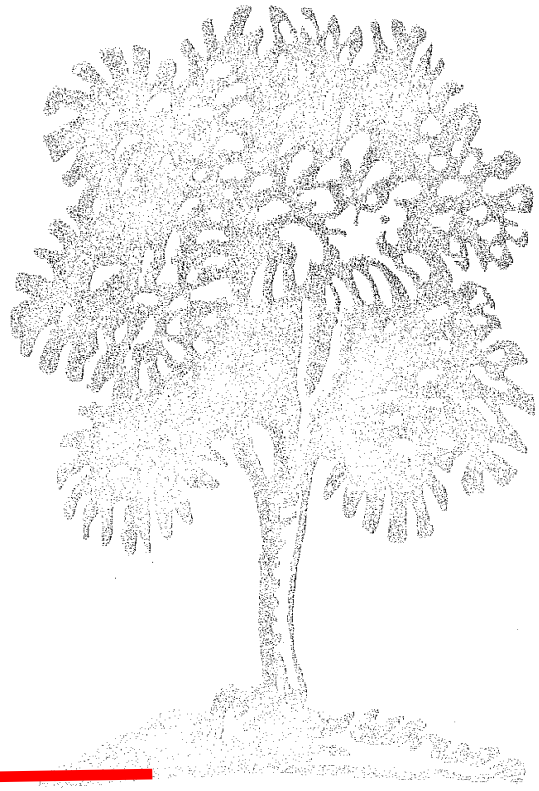
Improvements

Any work done in the public right of way of a scenic road shall not involve or include cutting or removal of trees or tearing down or destruction of stone walls, or portions thereof, without prior written consent from the Planning Board, after a public hearing.

Fines

Violations of Chapter 40 Section 15C of the General Laws of Massachusetts shall be punished by a fine not to exceed three hundred dollars.

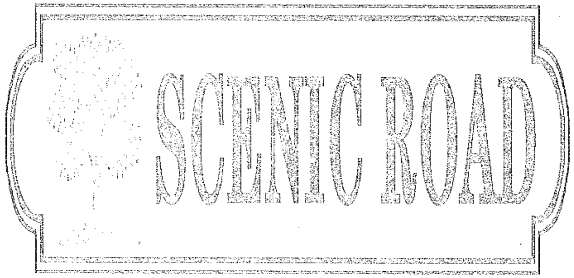
Dedicated to
Ms. Anna Marie Hughes



For questions about designation:
Spencer Historical Commission
at 508-885-7500 x 186

For questions about public hearings:
Office of Development & Inspectional
Services at 508-885-7500 x 180

A DRIVING TOUR



of SPENCER, MASS.

SCENIC ROAD

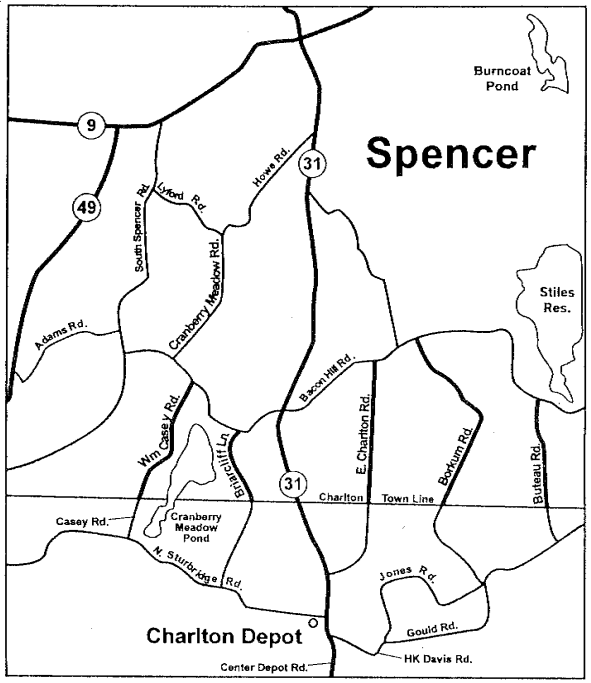
Little is known about the people who once lived and worked in these areas but.... Most were farmers, all hard working and by their efforts contributed to the growth and development of their town.

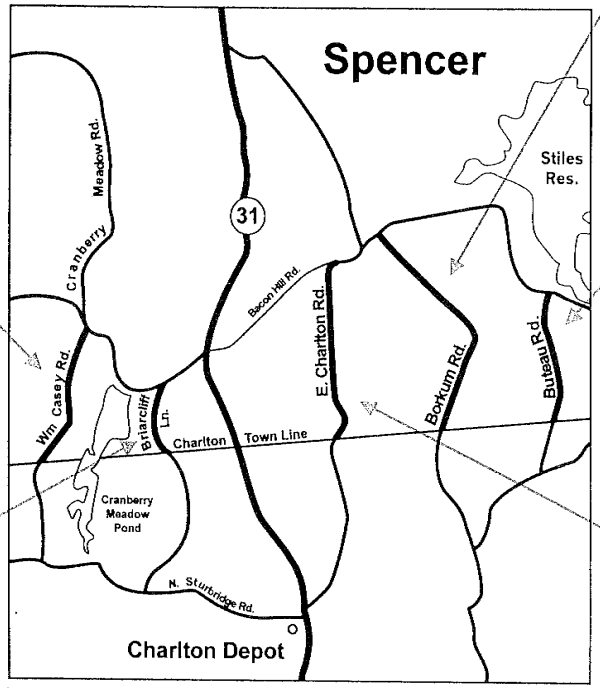
WM CASEY ROAD -

William Casey, a farmer, was named Commissioner of Agriculture in 1937 by Governor Charles E. Hurley. He also served 8 years as a member of the Massachusetts House of Representatives and as a local selectman for 13 years. Mr. Casey died on October 11, 1954, at the age of 69. He is buried in Holy Rosary and St. Mary's Cemetery on Rte 9 in Spencer.

BRIARCLIFF LANE -

During a special town meeting in October of 1987 the town voted to change the name of Cranberry Meadow Road, which runs from the railroad bridge southwesterly to the Charlton Town line, to Briarcliff Lane.





SCENIC ROAD

BORKUM ROAD -

Named after Sigmund Boaken who was born in Russia on January 1, 1876. Mr. Boaken died at the age of 63 in February 1939. Years ago the name got lost in translation and the road is now called Borkum Road.

BUTEAU ROAD -

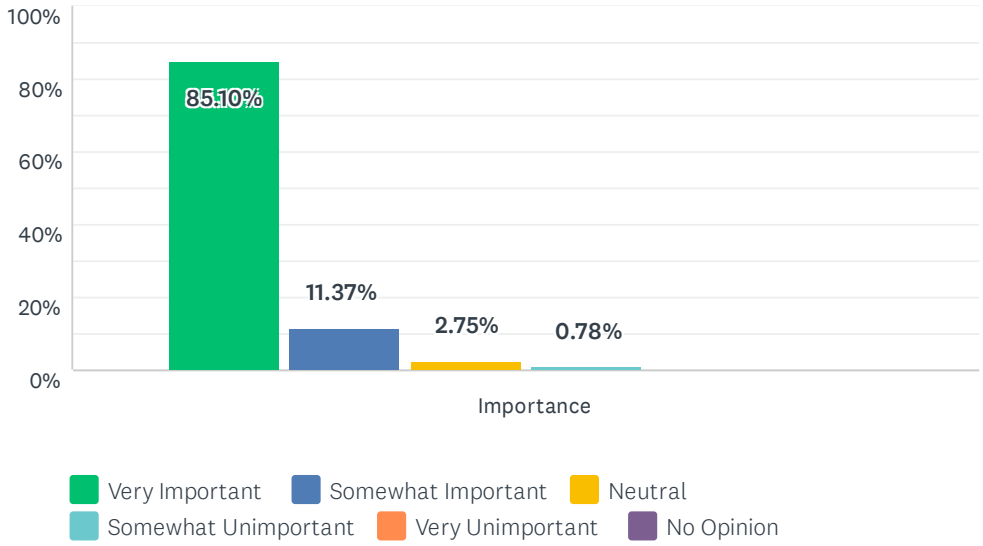
Named after farmer Theophile Buteau who came to the U.S. from Canada with his wife Aldia and family in 1899. He settled in Southbridge then moved to Spencer where he lived on Charlton Road. Mr. Buteau died on May 21, 1944, at the age of 83.

EAST CHARLTON ROAD -

The approximate 6,000 ft road was used for travel to and from the Town of Charlton.

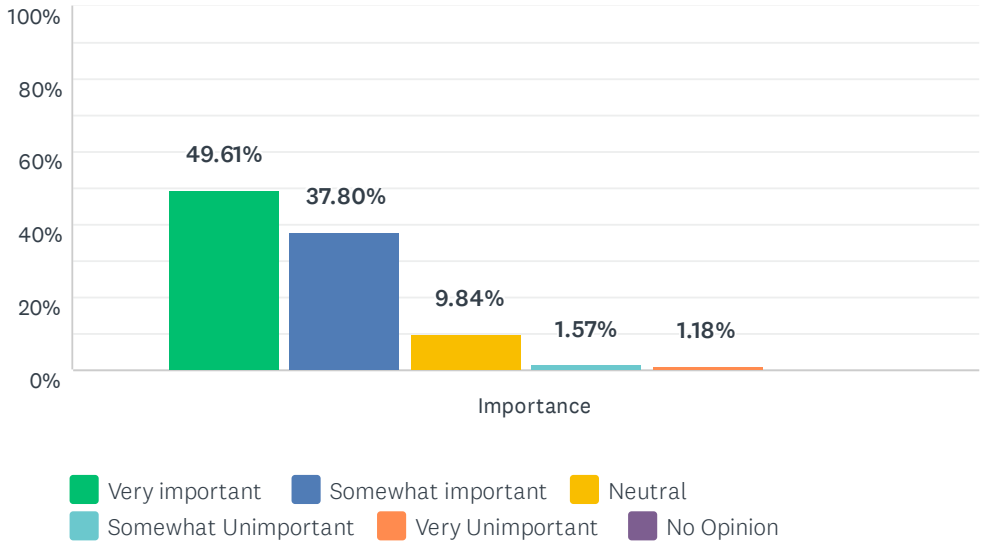
Q1 How important is it to you to preserve open space and natural areas, recreation areas, and historical sites in Spencer?

Answered: 255 Skipped: 2



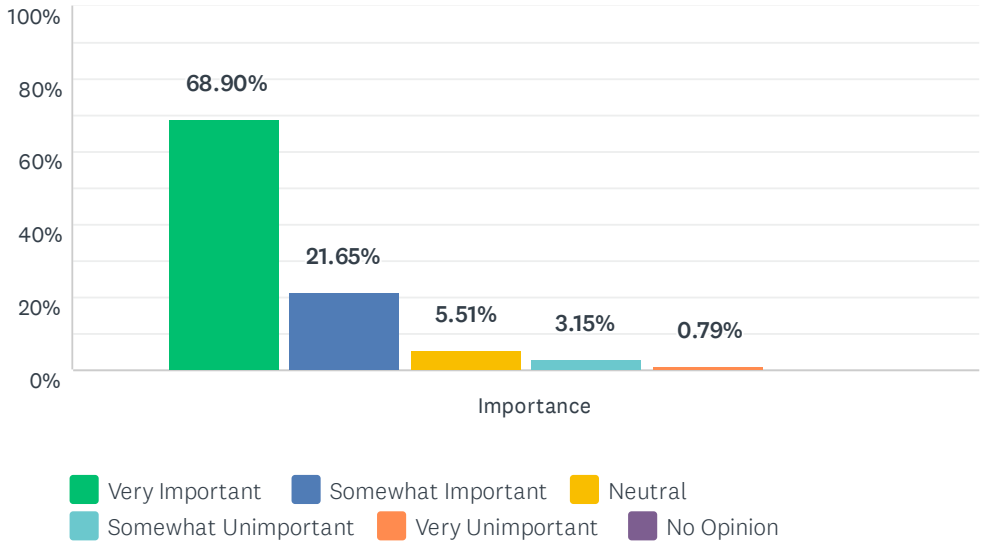
Q2 How important is the availability of designated and accessible parking areas for open space and natural areas, recreation areas, and historical sites in Spencer?

Answered: 254 Skipped: 3



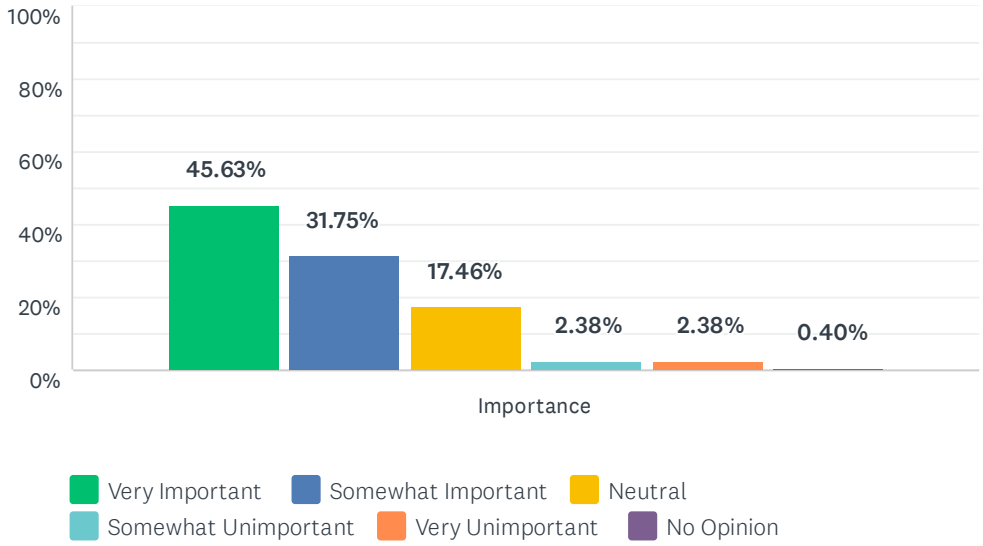
Q3 How important is it to be able to access open space and natural areas, trails, recreation destinations, and historical sites in Spencer by walking, biking or snowmobiling?

Answered: 254 Skipped: 3



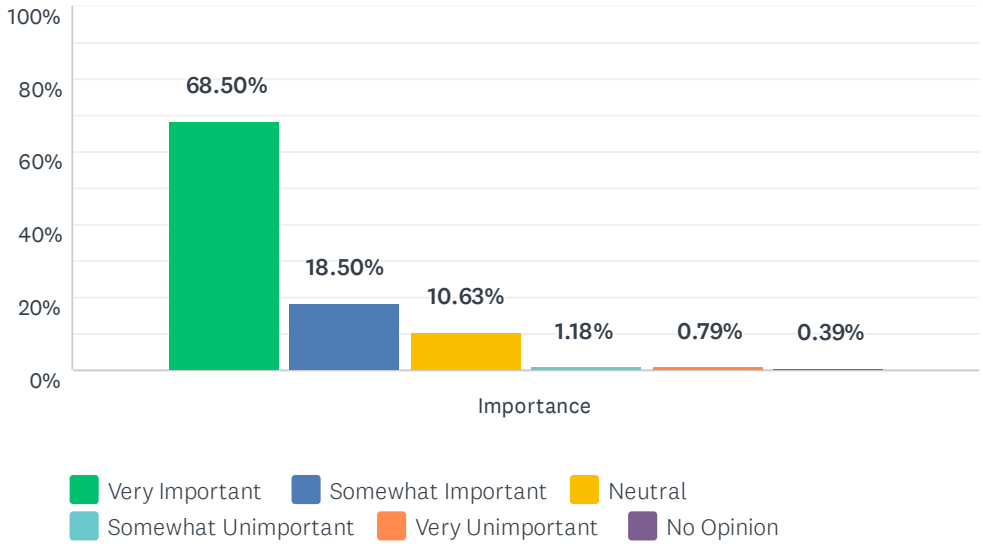
Q4 How important are open space and recreational opportunities for promoting tourism and economic development in Spencer?

Answered: 252 Skipped: 5



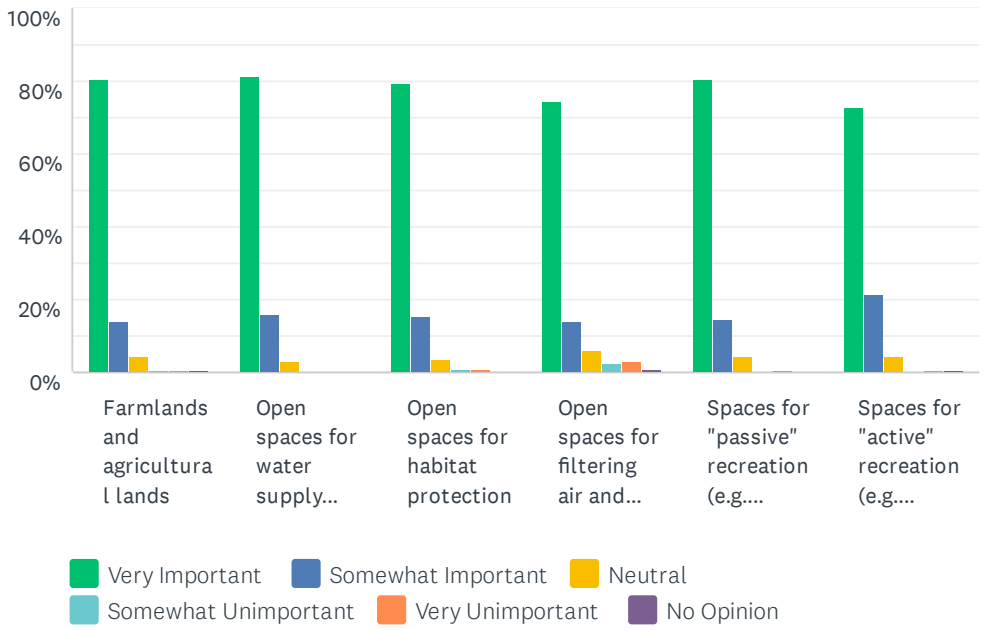
Q5 How important are youth and adult recreational and cultural programming opportunities in Spencer?

Answered: 254 Skipped: 3



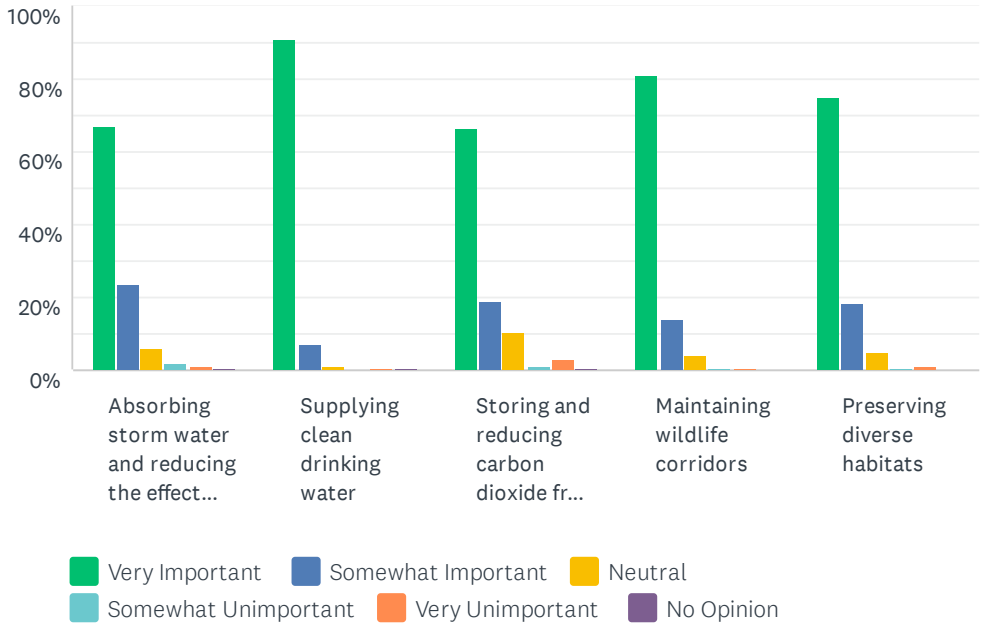
Q6 How important is it to you to preserve each of the following:

Answered: 254 Skipped: 3



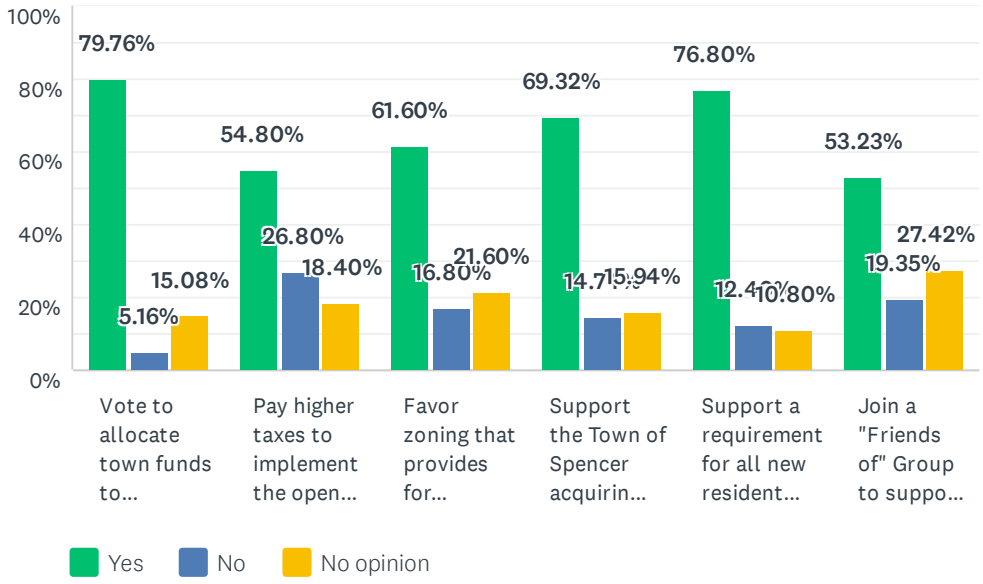
Q7 Open space and natural land can help reduce the effects of climate change by providing a variety of "services" to both the local and global community. How important are the following services to you?

Answered: 254 Skipped: 3



Q8 In order to preserve open spaces and promote recreational opportunities in Spencer, would you be willing to:

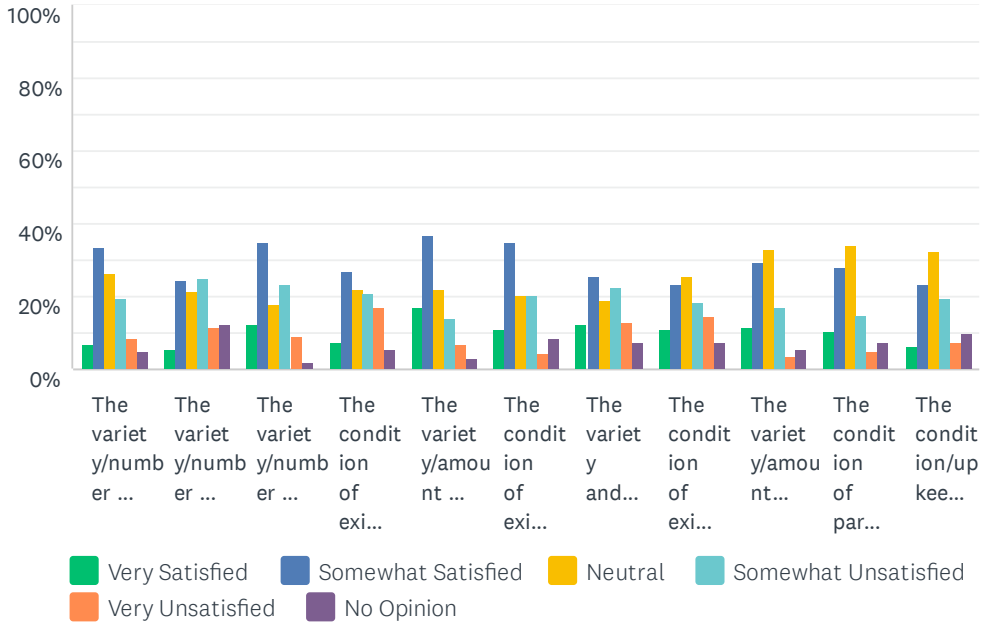
Answered: 252 Skipped: 5



#	OTHER (PLEASE SPECIFY)	DATE
1	Less trash on the trails	12/17/2019 8:13 AM
2	Adopting the CPA	12/16/2019 12:01 PM
3	land trust member	11/13/2019 4:00 PM
4	We should have a Community Preservation Fund	11/10/2019 7:58 AM
5	Add a dog park	11/8/2019 3:42 PM
6	Need more info on question 8	11/8/2019 12:02 PM
7	Feel strongly that we should not allow more unsightly solar panels to overtake our fields & pastures. We are pushing wildlife farther and farther out of their natural habitats.	10/28/2019 6:57 PM
8	Need open space for ATV"s	10/21/2019 11:10 PM

Q9 How satisfied are you with:

Answered: 226 Skipped: 31

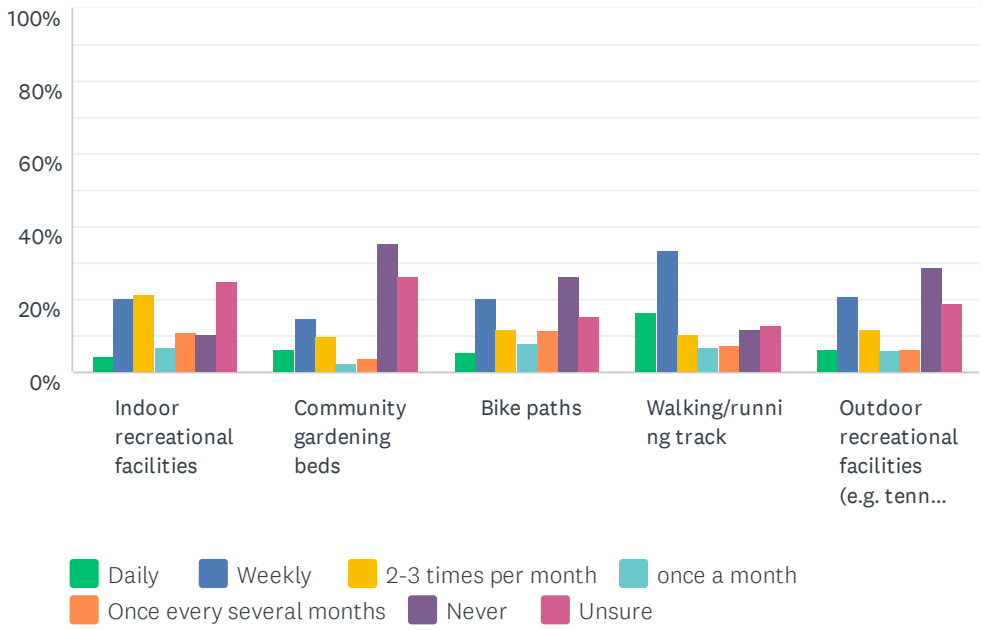


	VERY SATISFIED	SOMEWHAT SATISFIED	NEUTRAL	SOMEWHAT UNSATISFIED	VERY UNSATISFIED	NO OPINION	TOTAL
The variety/number of recreational programs/opportunities for adults	7.08% 16	33.63% 76	26.55% 60	19.47% 44	8.41% 19	4.87% 11	226
The variety/number of recreational programs/opportunities for children	5.31% 12	24.34% 55	21.68% 49	24.78% 56	11.50% 26	12.39% 28	226
The variety/number of outdoor recreational facilities	12.39% 28	34.96% 79	18.14% 41	23.45% 53	8.85% 20	2.21% 5	226
The condition of existing outdoor recreational facilities	7.56% 17	27.11% 61	22.22% 50	20.89% 47	16.89% 38	5.33% 12	225
The variety/amount of existing trails and other passive/active rec	16.89% 38	36.89% 83	21.78% 49	14.22% 32	7.11% 16	3.11% 7	225
The condition of existing trails, and other passive/active rec	11.11% 25	35.11% 79	20.44% 46	20.44% 46	4.44% 10	8.44% 19	225
The variety and/or amount of existing sidewalks.	12.50% 28	25.45% 57	19.20% 43	22.32% 50	12.95% 29	7.59% 17	224
The condition of existing sidewalks.	10.76% 24	23.32% 52	25.56% 57	18.39% 41	14.35% 32	7.62% 17	223
The variety/amount parking facilities for open spaces	11.61% 26	29.46% 66	33.04% 74	16.96% 38	3.57% 8	5.36% 12	224
The condition of parking facilities for open spaces	10.67% 24	28.00% 63	33.78% 76	15.11% 34	4.89% 11	7.56% 17	225
The condition/upkeep of historical sites in Spencer	6.67% 15	23.56% 53	32.44% 73	19.56% 44	7.56% 17	10.22% 23	225

#	DO YOU HAVE ANY SUGGESTIONS?	DATE
1	need to invest consistently as a community in our parks and in recreational programming	12/26/2019 12:57 PM
2	Adopt the CPA	12/16/2019 12:02 PM
3	Target grants and get funding	11/28/2019 8:15 PM
4	Fix buildings down town they are very ugly , new sidewalks are great but down town not so much	11/26/2019 3:18 PM
5	Consider safety in places like the rail trail when making changes.	11/25/2019 5:12 PM
6	More parking spaces for horse trailers	11/20/2019 5:27 PM
7	open space preservation should strongly consider access routes linking various plots. For example, linking the Small Farm parcel with Camp Marshall and Buck Hill trails.	11/19/2019 8:37 PM
8	DOG. PARK. This town needs a dog park. I want to socialize with other pet owners in this town and not feel so darn alone.	11/19/2019 3:59 PM
9	fix the DPHS track	11/13/2019 4:02 PM
10	"friends of" groups to monitor trash, vandalism etc. "friends of" depot trail etc.	11/11/2019 9:09 AM
11	I would love to see a dog park added to the town	11/8/2019 3:43 PM
12	Downtown sidewalks are wonderful!	11/7/2019 6:37 PM
13	the depot trail is a waste. Not safe to walk-needs to be made safer	11/5/2019 11:28 AM
14	Update or eliminate old equipment at Luther Hill Park. Picnic tables included. Also new tables at the playground in town. Do something about the run down buildings surrounding Main Street. Have an active community center with gym and fitness classes as well as after school activities (similar to Oxford's community center).	11/4/2019 6:12 PM
15	Instead of another senior living building, how about a rec center for the kids living in Spencer? Let's give them A place to go that's entertaining and drug-free? A place like this is overdue in this town.	11/4/2019 1:08 PM
16	The rail trail desperately needs more parking on the South Spencer Rd end	11/4/2019 11:13 AM
17	Although upkeep to Howe Park seems to have improved recently, much could be done to further improve the area. Walking in the woods can be hazardous with branches down and clutter in the paths.	10/28/2019 7:05 PM
18	stop solar development	10/24/2019 7:51 PM
19	Atvs need to be included in outdoor recreation instead of frowned upon..	10/23/2019 11:03 PM
20	Raise taxes. Our town is turning into a slum	10/22/2019 8:26 PM
21	Paving of side roads and sidewalks don't exist.	10/22/2019 10:56 AM
22	Do not expand, but make appropriate improvements on what exists	10/22/2019 10:18 AM
23	Dog park. Dog park. Dog park.	10/22/2019 6:27 AM
24	Fund the ole Cemetery North st so they can save this place!	10/21/2019 11:12 PM
25	There needs to be an open parking lot for residents on chesnut street so both ways of the street are clear for traffic. You can't even have access to the sidewalk at some points of the year.	10/21/2019 5:48 PM
26	Start fining people for blocking sidewalks with vehicles and trash containers / keeping sidewalks clear.	10/21/2019 5:24 PM
27	More youth programs. Improve the skate park	10/21/2019 4:48 PM

Q10 If provided, how often would you use the following:

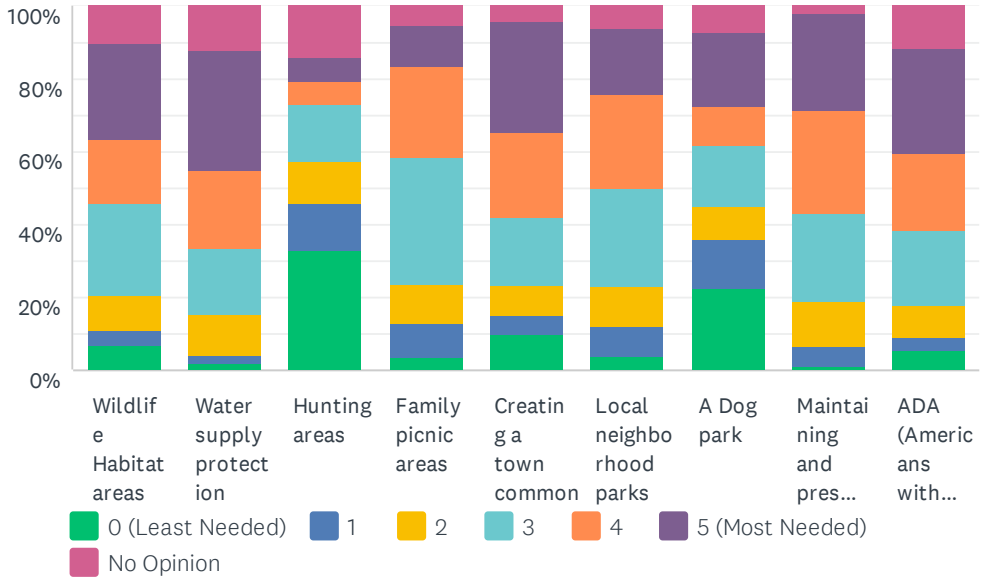
Answered: 226 Skipped: 31



#	DO YOU HAVE ANY SUGGESTIONS?	DATE
1	80 years old and home bound	12/17/2019 8:40 AM
2	Community Center for youths to stay positive	12/17/2019 8:14 AM
3	More hiking/walking trails	12/17/2019 8:01 AM
4	Outdoor gun range and archery range	12/16/2019 3:19 PM
5	Basketball court, preferably lighted at night or indoor.	12/16/2019 12:02 PM
6	Free Movies	12/16/2019 11:54 AM
7	We need a pool for winter and summer recreation that al the community can enjoy since we lose our water resources 10 months out of the year at least.	11/28/2019 8:15 PM
8	Pickle ball courts , fun for everyone	11/26/2019 3:18 PM
9	Volleyball nets	11/25/2019 7:38 PM
10	Somewhere that’s safe for runners/walkers would be great. We lack sidewalks and the trails can be unsafe. Maybe updating the outdoor recreation at the high school could be a win for the school and for the public that has access to it? Especially the running track.	11/25/2019 5:12 PM
11	We are elders and would not necessarily use but support the need for recreational facilities.	11/24/2019 4:11 PM
12	I don't bike, but would use bike paths for horseback riding, if allowed.	11/19/2019 8:37 PM
13	again... DOG PARK.	11/19/2019 3:59 PM
14	open up schools after hours, summers, wknds. for basketball or yoga, aerobics classes, weight rooms, walking paths at Luther Hill, form activities club like Nancy Andrews used to do where there are field trips or events for kids/families. organized activities such as Wed. night basketball, baseball (summer) leagues, hiking clubs, bicycle clubs. Use Luther Hill for more social and recreational events. A small movie theater would be wonderful. The was a movie theater years ago where our post office now sits. Maybe movie night once a month at one of the schools. We need more open space. Spencer should have a moratorium on farms selling out to the solar operations. We have lots precious prime agricultural lands, lost access to some water ways and lost the charm or rolling hills we once had.	11/11/2019 9:09 AM
15	Community gardens a great idea(I have a large garden of my own)-we need more and better sidewalks, no parking allowed on them!	11/10/2019 7:58 AM
16	Where are there bike trails??	11/8/2019 12:04 PM
17	Walking groups would be a great addition	11/5/2019 11:28 AM
18	Please make a rec center for the youth of this town.Give them something else to do besides get in trouble and do drugs because it’s an elderly community.	11/4/2019 1:08 PM
19	Dog park	11/4/2019 11:13 AM
20	New skatepark	11/4/2019 11:08 AM
21	We just need to maintain (and keep clean) the existing tennis courts, basketball courts, and the skate park. Luther Hill, O'gara, the high school and Knox Trail school provide most of these. Howe State Park is severely lacking maintenance and could provide so much.	10/30/2019 5:59 PM
22	I think having spaces for Youth is the most important. Like reopening the beach and skate park	10/30/2019 12:15 PM
23	Seniors, especially men, have very limited opportunity to meet with each other.	10/28/2019 7:05 PM
24	Turf sporting fields outdoors and an indoor sporting facility like FiveStar in Oxford or Teamworks in Northboro or the Habitat in Uxbridge. There is nothing like that anywhere local.	10/22/2019 9:10 PM
25	Have a plan to prevent atv and dirt bikes on trails	10/22/2019 7:29 PM
26	We don’t necessarily need more but we need to improve what we have. Good and SAFE walking trails I believe would be the most used. Teens and tweens need more facilities.	10/22/2019 6:53 AM
27	The community would greatly benefit from a designated dog park, where dogs can run freely in an Inclosed fence.	10/21/2019 5:48 PM

Q11 What do you consider to be the biggest unmet open space need in Spencer?

Answered: 207 Skipped: 50

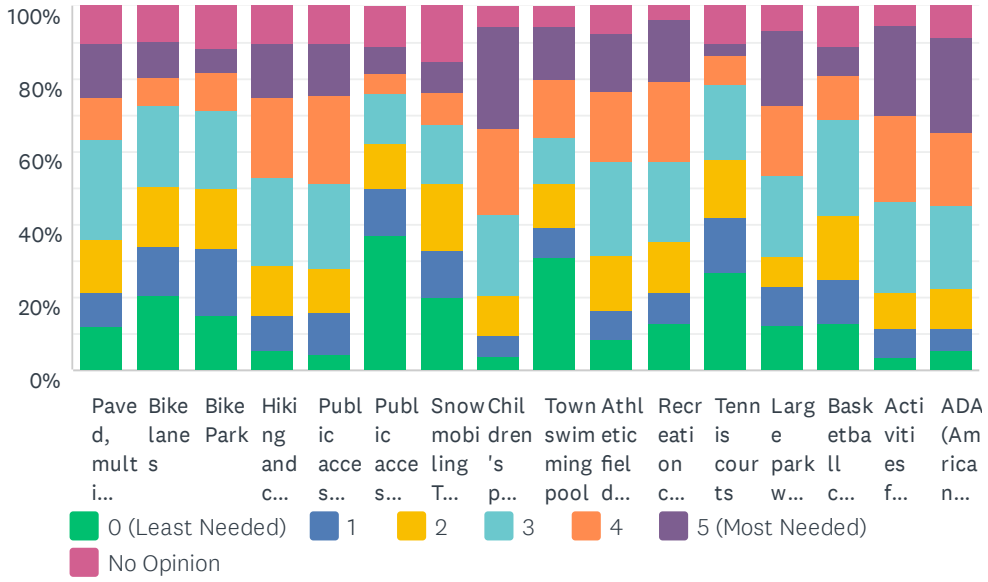


	0 (LEAST NEEDED)	1	2	3	4	5 (MOST NEEDED)	NO OPINION	TOTAL
Wildlife Habitat areas	6.90% 14	3.94% 8	9.85% 20	25.12% 51	17.73% 36	26.60% 54	9.85% 20	203
Water supply protection	1.96% 4	1.96% 4	11.76% 24	17.65% 36	21.57% 44	33.33% 68	11.76% 24	204
Hunting areas	33.17% 67	12.87% 26	11.39% 23	15.35% 31	6.93% 14	6.44% 13	13.86% 28	202
Family picnic areas	3.47% 7	9.41% 19	10.40% 21	35.15% 71	25.25% 51	11.39% 23	4.95% 10	202
Creating a town common	9.76% 20	5.37% 11	8.29% 17	18.54% 38	23.41% 48	30.73% 63	3.90% 8	205
Local neighborhood parks	3.90% 8	8.29% 17	10.73% 22	26.83% 55	26.34% 54	18.05% 37	5.85% 12	205
A Dog park	22.55% 46	13.24% 27	9.31% 19	16.67% 34	10.78% 22	20.59% 42	6.86% 14	204
Maintaining and preserving historical sites	0.98% 2	5.37% 11	12.68% 26	23.90% 49	28.78% 59	26.34% 54	1.95% 4	205
ADA (Americans with Disabilities Act) access to open space locations (e.g. East Woods)	5.34% 11	3.88% 8	8.74% 18	20.39% 42	21.36% 44	28.64% 59	11.65% 24	206

#	OTHER (PLEASE SPECIFY)	DATE
1	Save O'Gara Park Grandstand, adopt CPA	12/16/2019 12:05 PM
2	We need a holistic and partnership approach to maintain and develop the quality of all the open space assets in town, rather than the fiefdom approach we have at present. We need to start thinking about all the partners and build together.	11/28/2019 8:24 PM
3	We need to use the solar bylaws, as written, to prevent all of the above from being impossible to accomplish. Bylaws are ignored and if we lose our lands to solar operations, we will not have openspace land to do any of the above.	11/11/2019 9:20 AM
4	The recent updates to the downtown area are beautiful! However, there is something very bucolic and inviting about a town common in New England. So many events could be held there if we had one.	10/28/2019 7:15 PM
5	I think this asks the wrong question. Tell me what historical sites need preserving and I can quantify an opinion. What is the goal of having a town common? Holiday decorating? Activities? How can you ask if there’s a need when we don’t know how it will be use?	10/22/2019 7:06 AM

Q12 What do you consider to be the biggest unmet recreation need in Spencer?

Answered: 207 Skipped: 50

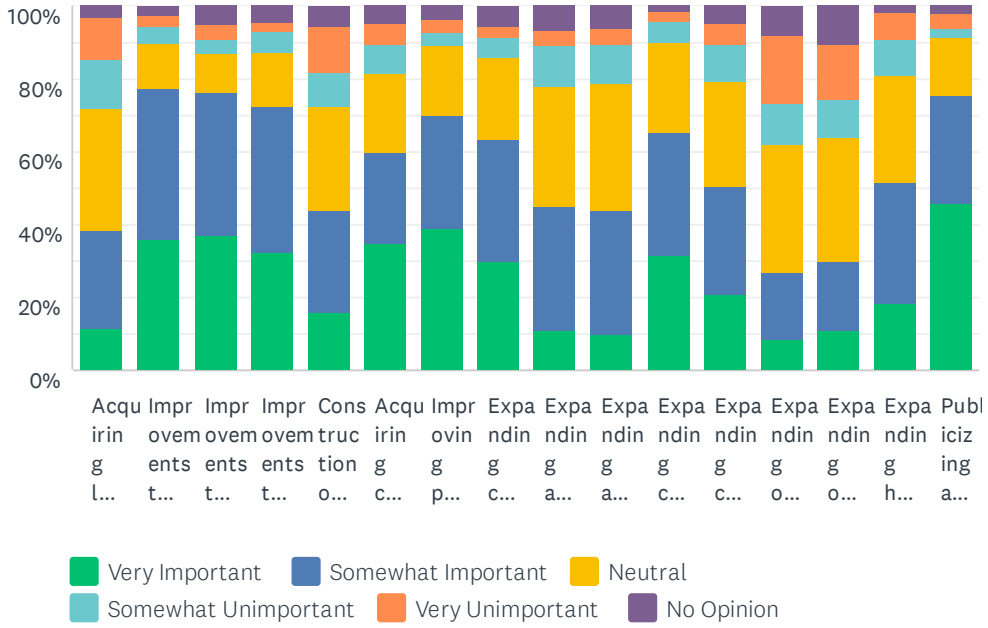


	0 (LEAST NEEDED)	1	2	3	4	5 (MOST NEEDED)	NO OPINION	TOTAL
Paved, multi-use recreational trails	11.88% 24	9.41% 19	14.85% 30	27.23% 55	11.88% 24	14.85% 30	9.90% 20	202
Bike lanes	20.50% 41	13.50% 27	16.50% 33	22.50% 45	7.50% 15	10.00% 20	9.50% 19	200
Bike Park	15.00% 30	18.50% 37	16.50% 33	21.50% 43	10.50% 21	6.50% 13	11.50% 23	200
Hiking and cross country skiing trails	5.42% 11	9.36% 19	14.29% 29	24.14% 49	21.67% 44	15.27% 31	9.85% 20	203
Public access areas to water bodies for boating or fishing	4.43% 9	11.33% 23	12.32% 25	23.65% 48	23.65% 48	14.78% 30	9.85% 20	203
Public access to areas for hunting	36.82% 74	13.43% 27	12.44% 25	13.43% 27	5.47% 11	7.46% 15	10.95% 22	201
Snowmobiling Trails	20.00% 40	13.00% 26	18.50% 37	16.00% 32	9.00% 18	8.50% 17	15.00% 30	200
Children's playgrounds	3.94% 8	5.42% 11	11.33% 23	22.17% 45	23.65% 48	28.08% 57	5.42% 11	203
Town swimming pool	30.88% 63	8.82% 18	11.76% 24	12.75% 26	15.69% 32	14.71% 30	5.39% 11	204
Athletic fields (e.g soccer, baseball, football)	8.42% 17	7.92% 16	15.35% 31	25.74% 52	19.31% 39	15.84% 32	7.43% 15	202
Recreation center building	12.87% 26	8.42% 17	14.36% 29	21.78% 44	22.28% 45	16.83% 34	3.47% 7	202
Tennis courts	27.00% 54	15.00% 30	16.00% 32	20.50% 41	8.00% 16	3.50% 7	10.00% 20	200
Large park with many facilities	12.38% 25	10.40% 21	8.91% 18	21.78% 44	19.31% 39	20.79% 42	6.44% 13	202
Basketball courts	12.81% 26	12.32% 25	17.24% 35	26.60% 54	11.82% 24	8.37% 17	10.84% 22	203
Activities for seniors	3.43% 7	7.84% 16	10.29% 21	25.00% 51	23.53% 48	25.00% 51	4.90% 10	204
ADA (Americans with Disabilities Act) accessible walking paths and facilities	5.39% 11	5.88% 12	11.27% 23	23.04% 47	20.10% 41	25.98% 53	8.33% 17	204

#	OTHER (PLEASE SPECIFY)	DATE
1	Senior Center	12/16/2019 11:57 AM
2	If recreational trails are paved, then they are not multi-use. Please do not entertain thoughts of paving trails.	11/19/2019 8:46 PM
3	We have tennis courts, basket ball courts and soccer fields. Just need to maintain them better and allow access to the public, not just students	11/11/2019 9:20 AM
4	We dont need a pool when we have a beach	10/30/2019 12:18 PM
5	Swimming would be a priority but so many of our lakes have deteriorated. Howe Park was once a beautiful lake for swimming and attracted so many people. Don't know the condition of Lake Whitemore	10/28/2019 7:15 PM
6	ATV Trails	10/21/2019 11:16 PM

Q13 What should our Town's priorities for expenditure be? Please choose how important each of the follow are...

Answered: 207 Skipped: 50

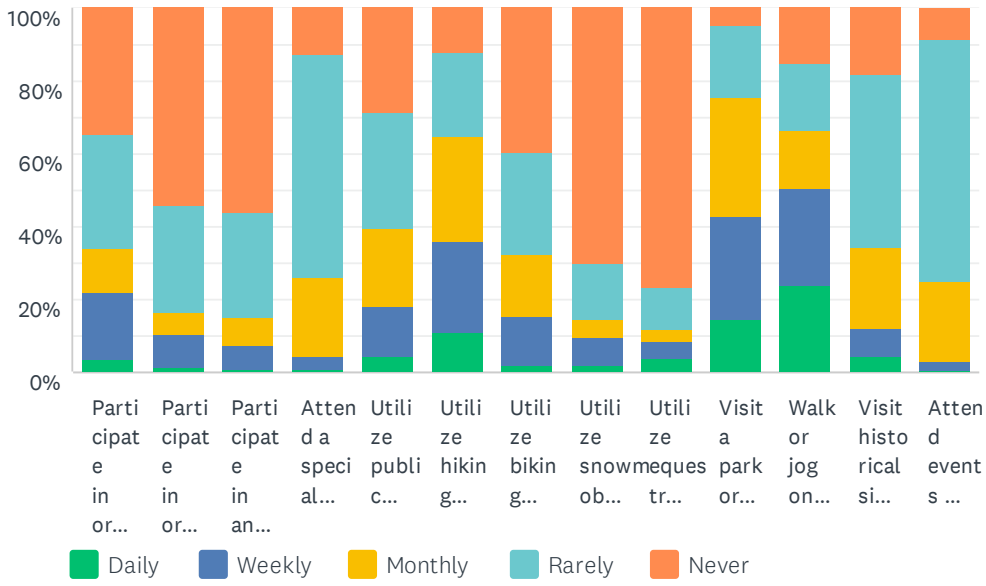


	VERY IMPORTANT	SOMEWHAT IMPORTANT	NEUTRAL	SOMEWHAT UNIMPORTANT	VERY UNIMPORTANT	NO OPINION	TOTAL
Acquiring land for new public athletic and recreation fields	11.27% 23	27.45% 56	33.33% 68	13.24% 27	11.76% 24	2.94% 6	204
Improvements to existing athletic and recreation fields	36.10% 74	41.46% 85	12.68% 26	4.39% 9	2.93% 6	2.44% 5	205
Improvements to existing recreational programming	37.07% 76	39.51% 81	10.24% 21	4.39% 9	3.90% 8	4.88% 10	205
Improvements to existing playground facilities	32.68% 67	40.00% 82	14.63% 30	5.85% 12	2.44% 5	4.39% 9	205
Construction of new playground facilities	16.02% 33	28.16% 58	28.16% 58	9.71% 20	12.62% 26	5.34% 11	206
Acquiring conservation lands for passive recreation use (e.g., trails)	35.12% 72	24.88% 51	21.46% 44	7.80% 16	6.34% 13	4.39% 9	205
Improving passive (i.e. hiking) recreation opportunities on existing conservation land	39.02% 80	31.22% 64	19.02% 39	3.90% 8	3.41% 7	3.41% 7	205
Expanding connectivity between existing hiking trails	29.76% 61	33.66% 69	22.44% 46	5.85% 12	2.93% 6	5.37% 11	205
Expanding available parking at open space destinations	11.22% 23	33.66% 69	33.17% 68	11.22% 23	4.39% 9	6.34% 13	205
Expanding available parking at recreational destinations	9.76% 20	34.15% 70	35.12% 72	10.24% 21	4.88% 10	5.85% 12	205
Expanding connections for walking (e.g. sidewalks, connecting trails)	31.53% 64	33.99% 69	24.63% 50	5.91% 12	2.46% 5	1.48% 3	203
Expanding connections for biking (e.g. off-road paths and on-road lanes)	21.18% 43	29.56% 60	28.57% 58	10.34% 21	5.91% 12	4.43% 9	203
Expanding opportunities for snowmobiling	8.29% 17	18.54% 38	35.12% 72	11.71% 24	18.54% 38	7.80% 16	205
Expanding opportunities for horseback riding	11.22% 23	19.02% 39	33.66% 69	10.73% 22	14.63% 30	10.73% 22	205
Expanding historical sites	18.32% 37	33.17% 67	29.70% 60	9.90% 20	7.43% 15	1.49% 3	202
Publicizing and educating about open space and recreational opportunities in Spencer	45.81% 93	29.56% 60	16.26% 33	2.46% 5	3.94% 8	1.97% 4	203

#	WHAT DO YOU RECOMMEND?	DATE
1	Cleaning up after horses on trails	12/17/2019 8:16 AM
2	Adopt CPA	12/16/2019 12:05 PM
3	Keep residents only access to all recreational areas.	12/15/2019 12:13 PM
4	Acquire conservation land for hiking/biking trails	11/25/2019 8:32 PM
5	Just a note that our organization likes to have other places to ride and we are willing to help with trail projects/parking areas that benefit horseback riders. Bay State Trail Riders Association	11/20/2019 5:32 PM
6	work with land trust and historical society to promote the use of our sites and promote stewardship of these sites	11/11/2019 9:20 AM
7	Make more recreational areas and maintain current. Place trail map board with brochures. Have rangers checking on all areas for safety and usage.	11/4/2019 3:15 PM
8	Facebook posts of what is out there.	11/4/2019 11:47 AM
9	Keeping atv and dirt bikes out	10/22/2019 7:35 PM
10	I believe expanding will destroy wildlife habitat. Animals are in everyone’s yards already. Improve what we have before trying to manage more!	10/22/2019 7:06 AM
11	An atv club like snowmobile	10/21/2019 7:31 PM
12	We need space for ATV'S and dirt bikes where kids can ride and not get in trouble.	10/21/2019 6:14 PM

Q14 How often do you:

Answered: 201 Skipped: 56

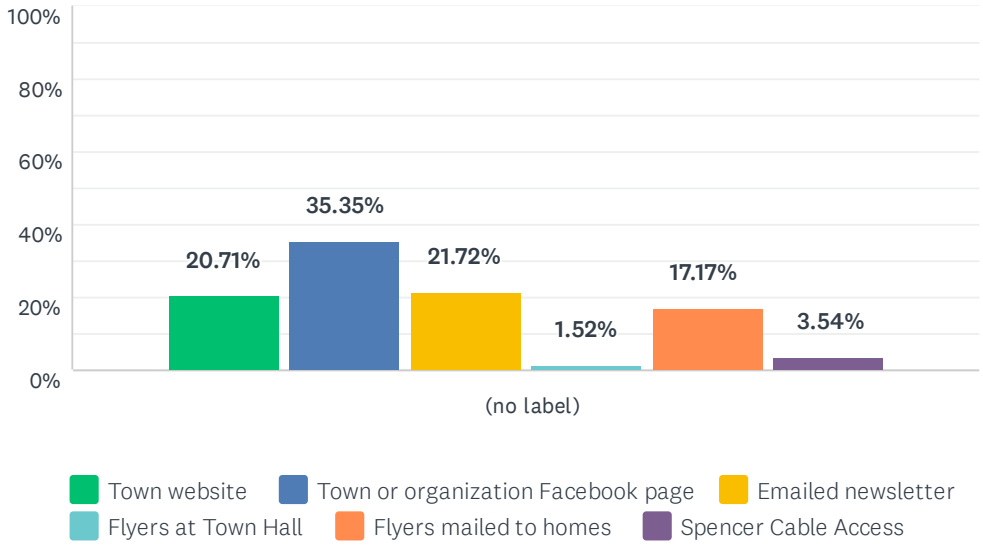


	DAILY	WEEKLY	MONTHLY	RARELY	NEVER	TOTAL
Participate in or watch a formal youth sports league?	3.48% 7	18.41% 37	11.94% 24	31.84% 64	34.33% 69	201
Participate in or watch a formal adult sports league?	1.49% 3	8.96% 18	5.97% 12	29.35% 59	54.23% 109	201
Participate in an informal playgroup or pick up game?	1.00% 2	6.47% 13	7.46% 15	28.86% 58	56.22% 113	201
Attend a special event at a park?	1.00% 2	3.50% 7	21.50% 43	61.50% 123	12.50% 25	200
Utilize public play area / playground?	4.48% 9	13.43% 27	21.39% 43	32.34% 65	28.36% 57	201
Utilize hiking trails?	10.95% 22	24.88% 50	29.35% 59	22.89% 46	11.94% 24	201
Utilize biking trails?	2.03% 4	13.71% 27	16.75% 33	27.92% 55	39.59% 78	197
Utilize snowmobile trails?	2.02% 4	7.58% 15	5.05% 10	15.15% 30	70.20% 139	198
Utilize equestrian trails?	3.98% 8	4.48% 9	3.48% 7	11.44% 23	76.62% 154	201
Visit a park or other open space?	14.65% 29	28.28% 56	32.32% 64	20.20% 40	4.55% 9	198
Walk or jog on a sidewalk or public way?	24.00% 48	26.50% 53	16.00% 32	18.50% 37	15.00% 30	200
Visit historical sites?	4.52% 9	7.54% 15	22.61% 45	47.24% 94	18.09% 36	199
Attend events or activities at the Spencer Fairgrounds?	0.51% 1	2.55% 5	21.94% 43	66.33% 130	8.67% 17	196

#	OTHER (PLEASE SPECIFY)	DATE
1	Comment on #15- Website, mailed flyers, cable access	12/17/2019 8:43 AM
2	Comment on #15 - all of them	12/17/2019 8:18 AM
3	When they occur (events at fairground)	12/16/2019 12:06 PM
4	When there are events we attend them	11/27/2019 5:47 AM
5	When available	11/25/2019 7:49 PM
6	Occasionally	11/25/2019 7:34 PM
7	When they have events I go	11/25/2019 6:26 PM
8	Just moved back home and haven't found anything for me yet!	11/19/2019 4:02 PM
9	form activities committee to promote/organize activities utilizing the above trails/areas	11/11/2019 9:23 AM
10	When activities are available	11/5/2019 2:56 AM
11	We are new to the area (2 yrs), don't know enough about what's available.	11/4/2019 10:11 PM
12	I would do more if more options were available or felt safe. Spencer rail trial is not somewhere I would walk with my kids as the only adult.	11/4/2019 3:18 PM
13	I would do all of these. Problem is spencer has none of them	10/23/2019 2:23 PM
14	I attend things at the fair grounds that interest me.	10/23/2019 6:50 AM

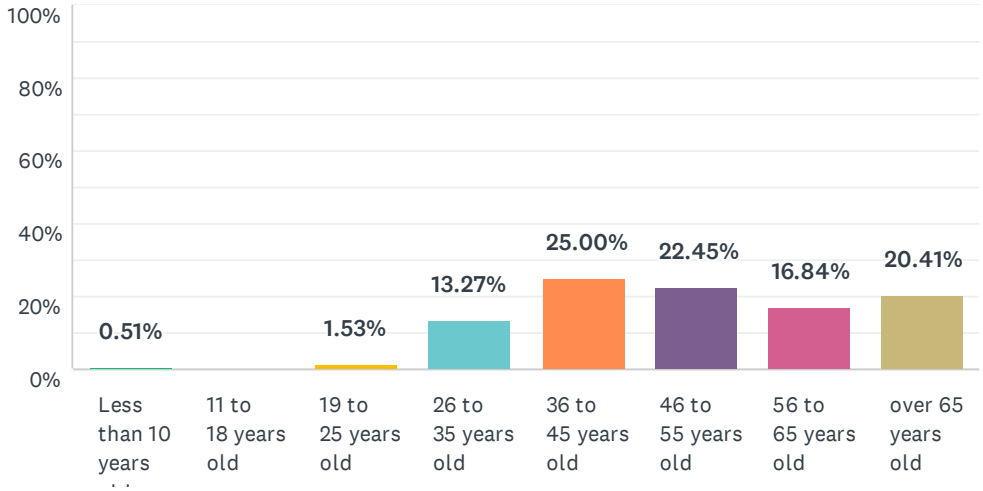
Q15 How would you prefer to get information about open space and recreational opportunities in Spencer?

Answered: 198 Skipped: 59



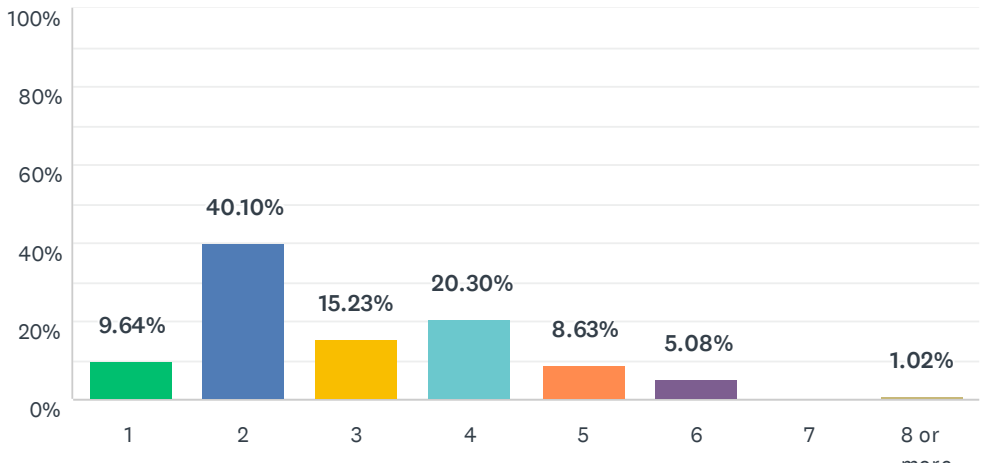
Q16 What is your age?

Answered: 196 Skipped: 61



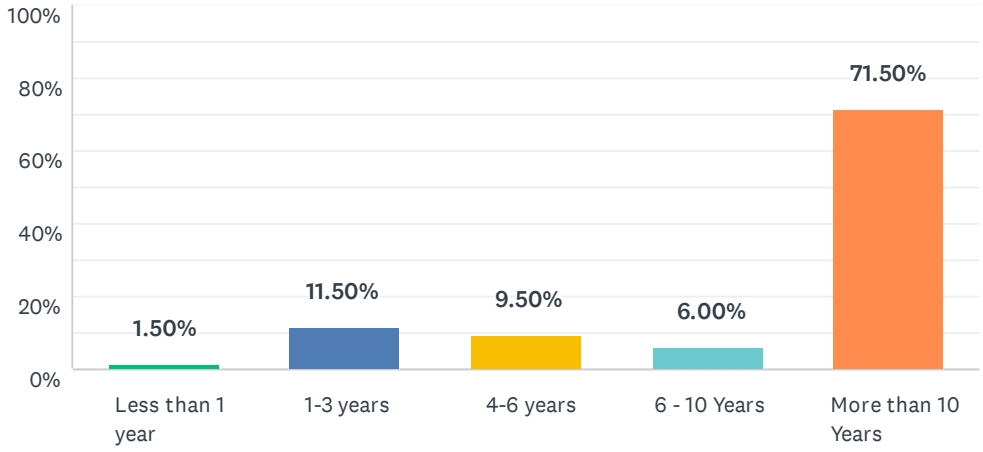
Q17 What is your household size?

Answered: 197 Skipped: 60



Q18 How long have you lived in Spencer?

Answered: 200 Skipped: 57



Q19 ***Optional***Your contact information will make it possible for us to...1) see who is responding to the survey2) provide you with updates on the Open Space and Recreation Plan (including the date, time and location of the public forum), and 3) identify and contact potential volunteers

Answered: 73 Skipped: 184

ANSWER CHOICES	RESPONSES	
Name:	87.67%	64
Company:	20.55%	15
Address:	79.45%	58
Address 2:	4.11%	3
City/Town:	90.41%	66
State:	90.41%	66
ZIP/Postal Code:	91.78%	67
Email Address:	76.71%	56

We Want Your Input!

SPENCER CONSERVATION COMMISSION VIRTUAL PUBLIC HEARING - 2020 OPEN SPACE AND RECREATION PLAN NOVEMBER 18 AT 7 PM



Any interested citizen is encouraged to call in and express their views on open space and recreation opportunities and facilities in Spencer.

Please call 1-877-309-2073 and use Access Code 357-318-117.

Any questions email grussell@spencerma.gov

We Want Your Input!

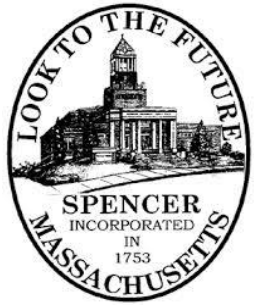
SPENCER PLANNING BOARD VIRTUAL PUBLIC HEARING
2020 OPEN SPACE AND RECREATION PLAN
DECEMBER 15 AT 7 PM



Any interested citizen is encouraged to call in and express their views on open space and recreation opportunities and facilities in Spencer.

Please call 1-866-899-4679 and use Access Code 924-512-829 or go to:
https://global.gotomeeting.com/join/924512829
Any questions email grussell@spencerma.gov

Spencer 2020 Open Space and Recreation Plan





THE TOWN OF SPENCER, WITH SUPPORT FROM THE OPEN SPACE AND RECREATION PLAN WORKING GROUP AND THE CENTRAL MASSACHUSETTS REGIONAL PLANNING COMMISSION (CMRPC)

What is an Open Space and Recreation Plan?

Planning effort undertaken by the town to:

- Articulate the community's vision and strategies to preserve and enhance the Town's open spaces
- Make accessible all of the benefits of open space that make up much of the character of the community
- Inventory all undeveloped land, both protected and not



Why Plan for Open Space and Recreation?

- Open space provides environmental, health and economic benefits for communities
- Planning helps communities most efficiently use available resources
- A community with an approved Plan becomes eligible to apply for LAND and PARC state grants





Purpose of Soliciting Public Input:

- Let us know what you think the plan's priorities should be
- Help us identify key areas of town that you feel should be the focus of protection, improvement or other town efforts





What do we mean by Open Space?

- Conservation land
- Forest land
- Recreation land
- Agricultural land
- Parks and amenities
- Any open area that is owned by an agency or organization dedicated to conservation

- Undeveloped land with conservation or recreation interest
- Undeveloped land used for passive recreation (e.g. walking, hiking or observing/enjoying nature)
- Or Active Recreation (e.g. organized sports)



Prior OSRP Planning Efforts

- Completed most recent Open Space Plan in 2012
- Identified 5 Goals, 22 Objectives and more than 90 Action Items



Planning Process

- Community organization
  - Establish OSRP committee/working group
  - Designate staff from town/hire a consultant to work on the plan
- Data Collection
  - Community profile: demographic, housing, other data from US Census, state, other sources
  - Environmental issues and concerns, water quality
  - Inventory of open spaces
- Community Input
  - Survey
  - Community Forum
- Document Preparation and Review
- Submit to the state



What's been done to date

- Data Collection
  - Updates to demographic, household data
  - Updated environmental data from state and other sources
  - Updates to goals and objectives from 2012
- Community Input
  - 5 meetings to date
  - Survey conducted October-December 2019



Draft Goals and Objectives

Goal 1: Protect valuable water resources from adverse impacts

Objective 1.1 - Protect the Town's water supply.

Objective 1.2 - Preserve watersheds, including those of rivers, lakes, and streams.

Objective 1.3 - Preserve the lands adjacent to rivers, lakes, and streams.

Goal 2: Retain Spencer's rural, small-town character

Objective 2.1 - Manage land uses along major roads (For example, Routes 31 & 9).

Objective 2.2 - Preserve and enhance Town center.

Objective 2.3 - Preserve and enhance Town gateways.

Objective 2.3 - Develop tools to manage Town growth.

Objective 2.4 - Preserve the Town's historic character.

Draft Goals and Objectives

Goal 3: Enhance recreation opportunities for Town residents and visitors

Objective 3.1 - Increase awareness and enjoyment of recreation facilities and programs

Objective 3.2 - Provide for maintenance and expansion of existing Town recreation facilities and programs

Objective 3.3 - Improve water quality in all Town water bodies.

Objective 3.4 - Enhance Spencer's trail network to provide access to existing parks, historic sites, and conservation lands

Objective 3.5 - Develop financial plan to support expansion of recreation opportunities and facilities.

Objective 3.6 - Promote Tourism and Economic Development in Spencer

Draft Goals and Objectives

Goal 4: Preserve Spencer's open spaces and natural heritage

Objective 4.1 - Protect open spaces for wildlife habitats.

Objective 4.2 - Preserve farmlands and forest lands.

Objective 4.3 - Enhance and increase conservation lands.

Goal 5: Establish a continuous open space process

Key Themes from the Survey

- Very important (85%) to preserve open space and natural areas in Spencer
- Most important to preserve the following types of land:

  Spaces for passive recreation, Open spaces for water supply protection, Agricultural land



- Biggest unmet open space needs:

  Maintaining and preserving historic sites, Creating a Town Common, Water Supply Protection

- Biggest unmet recreation needs:

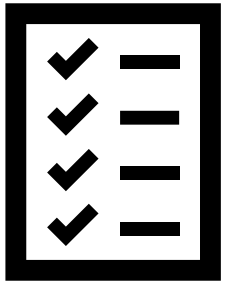
  Children's' playgrounds, Activities for Seniors, ADA accessible facilities

- Priorities for future expenditures:

  Publicizing and educating about open space and recreation opportunities in Spencer, Improving passive recreation opportunities on existing land, Improving existing recreational programming

Follow Ups and Next Steps

- Analyze the feedback collected here
- Committee will meet to complete final tasks
- Draft report presented to Town Board of Selectmen
- Report will be submitted to Department of Conservation Services



Thank you for your participation!

If you have any further comments, please email them to George Russell at grussell@spencerma.gov

Conservation Commission – Town of Spencer

Minutes

DRAFT

Conservation Commission Meeting
Wednesday, November 18, 2020 at 7:00 PM
Town Hall, McCourt Social Hall

NOTE: THIS IS A REMOTE MEETING AND ALL PRESENTATIONS, QUESTIONS, COMMENTS AND/OR DISCUSSIONS WILL TAKE PLACE VIA TELEPHONE CALL IN. IF YOU HAVE ANY QUESTIONS, PLEASE CALL THE CONSERVATION OFFICE BEFORE THE MEETING.

PERSONS SPEAKING CAN ONLY SPEAK WHEN RECOGNIZED BY THE CHAIR AND THEY MUST CLEARLY STATE THEIR NAME AND ADDRESS FOR THE MINUTES.

IN ORDER TO CALL IN, PLEASE CALL: 1-877-309-2073 AND USE ACCESS CODE: 357-318-117

TO LISTEN TO THE MEETING ONLY GO TO SCATV.ORG

The Meeting was opened at 7:00 p.m.

Commissioners Present: Charlie Bellemer, Mary McLaughlin & Warren Snow

Commissioners Absent: Margaret Emerson & Robert Perry

Staff present: George Russell, Jane Green
Staff absent:

Minutes Approved: *A motion to approve the minutes of October 28, 2020 (Snow/Bellemer) passed 3/0 with a roll call vote: Snow-yes, McLaughlin-yes, Bellemer-yes*
Signed: There were no items to be signed.

THERE WERE SIGNIFICANT TECHNICAL DIFFICULTIES WITH THE PHONES DURING THIS MEETING.

7:00 p.m. 4.1 Opened the Public Hearing for Citizen input on the 2020 Open Space Plan

George Russell discussed the Open Space and Recreation Committee Plans. There are five goals:

Goal 1: Protecting valuable water resources from adverse impact.
Goal 2: Retain Spencer's rural small-town character.
Goal 3: Enhance Recreation Opportunities for Town residents and visitors.
Goal 4: Preserve Spencer's Open Space and Natural Heritage.
Goal 5: Establish a continuance Open Space planning process.

There are 3-6 objectives under each goal, which outline the process of reaching the goals. The hearing tonight is to obtain any public input on any part of the Open Space plan. Jan Parke's from Common Ground Land Trust, wanted to know if the 5th goal is to establish a Open Space Committee as a permanent appointed Committee to the town. Mr. Russell was not sure if that was the goal, but it is a probability. The plan is to avoid getting together every 7 years and starting from scratch to update the plan. Maintaining the Committee is not up to us but is something that could be recommended. Ms. Parkes said that was one of the Land Trusts goals. They have been working on Leicester and Spencer establishing Open Space Committees. The Land Trust would be very supportive of that goal. William Shemeth who represents Parks & Recreation said that they would be in support of a Committee. Mr. Russell said that there will be another hearing on the plan with the Planning Board on December 15, 2020.

7:11 p.m. 4.2 Continued the Public Hearing for the Notice of Intent for Bertin Engineering
Property: Charlton & Bacon Hill Roads, Spencer, MA DEP#293-0984

The applicant's representatives Steve Pikul and T.J. Recupero joined the hearing. Mr. Recupero said that they just received the comments on November 12, 2020. Mr. Recupero said that they would like to receive the comments as soon as the town receives them. Mr. Russell said that within an hour of receiving the Peer Review Scope of Services, from BSC, it was sent to the applicant. Mr. Russell had not heard anything from the applicant regarding that, and he said we have not received the fees from the applicant. This application has been pending for 10 months. Mr. Russell recommended the permit be denied for lack of information. Mr. Recupero said that he sent the check and received confirmation. Ms. McLaughlin asked if they were in the process of preparing responses. Mr. Pikul said that they reviewed the comments and are putting together their responses. There was a discussion about the public hearing being open, but no testimony had been taken.

Jeremy Chapman from Melink Solar, said that SWCA did the Peer Review in February, but they did not get a report until July. Ms. McLaughlin said that COVID has something to do with why this has taken so long. There was discussion about Planning Board not having anything to do with Conservation from Mr. Recupero. Mr. Bellemer did not understand the statement about how Planning & Zoning have nothing to do with Conservation. Mr. Recupero said the point about P&Z not having anything to do with that, was a factual statement that referred to the authority for review under the Wetlands

protection Act and the local bylaw.
Mr. Snow asked if we normally review projects before they are approved by the Planning Board. Mr. Russell said that they parallel track them, so that both land use bodies are looking at the same plan. But that is not the case for this project. The plans for Planning Board are different. Ms. McLaughlin said that due to COVID, she recommends continuing. Mr. Snow and Mr. Bellemer agreed to continuing.

At the request of the applicant, the hearing will be continued to January 13, 2021.

7:30 p.m. 4.3 Continued the Public Hearing for the Notice of Intent for Edwin & Christine Mullens
Property: North Spencer Road, Spencer, MA DEP#293-0986
Mr. Russell said that we are waiting for the final review report.

At the request of the applicant, the hearing will be continued to December 16, 2020.

7:32 p.m. 4.4 Continued the Public Hearing for the Notice of Intent for Edwin & Christine Mullens
Property: North Spencer Road, Spencer, MA DEP#293-0987
Mr. Russell said that we are waiting for the final review report.

At the request of the applicant, the hearing will be continued to December 16, 2020.

7:35 p.m. 4.5 Opened the Public Meeting for the Request for the Determination of Applicability for John J. Green Jr. & Ruth Green
Property: 15 Washburn Terrace, Spencer, MA
Mr. Russell said the applicant wants to remove a tree in an area with a steep slope. The applicant did call in, but there were technical difficulties, which we did not realize until afterward.

At the request of the Commission, the hearing will be continued to December 16, 2020.

7:42 p.m. 4.6 Opened the Public Hearing for the Notice of Intent for Hans & Sharon DeKlerk
Property: 41 Lake Avenue, Spencer, MA DEP#293-0999
Mary Ann Dipinto from Three Oaks Environmental joined the meeting. Liz Dupre, the Engineer had technical difficulties calling in. They would like to replace a failed septic system. Ms. Dipinto explained the plans while communicating via text with Ms. Dupre. Mr. Russell said that his concerns were addressed, and he recommends approval with stipulations in the Agent's Report.

A motion to close the public hearing (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, Bellemer-yes, McLaughlin-yes.

A motion to approve the plans with Agent's stipulations (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, Bellemer-yes, McLaughlin-yes.

7;50 p.m. 4.7 Opened the Public Meeting for the Request for the Determination of Applicability for David A. Guertin
Property: 6 Lamoureux Lane, Spencer, MA
David Guertin joined the meeting. He said that there was a storm in October that toppled some trees that fell near the house and patio. The trunks are still there and are 20-30 feet high. He is afraid that they could fall on his house. Mr. Russell visited the site and spoke to Mr. Guertin. He recommends approval.

A motion to close the public meeting (Bellemer/Snow) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Snow-yes.
A motion for a negative #3 determination (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

7:56 p.m. 4.8 Opened the Public Hearing to amend the sections 2.2 and 2.3 of the local wetlands regulations, to change the number of copies of all material required for an NOI or RDA that must be submitted by an applicant
Mr. Russell said this is a staff request to minimize paper. There would be 2 copies required by the applicant and 1 copy for the website. The size of the maps needs to be 24x36 and 11x17. Mr. Russell asked the Commission if they would like copies prior to the meeting. The Commission said that they can look online if they want to see the plans. Mr. Russell researched the abutter notifications and found out from the town attorney that we can use Certificates of Mailing, instead of certified mailing.

A motion to close the public hearing (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Snow-yes.
A motion as per outline in the packet (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

8:00 p.m. 4.9 Opened the Public Hearing for the Notice of Intent for Peter Rourke
Property: 4 Wildwood Lane, Spencer, MA DEP no file # issued
Mr. Russell said that we do not have a DEP# for this application. Again there were technical difficulties which we did not realize until later.

At the request of the Commission the hearing will be continued to December 16, 2020.

5.0 Other Business:

5.1 Discussion – Conservation Commission Meeting Schedule 2021
Mr. Russell said that the state is going to open the 21-day criteria. If we do not get waivers, if needed from the applicants, the Commission may need a special meeting.

A motion to approve the meeting schedule (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

5.2 37 Lakeshore Drive – Certificate of Compliance
Mr. Russell said that all is ready for the request to be granted.

A motion to grant the CofC per Agent's Report (Snow/Bellemer) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

5.3 Recommendation on sale of Chapter 61 Land Donnelly Cross Road
Mr. Russell said that there is a large parcel on the corner of Donnelly Cross Road and Donnelly Road. The applicant wants to cut out a 1 ½ acre parcel and build a single-family home. The entire parcel is classified 61A. Mr. Russell said that we have done a study in the town, evaluating the chapter land in town. This parcel does not rank high in terms of fiscal impact if developed. He recommends the town not exercise the right of first refusal.

A motion to recommend we do not exercise the right of first refusal (Snow/Bellemer) 3/0.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

5.4 51 Lambs Grove – Certificate of Compliance
Mr. Russell said that all is ready for the request to be granted.

A motion to grant the CofC (Bellemer/Snow) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

5.5 Cranberry Well Beaver Dam- South Spencer Rd-Extension
Mr. Russell recommends the permit be extended for 5 years. This is for routine maintenance.

A motion to extend the Oof C (Bellemer/Snow) 3/0 passed.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

6,0 Agent's Report:
Mr. Russell said that he wanted to add a new document called the "Application Process Signature Form". It is designed to make sure that all applicants understand that the Agent can only give advice and recommendations, but it is the applicant's responsibility to submit the "correct" application for his or her project.

Agent's report is appended to and made part of the minutes.

New Applications: 8 Wildwood – RDA
55 Lakeshore Drive – CofC
159 South Spencer Road – RDA
24 Oak Lane - NOI

A motion to adjourn the meeting at 8:21 p.m. (Snow/Bellemer) passed 3/0.
All in favor: Snow-yes, McLaughlin-yes, Bellemer-yes.

Respectfully submitted by:

_____
Jane Green, Senior Clerk
Development & Inspectional Services

DOCUMENTS REVIEWED AT THE 11/18/20 CONSERVATION COMMISSION MEETING

Minutes 10/28/20

Agenda 11/18/10

Agent's Report 11/18/20

Conservation Commission Packets

Continuance form Charlton & Bacon Hill Roads

Continuance form Lots 1 and Lots 3 North Spencer Road

Continuance form 15 Washburn Terrace

Order of Conditions signed 41 Lake Avenue

RDA signed 6 Lamoureux Lane

Proposed Amendments to the regulations

Continuance form 4 Wildwood Lane

Conservation Commission Meeting Schedule 2021

Certificate of Compliance 37 Lakeshore Drive

Certificate of Compliance 51 Lambs Grove

Extension Order of Conditions Cranberry Well Beaver Dam

Application Process Signature Form

Planning Board – Town of Spencer

Minutes

Planning Board Meeting
Tuesday, December 15, 2020 at 6:00 PM
McCourt Social Hall, 157 Main Street Spencer, MA 01562
Memorial Town Hall- **Remote Meeting**

Planning Board Members Present: Chair Jonathan Viner (remote), Vice Chair Jeff Butensky(remote), Robert Ceppi (remote), and Maria Reed (remote) Paul Gleason (remote)
Planning Board Members Absent:
Staff Present in-person: Ian McElwee, Interim Town Planner
Staff Absent: Monica Santerre-Gervais, ODIS Senior Clerk

1. Jeff Butensky opened the meeting at 6:00 pm and read aloud Covid-19 statement. "*This Meeting of the Zoning Board of Appeals is being conducted remotely consistent with Governor Baker's Executive Order of March 12, 2020, pursuant to the current State of Emergency in the Commonwealth due to the outbreak of the COVID-19 Virus. In order to mitigate the transmission of the COVID-19 Virus, we have suspended public gatherings, and as such, the Governor's Order suspends the requirement of the Open Meeting Law to have all meetings in a publicly accessible physical location. We are meeting remotely and broadcasting live on Spencer Cable Access to ensure public viewing access."*

2. Discussion of Board Positions and Agenda

Jeff Butensky would like to discuss the future of the Solar Bylaw, internal issues, how the Agenda is set up, site visits, how to interact with the town employees and define the roles of the Planning Board. Mr. Ceppi nominated Jonathan Viner as the new chair.

MOTION: Mr. Ceppi made a motion to nominate Jonathan Viner to Chair.
SECOND: Mr. Butensky
DISCUSSION: None
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (5-0)

Mr. Viner made a motion to ratify the Agenda.

MOTION: Mr. Ceppi
SECOND: Mr. Butensky
DISCUSSION: None
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (5-0)

3. 1. Lot 10, 7 Paxton Road – Laureldale Family Trust

Kevin Jarvis joined the hearing to represent the family. The plan is to split 5 lots. The land is staying in the family. There was a discussion on what lots are buildable. Mr. Viner asked Mr. Jarvis to re-submit the plans and label the lots that are not buildable for Lot 7.

MOTION: Mr. Viner
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi and Mr. Viner all voted aye, and the motion was carried (4-0)

There was discussion on which parcels go with which Lot. Mr. Viner said that wetlands should have been shown on the plans for the Lots. The plan does not meet the ANR requirements for the Town of Spencer.

MOTION: Mr. Viner motioned to withdraw & re-submit the plans.
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

4. Public Hearing: 2020 Open Space and Recreation Plan Discussion

MOTION: Mr. Viner motioned to modify the Agenda.
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (5-0)

George Russell explained the Open Space Plan that has been updated since 2011. He said the outline for the plan is dictated by DCR (Department of Conservation & Recreation). Mimi Kaplan, from CMRPC, joined the meeting. She has been the one updating the plan. One of the benefits of the plan, is that the town can receive a whole host of grants. If anyone would like to add input, Mimi can add it to the plan. Jan Parke's from CGLT (Common Ground Land Trust) will present the draft to the Board of Selectman. It would be good to get an approval letter from the Planning Board. Matt Defosse, a resident, was glad to hear the plan is ADA compliant. There was talk about creating a budget, fund, or revolving account for the plan.

MOTION: Mr. Viner voted to close the public hearing.
SECOND: Ms. Reed
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (4-0)

5. Continued Special Permit – Applicant/ Owner: John Kennedy, 50 E. Charlton Road; Location: East Charlton Road; Spencer Assessor's Map R14-53-1, R14-53-3, R14-53-5. The applicant is requesting a Special Permit under 5.3.10 (Rear lot subdivision) of the Spencer Zoning Bylaw in order to create a rear lot subdivision. The property is located within the Rural Residential zoning district.

Jason Dubois joined the meeting to represent the applicant. There was a discussion on the setbacks.

MOTION: Mr. Viner motioned to approve the plans.
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

6. Continued Special Permit – Applicant/ Owner: Adam German; Location: 71 East Charlton Road; Spencer Assessor's Map R14-29-2 and R-14- 29-3. The applicant is requesting a Special Permit under 5.3.10 (Rear lot subdivision) of the Spencer Zoning Bylaw in order to create a rear lot subdivision. The property is located within the Rural Residential zoning district.

Jason Dubois joined the hearing and represented the applicant. There was a discussion on the rear lot subdivision with the common driveway.

MOTION: Mr. Ceppi motioned to approve the special permit.
SECOND: Ms. Reed
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

7. Continued Public Hearing – Special Permit/Major Site Plan Extension; Applicant: ForeFront Power, LLC; Owner: Laura Hopkins, Location: 36 Cranberry Meadow Road. Spencer Assessor's Map R12-4. The applicant is requesting an extension to the Special Permit and Major Site Plan under Sections 4.8.9, 7.2, and 7.4 of the Spencer Zoning Bylaw to install a 2.2 MW solar array. The property is located within the Rural Residential zoning district.

Mr. McElwee spoke about how the proposed solar array at 36 Cranberry Meadow Road has become impacted by the Solar Moratorium. There were no representatives for the applicant. Mr. Butensky wanted Attorney Jonathan E. Eichman's opinion. Attorney Eichman said it can be continued up to a year.

MOTION: Mr. Butensky motion to continue Cranberry Meadow to March 16, 2021
SECOND: Mr. Ceppi
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

8. Continued Public Hearing-Major Site Plan Review/Special Permit Applicant: Sunpin Solar Development, LLC; Owner: Peter and Carol Gaucher, Location: 22 Norcross Road; Spencer Assessor's Map R40-07. The applicant is requesting a Major Site Plan Review under Section 7.4 and Special Permit under Section 7.2 of the Spencer Zoning Bylaw Zoning to install a Solar Farm. The property is located within the Rural Residential zoning district (looking to continue for 6 months)

Andrew Vardakis, a Civil Engineer, with Wood Environmental joined the hearing. Jamie Boyd of Sunpin Solar joined as well. Mr. Vardakis said that they have been addressing both Planning Board and Conservation Commission Board with Peer Review. There was a discussion about continuing to 6-months. Ms. Boyd said that this has been in the works for a few years. They have spent considerable time and money. If they stop for 6 months, are they going to have to start all over again. Mr. Viner said that it would be according to the new Solar Bylaw from the Attorney General. Ms. Boyd would like to continue to one month. Mr. Ceppi suggested waiting until the new bylaw. Mr. Viner consulted with the Town Council who said that there would be no issue either way. It was decided that they continue for a month.

MOTION: Mr. Butensky motioned to Continue 22 Norcross to January 19, 2021
SECOND: Ms. Reed
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

9. Continued Public Hearing: Major Site Plan Review/ Stormwater Permit Renewal – Applicant: Chris Nolan, BETA Group, Inc.; Owner: DG Northeast 2020 Holdings, LLC Location: North Brookfield Road; Spencer Assessor's Map R39/14. The applicant is requesting an extension to a Major Site Plan Review under Section 7.4 of the Spencer Zoning Bylaw to install a solar array. The property is located within the Rural Residential zoning district.

Tom Gregory was contacted by the representatives' Attorney to include an extension to the permit. Tad Heuer, of DG Northeast, joined the hearing. He asked Atty. Eichman if DG provided all that was needed, would the building permit be allowed. Mr. Viner believes that it would be allowed. It was decided that they would like to continue to the next month.

MOTION: Mr. Ceppi motioned to Continue North Brookfield to January 19, 2021
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

10.Continued Public Hearing-Major Site Plan Review/ Special Permit/ Subdivision - Applicant: Spencer Solar LLC; Owner: Ash Spencer Realty LLC, Location: Ash Street; Spencer Assessor's Map R27-01. The applicant is requesting a Major Site Plan Review under Section 7.4 and Special Permit under Section 7.2 of the Spencer Zoning Bylaw Zoning to install a Solar Farm. The applicant is also seeking a Subdivision approval as part of this project. The property is located within the Rural Residential zoning district.

Steve Pikul from, Bertin Engineering, joined the hearing along with Attorney Thomas J. Recupero and Jeremy Chapman. Mr. Viner asked if they provided applications for each component. The three components were the Major Site Plan Review, the Special Permit, and the Subdivision. Mr. Pikul said currently they are reviewing and submitting the peer review questions and comments. The applicant would like to continue to the next meeting. Mr. Viner said that each component would be a separate item on the Agenda. Mr. Recupero said that the previous planner requested the Subdivision plans first.

MOTION: Mr. Ceppi motioned to Continue to January 19, 2021
SECOND: Mr. Butensky
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

11.Continued Definitive Subdivision Plan - Applicant: Colin Derhammer; Owner: Spencer Solar II LLC c/o Melink Solar Development, Location: Charlton Road (Bacon Hill Road); Spencer Assessor's Map R08-10. The applicant is requesting a definitive subdivision approval under Article 2.3 (Definitive Subdivision Plans) of the Spencer Subdivision Regulations. The property is located within the Rural Residential zoning district.

Steve Pikul joined the hearing and said they are reviewing the Peer Review Comments from BSC. Mr. Viner asked if they proposed anything different for the frontage, because that was discussed as the last meeting. They are proposing a cul-de-sac. The applicant would like to continue until the next meeting.

MOTION: Mr. Ceppi motioned to Continue to January 19, 2021
SECOND: Ms. Reed
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Viner all voted aye, and the motion was carried (4-0)

12.Special Permit - Applicant: Daniel Rubin, Freedom Forever Massachusetts, LLC; Owner: Craig Lusignan, Location: 83 Northwest Road; Spencer Assessor's Map R50-3-1. The applicant is seeking a Special Permit under Section 4.8.9 (Solar Photovoltaic Generating Installations) of the Spencer Zoning Bylaw to install a ground mounted 13.050 KW solar panel system. The property is located within the Rural Residential zoning district.

Daniel Rubin, the applicant, and Craig Lusignan, the owner, joined the hearing. They are proposing a small scale solar on the residential lot. Mr. Viner wanted to know the timeline. Mr. Lusignan said that at the end of the year he may be transferring ownership. There was discussion as to if it fell under the Solar Moratorium. Attorney Eichmann said it does not because it is not large-scale solar.

MOTION: Mr. Butensky motioned to Continue until January 19, 2021
SECOND: Ms. Reed
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (5-0)

13. Discussion: Solar

Mr. Butensky recommended discussing Solar another time. He wants to launch an initiative on policies for the board. There was discussion on having a Special Meeting to discuss those topics. Mr. Gregory reminded the board to come in and sign 51 Borkum Roads decision.

14. Approval of Minutes

The board agreed to Table the minutes to the next meeting.

MOTION: Mr. Butensky motioned to Table the 10/20/20 & 11/17/20 minutes to January 19, 2021
SECOND: Mr. Ceppi
DISCUSSION:
ROLL CALL VOTE: Mr. Butensky, Ms. Reed, Mr. Ceppi, Mr. Gleason, and Mr. Viner all voted aye, and the motion was carried (5-0)

15. Town Planner Report-CMRPC Delegate Ian McElwee

Mr. McElwee wanted to know if the Board would like the meetings to be at 6 pm or 7 pm. The board agreed to start at 6:00 p.m.

16. General Board Discussion/Board Liaison Reports

The board discussed having the Special meeting on Thursday January 14, 2021 at 7:00pm
Mr. Viner welcomed the new Board member, Paul Gleason.

17. New Business/ Adjournment

MOTION: Mr. Viner motioned to adjourn the meeting at 10:14 pm
SECOND: Mr. Butensky
VOTE: 5-0

Submitted by Jane Green ODIS Clerk
Approved by the Planning Board on:
List of Documents used on
Items sent to Planning Board prior to Meeting by email:

- Agenda

Items submitted/ brought to the Meeting:

INVENTORY OF LAND OF CONSERVATION OR RECREATION INTEREST

TOWN LAND WITH CONSERVATION OR RECREATION INTEREST

MAP	Parcel	Description	Acres	Pro-tection	#	Street	Manager	Interest	Current Use	Condition	Recreation Potential	Public Access	Zoning	Grant Used to Purchase	CR or APR?
R02	6	wood lot	24.1	N		Cranberry Meadow Rd.	P&R	FEE	Woodlot	good	passive only	Y	RR	no	no
R02	7	wood lot	14.0	N		Briarcliff Ln.	P&R	FEE	Woodlot	good	passive only	Y	RR	no	no
R05	9	Vacant landlocked lot	3.6	N		Hammond Rd.	BOS	Fee	Municipal Open Space	Fair	none	N	RR	no	no
R11	3	Vacant landlocked lot	10.2	N		S. Spencer Rd.	BOS	FEE	Municipal Open Space	Good	none	N	RR	no	no
R14	33-1	Vacant Wooded lot	1.8	N		Clark Rd	BOS	FEE	Municipal Open Space forest	Poor	none/swamp	y	RR	no	no
R14	37	Vacant corner lot	0.1	N		Clark Rd.	BOS	FEE	Municipal Open Space	Poor	none	Y	RR	no	no
R20	27	Old School House/Vietnam memorial	0.4	N	80.5	S. Spencer Rd.	BOS	FEE	Vietnam Memorial	Old School House needs repair	Passive	Y	SR	no	no
R22	3	east of Transfer station	23.0	N		S. Spencer Rd.	BOS	FEE	general municipal	Good	passive recreation	Y	I	no	no
R22	2	Transfer station, landfill & Cranberry well	114.0	N	17	S. Spencer Rd.	U&F	FEE	transfer station, capped landfill & municipal well	Good	none	N	RR	no	no
R28	20	Vacant Wooded lot	2.3	N	125	Ash St.	BOS	FEE	Municipal open space	Poor	Passive	Y	RR	no	no
R29	24	Bemis park	1.0	N		W. Main St.	P&R	FEE	historic marker	Good	passive recreation	Y	I	no	no
R30	2	water supply protection	16.0	N		Meadow Rd.	U&F	FEE	water supply protection	Good	canoeing	N	RR	no	no
R32	28	Spencer Fair Ground	8.0	N		Smithville Rd.	Spencer Fair Assoc by lease	FEE	fairground	Good	active recreation/fair	Y	RR	no	no
R35	16-1	Wire Village School	33.5	N	60	Paxton rd.	S. Comm	FEE	school	Good	active recreation/athletics	Y	RR	no	no
R37	17	by Turkey Hill Bk S side	2.1	N		Wire Village Rd.	BOS	FEE	open space	Good	hike and fish	Y	RR	no	no
R37	18	by Turkey Hill Brook	6.0	N		Hastings Rd.	BOS	FEE	open space	Good	hike and fish	Y	RR	no	no
R37	34	Ralph Warren Park	9.4	N		Vwire village Rd.	P&R	FEE	unimproved park	Good	passive recreation	Y	LR	no	no
R38	35-1	water supply protection & possible well location	18.4	N		Cooney Rd.	U&F	FEE	water supply protectio	Good	none	N	RR	no	no
R41	5-2	Vacant Wooded lot	1	N	5	Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-4	Vacant Wooded lot	1.2	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-5	Vacant Wooded lot	1.6	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-6	Vacant Wooded lot	1.4	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-7	Vacant Wooded lot	2	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-8	Vacant Wooded lot	1.4	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-10	Vacant Wooded lot	3.3	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-11	Vacant Wooded lot	2.3	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-12	Vacant Wooded lot	1.7	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-13	Vacant Wooded lot	1.1	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no

TOWN LAND WITH CONSERVATION OR RECREATION INTEREST

MAP	Parcel	Description	Acres	Pro-tection	#	Street	Manager	Interest	Current Use	Condition	Recreation Potential	Public Access	Zoning	Grant Used to Purchase	CR or APR?
R41	5-14	Vacant Wooded lot	2.7	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	5-15	Vacant Wooded lot	1.5	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
R41	11	Vacant Wooded lot	24.6	N		Briarwood Ln.	BOS	FEE	Municipal open space forest	Fair	Passive	Y	RR	no	no
R45	3	Vacant landlocked wooded lot	14.5	N		Paxton Rd.	BOS	FEE	Municipal open space forest	Good	none	N	RR	no	no
R54	5	Vacant landlocked wooded lot	19	N		McCormick Rd.	BOS	FEE	Municipal open space forest	Fair	none	N	RR	no	no
R55	5	land-locked in Spencer State Forest	1.0	N		McCormick rd.	BOS	FEE	Municipal open space forest	Fair	passive recreation	Y	RR	no	no
R56	1	Vacant Wooded lot	0.7	N		N. Spencer Road	BOS	FEE	Municipal open space forest	Good	none	Y	RR	no	no
R57	41	Vacant Wooded lot	0.7	N		Browning Pond Rd.	BOS	FEE	Municipal open space forest	Fair	Passive	Y	RR	no	no
R57	50	Vacant Wooded lot	0.7	N		Barclay Rd.	BOS	FEE	Municipal open space forest	Good	Passive	Y	RR	no	no
U02	6	maple st school	1.0	N	68	Maple St.	S. Comm	FEE	elementary school	Fair	playground	Y	VR	no	no
U04	11-1	Knox Trail Jr. High	20.8	N	75	Ash St.	S. Comm	FEE	School	Good	active	Y	SR	no	no
U05	5	Regional High School	44	N	302	Main St.	S. Comm	FEE	School	Good	active	Y	SR	no	no
U07	155	East end Muzzy Pond	0.6	N		Clark Rd.	U&F	FEE	shore & under pond	Fair	fishing	Y	VR	no	no
U07	12	corner lot, unknown interest	0.4	N	46-48	chestnut St.	BOS	FEE	municipal	Fair	possible pocket park	Y	VR	no	no
U07	27-1	by Muzzy Brook	0.1	N		Wall St.	BOS	FEE	municipal parking	Fair	none	Y	TC	no	no
U08	104	O'Gara Park	9.5	N		Valley St.	P&R	FEE	ball park	Poor	active recreation	Y	VR	no	no
U08	34	extends Depot Trail into town	0.5	N		Pearl St.	BOS	FEE	open space	Fair	none	N	VR	no	no
U08	94	Depot Trail	16.0	N		chestnut st.	P&R	FEE	rail trail	fair, needs washouts repaired, improved drainage	walking, biking etc.	Y	RR & VR	no	no
U08	3	tiny mid town lot, no frontage	0.0	N		Main St.	BOS	FEE	Municipal Open Space	Fair	none	N	TC	no	no
U09	6-1	east side, undeveloped, town purpose unknown, housing?	3.2	N	15	Bixby Rd.	BOS	FEE	Municipal Open Spac	Poor, lots of wetlands and streams	none	Y	VR	no	no
U11	8	Hwy Dept & river	13.0	N	7	Meadow Rd.	U&F	FEE	general municipal	Poor	none	N	I	no	no
U14	2	Parking lot	1.5	N	157	Main St.	BOS	FEE	Parking area	Poor	none	Y	VR	no	no
U14	66	Parking lot	0.7	N	191	Main St.	BOS	FEE	Park	Good	Passive	Y	VR	no	no
U15	30	Luther Hill Park	14.0	N		Luther Hill Park	P&R	FEE	lakeside park	good	swimming, playground, frisbe golf. Shelter needed	Y	VR & RR	no	no
U15	1	Vacant School	23.4	N	17	Lake	BOS	FEE	School	Fair	Passive	Y	VR	no	no
U15	16	Vacant House	0.3	N	50	lake St.	BOS	FEE	Vacant House	Fair	Active	Y	VR	no	no
U18	999	Lake Whittamore					BOS	FEE	Pond	Good	Active	Y	N/A	no	no
U20	57	former school	1.3	N	54	Pleasant St.	BOS	FEE	Former school building	Fair, possible hazardous materials	none	N	VR	no	no
U21	58	fair ground parking annually, otherwise water supply protection	1.4	N		Smithville rd.	BOS	FEE	water supply protectio	Good	fair parking	Y	RR	no	no
U23	6	Powdermill Park	4.2	N		Meadow rd.	P&R	FEE	playground	Fair, needs rest rooms	active recreation	Y	RR	no	
U23	5	water dept building and water supply protection	3.1	N		Old Meadow Rd.	U&F	FEE	water department	Good	none	N	RR	no	no
U23	7	water supply	56.0	N		Smithville rd.	U&F	FEE	water supply protectio	excellent	canoeing	N	RR	no	no

TOWN LAND WITH CONSERVATION OR RECREATION INTEREST

MAP	Parcel	Description	Acres	Pro-tection	#	Street	Manager	Interest	Current Use	Condition	Recreation Potential	Public Access	Zoning	Grant Used to Purchase	CR or APR?
U23	2-1	water dept	7.7	N	3	Old Meadow rd.	U&F	FEE	water department	good	none	to office only	RR	no	no
U24	17	Muzzy Bk Meadow St to 7 Mile R	6.0	N		Meadow rd.	BOS	FEE	natural	poor, old dump	passive, after clean up	Y	RR	no	no
U24	21	water supply protection	7.0	N		Meadow Rd.	U&F	FEE	water supply protectio	Poor	canoeing	N	RR	no	no
U26	999	Cranberry Meadow Pond					BOS	FEE	Pond	Poor	Active	Y	N/A	no	no
U27	47	Vacant wooded Lot	0.1	N		Wildwood Ave.	BOS	FEE	Open space forest	Fair	Passive	Y	LR	no	no
U27	48	Vacant wooded Lot	0.1	N		Wildwood Ave.	BOS	FEE	Open space forest	Fair	Passive	Y	LR	no	no
U27	49	Vacant wooded Lot	0.1	N		Wildwood Ave.	BOS	FEE	Open space forest	Fair	Passive	Y	LR	no	no
U28	81	Vacant wooded Lot	0.1	N		Wilson Grove	BOS	FEE	Open space forest	Poor, house on part	Passive	Y	LR	no	no
U28	86-3	Vacant wooded Lot	≥ 0.1	N		Wilson Grove	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U28	103	Vacant wooded Lot	0.1	N		Wilson Grove	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U28	108	Farming	0.1	N		Wilson Ave. Ext.	BOS	FEE	Agricultural	Good	Passive	Y	LR	no	no
U28	108-2	Vacant wooded Lot	≥ 0.1	N		Wilson Ave. Ext.	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U29	1	Vacant Wooded lot	0.1	N		chickering RD.	BOS	FEE	Open space forest	Good	Passive	y	LR	no	no
U29	64	Vacant Wooded lot	≥ 0.1	N		Wilson Grove	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U29	75	Vacant Wooded lot	0.1	N		Wison Ave. Ext.	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U29	76-1	Vacant Wooded lot	0.1	N		Wison Ave. Ext.	BOS	FEE	Open space forest	Good	Passive	Y	LR	no	no
U31	999	Sugden Res.					BOS	FEE	Pond	Good	Active	Y	N/A	no	no
U33	41	Sugden Dam	6.2	N		Paxton Rd.	U&F	FEE	Dam	Good	fishing	Y	LR	no	no
U33	5	Vacant wooded Lot	0.1	N		Lambs Cove	BOS	FEE	Open space forest	Fair	None	Y	LR	no	no
U35	25-1	Vacant wooded Lot	0.2	N		Shore Dr.	BOS	FEE	Open space forest	Good	None	Y	LR	no	no
U35	30	Vacant wooded Lot	0.1	N		Oak Lane	BOS	FEE	Open space forest	Good	None	Y	LR	no	no
U37	20	Thompson Pond access	0.1	N	25	Lake Shore Rd.	BOS	FEE	open space abutting pond	Good	lake access	Y	LR	no	no
U37	49	Thompson Pond access	0.2	N		Lake shore Rd.	BOS	FEE	open space abutting pond	Good	lake access	Y	LR	no	no
U37	85	Vacant wooded Lot	0.1	N		Lake Shore Drive	BOS	FEE	open space forest	Good	None	Y	LR	no	no
U38	18	potential Thompson Pond lake access	0.2	N		West Ave.	BOS	FEE	open space abutting pond	Good	lake access	Y	LR	no	no

Key - Manager

U&F

Sewer Commission

BOS

Parks and Recreation

onservation Commission

Fire Department

School Committee

Key - Level of Protection

P - Permanent

L - Limited

N - None

U&F

SC

BOS

P&R

ConCom

FD

S. Comm

STATE-OWNED LAND									
MAP	**Parcel**	**Description**	**Acres**	**Protection**	**#**	**Street**	**Owner**	**Manager**	**Interest**
R07	25	Four Chimneys WMA	213.0	P	30	BORKUM RD	STATE	DFW	FEE
R10	2	Spencer State Forest	176.0	P		HEBERT RD	STATE	DCR	FEE
R12	11	Spencer State Forest	2.9	P		CRANBERRY MEADOW RD	STATE	DFW	FEE
R12	5	Spencer State Forest	1.1	P		CRANBERRY MEADOW RD	STATE	DCR	FEE
R12	12	Spencer State Forest	7.8	P		CRANBERRY MEADOW RD	STATE	DCR	FEE
R12	1	Howe State Park	201.0	P	51	HOWE RD	STATE	DCR	FEE
R18	6	Spencer State Forest	13.0	P		CHARLTON RD	STATE	DCR	FEE
R18	7	Spencer State Forest	51.8	P		CHARLTON RD	STATE	DCR	FEE
R18	8	Spencer State Forest	21.3	P		CHARLTON RD	STATE	DCR	FEE
R18	1	Spencer State Forest	79.0	P		E CHARLTON RD	STATE	DCR	FEE
R19	12	Howe State Park	93.0	P		HOWE RD	STATE	DCR	FEE
R20	28	land abutting Rt 49 to the west	10.6	X		PODUNK PIKE	STATE	Mass DOT	FEE
R21	42	Pond S of NE Gateway, W of Rt 49	13.6	X		PODUNK PIKE	STATE	Mass DOT	FEE
R24	12	Spencer State Forest	42.0	P		R JONES RD	STATE	DCR	FEE
R29	25	Behind Big Y along 7 Mile River	20.9	L		W MAIN ST	STATE	MassDOT	FEE
R29	23	N. of Rt 9, W of Big Y	56.3	X		W MAIN ST	STATE	MassDOT	FEE
R29	6	E of Rt 49 ROW, S of Rt 9	5.4	X		W MAIN ST	STATE	Mass DOT	FEE
R36	12	Moose Hill WMA	38.5	P		DONNELLY CROSS RD	STATE	DFW	FEE
R45	2	Moose Hill WMA	157.0	P		DONNELLY CROSS RD	STATE	DFW	FEE
R46	4	Moose Hill WMA	44.0	P		PAXTON RD	STATE	DFW	FEE
R50	1	not named	99.8	X		KITTREDGE RD	STATE	DCR	FEE
R55	3	Spencer State Forest	200.0	P	92	MCCORMICK RD	STATE	DCR	FEE
U35	70	Thompson Pond Island 2	0.1	P		THOMPSON POND RD	STATE	DCR	FEE
U35	69	Thompson Pond Island	0.3	P		THOMPSON POND RD	STATE	DCR	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
Chapter 61								
E CHARLTON RD	R04	2		BEMENT LLC	24.86	RR	Owner	FEE
BORKUM RD	R04	7		BEMENT LLC	19.81	RR	Owner	FEE
4 TOM CASEY RD	R11	5	1	RYERSON, EDWARD	12.5	RR	Owner	FEE
10 SUNBERG RD	R13	23	1	DEWITTE, ROY	13.84	RR	Owner	FEE
GH WILSON RD	R15	6		MALONEY, DAVID	3.96	RR	Owner	FEE
CHICKERING RD	R15	6	2	MALONEY, DAVID	5.48	RR	Owner	FEE
66 GH WILSON RD	R15	9		MALONEY, DAVID	2.38	RR	Owner	FEE
GH WILSON RD	R15	12		MALONEY, DAVID	15.51	RR	Owner	APR
ASH ST	R23	1		FARMER, WILLIAM	71.25	RR	Owner	FEE
133 CHARLTON RD	R23	18		FARMER, WILLIAM	2.28	RR	Owner	FEE
68 DONNELLY RD	R36	29		HAMADRYAD LLC	0.9	RR	Owner	FEE
70 DONNELLY RD	R36	29	6	HAMADRYAD LLC	20.77	RR	Owner	FEE
NO BROOKFIELD RD	R41	10		BEMIS, DOROTHY	33.49	RR	Owner	FEE
59 HASTINGS RD	R43	16	2	ADAMS, RICHARD	15.14	RR	Owner	FEE
170 PAXTON RD	R45	10		ANDREWS, NANCY	47.14	RR	Owner	FEE
PAXTON RD	R45	7		ANDREWS, NANCY	62	RR	Owner	FEE
21B WASHBURN DR	R60	18		GIBBS, LISA KIRBY	22.65	RR	Owner	FEE
27 WASHBURN DR	R60	20		KNIGHT, JOHN	19.02	RR	Owner	FEE
2 DOWGIELEWICZ DR	R61	3		HUSTON, CLIFFORD	85.73	RR	Owner	FEE
200 NORTHWEST RD	R61	16		HUSTON, CLIFFORD	14.07	RR	Owner	FEE
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
Chapter 61A								
182 SO SPENCER RD	R01	13		HOOGASIAN, NOUBAR	64.32	RR		FEE
BORKUM RD	R04	8		BEMENT LLC	81	RR		FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
2 CHICKERING RD	R06	1		WATSON, GEORGE	31.62	RR		FEE
CLARK RD	R07	9		WATSON, GEORGE	75.99	RR		FEE
CLARK RD	R07	9	1	WATSON, GEORGE	2.71	RR	Owner	FEE
CLARK RD	R07	11		WATSON, GEORGE	83	RR	Owner	FEE
25 BORKUM RD	R07	11	1	WATSON, KATIE	6.31	RR	Owner	FEE
17 SUNBERG RD	R08	50		GOULD, KIM	75.62	RR	Owner	FEE
BACON HILL RD	R08	10		KNK REALTY TRUST	49.50	RR	Owner	FEE
BACON HILL RD	R08	24		KNK REALTY TRUST	7.55	RR	Owner	FEE
BACON HILL RD	R08	28	2	KURLAND, CAROL	7.02	RR	Owner	FEE
159 SO SPENCER RD	R10	1		BERCUME, DAVID	22.95	RR	Owner	FEE
SO SPENCER RD	R10	23		BERCUME, DAVID	68.72	RR	Owner	FEE
6 LEONARD RD	R10	18		THOMAS, ROGER	39.62	RR	Owner	FEE
TOM CASEY RD	R11	4		PLOURDE, ROGER	56	RR	Owner	CR
TOM CASEY RD	R11	5		PLOURDE, ROGER	196.1	RR	Owner	CR
SUNBERG RD	R13	20		LACROIX DIANE	81.5	RR	Owner	FEE
195 CHARLTON RD	R13	16		LALIBERTE, JAMES	33.72	RR	Owner	FEE
76 E CHARLTON RD	R14	47		KURLAND, CAROL	72.52	RR	Owner	FEE
33 CLARK RD	R15	2		WATSON, GEORGE	10	RR	Owner	FEE
CLARK RD	R15	3		WATSON, GEORGE	9.64	RR	Owner	FEE
65 GH WILSON RD	R16	1		PUALWAN, BETTY	48	RR	Trustees of Reservations	CR
HOWE RD	R18	14		MOSCHINI, ROBERT	65.21	RR	Owner	FEE
HOWE RD	R19	14		JEPSON, W THOMAS	10	RR	Owner	FEE
94 SO SPENCER RD	R20	21		DAVIS, SHERYL	6.12	RR	Owner	FEE
8 GALE DR	R20	20		NORDQUIST, KURT	36.5	RR	Owner	FEE
84 SO SPENCER RD	R20	23		ORMSBEE, HAROLD	37.61	RR	Owner	FEE
30 HOWE RD	R23	25		MOSCHINI, ROBERT	153.43	RR	Owner	FEE
DUFAULT RD	R23	31		MOSCHINI, ROBERT	73.83	RR	Owner	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
CHARLTON RD	R23	32		MOSCHINI, ROBERT	18	RR	Owner	FEE
SOUTH SIDE	R23	33		MOSCHINI, ROBERT	6	RR	Owner	FEE
MAPLE ST	R23	41		MOSCHINI, ROBERT	11.32	RR	Owner	FEE
89 SMITHVILLE RD	R30	1		ZUKAS, PETER	94.62	RR	Owner	FEE
SMITHVILLE RD	R31	3		PODBELSKI, ALAN	142	RR	Owner	APR
SMITHVILLE RD	R31	1	1	ZUKAS, PETER	39.7	RR	Owner	FEE
WOODSIDE RD	R31	4		ZUKAS, PETER	59	RR	Owner	FEE
WOODSIDE RD	R32	14		PODBELSKI, ALAN	18	RR	Owner	APR
16 TERKANIAN DR	R32	26		TERKANIAN, BENJAMIN	27.74	RR	Owner	FEE
POLAR SPRING RD	R34	3	1	MAINVILLE, KIRK	22.07	RR	Owner	FEE
DONNELLY RD	R35	17		KIMBALL, GREGORY	17.6	RR	Owner	FEE
59 DONNELLY RD	R35	16		SIMONIS, DAVID	42	RR	Owner	FEE
115 WILSON ST	R37	26		WILSON, CARL	113.91	RR	Owner	FEE
HASTINGS RD	R38	23		COONEY FIELDS, LLC	7.2	RR	Owner	FEE
WIRE VILLAGE RD	R38	20	1	MICZEK, JOHN	77.2	RR	Owner	APR
COONEY RD	R38	33		SMITH, CAMERON	18.61	RR	Owner	FEE
NO BROOKFIELD RD	R39	17		BEMIS FAMILY LIMITED PAR	4.32	RR	Owner	FEE
32 NO BROOKFIELD RD	R39	27		BEMIS FAMILY LIMITED PAR	122.61	RR	Owner	FEE
WOODSIDE RD	R39	19	1	CHALIFOUX, RAOUL	2.89	RR	Owner	FEE
44 WOODSIDE RD	R39	22	1	CHALIFOUX, RAOUL	11.79	RR	Owner	FEE
NORTHWEST RD	R39	39		PODBELSKI, ALAN	14.94	RR	Owner	APR
NO BROOKFIELD RD	R40	9		BEMIS FAMILY LIMITED PAR	22.03	RR	Owner	FEE
NORCROSS RD	R40	4		GAUCHER, PETER	78	RR	Owner	FEE
22 NORCROSS RD	R40	7		GAUCHER, PETER	75	RR	Owner	FEE
NORTHWEST RD	R42	6		JDF ENTERPRISES LLC	48.59	RR	Owner	FEE
NORTHWEST RD	R42	8		JDF ENTERPRISES LLC	6.47	RR	Owner	FEE
NORTHWEST RD	R42	11		JDF ENTERPRISES LLC	38.97	RR	Owner	FEE
56 NORTHWEST RD	R42	12		JDF ENTERPRISES LLC	135.93	RR	Owner	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
NO SPENCER RD	R42	25		THIBEAULT, EDWARD	12	RR	Owner	FEE
91 NO SPENCER RD	R42	30		THIBEAULT, EDWARD	26.61	RR	Owner	FEE
31 COONEY RD	R43	13		COONEY FIELDS, LLC	48.3	RR	Owner	FEE
HASTINGS RD	R43	16	1	MCGOURTY, MICHELLE	13.5	RR	Owner	FEE
15 COONEY RD	R43	10		SMITH, CAMERON	40.61	RR	Owner	FEE
84 NO SPENCER RD	R43	3		THIBEAULT, EDWARD	11	RR	Owner	FEE
NO SPENCER RD	R43	4		THIBEAULT, EDWARD	13	RR	Owner	FEE
GOLD NUGGET RD	R44	7	2	BRUSO, JOSEPH	28.02	RR	Owner	FEE
GOLD NUGGET RD	R44	36		BRUSO, JOSEPH	36.12	RR	Owner	FEE
GOLD NUGGET RD	R44	11		BRUSO, JOSEPH	0.74	RR	Owner	FEE
35 GOLD NUGGET RD	R44	14		GEORGE, WILLIAM	49.72	RR	Owner	FEE
17 MCCORMICK RD	R44	9		STANDISH, RICHARD	47	RR	Owner	FEE
35 MCCORMICK RD	R47	12		LAPRADE, ROBERT	13	RR	Owner	FEE
NORTHWEST RD	R49	2		JDF ENTERPRISES LLC	132.22	RR	Owner	FEE
82 NORTHWEST RD	R49	3		WOODIS, STEVEN	6.26	RR	Owner	FEE
NORTHWEST RD	R50	7		JDF ENTERPRISES LLC	17.9	RR	Owner	FEE
85 NORTHWEST RD	R50	5		RICHARDSON, NANCY	41.62	RR	Owner	FEE
BROOKS POND CROSS RD	R51	15		HARTSHORN, BRUCE	21.62	RR	Owner	FEE
26 BROOKS POND CROSS RD	R51	16		HARTSHORN, BRUCE	6.89	RR	Owner	FEE
BROOKS POND RD	R51	2		SPENCER FARMS LLC	20	RR	Owner	APR
243 NO SPENCER RD	R56	2		SCUDDER, DOUGLAS	8.01	RR	Owner	FEE
NO SPENCER RD	R56	3		SCUDDER, DOUGLAS	50.29	RR	Owner	FEE
BROOKS POND CROSS RD	R60	38		HARTSHORN, BRUCE	22.61	RR	Owner	FEE
269 MAIN ST	U15	46	2	DURGIN, DAVID	10.95	VR	Owner	FEE
73 LINCOLN ST	U19	13		BOOTH, CLAUDE	10.15	VR	Owner	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
CLARK RD	U27	1		WATSON, GEORGE	15	RR	Owner	FEE
WILSON GROVE	U28	86		WATSON, GEORGE	0.1	RR	Owner	FEE
WILSON GROVE	U28	86	1	WATSON, GEORGE	0.16	RR	Owner	FEE
WILSON GROVE	U28	86	2	WATSON, GEORGE	0.13	RR	Owner	FEE
WILSON GROVE	U28	86	4	WATSON, GEORGE	0.12	RR	Owner	FEE
WILSON GROVE	U28	86	5	WATSON, GEORGE	0.08	RR	Owner	FEE
WILSON GROVE	U28	86	6	WATSON, GEORGE	0.08	RR	Owner	FEE
WILSON EXT	U28	108	1	WATSON, GEORGE	0.28	RR	Owner	FEE
WILSON EXT	U28	109	1	WATSON, GEORGE	0.08	RR	Owner	FEE
CHICKERING RD	U29	110		WATSON, GEORGE	9.19	RR	Owner	FEE
CHICKERING RD OFF	U29	114		WATSON, GEORGE	0.37	RR	Owner	CR
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
Chapter 61B								
SO SPENCER RD	R01	9		BEDROSIAN REALTY TRUST	69.65	RR	Owner	FEE
WM CASEY RD	R01	17		BEDROSIAN REALTY TRUST	4.56	RR	Owner	FEE
WM CASEY RD	R01	18		BEDROSIAN REALTY TRUST	126.53	RR	Owner	FEE
BACON HILL RD	R03	13		KINNE, ARTHUR	39.44	RR	Owner	FEE
E CHARLTON RD	R04	3		JENESE, JAMES	39.00	RR	Owner	FEE
33 BACON HILL RD	R08	23		KENNEDY, JOSEPH	7.05	RR	Owner	FEE
16 GAUTHIER RD	R08	38		WILSON, DANIEL	8.39	RR	Owner	FEE
12 JOLICOEUR RD	R10	19		MCCOMAS, WILLIAM	7	RR	Owner	FEE
10 MARTIN RD	R12	9		FASANO, JOSEPH	8.84	RR	Owner	FEE
43 CHICKERING RD	R15	4	4	RUSSELL, PAULAINE	8.29	RR	Owner	FEE
65 GH WILSON RD	R16	1		PUALWAN, BETTY	48.45	RR	Trustees of Reservations	CR
169 ASH ST	R17	1		FARNHAM, PAUL	22.58	RR	Owner	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
SO SPENCER RD	R21	1		CHARPENTIER JOHN	38	RR	Owner	FEE
155 MECHANIC ST	R23	40		SPENCER FISH & GAME	26.29	SR	Owner	FEE
152 GREENVILLE ST	R25	35		CHESANEK, FREDERICK	9.42	RR	Owner	FEE
183 GREENVILLE ST	R25	3		RAMSEY, WARREN	11.96	RR	Owner	FEE
140 GREENVILLE ST	R27	7		LYMAN, PAUL	30.62	RR	Owner	FEE
96 GREENVILLE ST	R28	9-18		BERNARD PAUL	6.9	RR	Owner	FEE
101 GREENVILLE ST	R28	7		STANDRING, NEIL	13.12	RR	Owner	FEE
MAIN ST	R34	8	3	ECKLEBERRY, PHYLLIS	94.28	RR	Owner	FEE
500 E MAIN ST	R34	6		ECKLEBERRY, PHYLLIS	32	RR	Owner	FEE
HASTINGS RD	R37	22	1	GURK, MITCHELL	6.05	RR	Owner	FEE
22 HASTINGS RD	R37	22		KENNEDY, LISA	48	RR	Owner	FEE
54 HASTINGS RD	R37	27	1	MCGOURTY, ROBERT	28.53	RR	Owner	FEE
32 COONEY RD	R38	30		BAKER, PETER	31.97	RR	Owner	FEE
COONEY RD	R38	31	1	CHALIFOUX, KEVIN	6.53	RR	Owner	FEE
37 WOODSIDE RD	R40	1		NOWALK, BERNARD	30.62	RR	Owner	FEE
WOODSIDE RD	R40	2		NOWAK, BERNARD	3.20	RR	Owner	FEE
71 NO BROOKFIELD RD	R41	3		CZJAKOWSKI FAMILY IRR TR	24.31	RR	Owner	FEE
81 NO SPENCER RD	R42	26		DILEO, ANNE	7.25	RR	Owner	FEE
PAXTON RD	R45	7		ANDREWS, NANCY	107.76	RR	Owner	FEE
204 PAXTON RD	R46	4	1	ANDREWS, GREGG	11.5	RR	Owner	FEE
PAXTON RD	R46	5		ANDREWS, GREGG	19.8	RR	Owner	FEE
HASTINGS RD	R47	6	2	FANNING, VIRGINIA	20.95	RR	Owner	FEE
35 MCCORMICK RD	R47	12		LAPRADE, ROBERT	20.21	RR	Owner	FEE
BROOKS POND RD	R51	2		SPENCER FARMS LLC	19.03	RR	Owner	APR
BROOKS POND RD	R51	19		SPENCER FARMS LLC	7.8	RR	Owner	FEE
181 NORTHWEST RD	R61	1	1	COOK, JUSTIN	18.68	RR	Owner	FEE

PRIVATE CHAPTER LANDS								
ADDRESS	**PARCEL ID**			**OWNER**	**PARCEL AREA IN ACRES**	**ZONING**	**MANAGER**	**INTEREST**
101 ASH ST	U03	17		FECTEAU FAMILY TRUST	9.8	RR	Owner	FEE
133 WILSON ST	U17	40		MONETTE, RICHARD	9.01	RR	Owner	FEE
61 THOMPSON POND RD	U36	13		MAKYNEN, JOHN	7.97	RR	Owner	FEE
LAKESHORE DR	U37	9		MAKYNEN, JOHN	4.1	RR	Owner	FEE
Note: some parcels fall into more than one designation, e.g. R51-2.								

NON-PROFIT OWNED LAND									
MAP	Parcel	Description	Acres	protecti on	#	Street	Owner	Manager	Interest
R04	8	Camp	81.0	N		BORKUM RD	DIOCESE OF WEST MASS	OWNER	FEE
R05	10	Girl Scout camp	50.0	L		BUTEAU RD	Montachusetts Girl Scouts	OWNER	FEE
R05	6	GirlScout camp	47.5	L	34	BUTEAU RD	Montachusetts Girl Scouts	OWNER	FEE
R05	7	Girl Scout camp	131.4	L		BUTEAU RD	Montachusetts Girl Scouts	OWNER	FEE
R26	8	Burncoat sanctuary - part	2.1	P		GREENVILLE ST	MASS AUDUBON SOCIETY INC	OWNER	CR
R26	7	Burncoat Sanctuary - part	2.1	P		GREENVILLE ST	MASS AUDUBON SOCIETY INC	OWNER	CR
R26	2	Burncoat Sanctuary - part	126.6	P		GREENVILLE ST OFF	MASS AUDUBON SOCIETY	OWNER	CR
R26	6	Burncoat Sanctuary - part	59.5	P		GREENVILLE ST	MASS AUDUBON SOCIETY INC	OWNER	CR
R32	3-1	no name	1.3	L	43	SMITHVILLE RD	Spencer Agricultural Assoc.	OWNER	FEE
R32	3-5	no name	1.0	L	53	SMITHVILLE RD	Spencer Agricultural Assoc.	OWNER	FEE
R32	3-2	no name	1.5	L	45	SMITHVILLE RD	Spencer Agricultural Assoc.	OWNER	FEE
R32	3-4	no name	1.1	L	51	SMITHVILLE RD	Spencer Agricultural Assoc.	OWNER	FEE
R32	26-4	Fair parking	6.0	X		SMITHVILLE CROSS RD	Spencer Agricultural Assoc.	OWNER	FEE
R34	8-1	HILLSIDE BAPTIST CHURCH	15.0	X	472	E MAIN ST	HILLSIDE BAPTIST CHURCH	OWNER	FEE
R47	15	Camp Marshall	5.5	P		MCCORMICK RD	WORCESTER 4-H CENTER INC	OWNER	FEE
R48	5	ST JOSEPHS ABBEY	12.0	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R48	10	ST JOSEPHS ABBEY	22.0	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R48	10	ST JOSEPHS ABBEY	22.0	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R49	1	ST JOSEPHS ABBEY	3.6	L		ALTA CREST RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R52	6	ST JOSEPHS ABBEY	279.8	L		ALTA CREST RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R53	5	ST JOSEPHS ABBEY	41.1	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R53	2	ST JOSEPHS ABBEY	120.8	L		NO SPENCER RD	Cistercian Abbey of Spencer, Inc.	Abbot & monks	FEE
R53	3	ST JOSEPHS ABBEY	8.6	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R54	6	Camp Marshall	134.0	L	75	MCCORMICK RD	Worcester County 4H	OWNER	FEE
R54	3	ST JOSEPHS ABBEY	63.5	L		NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R54	4	ST JOSEPHS ABBEY	79.9	L		HASTINGS RD	Cistercian Abbey of Spencer, Inc.	Abbot & monks	FEE
R54	1	Camp Marshall	1.8	P		NO SPENCER RD	WORC COUNTY 4H CENTER INC	Worcester County 4-H	FEE
R54	8	Camp Marshall	125.0	P		MCCORMICK RD	WORC COUNTY 4H CENTER INC	Worcester County 4-H	FEE
R54	2	retreat house	4.8	X	186	NO SPENCER RD	MARY HOUSE INC	OWNER	FEE
R54	5	Part of Camp Marshall	19.0	X		MCCORMICK RD OFF	WORCESTER 4H	OWNER	FEE
R56	16	Thompson Pond Beach	0	L		NOTTINGHAM CIRCLE	SHERWOOD FOREST BEACH ASS TRUST	BEACH ASSOCIATION	FEE
R57	51	Boy Scout Camp	0.8	L		BARCLAY RD	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE

NON-PROFIT OWNED LAND									
MAP	Parcel	Description	Acres	protecti on	#	Street	Owner	Manager	Interest
R57	15	Boy Scout Camp	62.4	L		BROWNING POND RD	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	23	Boy Scout Camp	33.0	L		BROWNING POND RD	INST OF TRUST	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	21	Boy Scout Camp	0.7	L		BROWNING POND RD	HORNE ARCHIE J	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	25	Boy Scout Camp	13.0	L		BROWNING POND RD	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	35	Boy Scout Camp	0.2	L		BROWNING POND CIRCLE	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	40	Boy Scout Camp	84.1	L		BROWNING POND RD	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	18	Boy Scout Camp	1.0	L		BROWNING POND RD	Mohegan Council, Inc. BSA	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	19	Boy Scout Camp	10.0	L	69	BROWNING POND RD	HORNE ARCHIE	MOHEGAN COUNCIL INC. B.S.O.A.	FEE
R57	1	ST JOSEPHS ABBEY	5.0	L		NO SPENCER RD	Cistercian Abbey of Spencer, Inc.	Abbot & monks	FEE
R59	1	ST JOSEPHS ABBEY	918.0	L	167	NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R59	2	ST JOSEPHS ABBEY	158.0	L	167	NO SPENCER RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R63	1	ST JOSEPHS ABBEY	13.0	L		BROWNING POND RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
R63	2	ST JOSEPHS ABBEY	0.6	L		BROWNING POND RD	ST JOSEPHS ABBEY	Abbot & monks	FEE
U07	249	open lot	1.0	L	46	MAPLE ST	St. Mary's Roman Catholic Church	OWNER	FEE
U07	24-1	BY MUZZY Brook	0.2	L		LLOYD DYER DR	Spencer Housing Authority	OWNER	FEE
U11	11	Catholic Cemetary	15.0	L	18	W MAIN ST	Holy Rosary Cemetary	OWNER	FEE

Massachusetts Department of Conservation and Recreation

Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines



March 2012

Massachusetts Department of Conservation and Recreation

Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines

March 2012

Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor
Richard K. Sullivan, Jr., Secretary
Edward M. Lambert, Jr., Commissioner
Jack Murray, Deputy Commissioner for Park Operations

Dear Friends,

On behalf of Governor Deval Patrick, Secretary of Energy and Environmental Affairs Rick Sullivan, and the Department of Conservation and Recreation, it brings me great pleasure to present the final *Landscape Designation for DCR Parks and Forests: Selection Criteria and Management Guidelines*. This document reflects the fruits of a comprehensive and inclusive initiative that began in April 2009 with the commencement of the Forest Futures Visioning Process. That year-long process involved an extensive public process and culminated in a report developed by a Technical Steering Committee (TSC), which proposed a long-term framework for: adaptive management of DCR's properties; consideration of the full range of public benefits and ecosystem values that DCR's forests and parks can sustainably provide; and versatility to guarantee that monitoring affords opportunities for refinement to ensure that those values and objectives are realized.

Building upon the findings and recommendations of the TSC, DCR appointed a Director of Forest Stewardship, a new senior-level position within the agency, and initiated the Landscape Designation Process, which featured fourteen public workshops between Fall 2010 and Spring 2011, providing several opportunities for public comment during the development of selection criteria and management guidelines for the three landscape designations proposed by the TSC and sought input on the agency's initial designations for DCR's parks and forests.

The agency's Internal Working Group, composed of representatives from nearly all of DCR's divisions and bureaus as well as EEA, worked together over the course of countless hours to review and evaluate thousands of pages of public input, and incorporate feedback appropriately. The task was considerable and the effort poured into it was equally great. Knowing that this group spent a significant amount of time debating and reviewing the pertinent issues raised by the public and our partners, I am proud and appreciative of the diligence and thoroughness with which they have approached this assignment and the dedication that they exhibited to its completion.

I want to take a moment to thank our partners in the DCR Stewardship Council as well as those at The Nature Conservancy, Mass Audubon, The Sierra Club, the Appalachian Mountain Club, the Trustees of Reservations, and the Environmental League of Massachusetts for their support throughout this process. Upon implementation, the product of these efforts will result in a considerable increase in the number of acres set aside from commercial timber harvesting, will focus forest management activities in areas targeted as most suitable, and will provide a framework for guiding the management of our parks and forests as we continue to work toward the development of Resource Management Plans.

Stakeholders, partners, and DCR staff alike have devoted many hours to this effort. What we advance here is a new and exciting paradigm of land management for DCR as well as a stronger and more robust standard for inter-disciplinary and integrated planning within the agency. I am excited by the opportunity to lead DCR into this new chapter of stewardship of our amazing natural, cultural, and recreational resources. After the considerable amount of deliberation, thoughtful review of key issues and concerns, and resources devoted to the development of this vision, I look forward to working with our staff and our partners to begin implementing and observing the impact of the course we have charted.

To all those whose fingerprints have made a lasting impression on this extraordinary achievement, I extend my sincerest thanks and gratitude to the service you have provided to DCR and to the Commonwealth.

Sincerely,



Edward M. Lambert, Jr.
Commissioner

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The Massachusetts Department of Conservation and Recreation (DCR), an agency of the Executive Office of Energy and Environmental Affairs, oversees 450,000 acres of parks and forests, beaches, bike trails, watersheds, dams, and parkways. Led by Commissioner Edward M. Lambert, Jr.., the agency's mission is to protect, promote, and enhance our common wealth of natural, cultural, and recreational resources. To learn more about DCR, our properties, and our programs, please visit us at www.mass.gov/dcr. Contact us at mass.parks@state.ma.us.

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Section 1. Introduction

1.1 Background

In 2009 and 2010, the Massachusetts Department of Conservation and Recreation (DCR), together with its partners and stakeholders, undertook a year-long initiative to develop a renewed vision and long-term strategy for managing the 311,000 acres of forested lands in the State and Urban Parks system. This effort, the Forest Futures Visioning Process (FFVP), explored the wide range of ecosystem services or natural benefits provided by these lands and their place in the overall context of the Commonwealth's three million acres of public and private forests. The process sought to balance forest management practices with other uses and activities so that these lands may continue to provide a range of public benefits to future generations. The FFVP, which involved forest resource experts, stakeholders, and the general public, resulted in a set of ten recommendations to DCR for the improvement of forest stewardship practices.[1]

DCR has committed to adoption of the core set of recommendations of the FFVP – specifically, elevating the role of forest stewardship through the creation of a Director of Forest Stewardship position, improving public process relative to management decisions impacting DCR lands, adoption of an ecosystem services model to guide management decisions, and creating a new land use management structure as a means to identify and delineate compatible activities within DCR parks and forests. These efforts are more than just changes in how DCR approaches forestry – rather, they represent a new direction for strategic land stewardship for DCR.

The implementation of the FFVP recommendations has provided DCR with the opportunity to complete an analysis for all DCR State and Urban Parks and Forests and group them by key natural and ecological characteristics (topography, geology and elevation) – an effort that supports not only the new land use management structure, but is also beneficial to other resource planning efforts. This also marks the first time the agency has reached out to stakeholders and the public to solicit input on land use management decisions at a statewide scale.

1.2 Forest Futures Visioning Process

DCR, with facilitation by the Massachusetts Office of Public Collaboration (MOPC), launched the FFVP in April 2009. The agency undertook this process at the suggestion of the DCR Stewardship Council, in response to public criticisms of some of DCR's forestry practices and in recognition of the need to engage the public in an active dialogue about land management within the DCR State and Urban Parks system. Led by a Technical Steering Committee (TSC) composed of individuals with a high level of expertise on issues, trends, and best practices in climate change, forest conservation and ecology,

[1] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

invasive species, landscape ecology, natural resource economics and law, recreation, silviculture, social policy, visual/aesthetics, watersheds, and wildlife habitat, and guided by an Advisory Group of Stakeholders, the FFVP involved five public forums that were attended by over 500 individuals and received over 1,000 comments during the course of the process.

In its final recommendations report, the TSC encouraged DCR to embrace a "land management paradigm shift … moving the Department's forest management towards a vision based on a more comprehensive suite of ecosystem services."[2] The concept of ecosystem services, as developed through the 2005 Millennium Ecosystem Assessment[3], relates to the benefits provided to humans and the environment by ecosystem resources and processes. These services can be broken into four broad categories: provisioning, regulating, supporting, and cultural. The TSC focused on the premise that DCR lands should be managed for the provision of ecosystem services to the public that are not consistently delivered by private lands. These services include: carbon sequestration, soil, air and water quality, biological and ecosystem diversity, nutrient cycling, culture, history, spiritual values, public recreation, and renewable wood products.

To achieve this vision, the TSC provided DCR with a set of ten recommendations, primary among these recommendations is that DCR adopt a new land use management structure that incorporates a system of designating the 311,000[4] acres of DCR parks and forests at a statewide scale into three different zones—Reserves, Parklands and Woodlands—so that incompatibilities among the various ecosystem services can be prioritized and managed system-wide as well as prioritized within the individual zones in an effort to maximize outdoor recreational experiences on DCR lands. Taken together, these recommendations would impact every forest, park, and reservation in DCR's State and Urban Parks system.[5]

It is important to recognize that while DCR has adopted and is implementing many of the TSC's recommendations, some recommendations (or specific aspects of them) were not fully adopted, or cannot be at the present time, due to budgetary or other constraints. For example, some portions of Recommendations #9 (re: better stewardship of private forestland) and #10 (re: improved funding) require legislative action or budgetary resources that are not likely to materialize in the near future. In

[2] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 6.

[3] The 2005 Millennium Ecosystem Assessment was an international scientific effort that identified a connection between ecosystem services and human well-being, and divides these services into provisioning services, regulating services, and cultural services. Launched by the United Nations in 2001, the assessment involved over 1,300 natural and social scientists from around the world. For more information and access to reports, see: http://millenniumassessment.org/en/index.aspx

[4] Note: The TSC report referred to the "308,000 acres" of DCR State and Urban Park system properties. However, today that total is closer to 311,000 acres. The acreage figures in this document have been updated to reflect the more current total.

[5] DCR Water Supply Protection lands are not included in this process. The Quabbin, Wachusett and Ware River watersheds are managed by DCR's Division of Water Supply Protection (DWSP), in partnership with the Massachusetts Water Resources Authority. Although part of DCR, the DWSP is funded and overseen by a separate governing body – the Water Supply Protection Trust Board – and not the DCR Stewardship Council. The DWSP is undergoing a review of its forestland management by an independent panel of scientists and its legislatively-mandated Watershed Advisory Committees which will include opportunity for public input.

other cases, DCR foresaw a need for more flexibility than some TSC recommendations (e.g., regarding silvicultural methodology), in order to allow staff to apply certain forestry practices where necessary in order to effectively manage DCR lands consistent with the goals established by the TSC. Overall, DCR was in agreement with the vast majority of the TSC recommendations, and has made a number of significant changes and adjustments in its management planning and operations as a result.

It is also important to note that despite the controversies that led the agency, in consultation with the DCR Stewardship Council to initiate the FFVP, the TSC report and recommendations largely affirmed the value and importance of an active forest management program on DCR lands. Indeed, the report identified a number of ecosystem services and benefits associated with active forest management, and even proposed that the agency put in place silvicultural guidelines that demonstrate to private landowners and the general public how excellent silvicultural management can be implemented across the range of forest types and stands that exist in the Commonwealth.

1.3 Landscape Designation Overview

DCR is adopting a new land use designation system for the State and Urban Parks system structured around the designation of DCR lands as Reserves, Parklands or Woodlands, based on primary land use characteristics and suitability. In order to balance the provision of ecosystem services and activities on these lands, the FFVP recommended target acreage allocation ranges for each designation. These targets are:

- Reserves: 90,000 – 120,000 acres
- Parklands: 70,000 – 90,000 acres
- Woodlands: 100,000 – 150,000 acres.[6]

Further, the Patrick-Murray Administration has made a commitment that at least 60% of the land within the State and Urban Parks system (at least 186,566 acres), will be designated as Parklands and Reserves.[7]

Each designation has its own set of ecosystem services and management priorities:

> **Reserves** will conserve large contiguous blocks of high-value ecosystems. These are areas where the dominant ecosystem service objectives will be biodiversity maintenance, nutrient cycling and soil formation, and long-term carbon sequestration. Reserves are areas that users often value for spiritual reasons and that may provide elements of a wilderness recreational experience. There will be no commercial

[6] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 35.

[7] *Patrick-Murray Administration Announces Commonwealth Forest Heritage Plan.* Press Release, April 21, 2010. Available at: http://www.mass.gov/dcr/news/2010/pr10-4-21.pdf. Also, see Footnote #4. Despite the change in leadership at the Secretariat that has occurred since the FFVP was completed, the Patrick-Murray Administration still supports this allocation.

harvesting of timber in Reserves. Forest management will generally consist of letting natural processes take their course, although under specific circumstances, more active management might be permitted. For example, wildfire fuels management may be necessary for Reserves in Southeastern Massachusetts. Recreational activities will generally be passive, but existing authorized motorized uses will be maintained until they can be evaluated according to DCR's Motorized Trail Recreation Facility Assessment Policy.[8] This evaluation will guide continuation of pre-existing Off Highway Vehicle (OHV) use in Reserves.

Parklands conserve unique natural and cultural resources while focusing on the provision of recreation.[9] Parkland management approaches are expected to range from areas where natural processes dominate to highly modified environments where use is intensively managed. While wood production will not be a management objective in Parklands, some vegetation management to support recreational use, or to ensure public safety or ecological integrity may take place (e.g., removal of hazardous trees, clean up of storm or insect disease damage around facilities, maintenance of unique habitats upon advice of the Division of Fisheries & Wildlife, etc.).

Woodlands conserve a range of forest ecosystems, where recreation activities and sustainable forest management will continue. (Timber harvest sites will be closed to the public *only during active harvesting operations* for public safety.) These areas will provide a range of ecosystem services, including: production of high-quality, local, renewable wood products, protection of water quality,[10] carbon sequestration, and both late forest successional structures, and in focused areas, early forest successional stages to promote habitat diversity. Commercial timber harvesting that demonstrates a range of "excellent forestry" through the application of best management practices will be the applied management standard, and there will be demonstration forest opportunities to educate landowners and the general public. While the emphasis will be on uneven aged management, openings of up to five acres may occur under exceptional circumstances, after intensive review and approval by the DCR Commissioner. Forest management will also play a role in the ecological restoration of areas that have been significantly altered by past management practices, such as plantations of non-native species and high-grade harvests.

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[8] This policy is available on the DCR website at: http://www.mass.gov/dcr/recreate/ohv_policy.pdf

[9] Note that the TSC directed DCR to consider all State and Urban properties in their analysis, stating that Parklands ". . . should include all DCR lands in heavily populated areas and other forested areas with high recreational values while retaining other important ecosystem services." *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 39.

[10] It is well established that watershed forest cover provides the best long-term protection for drinking water supplies. A watershed forest functions 24/7 and provides filtration that rivals that provided by the most carefully engineered filtration plant. Forest cover is, however, periodically subjected to significant natural disturbances (e.g., wind, ice, insects) that can temporarily set back its filtration function. In order to maintain vigorous forest filtration, watershed forest management works to deliberately and carefully diversify age structure and species composition in order to increase resistance to disturbance and speed post-disturbance recovery. For more details on these principles, see: http://www.mass.gov/dcr/watersupply/watershed/documents/2007QuabbinLMPCh3.pdf

The DCR mission is "To protect, promote and enhance our common wealth of natural, cultural and recreational resources." It is important to note that the application of Landscape Designations significantly advances that mission. Habitat protection and cultural resource retention is important in all three designations – as stewards of these important resources, we work hard to ensure their protection no matter where they exist. With the exception of continued OHV use in newly designated Reserves, which will be undergoing further analysis and evaluation, Landscape Designation has no other impacts to existing recreational uses. ***Public access will continue within all three designations***. These three different designations allow DCR to provide users with a variety of experiences.

1.4 Implementation Process

In Spring 2010, after the TSC released the FFVP Final Report, DCR formed an Internal Working Group composed of staff with expertise in planning, natural and cultural resource protection, forestry, recreation, environmental education and interpretation, and park operations (see Appendix 11) to develop a framework for designating lands within the DCR State and Urban Parks system as Reserves, Parklands and Woodlands. With the FFVP Final Report and the Patrick-Murray Administration's endorsement and policy direction as its guide, the Internal Working Group produced a draft set of selection criteria and management guidelines to share with the public.

In November and early December of 2010, DCR hosted a series of seven public workshops across the Commonwealth to solicit public input on the selection criteria to be used in the Landscape Designation process, as well as on the draft management guidelines. Over 300 individuals participated in these meetings, and DCR received approximately 350 written comments expressing multiple viewpoints.[11] The selection criteria and the management guidelines were fine tuned based upon the public feedback received. Using available digital data, the selection criteria and Geographic Information Systems (GIS) software were used to develop three models (one each for Reserves, Parklands and Woodlands) and applied to develop a draft map of the three designations. [12]

The **Reserves Model** evaluated DCR State and Urban Parks properties using the Department of Fish and Game's (DFG) Natural Heritage and Endangered Species Program's (NHESP) BioMap2 data and output from a collaborative effort between The Nature Conservancy (TNC) and DCR to identify eleven Ecological Land Units. Ecological Land Units, or ELUs, are areas of land and water having similar characteristic combinations of physical environment – elevation, geology and land form (a measure of topography) – and as a result, similar vegetation and habitats. The purpose of designating ELUs was to identify and distribute potential Reserves across the state's forested ecosystems (i.e., areas with similar topography, geology and elevation) and to identify lands with the highest forest core values and best landscape level characteristics within each ecosystem. Designating ELUs ensured that Reserves would protect a range of ecosystem types, and be located across the Commonwealth so that all residents could have a Reserve experience.

[11] Notes from these public meetings and the subsequent written public comment submitted to DCR can be seen at: http://www.mass.gov/dcr/ld/landscapedesignations.htm

[12] The final selection criteria for each designation are described in the three sections of the report that follow. The three GIS models, and the datasets utilized to meet the selection criteria identified, are explained in Appendix 9.

The **Parklands Model** rated DCR State and Urban Parks properties based on high trail density, high population density and known intensive use areas developed for recreational activity.

The **Woodlands Model** ranked DCR State Parks properties for their suitability as productive Woodlands based upon soils, forest type, and lands that could benefit from silviculture. Urban Parks properties were not evaluated by the Woodlands Model because the necessary datasets were not available. Efforts were not made to develop the necessary data for a Woodland evaluation of these properties as there was neither the time nor the available funding to do so, and their typical characteristics of highly developed recreation, smaller acreage and surrounding population density suggested these properties would not be appropriately designated as Woodlands.

After the GIS models and selection criteria were applied, an internal agency review followed, to ground truth the draft mapping of the three designations. DCR Operations staff, who are most knowledgeable about the conditions and characteristics of properties on the ground, provided valuable feedback which was factored into the draft application of designations.

DCR sponsored a second round of seven public meetings around the state in May and June of 2011, at which the agency presented the draft application of the selection criteria and the resulting Landscape Designation proposals for DCR State and Urban Park properties. DCR also presented a draft set of management guidelines that articulated how Reserves, Parklands and Woodlands would be managed. The goal of the spring 2011 process was to solicit public review and input before finalizing the new system of land use management. Approximately 250 people participated, and over 400 written comments were submitted.[13] Again, multiple viewpoints were expressed, and all feedback was reviewed and considered during the Fall and early Winter of 2011. DCR reached out to some critically impacted municipalities to obtain broader involvement, as well as to major environmental organizations for input on particular issues of interest. As a result, some clarifications and adjustments were made and incorporated into the final designations and into these final guidelines. The final Landscape Designations can be seen in the series of maps provided in Appendix 10, and on the DCR website. The final breakdown of acreage among the three designations is as follows: 111,227 acres of Reserves, 76,904 acres of Parklands and 122,534 acres of Woodlands.

Thus, the final Landscape Designations were shaped by guidance and direction from the TSC and the Secretary of Energy and Environmental Affairs, and informed by both scientific (via GIS modeling) and public input processes.

DCR manages a number of properties that are co-owned and/or co-managed with DFG's Division of Fisheries & Wildlife (DFW), whose mission is more narrowly focused on the conservation of fish and wildlife resources.[14] Designations for these properties were made in consultation with staff at DFW – their comments on the Landscape Designations and Management Guidelines can be seen in Appendix 6.

[13] Notes from these public meetings and the subsequent written public comment submitted to DCR can be seen at: http://www.mass.gov/dcr/ld/landscapedesignations.htm

[14] This includes portions or all of the following properties: Bay Circuit Trail, Hawksnest State Park, Jug End State Reservation and Wildlife Management Area, Mount Watatic State Reservation, Quashnet Woods State Reservation, and the Southeast Massachusetts Bioreserve.

A small number of properties were not given a designation due to unusual administrative issues that did not merit designation at this time. These include:

- Hop Brook Flood Control Site: a flood control site that did not rank well for any of the three models
- MCI Plymouth: a minimum security prison that is located within Myles Standish State Forest
- Mt Watatic: a facility that is owned in partnership with five other public and private entities

1.4.1 Designation of Future Acquisitions

A major component of DCR's mission is land acquisition for resource protection and provision of public access. The Patrick-Murray Administration has displayed a strong commitment to land protection efforts, protecting over 88,000 acres across multiple Executive Office of Energy & Environmental Affairs (EEA) agencies – approximately 18,000 of those acres are held by DCR. As the TSC has recommended, the agency will seek opportunities to expand the Reserve system, so that the sizes of individual Reserves may be increased over time to encompass 10,000 to 15,000 acres.

In most cases, land acquired by DCR after the Landscape Designation process concludes will receive the same designation as the DCR facility that the new acquisition is expanding. For those acquisitions that result in the creation of a new DCR facility, or have different characteristics than surrounding facilities, or create new resource management or recreational opportunities, an internal assessment and analysis process will ensue and an interim designation made, to be finalized when a Resource Management Plan is completed.

1.5 Integration of Landscape Designation with Other Planning

In recommending Landscape Designations throughout the DCR parks system, the TSC both recognized the broad, statewide scale at which Reserves, Parklands and Woodlands would be identified, and understood that DCR would incorporate new, more specific knowledge over time to inform management at the district and property levels. The TSC also emphasized the need for DCR to better integrate and coordinate all of the planning functions within the agency. As a part of its work, DCR's Internal Working Group undertook this task with the support of environmental partners, resulting in the integration of key statewide level and property-level planning systems that are fundamental to the agency's management of its properties going forward.

1.5.1 Statewide Level

Landscape Designations, described in detail in this document, are applied at a statewide scale, and will guide land use management activities based on a balance between conservation and recreation for properties throughout the DCR parks system. Land at this scale is designated as Reserves, Parklands, or Woodlands. Much of the rest of this document provides details on the criteria used to designate DCR State and Urban Park properties, and on the guidelines that will inform management activities in each of those three designations.

1.5.2 District and Property Level

DCR develops Resource Management Plans (RMPs) for State and Urban parks, forests and reservations that include a comprehensive inventory and assessment of environmental and recreational resources, identification of the unique characteristics of a property or management unit, development of clear management goals and objectives, and an implementation plan to guide the short and long-term management. Land Stewardship Zoning (LSZ) is a finer level assessment applied at the property scale through the RMP process.[15] LSZ incorporates site specific information to guide the management and the protection of resources and areas within a property. The LSZ process defines three types of zones to address the legislative requirement to provide for the protection and stewardship of natural and cultural resources and to ensure consistency between recreation, resource protection, and sustainable forest management. [16]

During the preparation of an RMP, at the property scale, resource inventory and assessment leads to the zoning of specific areas within the property based on resource significance, sensitivity to recreation and management activities that are typical for that facility. A wide variety of existing data sources are drawn upon to apply this zoning (including BioMap 2) as well as data collected in the field as a part of developing the RMP.[17] Three Land Stewardship Zones provide a general continuum to categorize resources, relative to their sensitivity to human activities:

- **Zone 1**, the most protective zone, encompasses areas with highly sensitive natural and cultural resources that require special management approaches and practices to protect and preserve their special features and values.

- **Zone 2** encompasses stable yet important natural and cultural resources that are typical to the site. Zone 2 is the keystone to DCR's management responsibilities, because the protected landscape provides a buffer for sensitive resources, recharge for surface and groundwater, and large areas where typical public recreation activities can be managed at sustainable levels.

- **Zone 3** encompasses already developed landscapes or areas that may be suitable for future development as intensive use areas.

Significant Feature Overlays are used to identify resource features formally recognized or designated through research and assessment by professional resource specialists, who have developed specific management guidelines for the resource feature. The Significant Feature Overlay can be applied across all three zones. Examples of potential Significant Feature Overlays include historic resources listed on the National Register, priority habitat areas not included in a Zone 1, or Public Water Supply Districts.

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[15] See MGL Chapter 21, Section 2F. Information on the Resource Management Planning program and process can be found at: http://www.mass.gov/dcr/stewardship/rmp/

[16] For a complete discussion of these three zones and the additional special overlay zones, including expanded definitions of each and how they are applied, please see the DCR Land Stewardship Zoning Guidelines in Appendix 4 or on the DCR website at: http://www.mass.gov/dcr/stewardship/rmp/lszguidelines.htm

[17] DCR does not rely solely upon existing resource inventories for this task, recognizing the importance of the site specific data development that is a part of the RMP process

Landscape Designations will be used to inform the RMP process and the application of LSZ zones. Specific management guidelines associated with each zone are intended to provide additional protection and stewardship for site-specific natural and cultural resources and to ensure consistency among the activities that are allowed in each property under the broad management guidelines described for each Landscape Designation.[18]

DCR anticipates that the Landscape Designation and the RMP systems will work in coordination with each other to set high-level land management priorities based on ecosystem services, and to supplement those priorities with site specific resource protection and management guidelines. RMP site specific analysis may reveal resources and conditions not available to us at this time however the vertical and horizontal integration of these two systems, as exhibited in Table 1, allows for consistency between the two processes.

[18] Please see the DCR Land Stewardship Zoning Guidelines in Appendix 4 or on the DCR website at: http://www.mass.gov/dcr/stewardship/rmp/lszguidelines.htm

Table 1. Landscape Designation & Land Stewardship Zoning – A Land Management Framework

Landscape Designation Management Guidelines → Land Stewardship Zones ↓	**Reserve** – *The least fragmented forested areas where ecological processes will predominate and inform management, and where commercial timber harvesting is not allowed.*	**Woodland** – *Forested areas actively managed for forest health, resource protection, sustainable production of timber, and recreation.*	**Parkland** – *Areas providing public recreation opportunities, connections to nature, and protection and appreciation of natural and cultural resources.*
Zone 1 – *Highly sensitive resources requiring special management approaches.*	Rare species habitat, natural communities, archaeological sites, or fragile cultural sites identified as being sensitive to / easily degraded by human activities.		
Zone 2 – *Resources that support recreational and management activities appropriate to the site.*	Large areas of natural vegetation and associated natural and cultural features, including rare species habitat, that is compatible with dispersed recreation.	Forest stands and associated natural and cultural features, compatible with dispersed recreation **and active forest management** intended to enhance species and age class diversity.	Stable / hardy natural and cultural landscapes, where a variety of outdoor recreation activities can be provided in a sustainable manner.
Zone 3 – *Intensive use areas such as recreational sites or maintenance areas.*	**New zone 3s will not be established in Reserves**. *Exception* – an RMP may identify existing intensive use areas missed during designation and not already captured in a Parklands designation area, in which case the application of a zone 3 may be considered.	Intensive recreation and park administration areas currently embedded within the forested landscape.	Areas that require regular maintenance by DCR staff, including altered landscapes in active use, intensive recreation areas, and park administration areas. Sites that may accommodate administrative or intensive recreation areas to meet future demands.

Significant Feature Overlays can occur in all three designations, and in all three zones.

For complete management guidelines for Reserves see Section 2; for Parklands see Section 3; and for Woodlands see Section 4.

1.5.3 Forest Resource Management Plans

Prior to the FFVP, four comprehensive Forest Resource Management Plans (FRMPs) were prepared at the forestry district level, covering the Northern Berkshire district, the Central Berkshire district, the Southern Berkshire district, and the Western Connecticut Valley district.[19] These FRMPs include significant data analysis and public input, a review of current conditions and a vision for future forest conditions, along with short and long term strategies to reach those desired future conditions. DCR's Stewardship Council approved these four plans in November 2008 with the condition that they be revisited and revised as appropriate based on the FFVP.

Therefore, the existing FRMPs will be evaluated and edited to reflect Landscape Designations and incorporate the guidelines presented in this document and the updated Public Outreach and Consultation for Forest Cutting Plans Policy (see Appendix 3). In addition, Landscape Designations will supersede the Active Forest Resource Management Areas, Intensive Use Areas, and Forest Reserves that were established in the FRMPs. Amended FRMPs will incorporate the approaches to silvicultural treatments presented in the Woodlands guidelines to guide sustainable forest management in Woodland properties. Until the existing FRMPs are updated, the Woodlands guidelines will supersede the guidelines in the existing FRMPs. Decision criteria, resource protection, silvicultural approaches and guidelines are further detailed in the Woodlands section of this document.

Upon finalizing the Woodlands designations, DCR will undertake projects to demonstrate excellent forestry according to the Woodlands guidelines included in this document. Information from FRMPs will be incorporated into RMPs. Moving forward, forest management planning will occur as a part of the RMP process.

1.5.4 Public Process, Resource Assessment and Other Planning Tools

DCR is strongly committed to incorporating public processes into its planning and stewardship activities. In 2011 alone, the agency held over 50 public meetings. Proposed facility development and management activities that go beyond routine maintenance will continue to incorporate a public process.[20]

In addition to Landscape Designation, Resource Management Plans and Forest Resource Management Plans, DCR may employ a number of different planning tools as appropriate for the various complex challenges, resources, and issues that arise regularly. Examples of such planning tools include Master Plans that may be developed for a complex capital investment project (e.g., the Blue Hills Trailside Museum Master Plan[21]) and Comprehensive Interpretive Plans that may be developed to guide education and interpretation at a facility (such as the Mount Greylock Reservation Comprehensive

[19] These plans can be found on the DCR website at: http://www.mass.gov/dcr/stewardship/forestry/manage/planning.htm

[20] The DCR does not generally engage in a public process for new trails, changes in trail designation or trail closure decisions. However, in certain cases, where high levels of conflict exist, such as at the Middlesex Fells, or where changes could impact a significant portion of a trail system, the DCR may seek public input on such changes. See the *DCR Trail Guidelines and Best Management Practices Manual* for further guidance. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

[21] This is available on the DCR website at: http://www.mass.gov/dcr/pe/trailside.htm

Interpretive Plan[22]). Each of these tools is developed with public input, tailored to specific issues and provides for resource protection. These plans will be informed by the Landscape Designation of a given property. These planning tools may also be used and completed in conjunction with, prior to, or following an RMP, and may help inform or be informed by an RMP.

DCR consulted with DFW on the Landscape Designation process and guidelines,[23] and will continue to coordinate with DFW to assess what elements of the Massachusetts State Wildlife Action Plan can be implemented on DCR properties, consistent with DCR land management objectives and Landscape Designations.

Prior to completion of an RMP for a property or complex of properties, DCR's objectives are to provide stewardship for natural and cultural resources through compliance with applicable state and federal regulations, drawing upon professional site assessments of resources and a variety of professionally derived resource management guidelines; to maintain facilities; to protect public safety; and to meet state health and building codes. For properties where RMPs have not yet been developed, managers will follow the practices articulated in these management guidelines, along with relevant regulations, to ensure resource protection. The following is a partial list of regulations, agency policies, and resource management guidelines that are used to review and guide proposed management activities, facility development, and planning processes for DCR's forests, parks and reservations:

- DCR Best Practices for the Protection of Historic Buildings
- DCR Historic Parkways Preservation Treatment Guidelines
- DCR Old Growth Policy
- DCR Trails Guidelines and Best Practices Manual
- Federal and Massachusetts Endangered Species Act (16 U.S.C. 1531-1544 and 321 CMR 10.05)
- DCR Guidelines for agency activities in Areas of Critical Environmental Concern (301 CMR 12.00)
- DCR Guidelines for protection of archaeologically sensitive areas (DCR Archaeologist and Massachusetts Historical Commission)
- Massachusetts Environmental Policy Act review for projects that trigger specific thresholds (301 CMR 11.00)
- Massachusetts Forest Cutting Practices Act (MGL Chapter 132)
- Massachusetts Historical Commission Guidelines for protection of properties included in the State Register of Historic Places (MGL Chapter 254)
- Massachusetts Wetlands Protection Act, including project review by local Conservation Commissions (MGL Chapter 131)

[22] This is available on the DCR website at: http://www.mass.gov/dcr/news/publicmeetings/materials/parklands/greylockIMP2011.pdf

[23] See Appendix 6

- NHESP Forestry Conservation Management Practices for Rare Species
- Massachusetts Office of Coastal Zone Management Guidelines for Barrier Beach Management
- State and federal regulations and guidelines associated with ground and surface water quality, public water supplies, and waterways
- Massachusetts Watershed Protection Act MGL Chapter 92a and 350 CMR 11.05

In addition to the regulations and resource management guidelines listed above, DCR will carefully consider these factors when planning forest management projects:

- Old Growth Forests
- Rare Plant Communities
- Rare Species Habitat
- Riparian Areas
- Sensitive Historical Sites
- Steep Slopes
- Trail Buffers
- Wetlands and Vernal Pools

DCR is committed to the monitoring and protection of rare species, and will be utilizing BioMap 2 and working in coordination with NHESP to obtain and update resource information as staff resources permit.

All of these factors are evaluated on the ground when planning forest management projects and will contribute to the decision of whether a harvest will be excluded or deferred in order to protect the sensitive resources, including areas likely to be designated Zone 1 through the RMP process (see Section 4, Woodlands for more details).

1.6 Implementation Review and Improvement

The TSC urged DCR to adopt a process of adaptive management, so that insights gained from implementation of TSC recommendations can be used to improve future management decisions.[24] DCR agrees that there will be a need to analyze the effectiveness of both the Landscape Designations and the management guidelines in terms of their success in meeting the goals of each zone. The agency also recognizes that new site-specific information will come to light through the development of RMPs and

[24] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 25; p. 43. A model for such is provided by the *Open Standards for the Practice of Conservation* (Conservation Measures Partnership, Version 2.0, October 2007), available at: http://www.conservationmeasures.org/initiatives/standards-for-project-management

other research and planning efforts, and there will be a continual need to consider and incorporate new information as part of adaptive management.

DCR will review both the Landscape Designations and the management guidelines every ten years to assess their effectiveness in reaching the agency's goals of providing for the broad range of ecosystem services and make any necessary adjustments as a result in order to increase effectiveness.

Within the TSC report and this document are many recommendations and commitments that will require extensive staff time and funding. In the current challenging budget times, DCR will focus on implementing the highest priority items in these guidelines. One way to make incremental progress is to undertake pilot projects. DCR will explore the possibility of working with one community to pilot a "community demonstration forest" on a small DCR property. Developing demonstration forests in cooperation with local towns is an important tenet of the TSC report. Such a pilot could demonstrate how motivated towns with expertise and public support for excellent forestry and local wood products can work cooperatively with DCR. Selection of a property for this type of pilot would consider attributes that make a good demonstration forest, such as forest conditions that can benefit from uneven aged, late successional restoration projects and good access for forestry and public education to develop interpretive programs around the work done. If successful, the pilot could be extended and possibly expanded to other small DCR properties with suitable forest conditions.

1.7 Landscape Designations and Management Guidelines

Details on the three Landscape Designations – Reserves, Parklands, and Woodlands – are presented in the following pages. The description of each Landscape Designation begins with a statement of purpose, the TSC recommendation for the management approach for the designation, and a short list of primary ecosystem service objectives. This is followed by a discussion of each designation and any special considerations, and the selection criteria that were used to identify the appropriate properties for this land use. The discussion concludes with a description of the management guidelines for each Landscape Designation.

Section 2. Reserves

2.1 Reserves – Purpose

The primary purpose of setting aside large areas of forest as Reserves is to allow forests to develop relatively unimpeded by human disturbance and to create late successional habitat. Given a sufficient amount of time without major disturbances, the forest will develop characteristics associated with true old growth forest. These late successional and old growth conditions include a wide diversity of tree sizes and ages, tip-up mound topography, and micro-site conditions from fallen trees and large amounts of downed woody debris.

Another reason for the establishment of Reserves is to provide areas where forest conditions can be influenced solely by natural (versus human-caused) disturbances, where natural disturbance regimes can play out indefinitely, and where visitors will be able to experience these unique conditions first hand. Users of Reserves often value them for spiritual reasons since they may provide elements of a wilderness recreational experience.

DCR anticipates that Reserves will also provide an aspect of biodiversity less prevalent in the rest of the forests so it is important that the system of Reserves includes representatives from the main forest types across the Commonwealth.[25]

2.2 Patch Reserves

The TSC recommended that DCR designate "patch reserves" within the Parkland and Woodland Landscape Designations to identify areas where standard best management practices may not be adequate to fully protect highly significant and sensitive ecological or cultural resources from certain human uses or management and to recognize areas of special significance to park users and the public.

However, DCR believes the term "patch reserve" has different meanings for different people, and as the TSC pointed out, these areas should be selected by another set of criteria and have goals that are altogether distinct from the land designated as landscape-level Reserves.[26] Further, all of the site-specific information that is needed to properly identify candidate areas for "patch reserves" was simply not available during the Landscape Designation process. Therefore, DCR will identify sensitive resources and apply specific management guidelines to protect them (thereby meeting – and in some cases exceeding – the intent of "patch reserve designation" as described in the TSC report) by categorizing them as Zone 1 under the LSZ system during the RMP process.

[25] Major forest types found in Massachusetts include: White/Red Pine, Hemlock, Spruce-Fir, Pitch Pine – Scrub Oak, Northern Hardwoods, Birch-Red Maple, Oak, Swamp softwoods, and Swamp hardwoods.

[26] See the discussions about patch reserves in *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, pp. 39, 50 and 54.

In suggesting the designation of smaller "patch reserves," the TSC report points to the need for protection of ecological and cultural sites of sensitivity and/or significance, old growth, and forest dependent rare species habitat. DCR believes that the Zone 1 designation within its LSZ system is designed and intended to encompass such areas and provide an appropriate level of management and protection. In the Land Stewardship Zoning Guidelines (available in Appendix 4), Zone 1 is described as encompassing "areas that contain highly sensitive ecological and cultural resources that require additional and more restrictive management approaches and practices to protect and preserve the special features and values identified in the Resource Management Plan. These can also include areas with resources that are threatened by a high level of use." In addition, Zone 1 areas are described as "not suitable for future intensive development." In providing examples, Zone 1 areas are identified as being "highly sensitive to human activity include rare species habitat or natural communities, archaeological sites or fragile cultural sites, where stewardship of these resources must be the primary consideration when assessing management and recreational activities in these areas." Actual examples of Zone 1 areas in completed RMPs include most of the Blue Hills Reservation to the east of Route 28, an area that provides habitat for five state-listed species, four of which are state-endangered and sensitive to disturbance, and the Spot Pond Brook Archaeological District in the Middlesex Fells Reservation.

2.3 Management Approach for Reserves

Reserves are meant to contain natural features across a landscape, ideally located across the state representing different ecological settings. Reserves are also intended to be several thousand acres in size to provide adequate protection of resources, with the potential to be increased over time (either via state or local land conservation efforts or by co-management of non-state protected forest) to reach sizes of 10,000 to 15,000 acres. TNC recommends large Reserves in the Eastern United States be a minimum of 15,000 acres; EEA recommends a minimum of 5,000 acres; and BioMap2[27] selects "forest cores" (the least fragmented remaining forests) at a minimum of 500 acres in eastern Massachusetts, 1,500–2,000 acres in Worcester County and the Berkshire Plateau, and 3,000+ acres for the Taconics.

While large contiguous blocks of land are important to Reserve creation, DCR recognizes that Massachusetts is a relatively small, highly developed state, and that Reserves need to be scaled appropriately for Massachusetts. DCR believes that Reserves can also be effective at smaller scales, and has identified Reserves that vary by size in each region of the state due to several factors, including the level of development within properties as well as the size of DCR properties throughout the state. DCR was guided by BioMap2 in selecting "forest cores" to adjust the minimum sizes for "Large Reserves" across the state so that this designation would not be limited to large properties in the Berkshires. In addition, the new and more detailed ELUs developed by DCR, in collaboration with TNC, contain representation among Reserves as well as Parklands and Woodlands.

Management approach recommended by the TSC:

[27] See: http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_home.htm

Management of large forest Reserves should allow ecological processes to determine the long-term structure, composition, function, and dynamics of the forest to the maximum extent possible. However, the areas that have been considered for large Reserves range widely in their natural and historical disturbance regimes. In this context, flexible yet thoroughly vetted reserve management will support ecological functions in the varied forest ecosystems of the Commonwealth and under the ecological and climatic uncertainties of the future.[28]

The dominant ecosystem service objectives in Reserves will be:

- biodiversity expansion, including complex forest systems
- carbon sequestration
- provision of wilderness recreation opportunities

Management of Reserves should allow natural processes to determine the long-term structure, composition, function and dynamics of the forest to the maximum extent possible. Equally important is monitoring and studying these conditions, then applying this knowledge to low impact forest management techniques within Parklands and Woodlands, and on privately-managed forests.

The TSC also recommended the formation of a Forest Reserves Science Advisory Committee (FRSAC), consisting of conservation biologists and forest ecology experts to assist and review management and major restoration activities within Reserves.[29] The Patrick-Murray Administration supports this recommendation, and DCR is in the process of forming such a committee in the Spring of 2012 to provide guidance on vegetation management and assist with long term scientific monitoring and research opportunities within Reserves.

2.4 Selection Criteria for Reserves

FFVP Recommended Allocation: 90,000 to 120,000 acres

Approximately 40,000 acres of State Park and Forest lands were previously designated as "Large Reserves" in 2006 through a process involving DCR – Divisions of State Parks and Water Supply Protection – and DFW, which was coordinated by EEA.[30] GIS models based upon a continuum using the best available data were utilized to guide the selection of additional Reserves. The most favorable units of land for designation as additional Reserves are those:

- with least fragmented tracts of land

[28] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p.44.
[29] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p.37.
[30] The existing Large Reserves are at Chalet, East Branch, Otis, Mohawk/Monroe/Savoy, Middlefield/Peru, Mt Greylock, Mt. Washington and Myles Standish. Reports documenting the baseline characteristics of many of these Reserves are found at: http://www.mass.gov/dcr/stewardship/forestry/index.htm

- with the highest amount of forest interior
- that are well buffered from development
- that are contiguous with other protected land
- that represent a major ecological setting in the Commonwealth
- that conserve ecological and evolutionary processes
- that are large enough at a regional scale to capture a range of ecological processes
- that provide redundancy within each ecological land unit
- that contain special attributes, such as old growth or continuously forested sites
- with limited recreational infrastructure
- with a low density of officially designated trails

For these criteria, several existing data sets were drawn upon from a variety of sources, including the forest cores identified in BioMap2, DCR's new ELUs, and DFW's forest interior data.

TNC previously developed ELUs for a significantly larger region stretching from Virginia to New Hampshire. These regional ELUs were used to select candidate areas for the nine Large Reserves designated by EEA in 2006. These ELUs utilized geology, elevation and landform to map where different ecosystems occur, mapping very large landscape units across half of the eastern seaboard.

For the current Landscape Designation process, DCR felt it was important to update TNC's regional process so that more refined ELUs could be scaled to Massachusetts and mapped at a DCR property level. For example, if a 5,000 acre DCR property was part of a 100,000 acre ELU, the attributes of that property may or may not reflect the designation of the overall ELU. DCR collaborated with TNC to develop 11 new ELUs for Massachusetts that have been more useful in the categorization and designation of all DCR properties, allowing DCR to balance Reserves, Parklands and Woodlands within each of the new ELUs across the state.[31]

2.5 Wilderness Areas

The TSC also suggested that DCR consider establishing one or two wilderness areas within Reserves that would have further restrictions placed on them in order to maintain a wilderness character.[32] Wilderness means different things to different people, so in an effort to minimize conflicting interpretation of the term, DCR looked to the National Wilderness Preservation System, the largest systematic wilderness management program in the nation, for guidance on designating and managing suitable lands. The Wilderness Act of 1964, the prevailing document which guides management of wilderness areas on federal land, defines wilderness this way:

[31] For more information on the development of ELUs, see the GIS Model Descriptions in Appendix 9.
[32] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 38.

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped . . . land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.[33]

There are few, if any, areas in Massachusetts that are "untrammeled by man," and have "at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition."

The TSC suggested looking into adapting DCR's existing Wildlands Program to apply to potential wilderness areas. Under that program, Wildlands are broken into two categories: Representative Natural Areas (RNAs) and Backcountry Areas. RNAs identify natural areas distinct from their surroundings that are so special as to require additional protection (e.g., the 5-acre Atlantic White Cedar Swamp in Douglas State Forest). All of these areas are significantly smaller than the necessary acreage to offer an outstanding opportunity for solitude. Backcountry areas in the program are larger, but are designed to be accessible and are therefore neither remote enough to meet the "untrammeled by man" criteria nor the solitude criteria (e.g., the old growth forest in Savoy State Forest, which abuts Route 2). While not wilderness, there are backcountry areas within existing Reserves. In this way DCR's Wildlands program is effectively absorbed and expanded by the expansion of the Reserve system, but this program is not the appropriate source for wilderness areas.

However, in time, some areas within the Reserve system may approach the high standards set by the Wilderness Act of 1964. Therefore, DCR is not designating any Wilderness Areas at this time, but will review Reserves every five years for areas that are suitable for designation as Wilderness Areas in the future. When the issue is revisited, DCR may develop criteria for selection and management of Wilderness that are appropriate to Massachusetts, based upon the scale of the Wildlands model and incorporating the intent of the federal definition.

2.6 Management Guidelines for Reserves

Once land is designated as a Reserve, there are some significant threats that may impede natural processes in Reserves. These include:

[33] Public Law 88-577 (16 U.S. C. 1131-1136), Wilderness Act of 1964.

- fragmentation and destruction of adjacent forests due to residential or commercial development
- disruption of ecological processes from invasive species and climate change
- inconsistent enforcement of management policies
- unregulated recreational use such as off highway vehicle trespass
- human-caused wildfires
- development of dense trail systems or heavy use of trails and potential habitat fragmentation, soil compaction, and wildlife disturbance

Most DCR properties are less than the 15,000 acres recommended through the FFVP as the minimum size of Reserves (based on TNC's work). Therefore, it will be critical to work toward the protection of forested lands adjacent to Reserves to help retain the large forest blocks envisioned for Reserves. DCR will seek partnerships with statewide and regional conservation organizations to help accomplish this.

The lack of resources for monitoring and study present a challenge to attaining the desired value of Reserves. Since it will likely take decades for Reserves to look and function differently than other forests, it is important to routinely document changes so that the public can learn of their values and allow this knowledge to be applied to the management of other forests in the Commonwealth. DCR plans to elicit partnerships with private and academic conservation organizations and alternative funding sources to assist with monitoring Reserves and assess the efficacy with which Reserves are meeting this designation's goals.

In general, removal of trees and other vegetation (including commercial or salvage harvests) will not be allowed in Reserves. However, some situations may call for ecological restoration and vegetation management. Situations where some management may be appropriate include the removal of invasive species or for the protection of existing rare species. Fire adapted Reserves in Southeastern Massachusetts may require active restoration and management to maintain habitat for rare species and reduce the risk of catastrophic wildfire that can threaten human health and safety. Insect infestations, such as the recent discovery of the Asian Longhorned Beetle in the Worcester area, may also necessitate more active control and management activities than would normally be considered appropriate in Reserves. Finally, some management flexibility will be needed for Reserves that are part of municipal water supply watersheds, so that unanticipated future threats to those water supplies can be dealt with in effective and appropriate ways in accordance with the Landscape Designation management guidelines and in consultation with FRSAC, the municipal water supplier and/or the Department of Environmental Protection (DEP). Some management flexibility, with the safeguards discussed below, is crucial to maintain Reserve functions given the diversity of forest types, and the tremendous range of land use histories and disturbance regimes across the Commonwealth.

In order to consistently guide DCR in these decisions, the FRSAC, consisting of conservation biologists and forest ecology experts, will provide guidance on vegetation management and assist with long term scientific monitoring and research opportunities within Reserves.

Recreation and Public Access Guidelines:

A. Recreational activities that are compatible with Reserves include dispersed, non-motorized activities, including hiking, hunting, fishing, cross-country skiing, snowshoeing, mountain biking and horseback riding. Management needed to maintain those activities (e.g., trail maintenance) will be permitted, subject to agency guidelines and policies and existing property specific regulations.

B. Off Highway Vehicles, other than snowmobiles, are prohibited. However, where currently designated as an approved use prior to Reserve designation, OHV use may be continued if consistent with DCR's *Motorized Trail Recreation Facility Assessment Policy* and managed to minimize natural resource impacts and use conflicts.[34]

C. Snowmobile use shall be limited to designated trails and forest roads that are not maintained for vehicle use. Existing use regulations and policies apply.

D. Development of new intensive-use recreation sites (such as campgrounds, picnic areas, visitor centers, administrative offices, parking lots, etc.) is not permitted.

E. New trail construction is permitted only after the trail has been reviewed by DCR staff using the guidance and procedures established by the *DCR Trails Guidelines and Best Practices Manual*. Trail density and use levels will be evaluated to see how they may affect the values of the Reserve.

F. Trail relocations to reduce adverse impacts to critical resources will be prioritized. DCR will strive to maintain a low density of trails that are not highly developed (class 1–3[35]) within Reserves to protect their ecological and recreational intent. DCR may close trails to achieve the values of Reserves.

G. DCR will work with local fire and safety officials where Reserves are located to balance the need for fire and rescue access with the above goals for trail access in Reserves.

H. DCR will examine vehicle use on public roads that cross Reserves to determine whether fire and public safety access could be maintained and Reserve qualities enhanced by gating these roads. Any closing of public roads to vehicles would not negatively impact access to camping areas or

[34] In these cases, DCR is committed to applying the fine filter criteria developed in 2007 to determine whether the location may be able to provide safe and sustainable OHV recreation. If it passes the fine filter DCR will continue that use, but may also seek alternative locations for OHV recreation where management of this intensive recreational activity better matches the desired goals and conditions of the surrounding landscape. For more information on the fine filter criteria, see the *DCR Motorized Trail Recreation Facility Assessment Policy* available at: http://www.mass.gov/dcr/recreate/ohv_policy.pdf

[35] Trails are classified into 5 classes by tread, obstacles, constructed elements, signs, and typical recreational experience, the first 3 classes being the lower end of trail development. Class 1 trails are Minimal/Undeveloped Trails, Class 2 trails are Simple/Minor Development Trails, and Class 3 trails are Developed/Improved trails. For more info on these classifications, please see the *DCR Trails Guidelines and Best Practices Manual*, updated January 2010, pp 37 – 38. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

other facilities and would require close communication with the local towns and public safety officials.

Silviculture and Vegetation Management Guidelines:

A. Habitat manipulation, silvicultural treatments and commercial harvesting operations are not permitted in Reserves. However, if deemed appropriate by DCR and reviewed by the FRSAC, the following exceptions may be allowed:

   a) Implementation of NHESP recommendations to restore, maintain or enhance habitat for rare and endangered species and exemplary natural or rare communities.

   b) Removing plantations would not be permitted except to restore important wildlife habitat such as pitch pine barrens or other habitats and after consultation with DFW and FRSAC.

   c) Removing non-native invasive species may occur after consultation with FRSAC.

   d) Managing vegetation to control erosion, or to stabilize soils.

   e) Cutting of vegetation to maintain established public vistas and trails is permitted (e.g., the small Spruce Mountain vista located in Monroe State Forest).

   f) Removal of hazardous trees directly adjacent to official DCR trails and abutting properties that pose significant risk to public safety.

   g) Vegetation management is permitted by parties who have secured pre-existing rights (e.g., easement holders, utility easements) to perform such activity, subject, however, to standard regulatory and permitting requirements.

   h) Cutting vegetation to maintain existing agricultural fields or existing wildlife habitat openings is permitted.

B. Creation of new fields, vistas and wildlife openings is prohibited.

Water and Soil Resource Guidelines:

A. Management may be permitted to control erosion or stabilize soils, by closing roads and unauthorized trails, or other means such as stabilizing slopes with water bars or other erosion control structures. DCR will consult with local emergency management officials on road closures, and request FRSAC review for significant work of this type.

B. Where DCR Reserves are designated on local or regional public water supply watersheds, appropriate management activities may be undertaken in accordance with the Landscape Designation management guidelines, after consultation with the public water supplier, FRSAC and/or DEP, to confirm the need for, and the type and extent of, management actions to

address water quality protection issues (e.g., due to wildfires, insect or disease outbreaks, or other unanticipated threats to water quality). See Appendix 5 for a list of DCR properties on public water supply watersheds.

Habitat Protection Guidelines:

A. Identification, documentation and protection of rare species occurrences and important habitats will be addressed using the following tools:

   a) Review of the NHESP GIS database, which includes datalayers from statewide databases such as BioMap2, Priority Habitats of rare species, Estimated Habitats of rare wildlife, Certified or Potential Vernal Pools, and Natural Communities.

   b) Review of and consultation with other sources of natural resource information, where appropriate and available (e.g., Mass Audubon, New England Wildflower Society, The Vernal Pool Association, other NGOs, local naturalists, etc.)

   c) Surveys and monitoring, by trained DCR staff and/or outside consultants, to document and map rare species and important habitats when necessary for project specific purposes or long-term documentation.

   d) If any state listed species are listed pursuant to the U.S. Endangered Species Act (16 U.S.C.A. §§ 1531 – 1544), the US Fish & Wildlife Service must approve the project and the appropriate species Recovery Plan shall be consulted.

   e) Consult and work with NHESP to identify and develop appropriate conservation practices for Natural Communities.

   f) Consider certifying potential vernal pools if applicable; apply accepted Massachusetts and federal protection guidelines around all certified or potential vernal pools (304 CMR 11.00).

B. Work closely with DFW, and consult the Comprehensive Wildlife Conservation Strategy (CWCS)[36] for guidance in protecting rare species and their habitats, and the Forestry Conservation Management Practices for Rare Species,[37] where appropriate.

C. Using the resources noted in section A, Habitat Restoration Plans should be generated to improve degraded habitats important to rare species and/or state/regional biodiversity.

D. Consult with DFW and DEP prior to conducting any work adjacent to Coldwater Fisheries habitats; apply protection guidelines recommended.

[36]Available at: http://www.mass.gov/dfwele/dfw/habitat/cwcs/pdf/mass_cwcs_final.pdf
[37]Available at: http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/forestry/forestry_cmp.htm

E. Form partnerships with friends groups, local naturalists, environmental organizations, etc., to assist in the identification, protection and monitoring of important habitats or rare species population where appropriate.

Forest Health and Protection Guidelines:

A. Spread of invasive epidemic forest pathogens, insects and diseases or other biological risks to the forest (such as Asian Longhorned Beetle or Emerald Ash Borer) may be controlled as part of a coordinated effort, if there is a major threat to forest health or risk to private or public natural resources.

B. Wildfires will be contained, controlled and suppressed, unless there is an approved site specific controlled fire plan and conditions are within the fire plan prescription.

C. Fire breaks, where necessary, may be created and maintained.

D. Prescribed fire may be used when it is compatible with protection of the Reserve, restoration of native communities and ecological processes, and the protection of life and property adjacent to the Reserve and surrounding landscape. The prescribed fire burn plan would be subject to the review of the local fire chief(s) and the FRSAC.

E. Where the use of pesticides is the only feasible method to remove invasive species that threaten the values of the Reserve, this approach may be considered after gaining input from the FRSAC.

Cultural Resource Management Guidelines:

A. As per DCR's regulatory responsibilities, any projects undertaken on DCR land must be reviewed during the planning stages by DCR's Office of Cultural Resources for their potential impacts to historic and archaeological resources.

B. Maintenance of historic buildings and structures within Reserves is allowed.

C. Vegetation management for the protection of historic or archaeological sites is allowed, with some restrictions on the time of year, types of equipment and techniques used to minimize resource disturbance, as guided by DCR Cultural Resources staff.

Facilities, Transportation and Boundary Guidelines:

A. Existing roads will be managed and maintained to assure continued administrative and/or emergency access. Public roads within Reserves that are open to vehicles will be reviewed for vehicle closure via gating to enhance Reserve qualities only after an evaluation of impacts to

public access, fire and emergency vehicles, and after communication with local communities and the public.

B. No new roads will be constructed.

C. Existing roads not needed for recreation, administration or emergency use may be closed and restored to their natural condition, only after consultation with local emergency management officials.

D. Replacement of existing facilities, as needed, will be allowed, but construction of new facilities where none previously existed is prohibited. Exceptions may include small-scale, low impact, context appropriate informational kiosks, universal access structures for trails, composting toilets, trailheads, parking areas and carefully designed boardwalks, or other projects that protect the integrity of the reserve interior by locating those facilities that are necessary at the edge of the reserve.

E. Maintenance and marking of property boundaries is allowed.

F. All boundaries will be located and maintained on a ten-year cycle or when needed for project implementation. Boundaries will be maintained clearly and in a way that is sensitive to adjacent private lands with visible residences.

G. All boundaries needing formal surveys will be identified. All newly acquired DCR properties should have their boundaries surveyed and marked. (Interior line boundaries should be discontinued.)

H. Boundaries will be surveyed as needed for project implementation, where trespass is an issue, or where there are disputes.

Interpretation, Public Information, and Outreach Guidelines:

A. DCR will seek to balance maintaining the values of an unimpeded experience and the need to address complex scientific concepts through a combination of on-site public information (notices, rules signs, etc.), interpretation (educational signage or programming), and outreach (off-site information sharing). To be consistent with the values of Reserves, on-site media will need to harmonize with the environment and intrude on a visitor's experience only when necessary.

B. A minimalist approach to interpretation and public information is appropriate for Reserves. Outreach may be more important than on-site interpretation, and there will be opportunities to highlight ecological restoration.

   a) Interpretation in Reserves should serve to prepare visitors for their experience in the Reserve. In the case of programming, it offers engaging educational opportunities.

   b) Public information provides orientation or notices about management or security issues.

c) Outreach may be informational, interpretive, or educational with the aim of attracting visitors or informing non-visitors of management rationale or activities.

C. Interpretation (programming and media) connected to Reserves should focus on the reserve's ecological services, support management goals, and be based on relevant interpretive plans; should adhere to DCR interpretive, graphic, and signage standards; and may engage friends groups, schools, universities and other organizations for support when appropriate.

D. Developed interpretive signage and public information are generally most suited for main trailheads or parking areas.

E. Trails signs should follow *DCR Trails Guidelines and Best Practices Manual* signage standards for primitive areas.[38] Interpretive media should conform to DCR's graphic standards.

F. Infrastructure for interpretation may be added, however no new infrastructure should be applied within Reserves unless exceptional circumstances warrant otherwise.

Monitoring, Enforcement and Research Guidelines:

A. Non-destructive, low impact research for monitoring forest conditions may be conducted. In order to meet the intended purposes of Reserves, regular monitoring and research to document changing habitat conditions are needed. For example, monitoring information from Reserves will be critical in evaluating how climate change is affecting forest ecosystems and how species are adapting to this over time. Any research proposed by an outside entity must be developed and implemented in close consultation with DCR staff to assure coordination of efforts, and copies of all research results must be provided to DCR.

B. DCR will seek partnerships with appropriate conservation organizations to assist with regular monitoring of Reserves.

C. Continuous Forest Inventory (CFI) plots will be measured on a regular cycle and data used in conjunction with ongoing research needs such as Reserve vegetation development, carbon storage and climate change.

D. Prior to conducting monitoring and research on Reserves, a proposal outlining the purpose of the research, the techniques used and the potential impacts on the land will be reviewed by the FRSAC and approved by DCR.

E. DCR acknowledges the need for active enforcement of prohibited activities (such as dumping of refuse, construction of illegal motorized or non-motorized trails, use of off-highway vehicles in areas where not allowed, or cutting of trees at boundary encroachments) and regulated activities is critical to allow Reserves to develop under natural conditions without negative

[38] *DCR Trails Guidelines and Best Practices Manual*, updated January 2010, p. 51. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

human impacts. However, DCR's current and historic level of resources does not allow for optimal enforcement, and joint or cooperative oversight is a long term goal.

Special Use Guidelines:

A. Special uses such as events and activities will be evaluated on an individual basis by DCR and may be allowed if they do not adversely impact and are compatible with the purposes of the Reserve. DCR's Special Use policy and guidelines apply.[39]

B. Existing special uses such as transmission lines, communication sites, and commercial uses that are not compatible with the intent of Reserves will be evaluated to determine if they can be relocated to another area.

C. DCR will not grant new commercial rights for communications sites. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[40] Full environmental permitting and review would also apply.

D. Adding new communication hardware to existing fire towers and communications sites will be allowed. All applicable permits and DCR's Special Use policy and guidelines apply.[41]

E. DCR will not grant rights for new commercial wind installations and commercial solar installations. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[42] Full environmental permitting and review would also apply.

F. DCR will not grant new commercial rights for transmission lines. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[43] Full environmental permitting and review would also apply.

G. Granting rights for new commercial uses is prohibited except to the extent necessary for activities that advance Reserves goals.

[39] Information about DCR's Special Use Permit program is available at http://www.mass.gov/dcr/permits/
[40] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[41] Information about DCR's Special use Permit program is available at: http://www.mass.gov/dcr/permits/
[42] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[43] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf

Section 3: Parklands

3.1 Parklands – Purpose

DCR facilities offer an incredibly diverse mix of recreational opportunities, ranging from back country camping to urban swimming pools. Equally diverse are the size and character of properties on which these activities occur. Although public recreation occurs on all DCR properties, for many, the agency's active recreational areas are the main draw. These facilities accommodate millions of visitors each year.

As interests and recreational technologies change, the range of activities is expected to continue to evolve. DCR's intent is to continue to provide the best possible recreational experiences for the public at these facilities.

3.2 Management Approach for Parklands

Many of the recreational opportunities and experiences offered by DCR are directly reliant upon the wide range of natural and cultural resources within the parks and forest system – without their protection and careful management, those opportunities and experiences would be lost. DCR is committed to continuing to provide a diverse range of recreation opportunities that are consistent with its goals for public safety, resource protection and management, public health, visitor education and enjoyment.

Management approach recommended by the Technical Steering Committee:

> *DCR should develop and implement management guidelines for Parklands that focus on enhancing recreation, while continuing to provide additional ecosystem services, including those identified for Reserves as well as the aesthetic and cultural values of the property.*[44]

Ecosystem services provided by Parklands:

- protection of ecologically significant sites
- protection of cultural resources
- provision of public outdoor recreational and environmental education opportunities

Recognizing that the focus of the FFVP was on DCR forestry practices, the TSC's primary guidance regarding Parklands management was that ". . . wood production is not a utilized ecosystem service in the Parklands. Any cutting would be limited to what is necessary to support recreational assets and uses, including public safety."[45] However, DCR's adoption of the Landscape Designation system will

[44] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p.49.
[45] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p.49.

encompass and guide all of the agency's operations, and as such, these guidelines propose that all management activities in Parklands should focus on maintaining or improving the recreational experiences of visitors.

3.3 Selection Criteria for Parklands

FFVP Recommended Allocation: 70,000 to 90,000 acres

GIS models based upon a continuum using the best available data were utilized to guide the selection of Parklands. The most favorable units of land for designation as Parklands are those that have:

- a high surrounding population density
- forested areas with high recreational values
- a high density of officially designated trails
- established recreational areas, such as campgrounds, golf courses, etc.
- water access points for recreation
- active day use areas
- high recreational use/visitation
- easily accessible unique natural features: views, water features, chasms, unusual forest types
- unique historic/cultural features
- unique settings in comparison to the surrounding landscape
- suitable natural forested boundaries between active use areas and woodland areas

For these criteria, several existing internal and external data sets were used, including US Census data, DCR Roads and Trails data set, orthophotos, as well as internally developed intensive use area and cultural resource inventory data.

3.4 Management Guidelines for Parklands

As properties that have the most recreational infrastructure and/or recreational uses, Parklands are likely also those areas that are assumed to have the highest levels of visitation. Attempting to protect and maintain areas that are heavily utilized can be a challenge. Overuse can lead to competition for space, conflicts among different user groups, and damage to resources. However, popularity can also bring with it large and active friends groups and other potentially positive partnerships.

DCR is seeking with the Parkland designation to provide clear guidance on what can be done to protect the natural, cultural, and recreational resources that form the essence of a Parkland property.

Recreation and Public Access Guidelines:

A. A diverse mix of recreational activities will be allowed in the wide range of Parklands properties. While not every activity will be appropriate in every location, the range across the system could include athletic field uses such as baseball and soccer, intensive uses such as swimming pools, downhill ski areas and golf courses and dispersed recreational activities such as motorized and non-motorized trail uses. Agency policies, resource protection, public safety, and recreational goals will continue to determine activities that are encouraged and/or allowed in individual properties.

B. Recreational uses should be consistent with DCR's determination for recreational demands and opportunities as assessed through planning efforts and tools.

C. Development of new intensive-use sites within Parklands (e.g., campgrounds, athletic fields, playgrounds, picnic areas, visitor centers, administrative offices, parking lots, etc.) are allowed when consistent with public access, resource protection, public safety, and management goals.

D. DCR will strive to maintain a density and diversity of trails within Parklands that protects the natural and cultural resources of each property and meets the recreational intent for the property. Proposals for new trail development need to follow the existing process established through the *DCR Trails Guidelines and Best Practices Manual*.[46] Creating loop trails that enhance recreational experiences while supporting the other values of the Parklands will be encouraged. DCR may close trails to achieve the values of Parklands.

Silviculture and Vegetation Management Guidelines:

A. Commercial production of wood for wood products or energy is not an objective in Parklands. Vegetation management will only occur as needed to further the purposes of Parklands to protect ecologically significant sites and cultural resources and to provide environmental education and outdoor recreation opportunities in a natural and safe setting. Within these limited purposes, DCR will implement vegetation management in an effective and low-impact manner, whether that be via hiring arboriculture firms (if budgets permit) or via bidding projects to arboriculture or forestry firms (at either no cost or small payment to DCR, which is incidental to the operation).

B. Forest habitat manipulation, vegetation management, silvicultural treatments and operations will be permitted for the following purposes:

[46] See *DCR Trails Guidelines and Best Practices Manual*, updated January 2010, pp. 12 – 35. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

a) Vegetation management necessary to protect public health and safety, public interests, public assets and/or restore or maintain recreation sites following significant natural disturbances or destructive insects or diseases.

b) Vegetation management necessary for the control of non-native invasive plant species.

c) Removal of plantations to restore more natural and diverse vegetative communities – if public health and safety are at risk, or to restore ecologically significant communities such as pitch pine barrens. Controlled burns to maintain significant natural communities such as pine barrens is allowed with close coordination with municipal fire and safety, local friends groups and the general public.

d) Vegetation management necessary to control erosion, to stabilize soils, or to close unauthorized trails or roads not needed for administrative or emergency purposes. Local emergency officials will be consulted in all road closures.

e) Vegetation management necessary for the development or maintenance of trails, recreation area aesthetics and existing roads.

f) Vegetation management necessary to create or maintain agricultural fields, lawns, turf, greens or scenic vistas associated with recreational or educational goals.

C. Vegetation management mandated by environmental regulatory requirements.

D. Hazardous trees or excessive fuel loads that pose significant risk to public safety may be removed.

E. Vegetation management is permitted by parties who have pre-existing legal rights (e.g., easement holders, utility easements) to perform such activity, subject, however, to standard regulatory and permitting requirements.

Water and Soil Resource Guidelines:

A. Management may be permitted to control erosion or stabilize soils, by closing roads and unauthorized trails, or other means such as stabilizing slopes with water bars or other erosion control structures. Local emergency management officials will be consulted for any road closures being considered.

B. Where DCR Parklands occur on local or regional public water supply watersheds, appropriate management activities may be undertaken in accordance with the Landscape Designation management guidelines, after consultation with the public water supplier and/or DEP, to confirm the need for, and the type and extent of, management actions to address water quality protection issues (e.g., due to wildfires, insect or disease outbreaks, or other unanticipated threats to water quality). See Appendix 5 for a map and list of DCR properties on public water supply watersheds.

Habitat Protection Guidelines:

A. Vegetation management necessary to comply with NHESP recommendations for the restoration, maintenance or enhancement of habitats for rare and endangered species and exemplary natural or rare communities may be allowed.

B. Vegetation management to support species of greatest conservation need (SGCN) as described in the CWCS may be allowed if a particular SGCN is historically and or culturally associated with a specific Parkland.

C. Identification, documentation and protection of rare species occurrences and important habitats will be addressed using the following tools:

    a) Review of the NHESP GIS database, which includes datalayers from statewide databases such as BioMap2, Living Waters, Priority Habitats of rare species, Estimated Habitats of rare wildlife, Certified or Potential Vernal Pools, and Natural Communities.

    b) Review of and consultation with other sources of natural resource information, where appropriate and available (e.g., Mass Audubon, New England Wildflower Society, The Vernal Pool Association and other NGOs, local naturalists, etc.).

    c) Surveys and monitoring (for project specific purposes or long-term documentation), by trained DCR staff and/or outside consultants, to document and map rare species and important habitats when necessary.

    d) If any state listed species are listed pursuant to the U.S. Endangered Species Act (16 U.S.C.A. §§ 1531 – 1544) the US Fish & Wildlife Service must approve the project and the appropriate species Recovery Plan shall be consulted.

    e) Consider certifying potential vernal pools if applicable; apply accepted Massachusetts and federal protection guidelines around all certified or potential vernal pools (304 CMR 11.00).

D. DCR will work closely with DFW, and consult the CWCS[47] for guidance in protecting rare species and their habitats, and the Forestry Conservation Management Practices for Rare Species,[48] where appropriate.

E. DCR will work closely with DFW to resolve conflicts between wildlife and park facilities (such as beaver flooding problems).

F. Using the resources available from NHESP, Habitat Restoration Plans should be generated to improve degraded habitats important to rare species and/or state/regional biodiversity.

[47] Available at: http://www.mass.gov/dfwele/dfw/habitat/cwcs/pdf/mass_cwcs_final.pdf
[48] Available at: http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/forestry/forestry_cmp.htm

G. DCR will consult with DFW and DEP prior to conducting any work adjacent to Coldwater Fisheries habitats; apply protection guidelines recommended.

H. Partnerships with friends groups, local naturalists, environmental organizations, etc., will be formed to assist in the identification, protection and monitoring of important habitats or rare species population, where appropriate.

Forest Health and Protection Guidelines:

A. Spread of major significant forest pathogens and invasive species (such as Asian Longhorned Beetle or Emerald Ash Borer) may be controlled as part of a coordinated effort if there is a major threat to forest health or risk to private or public interests.

B. Pesticide use will be allowed in limited situations for the removal of invasives, only when no other feasible alternatives are available. Removal of invasives to provide the public with examples of native vegetation and habitats and as demonstration projects for other lands and to protect the integrity of the environmentally significant sites represented within the Parklands.

C. Wildfires will be contained, controlled and suppressed unless there is an approved site specific controlled fire plan and conditions are within the fire plan prescription.

D. Fire breaks, where necessary, may be created and maintained.

E. Prescribed fire may be used when it is compatible with protection of the property, restoration of native communities and ecological processes and the protection of life and property in the Parkland and surrounding landscape. The fire burn plan would be subject to the review of the local fire chief(s).

Cultural Resource Management Guidelines:

A. As per DCR's regulatory responsibilities, any projects undertaken on DCR land must be reviewed by DCR's Office of Cultural Resources during the planning stages for their potential impacts to historic and archaeological resources.

B. Maintenance of historic buildings, structures and landscapes within Parklands is allowed.

C. Vegetation management for the protection of historic or archaeological sites is allowed, with some restrictions on the time of year, types of equipment and techniques used to minimize resource disturbance, as guided by the DCR's cultural resources staff.

Facilities, Transportation and Boundary Guidelines:

A. Existing roads will be managed and maintained according to either the DCR *Historic Parkways Preservation Treatment Guidelines* [49] where appropriate, or other applicable road standards to assure continued access.

B. New roads necessary for public, administrative and emergency use may be constructed after review for impacts to natural and cultural resources.

C. Existing roads not needed for recreation, administration or emergency use may be closed and restored to their natural condition, after consultation with local emergency management officials.

D. Construction of new facilities may occur as necessary for public and administrative use after review of impacts to natural and cultural resources.

E. Maintenance and marking of property boundaries is allowed.

F. All boundaries will be located and maintained on a ten-year cycle or when needed for project implementation. Maintain all boundaries clearly and in a way that is sensitive to adjacent private lands with visible residences.

G. All boundaries needing formal surveys will be identified. All newly-acquired DCR properties should have their boundaries surveyed and marked. (Interior line boundaries should be discontinued.)

H. Boundaries will be surveyed as needed for project implementation, where trespass is an issue, or where there are disputes.

Interpretation, Public Information, and Outreach Guidelines:

A. The combination of existing infrastructure, natural and cultural features, and the availability of an audience in Parklands creates a strong opportunity to connect with visitors. Therefore, formal programming and media are appropriate in Parklands.

   a) Interpretation in Parklands seeks to build emotional and intellectual connections between visitors and the resource.

   b) Public information in Parklands will provide orientation, wayfinding, and notices about management activities or security issues.

   c) Outreach may be informational, interpretive, or educational with the aim of attracting visitors or informing non-visitors of park activities and opportunities.

B. Interpretation (programming and media) connected to Parklands should focus on the natural, cultural, and recreational themes of the property; support management goals; be based on

[49] *Historic Parkways Preservation Treatment Guidelines* are available at: http://www.mass.gov/dcr/histpark.htm

relevant interpretive plans; should adhere to DCR interpretive, graphic, and signage standards; and may engage friends groups, schools, universities and other organizations for support when appropriate.

C. Informational signs and interpretive kiosks are appropriate for siting throughout Parklands in a manner consistent with the character of the facility.

D. Trails signs should follow *DCR Trails Guidelines and Best Practices Manual*[50] signage standards. Interpretive media should conform to DCR's graphic guidelines.

E. Interpretation in Parklands may take advantage of existing resources and infrastructure or may initiate new infrastructure to enhance interpretive opportunities.

Monitoring, Enforcement and Research Guidelines:

A. Monitoring and research projects may be conducted as approved through DCR's Special Use Permit process. Any research proposed by an outside entity must be developed and implemented in close consultation with DCR staff to assure coordination of efforts, and copies of all research results must be provided to DCR.

B. Active enforcement of prohibited or regulated activities, such as dumping of refuse, construction of illegal motorized or non-motorized trails, use of off-highway vehicles in areas where not allowed, is critical to the maintenance of resources within Parklands.

C. CFI plots will be measured on a regular cycle and data used in conjunction with ongoing research needs such as vegetation development, and forest health monitoring.

Special Use Guidelines:

A. Special uses such as events and activities are allowed and will be evaluated on an individual basis as provided in DCR Special Use Policies and Procedures and/or volunteer guidelines.[51]

B. Existing special uses such as transmission lines, communication sites, and commercial uses that are not compatible with the intent of Parklands will be evaluated to determine if they can be relocated to another area.

C. DCR will not grant new commercial rights for communications sites. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary

[50] See *DCR Trails Guidelines and Best Practices Manual*, updated January 2010. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

[51] Information about DCR's Special Use Permit program is available at http://www.mass.gov/dcr/permits/

of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[52] Full environmental permitting and review would also apply.

D. Adding new or replacing existing communication hardware on existing fire towers and communications sites will be allowed. All applicable permits and DCR's Special Use policy and guidelines apply.[53]

E. DCR will not grant rights for new commercial wind installations and commercial solar installations. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[54] Full environmental permitting and review would also apply. Wind and solar installations that have a primary purpose of supplying electricity to a Parkland facility (for example a visitor center or maintenance facility) will be considered if the site is already impacted by an existing facility and the added impact to resources is insignificant.

F. DCR will not grant new commercial rights for transmission lines. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[55] Full environmental permitting and review would also apply.

G. Granting rights for new commercial uses is prohibited except to the extent necessary for activities that advance Parklands goals (e.g., food concessions associated with beaches).

[52] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[53] Information on DCR's Special Use Permit program is available at: http://www.mass.gov/dcr/permits/
[54] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[55] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf

Section 4: Woodlands

4.1 Woodlands – Purpose

The forestlands of Massachusetts represent one of its finest natural assets. They provide habitat, assist with the provision of clean air and water, are a source of wood products, and are a vital part of the local economy in a number of ways. Importantly, forests are also part of the social fabric of our small state, and play an often overlooked cultural role as well. The questions and issues regarding the management of the forests under the care and control of DCR were at the heart of the issues that brought about the FFVP.

In designating approximately 40% of the State and Urban Parks system as Woodlands, DCR's intent is to assure the long-term protection and sustainable use of this valuable resource for the wide range of values, benefits and uses that it provides.

4.2 Management Approach for Woodlands

The emphasis of forest management in Woodlands will be to provide the range of ecosystem services that sustainably managed forestlands offer, as well as educational examples of excellent forestry to landowners and the general public. Forestry practices will be directed at protecting forest productivity through sustainable forestry, providing resilience in watershed forests through active management, managing conditions to promote late forest successional structure and early forest successional stages, and producing high quality, high value, local forest products. Forest management will also play a role in the ecological restoration of areas that have been significantly altered by past land use and management practices such as plantations of non-native species and high-grading.

Management approach recommended by the Technical Steering Committee:

> *DCR should develop and implement management guidelines for Woodlands that demonstrate excellent forest management practices for sustainable production of wood, restoration of late successional habitat, active management of drinking water quantity and quality, creation of early successional habitat, and promotion of carbon sequestration and any other ecosystem services that benefit from relatively active manipulation of the forest. Over time, these guidelines should promote a greater emphasis on uneven-aged forests across the DCR system. At the same time, Woodlands management should include guidelines to protect rare species habitat and other natural resources, as well as the integrity and scenic quality of trails and scenic roads in the Woodlands zone.*[56]

Ecosystem Services provided by Woodlands include:

- protection of forest productivity with state of the art sustainable forestry

[56] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 52.

- restoration of late successional habitat
- protection of water supplies by increasing resilience and resistance of forests
- carbon sequestration through retention of woody debris and legacy trees in all silvicultural treatments including late successional habitat restoration
- ecological restoration of degraded natural community types (e.g., pitch pine/scrub oak barrens where human fire exclusion has led to excessive build-up of volatile fuels) and past high-graded stands
- sustainable production of renewable wood products including fuelwood and high quality timber for local markets
- provision of early-successional habitat[57] that is otherwise limited by human development

Active forest management must be carried out in the context of the ecosystem services model, which includes an awareness of the many interests in public lands management, with the goal of having a healthy forest. Foresters and forest managers will always be conscious that DCR Woodlands serve as demonstration forests. In order to achieve the high standard of forestry desired, DCR foresters will be licensed, maintain pertinent continuing forestry education, and obtain other expertise regarding state of the art forestry techniques. DCR foresters must strive to demonstrate and document as many of the following concepts within the forest management prescription as appropriate, and implement them in the field, including:

- Excellent silviculture conceptually and in practice. Prescriptions shall demonstrate how the treatment fits the regional forest type and the ecosystem processes that are present. The implementation of the prescriptions will use appropriate logging systems and equipment and demonstrate knowledgeable approaches to forestry aesthetics.
- Positive benefits to wildlife.
- Sustainable forestry practices, biologically and economically.
- Model forestry on DCR lands that are a part of municipal watersheds utilizing silviculture and Best Management Practices (BMPs) developed by DCR's DWSP.[58]
- Benefits to local economies (payments to towns through the Forest Products Trust Fund) and the Commonwealth using locally grown and harvested wood products.
- Opportunities to contribute to DCR's recreational goals.
- Opportunities to restore and maintain structural diversity in forests including late successional forest habitat and early successional habitat on both the stand and landscape level.

[57] Mass Audubon's recently released *State of the Birds 2011* report notes that there is a need to increase shrubland habitat through active management to address the significant, large scale declines seen in shrubland species (pp. 12, 23). The report recommends establishing a strategy for developing early successional habitat with DCR and other agencies (p. 56). See: http://www.massaudubon.org/StateoftheBirds/

[58] See: http://www.mass.gov/dcr/watersupply/watershed/quablmp.htm

4.3 Selection Criteria for Woodlands

FFVP Recommended allocation: 100,000 to 150,000 acres

GIS models are based upon existing digital data and produce output that results in a continuum of values designed to assist with the process of Landscape Designation. The most favorable lands for designation as Woodlands are those:

- areas suitable for wood production based on soils, vegetation, distance from roads and past management
- sites with a history of recent silvicultural treatments
- areas where late successional characteristics could be restored via management
- areas that currently have low forest type diversity
- areas where the potential impact on communities the most dependent on the local forest economy is the greatest
- areas suitable for early successional habitat creation
- sites requiring ecological restoration or those prone to disturbance
- watershed areas that would benefit from active forest manipulation
- areas in closest proximity to wood processing facilities
- areas where forest management could increase carbon storage
- areas with good access for model forest demonstration activities
- areas suitable for demonstration purposes as a representative of forest type, age class and logging conditions

For these criteria, sixteen different datasets were used and/or created to identify and classify lands best suited for the Woodlands designation. The goal was to use the best data currently available and the best data that could be developed to identify Woodlands. For example, to identify areas most suitable for wood production, the existing "Prime Forest Soils" and "Past Management" datasets were used as well as the newly created "Vegetation Suitability" and "Distance from Roads" datasets. To assess the positive impacts on communities most dependent on the local forest economy, a "Distance to Sawmills" dataset was created (based on sawmill locations identified in January of 2010 by a UMass study) and were used along with the existing "Sawmill Woodsheds" and "Harvester Woodsheds" dataset (also from UMass researchers). Ultimately, all of these datasets were added together (for TSC criteria that used more than one dataset, the multiple datasets were added together and rescaled so that each of the twelve TSC criteria were weighted evenly) to come up with a ranking of DCR land that quantifies their relative value as Woodlands.[59]

[59] For more information on the GIS model developed for Woodlands see Appendix 9.

DCR intends to conduct further categorization of Woodlands at the forest stand level, as described below, in order to achieve Woodlands goals. (Appendix 2 has additional information on this process.)

4.4 Assessment and Classification of Forest Stands

The primary goal in the assessment of forest stands is to match forest productivity and condition with broad silvicultural regimes. Note that the guidelines and directions presented here are at a broad landscape level – each site or stand considered for treatment must also be evaluated at ground level resolution.

The existing FRMPs used the Priority Timber Harvest Model,[60] developed by DCR staff, which produced silvicultural options in Active Management Areas based on forest type, stocking levels and size classes. Forest type, stocking levels, and size class were determined from aerial photographs taken and interpreted in 2003 – this data is known as the Bureau of Forestry Land Cover Classification.[61] These FRMPs will be evaluated, updated and expanded to include an assessment and classification of site quality and productivity. Information from FRMPs will also be incorporated into future RMPs as they are developed.

The TSC Report recommends classifying forest stands based on land use history and forest development as represented through origin, age and condition of stands. Generally, the classifications would depend on whether these lands were always woodland, not cultivated, cut and cultivated, or cut and pastured. The classifications suggested in the TSC Report are **Primary, Secondary, and Tertiary** forests. Unfortunately, there is not consistent, accurate statewide data available to provide a strong evaluation of primary, secondary and tertiary forests on Woodlands as defined in the TSC Report.

The guidelines for Woodlands observe the spirit and intent of the TSC Report by proposing a classification scheme that reflects the current land condition, development stage and productivity based on vegetation mapping and forest inventory data. The recommendation from the TSC carries with it the inherent message that more productive, more complex forest conditions will require more complex silviculture.

Forests with species composition, size classes and densities that indicate early stages of succession and conversely mid and later successional stages in forest development will be ranked or classified accordingly. Site productivity ratings (e.g., site index, prime soils analysis) will further refine the classification process.

Data sets that are available for classifying forest stands are:

- The Bureau of Forestry Land Cover Classification produced by James W. Sewall Co., Inc.
- The Prime Soils data layer produced by the University of Massachusetts

[60] A GIS model developed by DCR staff that utilized district specific statistics to identify and prioritize areas for active forest management.

[61] This data was created by James W. Sewall Co., Inc. for the Land Cover Classification project.

- Massachusetts Continuous Forest Inventory data.

Forest stands will be classed on a continuum and considered for silvicultural treatments that generally fit their productivity, structural complexity (or potential thereof) and diversity. The Silviculture and Vegetation Management Guidelines, below, provide information on the broad approaches to the application of silviculture. Forests that are plantations, or are developing from recent agricultural use (approximately the last 60 years), are composed of species indicative of young forest and recent regeneration (Birch-Red Maple, White Pine) and are on lower productivity sites that will rank low on the continuum of condition and productivity. Stands that are composed of species that indicate higher levels of natural disturbance such as Pitch Pine and Scrub Oak, and those particularly on lower productivity sites also will rank low on the classification continuum.

As forest stands increase in species diversity, vertical and horizontal structure, size, age, and site productivity, they will rank higher on the classification continuum and be examined for silvicultural approaches that can create and maintain higher levels of species and structural diversity. Generally even age stands that are less productive and diverse (lower on the continuum) will be considered for silvicultural approaches designed to increase landscape diversity and improve damaged and high graded stands.

4.5 Management Guidelines for Woodlands

Recreation and Public Access Guidelines:

A. The most common types of recreation in Woodlands will include dispersed recreational uses such as hiking, mountain biking, hunting, fishing, horseback riding, primitive camping, snowmobiling, and OHV use (where compliant with DCR OHV siting criteria). Property specific regulations and policies apply.

B. DCR will strive to maintain a moderate to low density and diversity of trails within Woodlands that protects the objectives of each property as well as recreational access. Proposals for new trail development will be evaluated through the process established in the *DCR Trails Guidelines and Best Practices Manual*.[62] Creating loop trails that enhance recreational experiences while supporting the other values of the Woodlands will be encouraged. Creating small vistas along trails may be allowed. DCR may close trails to achieve the values of Woodlands.

C. Hazardous trees within a "tree length" distance from official trails, parking areas, and access roads that pose significant risk to public safety, may be removed.

D. Forestry practices that can support recreational values within Woodlands will be incorporated where feasible and designed to promote aesthetics, native vegetation, species diversity, large diameter older trees, multiple age classes, and a safe recreational experience in recreation areas and at public access points. (See also the section on Recreation and Forestry in Appendix 2.)

[62] See *DCR Trails Guidelines and Best Practices Manual*, updated January 2010. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

E. During timber sale activities, existing trails will be protected. Where impacts are unavoidable, DCR will include a plan for trail rehabilitation in the harvest plan according to the *DCR Trails Guidelines and Best Practices Manual*[63] and documentation of trail interfaces.

F. During timber sale activities, logging equipment will be used to control erosion or stabilize soils, by closing trails and roads not needed for administrative or emergency access. Local emergency management officials will be consulted prior to closing or restricting use of permanent roads to ensure that access for emergency purposes is maintained.

G. Where OHVs are prohibited, roads and trails used for harvesting that will not be used for other activities will be closed and stabilized. However, where OHVs are allowed, foresters will consider whether existing access for OHVs can be improved via roads and trails used to access the harvest site (by replacing poorly planned trails, stabilizing well located trails etc.).

H. Special attention and care will be given to provide long-term quality scenery, consider general property aesthetics and improve vistas where possible and appropriate.

Silviculture and Vegetation Management Guidelines:

A. DCR Foresters will coordinate with the Management Program Supervisor, and the DCR Park Operations staff, as well as with user groups, when vegetation management is planned. (This process is outlined in Appendix 3.)

B. Silvicultural treatments should generally promote native, diverse, healthy forests and habitats across the landscape of the Woodlands designation. The decision to choose a silvicultural system and practices to implement will be based on analysis and consideration of the forest stand and site condition (see section 4.4). Silvicultural practices on Woodlands will fall into three broad categories summarized in item D below. (For complete guidelines on treatment, timber sales, and recreation considerations, please see Appendix 2.)

C. Silvicultural treatments within a project area will be prescribed by Management Foresters at the mapped stand level. Vegetative management projects may be composed of one stand or multiple stands.

D. Silvicultural Systems, Methods and Decisions: Each stand within the project will be assessed for its history, ecological and structural characteristics as described in section 4.4. Three broad approaches to silvicultural decisions will be used recognizing the three 'level' approach recommended by the TSC. The three broad approaches will be: 1) exclude/defer harvest; 2) manage for diversity and complexity using generally uneven age systems; and 3) manage less complex or abused forest stands for improvement, with generally even aged systems.

Exclude or Defer: Some stands or areas within forestry projects may be excluded or deferred from harvest treatment to protect ecologically or culturally significant areas within Woodlands,

[63] See *DCR Trails Guidelines and Best Practices Manual*, updated January 2010. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

or because they are areas that are not appropriate for forestry operations due to physical limitation factors such as steep slopes. The decision to exclude or defer harvest in any given stand may be based on the occurrence of wetlands and vernal pools, rare species habitat and communities, areas of historical and cultural significance, old growth forests, riparian and trail buffers, or steep slopes. In prescriptions these areas may be called "no cut," "retention," or "inoperable" areas. Within Woodlands, large areas of sensitive resources as described above will be not be included in project prescriptions and will be effectively reserved or excluded from harvesting by their exclusion from the silvicultural prescription.

Manage for Diversity/Complexity: Innovative and complex silvicultural treatments will be used in stands where there is high potential to create and enhance vertical structure, multiple age classes, tree species diversity and large tree size classes. Those forest stands that have the immediate potential for significant diversity and are rated high from a productivity standpoint will be treated with silviculture that enhances diversity and protects productivity. Silviculture will be used to restore late-successional forest structure and characteristics. Where sites are best suited for this silvicultural approach, such as areas adjacent to Reserves or existing high quality late successional stands, trees will be retained to older ages and more downed woody debris will be retained. Silvicultural systems that use uneven-age or multiage methods of regeneration will often be used to create and maintain very diverse forest stands. Opportunities to use these systems will be given greater consideration over even age systems when weighing options for managing forest stands.

Manage for Improvement: Silvicultural systems designed to work with forest stands or sites that have been "high graded" or damaged, or are identified and classified as being less productive and less structurally diverse, will use intermediate operations such as thinning to improve growing stock and generally even age methods of regeneration. Combinations of even aged and uneven aged methods of regeneration will be considered. Stands where these systems are applied may often be currently even aged and/or on low productivity soils. Approval from the DCR Commissioner will be required for harvest openings greater than 1/3 acre designed to harvest all merchantable trees. Overall, there will be less emphasis on regeneration methods that will result in large harvest openings.

E. Plantation forests may be harvested or removed to achieve results described above. Their harvesting or removal will be constrained relative to the guidelines established in this document (i.e. size of openings, review processes).

F. Small harvests of standing live or dead or down dead trees, commonly referred to as "Home Fuelwood" will be allowed for sale to individual citizens. Home Fuelwood harvests can be used to achieve results described for the respective levels. Home Fuelwood harvests will be held to the same silvicultural and management guidelines established in this document, and subject to the Public Outreach and Consultation on Forest Cutting Plans Policy (see Appendix 3). DCR will continue and expand the current program to help meet the forest management goals within small portions of Woodlands while engaging the public and providing a local market for low quality wood from improvement cuttings. DCR will also strive to include low income families by

working with the state's low income fuel assistance programs, where feasible, and look to provide wood on landings where access into the woods is less feasible.

Water and Soil Resource Guidelines:

A. Manage areas around all vernal pools (certified and non-certified) according to the *Massachusetts Forestry Best Management Practices Manual*[64] and further directed by *Guidelines for Timber Harvesting near Vernal Pools*.[65]

B. Maintain soil processes by providing for the recruitment of organic inputs (retain coarse woody debris) and minimizing erosion through the use of BMPs.

C. Minimize the number of roads, skid trails, and landings.

D. Require that landings and main skid roads be stabilized, graded, and planted to appropriate native seed mixtures at the end of any operation.

E. A petrochemical spill management plan will be in place on all districts where active forest management activities take place.

F. All petroleum products, industrial chemicals, and hazardous materials must be stored in accordance with the manufacturer's specifications, and, at a minimum, in durable sealed containers.

G. Require that all harvesting machinery carry oil absorbent cloth, shovel and a 5-gallon bucket to mitigate any oil or hydraulic fluid leaks, and that any such leaks/spills be reported to the appropriate Management Forester (and to DEP, if appropriate) on the day they occur.

H. Require that all harvesting machinery be thoroughly cleaned (the exterior, undercarriage, and tires/tracks of all equipment) of mud and other debris with a high-pressure washer at a maintenance facility prior to bringing the equipment on site to minimize the introduction of invasive plant seeds and parts. Management Foresters will inspect all equipment prior to unloading at job sites.

I. Prohibit the use of harvesting machinery during the typical mud season (March 15 to May 15) or wet periods, unless waived by the DCR forester.

J. Protect highly sensitive or wet soils by limiting activities to the period when the ground is frozen or dry to prevent a reduction in site productivity and/or requiring equipment that minimizes impacts to these soils.

[64] Kittredge, David B. and Michael Parker. *Massachusetts Forestry Best Management Practices Manual.* 1999. Prepared for the Massachusetts Dept of Environmental Protection, Office of Watershed Management and the US Environmental Protection Agency, Region 1, Water Division.

[65] Massachusetts Department of Conservation and Recreation – Service Forestry program. *Guidelines for Timber Harvesting Near Vernal Pools*. Unpublished document available by contacting DCR regional offices.

K. Manage soils on a sustainable basis by minimizing erosion, compaction and displacement. Management is permitted to control erosion or stabilize soils by closing roads and unauthorized trails or other means, such as stabilizing slopes with water bars or other erosion control structures. Local emergency management officials will be consulted in any road closures.

L. Where Woodlands overlap with DCR's DWSP lands or local or regional public water supply watershed lands, management should be closely coordinated with the public water supply agency to address water quality protection issues.

Habitat Protection Guidelines:

A. Vegetation management necessary to comply with NHESP recommendations for the restoration, maintenance or enhancement of habitats for rare and endangered species and exemplary natural or rare communities may be allowed.

B. Vegetation management to support SGCN as described in the Massachusetts Wildlife Action Plan may be allowed if a particular SGCN is historically and/or culturally associated with a specific Woodland, and if a public process verifies support for such management prior to it being carried out.

C. Identification, documentation and protection of rare species occurrences and important habitats will be addressed using the following tools:

a) Review of the NHESP GIS database, which includes datalayers from statewide databases such as BioMap2, Priority Habitats of rare species, Estimated Habitats of rare wildlife, Certified or Potential Vernal Pools, and Natural Communities.

b) Review of and consultation with other sources of natural resource information, where appropriate and available (e.g., Mass Audubon, New England Wildflower Society, The Vernal Pool Association and other NGOs, local naturalists, etc.). Surveys and monitoring (for project specific purposes or long-term documentation), by trained DCR staff and/or outside consultants with the advice of NHESP to document and map rare species and important habitats.

c) DCR will work closely with DFW and consult the CWCS for guidance in protecting rare species and their habitats, as well as the Forestry Conservation Management Practices for Rare Species,[66] where appropriate.

d) If any state listed species are listed pursuant to the U.S. Endangered Species Act (16 U.S.C.A. §§ 1531 – 1544), the US Fish & Wildlife Service must approve the project and the appropriate species Recovery Plan shall be consulted.

[66] Available at: http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/forestry/forestry_cmp.htm

e) Consult and work with NHESP to identify and develop appropriate conservation practices for Natural Communities.

f) Wetlands and vernal pools will be mapped, documented and all vernal pools treated as certified. Potential vernal pools should be submitted for certification if applicable; apply accepted Massachusetts and federal protection guidelines around all certified or potential vernal pools (304 CMR 11.00).

D. Using the resources noted in section A, Habitat Restoration Plans should be generated to improve degraded habitats important to rare species and/or state/regional biodiversity.

E. Consult with DFW and DEP prior to conducting any work adjacent to Coldwater Fisheries habitats; apply protection guidelines recommended.

F. Form partnerships with friends groups, local naturalists, environmental organizations, etc., to assist in the identification, protection and monitoring of important habitats or rare species populations where appropriate.

Forest Health and Protection Guidelines:

A. Forest Insects and Diseases

a) Conduct periodic surveys to identify and quantify forest insect and disease impacts.

b) Prescribe integrated pest management approaches that treat high-risk stands, including the development of an Invasive Species Response Plan for invasive species of significant risk to forest resources.

c) Implement the draft Massachusetts Highly Destructive Forest Invasive Species Response Plan[67] for invasive species that pose a significant risk to forest resources.

B. Non-native Invasive Species

a) Conduct periodic surveys to identify, map, and quantify impacts of non-native invasive species.

b) Prescribe integrated and interdisciplinary approaches that treat existing populations while maintaining desirable native species. Integrate the removal of invasives as a requirement of timber sale contractual operations.

C. Require that all harvesting machinery be thoroughly cleaned (the exterior, undercarriage, and tires/tracks of all equipment) of mud and other debris with a high-pressure washer at a maintenance facility prior to bringing the equipment on site to minimize the introduction of

[67] See http://www.mass.gov/dcr/stewardship/forestry/docs/response_plan_invasive.pdf

invasive plant seeds and parts. Management Foresters will inspect all equipment prior to unloading at job sites.

D. Carbon sequestration

a) Manage for native vigorous vegetative growth that will both increase carbon storage and enable adaptation to climate change over time. For example, use uneven aged silvicultural systems to regenerate northern hardwoods to help maintain this forest type which is at high risk of decline in the future due to climate change.

b) Use extended rotations and forest management techniques to restore late successional forest structure.

c) Draw upon and utilize the most current research and science in applying forest management carbon sequestration strategies.

E. Use of Pesticides

a) Use pesticides only when there are no other practical alternatives.

b) Apply pesticides according to product labels and by a licensed applicator.

c) Monitor treatments for effectiveness and impacts on non-target species and areas.

F. Salvage of Dead and Dying Forest

a) Use salvage operations following standard operating forest management guidelines and *Massachusetts Forestry Best Management Practices Manual* [68] to reduce risk to human health and safety, of fire, or to reduce continued forest health threats, when necessary.

b) Consider pre-salvage operations to reduce risk to human health and safety or address forest health threats.

G. Fire

a) Inventory and maintain desirable fire roads and water drafting sites.

b) Meet Massachusetts slash law requirements.

c) Suppress wildfires to meet the following objectives:

i) Provide for the safety and well being of fire fighters and the public.

ii) Protect natural resource investments and private property.

[68] Kittredge, David B. and Michael Parker. *Massachusetts Forestry Best Management Practices Manual.* 1999. Prepared for the Massachusetts Dept of Environmental Protection, Office of Watershed Management and the US Environmental Protection Agency, Region 1, Water Division.

iii) Use minimal impact suppression tactics (MIST) in fire pre-suppression and suppression actions.

iv) Coordinate suppression tactics with the natural resource desired conditions.

d) Use mechanical treatments such as fire breaks and mowing and prescribed fire to:

i) maintain natural communities

ii) reduce the buildup of hazardous fuels and catastrophic wildfire

iii) enhance conditions favorable to rare species or communities

iv) establish desirable regeneration

v) create habitat for early successional species

e) Maintain forest health to reduce forest mortality and subsequent build-up of fuels.

Cultural Resource Management Guidelines:

A. As per DCR's regulatory responsibilities, any projects undertaken on DCR land – including forestry cutting plans or other silvicultural prescriptions – must first be reviewed during the planning stage by DCR's Office of Cultural Resources (OCR) for potential impacts to known and potential historic and archaeological sites.

B. Vegetation management for the protection of historic or archaeological sites is allowed, with some restrictions on the time of year, types of equipment and techniques used to minimize resource disturbance, as guided by OCR staff.

C. When designing a harvest, every effort should be made to identify pathways for equipment that avoid the creation of new (or widening existing) gaps in stone walls. If stone walls are within potential treatment areas, a site walk with OCR staff to review options and assess potential impacts and mitigation measures should take place during prescription and/or cutting plan development.

D. Upon completion of a vegetation management treatment, all slash will be removed from within any foundation or cellar hole.

E. Maintenance of historic buildings, structures, sites and landscapes within Woodlands is allowed.

Facilities, Transportation and Boundary Guidelines:

A. Roads

a) Maintain existing roads in accordance with established road classification systems and maintenance policy.

b) Minimize the number of truck roads, skid trails and landings.

c) Staging areas, landings, main skid trails and truck roads must be stabilized and graded at the end of any operation.

d) Protect highly sensitive or wet soils by limiting activities to periods when the ground is frozen or dry, and/or requiring equipment that minimizes impacts to these soils. Use of harvesting machinery during the typical mud season (March 15 to May 15) or wet periods should be prohibited, unless waived by the forester due to drier than normal conditions.

e) New truck road construction may be permitted in stable areas only when necessary.

f) Commercial timber management, including salvage, is allowed within road corridors, and will be designed to promote diverse native vegetation, large-diameter trees, multiple age classes and forest structures, forest health, a safe recreation experience, and quality scenery.

g) No slash should remain within 25 feet of roads.

h) Skid trails and truck roads will be carefully laid out by the forester considering grades, drainage and stream integrity.

i) Inventory and maintain desirable fire roads and water drafting sites.

j) Minimize truck road width.

k) Minimize road shoulder clearing width for safe passage and provide minimal necessary fire breaks.

l) Minimize adverse effects on wildlife migration through properly designed and maintained roads and structures (cut and fill banks, culverts, and ditches).

m) Consider the use of in-kind services to provide for skid trail and truck road maintenance during project planning and implementation.

n) Coordinate and cooperate with municipal officials on the management of roads and ownership of timber within road right-of-ways.

o) Permanently close (restore to natural condition) roads that are significantly degraded, cannot be economically repaired or serve no feasible or emergency use. Local emergency management officials will be consulted.

p) Temporarily close forest roads, using barriers and gates, which will be used minimally for administrative needs only. Local emergency management officials will be consulted.

B. Boundaries

a) All boundaries needing formal surveys will be identified. All newly-acquired DCR properties should have their boundaries surveyed and marked. (Interior line boundaries should be discontinued.)

b) Boundaries will be surveyed as needed for project implementation, where trespass is an issue, or where there are disputes.

c) All boundaries will be located and maintained on a 10 year cycle or when needed for project implementation.

d) All boundaries should be maintained clearly and in a way that is sensitive to adjacent private lands with visible residences.

C. Facilities

a) Construction of new facilities may occur as necessary for public and administrative use, consistent with Woodlands goals.

Interpretation, Public Information, and Outreach Guidelines:

A. Achieving the Woodlands management goals will depend on gaining community trust and support through effective communication. Interpretation supports management objectives and is based on relevant interpretive and forest management plans. Interpretation, public information, and outreach are necessary in order to be fully successful in creating demonstration model forests. Therefore, public programs around ongoing forest management in Woodlands will be a high priority for the DCR's Interpretive Services program.

a) Interpretation helps develop an awareness and understanding of a place. In Woodlands it will focus on forest management practices and the ecosystem services the land provides.

b) Public information in Woodlands provides orientation or notices about management activities, forestry activities, and security issues.

c) Outreach provides information to constituents who may or may not be Woodland visitors. Intense efforts will be made to extend outreach in conjunction with forest management projects.

d) The Public Outreach and Consultation for Forest Cutting Plans Policy has been updated to reflect many of the findings and recommendations noted throughout the FFVP and Landscape Designation process as well as public comment and input received during these processes (see Appendix 3). Changes include a public site visit to each proposed timber sale project, as opposed to only those "projects that have high public sensitivity" as called for in the former policy.

B. Interpretation (programming and media) connected to Woodlands should focus on the themes of the land and the past harvesting projects that have taken place; support management goals

and be based on relevant interpretive plans; adhere to DCR interpretive, graphic, and signage standards; and may engage friends groups, schools, universities and other organizations for support when appropriate. It is vitally important to interpret the dynamics of forest ecosystems, with and without human intervention.

C. Interpretive media (e.g., pamphlets and brochures) or programming regarding management activities will be made available at state forests and parks, in neighboring communities, and via the internet.

D. Informational signs and interpretive kiosks are most appropriate at main trailheads or parking areas, demonstration forests, and active management sites. Minimal developed interpretive signage is appropriate elsewhere within the Woodlands.

E. Trails signs should follow *DCR Trails Guidelines and Best Practices Manual*[69] signage standards for primitive areas. Interpretive media should conform to DCR's graphic guidelines.

F. Interpretation and public information requiring new infrastructure may be allowed.

Monitoring, Enforcement and Research Guidelines:

A. Monitoring and research projects may be conducted as approved through DCR's Special Use Permit process. Any research proposed by an outside entity must be developed and implemented in close consultation with DCR staff to assure coordination of efforts, and copies of all research results must be provided to DCR.

B. Measure Continuous Forest Inventory plots on a regular cycle and use data in conjunction with ongoing research needs such as Reserve vegetation development, carbon storage and climate change.

C. All stands that have received silvicultural treatment will be inventoried within five years of the completed treatment using the stand level inventory system used to assess the stands prior to treatment. Post treatment stand examination/monitoring will measure the same attributes so as to track the results of the forest management objectives.

D. Active enforcement of prohibited or regulated activities (such as unapproved trails or cutting of trees at boundary encroachments) is critical to maintain resources within Woodlands.

Special Use Guidelines:

A. Special uses such as events and activities are allowed and will be evaluated on an individual basis as provided in DCR Special Use Policies and Procedures[70] and volunteer guidelines.

[69] See *DCR Trails Guidelines and Best Practices Manual*, updated January 2010. Available at: http://www.mass.gov/dcr/stewardship/greenway/docs/DCR_guidelines.pdf

B. Research areas are managed under special-use permits and cooperative partnerships are encouraged to further collective knowledge of ecosystem functions and processes.

C. Existing special uses such as transmission lines, communication sites, and commercial uses that are not compatible with the intent of Woodlands will be evaluated to determine if they can be relocated to another area.

D. DCR will not grant rights for new commercial communications sites. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[71] Full environmental permitting and review would also apply.

E. Adding new or replacing existing communication hardware onto existing fire towers and communications sites will be allowed, all applicable permits and DCR's Special Use policy and guidelines apply.[72]

F. DCR will not grant rights for new commercial wind installations and commercial solar installations. However, it should be noted that commercial energy uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[73] Full environmental permitting and review would also apply. Wind and solar installations that have a primary purpose of supplying electricity to a Woodland facility (for example a headquarters facility) will be considered if the site is already impacted by an existing facility and the added impact to resources is insignificant.

G. DCR will not grant rights for new commercial transmission lines. However, it should be noted that such uses are subject to legislative action, pursuant to Article 97 of the Constitution of the Commonwealth. In addition, in such circumstances, compliance with the Secretary of Energy and Environmental Affairs' "No Net Loss" policy for mitigation of loss of open space is required.[74] Full environmental permitting and review would also apply.

H. Granting rights for new commercial uses is prohibited except to the extent necessary for activities that advance Woodland goals.

4.6 Forest Resource Management Plans

The designation of DCR's State and Urban Parks properties as Reserves, Parklands and Woodlands will be reflected in edits to the existing, approved Northern Berkshires, Central Berkshires, Southern

[70] Information about DCR's Special Use Permit program is available at http://www.mass.gov/dcr/permits/
[71] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[72] Information about DCR's Special Use Permit program is available at http://www.mass.gov/dcr/permits/
[73] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf
[74] This policy is available on the EEA website at: http://www.mass.gov/eea/docs/eea/dcs/dcsarticle97.pdf

Berkshires and Western Connecticut Valley Forest Resource Management Plans. The new designations will replace the Active Forest Resource Management Areas, Intensive Use Areas, and Forest Reserves that were established in these plans.

The existing FRMPs will be evaluated, edited and expanded to reflect Landscape Designations and incorporate the guidelines presented in this document. The new Landscape Designations and guidelines will produce a change in expected outputs and will be integral to FRMP edits. Amended FRMPs will incorporate the approaches to silvicultural treatments presented in these Woodlands guidelines to guide sustainable forest management in Woodland properties. Until the existing FRMPs are updated, the Woodlands guidelines will supersede the guidelines in the existing FRMPs. Moving forward, forest management planning will occur as a part of the RMP process.

Upon finalizing the Woodlands designations, DCR will undertake projects to demonstrate excellent forestry, proposed and conducted according to the Woodlands guidelines included in this document.

Appendices

Appendix 1. *Glossary*

Appendix 2. *Silviculture and Guidelines for Application*

Appendix 3. *Public Outreach and Consultation for Forest Cutting Plans Policy*

Appendix 4. *Land Stewardship Zoning Guidelines*

Appendix 5. *DCR Properties on Public Water Supply Watersheds*

Appendix 6. *Division of Fisheries & Wildlife Comment Letter on Draft Landscape Designations and Management Guidelines*

Appendix 7. *Key Changes to Management Guidelines from Draft to Final*

Appendix 8. *Key Changes to Landscape Designations from Draft to Final*

Appendix 9. *GIS Models*

Appendix 10. *Contributors*

Appendix 11. *Final Landscape Designation Maps*

Appendix 1. Glossary

carbon sequestration – the incorporation of carbon dioxide into plant tissues.

clearcut – 1. a stand in which essentially all trees have been removed in one operation —*note* depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration; 2. a regeneration or harvest method that removes essentially all trees in a stand —*synonym* clearcutting.

> Legal definition from 304 Commonwealth of Massachusetts Regulation 11.00 pursuant to the authority granted under Massachusetts General Law c. 132, §§ 40 through 46
>
> **11.05: Standards (1) Cutting Trees (a) Silviculture**
>
> 2. Clearcutting, coppice cuts, or any regeneration cut leaving less mature trees than those required for a seed tree cut (excepting the removal cut of shelterwood, seed tree or similar systems where, in the judgment of the Director's agent, the advance regeneration is of suitable size and stocking for release) shall meet the following standards:
>   a. The maximum size of the opening created shall be ten acres unless the source of the regeneration is seeding from surrounding stands, in which case the maximum size shall be five acres. Clearcuts larger than these limits shall require a specific reason to be given and approved in the forest cutting plan showing that environmental impact is less, or that environmental benefits would be enhanced, by a larger cut. In these cases, the forest cutting plan must also state the silvicultural justification for the larger area and list the provisions necessary to insure adequate regeneration and mitigation of environmental impacts.
>   b. Clearcuts separated by less than 100 feet of forest maintained at or above "B Level" stocking shall be considered to be one clearcut.
>   c. Clearcutting cannot occur within filter and buffer strips, on slopes of 60% or more, or within wetlands.
>   d. Where regeneration of a clearcut is to be obtained by seeding from surrounding uncut mature stands of light-seeded species, the clearcut shall be so shaped that all parts are within the effective seeding range of the dominant tree species within the adjoining uncut mature timber stand. The adjoining stand must be at least 2½ acres in size.

commercial harvesting – the practice of forestry with the object of producing timber and other forest produce as a business enterprise or for sale to a business enterprise.

cutting cycle – the planned interval between partial harvests in an uneven-aged stand —*see* thinning cycle.

developed (soils) – refers to levels of soil formation/evolution and soil horizon formation/evolution. Soil development is influenced by climate, living organisms (especially vegetation), the nature of parent material, topography and time. Soil formation and development begins with the accumulation of parent material. As the biotic and abiotic influences affect the accumulating parent material, soils form

horizons or layers. More complex or developed soils generally have more, well defined layers and generally are more productive in regards to supporting complex vegetative communities.

early successional habitat – the condition of forest vegetation, in terms of species composition and structure, that is found in the early seral or successional stages of forest development. This habitat is made up predominantly of grasses, forbs, seedlings, and shrubs, and provides an environment for a diversity of birds, mammals and invertebrates.

ecological land unit – areas of land and water having similar characteristic combinations of physical environment (such as topography, climate, geomorphic processes, geology, soil, and hydrology), biological communities (such as plants, animals, microorganisms, and potential natural communities), and human factors (such as social, economic, cultural, and infrastructure).

ecosystem services – benefits provided by ecological resources and processes. These services can be broken into four broad categories: provisioning, regulating, supporting and cultural.

forest cutting plan – (in Massachusetts) a plan for the cutting of trees on forest land prepared and submitted in accordance with M.G.L. c. 132, §§ 40 through 46 and C.M.R. 11.00. A forest cutting plan shall meet the requirements for a notice of intent to cut under M.G.L. c. 132, §§ 40 through 46. *Approved Forest Cutting Plan* means a forest cutting plan which has been approved by the director or the Director's Agent pursuant to 304 CMR 11.04 in the form it was submitted or together with the amendments and requirements added by the Director or the Director's agent as conditions for approval. An approved forest cutting plan shall meet the requirements for a final work order required under M.G.L. c. 132, §§ 40 through 46.

forest health – a healthy forest condition is defined as a vibrant mix of native tree and other plant species naturally associated with soils and other physiognomic conditions present.

forestry – the profession embracing the science, art, and practice of creating, managing, using, and conserving forests and associated resources for human benefit and in a sustainable manner to meet desired goals, needs, and values —*note* the broad field of forestry consists of those biological, quantitative, managerial, and social sciences that are applied to forest management and conservation; it includes specialized fields such as agroforestry, urban forestry, industrial forestry, nonindustrial forestry, and wilderness and recreation forestry.

high grading – the removal of the most commercially valuable trees (high-grade trees), often leaving a residual stand composed of trees of poor condition or species composition —*note* high grading may have both genetic implications and long-term economic or stand health implications.

irregular – *of a regeneration method (e.g., irregular shelterwood)* characterized by variation in age structure (usually uneven-aged) or in spatial arrangement of trees.

late successional habitat – forest structural condition that resembles or is in the latest seral or successional stages of forest development. The structural condition includes live and dead (snags) standing trees that are large and often old for their species. The canopy of mature cohorts has gaps and complex vertical structure; there is a variety of tree sizes and ages. Overstory tree crowns have

morphology and architecture that provides nesting and roosting opportunities for raptors. The understory is generally developed and patchy and contains significant amounts of down woody debris. The environment of late successional habitat supports distinct associated flora and fauna species, sustains a high level of forest biodiversity and is a significant carbon sink.

merchantable – 1. *of trees, crops, or stands* having the size, quality, and condition suitable for marketing under a given economic condition, even if not immediately accessible for logging; 2. *of a bole or stem* the part(s) suitable for sale; 3. *of lumber* the commercial size or grade of round or sawn timber or of other forest produce, or the entire output of a sawmill except for mill culls.

micro-site conditions – specific conditions (temperature, humidity, sunlight, nutrient availability, soil physical characteristics, vegetation cover) different from the surrounding area. These conditions are created in a small area by features such as a rock outcrop, log, stump, small depression or similar feature.

old growth forest[75] **–** the (usually) late successional stage of forest development —*note 1.* Old growth forests are defined in many ways; generally, structural characteristics used to describe old growth forests include (a) live trees: number and minimum size of both seral and climax dominants, (b) canopy conditions: commonly including multilayering, (c) snags: minimum number of specific size, and (d) down logs and coarse woody debris: minimum tonnage and numbers of pieces of specific size —*note 2.* Old growth forests generally contain trees that are large for their species and site and sometimes decadent (overmature) with broken tops, often a variety of tree sizes, large snags and logs, and a developed and often patchy understory —*note 3.* Stand age, although a useful indicator of old growth, is often considered less important than structure because (a) the rate of stand development depends more on environment and stand history than age alone, and (b) dominants are often multiaged —*note 4.* Due to large differences in forest types, climate, site quality, and natural disturbance history (e.g., fire, wind, and disease and insect epidemics), old growth forests vary extensively in tree size, age classes, presence and abundance of structural elements, stability, and presence of understory —*note 5.* The minimum area needed for an old growth forest to be a functional ecological unit depends on the nature and management of surrounding areas; small areas often do not contain all old growth elements —*note 6.* An old growth forest is commonly perceived as an uncut, virgin forest with very little human-caused disturbance; some believe that the time taken for stands to develop old growth structure can be shortened by silvicultural treatments aimed at producing the above characteristics —*synonym* primary forest.

productivity – 1**.** *ecology* the rate at which biomass is produced per unit area by any class of organisms; 2. *ecology* the rate of new tissue formation or energy utilization by one or more organisms; 3. *ecology* the capacity or ability of an environmental unit to produce organic material; 4. *ecology* the ability of a

[75] The definition provided here is taken verbatim from the Society of American Foresters *Dictionary of Forestry* (updated July 2008). Please note that it does differ from the definition utilized in the DCR Old Growth Policy, which was adopted by the former DEM board in 1998. This policy is available at http://www.mass.gov/dcr/stewardship/forestry/docs/oldgrwpol.pdf.

population to recruit new members by reproduction; 5. *management* the relative capacity of an area to sustain a supply of goods or services in the long run.

redundancy – overlapping or duplicate function; in the context of forest reserve redundancy, this means that if one forest reserve is lost to disease, invasive species, pests or natural or anthropogenic disturbances, there is another similar forest reserve that functions in an ecologically similar way. Two forest Reserves that are not redundant would be a Northern hardwood forest stand on *steep slopes* and a pitch pine – scrub oak forest stand on *dry flats, acidic sed/metased* (these are "Ecological Land Unit" terms as defined by The Nature Conservancy) since each has a unique and different ecological function.

regeneration method – a cutting procedure by which a new age class is created; the major methods are clearcutting, seed tree, shelterwood, selection, and coppice —*synonym* reproduction method.

reserve tree – a tree, pole-sized or larger, retained in either a dispersed or aggregated manner after the regeneration period under the clearcutting, seed tree, shelterwood, group selection, or coppice methods —*synonym* standard, green tree retention.

seed tree (regeneration method) – the cutting of all trees except for a small number of widely dispersed trees retained for seed production and to produce a new age class in fully exposed microenvironment —*note* seed trees are usually removed after regeneration is established —*also* seed tree with reserves.

shelterwood (regeneration method) – the cutting of most trees, leaving those needed to produce sufficient shade to produce a new age class in a moderated microenvironment —*note* the sequence of treatments can include three types of cuttings: (a) an optional preparatory cut to enhance conditions for seed production, (b) an establishment cut to prepare the seed bed and to create a new age class, and (c) a removal cut to release established regeneration from competition with the overwood; cutting may be done uniformly throughout the stand (uniform shelterwood), in groups or patches (group shelterwood), or in strips (strip shelterwood); in a strip shelterwood, regeneration cuttings may progress against the prevailing wind.

silviculture – the art and science of controlling the establishment, growth, composition, health, and quality of forests and Woodlands to meet the diverse needs and values of landowners and society on a sustainable basis.

silvicultural system – a planned series of treatments for tending, harvesting, and re-establishing a stand —*note* the system name is based on the number of age classes (coppice, even-aged, two-aged, uneven-aged) or the regeneration method (clearcutting, seed tree, shelterwood, selection, coppice, coppice with reserves) used.

snag – 1. a standing, generally unmerchantable dead tree from which the leaves and most of the branches have fallen —*note* for wildlife habitat purposes, a snag is sometimes regarded as being at least 10 in (25.4 cm) in diameter at breast height and at least 6 ft (1.8 m) tall; a hard snag is composed primarily of sound wood, generally merchantable, and a soft snag is composed primarily of wood in advanced stages of decay and deterioration; 2. a standing section of the stem of a tree, broken off usually below the crown; 3. a sunken log or a submerged stump or tree; 4. the projecting base of a broken or cut branch on a tree stem.

stand – 1. *ecology* a contiguous group of similar plants; 2. *silviculture* a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit —*see* all-aged stand, mixed, pure, even-aged, and uneven-aged stands —*note 1.* A mixed stand is composed of a mixture of species —*note 2.* A pure stand is composed of essentially a single species —*note 3.* In a stratified mixture stand different species occupy different strata of the total crown canopy.

stand structure – 1. *ecology* the physical and temporal distribution of plants in a stand; 2. *silviculture* the horizontal and vertical distribution of components of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and down woody debris.

succession – the gradual supplanting of one community of plants by another ; the sequence of communities is called a sere, or seral stage.

sustainable forest management – *this evolving concept has several definitions* 1. the practice of meeting the forest resource needs and values of the present without compromising the similar capability of future generations —*note* sustainable forest management involves practicing a land stewardship ethic that integrates the reforestation, managing, growing, nurturing, and harvesting of trees for useful products with the conservation of soil, air and water quality, wildlife and fish habitat, and aesthetics (UN Conference on Environment and Development, Rio De Janeiro, 1992); 2. the stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality, and potential to fulfill, now and in the future, relevant ecological, economic, and social functions at local, national, and global levels, and that does not cause damage to other ecosystems (the Ministerial Conference on the Protection of Forests in Europe, Helsinki, 1993) —*note* Criteria for sustainable forestry include (a) conservation of biological diversity, (b) maintenance of productive capacity of forest ecosystems, (c) maintenance of forest ecosystem health and vitality, (d) conservation and maintenance of soil and water resources, (e) maintenance of forest contributions to global carbon cycles, (f) maintenance and enhancement of long-term multiple socioeconomic benefits to meet the needs of societies, and (g) a legal, institutional, and economic framework for forest conservation and sustainable management (Montréal Process, 1993).

thinning cycle – the period of time between successive thinning entries, usually used in connection with even-aged stands.

tip-up mound topography – forest soil disruption caused by falling trees.

whole-tree harvesting - cutting and removing an entire upper portion of a tree consisting of trunk, branches, and leaves or needles —*synonym* full-tree harvesting

<u>References used to compose Glossary definitions:</u>

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Appendix 2. Silviculture and Guidelines for Application

In Woodlands the DCR Management Forester will, in contemplating forest management activities, formulate a decision process of analyzing the forest site conditions and subsequently prescribing (or deciding against) silvicultural treatments. Often the forester must and will decide against harvesting. The exclusion of harvesting at any given time may be a deferral for the length of a cutting or thinning cycle or it may be long term exclusion due to the constraining characteristics of a site. Reasons for which harvesting is excluded within Woodlands include:

- wetlands and vernal pools
- riparian and trail buffers
- old-growth forests
- endangered species habitat and rare natural communities – appropriate surveys will be conducted (no harvests where Conservation Management Practices (CMPs) recommend not harvesting)
- wildlife habitat – retention of trees to meet diversity goals primarily to meet species habitat requirements
- areas of historical and cultural significance, where harvesting activities could destroy a resource
- steep slopes

Silviculture applied in Woodlands will be used to achieve the variety of agency goals identified in Section 4.2 of this document. Traditional silvicultural systems or a series of treatments including regeneration cutting, tending operations, protective treatments, and intermediate cuttings will most often be used to achieve DCR Woodlands goals. In some cases, timber harvesting may occur within a project that will not fit neatly in a traditional silvicultural system. Examples of singular focused cuttings to achieve one time intended results may be conducted for purposes include:

- controlling the spread of invasive pathogens, insects or plants
- removing hazardous trees along trails
- promoting habitat for rare and endangered species
- protection of cultural resources

Silvicultural systems for forest management will be designed with two broad directions:

- ***Diversity and Structure***. Create and/or maintain uneven aged or multi-aged stands with a high level of structural diversity and/or restore late-successional forest structure and characteristics.
- ***Rehabilitation and Improvement.*** Work to add diversity to high graded/damaged stands, lower productivity stands, or stands that are currently even aged.

Diversity and Structure

Intent: Create and/or maintain uneven aged or multi-aged stands with a high level of structural diversity and/or restore late-successional forest structure and characteristics. Silviculture with this intent will be used to create and enhance vertical structure, multiple age classes, tree species diversity and large tree size classes. On sites where it is a high priority for restoring late successional characteristics, trees will be retained to older ages and more downed woody debris will be retained. Those forest stands that have the immediate potential for significant diversity and are rated high from a productivity standpoint will be treated with silviculture that enhances diversity and protects productivity.

Guidelines: Use regeneration methods that resemble the regeneration results of small scale natural disturbance; manage to create and maintain uneven conditions on many scales of resolution (stand to landscape). Use intermediate operations to enhance late successional characteristics where appropriate.

A. Single Tree and very small group selection:

    a) Variable size group selection; from single tree to 1/3 acre.

        i) The model to determine opening size will be species shade tolerance.

            (1) Increasing shade tolerance = smaller gap

            (2) Decreasing shade tolerance = larger gap

B. Irregular and two age systems:

    a) Two age systems

        i) Use on current even age stands with species that have moderate to low shade tolerance – new openings up to 1/3 acre.

    b) Irregular shelterwood:

        i) Create and maintain irregular gaps up to 1/3 acre; create and maintain irregular forest structure, and heights of trees at stand level scale. Expand on areas of advanced regeneration reserving individual and groups of large trees.

C. Openings will be variably shaped.

D. Areas adjacent to openings will be thinned to enhance wildlife benefits and light conditions of openings.

E. All timber sale treatments must take aesthetics into high consideration. Roadside buffer requirements will be strictly adhered to and landing location and rehabilitation considered paramount. Enhancing aesthetics will be an important goal, as well as considering scenic vistas and wildlife viewing areas.

Rehabilitation and Improvement

Intent: Work to add diversity to high graded/damaged stands, lower productivity stands, or stands that are currently even aged. Silvicultural practices will be used generally in those stands that are less productive and less structurally diverse. The stands treated with this level of silviculture are generally even aged and are on less developed, less complex soils. Silvicultural systems will often use even age regeneration methods and stand improvement practices but not exclusively; a combination of systems that include even and uneven age methods should be sought.

Guidelines:

A. Advanced Regeneration present:

   a) Irregular Shelterwood with openings up to 5 acres with reserves/green tree retention.

   b) Single Tree and small group selection with openings up to 1/3 acre on relatively higher productivity sites and with desirable shade tolerant species present.

B. Advanced Regeneration not present:

   a) Clearcut, Shelterwood or Seed Tree with reserves/green tree retention with openings up to 5 acres.

   b) Single Tree and small group selection with openings up to 1/3 acre on relatively higher productivity sites and with desirable shade tolerant species present.

C. Conduct thinning in immature stands to promote growth on high quality, desirable trees.[76]

D. Promote diversity in size and shape of harvest openings.

E. Select Reserve or Legacy trees to be left in harvest openings that exceed 1/3 acre (see guidelines below in **Wildlife Structural and Coarse Woody Debris Guidelines**).

F. Aesthetics are a premium goal in the results of timber sale treatment. Adhere strictly to roadside buffer requirements. Landing location and rehabilitation are paramount. Enhance aesthetics; consider scenic vistas and wildlife viewing areas.

Silviculture practiced in this general approach will also be used to create habitat conditions for species that require forests in the earliest stages of succession and young forests less than 10 years old. Silvicultural systems that incorporate even-aged harvesting regeneration methods such as clearcut,

[76] If forest stands considered for treatment in this level are less than approximately 100 years old, thinning should be considered as an intermediate treatment to prepare the stand for regeneration at a later time. Thinning will maintain a cover of trees for an extended period, redistribute the growth potential of the site on more desirable higher quality trees, and allow residual trees to adjust to changing conditions (increased light, and exposure to wind).

shelterwood and seed tree (all with reserve trees) will be used to create forest openings of various sizes up to 5 acres using a public and expert consultative process. Openings above 1/3 acre will require approval from the DCR Commissioner. Emphasis will be on regenerating forest habitat in strategically selected areas and allowing the forest habitat to develop through many successional stages. Recently high graded stands adjacent to other open habitat, "pasture pine", or young forests are some examples of areas to select. The practice should be shifted across the landscape of DCR's Woodlands.

For each management forestry district, stands appropriate for early successional habitat will be mapped and prioritized working with DFW staff. DFW will advise DCR on the appropriate amount of early successional habitat needed for the district given landscape wildlife conditions and will advise DCR on the best location and timing of early successional habitat projects. An expanded public input process will occur for openings planned larger than 1/3 of an acre. Openings between 1/3 and 5 acres will be proposed on the advice of DFW (based on the Massachusetts State Wildlife Action Plan) and will require approval from the DCR Commissioner. This type of forestry has three goals: 1. to restore diversity to sites degraded from past land use; 2. to add to needed wildlife habitat for wildlife species of greatest conservation need identified in the state Wildlife Action Plan that benefit from larger patches of early-successional forest habitat; and 3. to demonstrate to other landowners how to conduct scientifically-based habitat restoration projects.

Wildlife Structural and Coarse Woody Debris Guidelines

*Where forest vegetation management occurs, the following guidelines apply***:**

A. Retain 1 to 3 live, large diameter (where possible >18" dbh) trees per acre and 4 live, 12" to 18" dbh trees per acre that have the potential to serve as cavity and den trees and future snags. Retention trees should be distributed uniformly, clumped or grouped, providing a random uneven distribution over the entire treatment area leaving an average of approximately 5 live, future snag trees retained per acre. Groups or clumps of future snag retention should coalesce to island patches in even age management systems providing vertical structural diversity and protection to larger legacy trees. A greater number of legacy trees should be left in riparian areas.

B. Retain all dead snags and stubs in harvest areas as safe operating conditions will allow. Leave a minimum of five snags greater than 10 inches dbh where they exist.

C. Retain on average one of the oldest, largest diameter, well formed, dominant trees (where possible > 18" dbh) per acre in harvested areas to serve as legacy trees.

D. Downed woody material (DWM) including coarse woody debris (CWD) should be maintained on site based on forest type and site productivity, generally following the Forest Guild guidelines

for DWM retention.[77] All DWM on site prior to the harvest will be retained. Maintain a minimum of at least two cords (256 cubic feet) per acre of down coarse woody debris (material 5" or greater at the tip and at least 4' long) for ground dwelling amphibians, mammals, insects, and nutrient recycling. When available, highest priority will be given to leaving large, cull logs that will remain for long periods of time.

E. Provide a diversity of horizontal and vertical forest structures by retaining both individual and groups of trees during final release regeneration harvests and by protecting desirable advanced regeneration.

Whole Tree Harvesting and Woody Biomass Removal – Biomass refers to vegetation removed from the forest, usually logging slash, small-diameter trees, tops, limbs, or trees not considered merchantable in traditional markets. Biomass harvesting often done in forestry operations with "whole tree harvesting" refers to the removal of logging slash, small-diameter trees, tops, or limbs. On DCR harvests this tool may be used in limited circumstances in order to:

1. Thin non-sawtimber quality trees from forest stands to redistribute growth on generally larger, more desirable retention trees that will develop into high quality, high value individuals. In developing stands chosen to direct on a path to late successional characteristics, whole tree harvesting can provide the economic means to cut noncommercial size trees.

2. Intentionally impoverish site conditions and reduce fuel loads when converting plantations on sand-plain ecosystems to native scrub oak, tree oak and pitch pine vegetation communities.

3. Improve and maintain aesthetics where visuals are a significant concern by reducing slash levels during a timber harvest.

The use of whole tree harvesting will not dictate silviculture but will allow these discussed practices to take place in the absence of a market for low quality timber. With rare exceptions, all timber sales regardless of the use of whole tree harvesting will adhere to minimum coarse woody debris retention standards in the Wildlife Structural and Coarse Woody Debris Guidelines (see above) and retain 256 cubic feet of down wood material. Possible rare exceptions may be to minimize forest fuel loading or to meet a particular wildlife species requirement.

These guidelines have been drafted recognizing the Massachusetts Department of Energy Resources (DOER) is in the process of finalizing regulations pertaining to the eligibility of biomass generation units to receive Renewable Energy Certificates (RECs) under the state's Renewable Energy Portfolio Standard (RPS). The guidelines below provide direction to the forest manager for woody biomass retention and removal and are separate from the DOER proposed regulations in practice. Purchasers of a DCR timber sale will have to determine independently how much, if any of the biomass removed will qualify for

[77] Forest Guild Biomass Working Group. *Forest Biomass Retention and Harvesting Guidelines for the Northeast*. May 2010. The Forest Guild, Santa Fe, NM. Available at: http://www.forestguild.org/publications/research/2010/FG_Biomass_Guidelines_NE.pdf

renewable energy credits. In the course of selling timber from state lands, DCR will regulate the amount of biomass removed from any given site to protect forest productivity.

The Woody Biomass Removal guidelines in this document are based primarily on the Forest Guild publication *Forest Biomass Retention and Harvesting Guidelines for the Northeast*.[78] The Forest Guild is an internationally noted organization that "promotes ecologically, economically, and socially responsible forestry – "excellent forestry"– as a means of sustaining the integrity of forest ecosystems and the human communities dependent upon them."[79] The following criteria established by the Forest Guild offer an appropriate model for evaluating sites within the Woodlands where forest harvesting takes place.[80]

A. Document soils/productivity in the area covered by Forest Resource Management Plans and specific silvicultural prescriptions. Using Natural Resource Conservation Service (NRCS) soils survey maps, identify low nutrient soil series, excessively drained or very poorly drained soils and restrict woody biomass removal. Prescriptions will contain a map indicating soil types underlying the treatment area. Additional information from Forest Productivity Mapping of Massachusetts,[81] and the Massachusetts CFI site index maps should be used to determine soil productivity.

B. Provide direction within the silvicultural prescription for woody debris retention and removal that is based on documented soil productivity.

    a) Do not remove limbs and tops from sites that have low nutrient soils, that are excessively drained or poorly drained, and are rated as low productivity sites unless the object is to impoverish the site, i.e.to help promote and maintain pitch pine – oak savannahs in the southeast.

    b) In areas that do not qualify as low nutrient or low productivity where 1/3 or more of basal area is being removed on a 15 to 20 year cutting cycle, retain 1/4 to 1/3 of tops and limbs.

    c) Increasingly nutrient rich sites (higher productivity) and/or more basal area retention during harvest and/or longer cutting cycle allows for less limbs and tops left on the site to protect site productivity.

C. Timber Sale Contracts will be written so that coarse woody debris, wildlife structural retention standards are met. Contracts will limit the removal of biomass based on the productivity analysis and silvicultural prescription.

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[78] Forest Guild Biomass Working Group. *Forest Biomass Retention and Harvesting Guidelines for the Northeast*. May 2010. The Forest Guild, Santa Fe, NM. Available at: http://www.forestguild.org/publications/research/2010/FG_Biomass_Guidelines_NE.pdf

[79] The Forest Guild – see: http://www.forestguild.org/mission.html

[80] Forest Guild Biomass Working Group. *Forest Biomass Retention and Harvesting Guidelines for the Northeast*. May 2010. The Forest Guild, Santa Fe, NM. Available at: http://www.forestguild.org/publications/research/2010/FG_Biomass_Guidelines_NE.pdf

[81] MacConnell, W.P., D.W. Goodwin, and K.M.L. Jones. *Forest Productivity Mapping of Massachusetts.* Massachusetts Agricultural Experiment Station, 1991. Amherst, MA. Research Bulletin Number 735, 45p.

D. Plan harvests if at all possible for winter so that removal of leaves and needles from the site is minimized.

Harvesting and Timber Sale Guidelines

A. All silviculture treatments will be directed by a written prescription developed by Management Forestry Staff and approved by the Program Supervisor. The prescription will contain required information per the outreach policy, which is located in Appendix 3.

B. Management Foresters will conduct a pretreatment inventory of each proposed timber sale site. Information gathered in the inventory will be the basis for the silvicultural prescription. Pre-treatment inventory will include forest overstory, understory (including herbaceous vegetation/ground cover) and coarse woody debris.

C. Timber Sale Contracts and Cutting plans will be signed by the Management Forestry Program Supervisor representing the landowner, the Commonwealth of Massachusetts.

D. Prior to drafting silvicultural prescriptions foresters will consult with the DCR Staff Archaeologist about cultural resources within a prescription area, and conduct a review of all pertinent and available information on rare and endangered species or wetland resources affecting a prescription area. Field reconnaissance that identifies and maps stone walls, wetland resources and vernal pools will take place prior to drafting prescriptions.

E. Silvicultural Prescriptions will include a preliminary logging plan map.

   a) The logging plan map will be a part of the timber sale prospectus and contract. It will indicate pre -designated primary permanent skid roads.

   b) The logging plan map will indicate wetlands, waterways, areas of rare and endangered species and stone walls to be protected during the harvesting activity.

F. Logging equipment will be appropriate to the forest type and structure, and presence of advanced regeneration. Silviculture will dictate the use of equipment for harvesting. Contracts will list allowed equipment on each timber sale. Permanent haul roads and primary skid roads will be laid out and marked prior to the sale; their location and standards will be specified contractually.

   a) Thinning or uneven age management systems retaining greater than 80 square feet of basal area per acre should use small cable log skidders or cut to length systems coupled with forwarders. Grapple skidders exceeding 120” wheelbase should not be used where average retained basal area exceeds 80 square feet.

   b) Design standards for forestry equipment will be based on forest conditions and site/soil characteristics for integration in Forest Resource Management Plans.

c) Logging equipment preferred and allowed for a forestry project will be specified in the silvicultural prescription and timber sale contract.

d) Proven local experience with equipment will be factored toward harvester selection to accomplish a silvicultural goal.

e) Timber sale contracts should provide penalties for the destruction of regeneration and residual crop trees to be protected.

G. Trees will be designated for removal with either the "Take Tree" marking method or the "Leave Tree" method. The marking method (take tree, leave tree, color of paint) will be specified in the timber sale contract and communicated during the site visit (See Appendix 3 – Public Outreach and Consultation for Forest Cutting Plans Policy).

a) Take Tree Marking - Trees to be cut and or removed will be marked/painted at breast height and stump. All other trees are retained.

b) Leave Tree Marking – Trees to be retained during a harvest will be marked/painted at breast height and stump. Trees not marked are designated for cutting and or removal.

H. Forest management on DCR lands will, wherever possible, exceed current BMPs identified in the *Massachusetts Forestry Best Management Practices Manual*.[82]

a) Use of BMPs should be documented in the silvicultural prescription and timber sale contract.

Recreation and Forestry

The most common recreation forestry interface will be hiking trails within the Woodlands. These guidelines build upon the approved Forest Resource Management Plans and the TSC recommendations. Official designation of trails will be via the DCR – MA Forest and Parks: Road and Trail Inventory and Survey.

National or significant trails such as the Appalachian Trail will use the following guidelines:

A. DCR will establish a "Primary Corridor" with a 200 foot wide area on each side of trail and a "Secondary Corridor" with a 300 foot wide area on each side of primary trail corridor (a total 500 foot wide area on each side of the trail).

B. In accordance with the Appalachian National Scenic Trail (AT) local management plan and the Memorandum of Understanding (MOU), within the "Primary Zone," the AT will be the "Primary Feature" for which the lands are managed. Forest management practices shall be limited to

[82] Kittredge, David B. and Michael Parker. *Massachusetts Forestry Best Management Practices Manual.* 1999. Prepared for the Massachusetts Dept of Environmental Protection, Office of Watershed Management and the US Environmental Protection Agency, Region 1, Water Division.

those practices that are directly beneficial to the Trail, as determined by the local planning process and agreed upon in the Massachusetts Appalachian Trail Management Plan. Should forest management activities take place on adjoining lands, logging trails will avoid crossing the Trail wherever possible.

C. Forest management that takes place within the "Secondary Corridor" of the AT will be consistent with the AT MOU.

D. Should forest management take place within the primary or secondary corridors, skid trails should not cross the AT unless there are no feasible alternatives. If skid trails must cross the trail, they should cross perpendicular to the trail.

E. Forest management within the primary and secondary corridors of other significant trails will be designed to promote native diverse vegetation, large diameter trees, multiple age classes and forest structures, forest health, a safe recreation experience, and quality scenery.

F. Slash, as a result of forest management within 50 feet of the trail, should result in a light and natural appearing forest ground cover.

G. Natural resource managers will coordinate with park supervisors, trail managers and user groups when vegetation management is planned.

All other trails (mapped and officially designated) that interface with forest management will include a 50 foot wide corridor on each side of the road or trail and use these guidelines:

A. Sustainable forest management, including salvage, is allowed within road and trail corridors.

B. Forest management within the trail corridors will be designed to promote native diverse vegetation, large-diameter trees, multiple age classes and forest structures, forest health, a safe recreation experience, and quality scenery.

C. Slash, as a result of forest management within 25 feet of interior forest, roads, interstate, intrastate, and local trails, shall meet the Massachusetts Slash Law, and should result in a light and natural appearing forest ground cover.

D. Skid trails should avoid crossing trails whenever possible and if crossings are necessary, they should cross perpendicular to the trail. Any impacts to a trail from such crossing shall be rehabilitated upon project completion.

E. Natural resource managers will coordinate with park supervisors, trail managers and user groups when vegetation management is planned.

F. Natural resource managers will coordinate with park supervisors, local emergency management officials and user groups to determine if "field identified" roads and trails (not mapped or signed) should have corridor forest management guidelines applied, have no special treatment, or should be closed and rehabilitated.

Incentives to Process Wood Locally and Support Local Economies and Communities

A. Prospective timber sale purchasers that are certified under the Department of Agricultural Resources' Commonwealth Quality Seal program[83] will be given a priority incentive in bidding on DCR timber sales. A system will be developed where qualified, prospective purchasers/bidders who meet the requirements of the Commonwealth Quality Seal program will be given preference in the evaluation of the bids.

[83] Information on the Commonwealth Quality Seal program for Forestry is available at: http://www.mass.gov/agr/cqp/sectors/forestry/app-package.htm

Appendix 3. Public Outreach and Consultation for Forest Cutting Plans Policy

The following is an update to the DCR Public Outreach and Consultation for Forest Cutting Plans Policy approved by the DCR Stewardship Council in 2007. This update incorporates key elements of the Forest Futures Visioning Process, Technical Steering Committee Recommendations, and the DCR Bureau of Forestry's commitment to conduct excellent forestry operations.

POLICY: This policy is intended to provide guidance on the Department of Conservation and Recreation's (DCR) internal review, public notice of, and comment on forest management plan implementation, and timber harvesting (forest cutting) projects.

APPLICABILITY: This policy applies to commercial timber sales and home fuelwood projects in DCR State Forests, Parks, and Reservations.

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I. Responsibility
II. Public Notice of Proposed Timber Harvesting Summaries
III. Addressing Public Issues
IV. Timber Harvest Project Design
    1. Silvicultural Prescription Preparation
    2. Forest Cutting Plan Preparation
V. Project Implementation

APPENDICES[84]:

Appendix 1: Massachusetts Forestry Best Management Practices Manual
Appendix 2: 304 CMR 11.00 – 11.10 Forest Cutting Practices
Appendix 3: Landscape Designation Management Guidelines
Appendix 4: Proposed Timber Harvesting Summaries
Appendix 5: Project Silvicultural Prescriptions
Appendix 6: Project Forest Cutting Plan
Appendix 7: Glossary of Terms

[84] ***Note:*** *Appendices noted above and referenced within the policy refer to appendices that are a part of the complete policy document and are not referencing appendices of the Landscape Designation Management Guidelines document. These appendices have not been altered in this policy update, and are not included here so as not to cause confusion. Please refer to the complete version of this policy document posted on the Bureau of Forestry's website, which includes all appendices referenced within:* *http://www.mass.gov/dcr/stewardship/forestry/docs/Final%20Public%20Notification%20Policy.pdf*

PROCEDURES:

I. Responsibility:

1. The DCR, acting through its Bureau of Forestry, is responsible for the conservation, health, and management of forest vegetation within DCR's State Forest, Park and Reservation system.

2. The Bureau of Forestry endeavors to meet and exceed the Massachusetts Forestry Best Management Practices (Appendix 1); Landscape Designation Management Guidelines (Appendix 3); statewide forestry guidelines in coordination with the Division of Fisheries and Wildlife; and Forest Resource Management Plans and Resource Management Plans pursuant to MGL Ch. 21, § 2F; and is responsible for meeting the standards of the regulations promulgated by the Massachusetts Forest Cutting Practices Act: 304 CMR 11.00 – 11.10 Forest Cutting Practices (Appendix 2) and other requirements of the law such as the Wetlands Protection Act and Endangered Species Act.

II. Public Notice of Proposed Timber Harvesting Summaries and Vegetative Management Projects:

1. For all commercial forest product sales that require a Forest Cutting Plan (Appendix 6), and for home fuelwood sales, or any significant forest vegetation management project, Management Foresters will prepare proposed Timber Harvesting Summaries (Appendix 4) after consultation, coordination and approval from the responsible Regional Director or their designee, Park Supervisors, and State Lands Management Program Supervisor.

2. The proposed Timber Harvesting Summaries will include: the municipality where the project is located; facility name; project's Forest Management district; Management Forester contact information (telephone number, e-mail address, and mailing address); project name; project location description; forest stand description; proposed preliminary silvicultural treatment; aesthetic, recreation, and environmental conditions and considerations such as forest Reserves, high conservation value forest; and designated scenic by-ways; topographic map of the area with the area of the proposed work marked, and any other basic identifying information that the Bureau finds appropriate.

3. The proposed Timber Harvesting Summaries and Vegetative Management Project proposals will be completed two times a year, on or about July 1 and January 1. Interim proposed timber harvesting summary plans may be posted at any time on an emergency basis. Examples of emergency situations are high mortality due to forest insects and diseases, blowdown, fire, snow and ice damage, rare species habitat needs, and treatment of invasive species infestation.

4. Proposed Timber Harvesting Summaries will be made publicly available by posting on the Bureau of Forestry's web page at http://www.mass.gov/dcr/stewardship/forestry/manage/ProposedForestProductsSales.htm and in hard copy at the DCR Boston office, the Regional Headquarters, and the Park administrative offices (site of proposed harvesting project).

5. The Timber Harvesting Master Summary List, a table listing a summary of all projects under consideration and active projects, will be posted on the Bureau of Forestry web page. The table will include project status, a link to each proposed Timber Harvesting Summary and project silvicultural prescription.

6. All proposed harvest project sites will be posted with a sign that informs the public of a proposed harvesting project and provide Management Forester contact information.

7. Public information meetings will be held twice annually, on or about the third Thursday of January and July at each DCR Regional Headquarters (Amherst, Lowell, Carver, Pittsfield and the Clinton Field Office). Management Foresters will be available from 3pm until 5pm and from 6pm until 8pm to present to the public and answer questions on the newly posted proposed Timber Harvesting Summaries. The public meetings will be announced through a DCR press release, on the DCR website, and through electronic mail to stakeholders.

III. Internal and External Review:

1. During the Timber Harvesting Proposal and Summary preparation process, Management Foresters will consult with Regional Directors or their designee, State Forest/Park Supervisors, DCR Bureau of Planning and Resource Protection staff, Recreation staff, other pertinent DCR Operations staff, and MA Division of Fish and Wildlife staff to assess the proposed projects and their effect on the respective state forest, park, or reservation. Management Foresters and staff will identify projects with wetland resource areas, rare or endangered species habitat, certified vernal pools, cultural resources, high public sensitivity, possible conflicts with intensively used areas, special and important public, geological or historic places. Issues of concern will be identified in the Timber Harvesting Summary along with steps for mitigation.

2. Twice a year, on or about July 1 and January 1, the DCR will post the Proposed Timber Harvest Summaries on the Bureau of Forestry web page. The webpage will include a link to the table listing all proposed and active harvesting projects, and Management Forester contact information for the purpose of soliciting public comments.

3. Written public comments will be accepted for 45 days after the posting of the proposed Timber Harvesting Summaries.

4. After review and consideration of all public comments received, the Bureau of Forestry will prepare a written response from DCR, which will be coordinated in consultation with qualified resource specialists, the Regional Director or their designee, Park Supervisor, State Lands Management Program Supervisor and Director of Forest Stewardship. The response will be posted on the Timber Harvest Summary web page.

5. Management Foresters will prepare the silvicultural prescription (Appendix 5) after the DCR prepares and posts responses to written public comments. The silvicultural prescription will account for legitimate concerns raised internally and externally during the comment solicitation

process. All silvicultural prescriptions will be approved by the State Lands Management Forestry Program Supervisor before a project proceeds.

6. The silvicultural prescription will be posted on the DCR Bureau of Forestry web page. The prescription will also be linked from the Timber Harvesting Master Summary List.

7. A site visit will be offered for *all* planned commercial timber sales and home fuelwood harvests. The site visit will provide information to all interested parties describing the purpose of the treatment, silviculture that will be implemented, how the area will change visually, practices to protect wetlands and endangered species, and steps to stabilize disturbed areas.

IV. Timber Harvesting Project Design:

1. **Silvicultural Prescription** - After public concerns have been addressed, a detailed Silvicultural Prescription will be prepared adhering to regulations in 304 CMR 11.00 – 11.10 Forest Cutting Practices; the Massachusetts Endangered Species Act; Wetlands Protection Act; Bureau of Forestry policy, direction, and guidelines; and applicable planning documents.

    a. The Management Forester will prepare a comprehensive silvicultural prescription (Appendix 5) based on a stand level inventory or stand examination of the forest stands in the proposed treatment area. The required elements of all prescriptions, regardless of scale, include descriptions of:

        i. Site Data
        ii. Stand Data
        iii. Evaluation of Data, Prescription and Expected Results
        iv. Documentation of Prescription and Data

For full silvicultural prescription requirements see Appendix 5. The Silvicultural Prescription will be made available for public review on the Bureau of Forestry Timber Harvest Summary web page http://www.mass.gov/dcr/stewardship/forestry/manage/ProposedForestProductsSales.htm, during the project site visit, from the project's respective Management Forester and prescription author, or at the Regional or Field Office.

2. **Forest Cutting Plan Preparation:**

    a. The Management Forester will prepare a Forest Cutting Plan (Appendix 6) using data and information gathered for the Harvesting Summary and Silvicultural Prescription. The Forest Cutting Plan will be prepared according to 304 CMR 11.00 – 11.10, Forest Cutting Practices. Qualified specialists such as Archaeologists, Hydrologists, Biologists, Ecologists, and staff from the Natural Heritage and Endangered Species Program will be consulted as needed.

b. Cutting Plans as required will be submitted to the Bureau of Forestry's Service Forestry Program for approval.

c. Cutting Plans as required will be submitted to the local Conservation Commission.

d. Cutting plans will be submitted to municipalities in which the forest cutting will take place.

The Forest Cutting Plan will be made available for public review at the project's respective DCR Regional or Field Office, on the DCR website, or at the respective project location's city or town conservation commission.

V. Project Implementation:

Upon completion of the process set forth above, the project will proceed.

Appendix 4. Land Stewardship Zoning Guidelines

Final Update: July 2012

The Department of Conservation & Recreation's Mission:

To protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well being of all.

I. Authorization and Purpose

The Department of Conservation & Recreation (DCR) has a very broad and dynamic mission that encompasses protection of resources, providing the public with access to recreational opportunities, and active forest management. This multi-faceted mission sometimes results in complex management challenges. To help meet its mission, DCR has developed a two tier system for guiding the management of all state forest and park properties[85] under its care:

1) Landscape Designations - applied statewide to assess and guide management activities throughout the DCR state forest and park system; and
2) Land Stewardship Zoning, and the RMP process of which it is a part, addresses the agency's statutory responsibilities in M.G.L. Chapter 21: Section 2F to prepare management plans that: encompass all reservations, forests and parks; provide for the protection and stewardship of natural, cultural, and recreational resources under the agency's management, and ensure consistency between recreation, resource protection and sustainable forest management. Land Stewardship Zoning is applied to DCR state forest and park properties on an individual basis during the Resource Management Planning process, incorporating site specific information to guide management of specific areas within these properties.

These two systems, while applied at different levels – statewide scale vs. site specific scale – work in an integrated fashion to accommodate primary ecosystem services while recognizing and providing site specific resource protection. Table 1 illustrates how these two systems work together.

The DCR is committed to protecting important natural and cultural resources while simultaneously providing for sustainable public access and recreation across all properties. The DCR is also committed to complying with all state and federal regulations and policies and meeting all state health and building codes - responsibilities that are central to the agency's mission and statutory charge.

II. Landscape Designations

The Forest Futures Visioning Process, an advisory initiative undertaken in 2009 – 2010, recommended the establishment of three landscape designations to differentiate and prioritize ecosystem values at a statewide scale. Acting upon that recommendation, DCR undertook an effort in 2010-2011 to designate all of the properties within the DCR State Parks System as either Reserves, Parklands, or Woodlands, as a means to establish the primary ecosystem services provided by these properties, guide management

[85] These management systems do not apply to DCR's Division of Water Supply Protection properties.

decisions based upon these services, and communicate the agency's landscape scale management objectives to the public.

The designations have been determined via the use of available GIS information drawing upon statewide resource databases, and incorporating extensive input from DCR field staff and the public. These designations are designed to provide a framework for overarching management guidelines that are applicable to properties within the state forest and park system.

The three landscape designations are:

- Parklands focus on providing public recreation opportunities while protecting resources of ecological and cultural significance.
- Woodlands demonstrate exemplary forest management practices for landowners and the general public, while supporting the range of ecosystem services that sustainably-managed forests offer, including a diversity of native species and age classes, and compatible recreation opportunities.
- Reserves provide backcountry recreation experiences and protect the least fragmented forested areas and diverse ecological settings. Successional processes will be monitored to assess and inform long-term forest stewardship.

III. Resource Management Plans and Land Stewardship Zoning

The Land Stewardship Zoning Guidelines defines three types of zones to ensure resource protection based upon site specific field data, and provides guidance for current and future management based upon resource sensitivities. Inventory and assessment of resources during preparation of a Resource Management Plan (RMP) is factored into land use management and decision making, and provides guidance for stewardship of these resources. The process results in zoning of areas and specific sites within DCR properties based on their sensitivity to recreation and management activities that are appropriate for each facility as recognized during the RMP process. In this way, the Land Stewardship Zoning system helps to "ensure that recreation and management activities do not degrade ecological, cultural, or experiential resources and values."[86]

The three Land Stewardship Zones provide a general continuum to categorize resources (relative to potential degradation from human activities) from undisturbed sites with highly sensitive resources, through stable / hardy resources, to sites that have been developed and consistently used for intensive recreation or park administration purposes.

The Land Stewardship Zoning system also includes Significant Feature Overlays that may be applied to highlight resource features that have been assessed and documented by professional resource specialists. Information on the significant features is brought into the RMP process via review of previous research projects and associated designations. Significant Feature Overlays can be applied in any of the three Land Stewardship Zones. An example is a natural or cultural resource, recognized through professional inventory / research (such as an Area of Critical Environmental Concern or National Historic District), which cuts across more than one Land Stewardship Zone. Management and protection of these resource features is guided by specific management recommendations that have been developed by resource specialists. An expanded description of Significant Feature Overlays is provided at the end of Section VI.

Application of the three-zone system**,** including Significant Feature Overlays, to individual DCR properties during the RMP process is facilitated by gathering available field data related to natural and

[86] *Capacity Reconsidered: Finding Consensus and Clarifying Differences.* Journal of Park and Recreation Administration, Spring 2011, Vol. 29, No. 1, pp. 1-20.

cultural resources, recreational uses, and developed facilities, and reviewing available data sources including BioMap 2 and NHESP Priority habitat information. As a part of this approach:

- lands of special resource sensitivity and significance are identified and mapped, and
- resource and landscape features such as priority habitat areas, wetlands, streams and ponds are mapped,
- new information is brought into the RMP process through public input.

This type of mapping and data collection, based on the best information currently available, provides the basis for subsequent analysis and ultimately the development and application of appropriate management guidelines for specific resources, designed to provide greater protection to valuable natural or cultural assets. This process identifies specific areas for specialized resource management guidance beyond those protections already provided by standard best management practices and legal regulations, such as the agency's Old Growth policy, or Coastal Zone Management's Barrier Beach Management Guidelines. Highly sensitive ecological or cultural assets identified through this process may be found within any of the three Landscape Designations.

IV. Forest Resource Management Plans

Another key tool in DCR's land management activities are the Forest Resource Management Plans (FRMPs) that have been completed for large geographic areas within the western part of the state. The FRMPs identify silvicultural treatments for properties or portions of properties that have been identified through the Landscape Designation process as being suitable for active forest management. These plans will be amended for consistency with the final Landscape Designations. Information and data collected in the FRMPs related to forested areas is similar to what is gathered for an RMP and will be utilized in the development of RMPs for properties located in these areas. As DCR continues to develop RMPs for its properties, forest management planning will occur as a part of the RMP process. Forest management decisions and activity in designated Woodlands will be directed by the Landscape Designation Management Guidelines which lay out procedures that include the identification of different approaches to appropriate silivicultural treatments to ensure resource protection.

V. Planning Integration

With the two tier planning approach – a statewide scale and a site specific scale - it is critical to understand how they work together in an integrated fashion to provide overall guidance to resource management and assist with administrative decisions. Landscape Designations will be used to inform the RMP process and the application of LSZ zones. Specific management guidelines associated with each LSZ zone are intended to provide additional protection and stewardship for site-specific natural and cultural resources and to ensure consistency among the activities that are allowed in each property under the broad management guidelines described for each Landscape Designation.

In most cases, the Landscape Designation and the LSZ zoning systems will work in coordination with each other to set high-level land management priorities based on ecosystem services, and to supplement those priorities with site specific resource protection and management guidelines. RMPs identify and assess specific resources and site conditions at a finer scale than the Landscape Designation process. However, the vertical and horizontal integration of these two systems, as exhibited in Table 1, allows us to apply consistency across processes.

Table 1. Landscape Designation & Land Stewardship Zoning – A Land Management Framework

Landscape Designation Management Guidelines ➔* **Land Stewardship Zones ⬇ ****	**Reserve** – ***The least fragmented forested areas where ecological processes will predominate and inform management, and where commercial timber harvesting is not allowed.***	**Woodland** – ***Forested areas actively managed for forest health, resource protection, sustainable production of timber, and recreation.***	**Parkland** – ***Areas providing public recreation opportunities, connections to nature, and protection and appreciation of natural and cultural resources.***
Zone 1 – ***Highly sensitive resources requiring special management approaches.***	Rare species habitat, natural communities, archaeological sites, or fragile cultural sites identified as being sensitive to / easily degraded by human activities.		
Zone 2 – ***Resources that support recreational and management activities appropriate to the site.***	Large areas of natural vegetation and associated natural and cultural features, including rare species habitat, that is compatible with dispersed recreation.	Forest stands and associated natural and cultural features, compatible with dispersed recreation **and active forest management** intended to enhance species and age class diversity.	Stable / hardy natural and cultural landscapes, where a variety of outdoor recreation activities can be provided in a sustainable manner.
Zone 3 – ***Intensive use areas such as recreational sites or maintenance areas.***	**New zone 3s will not be established in Reserves**. *Exception* – an RMP may identify existing intensive use areas missed during designation and not already captured in a Parklands designation area, in which case the application of a zone 3 may be considered.	Intensive recreation and park administration areas currently embedded within the forested landscape.	Areas that require regular maintenance by DCR staff, including altered landscapes in active use, intensive recreation areas, and park administration areas. Sites that may accommodate administrative or intensive recreation areas to meet future demands.

*See *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines* for complete management guidelines for Reserves, Parklands and Woodlands.

** For a complete description of management guidelines for each zone, please see Section IV of this document.

VI. Land Stewardship Zones

Each of the three Land Stewardship Zones have general management guidelines that are intended to provide additional protection for natural and cultural resources and to ensure consistency among resource stewardship, recreation and sustainable forestry. In addition, specific management recommendations derived during the preparation of each individual RMP are designed to ensure that management practices are tailored to the resources within the facility, factor in and assess existing uses, and address site specific management challenges and opportunities.

Zone 1

Management Objective:
Protection of sensitive resources from management or other human activities that may adversely impact the resources.

A. General Description

This zone encompasses areas with highly sensitive ecological and cultural resources that require additional management approaches and practices to protect and preserve the special features and values identified in the Resource Management Plan. Zone 1 areas are not suitable for future intensive development.

B. Examples

Examples identified as being highly sensitive to human activities include rare species habitat or natural communities, areas with concentrations of sensitive aquatic habitats, excessively steep slopes with erodible soils, archaeological sites or fragile cultural sites, where stewardship of these resources must be the primary consideration when assessing management and recreational activities in these areas.

C. General Management Guidelines

- **Recreation and Public Access:** In general, recreation activities will be limited to dispersed, low impact, non-motorized recreation and dependent on assessment of specific resource sensitivity and stewardship considerations by resource specialists - e.g. NHESP, MHC, DCR Bureau of Planning and Resource Protection - in conjunction with field staff. Snowmobiles may be permitted on existing designated trails during the appropriate time of year and according to DCR policies and regulations. Existing trails will be evaluated for compatibility with resource protection goals. Trails will be discontinued if discontinuance furthers sensitive resource protection and does not compromise public safety. Proposals for new activities will be strictly evaluated, and management guidelines will be applied by resource specialists for the protection of resources and to address specific issues.

- **Vegetation Management:** Commercial timber harvesting is not permitted. Vegetation management may occur for public safety purposes, removal of invasives, stewardship of cultural sites, or historic vista maintenance.

- **Water and Soil:** Management will focus on erosion control to protect sensitive natural and cultural resources.

- **Habitat Protection:** Public access will be guided away from sensitive rare species habitat and sensitive Priority Natural Communities. Long-term protection strategies will be developed in

consultation with the NHESP; Habitat Management Plans will be prepared in advance of proposed management activities.

- **Forest Health and Protection:** Spread of invasive species, forest pathogens and wildlfires may be controlled if a threat to sensitive natural or cultural resources is identified.

- **Cultural Resources:** Public access will be guided away from archaeological or historic sites sensitive to human activity and reoriented to areas that can sustain appropriate recreational activities. Management activities will focus on protection of sensitive archaeological and historic sites. Use of metal detectors, artifact collecting and digging is prohibited.

- **Facilities and Transportation:** Existing roads may be maintained to assure continued administrative and/or emergency access according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System. Roads identified as unnecessary for administrative and/or emergency access will be evaluated for compatibility with resources, and discontinued if discontinuance furthers sensitive resource protection and only after consultation with local emergency services personnel.

- **Interpretation, Public Information and Outreach:** Interpretation and public information related to the sensitive natural and cultural resources may be provided through programs, kiosks and other outreach venues that will avoid impacts to the actual resources.

- **Monitoring, Enforcement and Research:** Professional research projects in support of sensitive natural and cultural resource protection may be permitted with approval of the Director of State Parks & Recreation and the Director of Forest Stewardship. Baseline conditions will be evaluated and monitoring will be conducted to document changes, dependent on capabilities and availability of operational resources for staff and outside experts.

- **Special Use:** In general, Special Uses other than research projects described above will not be permitted.

Zone 2

Management Objective
Provide for a balance between the stewardship of natural and cultural resources and recreational opportunities which can be appropriately sustained.

A. General Description

This zone encompasses stable yet important natural and cultural resources. Zone 2 is a very important component to DCR's management responsibilities, because the protected landscape within this zone provides a buffer for sensitive resources, recharge for surface and groundwater, and large areas where existing types of public recreation activities can be managed at sustainable levels.

B. Examples

Examples include areas of non-intensive use that contain diverse ecosystems, rare species habitat that is compatible with dispersed recreation and sustainable management practices, and cultural resources that are not highly sensitive to human activities.

C. General Management Guidelines

- **Recreation and Public Access:** Resources will be managed to support a variety of safe, sustainable recreation opportunities that are compatible with the long-term stewardship and character of natural and cultural resources. New public access may be allowed depending upon existing area trail densities, purpose and need, physical suitability of the site, and specific guidelines for protection of rare species habitat and archaeological resources, as reflected in DCR's *Trails Guidelines and Best Practices Manual*.

- **Vegetation Management:** Vegetation may be managed for public safety purposes, stewardship of cultural sites, vista maintenance, maintaining native biodiversity, protection of recreational assets and ecological management and restoration, provided that the management activities are consistent with the applicable Landscape Designation for the property. Commercial timber harvesting will be limited to properties designated as Woodlands.

- **Water and Soil:** Prevent soil erosion via BMPs for management and recreational activities. Maintain water quality of surface and groundwater resources with pollution prevention and holistic watershed management strategies.

- **Habitat Protection:** Maintain and where possible enhance habitat for rare species, Priority Natural Communities, and ecological diversity. Management activities in NHESP designated Priority Habitat areas must follow guidelines of an approved Habitat Management Plan.

- **Forest Health and Protection:** Potential for wildfires may be lessened through fire prevention strategies. Spread of wildfires will be controlled for public safety purposes. Forest stands may be managed to lessen adverse effects of forest pathogens. Invasive species that are degrading native ecosystems may be controlled depending on availability of operational resources and trained volunteers.

- **Cultural Resources:** Management will ensure long-term stewardship of archaeological and historic sites. Newly discovered sites will be documented and inventoried in consultation with MHC. All proposed projects must be reviewed by the DCR Bureau of Planning and Resource Protection Office of Cultural Resources during their planning stages to determine potential impacts to cultural resources. Use of metal detectors, artifact collecting and digging is prohibited.

- **Facilities and Transportation:** In Parklands and Woodlands, new roads necessary for recreation, administration or emergency use may be constructed if consistent with resource management goals, after review for impacts to natural and cultural resources. Existing roads that are not required for administrative or public safety purposes may be closed and restored to a natural condition after consultation with local emergency services personnel. Roads will be maintained according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System.

- **Interpretation, Public Information and Outreach:** Interpretation will be focused on enhancing the variety of environmental education opportunities, and on building public support for the long-term stewardship of natural and cultural resources.

- **Monitoring, Enforcement and Research:** Monitoring and research projects may be conducted as approved through the Special Use Permit process. Enforcement of prohibited or regulated activities is critical related to public safety, enjoyment of appropriate recreation activities and long-term stewardship of natural and cultural resources.

- **Special Use:** Special uses may be allowed, and will be evaluated on an individual basis as provided in DCR's Special Use Policies and Procedures.

Zone 3

Management Objective

Provide public access to safe and accessible recreational opportunities, as well as administrative and maintenance facilities that meet the needs of DCR visitors and staff.

A. General Description

This zone includes altered landscapes in active use, and areas suitable for future administrative, maintenance and recreation areas. The resources in this zone can accommodate concentrated use and require regular maintenance by DCR staff.

B. Examples

Examples of areas of concentrated use include park headquarters and maintenance areas, parking lots, swimming pools and skating rinks, paved bikeways, swimming beaches, campgrounds, playgrounds and athletic fields, parkways, golf courses, picnic areas and pavilions, and concessions. Examples of future use areas include disturbed sites with no significant ecological or cultural values and not suitable for restoration, identified through the RMP or in a Master Plan as being suitable for intensive recreation or park administration sites. Note: Development would be preceded by detailed site assessments to ensure protection of natural and cultural resources.

C. General Management Guidelines

- **Recreation and Public Access:** Intensive recreation areas will be managed to maintain public health and safety. Agency policies, resource protection and recreational goals will determine activities that are supported in individual properties.

- **Vegetation Management:** Commercial timber harvesting is not permitted. Native species will be used for landscaping. Trees and other vegetation may be removed or trimmed for public safety, vegetative health, protection of cultural resources, and aesthetic purposes.

- **Water and Soil:** Management will focus on maintaining water quality for water-based recreation, including implementation of strategies to prevent erosion ans siltation and remediation of pollution sources. Employ Best Management Practices to capture, treat and recharge storm water run-off.

- **Habitat Protection:** Management will focus on identifying, documenting and protecting rare species habitat, in consultation with the NHESP.

- **Forest Health and Protection:** Spread of forest pathogens and invasive species may be controlled if there is a threat to native ecosystems that surround the intensive recreation or park administration sites.

- **Cultural Resources:** Historic sites that are the focus of intensive public visitation will be managed to minimize degradation of the historic resource. Proposed projects must be reviewed by the DCR Bureau of Planning and Resource Protection's Office of Cultural Resources during the planning

stages for potential impacts to historic and archaeological resources. Historic buildings, structures, objects, sites and landscapes will be preserved in original use or adaptively reused when appropriate for park uses or in compatible use, such as through the Historic Curatorship Program. Use of metal detectors, artifact collecting and digging is prohibited.

- **Facilities and Transportation:** Continue efficient use of existing facilities or employ appropriate reuse of existing facilities to minimize new impacts. Roads will be maintained according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System. New roads and facilities may be established as necessary for public and administrative use after review for potential impacts to natural and cultural resources. Adaptive reuse of historic resources for park or other appropriate uses is encouraged.

- **Interpretation, Public Information and Outreach:** Interpretive programs may be provided in association with intensive recreation sites or activities. Programs will be aimed at building public support for the long-term stewardship of natural and cultural resources.

- **Monitoring, Enforcement and Research:** Monitoring will focus on water quality related to water-based recreation activities. Enforcement of prohibited and regulated activities will be conducted to provide for public safety and enjoyment of appropriate recreation activities.

- **Special Use:** Special uses may be allowed, and will be evaluated on an individual basis as provided in DCR's Special Use Policies and Procedures.

Significant Feature Overlays

Management Objective
The purpose of the overlays is to provide precise management guidance in order to maintain or preserve the recognized resource features regardless of the zone in which they occur.

A. General Description

The three land stewardship zones may be supplemented with significant feature overlays that identify formally designated or recognized resources. These resource features have been recognized through research and assessment by professional resource specialists. Information on the significant features is brought into the RMP process via review of previous research projects and associated designations.

B. Examples

A natural or cultural resource, recognized through professional inventory / research, which cuts across more than one land stewardship zone, such as:

- National Register Historic District
- Areas subject to public drinking water regulations
- Priority habitat for species that are not sensitive to human activities
- Biomap2 Core Habitat
- Designated Areas of Critical Environmental Concern

A natural or cultural resource, recognized through professional inventory / research, which is located in an area characterized by intensive visitor use. In these cases, the Significant Feature Overlay is

used to highlight the potential conflict between resource stewardship and ongoing visitor use, and provide mitigation strategies. Examples include:

- A NHESP Priority Natural Community associated with a summit that is also a popular destination for hikers.
- A barrier beach that provides habitat for rare shorebirds, and is subject to CZM barrier beach management guidelines and coastal wetlands regulations, but also supports thousands of visitors during the summer season.
- A significant cultural site such as Plymouth Rock that is subject to ongoing, intensive visitation.

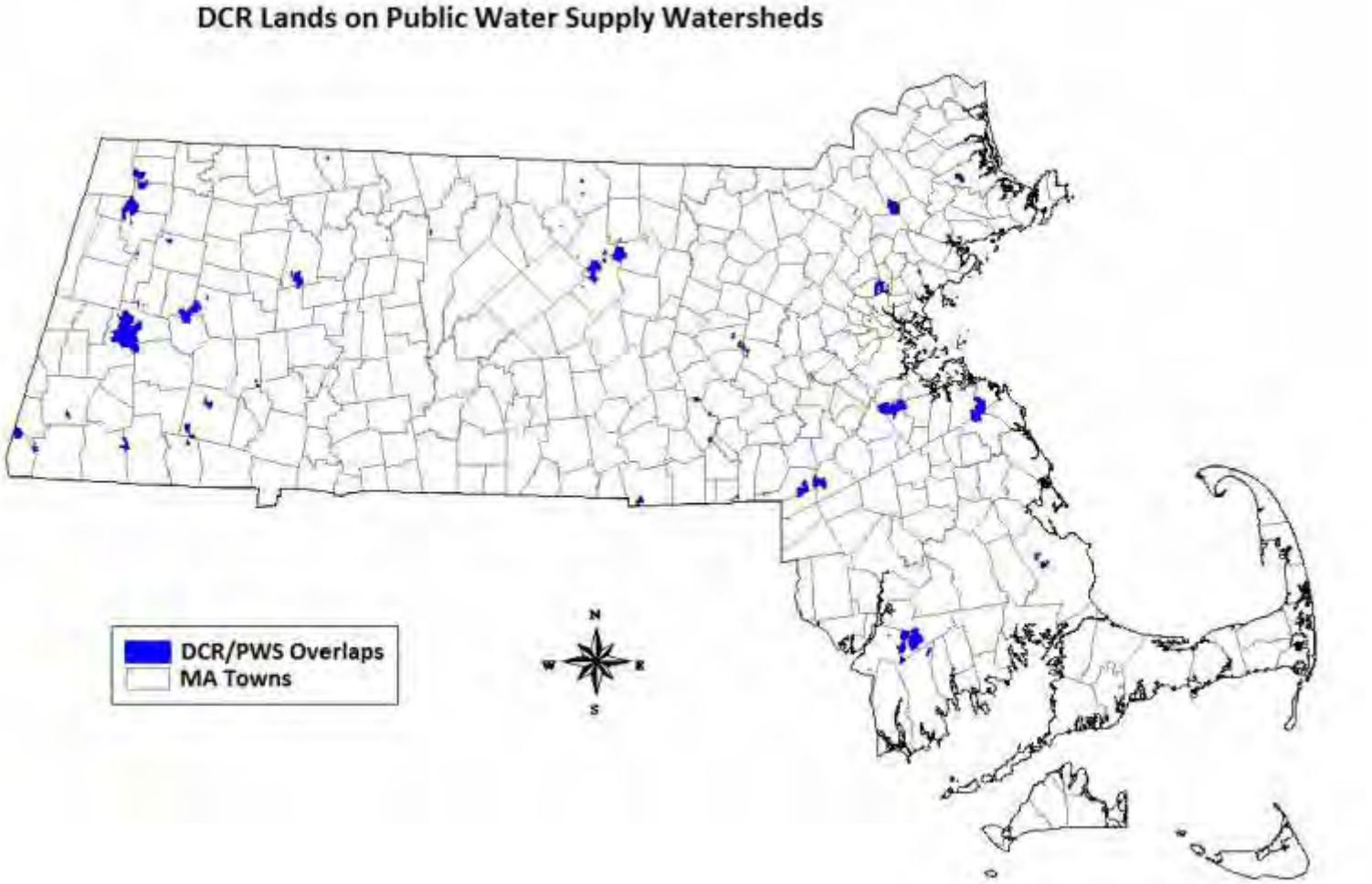
C. Management Guidelines

Specific management guidelines are provided by resource specialists and/or by the professional staff of the agency or NGO that assessed the significant resource feature or has a regulatory role for protection of the resource. Examples include MHC requirements for treatment of historic resources within National Register Historic Districts, and NHESP guidelines for Priority Natural Community habitat stewardship.

Appendix 5. DCR Properties on Public Water Supply Watersheds

Some DCR properties lie within the watershed areas for surface water supplies of public water supply reservoirs, and thus may require special management attention to minimize adverse impacts on water quality. Designation of these watershed lands as Woodlands would provide for maximum management flexibility. However, for various reasons, some of these lands were designated as Reserves or Parklands. In such cases, the Management Guidelines (see the **Water and Soil Resources Guidelines** in Sections 2.6 and 3.4) allow for appropriate management activities to be undertaken on those lands in accordance with the Landscape Designation Management Guidelines, after consultation with FRSAC (if a Reserve), and the public water supplier and/or DEP, to address water quality protection issues (e.g., due to wildfires, insect or disease outbreaks, or other unanticipated threats to water quality). The Public Outreach and Consultation for Forest Cutting Plans Policy would also apply.

The following map and table show locations of these surface water supply watershed lands, and identify the DCR facility, the name of the Public Water Supplier, and the Landscape Designations for those properties.


DCR Lands on Public Water Supply Watersheds
DCR/PWS Overlaps
MA Towns
N
W
E
S

DCR Facilities on public water supply (PWS) watersheds with Landscape Designations

DCR Facility Name	Town(s)	Designation*	PWS Name	Type of PWS**
ACUSHNET CEDAR SWAMP STATE RESERVATION	DARTMOUTH	R	FALL RIVER WATER DEPARTMENT	ESW
ALEWIFE BROOK PARKWAY	CAMBRIDGE	P	CAMBRIDGE WATER DEPARTMENT	SW
ANGLE TREE MONUMENT RESERVATION	PLAINVILLE; N. ATTLEBOROUGH	P	ATTLEBORO WATER DEPT	SW
APPALACHIAN TRAIL CORRIDOR	WASHINGTON; HINSDALE	P	PITTSFIELD DPU WATER DEPT	SW
APPALACHIAN TRAIL CORRIDOR 3	DALTON	R	DALTON FIRE DISTRICT	ESW
ASHBURNHAM STATE FOREST	ASHBURNHAM	W	ASH/WIN JOINT WATER AUTHORITY	SW
ATTITASH PUBLIC ACCESS	MERRIMAC	P	AMESBURY DWP WATER DIV.	SW
BAY CIRCUIT TRAIL	ROWLEY	P	IPSWICH DPU WATER DEPT	SW
BIKE TRAIL: FRESH POND SIDEPATH	CAMBRIDGE	P	CAMBRIDGE WATER DEPARTMENT	SW
BIKE TRAIL: S. NEW ENGLAND TRUNKLINE	BELLINGHAM; BLACKSTONE	P	RHODE ISLAND SOURCE	RI
BLUE HILLS RESERVATION	MILTON; RANDOLPH; QUINCY; CANTON; BRAINTREE	P	BRAINTREE WATER & SEWER DEPT.	SW
BLUE HILLS RESERVATION	RANDOLPH	P	TRI TOWN WATER BOARD	SW
BLUE HILLS RESERVATION	RANDOLPH	P	RANDOLPH/HOLBROOK WATER BOARD	SW
BOAT RAMP	HOPKINTON	P	RHODE ISLAND SOURCE	RI
C.M. GARDNER STATE PARK	HUNTINGTON	P	SPRINGFIELD WATER & SEWER COMMISSION	ESW
CALLAHAN STATE PARK	MARLBOROUGH; FRAMINGHAM; SOUTHBOROUGH	P	MWRA	ESW
CHESTER-BLANDFORD STATE FOREST	BLANDFORD	W	SPRINGFIELD WATER & SEWER COMMISSION	SW
CONWAY STATE FOREST	CONWAY	W	SOUTH DEERFIELD WATER SUPPLY DIST	SW
CONWAY STATE FOREST	CONWAY	W	NORTHAMPTON WATER DEPT	SW
CONWAY STATE FOREST	CONWAY; WILLIAMSBURG	W	NORTHAMPTON WATER DEPT	SW

DOUGLAS STATE FOREST	DOUGLAS	R, (P)	RHODE ISLAND SOURCE	RI
EAST MOUNTAIN STATE FOREST	GREAT BARRINGTON	R	GREAT BARRINGTON FIRE DIST	ESW
F. GILBERT HILLS STATE FOREST	FOXBOROUGH; WRENTHAM	W	ATTLEBORO WATER DEPT	SW
FLYNN RINK	MEDFORD	P	MWRA	ESW
FRANKLIN STATE FOREST	WRENTHAM	P	RHODE ISLAND SOURCE	RI
FREETOWN-FALL RIVER STATE FOREST	FREETOWN; FALL RIVER	W, (P)	FALL RIVER WATER DEPARTMENT	SW, ESW
FREETOWN-FALL RIVER STATE FOREST	FREETOWN	W	TAUNTON WATER DEPARTMENT	SW
FREETOWN-FALL RIVER STATE FOREST	FREETOWN	W	NEW BEDFORD DEPT. OF PUB. INFRASTRUCTURE	SW
FRESH POND PARKWAY	CAMBRIDGE	P	CAMBRIDGE WATER DEPARTMENT	SW
GARDNER VETERANS SKATING RINK	GARDNER	P	GARDNER WATER DEPARTMENT	SW
HAROLD PARKER STATE FOREST	N. ANDOVER; ANDOVER; MIDDLETON; N. READING	W, (P)	DANVERS WATER DEPT.	SW
HUNTINGTON STATE FOREST	HUNTINGTON	W	HOLYOKE WATER WORKS	SW
LEOMINSTER STATE FOREST	WESTMINSTER; PRINCETON	W	FITCHBURG DPW, DIV. OF WATER SUPPLY	ESW
LEOMINSTER STATE FOREST	LEOMINSTER	W	LEOMINSTER WATER DIVISION	SW
LEOMINSTER STATE FOREST	LEOMINSTER; WESTMINSTER; PRINCETON; FITCHBURG	W	LEOMINSTER WATER DIVISION	SW
LEYDEN STATE FOREST	LEYDEN	W	GREENFIELD WATER DEPARTMENT	SW
LYNN WOODS RESERVATION	LYNN; SAUGUS	P	LYNN WATER & SEWER COMM	SW
MARLBOROUGH-SUDBURY STATE FOREST	STOW; HUDSON	W, (P)	MAYNARD DPW, WATER DIVISION	ESW
MARLBOROUGH-SUDBURY STATE FOREST	MARLBOROUGH	W	MWRA	ESW
MAUDSLAY STATE PARK	NEWBURYPORT	P	NEWBURYPORT WATER DEPARTMENT	SW
MIDDLESEX FELLS RESERVATION	STONEHAM; WINCHESTER; MEDFORD	P	WINCHESTER WATER DEPT	SW
MIDDLESEX FELLS RESERVATION	STONEHAM; MEDFORD	P	MWRA	ESW
MONTAGUE STATE FOREST	MONTAGUE	W	TURNERS FALLS WATER DEPT	ESW
MOUNT EVERETT STATE RESERVATION	SHEFFIELD; MOUNT WASHINGTON	R, (P)	BERKSHIRE SCHOOL	ESW

MOUNT GREYLOCK STATE RESERVATION	WILLIAMSTOWN; N. ADAMS	R	WILLIAMSTOWN WATER DEPT	ESW
MOUNT GREYLOCK STATE RESERVATION	ADAMS; CHESHIRE; NEW ASHFORD	R	ADAMS FIRE DISTRICT	ESW
MOUNT GREYLOCK STATE RESERVATION	NEW ASHFORD; CHESHIRE	R, (P)	CHESHIRE WATER DEPT	ESW
MOUNT GREYLOCK STATE RESERVATION	NORTH ADAMS; ADAMS; WILLIAMSTOWN	R, (P)	NORTH ADAMS WATER DEPT	SW
MOUNT TOM STATE RESERVATION	HOLYOKE; EASTHAMPTON	P	HOLYOKE WATER WORKS	ESW
MOUNT WASHINGTON STATE FOREST	MOUNT WASHINGTON	W, (R)	EGREMONT WATER DEPT	SW
MYLES STANDISH STATE FOREST	PLYMOUTH	R	PLYMOUTH WATER DEPARTMENT	ESW
OCTOBER MOUNTAIN STATE FOREST	WASHINGTON	W, (R)	PITTSFIELD DPU WATER DEPT	SW
OCTOBER MOUNTAIN STATE FOREST	WASHINGTON; LEE; BECKET	W, (R), (P)	LEE WATER DEPT	SW, ESW
OCTOBER MOUNTAIN STATE FOREST	WASHINGTON	W	PITTSFIELD DPU WATER DEPT	SW
ORANGE STATE FOREST	ORANGE	R	ORANGE WATER DEPT	ESW
PERU STATE FOREST	PERU; WORTHINGTON; MIDDLEFIELD	W	SPRINGFIELD WATER & SEWER COMMISSION	SW, ESW
PINE SWAMP	IPSWICH	P	IPSWICH DPU WATER DEPT	SW
SANDISFIELD STATE FOREST	SANDISFIELD; NEW MARLBOROUGH; MONTEREY	W	MONTEREY WATER COMPANY	ESW
SE MASS BIORESERVE	FREETOWN; FALL RIVER; DARTMOUTH	W	FALL RIVER WATER DEPARTMENT	SW, ESW
SE MASS BIORESERVE	FREETOWN; FALL RIVER	W	NEW BEDFORD DEPT. OF PUB. INFRASTRUCTURE	SW
SOUTH NEW ENGLAND TRUNKLINE TRAIL	BELLINGHAM	P	RHODE ISLAND SOURCE	RI
SOUTH WATUPPA BOAT RAMP	FALL RIVER	P	FALL RIVER WATER DEPARTMENT	ESW
STONE ZOO	STONEHAM	P	MWRA	ESW
TOLLAND STATE FOREST	TOLLAND; BLANDFORD	R	SPRINGFIELD WATER & SEWER COMMISSION	SW
TYLER FLOOD CONTROL SITE	MARLBOROUGH	P	MARLBOROUGH DPW WATER DIV.	SW
UPTON STATE FOREST	UPTON; WESTBOROUGH	W	WESTBOROUGH WATER DEPARTMENT	SW

UPTON STATE FOREST	UPTON; HOPEDALE; HOPKINTON	W	RHODE ISLAND SOURCE	RI
WACHUSETT MOUNTAIN STATE RESERVATION	WESTMINSTER; PRINCETON	P	FITCHBURG DPW, DIV. OF WATER SUPPLY	SW, ESW
WACHUSETT MOUNTAIN STATE RESERVATION	PRINCETON	P	WORCESTER DPW, WATER SUPPLY DIVISION	SW
WESTMINSTER STATE FOREST	WESTMINSTER	W	FITCHBURG DPW, DIV. OF WATER SUPPLY	SW
WILLOWDALE STATE FOREST	IPSWICH	R	IPSWICH DPU WATER DEPT	SW
WINDSOR STATE FOREST	WINDSOR	W	PITTSFIELD DPU WATER DEPT	SW
WOMPATUCK STATE PARK	HINGHAM; COHASSET; SCITUATE; NORWELL	P	COHASSET WATER DEPT	SW
WOMPATUCK STATE PARK	HINGHAM; NORWELL	P	HINGHAM/HULL AQUARION WATER CO	SW
WORTHINGTON STATE FOREST	WORTHINGTON	W	SPRINGFIELD WATER & SEWER COMMISSION	SW, ESW
WRENTHAM STATE FOREST	PLAINVILLE; WRENTHAM	P	ATTLEBORO WATER DEPT	SW

*** Designations**: R=Reserves; P=Parklands; W=Woodlands
Note: For Facilities with more than one entry in the Designation column, the first entry signifies the primary Designation; entries in parentheses indicate Designations covering lesser acreages.

**** Type of PWS**: SW=active surface water supply; ESW = emergency supply; RI = Rhode Island PWS

Appendix 6. Division of Fisheries & Wildlife Comment Letter on Draft Landscape Designations and Management Guidelines

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

Commissioner Edward M. Lambert Jr.
Department of Conservation and Recreation
251 Causeway Street
Boston, MA 02114

RE: DFW public comment on DCR's Proposed Landscape Designation
Submitted to: designation.comments@state.ma.us

Dear Commissioner Lambert:

The Department of Fish and Game (DFG) and the Division of Fisheries and Wildlife (DFW) appreciate the opportunity to provide comments on the Department of Conservation and Recreation's (DCR) proposed Landscape Designations and Management Guidelines for state forests and parks. DFW recognizes that these documents are the result of significant efforts on the part of DCR.

DFW was pleased that Technical Steering Committee (of the Forest Futures Visioning Process) recommended that DCR, in consultation with DFW, "establish a formal ongoing planning and adaptive management process for addressing habitat needs" and that "DCR coordinate closely with DFW to identify opportunities for integrating the early successional habitat creation into management of lands identified for forestry demonstrations."

DFW also appreciates the efforts by DCR and EOEEA staff to consult with DFW on the proposed landscape designations and that DCR's proposed Management Guidelines require consultation with DFW to identify and manage areas for early-successional habitat on DCR lands for Species of Greatest Conservation Need (SGCN) as identified in DFW's Comprehensive Wildlife Conservation Strategies Plan (i.e. State Wildlife Action Plan).

Consultation and discussions between DCR and DFW were productive and provided an opportunity for both agencies to understand their particular goals and priorities. DFW appreciates the discussions held between DCR and DFW over the course of the public comment period and the time extension granted for submitting our comments, which has allowed for more collaboration between the two agencies. The discussions were focused primarily on:

1) The Fisheries and Wildlife Board's review and approval of DCR's Landscape Designations of co-owned properties as well as consistency of DCR's Landscape Designations with pre-existing

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An Agency of the Department of Fish and Game

Resource Management Plans (RMPs) and Memorandums of Understanding (MOUs) between DCR and DFW governing management of these properties,

2) Ensuring that DCR's proposed Management Guidelines allow for habitat management for sustaining biological diversity, specifically SGCN and the Massachusetts Endangered Species Act (MESA) species list. It should be noted that MESA listed species (except for state-listed plants) are included as SGCN species.

3) Integrating DFW and DCR goals to allow for habitat management on DCR lands to sustain biodiversity, including habitat management for SGCN and MESA listed species.
Based on the outcome of these discussions, DFW recommends that DCR consider the following in the final Landscape Designations and Management Guidelines for DCR Parks and Forests:

1) <u>Co-owned properties:</u>

- Recognize in the final management guidelines and landscape designations document that DCR will follow existing DCR Resource Management Plans and associated MOUs between DCR and DFW for the following co-owned properties which total 5,306 acres:

  Jug End State Reservation and WMA (1,171 ac.) - Proposed WOODLAND
  Hawes Parcel within the SE Mass Bioreserve (3,378 ac.) – Proposed WOODLAND
  Quashnet Woods State Reservation (395 ac.) – Proposed WOODLAND
  Mount Watatic Reservation (277 ac.) – Proposed WOODLAND

The existing RMPs and MOUs are consistent with established goals, policies, and practices for management on state Wildlife Management Areas and already reviewed and approved by the Fisheries and Wildlife Board, including allowing flexibility in the size of openings created by habitat management.

2) <u>DCR Management Guidelines</u>

- In cooperation with DFW, DCR should incorporate language into the DCR Management Guidelines which allow for flexibility in the size of openings created by habitat management to benefit SGCN and MESA state-listed species where appropriate on co-owned properties consistent with existing RMPs and MOUs.

DFW has serious concerns relating to DCR's proposed limit on forest openings of 1/3 to 5 acres within Guidelines for Silviculture for the Woodlands designation. Given that openings greater than 5 acres are necessary or enhance habitat conditions for SGCN species, particularly those which rely on young forest and shrublands, pitch pine scrub oak systems, and grasslands, DFW notes with concern that this type of habitat management (where it involves logging) would not be allowed under the current DCR policy. DFW encourages DCR to reconsider this policy in the future and would actively support efforts to enhance habitat with larger openings, at carefully selected locations.

In the short term, DFW requests that DCR amend the Management Guidelines to allow for openings larger than 5 acres on the above-listed DCR/DFW co-managed properties. DFW would like to pursue some significant near-term habitat management projects on these properties that

are supported by federal funding, and would do so in close coordination with DCR, which would include a public process led by DFW.

Specific SGCN species, some of which are also MESA state-listed species, are listed for each of these three habitats below:

Species of Greatest Conservation Need in Young Forests and Shrublands

State Listing Status	Taxon Grouping	Scientific Name	Common Name	State Status
State-listed	Reptiles	*Elaphe obsoleta*	Eastern Ratsnake	E
	Birds	*Vermivora chrysoptera*	Golden-Winged Warbler	E
		Oporornis philadelphia	Mourning Warbler	SC
	Mammals	*Synaptomys cooperi*	Southern Bog Lemming	SC
Not Listed	Reptiles	*Coluber constrictor*	Black Racer	--
		Heterodon platirhinos	Eastern Hognose Snake	--
	Birds	*Bonasa umbellus*	Ruffed Grouse	--
		Buteo platypterus	Broad-Winged Hawk	--
		Caprimulgus vociferus	Whip-poor-will	--
		Colinus virginianus	Northern Bobwhite	--
		Dendroica discolor	Prairie Warbler	--
		Empidonax traillii	Willow Flycatcher	--
		Falco sparverius	American Kestrel	--
		Pipilo erythrophthalmus	Eastern Towhee	--
		Scolopax minor	American Woodcock	--
		Spizella pusilla	Field Sparrow	--
		Toxostoma rufum	Brown Thrasher	--
		Vermivora pinus	Blue-winged Warbler	--
		Zonotrichia albicollis	White-throated Sparrow	--
	Mammals	*Sylvilagus transitionalis*	New England Cottontail	--
	Lepidoptera	*Hadena ectypa*	A Noctuid Moth	--

Species of Greatest Conservation Need in Pitch Pine/ Scrub Oak Systems

State Listing Status	Taxon Grouping	Scientific Name	Common Name	State Status
State-listed	Reptiles	*Terrapene carolina*	Eastern Box Turtle	SC
	Birds	*Circus cyaneus*	Northern Harrier	T
		Asio otus	Long-eared Owl	SC
		Pooecetes gramineus	Vesper Sparrow	T
	Beetles	*Cicindela patruela*	Barrens Tiger Beetle	E
		Nicrophorus americanus	American Burying Beetle	E
	Lepidoptera	*Abagrotis nefascia*	Coastal Heathland Cutworm	SC
		Acronicta albarufa	Barrens Daggermoth	T
		Anisota stigma	Spiny Oakworm	SC
		Apodrepanulatrix liberaria	New Jersey Tea Inchworm	E
		Callophrys irus	Frosted Elfin	SC
		Catocala herodias gerhardi	Gerhard's Underwing	SC
		Chaetaglaea cerata	Waxed Sallow Moth	SC
		Cicinnus melsheimeri	Melsheimer's Sack Bearer	T
		Cingilia catenaria	Chain Dot Geometer	SC
		Digrammia eremiata	Three-lined Angle Moth	T

State Listing Status	Taxon Grouping	Scientific Name	Common Name	State Status
		Eacles imperialis	Imperial Moth	T
		Erynnis persius persius	Persius Duskywing	E
		Euchlaena madusaria	Sandplain Euchlaena	SC
		Hemaris gracilis	Slender Clearwing Sphinx Moth	SC
		Hemileuca maia	Barrens Buckmoth	SC
		Hypomecis buchholzaria	Buchholz's Gray	E
		Itame sp. 1	Pine Barrens Itame	SC
		Lycia rachelae	Twilight Moth	E
		Lycia ypsilon	Pine Barrens Lycia	T
		Metarranthis apiciaria	Barrens Metarranthis	E
		Psectraglaea carnosa	Pink Sallow Moth	SC
		Ptichodis bistrigata	Southern Ptichodis	T
		Stenoporpia polygrammaria	Faded Gray Geometer	T
		Zale sp. 1	Pine Barrens Zale	SC
		Zanclognatha martha	Pine Barrens Zanclognatha	T
Not Listed	Reptiles	*Coluber constrictor*	Black Racer	--
		Heterodon platirhinos	Eastern Hognose Snake	--
	Birds	*Caprimulgus vociferus*	Whip-poor-will	--
		Colinus virginianus	Northern Bobwhite	--
		Dendroica discolor	Prairie Warbler	--
		Pipilo erythrophthalmus	Eastern Towhee	--
		Toxostoma rufum	Brown Thrasher	--
	Lepidoptera	*Schizura apicalis*	Plain Schizura	--
		Zale curema	No common name	--

Species of Greatest Conservation Need in Grasslands

State Listing Status	Taxon Grouping	Scientific Name	Common Name	State Status
State-listed	Birds	*Circus cyaneus*	Northern Harrier	T
		Bartramia longicauda	Upland Sandpiper	E
		Tyto alba	Barn Owl	SC
		Asio flammeus	Short-Eared Owl	E
		Pooecetes gramineus	Vesper Sparrow	T
		Ammodramus savannarum	Grasshopper Sparrow	T
		Ammodramus henslowii	Henslow's Sparrow	E
	Mammals	*Synaptomys cooperi*	Southern Bog Lemming	SC
	Beetles	*Cicindela purpurea*	Purple Tiger Beetle	SC
		Nicrophorus americanus	American Burying Beetle	E
	Lepidoptera	*Abagrotis nefascia*	Coastal Heathland Cutworm	SC
		Callophrys irus	Frosted Elfin	SC
		Cycnia inopinatus	Unexpected Cycnia	T
		Digrammia eremiata	Three-lined Angle Moth	T
		Erynnis persius persius	Persius Duskywing	E
		Euchlaena madusaria	Sandplain Euchlaena	SC
		Faronta rubripennis	The Pink Streak	T
		Grammia phyllira	Phyllira Tiger Moth	E

State Listing Status	Taxon Grouping	Scientific Name	Common Name	State Status
		Ptichodis bistrigata	Southern Ptichodis	T
Not Listed	Reptiles	*Heterodon platirhinos*	Eastern Hognose Snake	--
	Birds	*Colinus virginianus*	Northern Bobwhite	--
		Falco sparverius	American Kestrel	--
		Scolopax minor	American Woodcock	--
		Sturnella magna	Eastern Meadowlark	--

DFW also points out that some MESA state-listed plant species can benefit from disturbances created by habitat management. DFW is encouraged that within DCR's proposed Management Guidelines, there is specific language contained under a sub-section on Habitat Protection Guidelines which provides an opportunity for managing the habitat associated with these species, but recommends that DCR work with DFW to ensure that these Guidelines do not unnecessarily restrict habitat management.

3) **Integrate DFW and DCR Habitat Management on DCR Lands**

- DFW recommends that DCR consider jointly planning habitat management projects in the future which benefit SGCN and state-listed species on DCR properties which are not necessarily co-owned, but which are of significant value and importance to the conservation of those species and habitats.

There is a significant opportunity for DFW and DCR to jointly integrate habitat management projects towards sustaining biodiversity on state lands in the future. DCR's proposed Management Guidelines already recognize this opportunity. By combining expertise, resources, DFW and DCR can make strides in meeting both agencies' missions. DFW received broad public support without opposition for its habitat management goals and practices to sustain biodiversity on state Wildlife Management Areas during a 2010 public review. During the review, DFW received public comment that integration and coordination among DCR and DFW should occur relative to habitat management.

In summary, public lands in general offer the best opportunities for long-term management and conservation of biodiversity in the Commonwealth given the constraints and change in ownership and landowner goals. DFW notes that the Forest Futures Visioning Recommendations recognize this and recommend that DFW and DCR work together to develop habitat management plans that balance the two agencies' missions. Toward this end, DFW looks forward to future opportunities for integration of habitat management with DCR and appreciates DCR's consideration of these recommendations on the proposed Landscape Designations and Management Guidelines.

Sincerely,

Wayne F. MacCallum

Wayne F. MacCallum

Cc: Commissioner Mary Griffin
Fisheries and Wildlife Board

Appendix 7. Key Changes to Management Guidelines from Draft to Final

What follows is a summary of the major changes made to the Landscape Designation management guidelines from the draft to this final version. These changes have been made to reflect input provided during the seven public workshops held in the Spring of 2011, written comments received and additional DCR staff input.

Foreword

- The DCR Commissioner has provided a foreword to the final version of the Guidelines

Section 1

- Reaffirmation made that public access will continue within all three designations.
- A summary of the external and internal review of the draft designations and guidelines has been added.
- Notation made of a few properties that have not been given a designation due to special circumstances.
- Process by which future acquisitions will receive designations has been added.
- Better articulation of the integration of agency planning processes, and clarification of the relationship between Landscape Designations and the Land Stewardship Zoning system that is applied during the Resource Management Planning process has been provided. A new matrix illustrating the relationship between the two is included.
- Reaffirmation of site specific data development during the RMP process.
- Clarification made regarding public processes and trail projects.
- Clarification of use of statutory and regulatory guidelines and agency policy in review of proposed activities prior to completion of an RMP.
- Clarification on process for reviewing existing FRMPs and incorporation of Woodlands guidelines and Public Outreach Policy.
- Reaffirmation made regarding ongoing consultation with DFW on these guidelines and coordination to assess implementing the Statewide Wildlife Action Plan on DCR properties included.
- Legislative citations added to regulatory references.
- Reaffirmation of DCR's commitment to the use of the information in BioMap 2 stated.
- Reaffirmation of DCR's commitment to public process included.

Sections 2, 3 & 4

- Purpose statement added to the beginning of the discussion of each designation.
- Patch Reserve discussion moved within the document to the Reserves section.
- Reference to existing Large Reserves established in 2006 made.
- Clarification regarding DCR's potential future designation of Wilderness areas, using the intent of the federal definition of wilderness as a guide only, and applied at the scale of the DCR Wildlands program.
- Language added regarding engaging friends groups and other organizations to support interpretive efforts.
- Parameters of research proposals and results incorporated.
- Parameters of commercial energy installations in Parklands or in Woodlands incorporated.
- Reference to Mass Audubon's *State of the Birds 2011* report included.
- Categorization of silvicultural levels 1, 2 and 3 replaced with more descriptive language discussing the different silvicultural approaches to be taken based upon resource assessments of the site and the stand. Note that methodologies have not changed significantly since the draft, but changes in language have been made for clarification purposes in response to comments, and to help provide some distinction between the former Level 1 from a Zone 1.
- Clarified that Home Fuelwood harvests are subject to the same silvicultural and management guidelines and are also subject to the Public Outreach Policy.
- Language regarding protection of trails during timber sales included.

Appendices

Appendices reordered; note that the Glossary is now an Appendix rather than in the main body of the report, and the former Appendix 3, the Summary of the Recreation Opportunity Spectrum, has been removed to reduce confusion.

Appendix 1: Glossary – additional terms (such as forest health) and definitions provided, and additional sources included.

Appendix 2: Silviculture and Guidelines for Application –Replacement of the Levels 1, 2, and 3 labels with more descriptive language regarding the silvicultural approaches that will be followed to improve stand diversity and rehabilitate or improve others, or where forestry does occur. Language included regarding regulation of the amount of biomass removed for forest productivity protection.

Appendix 3: Public Outreach and Consultation for Forest Cutting Plans Policy - New appendix, updating the policy to reflect an expanded policy of public outreach; note: site walks incorporated now before any harvest.

Appendix 4: Land Stewardship Zoning Guidelines – New appendix, updating the Land Stewardship Zoning Guidelines to facilitate the TSC-recommended integration of DCR's key planning systems. Includes a matrix showing the relationship between Landscape Designations and Land Stewardship Zoning, revised zone and overlay descriptions, clarification of agencies use of BioMap2 and NHESP data during the zoning process, and expanded general management guidelines. Zone 1 includes language clarifying protection of ecologically and culturally sensitive resources.

Appendix 5: DCR Properties on Public Water Supply Watersheds – Clarification that the Public Outreach and Consultation for Forest Cutting Plans Policy will apply.

Appendix 6: Division of Fisheries & Wildlife Comment Letter on Draft Landscape Designations and Management Guidelines – New appendix, sharing the comments provided by DFW. These were not posted with the other public comments as they were formally submitted after the public comment deadline and posting.

Appendix 7: Key Changes to Management Guidelines from Draft to Final – New appendix, summarizing major changes in this document.

Appendix 8: Key Changes to Landscape Designations from Draft to Final - New appendix, summarizing major changes in the property designations.

Appendix 9: GIS Model Descriptions – The GIS models used to develop the ELUs, and identify potential Parklands and Reserves have been added.

Appendix 10: Landscape Designation Maps – maps now included as an appendix of this document.

Appendix 8. Key Changes to Landscape Designations from Draft to Final

Review of comments received from public meetings and in writing on specific Landscape Designations, and an overview of the decisions made based on these comments and subsequent DCR review.

Changes made to Designations

Baldpate Pond State Forest

Note: Baldpate, Cleaveland Farm, Boxford, Harold Parker and Georgetown-Rowley SF reviewed collectively – due to location, and numerous comments received regarding all of these properties. Segregated here for clarity and for ability to note discussions regarding each property.

Draft Designation– Woodland

Final Designation– Parkland

Discussion - Written comments opposed Woodland Designation. Baldpate is surrounded by suburban development, with many small house lots. Ranked low for all three designations, and was originally designated a Woodland due to proximity to some of the others that had been draft designated as Woodlands. Decision made to change Baldpate from Woodlands to Parklands.

Buckley-Dunton Lake in October Mountain State Forest

Draft Designation – Woodland

Final Designation – Parkland bubble around lake and recreation area

Discussion – Requests received to designate an area encompassing this lake a Reserve. Upon further review, an intensive use area not captured earlier was identified. Decision made to designate a Parklands area encompassing the lake, parking lot, boat launch, beach and trail in this area to reflect current recreational uses and simultaneously address concerns about forest management in this area.

Cleaveland Farm State Forest

Note: Baldpate, Cleaveland Farm, Boxford, Harold Parker and Georgetown-Rowley SF reviewed collectively – due to location, and numerous comments received regarding all of these properties. Segregated here for clarity and for ability to note discussions regarding each property.

Draft Designation – Woodland

Final Designation – Parkland

Discussion – Former tree farm prior to DCR ownership, and heavily managed in the past, good Woodlands score. Extensive public comments submitted requesting a change. Reassessment of access issues, growth in this region and consideration of adjacent property designations led to the decision to designate Cleaveland Farm a Parkland.

Connecticut River Greenway State Park

Draft Designation – Reserve

Final Designation – Parkland

Discussion– DCR has recently completed a number of acquisitions for this park. The property did not rate high for Woodlands, and it does not offer a typical Reserve experience. The federal America's Great Outdoors initiative, which was launched by the Obama Administration in 2010, seeks to partner with communities to restore cherished places, support conservation partnerships, restore critical ecosystems, support rural economies and increase public access to natural areas. Through this program, a national blueway initiative was created and the Connecticut River named as a multi-state blueway. In addition, the New England Governors Association Commission on Land Conservation has also focused on the Connecticut River in its "Connect People to the Outdoors New England" report. Both efforts envision future trail enhancements and recreational opportunities, consistent with resource protection. In consideration of the possibility for future federal resources and regional partnerships to advance these goals on DCR's Connecticut River Greenway, the decision was made to designate this collection of small parcels a Parkland, to more closely align with these efforts.

Georgetown-Rowley State Forest

Note: Baldpate, Cleaveland Farm, Boxford, Harold Parker and Georgetown-Rowley SF reviewed collectively – due to location, and numerous comments received regarding all of these properties. Segregated here for clarity and for ability to note discussions regarding each property.

Draft Designation – Woodland

Final Designation – Parkland

Discussion – Comments for this property voicing support for a Reserve. Georgetown-Rowley scored well for Woodlands and has good potential for demonstration forestry, home fuel wood, and general thinning opportunities. Due to the relative high scoring of this property as a Parkland, and the growth experienced in this region, the decision was made to designate Georgetown-Rowley a Parkland.

Mohawk Trail State Forest & Savoy Mountain State Forest

Draft Designation – Mohawk – Reserve; Savoy – Woodland

Final Designation – Mohawk – no change; Savoy – small Reserve area carved out

Discussion – Based on documented old growth in Savoy captured through the 2006 EEA Reserve effort and written comments mentioning the same, the decision was made to expand the Reserve designation into Savoy to encompass the old growth areas.

Mt. Watatic Reservation

Draft Designation – Woodland

Final Designation – Not assigned a designation

Discussion – Due to multiple ownership and joint stewardship by 6 different parties – DCR, DFW, the towns of Ashburnham and Ashby, and 2 local land trusts - with related but different missions, concerns were expressed that DCR should not designate this property. Based on input received at the spring public meetings and written comment, Mt. Watatic will not be designated, but could be in the

future if so desired by the different owning entities. Management of the property will follow the guidelines in the existing management plan.[87]

Pittsfield State Forest and Balance Rock State Park

Note – overview provided here for both properties as these two properties are contiguous and were reviewed jointly. Also note RMP currently in progress for this planning unit.

Draft Designation – Pittsfield: primarily Woodland with some Parklandss; Balance Rock: Parkland

Final Designation – Pittsfield: Woodland with expanded Parkland area, helping to capture more recreation intensive use areas; Balance Rock: Woodland with a decreased Parkland area

Discussion –Many comments received from recreational user groups about damage to trails from past forest management activities. Pittsfield scored highly as a Woodland. Further review resulted in an expansion of the parkland area in Pittsfield to capture a larger recreational use area not previously included. Balance Rock's Parkland area was refined using additional information related to the size of the intensive use area.

Wendell State Forest/Warwick State Forest

Draft Designation – Woodland and Reserve combination

Final Designation – Modifications made resulting in several changes

Discussion – Requests were received to adjust some of the designation boundaries in both properties to avoid impacts to some inholdings and to consider management in adjacent properties owned by Mass Audubon and private owner(s). Other issues included: watershed management areas, forest legacy projects, the desire to stitch together large blocks for both designations, recognition and utilization of the highest value forestry in the state and thoughtful proposals from the towns that provided consideration for municipal interest in timber revenue. Based on extensive and extremely thoughtful comment and field review by staff, an area of Reserve in Wendell State Forest was expanded to the powerline easement and Bear Mountain Road. In Warwick State Forest all lands, with the exception of Parkland carve-out areas, north of Hastings Heights Road, Athol Road, Northfield Road, and White Road will be Woodlands and the large contiguous piece that Flag Road goes through will be designated as a Reserve.

<u>Other Designation Changes Considered</u>

Beartown State Forest and October Mountain State Forest

Draft Designation – Beartown: Reserve; October Mountain: roughly 2/3 Woodland and 1/3 Reserve

Final Designation – no change

Discussion – Long discussion and assessment of comment letters received questioning the draft designations from both perspectives (some requesting more Reserve; others requesting more

[87] The existing management plan can be found on the DCR website at: http://www.mass.gov/dcr/stewardship/rmp/rmp-mtWatatic.htm

Woodland). Both properties have similar characteristics in terms of size, usage, and history of management, making decisions difficult. Other options considered included swapping the designations, or designating each facility as half Reserve, and half Woodland. DCR staff reviewed other protected open space around both facilities, and focused on the existing road networks and the municipal drinking water supply protection area in the north. Decision made to leave these two designations unchanged.

Blue Hills Reservation

Draft Designation – Parkland

Final Designation – no change

Discussion –Two comment letters suggested this property be changed to a Reserve. RMP recently completed includes Zone 1 areas applied through the Land Stewardship Zoning, which provides a higher level of protection and different management practices for a considerable portion of the property. Property has high trail density, high surrounding population and multiple intensive use areas. Decision made to retain the Parkland designation.

Boxford State Forest

Note: Baldpate, Cleaveland Farm, Boxford, Harold Parker and Georgetown-Rowley SF reviewed collectively – due to location, and numerous comments received regarding all of these properties. Segregated here for clarity and for ability to note discussions regarding each property.

Draft Designation – Reserve

Final Designation – no change

Discussion – Support expressed for Reserve designation, therefore no change was made to this designation.

Conway State Forest

Draft Designation – Woodland

Final Designation – no change

Discussion – Comments submitted by the Conway Conservation Commission (and some individuals) to designate this property a Reserve. Support for Woodlands designation received in comments from the Northampton Water Commission for watershed management, as half of the property falls within a surface water protection area. Property rates moderate/moderate for Reserves, and very high for Woodlands, and has been actively managed in the past. Decision made to retain the draft Woodland designation.

Douglas State Forest

Draft Designation – Reserve

Final Designation – no change

Discussion – Comment received suggesting that this property should be designated as a Parkland due to high trail density. Property scores highly for a Reserve, represents only one of two

Reserves in its ELU, and is a very large contiguous block of forest. Decision made not to change the designation.

F.G. Hills State Forest

Draft Designation – Woodland

Final Designation – no change

Discussion – Comments received from recreational users requesting Parkland designation; concerns regarding trails and trail density. Property has a history of active management here with a sawmill on site. Decision made to retain the draft Woodland designation.

Gilbert A. Bliss State Forest

Draft Designation – Reserve with a Parkland portion

Final Designation – no change

Discussion – One comment received noting an abundance of recreational uses and requesting a Parkland designation. Property was one of the original Reserves designated in 2006, and ranks very highly in the Reserves model. Decision made to retain the draft Reserve designation.

Granville State Forest

Draft Designation – Woodland

Final Designation – no change

Discussion - Comment received about certain designations being restrictive of OHV use statewide. Landscape Designation Management Guidelines do not restrict OHV use simply based on the property designation. Decision made to keep draft Woodland designation.

Harold Parker State Forest

Note: Baldpate, Cleaveland Farm, Boxford, Harold Parker and Georgetown-Rowley SF reviewed collectively – due to location, and numerous comments received regarding all of these properties. Segregated here for clarity and for ability to note discussions regarding each property.

Draft Designation – Woodland

Final Designation – no change

Discussion – Harold Parker scored well for Woodlands and has good potential for demonstration forestry, home fuel wood, and general thinning opportunities. Recreational opportunities at Harold Parker are compatible with Woodlands. Decision made to keep as draft Woodland designation.

Hawksnest State Park

Draft Designation – Woodland

Final Designation – no change

Discussion – One comment received suggesting that this property should be a Reserve based upon its ecological values, and for water supply protection. This property was identified as a Woodland not only to allow for a potential site for the home fuelwood program on Cape Cod, but also to provide

for water supply protection and to balance designations within this ELU. Property scored medium and low on the Reserve model. DCR field staff indicates this property is good for home fuelwood purpose (pine and oak). This is also a property that is co-managed by DFW, who expressed a strong interest in retaining flexibility to allow for active forest management. Decision made to retain the draft Woodland designation.

Holyoke Range State Park

Draft Designation – Reserve

Final Designation – no change

Discussion – Recreational users submitted comments requesting a Parkland designation due to concerns regarding potential trail closures. Property ranks high for Reserves, with unique ecological attributes and high habitat diversity. Decision made to retain the draft Reserve designation.

Middlesex Fells Reservation

Draft Designation – Parkland

Final Designation – no change

Discussion – Comment letters received suggesting that this facility should be designated a Patch Reserve. The Fells has the highest trail density in the entire DCR system, high surrounding population density, and an approved RMP that addresses protection of critical resources through land stewardship zoning. Decision made to retain the draft Parkland designation.

Mt. Tom State Reservation

Draft Designation – Parkland

Final Designation – no change

Discussion – Comment letter received noting this property is an Important Bird Area. Located adjacent to Holyoke Range, the recreational usage is high, and the property does not have as many reserve-like qualities as others in this region and ELU. Decision made to retain the draft Parkland designation.

Mt. Washington State Forest

Draft Designation – Part Reserve; Part Woodland in the northern area adjacent to Jug End

Final Designation – no change

Discussion – Comment received suggesting that the split designations would result in fragmentation to an important Reserve area. However, the section that is Woodland is separate from the Reserve area, and no fragmentation would occur. The area in question scores well for Woodlands, and is adjacent to Jug End, which is co-managed with the Department of Fish and Wildlife for Woodland values. Decision made to retain the draft partial Reserve, partial Woodland designation.

Peru State Forest

Draft Designation – Woodland

Final Designation – no change

Discussion – Suggestion was made that as a large unit next to Middlefield SF (designated as a Reserve) that Peru SF should also be designated as a Reserve to increase the size of area in Reserve. Middlefield SF, however, is in a different ELU than Peru SF. Neither community submitted comments this round. Decision made to retain the draft Woodland designation.

Robinson State Park

Draft Designation – Parkland

Final Designation – no change

Discussion –Letter received supporting this designation; no discussion or change necessary.

Rutland State Park

Draft Designation – Woodland with a small Parkland area

Final Designation – no change

Discussion – Letter received supporting this designation; no discussion or change necessary.

Sandisfield State Forest

Draft Designation – Woodland

Final Designation – no change

Discussion – Comment received concerning OHV use in the area. As Woodland designation in and of itself does not impact OHV use, and OHV use is not currently allowed here but rather in nearby Tolland SF, the draft designation was retained.

Sandy Point State Reservation

Draft Designation – Reserve

Final Designation – no change

Discussion – Suggestion made that as a small facility this should be a patch reserve, and should not count towards the total acreage target for Reserves. Decision made to retain the draft Reserve designation.

Shelburne Falls State Forest

Draft Designation – Parkland

Final Designation – no change

Discussion – Comment submitted requesting to change this to a Reserve. One parcel is about 10 acres and includes a fire tower, the other is an intensive recreational use area with access to the Deerfield River, and the Mohican/Mohawk trail runs through it. Due to heavy recreational use and assets, decision made to retain the draft Parkland designation.

Upton State Forest

Draft Designation – Woodlands with Parklands core at Civilian Conservation Corps HQ area

Final Designation – no change

Discussion – Comments received suggesting an expansion of the Parklands area to capture the loop road constructed by the CCC, both as a historic resource and as an area reflecting the primary area of use. Decision made to retain the draft designation and to capture those cultural and sensitive natural areas in the Land Stewardship Zoning to be conducted as part of an RMP.

Wachusett Mountain State Reservation

Draft Designation – Parklands

Final Designation – no change

Discussion – Comment reflected concern regarding the old growth stand at Wachusett and its need for protection. The old growth will still be protected at Wachusett through not only the DCR Old Growth policy, but also through Land Stewardship Zoning, which has zoned this area a Zone 1, the most protective Land Stewardship Zone. Given the extensive level of recreational infrastructure as well as the roadway and summit infrastructure, decision was made to retain the draft Parkland designation.

Willowdale State Forest

Draft Designation – Reserve

Final Designation – no change

Discussion – Comments received from recreational users suggesting that there are too many trails on this property for a Reserve designation. Concerns expressed that Reserve designation will automatically lead to trail closures, which is not the case. This property rated high for Reserve potential, and is currently the only large Reserve in the Northeast. Decision made to retain the draft Reserve designation.

Wompatuck State Park

Draft Designation – Parklands

Final Designation – no change

Discussion – Comment requested changing this designation to a Reserve, to balance the percentage of acreage of each designation within this ELU, and its natural resource values. There are other Reserves in this ELU, and this property includes a very active campground, is a heavy mountain biking area, and has remains of a former military installation. Decision made to retain the draft Parkland designation due to heavy recreational use and assets.

Appendix 9. GIS Models

Ecological Land Units and the Reserves Model

The primary recommendation for Landscape Designation by the Technical Steering Committee (TSC) was that DCR should establish "large, intact forest reserves in each of the major ecological settings"[88] representing Massachusetts forest biodiversity. Further, reserve design should ideally follow "principles of conservation biology that direct us to develop a connected network of large, well-buffered forest reserves with minimal internal fragmentation."[89]

To achieve this, the Forestry Internal Working Group developed a GIS 'Reserves' analysis model with guidance from The Nature Conservancy (TNC). The analysis has the following three distinct steps:

1: Ecological Grouping to identify major ecological settings in MA

2: Creating numeric 'Reserves' scores

3: Scaling scores for better relevance

1. Ecological Grouping to identify major ecological settings in MA

The DCR owns and manages properties that span the entire state, and support an astounding array of habitat types, recreation opportunities and cultural values. Within this diverse range though, are groups of facilities that are tied together by unique ecological characteristics. For instance forested DCR facilities located in higher elevations are intrinsically different from forested properties situated in richly silted river valleys. Or one group of properties might represent hilly lands with loose, fertile soils and dense vegetation whereas another might refer to those facilities that are on flat, coastal soils with scrubby vegetation.

Ecological grouping of DCR facilities helps identify such facilities that share similar, unique features. Drawn from an analytical approach used by TNC in their "Lower New England-Northern Piedmont ecoregion Conservation Plan," it provides a way of reducing many thousands of acres of DCR land into ecological groupings of properties. Together, the groups represent the diversity of physical and natural characteristics contained within DCR properties throughout Massachusetts.

Ecological Land Unit (ELU) groups for DCR owned and managed facilities were derived using a methodology established by the TNC. An ordination analysis was used to group DCR properties together based on three factors: elevation, geology and landform (a measure of topography). Properties that have similarities for these three basic attributes also tend to have similar vegetation and habitats. These groupings are referred to as Ecological Land Unit or ELU groups.

[88] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 36. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

[89] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 37. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

The groupings were created using the software program PC-ORD with a TWINSPAN ordination analysis. Results were interpreted with help of TNC experts to group together DCR properties that are most similar to each other in terms of their ecological setting, measured through elevation, geology and landform data (provided by the TNC). Eleven ELU groups of DCR properties emerged and were presented to DCR foresters with specific knowledge of DCR facilities, for verification. Where knowledge of the property suggested the necessity, slight alterations to the ELU groupings were made and then checked against the ordination analysis.

The primary use of these 11 ELU groups of DCR properties was to ensure equitable distribution of Reserves throughout the state.

In some instances, ELU groups provided key context to aid designation decisions. For example, if a particular ELU group had an overwhelming number of facilities that were designated as Woodlands and comparatively less in Reserves, it was a clue to more closely examine the facilities that were close-calls and re-designate in favor of Reserves. All decisions were evaluated by foresters and supervisors who had intimate knowledge of the areas so that there was some field verification of these model driven decisions.

The ELU groups were less applicable to the designation of Parklands which have a broader range of characteristics and are not mutually exclusive with other designations (i.e. they can co-exist).

ELU groups were created as follows:

1. We started with a GIS dataset that contained current DCR owned and managed facilities.

2. This list was formatted prior to the analysis as follows:

a) Some facilities were grouped together to better reflect their management structure. Almost all treated thus are very similar facilities that are adjacent or nearby and though named differently, are managed by the same supervisor/crew for an adjacent property. An example is Abigail Adams S.P., Stodders Neck and Webb Memorial S.P.
b) Some facilities were grouped together due to naming discrepancies. This is mostly in the case of adjacent facilities that may be named differently due to legal deed details, but that are considered to be part of the same facility by the DCR. An example is Brewster and Nickerson State Forests.
c) Many facilities less than 25 acres in size were left out of the ordination analysis and not given an ELU group. These properties were not analyzed for Reserves potential given that their small size would make them unlikely candidates for reserves. In addition, the scale of the available ecological data was incompatible with these very small properties and would lead to a compromise in the overall accuracy of the model. Certain exceptions were made based on specific knowledge of facilities. For example in the Abigail Adams/Stodders Neck/Webb combination mentioned above has significant natural, undeveloped areas. Therefore these smaller facilities received designations (most turned out to be best suited as ‘Parklands’)
d) Facilities with highly 'developed' characteristics were also left out of this grouping exercise and Reserves score calculation. Examples of these are: pools, rinks, playgrounds, and boat ramps. They were excluded because they have few or no qualities that would qualify them as Reserves.
e) Some very linear facilities were excluded for similar reasons. An example is Hammond Pond Parkway.

This step of grouping facilities by name/management or excluding them was our effort at diligent input formatting to ensure that the models were as representative of reality as possible. The ELU grouping that came out of the ordination analysis took accurate notice of the true character of the facilities and reflected this diligence. The Abigail Adams/Stodders Neck/Webb Memorial example above for instance: all were small facilities with a lot of recreational use and development in terms of trails. They were not eliminated by us per the small size/developed rules but included to account for the natural areas in Webb Memorial S.P. In the designation process though, in spite of being part of an ELU group, their developed 'Parklands' nature came to dominate and they were designated as Parklands.

3. Our amended list of facilities and the ELU data was fed into the TWINPSAN program and the analysis was run.

4. Initial model results were interpreted by a DCR GIS analyst and then confirmed by an analyst from TNC with expert knowledge and experience of the process. The interpretation of ordination results is a subjective exercise in pattern recognition so is a reiterative process requiring multiple passes. Numerical patterns were read to identify clusters of DCR properties and then the ecological characteristics used as a descriptor to fact-check the accuracy of the clusters. If there was consistency in the ecological description of the various properties in that cluster, it could be considered a valid group. If not, patterns were re-read to see if some of the mismatched properties in the cluster had a better fit in another cluster.

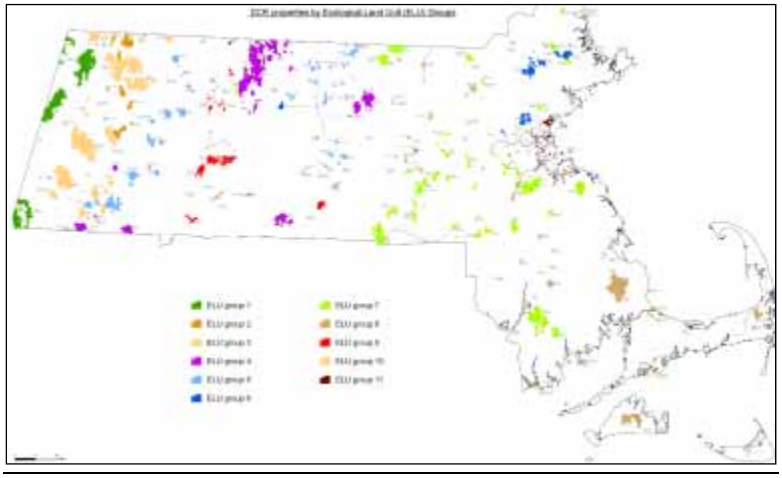
5. ELU groups created from the ordination analysis were checked by foresters and administrators with detailed knowledge of the properties. Where they felt that a facility fit better in a different ELU group, the TWINSPAN analysis was checked and if possible the facility was assigned to a different, more fitting group. In the few instances that a ELU group reassignment was suggested, the TWINSPAN data did in fact support the re-group since there are multiple ways of interpreting the TWINSPAN results.

6. The final ELU groups were used for background and context when individual GIS models were compared in assigning Landscape Designations.

An ELU is any combination of these 3 variables:

Topography	Geology	Elevation Zone
Cliff	Acidic sedimentary	Very Low (0-800')
Steep slope	Acidic shale	Low (800-1700')
Flat summit or ridgetop	Calcareous	Medium (1700-2500')
Slope crest	Moderately Calcareous	High (2500-4000')
Sideslope –N facing	Acidic granitic	Alpine (4000+'}

Sideslope – S facing Cove or footslope-N facing Cove or footslope–S facing Hilltop flat Hill / gentle slope Valley bottom or gentle toeslope Dry flat Wet flat Flat at bottom of steep slope Stream River Lake or pond	Intermediate or mafic Ultra mafic Deep fine-grained sediments Deep coarse-grained sediments	



The11 ELU groups identified for DCR properties, and their descriptions

ELU group	**Primary ELU traits** *i.e. all/almost all properties in this ELU group share these characteristics*	**Secondary traits** *i.e. some property sub-groups in this ELU group share these characteristics*
1	Mid elev, Mod calcareous sed/metased, gentle hill, cool & warm sideslopes, dry & wet flats, flat hilltop, valley/toeslope	Mid-high elev, Acidic sed/metased, Hilltop (flat) Mid-high elev, Mod calcareous sed/metased Mid elev, Acidic sed/metased, Flat at bottom of steep slope

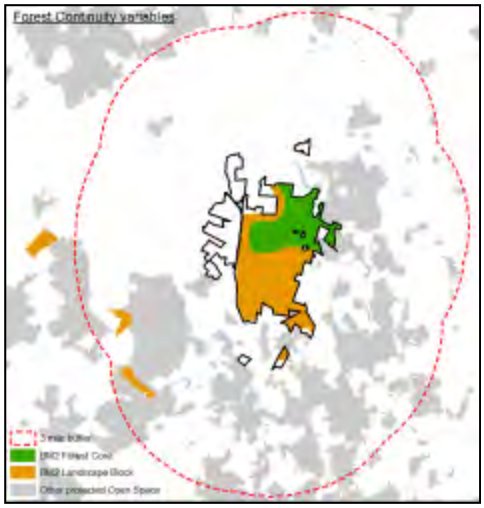
2	Mid-high elev, Acidic sed/metased, flat hilltop, gentle hills,cool & warm sideslopes, dry & wet flats, valley/toeslope AND Mid elev, Acidic sed/metased, Sideslope (cool & warm),cove/footslope(cool), flat at bottom of steep slope, wet flats, valley/toeslope	N/A
3	Mid elev, Acidic sed/metased, . Sideslope (cool & warm), cove/footslope(cool & warm), flat at bottom of steep slope, wet flats, valley/toeslope	Mid-high elev, Acidic sed/metased, flat hilltop, gentle hills, cool & warm sideslopes, dry & wet flats, valley/toeslope
4	Mid elev, Acidic sed/metased, Sideslope (cool & warm), cove/footslope(cool & warm), flat at bottom of steep slope, wet flats, valley/toeslope	Mid elev, Mafic/intermediate granitic, gentle hill, cool & warm sideslopes, dry & wet flats AND Mid elev, Acidic sed/metased, Sideslope cooler aspect
5	Mid elev, Acidic sed/metased, flat hilltop, gentle hills, wet & dry flats, cool & warm sideslopes, valley/toeslope	Mid elev, Mod calc sed/metased, flat hilltop, gentle hills, cool & warm sideslopes, dry & wet flats, valley/toeslope, Low elev, mod calc sed/metased
6	Low elev, Mafic/intermediate granitic, gentle hills, wet & dry flats, warm sideslopes, valley/toeslope, flat hilltop	N/A
7	Low elev, Acidic granitic, flat hilltop, gentle hills, wet & dry flats, cool & warm sideslopes, valley/toeslope	Mafic/intermediate granitic
8	Low elevation, Coarse sediments, wet & dry flats, valley/toeslope	<u>Sub-group 1:</u> Low elevation, Mod calcareous sed/metased, gentle hills, wet & dry flats, cool & warm sideslopes, valley/toeslope AND Low elevation, Acidic granitic, Cove/footslope cool & warm aspect <u>Sub-group 2:</u> Low elevation, Acidic sed/metased, flat hilltop, gentle hill, wet flats, lake/pond/reservoir

		Sub-group 3: Low elevation, Coarse sediments, flat hilltop, gentle hill, cool & warm sideslopes (some also have Acidic Granitic)
9	Low elevation, Acidic sed/metased,flat hilltop, gentle hills, wet & dry flats, cool & warm sideslopes, valley/toeslope, slope crest	N/A
10	Coastal zone, Coarse sediments, wet & dry flats	Sub-group 1: Coastal zone, Acidic granitic, gentle hills, wet & dry flats Sub-group 2: Coastal zone, Acidic sed/metased, flat hilltop, gentle hills, wet flats AND Coastal zone, Coarse sediments, wet & dry flats, valley/toeslope
11	Coastal zone, Fine sediments, flat hilltop, gentle hills, wet & dry flats, cool & warm sideslopes, valley/toeslope	N/A

2. Creating numeric 'Reserves Potential' scores

Two GIS models were created to evaluate DCR properties for Reserve potential using (mainly) TNC's Biomap 2 data: the Forest Continuity model and the Biological Systems Model.

The **Forest Continuity** model was used as the primary indicator of Reserves potential. It is the direct visualization of the TSC directive that DCR should establish "large, intact forest reserves in each of the major ecological settings"[90] representing Massachusetts forest biodiversity. The model evaluates DCR facilities to find those that have the most intact forests and are surrounded by other protected and intact forests. Recently released Biomap 2 data on Landscape Blocks and Forest Cores provided good data for intact forests.



To incorporate the second essential value of being "connected networks of large, well-buffered forest reserves,"[91] occurrences of these intact forests were considered not only within, but also ***nearby*** DCR facilities. This was done by adding a 3 mile buffer or ring around each

[90] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 36. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

[91] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 37. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

DCR property. In addition, nearby protected lands, whether forested or not, were also factored in to account for future Reserves potential and increased connectedness. The variables composing this 'Forest Continuity' data layer are:

1) Biomap 2 Forest Core (within property)
2) Biomap 2 Landscape Blocks (within property)
3) Biomap 2 Forest Core (within 3 miles of property)
4) Biomap 2 Landscape Blocks (within 3 miles of property)
5) Other protected Open Space (within 3 miles of property)

The method used to derive numerical 'scores' for Forest Continuity for each DCR property is as follows:

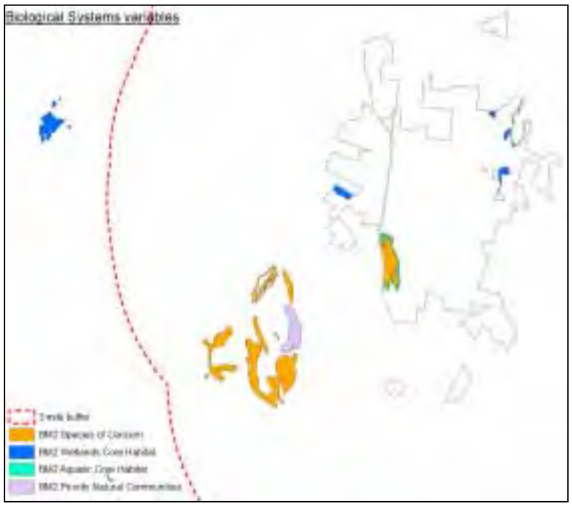
1. Area calculation:
   Areas of each data variable within or near each DCR property were calculated. ArcMap 9.3 Geoprocessing tools like intersect and clip were used to arrive at these acreages for the Forest Core and Landscape data. The buffer tool was used to create a 3 mile ring around DCR properties and the same data acreages calculated within this buffer. Protected Open Space (defined as any property publicly owned in perpetuity in the MassGIS Open Space data layer) was similarly calculated within this ring. Each DCR property thus had 5 acreages calculated, one for each variable listed above.

2. Ranking area for each variable:
   For each DCR property, each of the above 5 acreages were classified on the basis of where they fell in the range of values for their ELU group. To do this, acreages calculated in the first step were grouped according to Natural Breaks (Jenks) method using 3 classes for each ELU group of DCR properties. Using the Natural Break method creates classes "based on natural groupings inherent in the data" (ArcGIS Desktop 9.3, ESRI documentation). The class limits calculated by this method were used to classify the lowest class as 1 (lowest in the range), the middle class, 2 (middle of the range) and the highest class, 3 (highest in the range).

   For example, in ELU group 1, all 10 DCR properties in that group were symbolized on 'Forest Core' acres in ArcMap using 3 Natural Breaks. The 3 classes created by ArcMap were 0 – 422.22 , 422.23 – 3606.62 and 3606.63 – 7262.28. All properties that had Forest Core from 0 to 422.22 acres (the lowest class) were given a Forest Core Relative score of 1, meaning that amongst all the properties in ELU group 1, these properties had the lowest amount of Forest Core in them. Properties in the middle class for Forest Core, were given a score of 2 and those from 3606.63 – 7262.28 (the highest class) were given a score of 3. In effect, DCR Properties within this ELU group were ranked in terms of Forest Core through comparison with their peers within the same ELU group.

   This process was repeated for each of the 5 variables considered to indicate 'Forest Continuity'. So each DCR property had 5 scores calculated for each of the 5 'Forest Continuity' variables listed above.

The **Biological Systems** Model was considered to be a secondary model when evaluating DCR properties because the habitat principles it assessed were less emphasized by the TSC report than the 'intact forest' concepts included in the Forest Continuity Model. It was further meant to be a tie-breaker measure to add intelligence to designation decision making in cases of 'close calls' where a property might be well suited to more than one designation.



The components of the Biological Systems model are:

1) Biomap 2 Species habitat
2) Biomap 2 Wetland Core Habitat
3) Biomap 2 Aquatic Core Habitat
4) Biomap 2 Priority Natural Communities

The method for calculating acreages and ranking scores for each of these variables was identical to that of the 'Forest Continuity' model. At the end of the process, each DCR property had 4 acreages calculated for each of Biological Systems variables listed above as well as a rank for the acreage to evaluate it in the context of other properties in the ELU group.

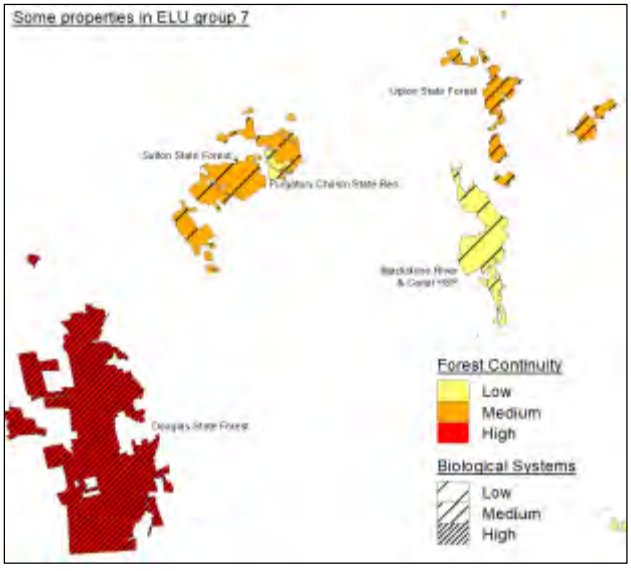
3. Scaling scores across groups of properties

One of the goals of designating Reserves across DCR lands was to ensure that they were distributed across each of the major ecological settings of the state. To achieve this, the numeric model scores created for all properties statewide were evaluated separately for each ELU group and broken into three categories. The lowest range of scores within a particular ELU group was considered to represent the lowest Reserves potential within that unique ecological setting. The middle data range was considered 'Medium' potential and the highest 'High'. Each ELU group of DCR properties was similarly evaluated and each property within the ELU group given high, medium and low scores accordingly. This scaling was applied to both Forest Continuity and Biological Systems data layers.

The steps for this analysis were:

1. Composite score calculation:

For Forest Continuity - a straight addition of the 5 ranks for each Forest Continuity variable for each DCR property yielded a composite raw score. For example, a particular property might have had a low rank for 'Forest Core' (1), medium for 'Landscape Block' (2), high for adjacent



Forest Core (3), medium for adjacent Landscape Block (2) and low for adjacent open space (1). The composite Forest Continuity score for such a property would be 9.

Similarly, for Biological Systems - that property might have had a low rank for Species habitat (1), medium for Wetland Core Habitat (2), medium for Aquatic Core Habitat (2) and high for Priority Natural Communities (3). The composite Biological Systems score for such a property would be 7.

2. Ranking composite scores:

Composite scores (for each of the 2 models) from above were grouped into 3 classes per Natural Breaks (Jenks) distribution for the ELU group the property belongs to. Properties that had raw composite scores in the lowest class were given a rank of 'Low' and so on, as described earlier. These were considered the final Forest Continuity scores that indicated Reserves Potential.

Parklands GIS model

The Technical Steering Committee (TSC) recommendations for designating Parklands included 'DCR lands in heavily populated areas," "density of officially designated trails" (with denser trails being more appropriate for Parklands) and "level of recreational visitation" (with areas of high visitation such as campsites, scenic areas being more appropriate for Parklands).[92] Accordingly the GIS model for Parklands included data layers representing High Trail Density, High population density and Intensive Use areas.

The scope of this analysis was statewide and did not produce a relative measure (Low, Medium and High) like Reserves and Woodlands but a binary indicator of whether a facility, or a part of it, either does or doesn't have any parkland potential according to the given criteria.

The steps and data layers for the Parklands model were:

1. High trail density data creation
2. Areas of intensive recreational use data creation
3. High population density data creation
4. Combine into a final 'Parklands' datalayer

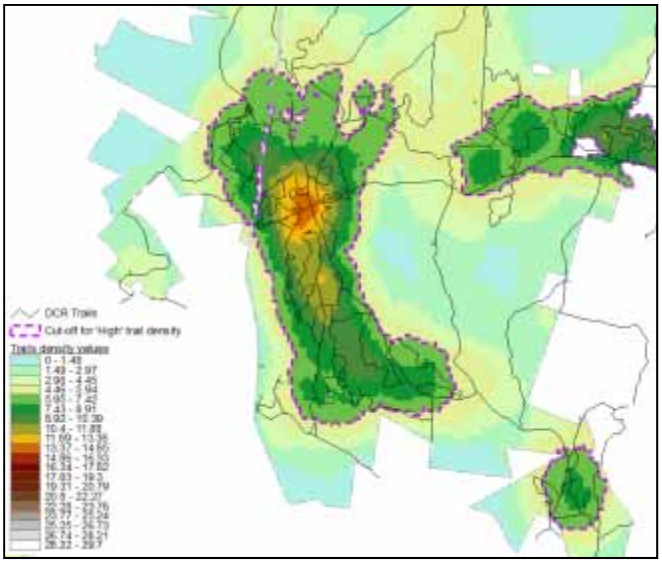
1. High Trail Density data creation

'High trail density' data was based on DCR's most current draft trails collected by DCR staff using global positioning systems (GPS). Public Roads that might be included in the functional trails system were excluded. In addition, existing Bicycle Trails and Long Distance Trails were added to the dataset from existing MassGIS data.

[92] *Final Report - Forest Futures Visioning Process Recommendations of the Technical Steering Committee*. April 21, 2010, p. 39. Available at: http://www.mass.gov/dcr/news/publicmeetings/tsc_final_recommendations.htm

Trail density was calculated using the 'Line Density' tool in ArcMap 9.3. This raster process evaluates each cell in a property for trail density, based on the length of trails occurring within a search radius (or neighborhood) of that cell. After some trial and error, a search radius of 0.25 miles was determined to accurately capture areas of truly dense trails. The result was a grid showing varying degrees of trails density for each DCR property. The numerical values in this grid are not meaningful except as a relative measure of density.

Next, statewide trail density values were interpreted using the Natural Breaks (Jenks) method to help determine a cut-off level for what should be considered 'high' density of trails. There was no scientific method of determining where the ideal cut-off should be but seeing the natural distribution helped to place trail density within the context of the entire state. Smaller, urban, recreational facilities that were covered with extensive trail networks for instance, would jump out as having 'high' trail density but choosing a trail density value from such a property might exclude a smaller area of dense trails in a larger, less urban facility. Comparing parks of different settings and sizes helped to determine what could be fairly considered to be truly 'dense' trails, regardless of other factors. The cut-off value in the trail density grid that was chosen in this particular case was 6. So any portion of any DCR property with a trail density value over 6 was considered to have 'high' trail density. A data layer was created for these 'high' trails density areas.



A property with 'High' density trails on over 40% of its total area, was considered to have Parklands potential in its entirety. Properties with less than 40% 'high' density trails were considered to have Parklands potential only where the areas of high density trails occur (so part of the property may have good Parklands potential). The 'High Trails density' data layer thus contains entire DCR properties (where over 40% is 'high' density per the GIS analysis) as well as portions of properties (where under 40% of the property is 'high' density).

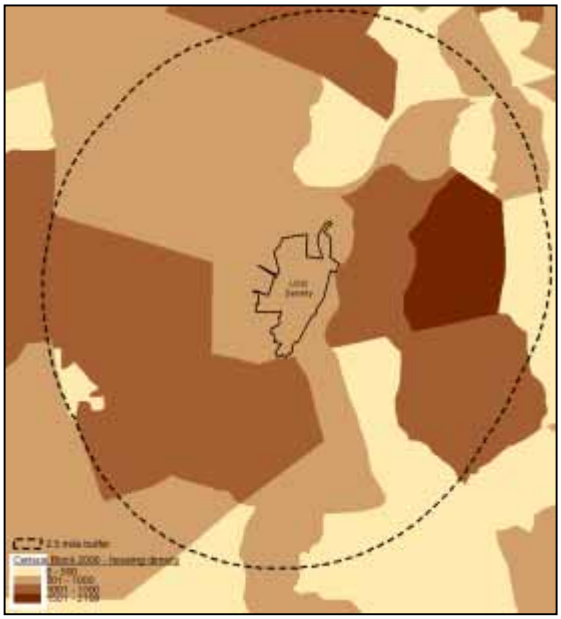
2. <u>Areas of intensive recreational use data creation</u>
   "Intensive use areas" for DCR properties were digitized into a data layer by DCR staff. They include constructed or developed administrative, maintenance and recreation sites, structures and resilient landscapes that accommodate concentrated use by recreational visitors and require intensive maintenance by DCR staff. Examples include park headquarters and maintenance areas, parking lots, swimming beaches, campgrounds, picnic areas and pavilions, open fields designed for high recreation use, and attractions such as waterfalls and scenic lookouts. Delineated areas are considered to have parklands potentials regardless of their setting within intact forests or urban areas. The shapes digitized were based on trail maps, GPS data (where available) and

orthographic (aerial) photos and were verified and/or refined by staff with good field knowledge of the properties.

To allow for possible future enlargement of these areas as well as to include a margin of privacy, a buffer of 500 feet was applied to the areas. Further examination of each intensive use area led to a fine tuning of this buffer to better represent conditions on the ground. For instance, where a playground foot print includes strips of woods on its margins, the buffer might have been dropped as an unnecessary measure. In other instances, the buffering process in GIS might have created misleading artifacts such as when buffering a parking lot on one side of a road leads to the creation of a patch of 'intensive use' on the other side that road. The idea of the buffer is to accommodate a small degree of unplanned expansion along the margins of use, rather than any sweeping and generalized plans of development.

3. <u>High Population Density data creation</u>
The best data available for population density was Census 2000 Block Group data.

Statewide statistical distributions of housing density (as measured in Census 2000) were examined help determine 'High', 'Medium' and 'Low' population density areas of Massachusetts.



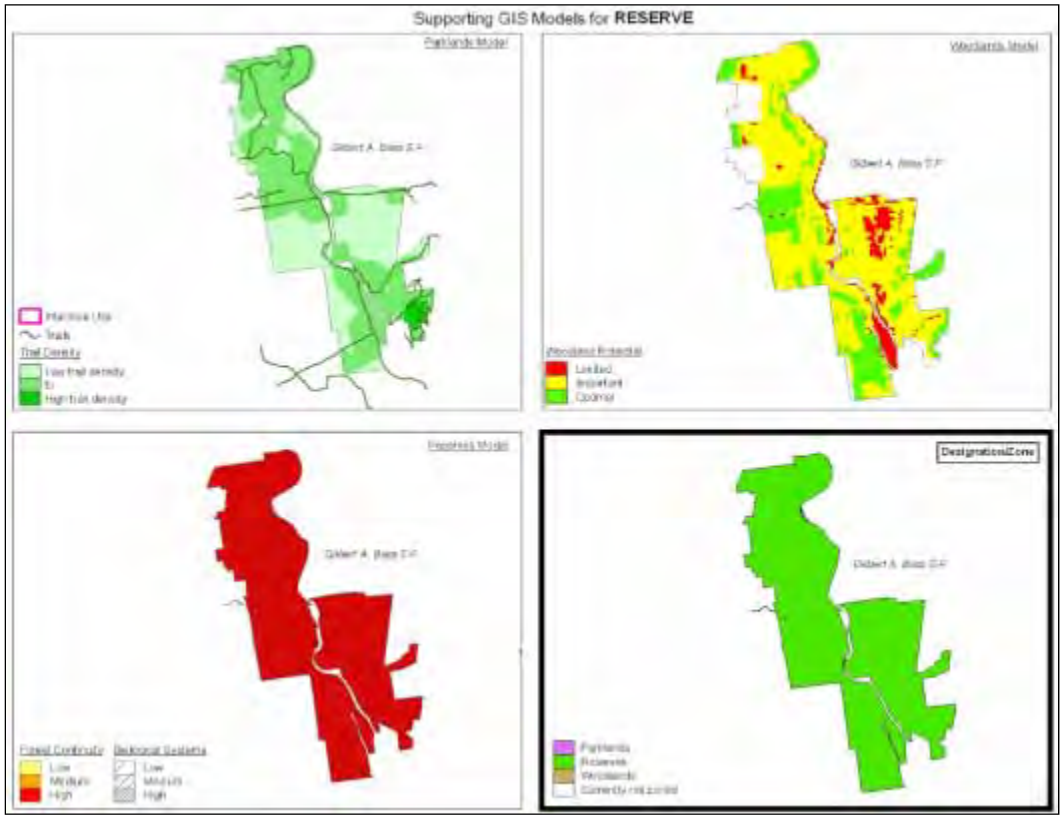
A combination of GIS geoprocessing tools were used to calculate population density within 2.5 miles of each DCR facility. The radius used to measure surrounding population density is straight line distance from the property boundary rather than travel time (since the TSC recommendation was to account for areas of dense population and not to track where visitors came from). The exact radius was determined through trial and error as there are no scientific guidelines for it. Multiple radii were tested, greater and less than 2.5 miles. Housing densities derived from the buffers were checked against how the Census Block data classified housing density. The image on the right shows a quartile distribution of data used by MassGIS to represent Housing Density. This was used as a benchmark to compare density calculations from different radii. Radii of 5, 1 and 1.5 miles were amongst many tested. Depending on the buffer size a property might turn out to have 'medium' housing density when a good proportion of Census Blocks surrounding it are obviously 'high'. A buffer too large dilutes the effect of true density values given that the density numbers are to be averaged within the radius. A buffer too small would give undue weight to properties that are in more urban areas and skew results against properties in less urban areas that nevertheless have high density for that region. The factor driving determination of the ideal radius was that urban properties should not skew results against less urban yet populated ones. Both 'Medium' and 'High' density properties were considered to indicate 'high' density in the final assessment of DCR properties in the Parklands analysis.

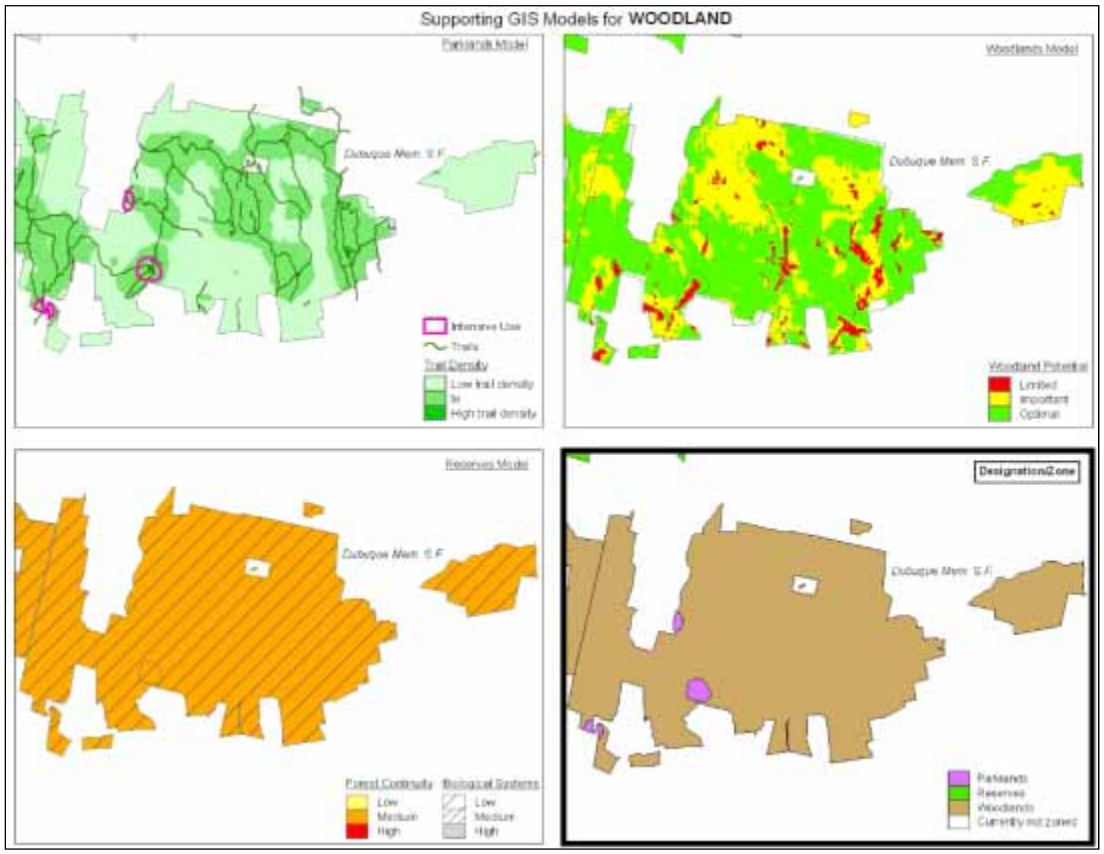
Census areas of measurement are 'Block Groups' which do not conform to either DCR property shapes or the buffers of DCR properties being used, proportions were used to approximate population densities. Housing density for portions of each Census Block that fell within a property's buffer, were averaged find an approximate population density score for each DCR facility.

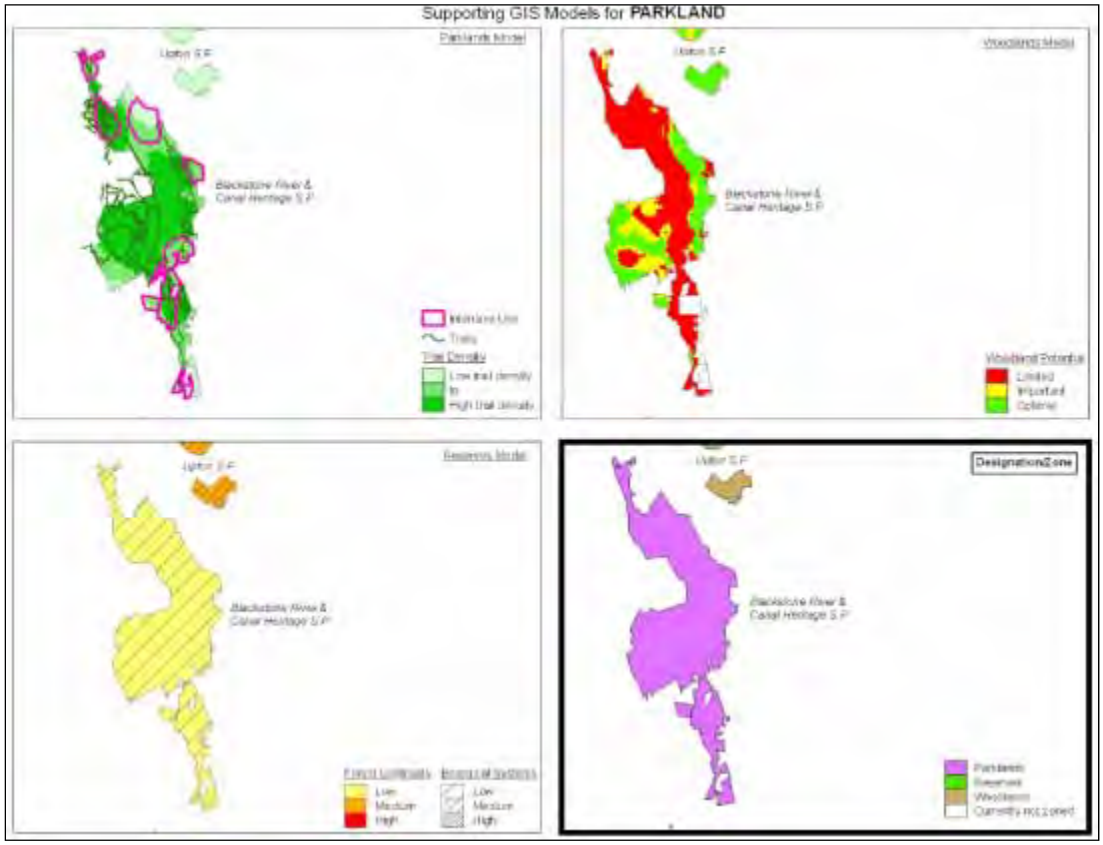
All properties within 'Medium' and 'High' population density levels are considered to have high parklands potential.

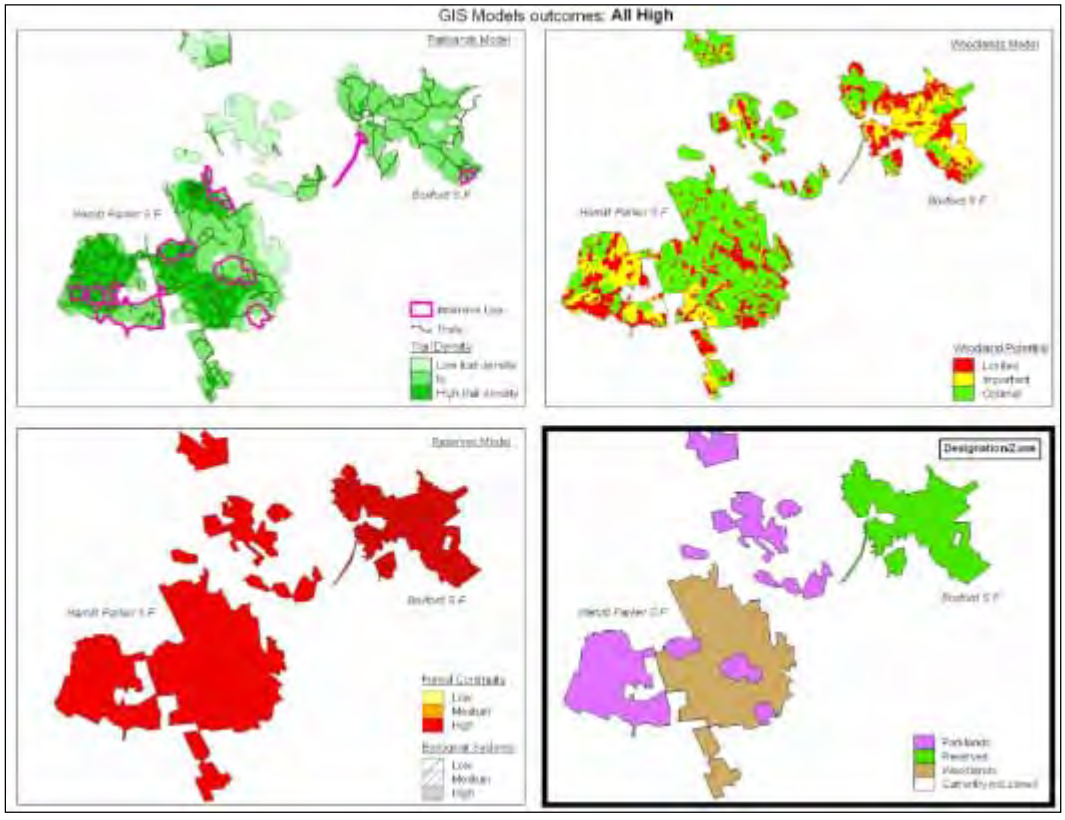
4. <u>Combine into a final 'Parklands' datalayer</u>
   All the three data layers above were merged together to create a final layer that shows areas of DCR facilities, or in cases, entire facilities that have the potential to be zoned as Parklands.

Below are examples of how the Woodlands, Reserves and Parklands models guided designations decisions. For each DCR property shown, each of the model results are shown along with the final landscape designation they led to.




Supporting GIS Models for WOODLAND
Parklands Model
Dubuque Mem. S.F.
Intensive Use
Trails
Trail Density
Low trail density
High trail density
Woodlands Model
Dubuque Mem. S.F.
Woodland Potential
Limited
Important
Optimal
Reserves Model
Dubuque Mem. S.F.
Forest Continuity
Low
Medium
High
Biological Systems
Low
Medium
High
DesignationsZone
Dubuque Mem. S.F.
Parklands
Reserves
Woodlands
Currently not zoned


Supporting GIS Models for PARKLAND
Parklands Model
Woodlands Model
Reserves Model
DesignationsZone
Blackstone River & Canal Heritage S.P.


GIS Models outcomes: All High
Parklands Model
Woodlands Model
Reserves Model
DesignationsZone
Hamill Parker S.P.
Boxford S.P.

Active Forest Management Model Used to Rank Woodlands

Plain English Guide

The purpose of this model is to identify the best DCR DSPR lands for Active Forest Management (AFM). It uses a number of input datasets (described below) to rank land based on assigned values to produce this relative ranking of Woodlands.

Each of the twelve criteria is weighted evenly. Output grids are created for 95.5% of all DCR DSPR lands (the remaining 4.5% did not have data to support the model). The actual GIS processes used are described in the "Active Forest Management Model" document.[93]

TSC Final Recommendations – Suggested Criteria for Woodlands (with Data Sources):

1. *Areas suitable for wood production* – Prime Forest Soils, Vegetation Suitability, Distance from Roads, Past Management
2. *Sites with a history of recent silvicultural treatments* – Past Management
3. *Areas where late successional characteristics could be restored via management* – Late Successional
4. *Forest type diversity* – Forest Diversity
5. *Potential impacts on communities most dependent on the local forest economy* – Distance to Sawmills, Sawmill Woodsheds, Harvester Woodsheds
6. *Areas suitable for early successional habitat creation* – Early Successional
7. *Sites requiring ecological restoration or prone to disturbance* – Ecological Restoration, Prone to Disturbance, Past Areas of Defoliation
8. *Watershed areas that would benefit from active forest manipulation* – Water Supply Protection Zones
9. *Proximity to wood processing facilities* – Distance to Sawmills, Sawmill Woodsheds
10. *Areas where forest management could increase carbon storage* – 2005 Forest Land
11. *Areas with good access for model forest demonstration activities* – Distance from Roads
12. *Suitability of site as a representative of forest type, age class and logging conditions for demonstration purposes* – Past Management, Vegetation Suitability, Fire Risk Areas, Prime Forest Soils

[93] This is an unpublished internal document outlining the process – it is available from DCR upon request.

Data Sources and Processes:

1. Prime Forest Soils – *forest soils with higher productivity are more appropriate for AFM*

High value is given to the most productive soils for growing trees.

Low value is given to the least productive soils for growing trees.

2. Vegetation Suitability – *certain forest types of different size and stocking classes are more appropriate for AFM than others*

High value is given to certain tree species that are large in size, overcrowded and would therefore respond well to active management to increase the growing space and encourage the best trees to thrive.

Low value is given to certain tree species that are small in size, already have adequate room for growth and therefore don't need active management to realize their highest growth potential.

3. Past Management – *if there has been past management, it has a higher value for AFM and the greater the number of past entries, the higher the value*

High value is given to areas that have been managed more frequently in the past.

Low value is given to areas that have not been managed much or at all in the past.

4. Late successional – *forest management can encourage late successional characteristics in certain forest stands*

High value is given to forest areas appropriate for late successional characteristic restoration, such as non-plantations or high stocking (density) or large tree size.

Low value is given to forest areas not appropriate for late successional characteristic restoration, such as plantations, medium to low stocking (density) or small tree size.

5. Forest Type Diversity – *forests with lower type diversity are better suited for management – this dataset uses species types, predominance, size class, stocking levels and past disturbance regimes as a measure of forest type diversity*

High value is given to forest areas with the lowest level of diversity since they represent greater opportunities for forest management to increase forest diversity.

Low value is given to forest areas with the highest level of diversity since they are already diverse.

6. Distance to Sawmills – *forest lands with shorter travel distances on public and forest roads to sawmills can be harvested more efficiently*

High value is given to areas close to sawmills since it is more economical to move forest products from forest to sawmill (this is based on measured travel distance).

Low value is given to areas far from sawmills since it is increasingly expensive to move forest products from forest to sawmill (this is based on measured travel distance).

7. Sawmill Woodsheds – *sawmill annual procurement volume ranges determine the effective forest zone of contribution (i.e., woodshed) in determining which forest lands can be harvested more efficiently*

High value is given to areas close to sawmills since it is more economical to move forest products from forest to sawmill (this is based on non-road linear distance).

Low value is given to areas far from sawmills since it is increasingly expensive to move forest products from forest to sawmill (this is based on non-road linear distance).

8. Harvester Woodsheds – *lands closer to 2010 licensed timber harvesters have a higher value for AFM, this dataset assumes that for lots > 5 acres, most harvesters would be willing to travel 25 (but not 50) miles based on Kittredge, et al research*

High value is given to areas close to licensed timber harvesters since it is more economical for them to be interested in timber sales on forests closer to their home.

Low value is given to areas far from licensed timber harvesters since it is increasingly expensive for them to be interested in timber sales on forests farther from their home.

9. Early Successional – *forest management can encourage early successional habitat creation in certain forest stands*

High value is given to forest areas appropriate for early successional habitat creation such as plantations, certain tree species, small tree size and open areas.

Low value is given to forest areas not appropriate for early successional habitat creation (inverse of above).

10. Ecological Restoration – *forest stands requiring ecological restoration (i.e., restoration of forests with native composition, structure, pattern and ecological processes) are well suited for forest management*

High value is given to forest areas appropriate for ecological restoration such as plantations or pitch pine/scrub oak communities.

Low value is given to forest areas not appropriate for ecological restoration (inverse of above).

11. Prone to Disturbance – *forest stands that are susceptible to natural disturbance are well suited for forest management*

High value is given to forest areas prone to natural disturbances such as insects, fire, windthrow, ice and beaver activity since forest management can help to restore a healthier more resilient forest.

Low value is given to forest areas not prone to natural disturbances (inverse of above).

12. Past Areas of Defoliation – *forest lands within insect infestation, disease outbreak or natural weather event areas have a higher value for AFM*

High value is given to forest areas that have had more recorded tree defoliation occurrences since forest management can help to restore a healthier more resilient forest.

Low value is given to forest areas that have had fewer recorded tree defoliation occurrences.

13. Water Supply Protection Zones – *forest lands within public water supply watersheds could benefit from active forest management*

Zone A is land between surface water source and various smaller buffers

Zone B is land between surface water source and various larger buffers

Zone C is land not in Zone A or B but within the watershed of the surface water source

High value is given to forest areas that are within Zones A, B or C.

Low value is given to forest areas that are not within Zones A, B or C.

14. 2005 Forest Land – *all forested land both increase the amount of carbon stored and the rate at which carbon is sequestered*

High value is given to forested land.

Low value is given to non-forested land.

15. Distance from Roads – *those lands that are closer to roads capable of supporting logging vehicles have a higher value for AFM*

High value is given to areas closer to roads since it is more economical and environmentally sound to access forest products close to a road so new roads don't have to be constructed.

Low value is given to areas further from roads since it is more costly and has a greater environmental impact to access these forest products.

16. Fire Risk Areas – *lands with the highest fire risk have the highest value for AFM (includes parameters for vegetation rate of spread and fuel load, topography for fuel moisture (aspect) and fire intensity (slope), and wildland urban interface)*

High value is given to areas with a higher fire risk since they would benefit from forest management to reduce this risk.

Low value is given to areas with a lower fire risk.

Creating the Final AFM Grid:

Each of the 12 TSC Criteria is weighted evenly (e.g., "Areas suitable for wood production" have 4 inputs and are scaled down and end up with the same weighting as "Forest type diversity" which only has 1 input). The 12 criteria are added up so any area with a value greater than 0 is added to the total score. If an area scores high on most of the 16 datasets described above, it will rank high for Woodlands, if an area scores low on most of the 16 datasets described above, it will rank low for Woodlands. An example of a high score would be an area on productive soils, close to a road, close to a sawmill, with past forest management, in a water supply zone, and prone to natural disturbance. Conversely, an example of a low score would be an area with low fire risk, no past defoliation, far from roads and timber harvesters, with high forest type diversity and small tree size.

Some of the input datasets are used more than once (e.g., Prime Forest Soils, Vegetation Suitability, Distance from Roads, Past Management, Distance to Sawmills and Sawmill Woodsheds). The reason is that Distance from Roads, for example, is useful for ranking areas suitable for wood production as well as areas with good access for model forest demonstration activities. Sawmill Woodsheds, for example, is useful for ranking potential impacts on communities most dependent on the local forest economy as well as proximity to wood processing facilities.

This dataset was classified into 3 categories with the same amount of area representing the categories "Limited", "Important" and "Optimal" for Woodlands.

DCR Property Average

The dataset described above was additionally processed to calculate an average AFM value for each DCR DSPR property (not including new properties acquired since the vegetation data was created in 2003). These property averages were used in the Landscape Designation process and compared to the model outputs for Reserves and Parklands to help guide the decision making process.

Active Forest Management Model – Bare Bones Technical Guide

The purpose of this model is to identify the best DCR State Parks lands for Active Forest Management (AFM) based on the recommendations of the Technical Steering Committee (TSC). It uses a number of vector shapefiles and grids to rank land based on values given each of the input datasets (as described below) to produce this relative ranking of Woodlands.

The model converts all shapefiles to grids (with a value that ranges from 0 to 10) and then adds each of the twelve criteria inputs up. For TSC recommendations that required more than one input data source (#1, 5, 7, 9 and 12 listed below), these datasets had their values added up (e.g., since criteria #1 has four input grids, these values potentially range from 0 to 40). These multiple input source grids were then rescaled down to 0 to 10 so that each of the twelve TSC criteria was weighted evenly. Output grids are created for 95.5% of all DCR State Parks lands (the remaining 4.5% did not have data to support the model). The actual GIS processes used are described in the "Active Forest Management Model" document.

TSC Final Recommendations – Suggested Criteria for Woodlands (with Data Sources):

1. *Areas suitable for wood production* – Prime Forest Soils, Vegetation Suitability, Distance from Roads, Past Management
2. *Sites with a history of recent silvicultural treatments* – Past Management
3. *Areas where late successional characteristics could be restored via management* – Late Successional
4. *Forest type diversity* – Forest Diversity
5. *Potential impacts on communities most dependent on the local forest economy* – Distance to Sawmills, Sawmill Woodsheds, Harvester Woodsheds
6. *Areas suitable for early successional habitat creation* – Early Successional
7. *Sites requiring ecological restoration or prone to disturbance* – Ecological Restoration, Prone to Disturbance, Past Areas of Defoliation
8. *Watershed areas that would benefit from active forest manipulation* – Water Supply Protection Zones
9. *Proximity to wood processing facilities* – Distance to Sawmills, Sawmill Woodsheds
10. *Areas where forest management could increase carbon storage* – 2005 Forest Land
11. *Areas with good access for model forest demonstration activities* – Distance from Roads
12. *Suitability of site as a representative of forest type, age class and logging conditions for demonstration purposes* – Past Management, Vegetation Suitability, Fire Risk Areas, Prime Forest Soils

Data Sources and Processes:

1. Prime Forest Soils – *forest soils with higher productivity are more appropriate for AFM*

Value:
10 – Prime 1
8 – Prime 2
6 – Prime 3 and 3W
4 – Statewide and SW
2 – Local and LW
0 – Unique and Non-Forest

Input: ***PRIME FOREST SOILS*** (from MassGIS)

Output: ***PFGRID***

This dataset is missing all data from Franklin County – for this areas, we used an average number based on the average value from Berkshire and Hampshire counties = Prime 3 (both counties had this average).

2. Vegetation Suitability – *certain forest types of different size and stocking classes are more appropriate for AFM than others*

Value of 10 for:	MajorGroups	1 White/Red Pine
		2 Hemlock
		3 Spruce-Fir
		5 Northern Hardwoods
		6 Birch – Red Maple
		7 Oak
	or SubTypes	SR Red Spruce
		SF Spruce-Fir
		SN Norway Spruce – White Spruce Plantation
		PP Pitch Pine
		PO Pitch Pine - Oak
		PS Pitch Pine - Scrub Oak
		SO Scrub Oak
	and Stocking	1 High (A or > 120 ft^2/ac)
		2 Medium (B/A or 60 – 120 ft^2/ac)
	and Size	4 Small Sawtimber (10.9 – 15" mmd)
		5 Large Sawtimber (> 15" mmd)
		9 Uneven Aged (3 or more age classes)
Value of 5 for:	Same as "Value 10" except:	
	Stocking	3 Low (C/B or 40 – 60 ft^2/ac)
		4 Sparse (< 40 ft^2/ac)
Value of 1 for:	Same as "Value 10" except:	
	Stocking	all 4 levels
	and Size	1 Seedling (< 1" dbh, < 10' tall)
		2 Sapling (> 1" – 4.6" dbh, < 30' tall)
		3 Pole (> 4.6 – 10.9" mmd)
	and SubTypes	RC Red Cedar
		LA Larch Plantation
Value of 0 for:	Everything else	

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract)

Output: ***VEGGRID***

3. Past Management – *if there has been past management, it has a higher value for AFM and the greater the number of past entries, the higher the value*

Value 10 – 5 past management entries
9 – 4 past management entries
8 – 3 past management entries
7 – 2 past management entries
6 – 1 past management entries
0 – no past management entries

Input: ***FOREST CUTTING PLANS*** (developed by DCR Management Forestry staff)

Output: ***PASTMANGRID***

4. Late successional – *forest management can encourage late successional characteristics in certain forest stands*

Value 10 – forest areas appropriate for late successional characteristic restoration (***inverse of below***)
Non-plantations and
Stocking (1 – high) and
Size (5 – large Sawtimber) and
MajorGroups (1 – 5, 7)

Value 0 – forest areas not appropriate for late successional characteristic restoration
Plantation SubTypes (LA, RP, SN, SP, WL) or SubTypes (PO, PP, PS, SO) or
Stocking (2 – medium, 3 – low, 4 – sparse) or
Size (1 – seedling, 2 – sapling, 3 – pole, 4 – small sawtimber, 9 – uneven aged) or
MajorGroups (0 – non-forest, 6 – birch – red maple, 8 – swamp softwoods, 9 – swamp hardwoods, 10 – water/non-forested wetlands)

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract)

Output: ***LATEGRID***

5. Forest Type Diversity – *forests with lower type diversity are better suited for management – this dataset uses species types, predominance, size class, stocking levels and past disturbance regimes as a measure of forest type diversity*

Value	10	1 forest type polygon within the analysis area (lowest level of diversity)
	9	2 forest type polygons within the analysis area
	8	3 forest type polygons within the analysis area
	7	4 forest type polygons within the analysis area
	6	5 forest type polygons within the analysis area
	5	6 forest type polygons within the analysis area
	4	7 forest type polygons within the analysis area
	3	8 forest type polygons within the analysis area
	2	9 forest type polygons within the analysis area
	1	10 forest type polygons within the analysis area (highest level of diversity)

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract)

Output: ***DIVERSITYGRID***

6. Distance to Sawmills – *forest lands with shorter travel distances on public and forest roads to sawmills can be harvested more efficiently*

Value:
10 – within 10 kilometers (6.2 miles)
8 – within 20 kilometers (12.4 miles)
6 – within 30 kilometers (18.6 miles)
4 – within 40 kilometers (24.8 miles)
2 – within 50 kilometers (31.0 miles)
0 – greater than 50 kilometers away (31.0 miles)

Input: ***SAWMILL DISTANCE*** (developed by DCR Management Forestry staff)

Output: ***SAWDISTGRID***

7. Sawmill Woodsheds – *sawmill annual procurement volume ranges determine the effective forest zone of contribution (i.e., woodshed) in determining which forest lands can be harvested more efficiently*

Value:
10 – > 44 to 52
9 – > 40 to 44
8 – > 35 to 40
7 – > 31 to 35
6 – > 27 to 31

5 – > 21 to 27
4 – >16 to 21
3 – > 13 to 16
2 – > 8 to 13
1 – 0 to 8

Input: ***SAWMILL_WOODSHEDS*** (developed by UMass Department of Natural Resources Conservation and used by permission)

Output: ***SAWMILLGRID***

8. Harvester Woodsheds – *lands closer to 2010 licensed timber harvesters have a higher value for AFM, this dataset assumes that for lots > 5 acres, most harvesters would be willing to travel 25 (but not 50) miles based on Kittredge, et al research*

Value
10 – > 163 to 201
9 – > 143 to 163
8 – > 123 to 143
7 – > 103 to 123
6 – > 74 to 103
5 – > 34 to 74
4 – > 20 to 34
3 – > 14 to 20
2 – > 5 to 14
1 – 0 to 5

Input: ***HARVESTER_WOODSHEDS*** (developed by UMass Department of Natural Resources Conservation and used by permission)

Output: ***HARVESTERGRID***

9. Early Successional – *forest management can encourage early successional habitat creation in certain forest stands*

Value (from ***SEWALLVEGETATION***)
10 – forest areas appropriate for early successional habitat creation
Plantation SubTypes (LA, RP, SN, SP, WL) or
Size (1 –seedling, 2 – sapling, 3 – pole) and
MajorGroups (1 – 7)

(from ***LANDUSE2005***)

10 – non forest areas appropriate for early successional habitat creation
Crop (1), Pasture (2), Open (6), Transitional (17), Powerline/Utility (24) or Brushland/Successional (40)

Value (from ***SEWALLVEGETATION***)
0 – forest areas not appropriate for early successional habitat creation
(inverse of above)

(from ***LANDUSE2005***)
0 – areas not appropriate for early successional habitat creation
(inverse of above)

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract) and ***LANDUSE2005*** (from MassGIS)

Output: ***EARLYGRID***

10. Ecological Restoration – *forest stands requiring ecological restoration (i.e., restoration of forests with native composition, structure, pattern and ecological processes) are well suited for forest management*

Value 10 – forest stands requiring ecological restoration (plantations or pitch pine/scrub oak)
0 – all other areas

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract)

Output: ***ECORESGRID***

11. Prone to Disturbance – *forest stands that are susceptible to natural disturbance are well suited for forest management*

Value 10 – forest stands prone to natural disturbance
0 – all other areas

Input: ***SEWALL LAND CLASSIFICATION*** (developed for DCR under contract)

Output: ***DISTURBGRID***

12. Past Areas of Defoliation – *forest lands within insect infestation, disease outbreak or natural weather event areas have a higher value for AFM*

Value: 10 – 10 and above
9 – 9
8 – 8
7 – 7
6 – 6
5 – 5
4 – 4
3 – 3
2 – 2
1 – 1
0 – 0

Input: ***BUGS34 to BUGS09*** (from MassGIS)

Output: ***DEFOLGRID***

13. Water Supply Protection Zones – *forest lands within public water supply watersheds could benefit from active forest management*

Zone A is land between surface water source and various smaller buffers
Zone B is land between surface water source and various larger buffers
Zone C is land not in Zone A or B but within the watershed of the surface water source

Value 10 – forest land within water supply protection zone A, B or C
0 – all other land

Input: ***DCR_ID6*** (from MassGIS)

Output: ***WATERGRID***

14. 2005 Forest Land – *all forested land both increase the amount of carbon stored and the rate at which carbon is sequestered*

Value 10 – forested land
0 – all other areas

Input: ***LANDUSE2005*** (from MassGIS)

Output: ***FORESTGRID***

15. Distance from Roads – *those lands that are closer to roads capable of supporting logging vehicles have a higher value for AFM*

Value:
10 – Within 750 foot buffer (229 meters)
8 – Within 1,500 foot buffer (457 meters)
6 – Within 2,250 foot buffer (686 meters)
4 – Within 3,000 foot buffer (914 meters)
2 – Within 3,750 foot buffer (1,143 meters)
0 – Outside of 3,750 feet

Input: ***EOTROADS*** (from MassGIS), ***DCR ROAD AND TRAIL DATA*** (developed by DCR Management Forestry staff and consultants) and road data from surrounding states

Output: ***ROADBUFGRID***

16. Fire Risk Areas – *lands with the highest fire risk have the highest value for AFM (includes parameters for vegetation rate of spread and fuel load, topography for fuel moisture (aspect) and fire intensity (slope), and wildland urban interface)*

Value:
10 – >25 – 45
9 – >24 – 25
8 – >23 – 24
7 – >22 – 23
6 – >21 – 22
5 – >20 – 21
4 – >18 – 20
3 – >14 – 18
2 – >9 – 14
1 – >6 – 9
0 – 0 – 6

Input: ***WLDFR_OLY_RC*** (developed by DCR Management Forestry staff with UMass Department of Natural Resources Conservation)

Output: ***FIREGRID***

Creating the Final AFM Grid:

Each of the 12 TSC Criteria is weighted evenly (e.g., "Areas suitable for wood production" have 4 inputs grids and are scaled down and end up with the same weighting as "Forest type diversity" which only has 1 input) to create the grid ***AFMGRID2*** (values range from 0 to 104). The 12 criteria are added up so any

area with a value greater than 0 is added to the total score. If an area scores high on most of the 16 datasets described above, it will rank high for Woodlands, if an area scores low on most of the 16 datasets described above, it will rank low for Woodlands. An example of a high score would be an area on productive soils, close to a road, close to a sawmill, with past forest management, in a water supply zone, and prone to natural disturbance. Conversely, an example of a low score would be an area with low fire risk, no past defoliation, far from roads and timber harvesters, with high forest type diversity and small tree size.

Some of the input datasets are used more than once (e.g., Prime Forest Soils, Vegetation Suitability, Distance from Roads, Past Management, Distance to Sawmills and Sawmill Woodsheds). The reason is that Distance from Roads, for example, is useful for ranking areas suitable for wood production as well as areas with good access for model forest demonstration activities. Sawmill Woodsheds, for example, is useful for ranking potential impacts on communities most dependent on the local forest economy as well as proximity to wood processing facilities.

This grid was classified into 3 quantiles representing the categories “Limited” (0 – 52), “Important” (53 – 60) and “Optimal” (61 – 104).

DCR Property Average

The ***AFMGRID2*** grid was processed to calculate an average AFM value for each DCR DSPR property (not including new properties acquired since the vegetation data was created). These property averages were used in the Landscape Zoning designation process and compared to the model outputs for Reserves and Parklands to help guide the decision making process.

Appendix 10. Contributors

Department of Conservation and Recreation

Andy Backman	Director, Office of Regional Planning
Gary Briere	Chief, Bureau of Recreation
Dave Celino	Chief Fire Warden
Peter Church	Director, Forest Stewardship
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Nathanael Lloyd	Director, GIS Office
Paul Lyons	Environmental Analyst, Division of Water Supply Protection
Joe Orfant	Director, Bureau of Planning & Resource Protection
Tim Rayworth	Environmental Education Coordinator, Bureau of Ranger Services
Jessica Rowcroft	Planner, Bureau of Planning & Resource Protection
Jason Silva	Commissioner's Chief of Staff
Chris Williams	Deputy Chief Park Ranger, Bureau of Ranger Services
Tim Zelazo	District Manager, Division of State Parks

Department of Fish and Game, Division of Fish and Wildlife

Tom O'Shea	Assistant Director of Wildlife
John Scanlon	Forestry Project Leader

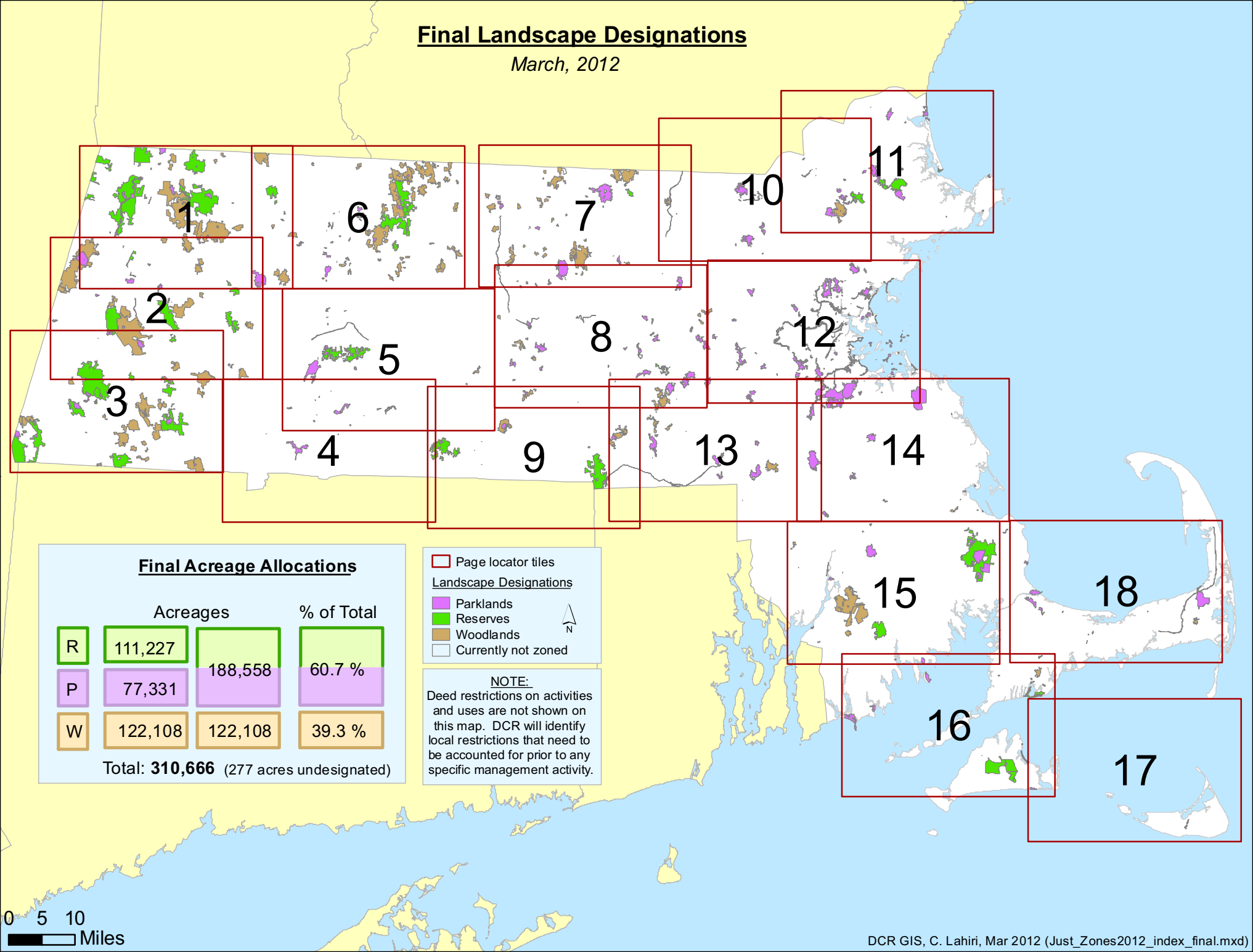
Executive Office of Energy and Environmental Affairs

Stephanie Cooper	Assistant Secretary for Land and Forest Conservation
Bob O'Connor	Director of Land and Forest Conservation

Appendix 11. Final Landscape Designation Maps

Final Landscape Designations

March, 2012



Final Acreage Allocations

	Acreages		% of Total
R	111,227	188,558	60.7 %
P	77,331		
W	122,108	122,108	39.3 %

Total: **310,666** (277 acres undesignated)

Page locator tiles

Landscape Designations

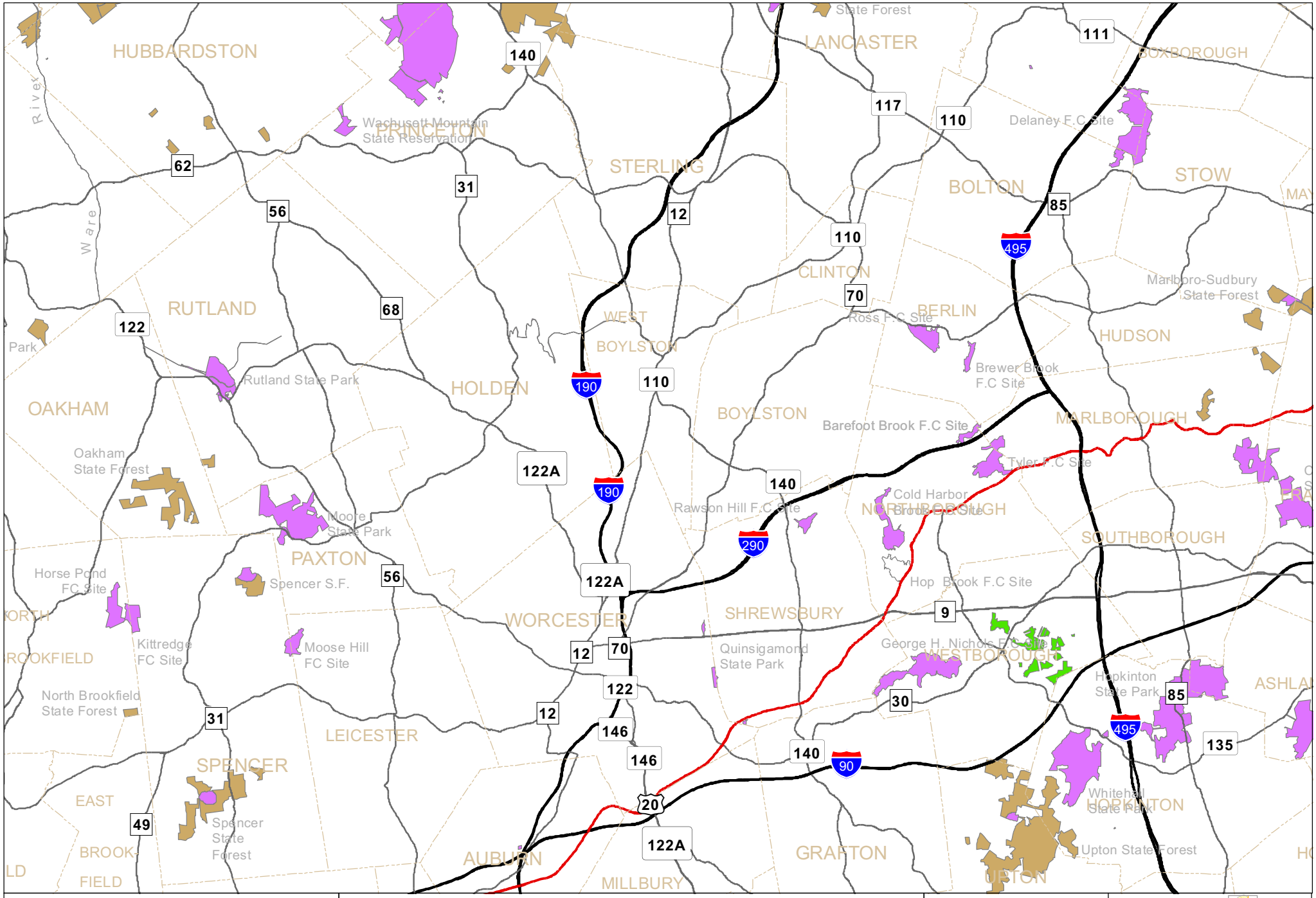
- Parklands
- Reserves
- Woodlands
- Currently not zoned

N

NOTE:
Deed restrictions on activities and uses are not shown on this map. DCR will identify local restrictions that need to be accounted for prior to any specific management activity.

0 5 10 Miles

DCR GIS, C. Lahiri, Mar 2012 (Just_Zones2012_index_final.mxd)



Landscape Designations

- Parklands
- Reserves
- Woodlands
- Currently not zoned

0 1 2 Miles

March 2012
DCR GIS, C. Lahiri
Just_Zones2012.mxd

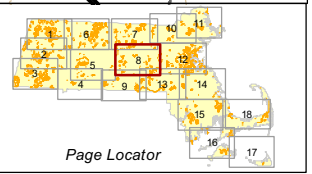
N

LANDSCAPE DESIGNATIONS

Worcester area

(locator page 8)

NOTE: Deed restrictions on activities and uses are not shown on this map.DCR will identify local restrictions that need to be accounted for prior to any specific management activity.
MORE INFO: http://www.mass.gov/dcr/ld/landscapedesignations.htm





Landscape Designations

- Parklands
- Reserves
- Woodlands
- Currently not zoned

0 1 2 Miles

March 2012
DCR GIS, C. Lahiri
Just_Zones2012.mxd

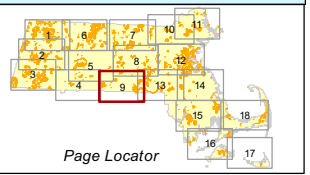
N

LANDSCAPE DESIGNATIONS

Worcester - South

(locator page 9)

NOTE: Deed restrictions on activities and uses are not shown on this map.DCR will identify local restrictions that need to be accounted for prior to any specific management activity.
MORE INFO: http://www.mass.gov/dcr/ld/landscapedesignations.htm



BioMap2

CONSERVING THE BIODIVERSITY OF MASSACHUSETTS IN A CHANGING WORLD

Spencer

Produced in 2012

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is <u>not</u> intended for use in state regulations.

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries & Wildlife

The Nature Conservancy
Protecting nature. Preserving life.™

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Core Habitat and Critical Natural Landscape Summaries

Elements of *BioMap2* Cores

Core Habitat Summaries

Elements of *BioMap2* Critical Natural Landscapes

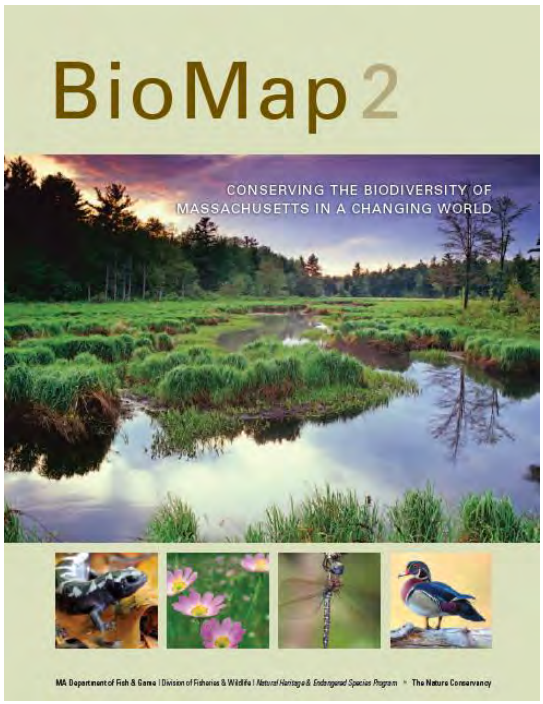
Critical Natural Landscape Summaries

Introduction

The Massachusetts Department of Fish & Game, through the Division of Fisheries and Wildlife's Natural Heritage & Endangered Species Program (NHESP), and The Nature Conservancy's Massachusetts Program developed *BioMap2* to protect the state's biodiversity in the context of climate change.

BioMap2 combines NHESP's 30 years of rigorously documented rare species and natural community data with spatial data identifying wildlife species and habitats that were the focus of the Division of Fisheries and Wildlife's 2005 State Wildlife Action Plan (SWAP). *BioMap2* also integrates The Nature Conservancy's assessment of large, well-connected, and intact ecosystems and landscapes across the Commonwealth, incorporating concepts of ecosystem resilience to address anticipated climate change impacts.

Protection and stewardship of *BioMap2* Core Habitat and Critical Natural Landscape is essential to safeguard the diversity of species and their habitats, intact ecosystems, and resilient natural landscapes across Massachusetts.



Get your copy of the *BioMap2* report! Download from www.mass.gov/nhesp or contact Natural Heritage at 508-389-6360 or natural.heritage@state.ma.us.

What Does Status Mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act (MESA), M.G.L. c.131A, and its implementing regulations 321 CMR 10.00. Rare species are categorized as Endangered, Threatened or of Special Concern according to the following:

- Endangered species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- Threatened species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- Special Concern species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition NHESP maintains an unofficial watch list of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated by any law or regulations, but they can help to identify

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ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- Critically Imperiled communities typically have 5 or fewer documented good sites or have very few remaining acres in the state.
- Imperiled communities typically have 6-20 good sites or few remaining acres in the state.
- Vulnerable communities typically have 21-100 good sites or limited acreage across the state.
- Secure communities typically have over 100 sites or abundant acreage across the state; however, excellent examples are identified as Core Habit to ensure continued protection.

In 2005 the Massachusetts Division of Fisheries and Wildlife completed a comprehensive State Wildlife Action Plan (SWAP) documenting the status of Massachusetts wildlife and providing recommendations to help guide wildlife conservation decision-making. SWAP includes all the wildlife species listed under the Massachusetts Endangered Species Act (MESA), as well as more than 80 species that need conservation attention but do not meet the requirements for inclusion under MESA. The SWAP document is organized around habitat types in need of conservation within the Commonwealth. While the original BioMap focused primarily on rare species protected under MESA, *BioMap2* also addresses other Species of Conservation Concern, their habitats, and the ecosystems that support them to create a spatial representation of most of the elements of SWAP.

BioMap2: One Plan, Two Components

BioMap2 identifies two complementary spatial layers, Core Habitat and Critical Natural Landscape.

Core Habitat identifies key areas that are critical for the long-term persistence of rare species and other Species of Conservation Concern, as well as a wide diversity of natural communities and intact ecosystems across the Commonwealth. Protection of Core Habitats will contribute to the conservation of specific elements of biodiversity.

Critical Natural Landscape identifies large natural Landscape Blocks that are minimally impacted by development. If protected, these areas will provide habitat for wide-ranging native species, support intact ecological processes, maintain connectivity among habitats, and enhance ecological resilience to natural and anthropogenic disturbances in a rapidly changing world. Areas delineated as Critical Natural Landscape also include buffering upland around wetland, coastal, and aquatic Core Habitats to help ensure their long-term integrity.

The long-term persistence of Massachusetts biological resources requires a determined commitment to land and water conservation. Protection and stewardship of both Critical Natural Landscapes and Core Habitats are needed to realize the biodiversity conservation vision of *BioMap2*.

Components of Core Habitat

Core Habitat identifies specific areas necessary to promote the long-term persistence of rare species, other Species of Conservation Concern, exemplary natural communities, and intact ecosystems.

Rare Species

There are 432 native plant and animal species listed as Endangered, Threatened or Special Concern under the Massachusetts Endangered Species Act (MESA) based on their rarity, population trends, and threats to survival. For

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Table 1. Species of Conservation Concern described in the State Wildlife Action Plan and/or included on the MESA List and for which habitat was mapped in *BioMap2*. Note that plants are not included in SWAP, and that marine species such as whales and sea turtles are not included in *BioMap2*.

Taxonomic Group	MESA-listed Species	Non-listed Species of Conservation Concern
Mammals	4	5
Birds	27	23
Reptiles	10	5
Amphibians	4	3
Fish	10	17
Invertebrates	102	9
Plants	256	0
Total	**413**	**62**

BioMap2, NHESP staff identified the highest quality habitat sites for each non-marine species based on size, condition, and landscape context.

Other Species of Conservation Concern

In addition to species on the MESA List described previously, the State Wildlife Action Plan (SWAP) identifies 257 wildlife species and 22 natural habitats most in need of conservation within the Commonwealth. *BioMap2* includes species-specific habitat areas for 45 of these species and habitat for 17 additional species which was mapped with other coarse-filter and fine-filter approaches.

Priority Natural Communities

Natural communities are assemblages of plant and animal species that share a common environment and occur together repeatedly on the landscape. *BioMap2* gives conservation priority to natural communities with limited distribution and to the best examples of more common types.

Vernal Pools

Vernal pools are small, seasonal wetlands that provide important wildlife habitat, especially for amphibians and invertebrate animals that use them to breed. *BioMap2* identifies the top 5 percent most interconnected clusters of Potential Vernal Pools in the state.

Forest Cores

In *BioMap2*, Core Habitat includes the best examples of large, intact forests that are least impacted by roads and development, providing critical habitat for numerous woodland species. For example, the interior forest habitat defined by Forest Cores supports many bird species sensitive to the impacts of roads and development, such as the Black-throated Green Warbler, and helps maintain ecological processes found only in unfragmented forest patches.

Wetland Cores

BioMap2 used an assessment of Ecological Integrity to identify the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores

To delineate integrated and functional ecosystems for fish species and other aquatic

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Species of Conservation Concern, beyond the species and exemplary habitats described above, *BioMap2* identifies intact river corridors within which important physical and ecological processes of the river or stream occur.

Components of Critical Natural Landscape

Critical Natural Landscape identifies intact landscapes in Massachusetts that are better able to support ecological processes and disturbance regimes, and a wide array of species and habitats over long time frames.

Landscape Blocks

BioMap2 identifies the most intact large areas of predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes.

Upland Buffers of Wetland and Aquatic Cores

A variety of analyses were used to identify protective upland buffers around wetlands and rivers.

Upland Habitat to Support Coastal Adaptation

BioMap2 identifies undeveloped lands adjacent to and up to one and a half meters above existing salt marshes as Critical Natural Landscapes with high potential to support inland migration of salt marsh and other coastal habitats over the coming century.

The conservation areas identified by *BioMap2* are based on breadth and depth of data, scientific expertise, and understanding of Massachusetts' biodiversity. The numerous sources of information and analyses used to create Core Habitat and Critical Natural Landscape are complementary, and outline a comprehensive conservation vision for Massachusetts, from rare species to intact landscapes. In total, these robust analyses define a suite of priority lands and waters that, if permanently protected, will support Massachusetts' natural systems for generations to come.

Legal Protection of Biodiversity

BioMap2 presents a powerful vision of what Massachusetts would look like with full protection of the land most important for supporting the Commonwealth's biodiversity. While *BioMap2* is a planning tool with *no regulatory function*, all state-listed species enjoy legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Wetland habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.00). The *Natural Heritage Atlas* contains maps of Priority Habitats and Estimated Habitats, which are used, respectively, for regulation under the Massachusetts Endangered Species Act and the Wetlands Protection Act. For more information on rare species regulations, and to view Priority and Estimated Habitat maps, please see the Regulatory Review page at http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/.

BioMap2 **is a conservation planning tool that does not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the** *BioMap2* **vision is fully realized, we must continue to protect our most imperiled species and their habitats.**

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Understanding Core Habitat Summaries

Following the Town Overview, there is a descriptive summary of each Core Habitat and Critical Natural Landscape that occurs in your city or town. These summaries highlight some of the outstanding characteristics of each Core Habitat and Critical Natural Landscape, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific fact sheets at www.mass.gov/nhesp.

Additional Information

For copies of the full *BioMap2* report, the Technical Report, and an interactive mapping tool, visit the *BioMap2* website via the Land Protection and Planning tab at www.mass.gov/nhesp. If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program

By phone	508-389-6360
By fax	508-389-7890
By email	natural.heritage@state.ma.us
By Mail	100 Hartwell Street, Suite 230 West Boylston, MA 01583

The GIS datalayers of *BioMap2* are available for download from MassGIS at www.mass.gov/mgis.

Town Overview

Spencer lies within the Lower Worcester Plateau Ecoregion, an area comprised of open hills and transition hardwood and central hardwood forests. Most parts drain to the Chicopee and Quinebaug Rivers.



Spencer at a Glance

- Total Area: 21,764 acres (34.0 square miles)
- Human Population in 2010: 11,688
- Open space protected in perpetuity: 4,457 acres, or 20.5% percent of total area*
- *BioMap2* Core Habitat: 702 acres
- *BioMap2* Core Habitat Protected: 192 acres or 27.3%
- *BioMap2* Critical Natural Landscape: 833 acres
- *BioMap2* Critical Natural Landscape Protected: 332 acres or 39.9%.

BioMap2 Components

Core Habitat

- 4 Wetland Cores
- 6Aquatic Cores
- 1 Vernal Pool Core
- 11 Species of Conservation Concern Cores**
  - 3 birds, 2 reptiles, 3 amphibians, 1 fish, 2 mussels, 1 plant

Critical Natural Landscape

- 1 Landscape Block
- 4 Wetland Core Buffers
- 6 Aquatic Core Buffers

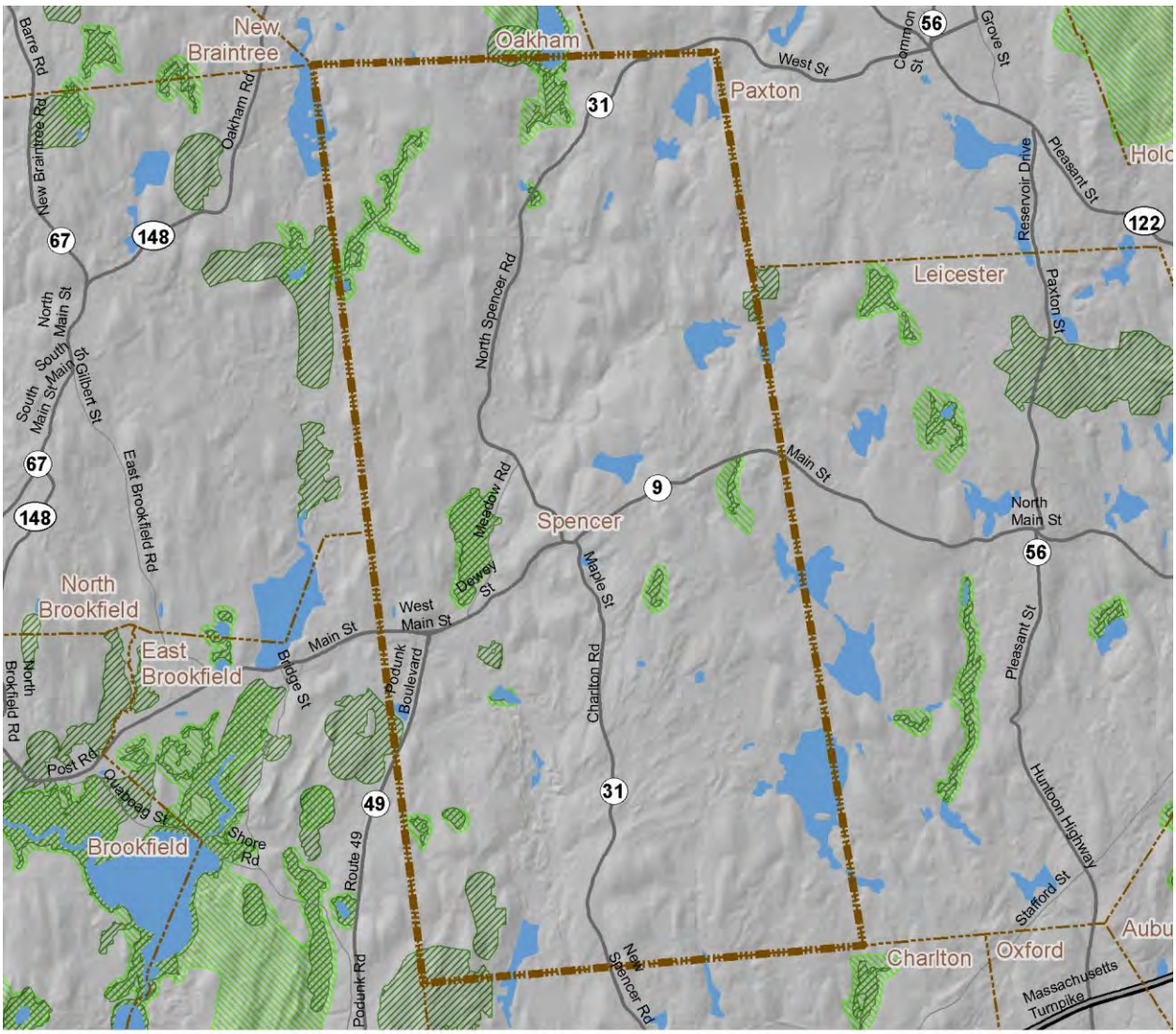
* Calculated using MassGIS data layer "Protected and Recreational Open Space—March, 2012".

** See next pages for complete list of species, natural communities and other biodiversity elements.

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BioMap2 Core Habitat and Critical Natural Landscape in Spencer



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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Species of Conservation Concern, Priority and Exemplary Natural Communities, and Other Elements of Biodiversity in Spencer

Mussels
- Creeper, (*Strophitus undulatus*), SC
- Triangle Floater, (*Alasmidonta undulata*), Non-listed SWAP

Amphibians
- Blue-spotted Salamander, (*Ambystoma laterale*), SC
- Marbled Salamander, (*Ambystoma opacum*), T
- Four-toed Salamander, (*Hemidactylium scutatum*), Non-listed SWAP

Fishes
- Bridle Shiner, (*Notropis bifrenatus*), SC

Reptiles
- Wood Turtle, (*Glyptemys insculpta*), SC
- Smooth Green Snake, (*Opheodrys vernalis*), Non-listed SWAP

Birds
- Grasshopper Sparrow, (*Ammodramus savannarum*), T
- American Bittern, (*Botaurus lentiginosus*), E
- Pied-billed Grebe, (*Podilymbus podiceps*), E

Plants
- Bristly Buttercup, (*Ranunculus pensylvanicus*), SC

Other *BioMap2* Components
- Aquatic Core
- Wetland Core
- Vernal Pool Core
- Landscape Block
- Aquatic Core Buffer
- Wetland Core Buffer

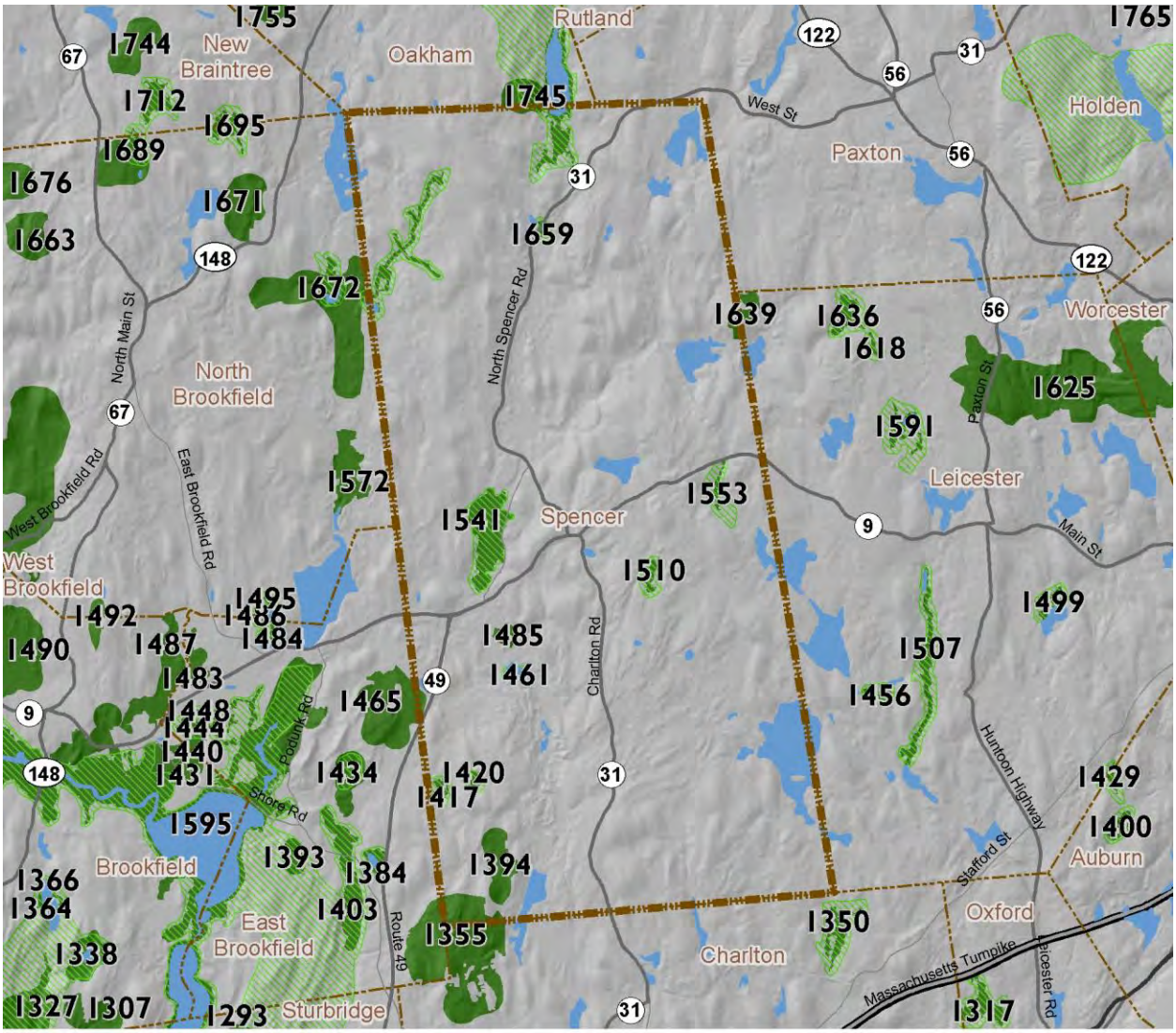
E = Endangered
T = Threatened
SC = Special Concern
S1 = Critically Imperiled communities, typically 5 or fewer documented sites or very few remaining acres in the state.
S2 = Imperiled communities, typically 6-20 sites or few remaining acres in the state.
S3 = Vulnerable communities, typically have 21-100 sites or limited acreage across the state.

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BioMap2 Core Habitat in Spencer

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Elements of *BioMap2* Cores

This section lists all elements of *BioMap2* Cores that fall *entirely or partially* within Spencer. The elements listed here may not occur within the bounds of Spencer.

Core 1355

Species of Conservation Concern		
Marbled Salamander	*Ambystoma opacum*	T

Core 1394

Species of Conservation Concern		
Blue-spotted Salamander	*Ambystoma laterale*	SC

Core 1417

Wetland Core

Core 1420

Aquatic Core		
Species of Conservation Concern		
Pied-billed Grebe	*Podilymbus podiceps*	E

Core 1461

Aquatic Core		
Species of Conservation Concern		
Bristly Buttercup	*Ranunculus pensylvanicus*	SC

Core 1465

Species of Conservation Concern		
Blue-spotted Salamander	*Ambystoma laterale*	SC
Four-toed Salamander	*Hemidactylium scutatum*	Non-listed SWAP

Core 1485

Species of Conservation Concern		
Grasshopper Sparrow	*Ammodramus savannarum*	T

Core 1510

Wetland Core

Core 1541

Aquatic Core		
Species of Conservation Concern		
American Bittern	*Botaurus lentiginosus*	E

Core 1553

Wetland Core		

Core 1639

Species of Conservation Concern		
Smooth Green Snake	*Opheodrys vernalis*	Non-listed SWAP

Core 1659

Aquatic Core		
Species of Conservation Concern		
Creeper	*Strophitus undulatus*	SC
Triangle Floater	*Alasmidonta undulata*	Non-listed SWAP

Core 1672

Wetland Core		
Aquatic Core		
Species of Conservation Concern		
Wood Turtle	*Glyptemys insculpta*	*SC*

Core 1745

Wetland Core		
Aquatic Core		
Vernal Pool Core		
Species of Conservation Concern		
Bridle Shiner	*Notropis bifrenatus*	SC

Core Habitat Summaries

Core 1355

A 613-acre Core Habitat featuring a Species of Conservation Concern.

Adult and juvenile Marbled Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late summer or early fall to breed in dried portions of vernal pools, swamps, marshes, and other predominantly fish-free wetlands. Eggs are deposited under logs, leaf-litter, or grass tussocks and hatch after being inundated by fall rains. Larvae metamorphose during late spring, whereupon they disperse into upland forest.

Core 1394

A 121-acre Core Habitat featuring a Species of Conservation Concern.

Adult and juvenile Blue-spotted Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest.

Core 1417

An 11-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Core 1420

A 17-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Pied-billed Grebes are secretive marshbirds that typically nest in dense cattail beds adjacent to open water. They are very sensitive to disturbance and changes in water levels.

Core 1461

A 7-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

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Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Bristly Buttercup is an annual or short-lived perennial herb with small, pale yellow flowers. A habitat generalist, Bristly Buttercup grows in a variety of areas that tend to have open to filtered light and that are wet to periodically flooded. It often inhabits areas with some disturbance.

Core 1465

A 272-acre Core Habitat featuring Species of Conservation Concern.

Adult and juvenile Blue-spotted Salamanders inhabit upland forests during most of the year, where they reside in small-mammal burrows and other subsurface retreats. Adults migrate during late winter or early spring to breed in vernal pools and fish-free areas of swamps, marshes, or similar wetlands. Larvae metamorphose in late summer or early fall, whereupon they disperse into upland forest.

Four-toed Salamanders live in forested habitats surrounding swamps, bogs, marshes, vernal pools, and other fish-free waters that are used as breeding sites. Most breeding sites in Massachusetts are characterized by pit-and-mound topography with significant sphagnum-moss cover. Eggs are typically laid in mounds or patches of sphagnum moss that overhang water. Upon hatching, the larvae wriggle through the moss and drop into the water, where they will develop for several weeks prior to metamorphosis.

Core 1485

A 25-acre Core Habitat featuring a Species of Conservation Concern.

Grasshopper Sparrows nest in dry grasslands. Natural situations include sandplain grasslands, but they have adapted well to anthropogenic habitats such as airports and landfills. They are very sensitive to changes in plant composition and respond well to the effects of fire management.

Core 1510

A 17-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

The Wetland Core occurs on mid elevation Slate, one of the least common ecological settings for Wetland Cores in the state.

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Core 1541

A 184-acre Core Habitat featuring Aquatic Core and a Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

American Bitterns are heron-like birds that nest primarily in large cattail, tussock or shrub marshes and are very sensitive to disturbance.

Core 1553

A 13-acre Core Habitat featuring Wetland Core.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

The Wetland Core occurs on mid-elevation slate, one of the least common ecological settings for Wetland Cores in the state.

Core 1639

A 54-acre Core Habitat featuring a Species of Conservation Concern.

A small to medium-sized snake, adult Smooth Green Snakes are 14-20 inches long with a uniform light green back and yellow to white venter. The Smooth Green Snake is found in moist open or lightly forested habitat where grasses and shrubs are abundant (edges of marshes, wet meadows, fields, and forest edges or open forests, grasslands, blueberry barrens, pine barrens) and prefers to forage on the ground with activity in the daytime. Smooth Green Snake overwinter in rodent burrows, ant mounds and rock crevices, either singly or communally.

Core 1659

A 7-acre Core Habitat featuring Aquatic Core and Species of Conservation Concern.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Creepers are freshwater mussels that inhabit low-gradient reaches of small to large rivers with sand or gravel substrates. Cool to warm water with diverse fish assemblages best support Creepers.

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Triangle Floaters are freshwater mussels commonly found in low-gradient river reaches with sand and gravel substrates and low to moderate water velocities, although they are found in a wide range of substrate and flow conditions.

Core 1672

A 549-acre Core Habitat featuring Wetland Core, Aquatic Core, and a Species of Conservation Concern.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

Wood Turtle habitat is streams and rivers, preferably with long corridors of undeveloped, connected uplands. They also use fields and early succesional habitat extending up to 500 meters on both sides of the waterways. Mowing and roads are the primary causes of mortality. Collection is also a conservation concern.

Core 1745

A 291-acre Core Habitat featuring Wetland Core, Aquatic Core, Vernal Pool Core, and a Species of Conservation Concern.

Wetland Cores are the least disturbed wetlands in the state within undeveloped landscapes—those with intact buffers and little fragmentation or other stressors associated with development. These wetlands are most likely to support critical wetland functions (i.e., natural hydrologic conditions, diverse plant and animal habitats, etc.) and are most likely to maintain these functions into the future.

Aquatic Cores are intact river corridors within which important physical and ecological processes of the river or stream occur. They delineate integrated and functional ecosystems for fish species and other aquatic Species of Conservation Concern.

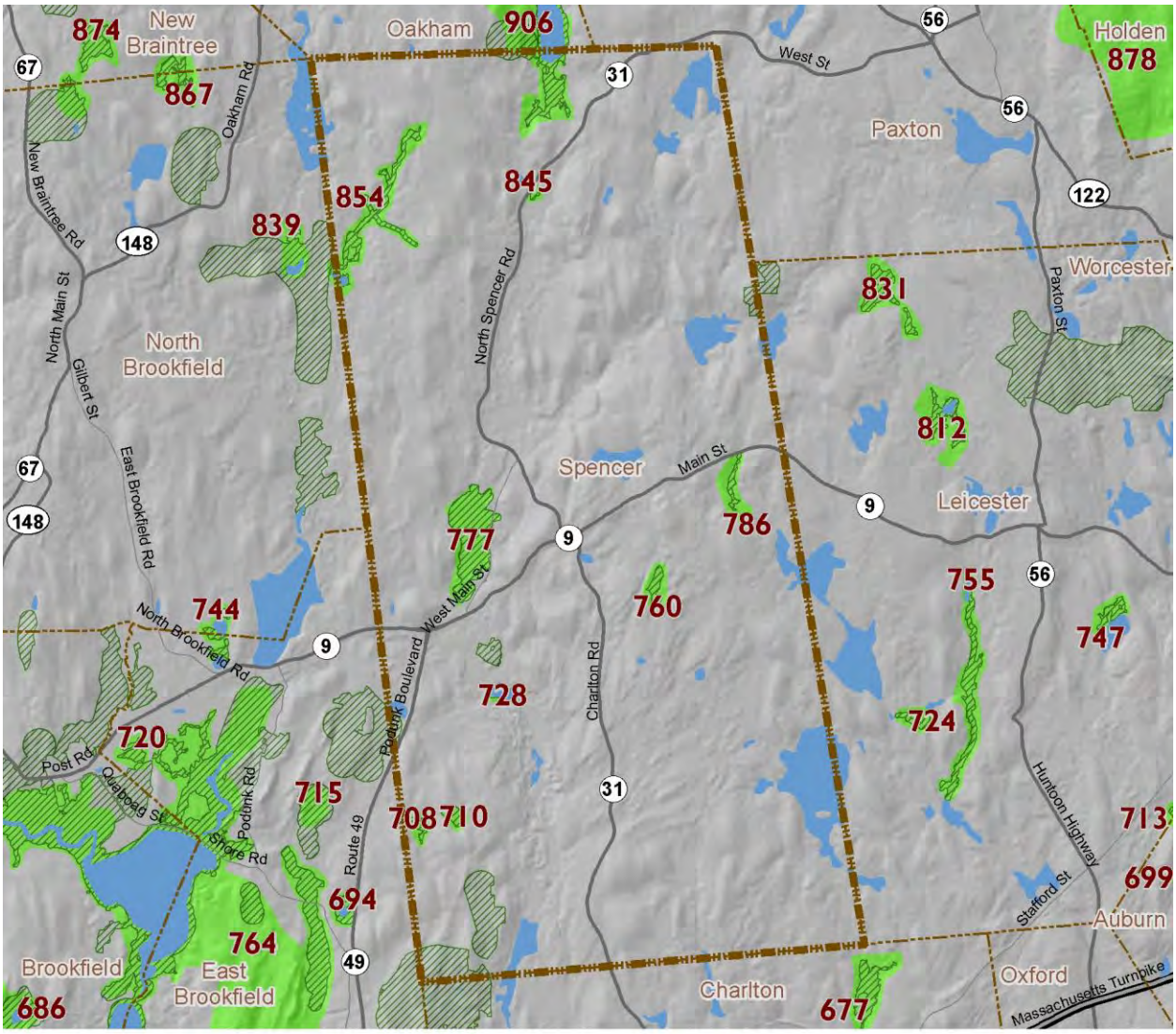
Vernal pools are small, seasonal wetlands that provide important wildlife habitat, especially for amphibians and invertebrate animals that use them to breed. *BioMap2* identifies the top 5 percent most interconnected clusters of Potential Vernal Pools in the state.

Bridle Shiners are small (<5 cm) minnows that are found in clear water in slack areas of streams and rivers and are also found in lakes and ponds.

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BioMap2 Critical Natural Landscape in Spencer

Critical Natural Landscape IDs correspond with the following element lists and summaries.



BioMap2 Core Habitat

BioMap2 Critical Natural Landscape

1 Mile

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Elements of *BioMap2* Critical Natural Landscapes

This section lists all elements of *BioMap2* Critical Natural Landscapes that fall *entirely or partially* within Spencer. The elements listed here may not occur within the bounds of Spencer.

CNL 708
Wetland Core Buffer

CNL 710
Aquatic Core Buffer

CNL 728
Aquatic Core Buffer

CNL 760
Wetland Core Buffer

CNL 777
Aquatic Core Buffer

CNL 786
Wetland Core Buffer

CNL 845
Aquatic Core Buffer

CNL 854
Aquatic Core Buffer

CNL 906
Aquatic Core Buffer
Landscape Block
Wetland Core Buffer

Critical Natural Landscape Summaries

CNL 708

A 34-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 710

A 27-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 728

A 22-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 760

A 51-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 777

A 214-acre Critical Natural Landscape featuring Aquatic Core Buffer.

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A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 786

An 81-acre Critical Natural Landscape featuring Wetland Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 845

An 18-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 854

A 232-acre Critical Natural Landscape featuring Aquatic Core Buffer.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

CNL 906

A 1,923-acre Critical Natural Landscape featuring Aquatic Core Buffer, Wetland Core Buffer and Landscape Block.

A variety of analyses were used to identify protective upland buffers around wetlands and rivers. One, the variable width buffers methodology, included the most intact areas around each wetland and river, by extending deeper into surrounding unfragmented habitats than into developed areas adjacent to each wetland. Other upland buffers were identified through the rare species habitat analysis. In this way, the

Massachusetts Division of Fisheries and Wildlife
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conservation of wetland buffers will support the habitats and functionality of each wetland, and also include adjacent uplands that are important for many species that move between habitat types.

Landscape Blocks, the primary component of Critical Natural Landscapes, are large areas of intact predominately natural vegetation, consisting of contiguous forests, wetlands, rivers, lakes, and ponds, as well as coastal habitats such as barrier beaches and salt marshes. Pastures and power-line rights-of-way, which are less intensively altered than most developed areas, were also included since they provide habitat and connectivity for many species. Collectively, these natural cover types total 3.6 million acres across the state. An Ecological Integrity assessment was used to identify the most intact and least fragmented areas. These large Landscape Blocks are most likely to maintain dynamic ecological processes such as buffering, connectivity, natural disturbance, and hydrological regimes, all of which help to support wide-ranging wildlife species and many other elements of biodiversity.

In order to identify critical Landscape Blocks in each ecoregion, different Ecological Integrity thresholds were used to select the largest intact landscape patches in each ecoregion while avoiding altered habitat as much as possible. This ecoregional representation accomplishes a key goal of *BioMap2* to protect the ecological stages that support a broad suite of biodiversity in the context of climate change. Blocks were defined by major roads, and minimum size thresholds differed among ecoregions to ensure that *BioMap2* includes the best of the best in each ecoregion.

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Natural Heritage & Endangered Species Fund

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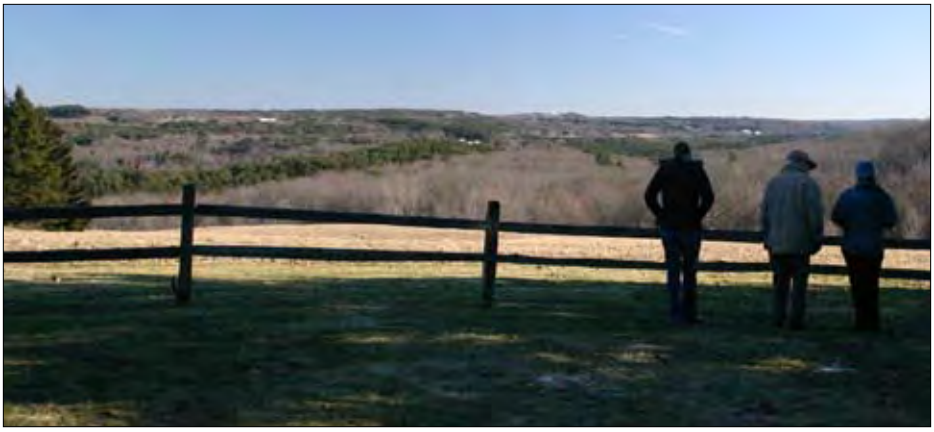
SPENCER RECONNAISSANCE REPORT

UPPER QUABOAG WATERSHED AND NORTH QUABBIN REGION LANDSCAPE INVENTORY

MASSACHUSETTS HERITAGE LANDSCAPE INVENTORY PROGRAM







Massachusetts Department of Conservation and Recreation
Central Massachusetts Regional Planning Commission
North Quabbin Regional Landscape Partnership

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COMMONWEALTH OF MASSACHUSETTS • EXECUTIVE OFFICE OF ENERGY & ENVIRONMENTAL AFFAIRS

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INTRODUCTION

Heritage landscapes are special places created by human interaction with the natural environment that help the character of a community and its past. They are dynamic and evolving, the history of a community and provide a sense of place. They show the natural ecology that land use patterns and often have scenic qualities. This wealth of landscapes is central to each community's character, yet heritage landscapes are vulnerable and ever changing. For this reason it is important to take the step toward their preservation by identifying those landscapes that are particularly valued by the community – a favorite local farm, a distinctive neighborhood or mill village, a unique natural feature or an important river corridor.

To this end, the Massachusetts Department of Conservation and Recreation (DCR) and its regional partners, the Central Massachusetts Regional Planning Commission (CMRPC) and the North Quabbin Regional Landscape Partnership (NQRLP), have collaborated to bring the Heritage Landscape Inventory program to communities in central Massachusetts. The goals of the program are to help communities identify a wide range of landscape resources, particularly those that are and unprotected, and to provide communities with strategies for preserving heritage landscapes.



Upper Quaboag Watershed and North Quabbin Region Heritage Landscape Inventory project area

The communities within the Upper Quaboag Watershed and North Quabbin region of central Massachusetts share a common dispersed settlement pattern as well as an early agricultural economy and later shift into manufacturing. Developed along a series of major waterways and their tributaries, including the Millers, Quaboag and Ware Rivers, this region contains vast cultural and historic resources and uncommon natural beauty. The heritage landscapes in the participating communities the agrarian and industrial past while providing recreational and educational opportunities for today. From scenic town commons and natural areas to civic buildings and burial grounds, the heritage landscapes within the region collectively tell the story of their varied and often turbulent, history.

Methodology

The methodology for the Heritage Landscape Inventory program was developed in a pilot project conducted in southeast Massachusetts. It is outlined in the DCR publication *Reading the Land*, which has provided guidance for the program since its inception. In summary, each community organized a heritage landscape meeting during which residents and town identify and prioritize the landscapes that embody the community's character and its history. This meeting is followed by a session including the consulting team, accompanied by interested community members. The product for each community is an individualized Heritage Landscape Reconnaissance Report. This report outlines the community's landscape history, discusses broader land planning issues by the community, describes the priority heritage landscapes and issues associated with them and concludes with preservation recommendations.

PART I: HERITAGE LANDSCAPE INVENTORY

LOCAL HISTORY

Spencer's many hills and stream valleys have determined its history and growth from Native American times to the modern era. There are no known major Native Americans settlements here, but the Seven Mile and Cranberry Meadow Rivers were likely used as major thoroughfares and for seasonal hunting and harvesting.



View of St. Joseph's om Northwest Road

The land that is now Spencer was purchased from the Native Americans by a group of settlers from Boston in 1686. Originally part of Leicester, the Town of Spencer was incorporated in 1775. Nathaniel Wood was to settle the area in 1717, on a 100-acre lot on the western border of town. The original village was formed at the geographic center of the town with a meetinghouse in 1743, followed by other institutional buildings and a tavern. Most of the residents lived on large farm tracts dispersed throughout the Town.

In the mid- to late-18th century, water-based industries emerged on Spencer's streams and rivers, and by the early-19th century, two more villages developed. Starting at the turn of the 19th century, Upper and Lower Wire Villages manufactured wire along Turkey Hill Brook corridor, which at one time contained 7 dams, 11 factories and 26 buildings. Also during this time, textile, boot and shoe manufacturing developed in the center of town.

The arrival of the Western Railroad in 1841 expanded Spencer's economy and population and another village, Spencer Depot, developed southwest of the Center. During this period there was a decrease in agricultural production as some farmers turned to work in the factories, and many reverted back to woodland. Dairying, however, remained a large part of Spencer's economy through the early-1900s.

By the 1890s, electric streetcar service was running along Main Street leading to Worcester in the east and and Warren in the west. This marked the early suburbanization of Spencer, enabling residents to travel outside of town for work. Many of Spencer's factories closed during the Depression or soon after. Two of three textile mills closed by 1931, and the mills throughout

the Wire Villages were discontinued by the 1940s. Although several small wire manufacturers remained in business, the town experienced a decrease in population during this time.

With the age of the automobile, however, roads were improved and the Town's population grew again as people were moving out from more urban areas. Cottages were built on ponds throughout Spencer, which sparked an increase in regional tourism. Residents and visitors were attracted by the Town's rural scenic character and quality of life.

Today the town is primarily residential although some industry and agriculture remain. St. Joseph's Abbey is the home of the Trappist Preserves processing plant and there are several dairy farms still in operation. Recreational and tourist opportunities in Spencer include Howe State Park, Camp Marshall, the Buck Hill Center and the MidState Trail, the Depot Trail, the Snowbirds and snowmobile trails.

PRIORITY HERITAGE LANDSCAPES

Spencer is experiencing growth pressure and will need to determine how it will affect the rural character of the community and the heritage landscapes that the community valuable. In the public meeting, participants priority landscapes in town that the heritage of the community. These heritage landscapes provide a cross section of the types of landscapes that contributed to the historical development of the town and together tell the story of Spencer's past. The following text describes the unique value that each of these landscapes provides to the community and a set of recommendations for its preservation and protection.

Green Property and Schoolhouse #3

Green Farm

In the same family for over 150 years, the Green farm is located on 11.9 acres on Main Street in the center of Spencer. Richard Green still lives in the farmhouse built in 1856 by his great-grandfather who also owned the yellow house to the west with the associated greenhouses. Although in need of repair, the farmhouse contains original 1856 wallpaper that was damaged by the 1938 hurricane and an original ice box in the kitchen. As a working farm, the land behind the farmhouse was originally open from the house to the shore of Lake Whittemore. Over time, woodlands have started to encroach on the farmland from the lakefront. Only about half of the property remains open including several horse paddocks directly adjacent to the house. Although not currently an allowed use in the town center other than by Special Permit, the horses kept on the property are grandfathered under the terms of the 1975 conservation restriction deeded to the Town by Herbert Green, Richard Green's grandfather.



Rear yard of Schoolhouse #3, Green home in the distance

The Green property abuts the Town-owned Luther Hill Park along a portion of its western boundary from the shore of Lake Whittemore running south. According to the 1975 Conservation Restriction, an easement allows for public use of the 10-acres running up from the lakefront for recreational purposes and nature study. Trails may be laid out and maintained by the Spencer Conservation Commission. Although not utilized in recent years, Mr. Green recalls High School classes using the area as an outdoor classroom. In addition to the farmhouse, the property contains the original barns as well as historic landscape features such as stone walls, hedge rows and orchard remnants.



Historic photograph showing schoolhouse #3 with the Green Home in the background

Schoolhouse #3

Built by the Green family in 1857, Schoolhouse #3 is located on ¾ acre that the Green family subdivided out of their farmland. It was purchased by the Town and operated as a school until it was sold back to Green family in 1924 when the schools were consolidated. From that time until the present, the Green family has maintained the property and it has had a variety of uses including serving as an emergency hospital, in case of air raids, during WWII. The building is currently un-occupied and used for storage.

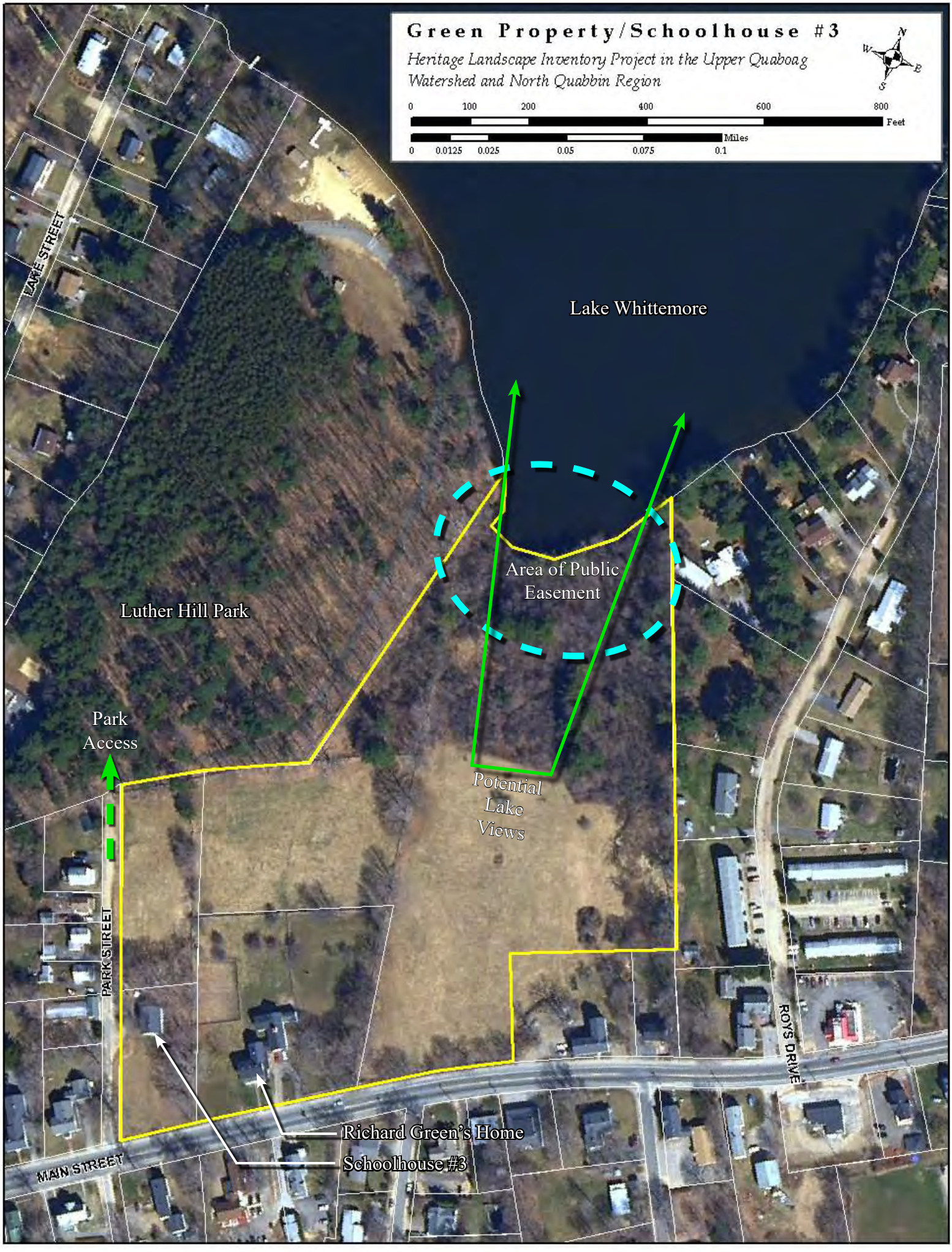
Although structurally sound, the building has no running water or electricity and is in need of rehabilitation. The interior of the building still retains the original school blackboards. The Schoolhouse is on a separate parcel, under different ownership than the farmhouse, and is currently for sale. The open behind the Schoolhouse, also originally part of the Green farm, is a separate parcel owned by Richard Green's stepdaughter and is also currently on the market. Both of these parcels run along Park Street and adjoin the Luther Hill Park to the North. Stone pillars and a gate into the Park are located at the end of Park Street but they have been closed to vehicular access. Neither of these parcels was included in the 1975 Conservation Restriction deeded to the Town.

Opportunities:

- The Town of Spencer is interested in the historical and recreational value of these sites as not many agricultural landscapes still exist so close to the center of town. Their proximity to Luther Hill Park and Lake Whittemore are also important to the town.
- The Schoolhouse could be rehabilitated for use by the Historical Society and/or Park and Recreation Commission as well as a general community room
- The Green Farmhouse has been inventoried with the Massachusetts Historical Commission

Issues:

- The future of the Green farm and its farmhouse is unclear, as Mr. Green and his older brother are the last members of the family
- Both the Green farmhouse and Schoolhouse are in relatively poor condition and in need of rehabilitation in the near future
- The Schoolhouse site and lot behind it are currently for sale and could be sold and/or developed at any time


Green Property/Schoolhouse #3
Heritage Landscape Inventory Project in the Upper Quaboag Watershed and North Quabbin Region
N
W
E
S
0 100 200 400 600 800
Feet
0 0.0125 0.025 0.05 0.075 0.1
Miles
LAKE STREET
Lake Whittemore
Area of Public Easement
Luther Hill Park
Park Access
Potential Lake Views
PARK STREET
ROYS DRIVE
MAIN STREET
Richard Green's Home
Schoolhouse #3

Recommendations:



Photo taken in front of Green Home, with School #3 in the background

1. The easement allowing public access on the back portion of the Green Farm at Lake Whittemore should be utilized, opening up paths and restoring views to the lake from the Farm and Main Street, with owners permission and Conservation Commission approval.
2. The Town/Historical Commission should work with the owners of the Schoolhouse and vacant parcel to pursue a Preservation Restriction to preserve the historic character of the building and a Conservation Restriction for the associated landscape of the Green Farm (see pages 28 and 26 for more about PRs and CRs)
3. Schoolhouse #3 should be rehabilitated by the Town or other civic organization such as the Historical Society, for use as a museum or children's/community center. The town may also consider models such as the DCR Historic Curatorship Program to facilitate rehabilitation of the schoolhouse, and possibly the farmhouse in the future.
4. The parcel behind the Schoolhouse should be purchased by a organization and/ or the Town Parks and Recreation Commission, making a connection between the center of town and Luther Hill Park, along with the Schoolhouse #3, the Green Property easement, and Lake Whittemore

Sibley Farm/Wendy Warner Farm

These two farms consist of three contiguous agricultural parcels between to Route 9 and Greenville Street. The Wendy Warner Farm is in the Chapter 61 Program, and the Sibley Farm is under no protection. Totaling approximately 350 acres, the Sibley and Warner Farm properties represent one of the largest undeveloped, and most scenic, pieces of land in the center of Spencer.



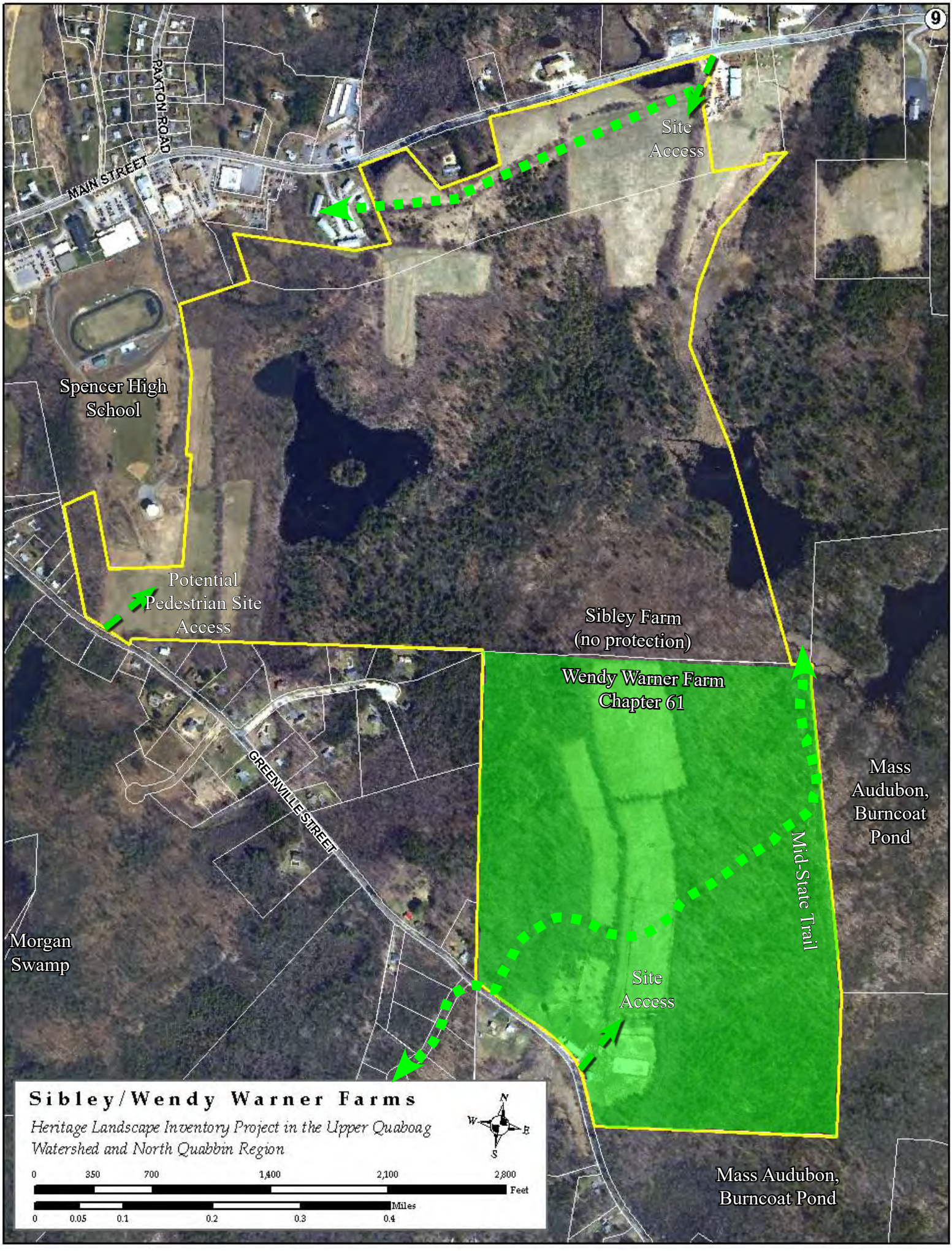
View into Sibley Farm looking South

The former Sibley Farm is located off of Main Street (Route 9) and is a beautiful collection of rolling hills, large tracts of forest, open hay and small ponds. Near the boundary along Main Street the site contains a portion of the Old Boston Post Road that locals claim George Washington rode on. Carriage ruts can still be seen at certain times of the year. The archeological remains of a schoolhouse (possibly #1) are located along the northern section of the property and the site is also said to contain the foundations of the Sibley mansion , which was blown down in the 1938 hurricane. Although no longer owned by the Sibley family or actively farmed, the current owners lease several acres to a local farmer for hay production.



Vacant property, formerly Wendy Warner Farm

Access to the Sibley Farm parcels is from Main Street on what was the original Sibley Farm Road and through a gate on Greenville Street that also accesses the Wendy Warner Farm property. Located off of Greenville Street farther to the south, there are several buildings that remain from the Wendy Warner Farm. The buildings are late 19th and 20th century vernacular; they are not in very good shape having been vacant for some time, and their historical and architectural is minimal. Several acres are still open in this portion of the site and also possibly hayed.


9
MAIN STREET
PAXTON ROAD
Site Access
Spencer High School
Potential Pedestrian Site Access
Sibley Farm (no protection)
Wendy Warner Farm Chapter 61
GREENVILLE STREET
Mass Audubon, Burncoat Pond
Mid-State Trail
Morgan Swamp
Site Access
Mass Audubon, Burncoat Pond
Sibley/Wendy Warner Farms
Heritage Landscape Inventory Project in the Upper Quaboag Watershed and North Quabbin Region
N
W
E
S
0 350 700 1,400 2,100 2,800
Feet
0 0.05 0.1 0.2 0.3 0.4
Miles

The Mid-State Trail runs through the Wendy Warner Farm parcel connecting from the Morgan Swamp area to the Southwest, to Mass Audubon land adjacent to the East. Mass Audubon owns approximately 194 acres surrounding the Southeast boundaries of the site including a portion of Burncoat Pond. The Town of Spencer retains Conservation Restrictions on three additional parcels totaling 68 acres, located south on Greenville Street.

Opportunities:

- Large undeveloped parcel in center of Town with good access from both Main and Greenville Streets
- Beautiful site with rolling hills and water bodies provides an important natural resource for hydrological systems and wildlife habitats
- The Old Boston Post Road is an important historical resource
- Connections could be made to Spencer High School west of the Farm
- The MidState Trail runs through the Wendy Warner parcel
- The Wendy Warner parcel is listed under Chapter 61, Forest Tax Law, which provides a temporary form of protection and allows the Town if it is taken out of this designation

Issues:

- Currently owned by a group of investors, the land (both the Sibley and Warner Farms) has been permitted for large-scale development including commercial and residential areas

Recommendations:

1. A development application has been permitted for this land but the Town should work with the property owners to revise the plans in a way that provides for clustered development and the retention of conservation land; establishing an Open Space Residential Development Zone may help to facilitate this process (see page 28 for more about this type of zoning). The town should work closely with the owner to preserve the majority of open adjacent to Route 9 and to re-design the new roadway/entrance to blend into the landscape as much as possible.
2. The Town should obtain a Preservation Restriction on the portion of the Old Boston Post Road, as it runs through the site, for public access and interpretation. (see page 28 for more about PRs). If the Community Preservation Act were adopted in town, funds could be used to help purchase this PR (see page 26 for more about the CPA).
3. The town should develop a strategy for acquisition of Chapter 61 parcels throughout town, should they change land use or ownership (see page 27 for more about Chapter 61 Policy).
4. The Parks and Recreation Commission should pursue a connection to the MidState Trail from Main Street through the Sibley Farm property. This could also utilize CPA funds.

Wilson Farm



W d old farmhouse



Views across Wilson Farm and to the West

The 150-acre Wilson Farm dates from the 1700's and has remained in the Wilson family since that time. The original 1740 farmhouse still stands at 115 Wilson Street although the Wilson family no longer lives on the property and it is currently vacant. All other outbuildings have been demolished but the barn foundations remain to the west of the farmhouse. Actively farmed until recently, the site was well known in the 20th century for its local produce and vegetable stand. Today the site contains large portions of forest land, large open a small pond and spectacular

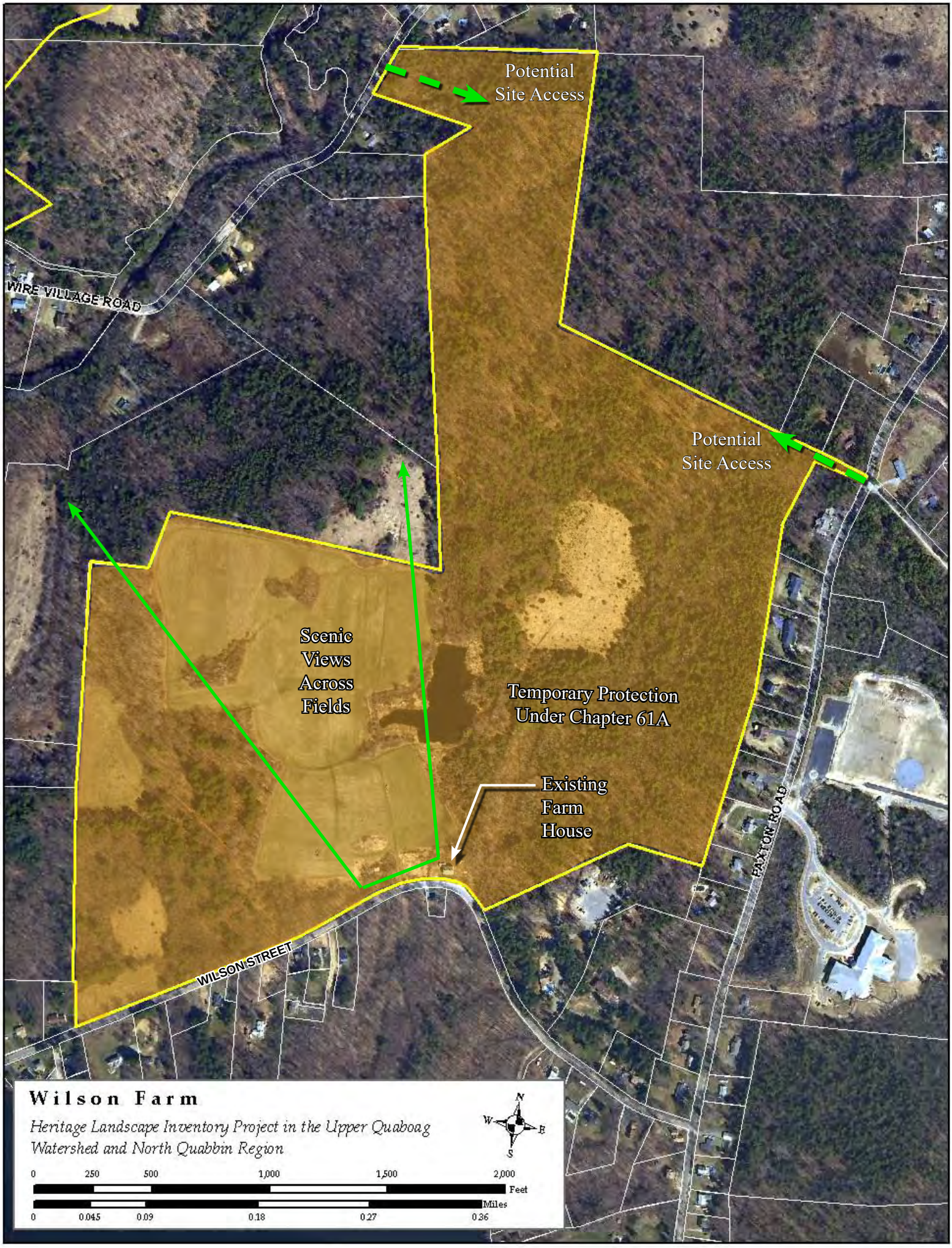
Primary access to the site is the frontage along Wilson Street. The site also abuts Wire Village Road and Paxton Road across from Donnelly Street. This portion of the site is heavily forested and there are some steep slopes. The entire parcel is currently under the temporary protection of Chapter 61A designation, but this status will soon be lost since the farming has ceased..

Opportunities:

- Beautiful sloping land with stunning views to the north and west
- Large tracts of forest land that provide wildlife habitat
- Several points of access
- Chapter 61A provides the Town with the for acquisition or the procurement of conservation restrictions
- The farm and farmhouse have been inventoried on MHC inventory forms.

Issues:

-
- Family has few resources - would consider putting remainder in Conservation Restriction if the town can help with grants, etc.
- Vulnerable to large-scale development


Potential
Site Access
WIRE VILLAGE ROAD
Potential
Site Access
Scenic
Views
Across
Fields
Temporary Protection
Under Chapter 61A
Existing
Farm
House
PAXTON ROAD
WILSON STREET
Wilson Farm
Heritage Landscape Inventory Project in the Upper Quaboag
Watershed and North Quabbin Region
N
W
E
S
0
250
500
1,000
1,500
2,000
Feet
Miles
0
0.045
0.09
0.18
0.27
0.36

Recommendations:

1. The Town should work with Wilson family to explore options for the development of a portion of the site while preserving the remainder of the property in a Conservation Restriction (see page 26 for more about CRs). Clustered development could be located in the eastern portion of the property with access from Paxton Road and Wire Village Road while the remainder of the site could be conserved for public access. This would provide to the owner without the loss of this valuable scenic and cultural resource.



Old Wilson Farmhouse

2. Procure a scenic easement on the view to the northwest from the Farmhouse on Wilson Street (see page 29 for more about scenic protection).
3. The Historical Commission/Society should pursue the nomination of this historic building to the National Register of Historic Places. Work with the property owner to rehabilitate the 1740 farmhouse and/or sell it with a Preservation Restriction and small portion of land (see page 28 for more about PRs). Also consider models such as the DCR Historic Curatorship Program to facilitate the rehabilitation.

Wire Village and Turkey Hill Brook



Dam ruins at Lower Mill Village

The Turkey Hill Brook runs along Wire Village Road, and once held an extensive wire industry which now remains only in ruins and local lore. The Upper and Lower Villages bookend the industrial area and retain a few homes from that period of town history.

The Upper and Lower Wire Villages

Wire manufacturing started in Spencer around 1800 and continued until the early 1940s. The largest and longest running was the Spencer Wire Co. but there were other wire manufacturers in both Lower and Upper Wire Villages including Prouty, Hatch, and Snow. The several mills along Turkey Hill Brook in both villages changed hands many times and many were incorporated into the Spencer Wire Co. By the late 1890s, there were seven dams and 24 buildings associated with the Company.

Located at the junction of Wire Village Road and Hastings Road, Lower Wire Village was the site of Spencer Wire Co. Mill #5 which operated on the West side of Turkey Hill Brook during the 1800s. A large portion of a dam remains near the road on what was also former Spencer Wire Co. land. There are some buildings that were former mill housing going up Hastings Road to the north and a trail extends southwest from the junction along north side of the Brook. This is private property but some public access is allowed.



Remains of old canal at Turkey Hill Brook Park

Upper Wire Village consists of the majority of former Spencer Wire Co. land on both sides of Turkey Hill Brook at the junction of Nugget Farm Road and Wire Village Road. This area included mills #1-3 as well as accessory buildings and the two mill ponds that were located to the north above the intersection. Various foundations are located in the woods along Wire Village Road between the road and Turkey Hill Brook in this area. The former Mill housing neighborhood ran on the East side of Paxton Road south of Nugget Farm Road and many original houses remain but have been modernized in the 20th century.

Turkey Hill Brook Corridor

Turkey Hill Brook runs through both Upper and Lower Wire Village and supplied the water power for the mill operations. Turkey Hill Brook Park is the site of Spencer Wire Co. mill #4

and associated outbuildings of which several foundations remain as well as part of the canal and towpath. The remains of a second dam, 15-20' high, are located where the Brook crosses under Wire Village Road.

Farther northeast along the north side of the Brook is the site of that were accessible by a foot bridge where Gold Nugget Farm lands run down to the Brook. According to local lore, these were built by Spencer Wire Co. and used from 1880's through 1920's by the mill workers. Since the end of the wire manufacturing business in Spencer, the Turkey Hill Brook corridor has become primarily wooded and regained a more natural state.

Opportunities:

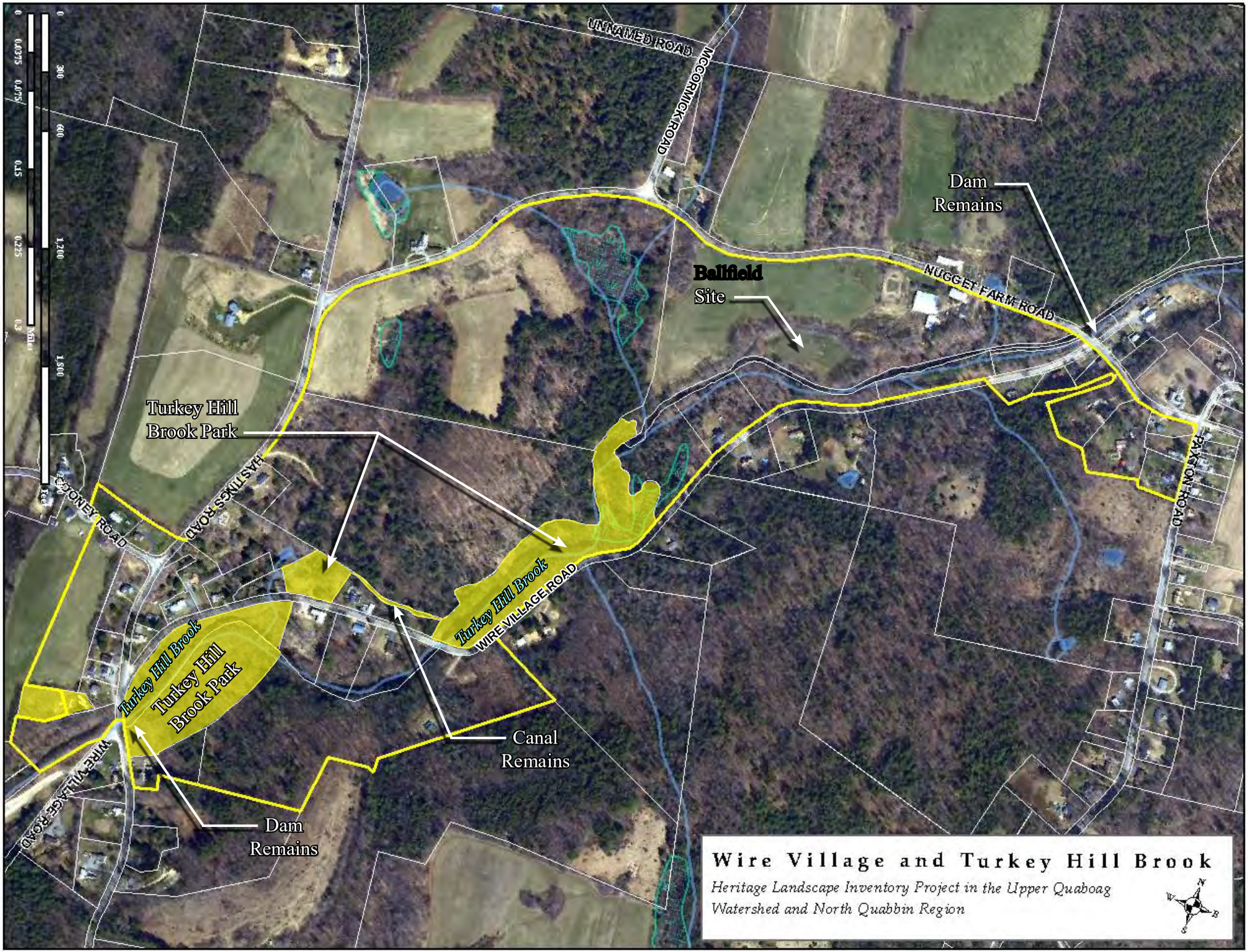
- Several parcels along Turkey Hill Brook are already protected by the town
- Many Spencer Wire Co. foundations and other structures remain within the villages and along the Turkey Brook corridor
- Much of the Brook between the two villages is still undeveloped and provides a great opportunity for trails, access, and wildlife protection.

Issues:

- Other than the Turkey Hill Brook Park, much of the land is under private ownership in many small parcels
- Mill ruins and remnants are fragile and will be lost to the elements before long if not documented and protected

Recommendations:

1. Protect the Turkey Hill Brook Corridor from Upper to Lower Wire Village as cultural and natural resource through a Corridor Protection Overlay District (see page 27 for more about these districts).
2. Upper and Lower Wire Villages should be nominated to the National and State Registers of Historic Places.
3. The Town of Spencer should pursue the development of a Wire Village Heritage Trail extending from Upper Wire Village, along the Brook and ending in Lower Wire Village. This could include the purchase of trail easements along the Brook as well as interpretive signage and the re-creation of the footbridge near the former Parking areas could be located within each village hub as well as Turkey Hill Brook Park. CPA funds could be utilized in the creation of this cultural trail system (see page 26 for more about the CPA)
4. The Conservation Commission should be informed of the of these cultural resources, and the town should familiarize themselves with the DCR publication *Terra Firma #5: Stones that Speak: Forgotten Features of the Landscape*


UNNAMED ROAD
MCCORMICK ROAD
Dam
Remains
Ballfield
Site
NUGGET FARM ROAD
Turkey Hill
Brook Park
HASTINGS ROAD
PAYSON ROAD
Turkey Hill Brook
WIRE VILLAGE ROAD
Turkey Hill Brook
Turkey Hill
Brook Park
WIRE VILLAGE ROAD
Canal
Remains
Dam
Remains
Wire Village and Turkey Hill Brook
Heritage Landscape Inventory Project in the Upper Quaboag
Watershed and North Quabbin Region

St. Joseph's Abbey

The Trappist Monks of St. Joseph's Abbey own approximately 1900 acres of rolling farmland and forest with 360-degree views of North Spencer. Originally the Sagandorf Dairy Farm, the monks purchased the property in 1948-49 and incorporated the farm into their development of the site. Several portions of the original farm buildings still exist in portions of their complex including the remains of a windmill near the guesthouse and the former cow barn. The land was actively farmed by the brothers until the 1980s and is now leased out to several local farmers who have corn and hay operations.



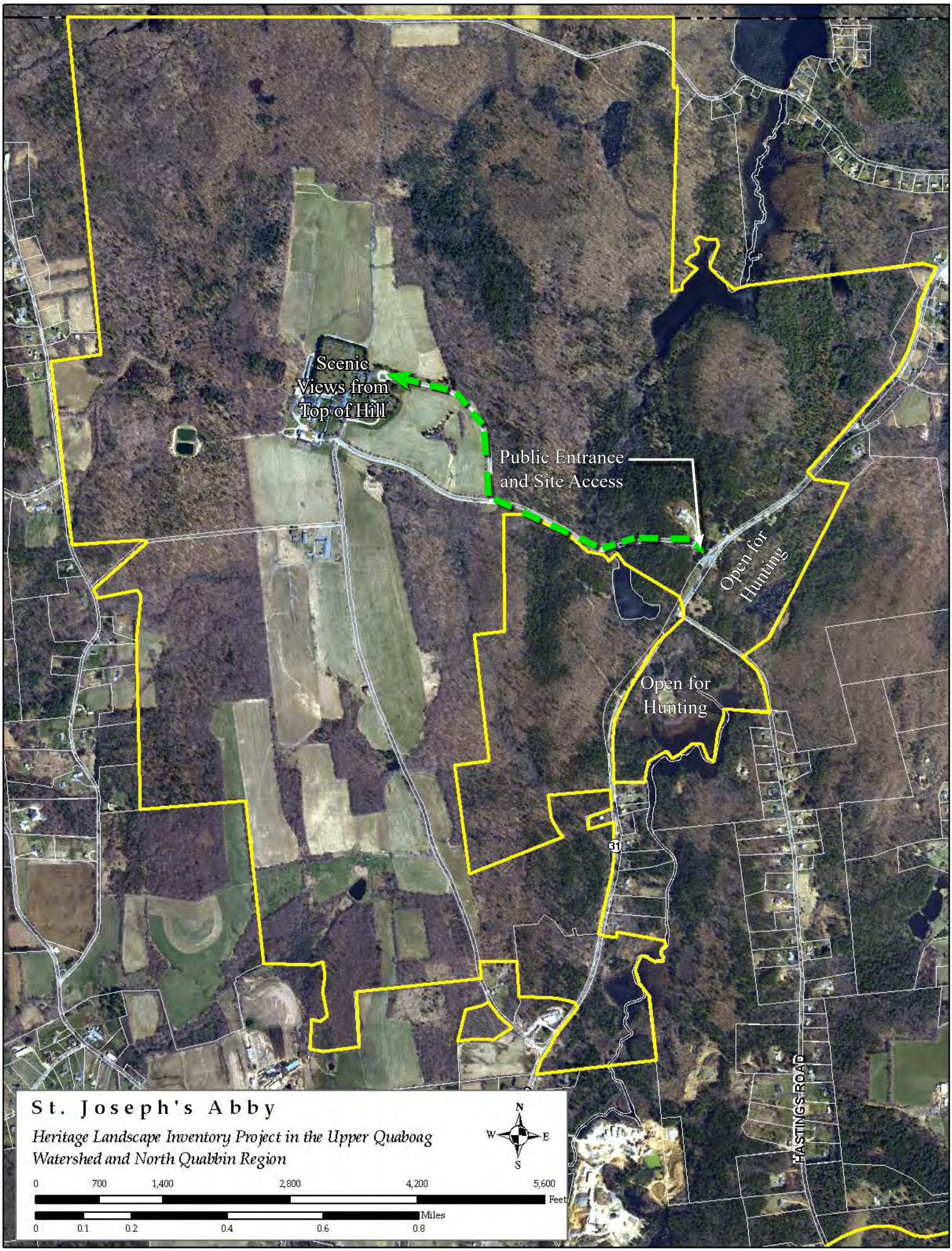
View from Joseph's Abby guest house looking West

The site is open to the public via the main 1-mile access road off of Route 31. Although Alta Crest Road also accesses the site from Route 31, it is no longer a Town-owned road but privately owned and maintained by the Abbey. St. Joseph's land also abuts Northwest Road to the west which the Spencer Historical Commission is seeking to have designated as a scenic road. Northwest Road is lined with stone walls, large street trees, scenic farmland and stunning views to the Abbey property.



North-facing side of St. Joseph's Abby. The terrace leads into a garden, a few trees from an old orchard stands to the East.

The monks at St. Joseph's Abbey also operate a jelly processing plant that produces their well-known Trappist Preserves. They prepare, package and ship these preserves around the country from the site. There are currently 60 monks residing full time on the property but they also operate a guesthouse for retreats of up to two weeks at a time. In addition to the guesthouse, living quarters and jelly plant, there are two churches within the complex as well as courtyards, landscaped grounds and a small cemetery.


Scenic
Views from
Top of Hill
Public Entrance
and Site Access
Open for
Hunting
Open for
Hunting
31
HASTINGS ROAD
St. Joseph's Abby
Heritage Landscape Inventory Project in the Upper Quaboag
Watershed and North Quabbin Region
N
W
E
S
0
700
1,400
2,800
4,200
5,600
Feet
Miles
0
0.1
0.2
0.4
0.6
0.8

Opportunities:

- Large, beautiful piece of land with stunning views and historic, agrarian landscape
- Potential recreation or conservation opportunities

Issues:

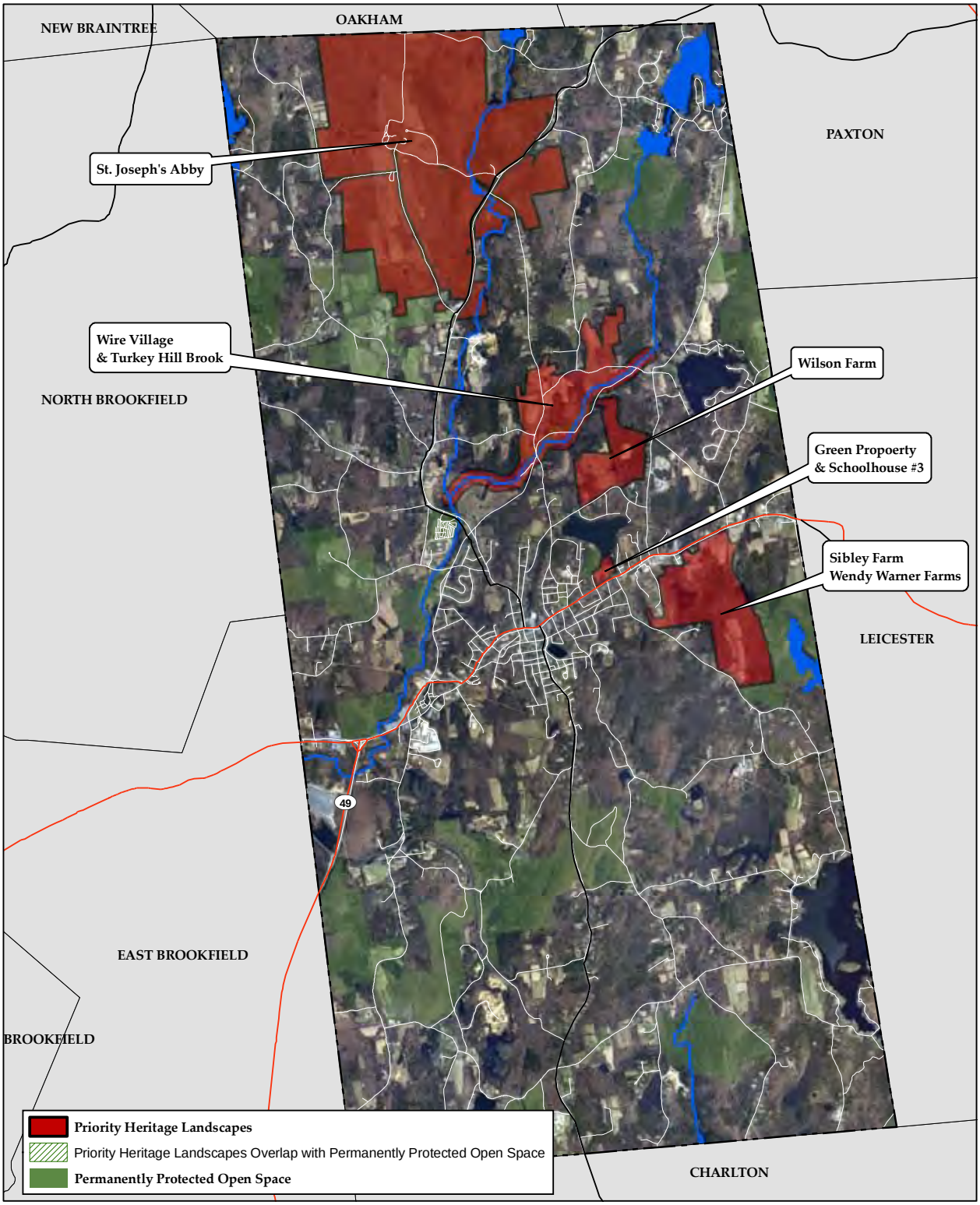
- Not currently under any form of protection
- The property has limited public access

Recommendations:

1. The town should pursue a Scenic Overlay District on the property in case of changes in ownership (see page 29 for more about scenic protection).
2. The town should work with the Massachusetts Land Trust Coalition's *Religious Lands Conservancy Project* and the Abbey to identify areas that should be protected
3. The town should investigate the possibility of creating public trail access on more remote portions of the site including the two parcels located across Route 31 which are currently open to hunting. CPA funds could be utilized to create public trails (see page 26 for more about the CPA).
4. The Town should adopt a Scenic Road Bylaw and pursue designation of Northwest Road as a scenic road (see page 29 for more about this bylaw).
5. The Historical Commission should pursue the nomination of the Abbey buildings and landscape to the National Register of Historic Places and a historic district.



North-facing side of St. Joseph's Abby



Priority Heritage Landscapes

Spencer, Massachusetts

Prepared for: Massachusetts Department of Conservation and Recreation, Heritage Landscape Inventory Project in the Upper Quaboag Watershed and North Quabbin Region

Prepared by: Dodson Associates, Ltd., Landscape Architects and Planners
Ashfield, Massachusetts

25 June 2008

0 0.2 0.4 0.8 1.2 1.6 Miles

N
W E
S

"Office of Geographic and Environmental Information (MassGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs"
MassGIS 2005 Orthophotos

For Planning Purposes Only

PART II: PLANNING FOR HERITAGE LANDSCAPES

As our communities undergo rapid land use changes, heritage landscapes are particularly threatened because they are often taken for granted. There is a broad variety of resources that communities can call upon to protect these irreplaceable landscapes. What follows is a review of the tools that Spencer already has in place, as well as a number of recommended actions for the future. The measures already in place for Spencer provide a strong foundation for heritage landscape preservation, but additional measures have been in the following text that will aid the development of a holistic preservation planning strategy. Appendix B includes extended descriptions of preservation measures. These tools should be considered in combination with those recommendations made in Part I for Spencer's priority landscapes.

INVENTORY AND DOCUMENTATION

1. *Massachusetts Historical Commission Records*

We cannot advocate for something until we clearly identify it – in this case, the physical characteristics and historical development of the town's historic and archeological resources. The necessary step is to record information about the resources at the Massachusetts Historical Commission. The Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets is a statewide list that es historic resources throughout the Commonwealth. In order to be included in the inventory, a property must be documented on an MHC inventory form, which is then entered into the MHC database. This searchable database, known as the Massachusetts Cultural Resource Information System (MACRIS), is now available online at http://www.sec.state.ma.us/mhc. Information on the locations of archaeological sites is not available to the general public in order to protect these sensitive and non-renewable cultural resources.

Current Listings: According to the MHC, Spencer's inventory documents over 400 cultural resources from the mid 18th century to the 20th century ranging from individual buildings to farms, factories and historic districts. Of the heritage landscapes by the community as priority resources, the Henry R. Green House, the Wilson Farm, St. Joseph's Abbey and Wire Village are all listed under MACRIS.

Spencer also has fourteen documented archaeological sites recorded with MHC. Ten of these are prehistoric and 4 are historic. These resources the Native American settlement of the region as well as the early industrial development of the modern era. The number of prehistoric sites

Recommendations: The MACRIS list for Spencer an extensive overview of historic buildings and landscapes within the community. In the future, Spencer may want to consider researching and documenting additional archaeological sites.

2. *National and State Register Listing*

The National Register of Historic Places is the federal list of districts, sites, buildings, structures and objects that have been determined in American history, architecture, archaeology, engineering and culture. Listing brings a number of including recognition, consideration when federally-or state-funded projects may impact the resource, eligibility for tax credits, and for certain grant programs. Resources on the National Register are automatically added to the State Register of Historic Places.

Current Listings: The Town of Spencer's National Register (NR) program began with the listing of the Route 9 (Old Boston Post Road) Mile Markers in 1971. In 1986 several individual buildings including Memorial Town Hall, the Fire Station (near Town Hall), and the Sugden Block were added as well as the Spencer Town Center Historic District. The Grove Street School, the Pleasant Street School and the East Main-Cherry Street Historic District were added in 1996.

In addition to National Register listing, the Grove Street School, the Pleasant Street School, Memorial Town Hall, Spencer Fire Station (near Town Hall) and the Sugden Block all have Preservation Restrictions placed on them. All National Register listings are automatically listed in the State Register of Historic Places.

Recommended Listings: The Spencer Historical Commission should consider nominating the 1740 Wilson Farmhouse as an individual property and Upper Wire Village and St. Joseph's Abbey buildings and landscape as National Register districts.

3. *Heritage Landscape Inventory List fr*

Each town involved in the Upper Quaboag Watershed and North Quabbin Region Heritage Landscape Inventory held a local meeting to solicit input from a range of community members to identify potential heritage landscapes throughout the town. The lists were prioritized by the community, with help from the consultants, to create a list of to ten priority areas, which were described in Part I of this report. The complete list of the town's over 120 heritage landscapes is included as Appendix A of this report and provides a sound resource list for future documentation activities and potential funding opportunities. Spencer's meeting was held on January 30, 2008 with approximately 20 community members present.

PLANNING AND ZONING TOOLS AND TECHNIQUES

1. *Comprehensive, Open Space and other Planning Documents*

It is important that Open Space Plans, Comprehensive or Master Plans, and other planning documents address heritage landscapes as vital features of the community, contributing not only to unique sense of place but also to environmental, recreational and economic health.

Current Plans: Spencer completed a Community Master Plan in 2003 that contains information about scenic roads, trail development and zoning recommendations as well as utilizing information created in the 2001 Open Space and Recreation Plan (OSRP). The Spencer OSRP provides a valuable source of information for landscape character, natural and scenic resources and a conservation and recreation lands inventory. This inventory includes a table of land ownership and levels of protection including lands in Chapter 61 and under permanent protection.

Recommended Plans: The Town of Spencer should consider updating its Open Space and Recreation Plan within the next couple of years.

2. *Zoning Bylaws and Ordinances*

Effective and innovative preservation tools exist in the legal and regulatory realm. These range from a wide array of zoning, bylaw and ordinance mechanisms, to incentive programs and owner-generated restrictions on land use.

Current Zoning: In 2006, Spencer amended their zoning bylaws to include Open Space Residential Development (4.8.2). This bylaw provides for the clustering of residential buildings and infrastructure in order to set aside a portion of the site for open space. In their 2003 Master Plan, the Town this as a technique for preserving the rural character of the community and for

The 2006 Spencer Zoning Bylaw also added a Town Center Mixed Use District, a Village Residential District and a Lake Residential District. These zoning districts provide the opportunity for the community to provide land use controls on neighborhood areas that are unique in their development history. Spencer also has a Wetlands Protection Bylaw.

Additional Planning and Zoning Tools and Techniques for Spencer's landscapes:

Agricultural Preservation Restrictions (APR)
The Agricultural Preservation Restriction (APR) Program is a voluntary program managed by the Massachusetts Department of Agricultural Resources. It is intended to provide a "non-development" alternative to farmers and other owners of "prime" and "state important" agricultural land. When faced with the inability to actively farm and rising tax assessments, this offers the farmer the opportunity to retain the property rather than sell it for development. The State purchased a permanent deed restriction on the property for the difference between fair market value and agricultural value. The deed restriction would preclude any use of the property that will negatively impact its agricultural viability.

Agricultural Preservation Zoning
An agricultural preservation overlay zone can be created that will promote and protect the practice of farming. This can help to preserve lands on which farming is most viable, lands that maintain an adequate agricultural base in town and areas that preserve the culture and landscape of farming. This can be accomplished in several ways including requiring all new large-scale residential development to be clustered on areas least suitable for agriculture and away from farms and views. An agricultural preservation bylaw can also use the site plan review process to require dedicated open space to remain as farmland and include that new development be located on least suitable soils for agriculture and be integrated into the existing landscape.

Community Preservation Act
By enabling legislation created in 2000, the Community Preservation Act (CPA) helps communities provide funds for the preservation of open space and historic resources and the creation of affordable housing and recreational facilities. The funds are raised through a property tax surcharge ranging from 0.5% to 3% and are administered by a local Community Preservation Committee. A minimum of 10% of the annual revenues must be used for each of the three core areas: acquisition and preservation of open space, acquisition and preservation of historic buildings and landscapes and creation and support of affordable housing. The remaining 70% can be used for any combination of the above uses and for recreational uses. If adopted by Spencer, Community Preservation Act funds could be used for acquisitions such as Schoolhouse #3 and the purchase of conservation restrictions on the Wilson, Green and St. Joseph's Abbey properties.

Conservation Restrictions
A permanent deed restriction between a landowner and a holder - usually a public agency or a private land trust; whereby the grantor agrees to limit the use of his/her property for the purpose of protecting certain conservation values in exchange for tax EOEEA's Division of

Conservation Services provides assistance to landowners, municipalities, and land trusts regarding conservation restrictions and has produced The Massachusetts Conservation Restriction Handbook as a guide to drafting conservation restrictions. Conservation Restrictions could be pursued for the view from St. Joseph's Abbey and the Wilson Farm.

Corridor Protection Overlay District

A Corridor Protection Overlay District is intended to promote appropriate development within a given corridor, serving to protect natural (and sometimes cultural) resources. As an overlay zone, all regulations pertaining to the underlying zone apply, except to the extent that the overlay zone or provides for alternatives to the underlying requirements. Corridor Protection Overlay Districts can be used cooperatively by adjoining communities to provide continuous protection across municipal boundaries. This type of zoning tool should be considered for the Turkey Hill Brook and the Wire Villages corridor.

Chapter 61 Policy

Massachusetts General Laws Chapter 61 was created in the 1970s when many farmers and forestland owners were forced to sell their land due to rising property values and taxes. The legislation became known as the Forestland Act but was quickly followed by Chapter 61A, the Farmland Assessment Act and 61B, the Open Space Act. This new legislation required towns to reduce assessments on farm, forest and open space lands as long as the owners made a commitment to keep their land in that use.

A major provision of this law allows the town the right of refusal on these lands if the lands are to be sold for residential, commercial or industrial purposes. This provision provides the town with the opportunity to match a fair market value offer for the property. Adoption of a Chapter 61 Policy would outline a response process for the town to follow when these lands come out of the program. This may include a requirement for the select board to collaborate with other town boards, conservation groups and other interested parties, and hold a public meeting. For more information about the Chapter 61 Program and to see a sample Chapter 61 Policy, please see the Mount Grace Land Conservation Trust website (http://mountgrace.org/), to download their *Chapter 61 Handbook*.

Both the Wilson Farm and a portion of the Sibley property are currently under Chapter 61 and Spencer should strongly consider exercising their right of refusal particularly in the case of the Wilson Farm. However, given the short time frame for decision-making the Town should plan ahead for raising the necessary funds.

Demolition Delay Bylaw
Demolition delay bylaws provide a time period in which towns can consider alternatives to demolition of historic buildings and structures. The local historical commission should work with MHC staff to develop a bylaw that would best suit the town and should work with other town groups to publicize the advantages of a demolition delay bylaw to the community. Most demolition delay bylaws apply to structures that were built more than 50 years ago. The most common delay of demolition is six months; however many communities are that a one-year delay is more effective. A demolition delay bylaw requires a majority vote of Town Meeting.

Local Historic Districts (LHD)
Local Historic Districts are designated through the adoption of a local ordinance that recognizes special areas within a community where the distinctive characteristics of buildings and places are preserved and protected by the designation. These districts are the strongest form of protection for the preservation of historic resources. They are adopted by a 2/3 vote of Town Meeting and are administered by a district commission appointed by the Board of Selectmen.

Both the Spencer Town Center National Register District and the East Main- Cherry Street National Register District may from local historic district designation that provides stronger protection through local bylaws designed to protect the important features of the buildings within the district. National Register districts have no such controls.

Open Space Zoning
Open Space Zoning – also known as Cluster Development Bylaw, Open Space Communities Zoning, Open Space Development Overlay District, Open Space Preservation Subdivision, or Open Space Residential Development – allows greater density than would otherwise be permitted on a parcel, in an effort to preserve open space. Typically, construction is limited to half of the parcel, while the remaining land is permanently protected under a conservation restriction.

Preservation Restrictions
Preservation Restrictions protect historic and archaeological properties from changes that may be inappropriate. A Preservation Restriction (easement) on a property restricts present and future owners from altering a portion of that building, structure, or site. A restriction can run for a few years or in perpetuity and may be included as part of the property deed. Preservation restrictions can be donated or purchased by a government body or private preservation organization and are enforced by the holder of the restriction. Charitable donations of easements on historical buildings or archaeological sites may qualify for federal income tax deductions. A preservation restriction should be pursued for the historic Old Boston Post Road located on the Sibley Farm.

Scenic Overlay District Zoning
Scenic Overlay District Zoning protects scenic vistas by providing for a no-disturb buffer on private lands, thereby helping to maintain viewpoints. This type of zoning is more far-reaching than a Scenic Roads Bylaw (see below) and may be applied to numbered routes.

Scenic Vista Protection Bylaw
This is a preservation planning tool that seeks to protect the scenic qualities of mountains, hills and rolling terrain by requiring additional design criteria for new construction in these visually sensitive areas. A scenic vista protection bylaw can be created as a scenic overlay district to protect a larger area or can address views such as those only visible from a certain area or above a certain elevation. A scenic protection bylaw is generally administered through site plan review and the development application process.

Scenic Roads Bylaw
Local roads, owned and maintained by the Town, can be designated as Scenic Roads in order to preserve their rural and/or historic character. A scenic roads bylaw is an effective tool for the preservation of these heritage landscapes. Adopted as part of the local zoning bylaws, the scenic roads ordinance requires a public hearing by the planning board before any work is undertaken in a public right-of-way that would involve the cutting of trees or the destruction of stone walls. This bylaw only applies to trees and stone walls within the town-owned right-of-way and to local roads and not state routes. The Town should pursue the designation of Northwest Road as a Scenic Road.

IMPLEMENTATION STRATEGIES

Outreach, Education and Interpretation
In order to create a community of advocates, we need to raise public awareness and broaden the base of support. This includes developing opportunities to learn about and celebrate the places and history of the town, as well as to care for them.

Collaboration
Protecting community character, respecting history, and promoting smart growth are interrelated concerns that impact heritage landscapes and require collaboration across a broad spectrum of the community. This includes communication among town boards and departments, as well as public-private partnerships.

Technical Assistance
Regulations and creative solutions for heritage landscapes are constantly changing and emerging. Public and private agencies offer technical assistance with the many issues to be addressed, including DCR, MHC, and the Central Massachusetts Regional Planning Commission.

Funding Opportunities
Funding rarely comes from a single source, more often depending on collaborative underwriting by private, municipal, and regional sources. Each town also has a variety of funding sources that

A list outlining options for the above strategies can be found in Appendix B.

CONCLUSION

The Heritage Landscape Reconnaissance Report for Spencer provides an initial preservation-planning document that priority heritage landscapes and discusses strategies for their long-term protection. Spencer contains a rich diversity of heritage landscape types ranging from industrial corridors to 18th century farms and former one- room schoolhouses. These landscapes the strong history and character of the community and are tangible pieces of the Spencer story.

This Report provides a starting point for preservation strategies but the heritage landscapes especially the priority landscapes, will need additional research and documentation including the preparation of MHC inventory forms. Additional information allows for better consensus building and the support of the broader community in order to successfully implement the recommendations for these landscapes. Ultimately, preservation and protection implementation requires a collaboration of local boards and commissions, regional and state agencies and non-

Distribution of this Reconnaissance Report to various municipal boards and commissions involved in making land use decisions will assist Spencer with an overall strategy for the preservation of its community's character. The breadth of action steps outlined in this document will require a cooperative effort and a variety of local groups to take the lead on implementation. Included in the recommendations are several actions that can be taken by the Spencer Historical Commission including the nomination of St. Joseph's Abbey, the Wilson farmhouse and Upper Wire Village to the National Register of Historic Places. Several recommendations have been made that the Town of Spencer should pursue such as the adoption of a Corridor Protection Overlay Zone for the Turkey Hill Brook corridor and the pursuit of Conservation Restrictions on the Green and Wilson Farms.

A public outreach campaign that educates the community about it's heritage landscape resources is also an important tool for increasing awareness and support for these landscape's protection. This Report provides an important step for Spencer's preservation planning program and can provide the foundation for future historic preservation, conservation and recreation planning activities. The commitment of the citizens of Spencer to their heritage is apparent in the historic landscape character and fabric that makes Spencer the vibrant and beautiful place it is.

The project team suggest that the following recommendations be the top three priorities for the Town of Spencer as it works to protect the heritage landscape character of the community:

1. Adopt the Community Preservation Act.
2. Adopt a Demolition Delay Bylaw.
3. Purchase Conservation Restrictions on the Schoolhouse #3 parcel and the vacant parcel behind it.

APPENDIX A: SPENCER HERITAGE LANDSCAPES

Landscape Name	Landscape Notes
Agricultural	
Wilson Farm	scenic landscape
Sibley Farm	landscape
Sheep Farm, Curtis Farm (Paxton Line)	
Country Acre Fall	
Green's Farm	
Bercumbe Farm	
Smalls Farm	
Jolicour Farm	
Alta Crest/Abby Zukas Farm	
Bemis Orchard & Settlement	
Gold Nugget Farm	
Pulling's Farm	
Andrew's Farm (Laurel Dale)	
Royalcrest	
Moose Hill	
Castleberry Horse Farm	
Archaeological	
Manly Ransom Home Site	
"The Oven"	
Old Howe Mill in St Park	
Burial	
Cranberry Meadow Cemetery	
Old Cemetery	
Old St. Mary's	
Pine Grove (Rte 31)	
St. Mary's on Rte 9	
Indian Burial and Grainery	

Note: Highlighted landscapes have been designated "Priority Landscapes" by the town or directly correspond to a Priority Landscape

Civic	
Richard Sugden Library	
Congregational Church	
South Spencer/Hillsville - Village Center	residential landscape
Old Firehouse	
Wire Village - Upper and Lower	residential, and scenic landscape
Town Hall	
Cherry Street Fire House	
Old Denny Hall	
Industrial	
Shoe factory next to Green's Farm	
Washington Hill House	
Prouty's	
Institutional	
School House #3	Historically linked to Green' scenic landscape
St. Joseph Abbey	
David Prouty High School	
Northwest School House (x2)	
4H Camp Marshal	
Girl Scout Camp Laurelwood	
Spencer Fairgrounds	
Treasure Valley Boy Scout, Spencer & Oakham	
Military	
Encampments	near Catholic cemetery
Knox Trail	
Prouty Park	
Powder Mill	

Note: Highlighted landscapes have been designated "Priority Landscapes" by the town or directly correspond to a Priority Landscape

Natural	
5 Mile River	
Turkey Hill Brook	former Wire Village
David's Hill	
Howe Park	
7 Mile River	found here
Balance Rock on Mid-State Trail	
Hastings Pond & Mill Dams	
Open Space/Recreation	
Brook's Pond and Foundry Sites	transportation, and scenic landscape
Whitemore	
Luther Hill Park	
Browning Pond	
Sugden Pond	
Shaw Pond	
Thompson	
Cranberry	
Snowmobile Trails	
Small's Field	
Mid-State	
Depot Trail	
Ralph Warren Trail	
Bemis Park Trail	
Bemis Park	
Stiles Res.	

Note: Highlighted landscapes have been designated "Priority Landscapes" by the town or directly correspond to a Priority Landscape

Residential	
Prouty Carriage House	
Pleasant Street Historic District	
Sagendorph Mansion	
Cherry Street Neighborhood	
Richard Sugden House	
45 Ash Street	
Bemis Settlement	
Spencer Country Inn	
Transportation	
Northwest Road	
Brook's Pond Road	
Andrew's Old Airport	
Boston Post Road	
McCormick Road	
Gold Nugget Road	
Browning Pond Road	
Buteau Road	
William Casey Road	
Borkum Road	
Briarcliff Road	
East Charlton Road	
Old Depot - Arty's Rest	
Boston/Albany - Conrail	

Note: Highlighted landscapes have been designated "Priority Landscapes" by the town or directly correspond to a Priority Landscape

APPENDIX B: GUIDE TO PRESERVATION & PLANNING TOOLS FOR HERITAGE LANDSCAPES

Preservation planning is a four-step process: evaluation, education and protection. Within the realm of protection, there is a vast array of tools that communities can call upon and that are most effective when used in combination with one another. Stewardship of these resources involves education and community support, planning with a clear set of goals, and regulatory mechanisms.

Three useful documents to consult when planning preservation strategies are:

- ♦ Department of Conservation and Recreation, Reading the Land
- ♦ Massachusetts Historical Commission, Survey Manual
- ♦ Massachusetts Historical Commission, Preservation through Bylaws and Ordinances

The following three sections detail the resources and strategies available for heritage landscape preservation - from documentation and evaluation, to public education, to regulating activities and the revenue necessary to fund the effort. These lists are meant to cover a variety of regional areas and opportunities, all may not apply to any given community.

INVENTORY AND DOCUMENTATION

Massachusetts Historical Commission Records

The vital step in developing preservation strategies for heritage landscapes is to record information about the resources on MHC inventory forms. One cannot advocate for something unless one knows precisely what it is – the physical characteristics and the historical development.

Survey methodology has advanced since the early work of the 1980s. If a community had survey work done during that time period, it is time for an inventory update, looking at resources in a more comprehensive and connected way than may have been done at that time. Even if survey work is more recent, there may be a need to document more resources throughout the community.

Using the Massachusetts Historical Commission survey methodology:

- ♦ Compile a list of resources that are under-represented or not thoroughly researched, beginning with heritage landscapes.

- ♦ Make sure to document secondary features on rural and residential properties, such as outbuildings, stone walls and landscape elements.
- ♦ Record a wide range of historic resources including landscape features and industrial resources.
- ♦ Conduct a community-wide archaeological reconnaissance survey to identify patterns of prehistoric and historic occupation and to identify known and probable locations of archaeological resources associated with these patterns. Known and potential precontact and historic archaeological sites should be professionally to evaluate cultural associations and integrity. A professional archaeologist is one who meets the professional (950 CMR 70.01) outlined in the State Archaeologist Permit Regulations (950 CMR 70.00).

National and State Register Listing

Survey work for the National Register of Historic Places, a program of the National Park Service includes evaluation of whether resources meet the for its listing. This will provide new information about the eligibility of properties. Using the information generated in the survey work and the accompanying National Register evaluations, expand your town's National Register program.

- ♦ Develop a National Register listing plan, taking into consideration a property's or area's integrity and vulnerability. Properties in need of recognition in order to advance preservation strategies should be given priority. All sites listed on the National Register are automatically added to the State Register.

PLANNING AND ZONING TOOLS AND TECHNIQUES

Comprehensive, Open Space and other Planning Documents

Communities use a variety of planning exercises and documents to their goals and vision of the future, address community-wide issues, and recommend measures to respond to them. There are state mandates for towns to prepare Comprehensive or Master Plans and Open Space and Recreation Plans.

- ♦ Comprehensive or Master Plans provide an important frame of reference for land use decisions, and incorporate all of a community's issues including economic development, housing and transportation into an integrated plan. Heritage landscapes need to be seen

through the lenses of community character, historic preservation, environmental health, and economic viability and growth. Their future and the values they contribute should be addressed within these multiple perspectives, not solely as historical assets of the community.

- ♦ Like Comprehensive Plans, Open Space Plans look holistically at the community—its history, demographics and growth patterns, and current conditions—to make recommendations that protect open space and natural resources for ecological health and public The Heritage Landscape Inventory Program provides a framework for looking at these important resources, and this new understanding should be incorporated into Open Space Plans.
- ♦ Many communities have other plans that have been prepared as well.

Zoning Bylaws and Ordinances

A wide range of laws, bylaws and regulations is available to protect heritage landscapes. Following are brief descriptions of some of the most widely used and/or most effective of these tools, arranged alphabetically.

Adaptive Reuse Overlay District

An Adaptive Reuse Overlay District is superimposed on one or more established zoning districts in order to permit incentive-based reuses of existing built properties. These districts can be created to allow for the adaptive reuse of properties of a certain kind, or within a area within a community. As an overlay zone, all regulations pertaining to the underlying zone apply, except to the extent that the overlay zone or provides for alternatives to the underlying requirements.

Agricultural Preservation Restrictions (APR)

The Agricultural Preservation Restriction (APR) Program is a voluntary program managed by the Massachusetts Department of Agricultural Resources. It is intended to provide a "non-development" alternative to farmers and other owners of "prime" and "state important" agricultural land. When faced with the inability to actively farm and rising tax assessments, this offers the farmer the opportunity to retain the property rather than sell it for development. The State purchased a permanent deed restriction on the property for the difference between fair market value and agricultural value. The deed restriction would preclude any use of the property that will negatively impact its agricultural viability.

Agricultural Preservation Zoning
An agricultural preservation overlay zone can be created that will promote and protect the practice of farming. This can help to preserve lands on which farming is most viable, lands that maintain an adequate agricultural base in town and areas that preserve the culture and landscape of farming. This can be accomplished in several ways including requiring all new large-scale residential development to be clustered on areas least suitable for agriculture and away from farms and views. An agricultural preservation bylaw can also use the site plan review process to require dedicated open space to remain as farmland and include that new development be located on least suitable soils for agriculture and be integrated into the existing landscape.

Archaeological Resource Protection
Archaeological sites are non-renewable cultural resources that can be permanently altered or destroyed through unauthorized digging, artifact collection, and development. Protection of archaeological sites can occur through a number of different strategies and mechanisms. An important step is the development of a town-wide archaeological resource protection plan. Based on a professional reconnaissance survey of resources in the community, this plan would recommend steps for their preservation. Options for protection include acquisition, preservation restrictions, site plan review, an archaeological review bylaw and public education. Reasonable thresholds for local review of archaeological resources should be developed in consultation with the Massachusetts Historical Commission and interested groups such as Native Americans. Reasonable thresholds for local review of archaeological resources should be developed in consultation with the Massachusetts Historical Commission and interested groups such as the Massachusetts Commission on Indian Affairs.

Community Preservation Act
By enabling legislation created in 2000, the Community Preservation Act (CPA) helps communities provide funds for the preservation of open space and historic resources and the creation of affordable housing and recreational facilities. The funds are raised through a property tax surcharge ranging from 0.5% to 3% and are administered by a local Community Preservation Committee. A minimum of 10% of the annual revenues must be used for each of the three core areas: acquisition and preservation of open space, acquisition and preservation of historic buildings and landscapes and creation and support of affordable housing. The remaining 70% can be used for any combination of the above uses and for recreational uses.

Conservation Restrictions (CR)
A permanent deed restriction between a landowner and a holder - usually a public agency or a private land trust; whereby the grantor agrees to limit the use of his/her property for the

purpose of protecting certain conservation values in exchange for tax Executive of Energy and Environmental Affairs (EOEEA) Division of Conservation Services provides assistance to landowners, municipalities, and land trusts regarding conservation restrictions and has produced The Massachusetts Conservation Restriction Handbook as a guide to drafting conservation restrictions.

Corridor Protection Overlay District

A Corridor Protection Overlay District is intended to promote appropriate development within a given corridor, serving to protect natural (and sometimes cultural) resources. As an overlay zone, all regulations pertaining to the underlying zone apply, except to the extent that the overlay zone or provides for alternatives to the underlying requirements. The Corridor Protection Overlay District can be used cooperatively by adjoining communities to help maintain continuous protection across town lines.

Chapter 61 Policy

Massachusetts General Laws Chapter 61 was created in the 1970s when many farmers and forestland owners were forced to sell their land due to rising property values and taxes. The legislation became known as the Forestland Act but was quickly followed by Chapter 61A, the Farmland Assessment Act and 61B, the Open Space Act. This new legislation required towns to reduce assessments on farm, forest and open space lands as long as the owners made a commitment to keep their land in that use.

A major provision of this law allows the town the right of refusal on these lands if the lands are to be sold for residential, commercial or industrial purposes. This provision provides the town with the opportunity to match a fair market value offer for the property. Adoption of a Chapter 61 Policy would outline a response process for the town to follow when these lands come out of the program. This may include a requirement for the select board to collaborate with other town boards, conservation groups and other interested parties, and hold a public meeting. For more information about the Chapter 61 Program and to see a sample Chapter 61 Policy, please see the Mount Grace Land Conservation Trust website (http://mountgrace.org/), to download their *Chapter 61 Handbook*.

Demolition Delay Bylaw

Demolition delay bylaws provide a time period in which towns can consider alternatives to demolition of historic buildings and structures. The local historical commission should work with MHC staff to develop a bylaw that would best suit the town and should work with other town groups to publicize the advantages of a demolition delay bylaw to the community. Most demolition delay bylaws apply to structures that were built more than 50 years ago. The most

common delay of demolition is six months; however many communities are that a one-year delay is more effective. A demolition delay bylaw requires a majority vote of Town Meeting.

Design Review
Design Review is a non-regulatory process that is undertaken by a town appointed Design Review Board. The board reviews the design of new construction and additions – typically those taking place in already built-up areas. Recommendations are made to the planning board to help preserve appropriate building patterns and architectural styles, with the goal of maintaining the overall character of a given area. Design Review Boards often limit their review to exterior architectural features, site design and signage.

Downtown Revitalization Zoning
Downtown Revitalization Zoning seeks to encourage businesses to locate in downtowns. Zoning of this nature is typically written to be attractive to businesses of a certain kind that would work well within the given infrastructure and transportation needs, but can also incorporate some of the same elements as Village Center Zoning (see below), such as encouraging mixed use development at a pedestrian-friendly scale, with minimal setbacks and off site parking.

Expedited Local Permitting - Chapter 43D
Expedited Local Permitting (Chapter 43D) provides an process for municipal permitting and grants for up to $150,000 for such things as professional assistance, local government reorganization, and consulting services. Participating towns from marketing of their site and online promotion of their pro-business regulatory climate. In order to pursue Expedited Local Permitting, a town must have commercial and/or industrial zoning in place for the site, and there must be space for a building of at least 50,000 square feet of

Flexible Development Zoning
Flexible Development Zoning allows for greater and creativity when subdividing land, to conform and work with the natural and cultural resources of a site and minimize alteration or damage to these resources, rather than follow standard requirements of subdivision regulations. While this does not prevent land from being subdivided, it does allow for the protection of some features, serves to preserve some undeveloped land, and promotes better overall site planning.

Local Historic Districts (LHD)
Local Historic Districts are designated through the adoption of a local ordinance that recognizes special areas within a community where the distinctive characteristics of buildings and places are preserved and protected by the designation. These districts are the strongest form of protection for the preservation of historic resources. They are adopted by a 2/3 vote of Town Meeting and are administered by a district commission appointed by the Board of Selectmen. For more information review the Massachusetts Historic Commission's (MHC) guidebook, *Establishing Local Historic Districts,* available on the MHC website.

Neighborhood Architectural Conservation Districts (NCD)
Neighborhood Architectural Conservation Districts (sometimes known as Neighborhood Conservation Districts) are local initiatives that recognize special areas within a community where the distinctive characteristics of the neighborhood are important. They are less restrictive than Local Historic Districts in that they focus on a few key architectural elements and massing, scale, and setback in an effort to embrace overall neighborhood character. As in Local Historic Districts, changes are reviewed by a Neighborhood Architectural Conservation District Commission.

Open Space Zoning
Open Space Zoning – also known as Cluster Development Bylaw, Open Space Communities Zoning, Open Space Development Overlay District, Open Space Preservation Subdivision, or Open Space Residential Development – allows greater density than would otherwise be permitted on a parcel, in an effort to preserve open space. Typically, construction is limited to half of the parcel, while the remaining land is permanently protected under a conservation restriction.

Preservation Restrictions
Preservation Restrictions protect historic and archaeological properties from changes that may be inappropriate. A Preservation Restriction (easement) on a property restricts present and future owners from altering a portion of that building, structure, or site. A restriction can run for a few years or in perpetuity and may be included as part of the property deed. Preservation restrictions can be donated or purchased by a government body or private preservation organization and are enforced by the holder of the restriction. Charitable donations of easements on historical buildings or archaeological sites may qualify for federal income tax deductions.

Rate of Development Bylaw
A town may slow the rate of its growth within reasonable time limits to allow the community to engage in planning and preparation for growth. This measure must be used for the purpose of conducting studies and planning for rational development, and not for restraining the rate of growth for a period of unlimited duration.

Right to Farm Bylaw
A Right to Farm Bylaw asserts the rights of farmers to pursue agricultural activities, provides community support for farming activities and requires dispute resolution so that abutters cannot make nuisance claims. Agricultural landscapes are widely considered to be heritage landscapes for which there is constant concern of potential development. This bylaw serves to help active farmers remain just that - active.

Scenic Overlay District Zoning
Scenic Overlay District Zoning protects scenic vistas by providing for a no-disturb buffer on private lands, thereby helping to maintain viewpoints. This type of zoning is more far-reaching than a Scenic Roads Bylaw (see below) and may be applied to numbered routes.

Scenic Roads Bylaw
Local roads, owned and maintained by the Town, can be designated as Scenic Roads in order to preserve their rural and/or historic character. A scenic roads bylaw is an effective tool for the preservation of these heritage landscapes. Adopted as part of the local zoning bylaws, the scenic roads ordinance requires a public hearing by the planning board before any work is undertaken in a public right-of-way that would involve the cutting of trees or the destruction of stone walls. This bylaw only applies to trees and stone walls within the town-owned right-of-way and to local roads and not state routes.

Scenic Vista Protection Bylaw
This is a preservation planning tool that seeks to protect the scenic qualities of mountains, hills and rolling terrain by requiring additional design criteria for new construction in these visually sensitive areas. A scenic vista protection bylaw can be created as a scenic overlay district to protect a larger area or can address views such as those only visible from a certain area or above a certain elevation. A scenic protection bylaw is generally administered through site plan review and the development application process.

Shade Tree Act
The Shade Tree Act is a part of MGL Chapter 87, which all trees within the public way as public shade trees. The municipal Tree Warden is responsible for the care, maintenance and

protection of all public shade trees (except those along state highways). Trimming or removal of any public shade trees greater than 1.5" in diameter requires a public hearing. Chapter 87 applies to all communities; however, some communities have adopted their own Shade Tree Act Bylaws that provide stricter regulations than those mandated in Chapter 87.

Site Plan Review
Site Plan Review provides the planning board (and other boards and committees, depending how the bylaw is written) with an opportunity to consider a variety of community concerns – such as impacts to vehicular circulation, scenic vistas, topography and natural resources – during the permit process. Boards may comment on site plans and request changes to the design. Site Plan Review is typically limited to large scale projects and tied to the special permit process.

Smart Growth Zoning – Chapter 40R & 40S
Smart Growth Zoning (Chapter 40R) provides rewards to communities that adopt special overlay zoning districts allowing as-of-right high density residential development in areas near transit stations, areas of concentrated development, or areas that are suitable for residential or mixed use development. Such zoning can help direct compact growth to areas that are already developed – such as historic village centers – thereby discouraging growth in less suitable areas. Chapter 40S provides State funding for any net-added school costs that come from children living in newly developed housing within a Smart Growth District.

Transfer of Development Rights (TDR)
TDR is a regulatory technique that allows a landowner to separate building or development rights from the property and sell them, receiving compensation for preserving land and allowing for the development to occur in areas selected for higher density projects. In essence, development rights are "transferred" from one district (the "sending district") to another (the "receiving district"). As a result, development densities are shifted within the community to achieve both open space preservation and economic goals without changing overall development potential.

Village Center Zoning
The goal of Village Center Zoning is to meet the needs of a small-scale, mixed-use, pedestrian-friendly area by encouraging compact development. New construction is required to be built at a scale that is compatible with the neighborhood and to have a reduced (or no) setback from the street. Parking may be directed to discourage large lots in front of buildings. Village Center Zoning shares many similarities with Traditional Neighborhood Development, and the terms are sometimes used interchangeably.

Wetlands Protection Act and Bylaws
The Wetlands Protection Act (MGL Chapter 131, Section 40) protects wetlands by requiring a careful review by local conservation commissions of proposed work that may alter wetlands. The law also protects riverfront areas, land under water bodies, waterways, salt ponds, runs and the ocean. Communities may also adopt their own Wetlands Protection Bylaw, providing stricter regulations than those mandated in Chapter 131.

IMPLEMENTATION STRATEGIES

Outreach, Education and Interpretation

The best stewards and advocates for heritage landscape protection are members of the community. There are many ways to communicate the importance of these special places to the public, and to connect their preservation with the shared values and goals that community members have already expressed in various planning documents and forums.

Think creatively about how to educate the community about the values and threats to heritage landscapes, and how each town resident from these special places. Use a combination of strategies to get the word out about heritage landscapes and preservation of community character, including:

- **Festivals and Tours** – Tours are a great way to draw attention to the history around us, and to engage more people in caring for it. Consider hosting a Heritage Celebration Day including tours and family-friendly activities, or plan a celebration around a particular place or area on a meaningful date. Make sure events are well publicized.
- **Signage and Banners** – Signs are a very effective way to announce special historic sites and districts. Banners can also bring attention to the of an area and make a celebratory statement about its contribution to the town.
- **Written Materials** – Clear, concise and engaging written material with engaging illustrations is a reliable way to relay information about community character and heritage landscapes. Make use of fact sheets and to get the word out on particular issues such as a town ordinance that protects heritage landscapes, a threat that needs to be addressed, or an upcoming event.
- **School Curricula** – Start teaching at a young age. Children are very receptive to engaging stories, and there are no better stories to excite childrens' imaginations and build pride of place than stories of their town's past and present. Teachers have an opportunity to connect history with environmental issues through classroom study, hands-on history

projects, and exploration of a town's heritage landscapes. Subsequently, students have an opportunity to teach their parents that preservation is everybody's business.

- **Lectures and Workshops** – Use these forums to raise awareness, educate at a deeper level about the community's history and its resources, and broaden the base of interest.
- **Website** – Keep Historical Commission and local historical organizations' entries on the town's website current, and include information about issues, proposals for preservation strategies, and upcoming events.
- **Press Releases** – Use all avenues including press releases to keep the public informed when a meeting or event is about to occur. Work with local reporters to develop special interest articles that highlight landscape resources.

Remember that bringing an issue or a heritage landscape to people's attention once will have only short-term effect. Outreach, education and interpretation must be ongoing concerns that involve preservation and conservation interests, teachers and community organizations in repeated projects to attract and engage the general public.

Collaboration Opportunities

Because heritage landscapes encompass such a broad range of resources and issues—from preservation of town centers, scenic roads and river corridors to promotion of smart growth and economic development – stewardship of these resources involves many interests in a community. It is essential that there be good communication between the many departments and committees that address issues related to heritage landscapes. Collaboration between public and private partners is also an essential element in a successful preservation strategy.

- Broaden the base. Preservation, particularly preservation of landscapes, is not just for the Historical Commission. It is important that the cause not be marginalized by those who view preservation as opposed to progress, or to personal interests. A look at DCR's Reading the Land shows the range of organizations and viewpoints that value heritage landscapes.
- Nurture public-private partnerships. Friends groups, neighborhood associations, and local land trusts all have important roles to play to spread the word, and to expand the capacity of the public sector to care for heritage landscapes.
- Take advantage of forums created to share issues and ideas. For instance, the Massachusetts Department of Agricultural Resources offers a "cluster" format for monthly discussion and information exchange meetings among area farmers.
- Share resources across communities. Towns that lack funding for a town planner position, for instance, have found that "sharing" a planner with another community can be quite effective.

Technical Assistance

Beyond DCR, the Central Massachusetts Regional Planning Commission and the North Quabbin Regional Landscape Partnership, technical assistance is available from many governmental and ganizations.

- ♦ American Farmland Trust: Clearinghouse of information supporting farmland protection and stewardship.
- ♦ Regional planning agencies are charged with assisting communities with local planning efforts:
  - • Central Massachusetts Regional Planning Commission serves the Heritage Landscape Inventory Program towns of Barre, East , Warren and W
  - • Franklin Regional Council of Government serves the Heritage Landscape Inventory Program towns of Orange and Warwick.
  - • The Montachusett Regional Planning Commission serves the Heritage Landscape Inventory Program towns of Athol, Petersham, Phillipston, Royalston, and Templeton.
- ♦ The North Quabbin Regional Landscape Partnership provides assistance and small grants to help protect ecologically, historically, economically, and culturally open space within the North Quabbin Region.
- ♦ The Mount Grace Land Conservation Trust is a regional organization that assists with conservation efforts of productive farm and forest land in parts of central and western Massachusetts.
- ♦ Citizen Planner Training Collaborative: Provides local planning and zoning with training opportunities and online information; they also hold an annual conference to support land use planning.
- ♦ Massachusetts Historical Commission: Provides technical assistance as well as grants to

- ♦ New England Small Farm Institute: A dedicated to providing technical assistance, information and training to farmers.
- ♦ The Trustees of Reservations: Offers conservation and landscape protection workshops, publications and connections through the Putnam Conservation Institute. The Trustees also manages a unique Conservation Buyer Program that links interested sellers with conservation-minded buyers and assists with establishing permanent property protection mechanisms.
- ♦ Massachusetts Department of Agricultural Resources is the state agency dedicated to supporting the agricultural activities in the state through special initiatives, programs and technical assistance.

- ♦ The Trust for Public Land is a national that assists municipalities with land conservation efforts.
- ♦ DCR's Lakes and Ponds Program works with local groups and municipalities to protect, manage and restore these valuable aquatic resources. They provide technical assistance to communities and citizen groups, help to monitor water quality at various public beaches to ensure public safety, and provide educational materials to the public about a range of lake issues.
- ♦ Massachusetts Agricultural Commissions has recently launched a new website that includes helpful information both for communities with Agricultural Commissions and for those learning more about forming one.
- ♦ UMASS extension (NREC) – Natural Resources and Environmental Conservation) can provide assistance on issues related to land and water resource protection, smart growth/ sustainability measures and forestry and farming management.
- ♦ The East Quabbin Land Trust provides assistance to protect ecological and historic landscapes through the conservation and stewardship of the farmlands, woodlands and waters of 8 Central Massachusetts towns
- ♦ Opacum Land Trust provides assistance to protect ecologically and culturally open space within 13 south-central Massachusetts towns.

Funding Opportunities

Funding for preservation projects is an important aspect of implementing strategies to protect heritage landscapes. There are local, state, regional, national and funding programs and resources that can assist communities in preservation and land conservation-related issues. The availability of such assistance varies from year to year and private property is not always eligible for funding. Examples include:

Local Funding Assistance

- ♦ Towns that have adopted the **Community Preservation Act (CPA)** it to be an excellent funding source for many heritage landscape projects. While tricky to pass in lean economic times, the number and types of projects that are across the Commonwealth makes the CPA worthy of consideration. Such projects include MHC inventory, National Register nominations, cemetery preservation, open space acquisition and preservation and restoration of public buildings. The CPA (M.G.L. Chapter 44B) establishes a mechanism by which cities and towns can develop a fund dedicated to historic preservation, open space and affordable housing. Local funds are collected through a 0.5% to 3% surcharge on each annual real estate tax bill. At the state level, the

Commonwealth has established a dedicated fund which is used to match the municipality's collections under the CPA. The amount of the surcharge is determined by ballot vote at a local election.

Adoption of the Community Preservation Act, by a majority vote on a ballot question, fosters partnerships among historic preservationists, conservationists and affordable housing advocates. At least 10% of the funds must be used to preserve historic resources; at least 10% must be used to protect open space; and at least 10% must be used to advance affordable housing. The remaining 70% must be used for one of these three uses as well as recreational needs and can be distributed in varying proportions depending upon the projects that the city or town believes are appropriate and to the municipality. Additional information about the CPA can be found at www.communitypreservation.org.

- Municipalities can establish land acquisition funds, increasing their revenue from sources such as an annual line item in the municipal budget; income from forestry, farming and leasing of town-owned land; gifts and bequests; grants and foundation funding; and passage of the CPA, detailed above.

State Funding Assistance

Funding for a variety of preservation projects, primarily for municipalities and is available through the Massachusetts Historical Commission (MHC), the EOEEA Division of Conservation Services (DCS), the Department of Conservation and Recreation (DCR) and other state agencies. Further information on these programs is available on the agency websites.

- MHC **Survey and Planning Grants** support survey, National Register and a wide variety of preservation planning projects.
- The **Massachusetts Preservation Projects Fund (MPPF)**, administered through the MHC, funds restoration and rehabilitation projects.
- Towns that have a local historic district bylaw may apply for **Local Government (CLG)** status which is granted by the National Park Service (NPS) through the MHC. At least 10% of the MHC's yearly federal funding allocation is distributed to CLG communities through Survey and Planning matching grants. To become a CLG, the town completes an application; after being accepted as a CLG, it a report yearly on the status of applications, meetings, and decisions; in return the town may apply for the matching grant funding that the MHC awards competitively to CLGs annually. Presently 18 cities and towns in Massachusetts are CLGs. **NOTE:** CLG status is dependent in

part on a municipality having at least one Local Historical District as evidence of the community's commitment to historic preservation.

Open Space Plans, with a requirement of updating the plan every years, make a community eligible for **Executive of Energy and Environmental Affairs (EOEEA) grants** and technical assistance programs through the Department of Conservation Services.

- The Massachusetts LAND Program of DCS assists local conservation commissions in acquiring land for the purposes of natural and cultural resource protection and passive outdoor recreation.
- The Massachusetts PARC Program, another DCS initiative, is geared toward assisting towns and cities in acquiring and developing land for park and outdoor recreation purposes.
- DCS Conservation Partnership Grants assist in acquiring interests in land for conservation or recreation, and have also been used in the past to help protect active agricultural lands.
- The Federal Land and Water Conservation Fund, distributed through the DCS, can support heritage landscape protection by providing up to 50% of the total project cost for the acquisition or renovation of park, recreation or conservation areas. Municipalities, special districts and state agencies are eligible to apply.

The **Department of Conservation and Recreation (DCR)** administers a variety of grant programs that can help with heritage landscape preservation:

- Urban and Community Forestry grants fund projects which will result in sustained improvements in local capacity for excellent urban and community forestry management.
- The Recreational Trails Grant Program provides funding on a reimbursement basis for a variety of recreational trail protection, construction, and stewardship projects.

The **Department of Agricultural Resources** Farm Viability Enhancement Program works with farmers to develop sound business plans and funding assistance to implement them.

Regional and Non-Pr Assistance

- The Trust for Public Land (TPL) is a national, land conservation organization that conserves land for people to enjoy as parks, community gardens, historic sites, rural lands and other natural places. TPL helps communities identify and prioritize

lands to be protected; secure for conservation; and structure, negotiate and complete land transactions. TPL's New England recently launched the Worcester County Conservation Initiative, to accelerate the pace of land conservation in central

- The National Trust for Historic Preservation offers a variety of assistance programs. Based on the availability of funding, the National Trust awards more than $2 million in grants and loans each year for preservation projects nationwide.
- Regional planning organizations do not administer grants, but can work with communities

  • Central Massachusetts Regional Planning Commission serves the Heritage Landscape Inventory Program towns of Barre, East , Warren and W

  • Franklin Regional Council of Government serves the Heritage Landscape Inventory Program towns of Orange and Warwick.

  • The Montachusett Regional Planning Commission serves the Heritage Landscape Inventory Program towns of Athol, Petersham, Phillipston, Royalston, and Templeton.
- The North Quabbin Regional Landscape Partnership offers a Small Grants Program to eligible organizations. More information can be found at: http://www.nqpartnership.org/sgp.htm. The Partnership also provides technical assistance.

Federal Funding Assistance

- The Farmland and Ranchland Protection Program of the U.S. Department of Agriculture has protected 85 farms to date in Massachusetts on 6,335 acres with matching funds. Eligible organizations are federally recognized Indian tribes, states, local government, and nongovernmental organizations. They are required to provide 50-50 matching funds for purchase of conservation easements in land with prime, productive soils that are subject to a pending offer, for the purpose of limiting conversion to non-agricultural uses of the land.
- The National Park Service's Rivers & Trails Program provides technical assistance to community groups and government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The program does not offer grants, but can provide staff to help identify needs, assist partners in navigating the planning process, and help with organizational development and capacity building. The program can serve as a catalyst for successful trail development and conservation efforts.

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Massachusetts Volunteers Guide for

Surveying a Lake Watershed and Preparing an Action Plan

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Lake Watershed Survey—Introduction

Section **1**

What's Here?

Lake Watershed Surveys
About the Guide

Community volunteers are energizing efforts in Massachusetts to restore bodies of water to healthier conditions. By collecting information and educating themselves and others about water quality problems, volunteers are strengthening stewardship for the environment in the Commonwealth. Today, the number of volunteer groups taking on challenging water quality problems in lakes, streams, coastal waters, and wetlands is growing. Neighborhoods, businesses, organizations, and government are coming together to solve environmental problems in new and more effective ways. Local leaders and citizens like you are taking responsibility and working together with other communities to find and correct pollution problems that are damaging local waterbodies.

Designed for citizens and local leaders, this Lake Watershed Survey guidance empowers community volunteers and provides the tools to identify and alleviate common sources of pollution that are associated with different land uses. This guide includes basic information about water pollution and lakes, direction for working with a steering committee and volunteers, a step-by-step process for conducting a lake watershed survey, and considerations for recommending and implementing a lake management action plan.

Lake watershed surveys

Lake watershed surveys can help protect water quality and aquatic life. The primary objective of a survey is to locate as many potential pollution problems in the watershed as possible. By identifying sources of pollutants within the watersheds of Massachusetts lakes, volunteers will bring attention to issues that need to be corrected. A second, equally important objective is to help the watershed community understand how land use influences lake water quality. Once awareness is raised, people are more likely to change habits that are damaging to lakes.

Addressing a lake's water pollution problems on a watershed basis makes sense. A watershed is defined by the movement of water from the geographic high points to a common low point such as a river, lake, or bay. Thus, the flow of rain and snowmelt on and in the ground is along pathways that are defined by watersheds. Because of these flow patterns, surface and ground water transports pollutants within a watershed, rather than along municipal or other created boundaries. Consequently, neighboring communities are connected by the water within a watershed, and they share the responsibility to protect it.

Clean lakes are vital to Massachusetts' economic and ecological well-being. Massachusetts lakes are used for drinking water, recreation, and flood control. Lakes also provide wildlife habitat and irrigation for farmland. However, despite regulatory protection, such as the Rivers Protection Act, the Wetlands Protection Act, and Title 5, hundreds of Massachusetts lakes have pollution problems,

Bold italics indicates that there is related information in an Appendix.

including an overabundance of aquatic plants and algae, a buildup of sediment, infestation of nonnative plants, and mercury contamination in fish. Pollution impairs or reduces the ways in which Massachusetts lakes may be used. Pollution can make water unsafe or unhealthy to swim in and can cause restrictions or prohibitions of fish and shellfish consumption. It also can lead to expensive treatment of drinking water in reservoirs. As clean water becomes less plentiful, protecting lakes and eliminating pollution becomes critically important to all of us.

This Lake Watershed Survey guidance has been developed by the Massachusetts Department of Environmental Protection to support the state's Total Maximum Daily Load (TMDL) program for lakes.

Today, the federal and state governments are approaching water quality problems in a systematic way using the TMDL provision in the federal Clean Water Act. TMDLs are required for all waterbodies–such as lakes–which are impaired by pollution. The ultimate goal of the TMDL program is to assure that all waters in the nation can be used and protected, appropriately.

A TMDL is defined as the greatest amount of pollution a waterbody can accept without causing impairment and still meet the Clean Water Act standards.

In practical terms, developing a TMDL requires knowledge about the sources, types, and amounts of pollution that are causing damage to a lake or waterbody. Once the pollution problem is understood, a determination is made of the amount of pollution that can be tolerated by the waterbody. That amount is divided among all the sources of pollution, including piped groundwater and over land runoff that flow into the waterbody. In most cases, sources of pollution will need to be reduced or eliminated to attain acceptable pollution levels, and landowners will need to take greater

The Importance of Watershed Surveys

- **Raise awareness to protect lakes from nonpoint source pollution.**
- **Collect information to track changes in the watershed.**
- **Determine watershed problems, their location, and seriousness.**
- **Give landowners information on how to reduce nonpoint source pollution on their property.**
- **Provide information for a lake management action plan to protect and restore the lake.**

responsibility for watershed stewardship. This will require some changes in current land use activities, storm drain systems, and other practices with discharges to waterbodies.

The guide describes a simple and effective visual assessment method to identify existing and potential sources of problems in a lake watershed. Other lake assessment and monitoring techniques also are used to evaluate the environmental conditions of Massachusetts lakes and ponds. While separate from this survey, in-lake and shoreline studies can be used to supplement this lake watershed survey. Although soil erosion issues are emphasized in this survey, the guidance includes land use activities that also contribute to the phosphorus and sediment problem in lakes. Since much of this damaging lake pollution comes from private land, volunteers will need the cooperation of landowners to reduce pollutants at their sources. By participating in this important work, volunteers and landowners will gain a better understanding of land uses and their impacts.

Thank you for sharing your talents and giving your time. As you visit sites and gather information, there will be an opportunity to share knowledge with residents and landowners in the watershed. Take advantage of these opportunities; they will help improve decisions made at the local level, and your enthusiasm may inspire greater community involvement.

About the guide

Volunteers who are new to lake watershed surveys will have a lot of questions about the work they will be undertaking. This guide explains what is expected of volunteers before, during, and after the lake watershed survey. This guide is not an in-depth resource on topics, such as lake pollution and nonpoint pollution best management practices. However, there are references, a bibliography, Web sites, and funding sources in the appendices for those interested in pursuing lake resource issues beyond the scope of the guide.

The guidance is divided into five sections, and is organized as follows:

Section 1 - Introduction provides information on lake watershed surveys, discusses the purpose of the guidance, and outlines the structure of the document.

Section 2 - Understanding Lake Pollution introduces volunteers to the lake pollution problems that the survey is addressing.

Section 3 - Organizing a Lake Survey provides an organizational framework for steering committees.

Section 4 - Steps for a Lake Watershed Survey: Field Volunteers describes the step-by-step process for conducting a lake watershed survey. It is written for field volunteers, but the steering committee also will find it useful.

Section 5 - Getting Results from the Survey is for the steering committee, field volunteers, and others interested in interpreting the survey results and translating them into a work plan of objectives and recommended activities.

The guidance also can be used to support the training workshops for volunteers. Appendices contain frequently asked questions, references, sample survey forms, a glossary, case studies, guidance for reading topographic maps, and who to call for help. Lake associations, watershed and civic groups, and municipal officials are invited to organize and join a lake watershed survey. With many impaired lakes in Massachusetts, your volunteer support is needed to identify and address lake watershed water quality problems.

The document is based, in large part, on *A Citizen's Guide to Lake Watershed Surveys: How to Conduct a Nonpoint Source Phosphorus Survey*, April 1997, prepared by the Congress of Lake Associations and Maine Department of Environmental Protection (DEP). Inspired by the success of lake watershed surveys conducted in Maine, the Massachusetts DEP adapted Maine's survey process to encourage similar survey efforts by community volunteers in Massachusetts.

Understanding Lake Pollution—The Basics

Section 2

What's Here?

Why are Lakes Sensitive to Pollution?
Phosphorus-A Damaging Pollutant
Land Use and Phosphorus
Can a Lake's Health be Restored?

Why are lakes sensitive to pollution?

Lakes are constantly receiving environmental pollution and other substances from the air, land, and water around them. Lakes can be very susceptible to damage from this uninterrupted bombardment of airborne and waterborne pollution because water exchange can be very slow, compared with streams, rivers, and coastal waters. In general, pollutants tend to stay longer in lakes, which provides a greater opportunity for impairment. Lake water is a blend of incoming water, airborne materials, and resident lake water.

A lake's pollution problem reflects what is happening on the land surrounding the lake–***the lake watershed.*** A watershed (for any body of water) is the land area which defines and directs the downhill flow of water, from the highest elevations to the body of water at the lowest elevation. A lake's watershed includes all the surrounding land that captures and drains water–through streams, ditches, groundwater, or directly over the land's surface–into the lake. Even though a watershed may extend many miles away from the lake itself, the watershed is part of the ***lake ecosystem***, and the two cannot be separated. Whatever happens in a lake watershed affects the lake ecosystem.

The health of a lake is affected by a combination of physical, chemical, and biological factors that make up the lake's ecosystem. Physical characteristics, such as the size and depth of the lake, the size of the watershed relative to the lake area, steepness of terrain, and location of streams, have an effect on lake sensitivity to pollution. Lake sensitivity also is affected by chemical factors, which may be associated with climate, the types of soils in the watershed, soil fertility and erodibility, and nutrient enrichment. In addition, biological factors relating to lake habitat and the plants and animals in the watershed will influence the condition of a lake and its sensitivity to pollution.

Where does lake pollution come from?

Nonpoint source (NPS) pollution is the greatest threat to lake water quality because it exists in many forms that are often difficult to pinpoint and control. NPS occurs when rainwater, snowmelt, or water for irrigation flows over the land, picking up pollutants and depositing them into rivers, lakes, coastal waters, or groundwater. Until recently, the focus of water protection laws and regulations has been on direct or ***point source pollution***, which comes from a discrete source or single outlet such as a discharge pipe at an industrial plant or wastewater treatment plant.

Heightened public awareness, legislation, and improved control technologies have reduced point source pollution. A great deal of progress has been made in the past few decades to reduce pipe discharges to lakes, rivers, streams, and oceans.

NPS pollution, on the other hand, exists wherever there is human activity. Residential, commercial, urban development, roadways, parking lots, agriculture, forestry, and industry all contribute pollutants that degrade water quality. These land uses not only create pollution, they also cause it to reach the lakes more readily by increasing the amount of runoff from rain and snowmelt and channeling it more directly.

The decline of lake water quality as a result of human activity in the lake watershed is referred to as ***cultural eutrophication*** (over-enrichment of the lake from human actions). The result is an acceleration of a lake's "aging" process (called succession) that can have far-reaching consequences on watershed communities, including:

- Reduced swimming and boating appeal;
- Loss of habitat and changes in fishery as habitat disappears;
- Increased expense of treating drinking water;
- Loss of shorefront property value;
- Reduced community tax revenues; and
- Increased costs to communities for lake improvement or restoration.

The pollutants carried in stormwater runoff may include ***nutrients*** like ***phosphorus*** and nitrogen, biological matter (viruses and bacteria), and ***toxic*** substances like heavy metals. Materials may be dissolved in runoff or they may be attached to sediment particles. Lakes are particularly sensitive to phosphorus and ***sediment*** particles.

Many Massachusetts lakes have been seriously damaged, and many more are considered at risk from pollution. The 303(d) list of impaired waters, prepared by the Massachusetts Department of Environmental Protection (DEP), concludes that about 727 lakes do not meet water quality standards established by Massachusetts law. The deteriorating quality of these lakes is evident by problems such as dense growth of non-native and invasive plant species, nuisance ***algal blooms,*** and metals, particularly mercury in fish. Most of these problems are associated with excess nutrients and sediments in the water.

How does land development speed up the transport of pollution into lakes?

Stormwater runoff is one of the main pathways for pollutants, such as phosphorus, to travel from the upper elevations in a watershed to a lake. The volume of stormwater runoff and the amount of phosphorus in the runoff depends on how land throughout the watershed is being used.

Forest land in undeveloped lake watersheds acts like a large sponge. The irregular depressions and rich organic ***duff layer*** on the ground surface absorb runoff from heavy rains and snowmelt, trapping and filtering the water.

The forest's tree canopy breaks the ***velocity*** of rain, which reduces soil erosion and allows moisture to be absorbed into the ground. Smaller trees and woody shrubs provide additional protection against erosion by binding the soil with their dense root systems.

Much of the phosphorus trapped by the natural filtering action of soil particles and vegetation is then taken up by the forest vegetation. As a result, the water that flows to the lake contains relatively little phosphorus.

A lake's watershed consists of all the surrounding land that drains into the lake. Watersheds can extend for miles.

As a watershed is developed, trees and ground cover vegetation are removed. Soils are disturbed, compacted, and covered with pavement and structures. Natural ground surface irregularities are smoothed out to create lawns. Much of the rain and snowmelt that would have been absorbed into the ground runs off the surface of roads, parking lots, buildings' rooftops, fields, and lawns.

Ultimately when land is developed from its natural condition, and replaced with paved and impervious surfaces, the volume of stormwater runoff increases. Higher volumes increase the velocity at which the runoff moves through the watershed. With both increased volume and velocity, runoff travels greater distances toward streams and lakes. The added force of the runoff causes erosion of more soil from road surfaces, shoulders, ditches, stream channels, and shoreline areas.

A multitude of pollutants may be picked up and carried in runoff from developed areas. Soil particles, road salt, lawn fertilizers, herbicides, pesticides, animal excrement, oil, and gasoline residues from streets and parking lots are just a few of the potential pollutants in runoff from developed watersheds. Typically, phosphorus concentrations in runoff from developed areas are much higher than they are in runoff from an undisturbed forest.

Phosphorus — A Damaging Lake Pollutant

What is phosphorus?

Phosphorus is a natural substance found in nearly all plant and animal matter. It is an important building block for plant and animal cell ***metabolism***, and it is a nutrient (fertilizer) essential to all living organisms. Nearly all soils contain phosphorus. Fine soil particles like clays, silts, and rich organic soils contain very high concentrations of phosphorus. Septage, manure, and street runoff also contain high concentrations. Phosphorus is a common ingredient in lawn and garden fertilizers, and is found in gasoline and oil residues.

What are the effects of too much phosphorus on lakes?

Lakes are very sensitive to phosphorus and other nutrients. The amount of phosphorus influences biological growth in a lake. Even small increases of phosphorus can cause problems.

The amount of phosphorus in lake water determines the amount of vegetation–the more phosphorus that reaches the lake, the more ***algae*** and aquatic plants that can grow. Although algae are an important component of the lake ***food chain,*** too much algae growth causes the water to turn green and cloudy, and generally undesirable for most recreational uses, especially swimming, and balanced aquatic life.

Table 1: Land Use and Phosphorus

Land Use	Source of Phosphorus	Comments
Agriculture	• Tilled soil • Animal waste • Fertilizers • Diverted field runoff that flows into road ditches • Unstable stream banks, or shoreline areas from livestock grazing	Agriculture creates the potential for high phosphorus runoff. There may be large areas of exposed soil, concentrated water diversions, fields tilled too close to road ditches, and livestock grazing too close to streams or the lake. Runoff from manure storage areas can also be a serious problem.
Commercial/ Urban Development	• Exposed soil from construction sites • Gasoline and oil residues from road surfaces • Sand and gravel from roads • Large paved areas and parking lots without adequate stormwater controls	High runoff volumes from buildings and parking areas can erode streambanks. Urban runoff contains moderately high levels of phosphorus and many other pollutants that are potentially harmful to water resources. Sand spread on roads in winter is easily washed into storm drains, streams, and ultimately into the lake.
Residential Development	• Soil erosion from construction sites • Soil erosion from subdivision and camp roads • Runoff from fertilized lawns and gardens • Animal waste (pets) • Failing septic systems	The phosphorus pollution potential is high partly due to rapid growth of residential development in many watersheds. The cumulative phosphorus load from residential areas (including roads) throughout the watershed can easily exceed all other land uses in the watershed combined.
State and Town Roads	• Soil erosion from road surfaces, shoulders, and ditches • Erosion from unstable banks or bridge scour • Ditches discharging directly to streams • Inadequate stormwater controls (e.g., catchbasins, detention ponds)	A significant source of sediment in most watersheds is the extensive network of roads and inadequate construction and maintenance standards.
Forestry Operations	• Soil erosion from skidder trails,clear cuts, log yards, logging roads, and stream crossings	Forestry operations can be a high source of phosphorus due to soil exposure and erosion from logging trails. Streambank erosion may occur due to increased runoff from heavily logged sites.

Excess algae growth also can cause a decline of oxygen in the water. This can seriously impair aquatic ***habitat,*** resulting in the slow decline of some sensitive species such as trout and salmon. In extreme cases, algae "blooms" can cause thick, foul-smelling scums to form on the water surface, and large numbers of fish and other organisms may die from oxygen depletion. Left uncontrolled, the effects of cultural eutrophication will result in the lake's decline.

Measuring phosphorus — How much is too much?

Natural phosphorus levels in lake water are normally so low that they are measured in parts per billion. A part per billion (ppb), is equivalent to 1 grain of salt in about 35 gallons of water. Lakes that have phosphorus levels in the 3-5 ppb range are typically clear and have good water quality. Levels of only 15 ppb or more, however, can cause lake water to turn green from excess algae growth. Phosphorus concentrations in Massachusetts lakes range from approximately 3 to 100 ppb, with a relatively high average level of 18 ppb.

Soil erosion and phosphorus.

Fast-moving stormwater accelerates land ***erosion***. Eroded sediment is transported downstream into streams, rivers, and lakes, where it eventually settles out. When soil particles erode, they travel with the runoff. Dissolved phosphorus and very small soil particles can travel great distances in stormwater runoff. The erosion and sedimentation problem is enormous—it has been estimated that as much as 80 million tons of sediment a year are eroded from construction sites. Because phosphorus and sediment can affect lake water quality so negatively, this guide places emphasis on identifying and reducing sources of stormwater runoff and sediment enriched with phosphorus.

Detached soil particles (sediment) from eroded areas also can cause serious damage to the streams that feed a lake by smothering sensitive habitat for fish and aquatic insects. Sediment that travels to the lake causes similar damage.

You can actually see the difference.

The difference in runoff quality can be easily seen during a rainstorm. Look at the runoff from a residential or commercial area flowing through a road ditch or small stream. Compare it with that of a small brook in the forest. Runoff from forested areas does not begin to flow until the soil is saturated with water and natural depressions in the forest floor have filled.

A lake's watershed consists of all the surrounding land that drains into the lake. Watersheds can extend for miles.

In developed areas, runoff begins to flow almost immediately off the ***impervious surfaces,*** such as paved roads and roof tops. Also, the appearance of the water differs significantly. Runoff from developed areas is normally brownish-gray in color. But runoff from stable, forested areas is usually clear, except in severe storms where it may become cloudy due to soil erosion.

Collect water in a mason jar from a forested lake. Compare it with lake water from a residential neighborhood. Photos of the two jars are effective for public presentations.

Certain land uses release higher phosphorus levels in stormwater runoff.

Phosphorus contributions from different land uses vary significantly from one lake watershed to another. Studies have been done to estimate the approximate amount of phosphorus released by certain land uses. These study results can be used to roughly predict a lake's annual ***phosphorus load,*** based on the land uses and soil types in its watershed, and to estimate how much the lake may be degraded.

These studies and the predictive models developed from them do not specifically pinpoint the problems causing degradation, however. That information is best determined through a watershed survey. Locating the problems and describing their nature and severity provides valuable information about the extent of problems and the overall character of the lake watershed.

The degree to which pollutants threaten a lake depends on everything that's happening in the watershed–how the land is being used, the extent of development, and the way ***surface water*** travels down through the watershed to the lake. The location of streams, soil type, and variations in the slope of the land are all factors that affect the way NPS pollutants travel to lakes. A visual lake watershed survey like this one helps to determine what's happening in the watershed and how that affects the lake.

All of the land in a lake watershed contributes phosphorus to the lake, including the undeveloped land. Different land uses have the potential to contribute greater or lesser amounts of phosphorus, depending on a number of factors.

These factors include:

- Where the development is located in the watershed (i.e. is the developed area on steep slopes, poor soils, near streams or the shoreline);
- How large an area has been developed for each type of land use;
- Whether or not measures are being used to control soil erosion and stormwater runoff; and
- How long the developed area has existed.

For example, in a small watershed with moderate shoreline development, much of the phosphorus would probably be coming from the lakeshore development. But in a watershed with a large upland area away from the shoreline, general residential development, forestry operations, farms, and commercial development would probably all be contributing to the lake's phosphorus load.

By the time pollution effects are obvious, a lake can be difficult or impossible to restore.

A lake watershed survey helps determine *where*, and *what*, the problems are. It helps us understand whether or not particular *types* of land uses are problematic. For instance, new construction activities in a particular town may not have ***erosion controls*** installed to keep soil from eroding off the site. And most important, the survey nearly always confirms that the problems are not just the large, obvious ones. There are many small situations that are commonly overlooked. Small problems add up and can cause serious water quality problems.

A lake watershed survey identifies problems and educates the public about land use activities.

Can a lake's health be restored?

Efforts to restore a lake to a healthy state, once it has declined, take a long time and are very costly. The technology to manage watershed functions is complex, and the results are often uncertain. ***When it comes to caring for our lakes, an ounce of protection is worth many pounds of cure!***

During the past two decades, a number of Massachusetts lakes have undergone restoration efforts. Some lake restoration projects may cost hundreds of thousands, or even millions of dollars, and there is no guarantee of success. However, the potential for success is improved by reducing nutrients from the watershed.

Attempts to manipulate water quality through chemical treatment may only last for a few months, and usually no more than a few years. In the three year period from 1994 to 1997, the Department of Environmental Management (DEM) awarded nearly one million dollars from the Lake and Pond Grant Program for 127 projects at 113 Massachusetts lakes and ponds for improved best management practices. While there were improvements in water quality, this level of funding addressed only some of the lakes' problems.

Although many of Massachusetts lakes are impaired, it is more economical and ecologically responsible to prevent lakes from reaching the point where restoration is needed. Fortunately, many methods for preventing or alleviating NPS pollution are simple and inexpensive. These methods, however, must be accepted as an essential part of land-use planning and long- term management. Problems associated with existing development also must be addressed.

Landowners in lake watersheds need to become more aware of the sensitivity of lakes and accept greater responsibility for the stewardship of these fragile ecosystems. Watershed education will help. Many are still unaware that, cumulatively, landowners have the greatest impact on the health of a watershed. When municipal officials and landowners recognize the "cause and effect"of their activities on a lake's ecosystem, they will be more likely to change damaging practices. This is the first–and perhaps most important–step toward changing watershed behavior, in order to reduce water pollution and provide better lake and water resource protection.

Phosphorus from a lake watershed can be reduced, by identifying and eliminating the majority of soil erosion problems.

Organizing A Lake Watershed Survey

Section 3

What's Here?

The Steering Committee
Communication
Getting Support
Training Tips

Getting organized and establishing clear roles and responsibilities can ensure a successful lake watershed survey. The initial steps are organization of a steering committee and determining reasonable and acceptable goals for the survey to accomplish.

Organizers of the survey should begin by considering the benefits of conducting a lake watershed survey. An important benefit is raising public awareness of water quality problems in a watershed and the need to protect the lake's water quality. The survey becomes an effective tool for explaining watershed concepts. The survey also is a cost-effective way to gather land-use data, making it an important component in a comprehensive strategy for water quality protection. Landowners and community volunteers can become aware of erosion and runoff problems that may exist on their property and in their community.

The project schedule below shows a list of activities for a successful lake watershed survey. This schedule allows participants to set deadlines and structure certain activities for their specific lake watershed survey. Schedules can, and probably will, vary for each watershed.

Project Schedule

Target Date	Actual Date	Activity
		◆Organize steering committee and gather information about the watershed.
		◆Run article/notice in local newspaper. ◆Hold public information meetings. ◆Conduct training sessions for volunteers.
		◆Project advisors check ground conditions and decide on start date. ◆Begin the survey. ◆Trainers schedule a day in the field to help volunteers get started.
		◆Volunteers complete and return survey forms to volunteer coordinator. ◆Volunteer coordinator checks with each team to be sure work has been completed.
		◆The team reviews data and reports findings to discuss and resolve questions concerning field data.
		◆Prepare preliminary summary of findings. ◆Address problems with the group and consider contacting landowners. ◆Hold public meetings to present findings. ◆Prepare final report. ◆Seek funding and develop watershed protection strategies.

Steps in Organizing the Lake Watershed Survey

1. Form a steering committee to guide the survey.

A steering committee will be the guiding force behind the lake watershed survey. The committee is comprised of committed individuals who are aware of the problems in the surrounding watershed. The diversity of this committee can be seen by the representation of its members. Committee members should have the ability to facilitate group interactions and the ability to build and strengthen new and existing relationships within the watershed community. People from local lake associations, property owners' groups, business groups, and educators should be on the steering committee. Local, state, and federal representatives should be asked to participate. Members can include town selectmen, managers, planning board members, and boards of health. Steering committee members also might be found in watershed teams, conservation commissions, and state and federal environmental agencies.

Steering committee members will play a number of important roles throughout the survey. Committee members need to set project goals according to the needs of the community. They will develop a long-term comprehensive strategy for lake protection based on information gathered during and following the lake watershed survey. The steering committee will communicate with town officials, resource agencies, and the local media, as well as plan community information meetings. Another responsibility of the steering committee is recruiting volunteers and support personnel. Members of the group will be responsible for ensuring that field volunteers get the necessary training, checking identified sites, and preparing the final report.

Key roles in the lake watershed survey project are:

Survey Coordinator: Responsible for coordination of the specific projects, including overseeing the activities of the steering committee.

Volunteer Coordinators: Responsible for coordinating activities of the volunteers, including distribution of materials and the collection and preliminary review of data. These individuals will assist volunteers on technical issues, training, conducting follow-up work in the field, and writing the final report.

Documentation of organizational time may prove valuable in demonstrating the level of commitment that a group of individuals, an organization, or town has made to the project. This may be very useful if additional assistance is needed for a follow-up project that may have been identified in the survey. The amount of time will depend on the size of the watershed and the level of detail in the Lake Watershed Action plans.

2. Identifying concerns and issues.

Why conduct a lake watershed survey? Be prepared to answer this question. Is there a specific problem with the lake that justifies the survey? If not, does the watershed community recognize the value and sensitivity of the lake, and want to protect and maintain that value? These questions should be answered early in the organizing process.

Each town in the watershed should be represented on the steering committee, regardless of whether the lake itself is in those towns.

Before enlisting help from the public and agencies or organizations, project organizers should be able to define the concerns and basic issues. Much of the background information needed to discuss the issues is included in "*Understanding Lake Pollution,*" Section 2 of this manual. Often, additional information about the lake can be obtained by contacting the Massachusetts Department of Environmental Protection ; Bureau of Resource Protection; Watershed Planning Program; the Department of Fisheries and Wildlife's Riverways Program; the Executive Office of Environmental Affairs (EOEA) watershed team leader; or the Department of Environmental Management (DEM) Lakes and Ponds Program.

There may be a great deal of information already available about the lake and its watershed. Watershed maps are available from DEP and EOEA watershed team leaders. Soil and aerial survey maps are available from the Massachusetts Geographic Information System (MASS GIS) and Natural Resource Conservation Service (NRCS). Towns may have drainage maps available. Conservation commissions also may have information concerning land use problem areas in the watershed and examples of ***Best Management Practices*** (BMPs) that are in use. Finding information about the watershed and lake before volunteers begin will prevent repetition of information about problem areas that have been identified through other agency research.

3. Communicate and involve the watershed community.

Community support is critical to the success of a lake watershed survey. Before beginning the survey, talk with community ***stakeholders*** (area business people, lakefront property owners, and town officials) to let them know what is planned and to get their support. This also would be a great time to recruit volunteers for the survey!

Communication early in the process will educate and inform citizens about the project well in advance of the field survey. Community members may point out problem areas in the watershed before field volunteers do their work. Key members of the steering committee should work with landowners to identify sites and sources of technical assistance. Early awareness helps address citizens' questions and concerns. Landowner involvement should be emphasized when the project is discussed with members of the community. Misunderstanding about the survey objectives can be avoided when landowners are fully knowledgeable of the project.

Publicizing the survey process in advance, and holding public information meetings, will help ensure that the public understands the nature of the project and the need to access private land. Watershed association newsletters and Web sites can be used to publish information about the lake watershed survey. Regular communication with the public is the most effective way to avoid misconceptions about the project's purpose, findings, and recommendations.

Send a letter of explanation to landowners before the survey

Develop or obtain a mailing list for landowners in the lake watershed, and mail a letter explaining the survey. A one-page explanation of the survey objectives and the name and telephone number of contacts (e.g., a survey coordinator or watershed team leader) provides every landowner with an opportunity to ask questions about the project. These letters also provide another opportunity to ask for volunteer participation!

Organize public information meetings

Ideally, public meetings should be scheduled throughout the life of the project, and information about the survey should be available at town meetings.

Hold public information meetings to explain the purpose and procedures of the project to interested members of the watershed community. Invite the press to *all* public meetings and to attend volunteer training sessions. Send press releases to the local newspaper with progress summaries as the project proceeds. Local television reporters should be invited to attend public meetings. Make use of community bulletin boards in churches, schools, supermarkets, and public libraries to help raise awareness of the survey and its progress.

Speak with property owners during the survey

As a general rule, permission must be obtained before volunteer surveyors enter private land. Steering committee members should make every effort to make landowners aware of the project before volunteers begin the survey. Surveyors also should speak to property owners before entering their land to avoid potential conflicts or misunderstandings. This contact gives volunteers an excellent opportunity to explain the survey and educate the property owner. Information about how to approach landowners should be included in the training for field volunteers.

Landowners who do not wish to participate in the survey can notify the committee so their property will not be surveyed. However, not everyone will be aware of the project, and property lines are not always easy to determine. Town assessors maps can be checked, copied, and carried in the field to determine property ownership.

Leave information with property owners

If owners are not home when the survey is conducted, field volunteers should have a prepared statement about the survey along with a contact name and phone number. Volunteers should leave this information at the house and recontact the landowner another time. Do not survey any property without permission.

4. Involving agencies and organizations.

A number of local, state, and federal agencies and organizations can provide technical experience, guidance, and direction. Many of the members of these organizations become involved in their local lake associations and are willing to contribute their technical expertise for the lake watershed survey. The following are examples of the resources provided by organizations and groups that can assist in the survey process, both technically and financially. ***(See also Appendix D for contacts and Web sites for the following groups.)***

The Executive Office of Environmental Affairs watershed teams and local watershed associations can provide valuable help in all phases of the project. Technical expertise and materials, such as watershed maps, may be acquired through these groups. They should be among the first contacted.

Municipal governments should not only be informed about the survey but encouraged to participate. Clean lakes benefit communities in many ways. High property valuation around clean lakes result in higher tax revenues for cities and towns. Tourists, who are more likely to visit clean lakes and patronize local businesses, can increase local revenues substantially. Municipalities may be willing to cover the cost of materials required for the survey and expenses for professional oversight. It is essential that municipal officials be kept fully informed of the progress and findings of the project. They are likely to field questions from the public and they need to provide accurate information.

Conservation commissions can be an excellent source of information about the lake watershed. The commission may have already identified or mapped sensitive areas. Commissioners may be interested in participating on survey teams. They also may have aerial photos. Coordination with a local conservation commission in preparing the final project report may add credibility to the findings and recommendations of the survey team.

Regional Planning Commissions (RPCs) may be able to identify problem areas in the watershed and help organize information. RPCs may be willing to direct organizers to key people in the watershed towns. They may know of grants for the survey work and be willing to assist with the development of grant proposals for restoring problem sites identified during the survey.

The University of Massachusetts Cooperative Extension should be made aware of the project and approached for help. They work with agricultural producers in improving nutrient management and pesticide reduction. They also work to solve wellwater problems and conduct environmental education projects.

The Massachusetts Water Watch Partnership provides training and technical assistance to organizations that conduct water quality monitoring programs in Massachusetts. The partnership also can be a resource for finding funding opportunities. This group is affiliated with the University of Massachusetts at Amherst Water Resources Research Center.

The Watershed Planning Program in the Division of Watershed Management, Massachusetts DEP maintains water quality files for many Massachusetts lakes. They may have useful information on land use activities in your lake watershed, as well as extensive historical data about the watershed.

The Drinking Water Program in the Division of Watershed Management, Massachusetts DEP will have information on lakes and reservoirs that are active drinking water sources. DWP is conducting the ***Source Water Assessment Program*** to identify and map potential contaminant sources in Massachusetts drinking water sources. ***(see appendix E for more information)***

The North American Lake Management Society (NALMS) is a nationwide organization that creates partnerships among citizens, scientists, and professionals to further the protection and management of lakes. NALMS Web site at www.nalms.org has links to the New England chapter. Contact the New England chapter for information on workshops.

The Massachusetts Congress of Lakes and Ponds (MACOLAP) and ***LAPA-West*** promote and support the formation of lake and pond associations. Their objective is to preserve, protect, maintain, and enhance the environmental, aesthetic, recreational, and economic values of Massachusetts waterbodies.

The Department of Fisheries, Wildlife, and Environmental Law Enforcement (DFWELE) is a good resource for fish and wildlife habitat information. ***The Riverways Program*** assists with the organization of local watchdog and advocacy groups to protect waterbodies in Massachusetts.

The ***Natural Resource Conservation Service (NRCS)*** is a federal agency under the U.S. Department of Agriculture with regional offices in Massachusetts. The NRCS is familiar with erosion problems in many lake watersheds. Limited technical review and assistance in recommending BMPs may be available through NRCS, depending on staff availability and funding for other projects.

Lastly, qualified ***private consultants*** are available to assist with watershed survey projects. If a consultant is hired to work with the steering committee, the individual or firm should be thoroughly familiar with nonpoint source pollution issues, lake water quality issues, watershed land-use relationships, and the use of BMPs to mitigate nonpoint source problems. Hiring a consultant will add expense to the project, depending on the level of involvement.

5. Determine the survey schedule.

Establish a time frame for the survey. This ensures that surveyors are in the field during the best time of the year for seeing ***runoff***-related NPS problems. A schedule also provides volunteers with a deadline for returning field forms.

6. Find field volunteers to survey the watershed.

Field volunteers participate because they are concerned about protecting their lake and are willing to give their personal time to that effort. Volunteers reduce project costs and help educate and inform the community about the effects of watershed development on lake water quality. Because volunteers live in and represent the community, they are able to continue educating the public for years after the survey has been completed.

There are many ways to find people who are interested in being field volunteers. Many of the organizations listed below can be found in the yellow pages of a local phone directory, and on Web sites.

- Lake associations or shoreline property owner groups
- Conservation commissions
- Planning committees
- Youth conservation groups
- Student interns from college environmental studies programs
- Local community service organizations such as the American Association of Retired Persons
- Fish and game clubs
- Garden clubs
- High school students

Identifying financial and moral support for the volunteer network should always remain a priority for the steering committee. Financial needs for the volunteers can vary greatly, and there are a number of funding sources that can provide money for project materials and expenses. The most common expenses are telephone charges, mileage, photocopying of documents (topo maps and survey forms, for example), and buying and developing film.

Volunteers may need support beyond what they receive during initial training sessions. Interest and enthusiasm are critical to a survey project's success! Hard work and long hours devoted to the lake watershed survey deserve recognition. Events, small and large, should be planned to mark accomplishments and milestones of the volunteer team.

Consider the size of the watershed when gathering volunteer support

A **minimum** of 10 volunteers is needed for a lake watershed survey. The size of the watershed and the development density of the watershed will determine how many volunteer surveyors are needed. For large, densely developed watersheds, it may not be feasible to survey the entire watershed in one year. Try to estimate how much area can be covered, based on the size of the watershed and the number of volunteers available. Involve enough volunteers to visit all developed property, roads, and undeveloped areas.

Tell field volunteers what to expect

Each volunteer should make a **minimum** time commitment of one day for training and two days in the field. They should expect to provide carefully written, photographed, and illustrated documentation of the problem sites found. Volunteers should understand the importance of accurate and consistent reporting of information.

Volunteers should be made aware that it may be necessary to visit certain sites during inclement weather conditions. Specific site problems that will be found in different weather conditions should be covered during the field volunteer training. Following a review of the volunteers' field data, they may be asked to revisit sites to verify observations, particularly if vital information is missing from the survey forms. Revisiting sites also is useful as a quality assurance and control measure. One or two volunteers should be designated as group coordinators. They should be responsible for relaying information from the steering committee to the field volunteers.

Part of the process of identifying sources of phosphorus and sediment should be done during runoff-producing storms, if possible. Volunteers should be aware that "windshield surveys" (surveys done from the seat of a car) will not produce the detailed information needed. They may have to track runoff for considerable distances from the lake to locate the sources of pollution.

7. Arrange for training sessions.

Who should train volunteers?

Training sessions should include a presentation on the goals and objectives of the project. The reasons for monitoring, the history of the watershed and lake, uses of data collected, and how the project will benefit the volunteers, the community, and the state should be covered in the first meeting. There should be an overview of the survey procedures, preferably with a slide presentation. A trial run of proper methods of surveying should be done by the trainer while in a classroom setting. The training session also should include the distribution of any equipment and an explanation on how to use the equipment. Volunteers should be encouraged to provide an evaluation of the training session to the training team.

The second part of the training involves a field assessment of actual problem areas in the watershed. This training should emphasize detailed and accurate documentation. Joint visits to a few sites will promote consistency in field data collection and reporting. Volunteers will be given an opportunity to practice what they have learned.

Fundamentals that volunteers should learn

Volunteers should know that there are two basic questions that need to be answered in reporting each problem: Where is the problem? What is the problem? Field survey forms that do not answer these two questions can slow the process and add expense to the survey.

Volunteer training is essential to the success of the lake watershed survey. Become a dynamic lake surveyor through training! Enthusiasm is catching!

Prepare topographic maps for use in the training session

The lake watershed should be outlined on USGS 7.5-minute topographic maps. Copies of USGS topographic quad maps are available from MASS GIS on-line ***(see Appendix C)*** or call 800/USA-MAPS. Another good source of topo maps can be found at www.topozone.com. Many copy centers now have map copiers that will reproduce a USGS map, but the copy will not be in color. If time and cost allow, copy or trace watershed boundaries directly onto original USGS maps to have color-coded topographic information. General guidance for reading topographic maps can be found in Appendix C. Distribute and review this guidance with the volunteers during training.

Divide the watershed into sections

Prior to the training session, divide the watershed into clearly defined areas. Each area should be small enough so that two or three volunteers can cover it in approximately two days,

Volunteer Training Issues to Cover:

- What is a watershed and how does it work?
- The goals of the survey.
- Tools for watershed management.
- What are stormwater runoff and nonpoint source pollution? How do they affect lake water quality?
- How soil erosion and phosphorus affect lake water quality.
- Lake ecology and how changes to the lake's ecology reduce recreational enjoyment.
- How changes in water quality affect the local economy.
- Safety in the field.
- How to read topographic maps.
- How to fill out survey forms.
- Methods for keeping accurate and detailed documentation.
- Examples of typical erosion problems (photos and slides as well as visits to actual sites).
- How to discuss the survey with landowners (i.e., public property rights or trespassing issues.)

or 7-8 hours. Establish area boundaries along features that are easy to locate, like roads and streams. ***(See next page for an example map.)***

Establish teams of two for each area

Volunteers should work in teams of two for several reasons: safety, to share ideas about site evaluations, and to help each other fill out data sheets consistently and accurately. It is also easier to obtain follow-up information on a specific site when more than one person can be contacted.

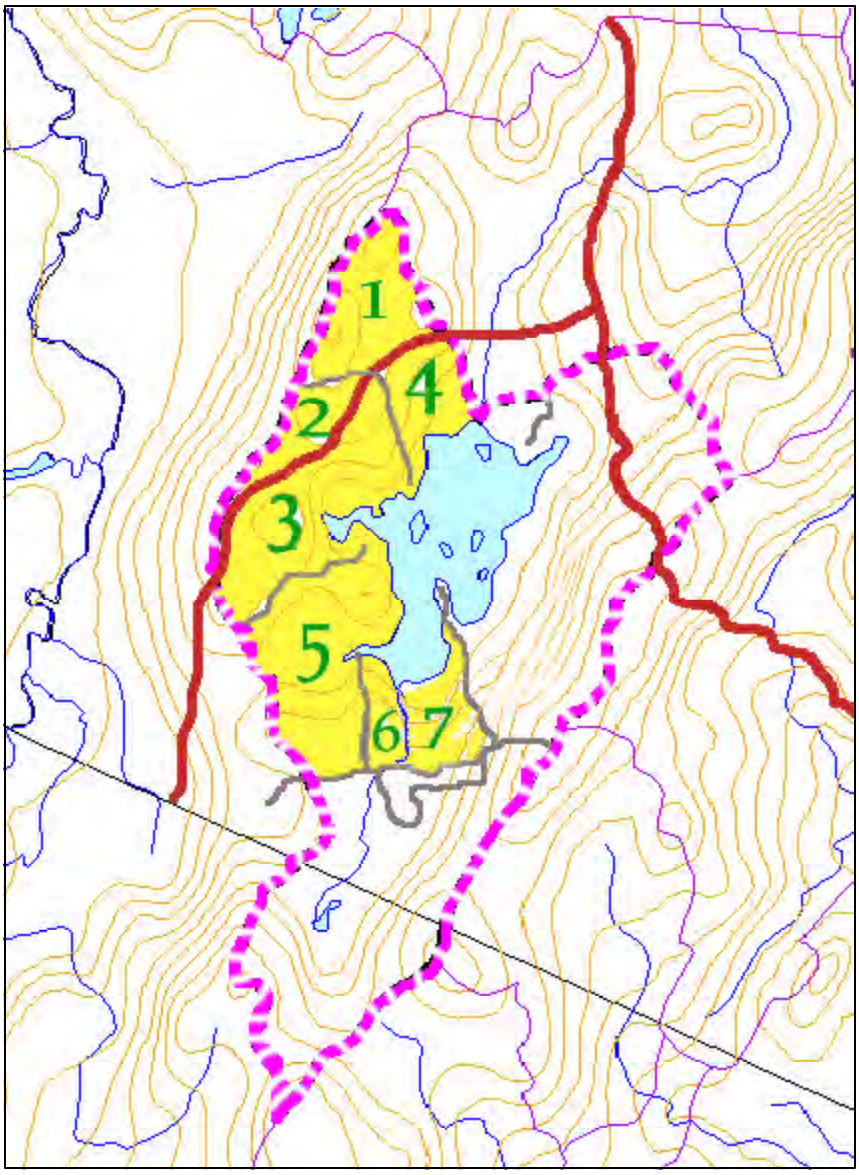
Give volunteers lake watershed survey data collection forms

Appendix A contains a sample watershed survey data collection form used by the Massachusetts WaterWatch Partnership. There are data collection forms designed for use with this survey and will be part of the lake watershed survey training for volunteers.

Give the volunteers practice

Volunteers should be taken into the field during training. Representative sites should clearly illustrate types of problems volunteers need to recognize, as well as good practices that can be found, such as existing buffers and landscaping with native plants. Sites can be defined as any problem area that can reasonably be described on the survey form. Include a variety of land uses such as open space, forest, water and marsh, agricultural (cultivated and pasture), and developed (urban and residential). Visit sites where BMPs are being used to emphasize the difference between stable and unstable land uses. Contact property owners to inform them that their sites provide good examples, ask permission to access their property, and encourage their participation in the training.

In addition to seeing typical NPS problems, have the survey volunteers participate in a problem-solving exercise. Ask them to locate and identify different land-use sites within a specific area.



Assigning Areas in the Watershed

The watershed should be divided into areas that are clearly defined by boundaries, such as roads or streams. The areas should be small enough that volunteers can cover the majority of the area in approximately two days.

This example shows clearly delineated boundaries using major highways, minor connecting roads, and existing waterbodies. Field volunteers can easily navigate through their area by using the boundary lines that are created naturally.

More information on reading and finding your way through topo maps can be found in Appendix C.

Legend

- ***Sub-Basin***
- ***Major Road***
- ***Minor Connectors***
- ***Waterbody***
- ***Assigned areas***

8. Send volunteers out to conduct the survey.

Plan ahead

Even if articles about the project have previously been published, print a reminder before the survey begins. Issue a brief press release to the local papers describing the project and the schedule for the survey just before volunteers go into the field.

Stay on schedule

The survey should be conducted according to a schedule set by the survey team. The public will be expecting volunteers to be surveying the watershed within the period of time discussed in newspaper articles. Staying on schedule also allows time for follow-up if there are questions concerning the volunteer findings.

Provide support for volunteers in the field

If the trainers and volunteers feel additional help is needed, consider meeting with the volunteers at a predetermined location on the first day of the survey. This allows volunteers to check back with the advisors during the day with questions, and it allows the team to review survey forms to ensure that information is being properly documented. This can save a lot of time after the volunteers have finished and are less available.

9. Review field data for preliminary summary.

Immediately after the lake watershed survey is finished, all survey information should be reviewed by members of the survey group to verify that the survey forms have been properly completed and all sectors evaluated.

The team will evaluate the accuracy and thoroughness of the documentation. Individual problems that have been identified will be prioritized. This process can take a few days or several weeks, depending on the number of problems that are identified.

If the survey information is incomplete, the volunteer coordinator should contact the volunteers *immediately* to ask for the missing information, which might require another field visit. Sites also may be checked with aerial photographs, where feasible. Contacting the volunteers soon after they have completed their work may save time that could be needed to locate poorly defined problems.

Throughout the lake watershed survey, the data being collected should be monitored as it comes in. Volunteers should be encouraged to ask questions about the process as they fill out the survey forms.

The data should be compiled from the field survey forms. A review of this data will help prepare a strategy to address specific site problems, which will need to be prioritized. High priority sites will not always be the focus of the strategy. The cumulative effect of correcting many lower priority sites may have greater benefits and be easier to address. These sites may be repaired at lower costs. In Section 5, a method is laid out for setting objectives and recommending activities to correct erosion and sedimentation problems.

Protection of the lake is an ongoing process. The steering committee's plan should develop long-range goals and recommendations for the future to sustain the interest and involvement of the watershed community.

Steps for a Lake Watershed Survey—Field Volunteers

Section **4**

What's Here?

Decide When to Survey
Plan to Talk to Landowners
Conducting the Survey
FillingOut the Survey Form

1. Decide when to survey.

At this point, field volunteers have training, topographic watershed maps, and blank survey forms. Volunteers are ready to begin surveying the watershed. Begin surveying the assigned section of the watershed as soon after the training as possible. Ideally, the survey should be conducted within a week or two of training.

A watershed survey can be conducted at any time. However, there are advantages to conducting a watershed survey in the spring, between March and May, because:

- The ground is likely to be ***saturated*** with water due to spring snowmelt. Under these conditions, ***stormwater runoff*** from rainstorms will be at a maximum (phosphorus and sediment in runoff from spring storms often represents a large percentage of the total annual phosphorus load to a lake).
- Eroded areas will be more visible due to the absence of vegetation.
- No spring maintenance on roads will have taken place, so problems will be more obvious than after roads have been regraded and repaired.
- Time will remain for the follow-up team to complete the project during the summer months.

Because about 90 % of erosion occurs during heavy storms, it will be easier to see runoff associated with erosion when a survey is done during or just after a storm. However, it will be more convenient to plan and conduct the first survey on a day that has been scheduled in advance. During the survey, look for brown or ***turbid*** (cloudy) water in road ditches, swales, brooks, and streams. This is an indication that silt and other phosphorus-bearing soil particles are present. Severe erosion problems, such as gully erosion, ditch and road washouts, and undercutting of streambank slopes from running water or in areas of heavy shoreline wave action, are obvious in dry weather.

2. Decide where to start.

Before going into the field, become familiar with the assigned section of the watershed on the topographic map of the watershed. Locate roads and watershed boundaries, and decide where to begin. The ability to read maps is a skill necessary for locating and documenting sites. Practice reading topographic maps before doing fieldwork. ***(A guide for reading topographic maps is in Appendix C.)***

This section is set up as a series of checklists that volunteers can use to prepare and conduct the survey.

Starting at the low point—the lake itself—and working up the watershed is usually most efficient. **The most environmentally sensitive area is within 1000 feet of the lake and its tributaries.** Access the watershed via roads. Begin near the lake at one end of the road; work within the assigned area of the watershed. An orderly progression through the watershed works well for documenting and recalling sites.

3. Gather materials for the field.

- ☐ Clothing for foul weather, including rain gear, hat or hood, gloves, comfortable boots, warm sweater, and socks.
- ☐ Survey forms, topographic maps of the watershed, clipboard and pencils; if possible, stored in a sealed plastic bag or a field clipboard designed to shield contents from the weather.
- ☐ Camera, film, and fresh batteries—the saying "a picture is worth a thousand words" is especially true when documenting watershed problems.
- ☐ A 50-foot tape measure to measure areas of the site and distances from landmarks (or measure your pace so you can estimate distances by "pacing" it out).
- ☐ Life vest, in case you work around large streams with high-velocities.
- ☐ Flashlight with fresh batteries (useful for checking ***culverts*** and as a safety precaution).

4. Prepare to be safe in the field.

- ☐ Always work in teams of two or more.
- ☐ Be sure someone at home knows where you are.
- ☐ Dress appropriately.
- ☐ Have a first-aid kit, and tick and insect repellent available.
- ☐ Always use a map.
- ☐ Bring a cell phone.
- ☐ Walk only where footing is safe — do not compromise your safety to gain access to a difficult area.
- ☐ Use caution walking near roads, a rocky or steep shoreline, or on slippery rocks.
- ☐ Know how to recognize poison ivy.
- ☐ Bring water and snacks.
- ☐ Heed "beware of dog" signs.
- ☐ When working around large streams with high velocities, wear a life jacket.
- ☐ After field visit is over, check for ticks.

5. Talk with landowners.

- ☐ Knock on the door, introduce yourself, and explain the survey. This is an excellent opportunity to educate the community.
- ☐ Take along handouts to give to landowners. Handouts explain the watershed survey work *(see Appendix A.)* If no one is at home, leave a handout explaining the project.
- ☐ Be clear about the purpose of the survey:

➢Volunteers are trying to identify problems that may be impacting the lake.
➢Volunteers are finding the pathways in which stormwater carries soil and pollutants to the lake or tributary streams.
➢Volunteers and technical teams are developing solutions to the problems identified and are creating an action plan detailing solutions.
➢Volunteers are raising public awareness about the effects of polluted runoff on the lake and building support in the community for local watershed management.

- ☐ Be prepared to respond to uncooperative people. If the property owners do not wish to have their property surveyed, leave them literature and move on to the next site. Confrontations are unnecessary.

- ☐ Always respect the property owner's wishes, regardless of the situation. If a volunteer suspects a serious problem exists on an inaccessible site, note it on the survey form and notify the DEP Regional Office (Appendix D), so that the site can be visited later.

6. Who should be contacted for questions?

Even with training, questions will come up throughout the survey. Look for answers in Appendix B, Frequently Asked Questions, and contact the following people:

- ☐ Your partner.
- ☐ Steering committee chair.
- ☐ DEP Nonpoint Source (NPS) Coordinators (Appendix D) are available to answer questions — just a phone call away.

7. Conducting the survey— What to look for in the field.

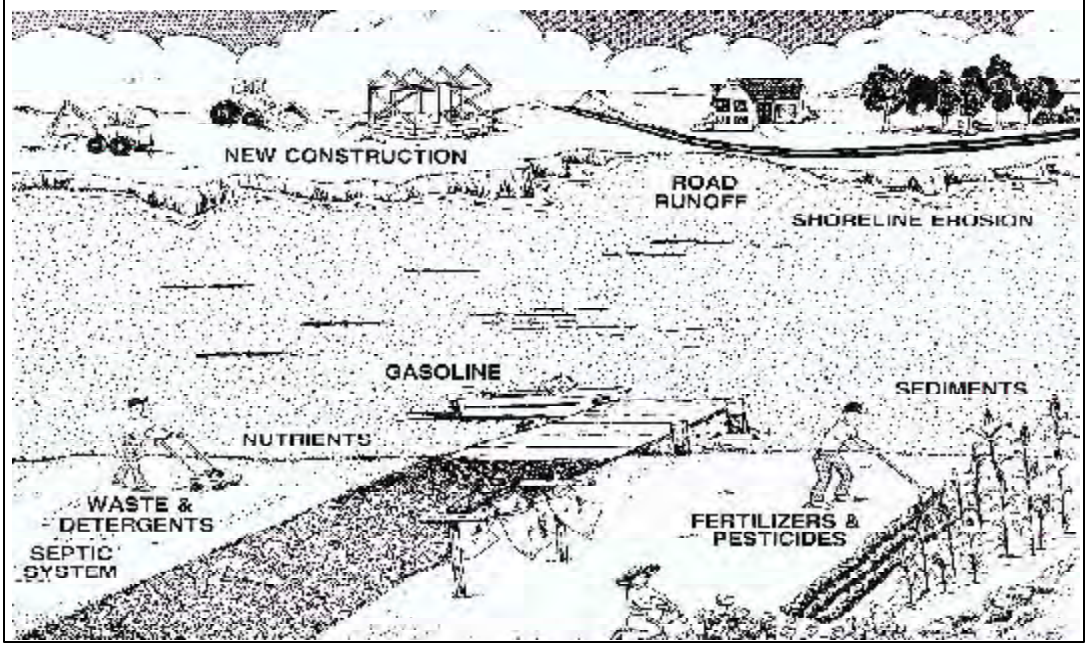
Regardless of land use type, volunteers will be looking primarily at the pathway for stormwater runoff. Is the runoff flowing directly to a stream or lake? How close is the erosion problem to the lake or stream? Is it entering a channel or ditch that flows to a stream or lake? Does runoff flow to a vegetated buffer before it reaches a stream or the lake? How well is runoff distributed throughout the buffer? Does the runoff spread over the ground, or does it flow through the buffer in a channel? Are there steep slopes at and below the site that might cause runoff to pick up speed and erode channels?

Volunteers should look for, and record, the approximate distance from the site to a lake tributary, an ***intermittent stream,*** a road ditch, or the lake. Road ditches often transport contaminated runoff for hundreds of feet before flowing into a brook. It may be necessary to follow runoff for a considerable distance before determining whether runoff from the problem site reaches the lake.

The volunteers' presence will generate interest. People may question what volunteers are doing, and why they are going onto private property.

Remember, during a storm or right after, it's easier to see evidence of erosion such as turbid water. However, clear runoff may still be a concern. Therefore, document any runoff to a ditch, stream, lake, or wetland. Also learn to recognize sediment deposits, which accumulate or mound near stream channels and shorelines, downstream of areas with eroding soil. Look for activities that alter or remove streambank, shoreline, and natural vegetation. These activities cause open areas to be more vulnerable to erosion.

Typical Sources of Nonpoint Source



Look closely for land disturbances that may be causing changes in lake water quality or increasing sediment transport, such as:

Land Disturbances–Examples:

- ☐ Bare soil, uncovered/unfenced piles of soil.
- ☐ Erosion, such as ***gullies and rills.***
- ☐ Undercut or slumping banks or slopes.
- ☐ Cloudy or discolored water or runoff.
- ☐ Green scum, oily sheen, or floatables on water.
- ☐ Sediment deposits/build up in waterbodies or pipes.
- ☐ A defined pathway of runoff from the site.
- ☐ Pipes/culverts with runoff, stains, or odors.
- ☐ Animal manure, trash, vehicles, or waste storage near waterbodies.
- ☐ Altered and paved areas near waterbodies–absence of ***vegetated buffers.***
- ☐ Slopes of 7% or more on topographic maps (***See Appendix C***).
- ☐ Absence of erosion and sediment barriers around disturbed areas, such as hay bales and ***silt fences.***
- ☐ Absence of check dams in ditches or swales.

Look closely at all land uses in the survey area, particularly the following:

More information on land uses follows the list.

Land Uses–Examples:

- ☐ Construction sites: disturbed areas and waterbodies.
- ☐ Residential areas: driveways, shoreline, paths to shoreline, and lawns, (especially very green lawns).
- ☐ Roads (town, state, and private): ditches, shoulders, banks, stream crossings.
- ☐ Agricultural areas: cultivated fields, pasture/open land, manure storage areas, animal stream crossing, animal grazing.
- ☐ Urban, commercial, and industrial areas: parking and vehicle maintenance areas, dumpsters and waste storage areas near waterbodies; piped drainage ways to streams and wetlands.
- ☐ Logging operations: trails, roads, stream crossings, logging yards, cut areas.

Field volunteers will find other land uses, such as landfills, parkland and open space, and gravel pits. Although these are not the primary land uses described in the guide, discuss these sites and how to proceed with the DEP NPS Coordinator.

Construction Sites

Soil can erode from excavated or filled areas during and after construction of new buildings, additions to existing structures, foundations or footings, and during landscaping projects. Soil erosion from construction sites is usually obvious. Small gullies or channels, called rills, appear on the surface of bare soil where soil particles have been carried away by rain or snowmelt. These channels do not have to be very wide or very deep to cause downstream problems. The larger the exposed area and the steeper the slope, the greater the potential for soil erosion. Areas that are not replanted following construction can be ongoing sources of phosphorus and sediment to a lake.

Erosion of soil from construction projects can be greatly reduced by stabilizing the soil surface with erosion controls. Erosion controls can preserve topsoil, which reduces landscaping costs. A wide range of erosion controls are available, such as mulch, blankets, plastic sheeting, and sod. These ***erosion controls*** must be installed properly and maintained in order to be effective.

Construction Sites - Examples:

- ☐ Exposed soil and erosion.
- ☐ Alteration to drainage pathways or alteration near waterbodies.
- ☐ Absence of erosion controls.
- ☐ Evidence of erosion, such as gullies or rills on the surface of the soil.
- ☐ Cloudy or discolored water in ditches, streams, wetlands, or lake.
- ☐ Sediment build up in ditches, streams, wetlands, or lake.
- ☐ Construction on steep slopes.
- ☐ Check local permits for an erosion and sediment control (ESC) plan.
- ☐ Erosion controls such as silt fences and hay bales that are not working (not holding the soil on site, or not anchored into the ground).

Residential Areas

Residential areas are a source of runoff pollutants. Of concern are eroding soils, shorelines, or streambanks; poorly vegetated lots and improper use of fertilizer and pesticide in landscaping practices; effluent from poorly maintained or failing septic systems; illicit sanitary connections to storm drains; pet waste; and concentrated runoff from roofs, driveways, lawns, and other hard or impervious surface areas.

Lakes can benefit greatly by keeping a vegetated buffer area between structures and the lake, or along pathways to the lake (ditch, stream, and wetlands). Vegetated buffers filter out pollutants from runoff before they reach the lake. Vegetation also provides habitat and shade for animals that depend on the lake for survival.

Residential areas - Examples:

- ☐ Areas of bare soil.
- ☐ Turbid (cloudy) water.
- ☐ Evidence of erosion on driveways or other areas, such as gullies or rills on the surface of the soil, or sediment accumulation in ditches and streams.
- ☐ Bank instability—bare soil, slumping, or undercut banks.
- ☐ Removal of vegetation near shoreline, resulting in increased vulnerability to erosion.
- ☐ Unstable, eroding access points or paths to the lake.
- ☐ A direct pathway for runoff to reach the lake.
- ☐ Absence of vegetation or vegetated buffer.
- ☐ Evidence of septic system problems— lawn with green patch, soggy or wet lawn, and/or sewage odor.
- ☐ Lush lawns.
- ☐ Petwaste.
- ☐ Improperly stored trash (e.g., trash barrels or dumpsters) or organic debris (grass clippings, leaves, compost) near a waterbody.

Roads

In many watersheds, roads represent a significant percentage of impervious areas and problem sites. Poor design, location, and maintenance of paved and unpaved roads can contribute to chronic erosion problems. Steep slopes and unstable banks adjacent to roadways are prone to erosion. Without routine grading and the addition of new gravel on gravel road surfaces, these surfaces tend to erode. In addition, road erosion problems occur in areas of increased development, which contributes runoff in excess of the design capacity of the road drainage system.

Road drainage ditches erode when designed improperly, when not stabilized after construction, and when not maintained. Erosion also can occur around culverts that are undersized or installed without sidewall or ground stabilization measures at inlets and outlets. When ditches and culverts are not working properly, a road surface can wash away.

During dry weather, pollutants from cars and trucks accumulate on roads. Sediment, metals, oil and gas residues, and other materials, including phosphorus are picked up by stormwater from roads. Gravel and paved roads are designed to shed stormwater. Stormwater runoff from roadways concentrates in ditches, which often discharge directly into streams and waterbodies.

Roads - Examples:

- ☐ Roads located close to streams, lakes, or wetlands.
- ☐ Absence of vegetation or buffer between road and waterbody.
- ☐ Roads located on steep slopes.
- ☐ Washouts and crumbling pavement.
- ☐ Ditch, culvert, or pipe washouts, undercutting, or gullies and rills along sides and bottom of road or ditch.
- ☐ Exposed soil in ditch channel.
- ☐ Ditches that are long without discharge points into vegetated areas.
- ☐ Ditches, culverts, or pipes that empty runoff into streams, wetland, or lake.
- ☐ Erosion around inlets and outlets of culverts.
- ☐ Sediment buildup in lake or stream channel below culvert.
- ☐ Washed out or damaged culvert.

Agricultural areas

Agricultural land uses, while not prevalent, can be significant sources of phosphorus and sediment, as well as other pollutants that are transported by stormwater. Most tilled fields experience at least some erosion problems, particularly in spring. Drainage alterations to fields and yards are very common, and can concentrate the runoff into ditches or streams. Eroded soil from cropland may contain very high levels of phosphorus, pesticides, and herbicides.

Manure spread on frozen fields during late fall, winter, and early spring is easily washed away to a ditch, tributary, or lake by rain and snowmelt. Manure-handling systems, if not properly designed and used, leak liquid wastes containing high concentrations of phosphorus and bacteria.

When livestock graze close to a lake shoreline or stream, animal waste, which includes ***nutrients*** and ***biological contaminants*** such as bacteria and viruses, may wash toward the water during wet periods. Streambanks and shoreline areas also may break down and erode if animals are not fenced, and overgrazing can increase soil loss.

Agricultural areas - Examples:

- ☐ Bare soil.
- ☐ Tilled fields where no buffer exists between area and stream, lake, or wetland.
- ☐ Fields close to road ditches.
- ☐ Turbid water in ditch, stream, wetland, or lake.
- ☐ Farm animals grazing in or directly adjacent to streams, lakes, or wetlands: broken down stream banks and/or shoreline, stream widening, disturbed soil adjacent to stream.
- ☐ Manure spreading during periods when the ground is frozen, or where runoff can reach the stream or lake.
- ☐ Leaking storage areas and storage areas that are not enclosed or covered.

■ Urban areas

Urban areas typically have a mosaic of land uses to support thriving communities. In addition to homes, businesses, and commercial development, urban areas are defined by a wide variety of land uses such as parkland, gas stations, cemeteries, roads, railroads, and utilities.

Urban stormwater runoff is characterized by increased volume and velocity**,** which can cause severe erosion and flooding damage downstream. More stormwater runs off urban areas because there is more ***impervious pavement.*** Generally, natural drainageways are not large enough to handle increased runoff associated with urbanization. Consequently, urban runoff, which may contain high concentrations of phosphorus and other pollutants, causes streambanks to erode, while depositing sediment, phosphorus, and other pollutants into lakes.

In urban areas, much of the runoff also is conveyed underground by a storm drain system, which may consist of street gutters, storm drains or catchbasins and sometimes detention ponds, treatment structures, or constructed wetlands. Typically, the ultimate discharge of stormwater is to a surface waterbody, but this may not be obvious. Thus, the watershed survey work in an urban area should start with a visit to the municipal department of public works in order to learn more about the storm drain system, and to review storm drain maps, if available, to locate discharge points in the watershed. The town or city engineer also may be able to identify private land uses that discharge stormwater to the municipal drainage system, and explain the maintenance schedule for cleaning the municipal drainage system and street sweeping.

Urban areas - Examples:

- ☐ Street drains, storm sewers, and pipes that discharge directly to streams, lake, or wetland.
- ☐ Street drains and catch basins with sediment or waste material.
- ☐ Eroded or undercut banks due to increased stormwater volumes and flows.
- ☐ Green scum, oily sheen, or floatables on water.
- ☐ Cloudy, discolored, or smelly water in ditches, streams, wetland, or lake.
- ☐ A defined or eroded pathway of runoff from the site.
- ☐ Sediment buildup in stream channel below pipe or along roadside.
- ☐ Damaged or eroded pipe or culvert outlets.
- ☐ Absence of vegetation or vegetated buffer near waterbody.
- ☐ Altered and paved areas near waterbodies.
- ☐ Lush lawns.
- ☐ Petwaste.
- ☐ Improperly stored trash (e.g., trash barrels or dumpsters) or organic debris (grass clippings, leaves, compost) near a waterbody.
- ☐ Manure, trash, vehicles or waste storage near waterbodies.

■ Forestry operations

Some of the problems typically associated with logging operations, like logging yard erosion and runoff from skidder trails, are easy to detect. More subtle problems, such as stream bank scouring from increased runoff may be overlooked. Poorly located and constructed logging roads, improperly designed stream crossings, heavily cut woodland buffers along streambanks, areas of exposed soils in logging yards, and brush and slash placed in streams can all harm stream and lake water quality.

Runoff from a heavily logged site can increase in a very short time, producing severe soil erosion in the area that has been cut, and along streambanks and downstream property. Skidder trails are often deep enough to redirect the course of small streams. If this occurs, soil can erode from the new stream course for several months or longer, until the new stream bed has stabilized.

Forestry operations- Examples:

- ☐ Road surface and ditch erosion.
- ☐ Ditches that empty runoff to streams or channelized flow.
- ☐ Unstable culverts, roads close to streams.

- ☐ Areas where skidder trails cross streams, causing erosion of stream bank and redirecting runoff.
- ☐ Erosion of culvert inlets and outlets.
- ☐ Turbid water or sediment in stream.
- ☐ Heavily cut woodland buffers along streams.
- ☐ Bare soil.
- ☐ Gullies and rills.
- ☐ Poor design of logging roads.

8. Filling out the Lake Watershed Survey Form—Checklist:

- ☐ **Fill out the survey form completely. Be sure to put the same number on the corresponding site map, form, photographs, and drawings.** *(See Appendix A for a sample watershed survey form. Survey forms will vary from watershed to watershed, and the information within the form will reflect the conditions found in your watershed.)*

- ☐ Fill out one survey form for each site within the assigned area. If the entire site is not surveyed, explain why and estimate the percent of the area that was not covered.

- ☐ Fill out all forms in the field, as work is done. Do not rely on an after-the-fact memory.

- ☐ Mark the site on your topographic map using the site number. Take one or two pictures and label them with the site number and surveyor's name. As photographs are taken, write the exposure number from the camera and the site description on the survey form. When the film is developed, this will ensure that the corresponding photos will be submitted with the forms.

- ☐ Draw a site diagram. Use easily identifiable landmarks in the drawings and provide information on distances and estimated slope. Sketch an area map to show where the problem is.

- ☐ Provide details, such as road names, telephone pole numbers, and house numbers. In large watersheds or remote areas, use a global positioning system (GPS), if available.

- ☐ Record weather information from the last 48 hours on the survey form. For instance, was there a recent heavy rain storm or has it been very dry? Weather is an important factor in the way pollutants move from the watershed to the lake.

- ☐ Estimate the dimensions of the problem area. The approximate width and depth of runoff channels and exposed soil areas are important in assessing the severity of a problem site.

- ☐ Note whether the problem is connected to a stream or lake. During the initial survey, carefully assess the cause or causes of the erosion or sediment problems. This is essential to correcting problems and setting attainable goals.

- ☐ Document why you identified a particular site. This information will help in the follow-up analysis and provide insight into the nature of (and solution to) the problem.

- ☐ Proper documentation is critical to the watershed survey's usefulness and success. Any follow-up work may take place during another season when the ground may look dramatically different from the original survey date.

In addition to differences in appearance, the runoff that attracted attention to the site in the spring is likely to be nonexistent during the summer and fall. If the information on the form is insufficient, the technical team may need to ask volunteers to revisit the problem area.

9. Document the time spent on the project.

Documentation of volunteers' time may prove valuable in demonstrating the level of commitment that a group of individuals, an organization, or the town has made to the project. This information may be useful if additional assistance is needed for a follow-up project to fix problems that have been identified in the survey. Therefore, keep track of how much time is spent on the survey. This includes time spent in training, preparation for going out in the field, actual surveying, and organizing the forms and pictures for delivery to the volunteer coordinator.

10. Organize and give survey information to the volunteer coordinator.

After surveying your area, review the documentation. Do this while the information is still fresh in your mind. Make sure the survey sheets are complete and legible. Photographs should be labeled and attached to the corresponding watershed survey. Problem sites should be clearly numbered on the area map. Submit all the materials to the volunteer coordinator.

The steering committee and volunteer coordinator should arrange any follow-up work, such as revisiting the sites identified to determine how severe the problems are and making recommendations to correct them. Once the follow-up is done, a draft report (Section 5) will be prepared and sent to all volunteers. The report will present an overview of the extent of sediment problems, and associated phosphorus problems, in the lake watershed and should summarize the problems observed by category. A meeting also may be helpful before or after drafting the report to share the results with the volunteers and involve them actively in discussions about the results and how to use them in an action plan.

11. Volunteer involvement does not need to end.

In many ways, the report is another beginning, and it presents new opportunities for volunteer involvement. All participants of the survey—field volunteers and steering committee members—should participate in the discussions of a Watershed Action Plan to address the problems identified in the survey. The DEP Regional NPS Coordinators can assist with technical issues. The lake watershed survey results can be used to reach out to non-traditional groups, such as schools, churches, businesses, and community organizations, as well as landowners. This is an ideal time to create stewardship teams of volunteers and landowners. Working together, stewardship teams can seek practical ways to implement the action plan.

Getting Results from the Survey—Steering Committee & Volunteers

Section 5

What's Here?

Prepare a Draft Report
Develop a Lake Watershed Action Plan
Best Management Practices
Preparing the Final Report and Recommendations

Prepare a draft report.

The draft report does not have to be lengthy—it should be clear, complete, and concise. Survey information must be assessed carefully and presented accurately. Convey information on the extent of problems in the lake watershed as clearly as possible. Include information about the number of problems and where they were found. The draft report should summarize the important findings and lay the foundation for the Action Plan that will be built around the results in the report.

Tally the number of sites identified and categorize them by land use. This table is an example:

Land Use:	Number of Sites
Urban	16
Town Roads	21
State Road	2
Residential	18
Residential shoreline	12
Construction	5
Commercial	3
Forestry	1

Briefly discuss the most frequent problems found for each major land use. In preparing the report, consider your target audience and the most appropriate format to reach them. Consider the level of detail needed for the audience and the balance of text, data, graphics, and pictures. Highlight some particularly significant problems with graphs, illustrations, and photographs.

Publicize survey findings on the extent of point and nonpoint source runoff problems in the watershed. This information should be made available to the towns in the watershed as soon as it is available. If a town official (planning board member, selectman, or town manager) is not on the steering committee, one should be contacted to determine where the report should be sent. Copies of the draft report should be given to local libraries. Landowners also should be notified of the report's availability. If possible, a presentation of the information should be given for landowners and others interested in the survey.

The press also may be interested in preliminary findings. Remember to keep communication open during the entire process to maintain good public relations within the watershed community.

Include the field volunteers and be sure to let them know that survey data are being used. To maintain interest in the project, it is necessary for the volunteers to see the draft report in a timely manner and to know that their efforts are showing results. With the draft lake watershed survey report in hand, the steering committee, field volunteers, and others are ready to move into the next phase of the lake tershed survey project.

Action Plan activities can have regulatory requirements. Local, state, and federal agencies should be contacted and involved early in the work plan development process.

ROADS - Example of Observations and Best Management Practices

Site ID#	Type of Problem	Type of Solution (BMP)	Priority	Level Technical Asst. Needed	Cost	Identify Landowner Cooperation
1	Severe, road surface erosion into lake	Divert water away from road to vegetated areas. Use more culverts, if needed	high	high	med	possibly
2	Clogged culvert	Reshape road, add a berm and a box culvert. Maintenance, clean out, or possibly replace culvert	med	low	low	yes
3	Large area of exposed soil in ditch, drains to stream	Reshape, seed, and mulch	high	low	low	yes
4	Moderate shoulder erosion	Determine cause, add new material	low	low	low	yes

Develop a lake watershed management action plan.

Using the survey report as a foundation, the next step is to develop a Lake Watershed Management Action Plan. In the Action Plan, the problem sites from the lake watershed survey will be redefined into a list of realistic objectives and activities that can be accomplished within the watershed. The Action Plan objectives and activities need to be designed to advance the desired outcome or main goals of the survey, including the following:

- Minimize and eliminate existing and future sources of erosion to decrease the amounts of phosphorus and sediment entering the lake.

- Help educate the community of homeowners, businesses, and nonprofit and government agencies about the lake watershed survey and enlist their support for lake watershed management work activities.

To acquire widespread acceptance and support for the Lake Watershed Management Action Plan, the steering committee will need to collaborate with others to ensure that the survey results are integrated with the political, economic, social, and cultural values of the communities in the watershed. The Lake Watershed Management Action Plan should incorporate input from landowners, the steering committee, field volunteers, and all other interested watershed partners so that the objectives and activities reflect a common vision for the future of the lake.

The key steps in developing a Lake Watershed Management Action Plan are 1) to recognize that the objectives of the Action Plan need to be reasonable, 2) to rank and prioritize problem sites documented in the survey, and 3) to make recommendations on lake watershed management activities. This section of the guide outlines some considerations for accomplishing these key steps.

1. Understand lake watershed management constraints

Recognizing that all the problem sites cannot be addressed simultaneously is the first step toward developing a realistic Action Plan for a lake watershed. Other factors to consider are financial, political, institutional, legal and regulatory, social, cultural, and land and water use conflicts. Any of these can affect the feasibility and outcome of a management effort.

To determine the feasibility of correcting problem sites from the survey list, the steering committee should evaluate the challenges and issues affecting management and restoration efforts. This can be done by considering some potentially significant limitations, such as cost, landowner willingness, and availability of technical resources. Survey results will be adequate to identify lake watershed management needs in many situations, and may show that a more thorough assessment of the lake and the problem is advisable and necessary.

The matrix of road-related problems is a tool that can be used to determine which problems in a lake watershed can most readily be addressed, all factors considered. A matrix should be developed for each land use. When developing the matrix, ask questions such as: What sites can be corrected easily without spending significant resources? What are the most significant sources of pollution? Does this activity have support or opposition?

2. Rank and prioritize sites

The next step is to rank the problems based on their seriousness and make recommendations for corrective actions. A priority ranking of the sites can be done on a simple, low-medium-high scale, and the following criteria should be considered in site rating and ranking:

➢**Site conditions assessment score**—An average score for the site can be computed and interpreted as low, medium, or high for the purposes of ranking and prioritizing sites.

➢**Size of the area affected by the problem**—How large is the problem area? Is it a few square feet, half an acre, 10 acres? This factor is especially important where soil erosion is the problem. Generally, the larger the area, the more significant the problem.

➢**Slope**— Steeper slopes cause greater soil erosion. Runoff tends to concentrate in channels more quickly, and does not filter through the soil where it would be treated.

➢**Type of soil**— Generally, soil type is important in ranking a site for phosphorus loading. Loam contains more phosphorus than sand, and clay contains more phosphorus than loam.

➢ **Distance between the problem site and a ditch, stream, or the lake itself**—Generally, sites closer to the lake should receive higher priority ranking than those farther away, when the problems are equivalent or similar.

➢**Land use considerations**—Changes in land use patterns and increased development increase stormwater runoff, which affects sediment and nutrient transport. Trends toward increased watershed development will make the lake watershed more vulnerable to further impairment.

➢**Site capacity for management (e.g., adding a vegetated buffer)**— As a practical matter, sites that have a greater potential to be managed or restored should be rated higher. For example, there may be community consensus that the recreational value of a swimming beach is more important. Accordingly, it would be easier to plan management activities in response to a beach-related problem.

(NOTE: The scale of the problem will affect the scale of the Action Plan activities required. Therefore, a high rating for size, may be offset by a low rating for site management capacity. Priority rating systems need to be interpreted with caution. There is a danger that the public or whoever is reviewing the list of sites will be drawn only to sites with a relatively high rating. However, the ***cumulative impact*** to water quality of many low priority sites can outweigh a few high priority sites. Low priority sites also may be easier to correct than large-scale problems.)

3. Recommend realistic objectives for the Lake Watershed Management Action Plan

The Action Plan objectives may be considered secondary goals in that they directly or indirectly support the main goals for the survey and lake watershed management project. Realistic Action Plan objectives reflect community needs and significant lake watershed issues. They give direction for development and implementation of management activities. Realistic objectives also are measurable, in order to provide a basis for monitoring project success. The following are examples of measurable objectives:

- Decrease erosion,
- Reduce sediment entering a lake, and
- Install BMPs to reduce sediment.

4. Recommend realistic activities for the Lake Watershed Management Action Plan

Once objectives are established, a list of corresponding activities can be developed. Action Plan activities are based on a site's potential for management, which is not necessarily a plan for restoration to an unaltered or entirely natural state. This ideal situation may not be achievable, given the constraints that have been identified.

In this step, general solutions or overall strategies are being recommended to address the objectives. The steering committee and technical team should be familiar with technically feasible alternatives. Some of the concepts for management and restoration are outlined briefly, later in this section.

Realistic activities also should be measurable, in order to provide a basis for monitoring project success. For example, management activities could propose planting 20% of unvegetated lakeshore each year for five years, and that native vegetation planted along the lakeshore would show a 50% survival rate after 3 years. A landowner's agreement for survey-related work also would be a measurable success.

Best Management Practices (BMPs)

Making recommendations for Action Plan objectives and activities requires an understanding of the options available to improve water quality of the lake. Options range from simple solutions, such as lake cleanup days, to constructed BMPs. Knowing what BMPs are available and appropriate for typical lake watershed problems is basic to recommending management work.

BMPs are specific practices that have been designed to protect water quality from the effects of development. Mitigation with BMPs is less costly when it's incorporated into long-range land use planning. Adding BMPs after a problem exists may be difficult, or even impossible, due to site limitations. But just as every problem site in a watershed contributes to the cumulative damage to lake water quality, even a limited amount of mitigation can lead to improvements in water quality. Therefore, BMPs should be considered for developed sites, despite site limitations.

Information on BMPs is readily available through all search engines on the Internet. Some suggested Web site references are listed in Appendix D. BMPs to protect lakes from phosphorus and sediment in stormwater runoff should have one or more of the following capabilities:

- **Reduce soil erosion by stabilizing exposed soils.** Soil erosion is a major source of phosphorus and sediment to lakes. Many erosion problems can be eliminated easily by seeding and ***mulching*** exposed areas. Some problems have complex causes and may require evaluation by professionals. By reducing the number of erosion problems in a lake watershed, phosphorus and ***sediment loading*** to the lake can be reduced significantly.

- **Minimize vegetation loss, or replace vegetation that has been removed.** As the natural forest cover is removed, stormwater runoff increases. In addition, the

natural sediment and phosphorus filtering (buffering) capability of the vegetation is lost. By minimizing vegetation loss, erosion problems also are minimized. Generally, native trees, shrubs, and ground cover vegetation are preferable to lawns. Replacement vegetation should mimic natural forest conditions in the area, if possible. However, many property owners may prefer the appearance of a landscaped buffer, which can be effective, when designed properly. Vegetated buffers, greater than 100 feet wide, along streambanks greatly reduce nutrients and sediments; cool water; and provide critical habitat.

➢ **Reduce stormwater runoff volumes and velocities by minimizing the amount of impervious area.** Road and driveway lengths should be minimized, where possible. Parking lots and building areas also should be minimized. Runoff from small paved areas should be diverted directly to the shoulder and into vegetation. Avoid use of curbs and gutters, which collect water, where possible. By reducing impervious area, less runoff is generated during storm events. This means less phosphorus, sediment, and other pollutants in the runoff. It also means the runoff is less likely to find its way to a stream or the lake.

➢ **Divert runoff from developed or disturbed areas to vegetated buffers or areas where runoff can filter into the ground.** This practice reduces the amount of phosphorus and sediment in stormwater runoff. Runoff from buildings, parking lots, driveways, roads, construction areas, farmlands, and logging areas should not discharge directly into streams or the lake without first receiving some level of treatment to reduce pollutants. Natural woodland buffers are very effective at reducing phosphorus and sediment from stormwater runoff. Grassed areas, while less effective than woodland areas, can provide some treatment. For buffers to work, they must be located between disturbed areas and the lake, or any ***channel*** (road ditches, ***swales,*** and streams) that could carry runoff to the lake. The effectiveness of a vegetated buffer depends on the width of the buffer, the slope of the land, soil type, and the types and densities of vegetation growing in the buffer.

➢ **Control phosphorus by limiting opportunities for transport with sediment and stormwater runoff.** It has recently been found that residential lawns contribute significantly to the total load of many pollutants, especially phosphorus. Reduced fertilization, application of only the amount recommended, and use of organic or slow-release fertilizers will limit nutrient release. Lakeshore areas and tender young grasses also are attractive to Canada geese, with feces that are another source of nutrients. Maintaining and planting dense natural stands of trees with shrubby undergrowth and tall, unmowed grasses will provide natural obstructions to goose movement through the area.

➢ **Redirect surface runoff that is sediment free and clean away from areas prone to erosion.** This practice may be adaptable to many of the land uses. It will reduce sediment loads to waterbodies. For example, in a residential area, rooftop runoff could be discharged to a dry well where it will be absorbed by the ground, instead of being discharged to a sloping lawn which directs runoff into a brook.

Non-structural and structural BMPs

For both non-structural and structural BMPs, the design should control the pattern of sediment transport. Non-structural best management practices are activities that landowners can undertake to control sediment and phosphorus before they are released into the environment, where pollutants can be transported to the lake. Examples on non-structural BMPs are reduced fertilizer use, changes in application of fertilizers, street sweeping, and regular inspection of septic systems.

When non-structural measures are insufficient or infeasible, it may be possible to use structural BMPs for a point or non-point pollution problem in the lake. Structural measures include vegetative stabilization of shoreline and streambank areas, grassed swales or ditches with checkdams to slow the velocity of runoff, lakeshore buffers and management areas, and stormwater BMPs for control of sediments. The bibliography (Appendix G) provides references to Massachusetts publications for structural BMPs.

Land use and BMPs

■ Construction sites

Erosion rates from construction sites are much greater than other land uses. Even though most new construction sites are required by federal, state, or local regulations to have erosion and sedimentation plans, field surveys may reveal the use of inadequate or poor best management practices on construction sites. Unmanaged construction sites can contribute 7 to 1000 tons of sediment per acre during a year to a lake. Generally, erosion control methods should effectively hold soil in place so that it cannot be washed away by stormwater runoff.

Construction site BMP checklist

- ☐ Use nonvegetative soil stabilization.
- ☐ Use barriers such as silt fences and hay bales.
- ☐ Seeding and mulching exposed soil.
- ☐ Limit disturbed area.
- ☐ Project phasing to minimize bare soil.
- ☐ Use sedimentation basins and clean out sediment frequently.
- ☐ Stabilize construction roads.
- ☐ Cover and immobilize stockpiled soil.
- ☐ Remove excess soil as soon as possible.
- ☐ Use measures (e.g., checkdams and swales) to dissipate flow and velocity.

■ Residential areas

There is a direct link between water quality and chemicals used to maintain lawns and gardens. Although more research is needed, the types, quantity, and timing of chemical applications make a significant difference. Landowners need to be educated about the use of fertilizers and the impact of lawns on lake water quality.

In residential areas, look for low maintenance, long-term BMPs that can be implemented readily and inexpensively by homeowners. Use of aesthetically pleasing landscape materials to divert runoff from eroding slopes, planting vegetation, adding berms to driveways or use of porous pavers in driveways, and minor regrading are examples of achievable activities. Homeowners also should be educated about the use of fertilizers and the impact of lawns on lake water quality.

Residential BMP checklist

- ☐ Plant vegetation for soil stabilization.
- ☐ Add vegetated buffers along lakeshore.
- ☐ Limit and stabilize the number of lakeshore access points.
- ☐ Use porous pavement for driveways.
- ☐ Divert stormwater runoff (e.g. to grassed swale).
- ☐ Dry wells to capture and infiltrate rooftop runoff.
- ☐ Minimize and control use of fertilizers and pesticides/herbicides on gardens, lawns, and landscape plants.
- ☐ Minimize lawn areas–plant perennials–particularly along lakeshore (for geese control).
- ☐ Use non-phosphorus fertilizers on lawns.

■ Roads

In many areas, road systems will be the greatest source of imperious cover. When stormwater comes in contact with roads, accumulated sediment, oil and gas residue, and pollutants are washed off at higher velocities. Sediment and road salt accumulation are higher in early spring, after a winter season of storm de-icing. Look for solutions that address poor design, location of roads, and inadequate drainage systems, as well as road maintenance options to correct erosion and sedimentation problems.

Road BMP checklist

- ☐ Reshape road or add berms to redirect stormwater runoff away from lake or stream.
- ☐ Use pavement materials that are not susceptible to erosion.
- ☐ Reposition culvert inverts.
- ☐ Stabilize culvert inlets and outlets.
- ☐ Vegetate slopes and road ditches.

- ☐ Add ditch turnouts.
- ☐ Street sweeping.
- ☐ Clean out catch basins.

■ Agricultural areas

Because of extensive areas of exposed soil, agricultural land uses can be significant sources of phosphorus, sediment, and other pollutants. Well managed farms that use conservation practices can reduce water quality impacts to lakes and other waterbodies. Many resources that address agricultural BMPs are available.

Agricultural BMP checklist

- ☐ Plant vegetative buffers along lakes, streams, and wetlands.
- ☐ Use winter cover crop, rotation.
- ☐ Leave vegetation along ditches to capture field runoff.
- ☐ Fence animals out of streams and waterbodies.
- ☐ Create adequate stream crossings.
- ☐ Spread manure on unfrozen, dry ground.
- ☐ Properly design and maintain manure storage areas.
- ☐ Fertilizer management, based on soil testing.
- ☐ Integrated Pest Management

■ Urban

Urban environments are heavily impacted by development. Paved and impervious cover accumulates pollutants, reduces infiltration of rainwater into the groundwater, and accelerates the rate of runoff. Rivers rarely resemble a natural state. Most are culverted, dammed, straightened, or flow underground. Urban land use is a significant contributor to water quality problems. Waste from domestic animals and birds, such as pigeons, geese, and gulls also can be a problem for urban lakes and ponds. Consequently, urban areas pose significant problems that will require nonstructural and structural best management practices, long range watershed planning, and possibly local ordinances and bylaws to manage phosphorus, sediment, and pollutant loadings. BMPs need to address high levels of metals, nutrients, and contaminants from urban areas.

Urban BMP checklist

- ☐ Reduce impervious surfaces.
- ☐ Use porous pavement for parking lots.
- ☐ Direct roof top runoff to groundwater.
- ☐ Provide flood storage.
- ☐ Routine street sweeping.
- ☐ Nonstructural practices (e.g., spill prevention and containment, material storage, and housekeeping) to limit the release of pollutants.
- ☐ Use and maintain stormwater controls (BMPs).
- ☐ Check BMPs for damage and build up.
- ☐ Monitoring BMPs periodically to ensure that the schedule for maintenance is adequate.

■ Forestry (logging)

Harvesting forest products requires the use of heavy equipment, which disturbs soil and causes the release of sediments. Phosphorus and sediment concentrations in runoff from actively forested areas can be very high. Forestry is heavily regulated in Massachusetts; forest cutting practices regulations required the use of BMPs to prevent or minimize water pollution impacts. These regulations are supported by other state and federal regulations and funding programs. Use the *Massachusetts Forestry Best Management Practices Manual* to address forestry -related problems. Required BMPs are highlighted and differentiated from recommended practices and activities in that guide.

Forestry BMP checklist

- ☐ Regrade, smooth, and repair ruts and shoreline or streambank landings.
- ☐ Vegetate or stabilize and smooth roads and skid trails that are no longer used.
- ☐ Limit skid trails and locate where stream bed is firm and avoid steep or undercut banks.
- ☐ Maintain stream and shoreline buffers and filter strips.
- ☐ Clear culverts and stabilize inlets and outlets.
- ☐ Use barriers such as hay bales and silt fences.
- ☐ Maintain ditches, waterbars, and culverts.
- ☐ Use barriers such as hay bales and silt fences.
- ☐ Avoid stream crossings wherever possible.
- ☐ Use Integrated Pest Management (IPM) and best management practices for pesticide and herbicide use.

Prepare the final report and recommendations.

The final report is more comprehensive than the draft report. Input from all participants in the survey should be solicited in preparing the report. Shared ideas from the steering committee members, technical team, and volunteer surveyors will help to create a thorough and balanced report.

The final report may be used and referenced for many years in the future. If the lake should experience a change in water quality, the report may be valuable for providing historical perspective on the types of problems that have existed in the watershed. The documentation of watershed protection efforts by the community may also help to get funding for mitigating future problems.

The final report should include the following:

- A discussion of types of problems identified for each land use.
- General recommendations for fixing each site.
- For sites where technical assistance would be required in designing and implementing BMPs, (conservation measures) the appropriate resource agencies should be identified.
- Identification of potential sources of funding to fix problems.
- A description of the overall level of development in the watershed relative to the number, type, and severity of problems.
- Information that provides precise information about the location of sites, but does not make specific reference to the name of the landowner.
- To avoid alienating landowners, do not include landowners' names in reports that are available to the public.
- A map(s) depicting the lake watershed, survey area, and the general location of the sites.
- A priority ranking of the sites based on their level of severity.
- While fixing the problems documented in the survey is generally beyond the scope of the project, ranking the problems based on their seriousness and making recommendations for corrective efforts is not.

If certain types of problems are recurrent throughout the watershed, recommendations could be made for developing local ordinance standards to prevent similar problems from occurring in the future. For example, if the road ditches in residential subdivisions are consistently found to be unstable and eroding into streams, a standard could be added to the local subdivision ordinance. Such a standard might require developers to stabilize ditches with vegetation or stone and to direct runoff from ditches to well-vegetated wooded areas, so that phosphorus and sediment would be filtered out.

If development has taken place on land with severe limitations such as very steep slopes, highly erodable soils, high water table, or any other factor that would increase the likelihood of soil erosion, this information should be included in the report. Town comprehensive planning committees and conservation commissions may find this information helpful in establishing long-term lake protection programs.

Survey information can help to identify areas of the watershed where existing land uses have resulted in significant NPS problems due to poor soils, steep slopes, or other natural limiting factors to development. This information also may highlight the need for comprehensive lake water quality protection and serve as a basis for recommending that a town adopt a phosphorus control policy that can be used when reviewing new land use applications.

Town of Spencer
ADA Self-Evaluation Report

PART I: ADMINISTRATIVE REQUIREMENTS

1. **Designation of ADA Coordinator**
   The ADA Coordinator for municipal employees is Thomas Gregory, Town Administrator. The ADA Coordinator for the general public and Spencer residents is Duane Amos, Building Inspector/Zoning Enforcement Officer (see attached memo).

2. **Grievance Procedures**
   Grievance procedures were adopted by the Board of Selectmen on January 24, 2011 (copy attached).

3. **Public Notification Requirements**
   The Town of Spencer publicly posts that the Town does not discriminate on the basis of disability. Notice is posted in all Town Hall offices and buildings as part of a general notice of all required postings and is updated regularly (cover sheet and relevant pages attached).

4. **Participation of Individuals with Disabilities or Organizations Representing the Disabled Community**
   The Town of Spencer has worked regularly with the Disability Commission to plan for and make improvements to Town facilities to increase accessibility.

PART II: PROGRAM ACCESSIBILITY

Facility Inventory & Transition Plan - Attached PART

III: EMPLOYMENT PRACTICES

The Town of Spencer's employment practices are in compliance with the Americans with Disabilities Act with regard to Recruitment, Personnel Actions, Leave Administration, Training, Tests, Medical Exams/Questionnaires, Social & Recreational Programs, Fringe Benefits, Collective Bargaining Agreements, and Wage & Salary Administration. See attached statement from the ADA Coordinator.

POLICY NO.: 86
DATE ADOPTED: 1/24/11

TOWN OF SPENCER
BOARD OF SELECTMEN
POLICY

Policy for ADA Grievances
(Equal Access to Town Facilities and Activities)

Purpose: The purpose of this policy is to ensure that maximum opportunity will be made available to receive citizen comments, complaints and/or to resolve grievances or inquiries regarding equal access to Town facilities and activities.

Administration: This policy shall remain in effect until rescinded or revised by the Board of Selectman ("BoS") pursuant to the Town "Policy on Policies". This policy shall be implemented through the Town Administrator.

Policy:

STEP 1:

The Town Administrator will be available to meet with citizens and employees during business hours.

When a complaint, grievance, request for program policy interpretation or clarification is received either in writing or through a meeting or telephone call, every effort will be made to create a record regarding the name, address, and telephone number of the person making the complaint, grievance, program policy interpretation or clarification. If the person desires to remain anonymous, he or she may.

A complaint, grievance, request for program policy interpretation or clarification will be responded to within ten (10) working days (if the person making the complaint is identified) in a format that is sensitive to the needs of the recipient, (i.e. verbally, enlarged type face, etc).

Copies of the complaint, grievance, or request for program policy interpretation or clarification and response will be forwarded to the appropriate Town agency (i.e. Parks & Recreation Commission, Conservation Commission). If the grievance is not resolved at this level it will be progressed to the next level.

STEP 2:

A written grievance will be submitted to the Town Administrator. Assistance in writing the grievance will be available to all individuals. All written grievances will be responded to within ten (10) working days by the Town Administrator in a format that is sensitive to the needs of the recipient (i.e. verbally, enlarged type face, etc). If the

grievance is not resolved at this level it will be progressed to the next level.

STEP 3:

If the grievance is not satisfactorily resolved, citizens will be informed of the opportunity to meet and speak with the BoS, with whom local authority for final grievance resolution lies.

Adopted: 1/24/11 Date: 1/24/11

Board of Selectmen
Town of Spencer

MEMORANDUM – OFFICE OF THE TOWN ADMINISTRATOR

TO: George Russell, Conservation Agent

FROM: Thomas Gregory, Town Administrator

DATE: January 4, 2021

Re: ADA Coordinator Statement

Please be advised that I am the ADA Coordinator for municipal employees for the Town of Spencer.

Building Inspector/Zoning Enforcement Officer Duane Amos is the ADA Coordinator for the general public / Spencer residents.

Thomas Gregory, Town Administrator

Thomas Gregory

MEMORANDUM – OFFICE OF THE TOWN ADMINISTRATOR

TO: George Russell, Conservation Agent

FROM: Thomas Gregory, Town Administrator

DATE: January 4, 2021

Re: ADA Coordinator Statement

The Town of Spencer abides by the Americans With Disabilities Act with respect to Recruitment, Personnel Actions, Leave Administration, Training, Tests, Medical Exams/Questionnaires, Social and Recreational Programs, Fringe Benefits, Collective Bargaining Agreements and Wage and Salary Administrations.

Thomas Gregory, Town Administrator

Thomas Gregory

TO: Paul

RE: Luther Hill Park

FM George

Paul I did inspections on all of the properties listed in the 2012 OSRP over the last two weeks and my notes are on the attached.

I need to make a separate entity for Luther Hill Park since there are a number of issues:

- There is only one signed handicapped space, but the asphalt markings are basically gone;
- The are two painted asphalt markings in the driveway entrance to the employee parking area and if both are used, the rest of the parking area is not accessible to anyone;
- None of the picnic benches are up to standards;
- None of the recreation areas, e.g. the skateboard park and disk golf are accessible;
- The crosswalks need painting;
- There is no paved off-street parking save for employees;
- The lake itself is accessible, but the pads at the end of the ramp are on their last legs; and
- There is no way to tell if the restrooms meet ADA standards since they were locked.

Let me know if you have any questions.

NOTE: Spencer's 2021 ADA Facility Inventory evaluations consist of annotations to the 2012 ADA Facility Inventory, and handwritten notes written in the margins of the pages below.

ADA Facility Inventory, Spencer

The Town of Spencer has made accessibility of parks and recreation areas a high priority. The Town has made steady improvements at all facilities as funds are available and re-evaluates facilities on a regular basis. Inventory forms were completed by Spencer Town Planner Michelle R. Buck, based on site visits during December 2010 and June 2011, supplemented with information from the 2008 Transition Plan, 1999 Open Space & Recreation Plan and information provided by the Parks & Recreation Commission and the Spencer Agricultural Association. To reduce paper used in the preparation of this inventory, the standard forms were modified by deleting any sections inapplicable to a particular facility. Nine properties were evaluated as part of this inventory, as follows:

1. O'Gara Park	6. Vietnam Memorial Park
2. Luther Hill Park	7. Bemis Memorial Park
3. Powder Mill Park	8. Isaac Prouty Park
4. Ralph Warren Park	9. Spencer Fairgrounds
5. Depot Trail	



Accessible parking, O'Gara Park



Accessible Grandstands, O'Gara Park

LOCATION #1: O'Gara Park

95 Valley St (end of Valley St.). Map U08-Parcel 104

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Fewer than 76*	**3**	~~3~~ 1
***The parking area only partially paved and spaces are not marked. Most of the parking area is dirt. One accessible space is marked with a sign. Paving of the parking area is included in the 2011 Capital Plan.**		

not Paved yet

Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		

Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100 ft			**N/A**
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		
Van space – minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle	~~X~~	X	**There are 3 spaces; 2 inside the gate.** NONE
Sign with international symbol of accessibility at each space or pair of spaces	X		
Sign minimum 5 ft, maximum 8 ft to top of sign	X		
Surface evenly paved or hard-packed (no cracks)	X		
Surface slopes of less than 1:20, 5%	X		**3rd space outside gate may exceed 5%** NO SPACE INSIDE GATE
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present			**N/A**
Curbcut is a minimum of 3 ft, excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or yellow paint			
RAMPS		X	**No ramp provided**
SITE ACCESS, PATH OF TRAVEL, ENTRANCES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Site Access			
Accessible path of travel from passenger disembarking area and parking area to accessible entrance		X	
Disembarking area at accessible entrance		X	
Surface evenly spaced or hard-packed	X	?	
No ponding of water	~~X~~	X	
Path of travel			
Path does not require the use of stairs	X		
Path is stable, firm and slip resistant	X		
3 ft wide minimum	X		
Slope maximum 1:20 (5%) and maximum cross pitch is 2% (1:50)	X		**From accessible space inside gate to grandstand is level.** NO ACCESS SPACE INSIDE GATE
Continuous common surface, no changes in level greater than ½"			
Any objects protruding onto the pathway must be detected by a person with a visual disability using cane			
Objects protruding more than 4" from the wall must be within 27" of the ground, or higher than 80"			
Curb on pathway must have curb cuts at drives, parking and drop-offs			
RESTROOMS **O'Gara Park does not currently have a permanent restroom building available to the public. It is no longer used due to disrepair. The site is served by portable toilets, including an accessible portable toilet.**			
NOTES			

A Building Evaluation Study was completed in 2008, which included O'Gara Park. That report noted the following information relevant to ADA access:

> **The park has no paved parking areas. The grandstands have recently been updated to better accommodate persons with disabilities. The structure has also been repainted recently. It appears the grandstand only requires routine maintenance.**

The concession building is outdated and not used at this time. The Park Commission in their 2011 Capital Plan recommended the construction of a new modernized accessible concession/restroom building.

There are no applicable drinking fountains, telephones, swimming pools, shower rooms, or picnic facilities at O'Gara Park.

O'Gara Park is used for baseball, softball, and youth football.

OK

skate board Park ??

LOCATION #2: Luther Hill Park

[end of Park Street. Map U15-Parcel 30]

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Unable to determine exact number; appears to be less than 75*	**3**	**3**
Parking spaces other than accessible spaces are not marked.		

Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		**One space directly across from accessible ramp to beach; the other two are a short distance away**
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100 ft			**N/A**
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		**One space conforms to this requirement; remaining 2 spaces appear to be less than 13'**
Van space - minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle	X		**One van-accessible space**
Sign with international symbol of accessibility at each space or pair of spaces	Xe		
Sign minimum 5 ft, maximum 8 ft to top of sign	X		
Surface evenly paved or hard-packed (no cracks)	X		
Surface slopes of less than 1:20, 5%	X	X	**2 spaces further from ramp appear to exceed 5% slope**
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present	X		
Curbcut is a minimum of 3 ft, excluding sloped sides, has sloped sides, all slopes not to exceed	X		

1:12, and textured or yellow paint			
RAMPS	**Wooden accessible ramp to beach from parking lot.**		
Site Access			
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	X		
Disembarking area at accessible entrance	X		
Surface evenly spaced or hard-packed	X		
No ponding of water	X		
Path of travel			
Path does not require the use of stairs	X		**Ramp**
Path is stable, firm and slip resistant	X		
3 ft wide minimum	X		
Slope maximum 1:20 (5%) and maximum cross pitch is 2% (1:50)	X		
Continuous common surface, no changes in level greater than $\frac{1}{2}$"	X		
Any objects protruding onto the pathway must be detected by a person with a visual disability using cane			**N/A**
Objects protruding more than 4" from the wall must be within 27" of the ground, or higher than 80"			**N/A**
Curb on pathway must have curb cuts at drives, parking and drop-offs	X		
RESTROOMS			
NOTES **Restrooms locked at time of site visit. One small restroom building with 2 restrooms (male/female); both are accessible bathrooms.**			
FLOORS, DRINKING FOUNTAINS, TELEPHONES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
PICNICKING			
Specification	*Yes*	*No*	*Comments/Transition Notes*
A minimum of 5% of the total tables must be accessible with clear space under the table top not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. An additional 29" clear space (totaling 48") must extend beyond the 19" clear space under the table to provide access		X	**Picnic tables do not appear to be fully accessible.**
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide and 24" deep.			
Top of table no higher than 32" above ground	X		
Surface of the clear ground space under and around the table must be stable, firma nd slipresistant, and evenly graded with a maximum slope of 2% in all directions		X	
Accessible tables, grills and fire rings must have clear ground space of at least 36" around the perimeter			**N/A**

NOTES:

Luther Hill Park has a public beach as well as picnic areas and playground equipment. The Town provides recreational programs at Luther Hill Park each summer, including swimming lessons and summer camp programs. The main drive has been repaved since 2007. Accessible parking spaces across from the accessible ramp to the beach have been provided.

The playground equipment does not appear to be fully accessible.

There are no telephones, drinking fountains, shower rooms, or other facilities at Luther Hill Park.



Powder Mill Park Bathroom and Picnic Table

LOCATION#3, Powder Mill Park

[Intersection of Smithville Road and Meadow Road (entrance on Smithville)/Assessors Map U23, Parcel 6]

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Less than 25*	**1**	**1**

***parking is unpaved and unmarked along edge of road, except for paved accessible space immediately adjacent to the entrance to park**

Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100 ft			**N/A**
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		
Van space - minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle	X		**Approximately 13 feet**
Sign with international symbol of accessibility at each space or pair of spaces	X		

Sign minimum 5 ft, maximum 8 ft to top of sign	X		
Surface evenly paved or hard-packed (no cracks)	X		
Surface slopes of less than 1:20, 5%	X		
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present	X		
Curbcut is a minimum of 3 ft, excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or yellow paint	X		
RAMPS		X	**N/A**
SITE ACCESS, PATH OF TRAVEL, ENTRANCES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Site Access			
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	X		
Disembarking area at accessible entrance	X		
Surface evenly spaced or hard-packed	X		
No ponding of water	X		
Path of travel			
Path does not require the use of stairs	X		
Path is stable, firm and slip resistant	X		
3 ft wide minimum	X		
Slope maximum 1:20 (5%) and maximum cross pitch is 2% (1:50)	X		
Continuous common surface, no changes in level greater than $\frac{1}{2}$"	X		
Any objects protruding onto the pathway must be detected by a person with a visual disability using cane	X		
Objects protruding more than 4" from the wall must be within 27" of the ground, or higher than 80"			**N/A**
Curb on pathway must have curb cuts at drives, parking and drop-offs			**N/A**

LOCATION

RESTROOMS – Powder Mill Park is served by an accessible portable toilet.			
PICNICKING			
Specification	*Yes*	*No*	*Comments/Transition Notes*
A minimum of 5% of the total tables must be accessible with clear space under the table top not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. An additional 29" clear space (totaling 48") must extend beyond the 19" clear space under the table to provide access	X		
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide and 24" deep.	X	X	
Top of table no higher than 32" above ground	X	X	
Surface of the clear ground space under and around	X		

3 Picnic Tables

the table must be stable, firma nd slipresistant, and evenly graded with a maximum slope of 2% in all directions	X		
Accessible tables, grills and fire rings must have clear ground space of at least 36" around the perimeter	X		

NOTES

Powder Mill Park contains playground equipment, picnic facilities, and a gazebo. To ensure access to the playground equipment, the safety fiber needs to be replaced every 3 years at an approximate cost of $3,000.

NO RESTROOMS on 8/26/20

There are no stairs, doors, drinking fountains, telephones, swimming pools, or shower rooms.



Ralph Warren Park

LOCATION #4: Ralph Warren Park

55 Wire Village Road/Assessors Map R37, Parcel 34

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Less than 25*	**1**	**0**
***parking is unpaved and unmarked along edge of road**		

SITE ACCESS, PATH OF TRAVEL, ENTRANCES

No paved parking. Park contains gently sloped mowed grass area ~~with picnic tables.~~

NO

PICNICKING

Specification	*Yes*	*No*	*Comments/Transition Notes*
A minimum of 5% of the total tables must be accessible with clear space under the table top not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. An additional 29" clear space (totaling 48") must extend beyond the 19" clear space under the table to provide access		X	**Picnic areas are not fully accessible, but grass area is level and edge of pavement area is not raised.** NONE
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide and 24" deep.		X	
Top of table no higher than 32" above ground	X		

Surface of the clear ground space under and around the table must be stable, firma nd slipresistant, and evenly graded with a maximum slope of 2% in all directions		~~X~~	N/A
Accessible tables, grills and fire rings must have clear ground space of at least 36" around the perimeter	~~X~~		N/A

NOTES

Ralph Warren Park is a small nature preserve featuring woodland trails and picnic tables.

There are no stairs, buildings, restrooms, water fountains, telephones, or other facilities at Ralph Warren Park.



Depot Trail Sign



Depot Trail Parking Sign

LOCATION #5: Depot Trail

South Spencer Road (just south of 63 South Spencer Road)/Assessors Map 22, between parcels 6 & 7

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
6-8 (approximate)*	**1**	**1**

***The parking area is smooth stone dust; spaces are not marked. There is one marked accessible parking space.**

Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		
Where spaces cannot be located within 200 ft of accessible entrance, drop-off area is provided within 100 ft			**N/A**
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		
Van space – minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle	X		**Not marked, but adequate room for a van.**
Sign with international symbol of accessibility at each space or pair of spaces	X		
Sign minimum 5 ft, maximum 8 ft to top of sign	X		

NOT PAVED

Surface evenly paved or hard-packed (no cracks)	X		**Parking is smooth hard-packed stone dust**
Surface slopes of less than 1:20, 5%	X		
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present	X		
Curbcut is a minimum of 3 ft, excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or yellow paint	X		
RAMPS			**Not applicable**
SITE ACCESS, PATH OF TRAVEL, ENTRANCES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Site Access			
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	X		
Disembarking area at accessible entrance	X		
Surface evenly spaced or hard-packed	X		
No ponding of water	X		
Path of travel			
Path does not require the use of stairs	X		**The parking area leads directly to the trail. See notes below for more detail on the trail.**
Path is stable, firm and slip resistant	X		
3 ft wide minimum	X		
See notes at end for more detail			

NOTES:

The surface of Depot trail is currently rolled stonedust, and while not fully ADA compliant the trail is useable by people in wheelchairs. Maintenance of the surface, particularly after heavy rain events, will be crucial to ensuring this level of accessibility is sustained.

The trail was conceived as, and grant money approved for, a multi-use trail which includes horses and snowmobiles in addition to pedestrians, bicyclists, and disabled people. This creates some challenges in regard to the surface, and the surface should be monitored and maintained.

The parking lot at the South Spencer Road end of the trail is fully ADA compliant, and wheelchair access is accommodated at this time. Maintenance of the parking area to ensure striping is visible will be required. The Chestnut Street end of the trail has no parking at this time, although sidewalks in the town center area connect to it. Currently people can park vehicles at O'Gara Park and walk on the roads and sidewalks to the beginning of the trail.



The Town's long-range plan is create an ADA compliant connector trail from the O'Gara Park parking lot to the trail. This will be located to the north and west sides of the fields, and would connect to the trail behind the grandstand. The cost to construct this nearly 1,000 foot long connector was estimated at $13,000 for labor and materials in 2006.

There are no applicable entrances, restroom, floors, stairs, doors, drinking fountains, Telephones, Signs, Signals, and Switches, Swimming pools, shower rooms, or picnicking facilities at Depot Trail.



Vietnam Memorial Park



bench gone

Vietnam Memorial Park, Picnic Area

LOCATION #6: Vietnam Memorial Park

[South Spencer Road. Map 25 Parcel 25 and/or 27]

PARKING			
Total Spaces	Required Accessible Spaces		Accessible Spaces Provided
Approximately 5*	**1**		**1**
***parking spaces are not marked**			
Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		
Van space – minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle		X	
Sign with international symbol of accessibility at each space or pair of spaces	~~X~~ 5	X	~~Sign faded~~
Sign minimum 5 ft, maximum 8 ft to top of sign	~~X~~ 2		NA
Surface evenly paved or hard-packed (no cracks)	X		
Surface slopes of less than 1:20, 5%	X		
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present			n/a
Curbcut is a minimum of 3 ft, excluding sloped sides, has sloped sides, all slopes not to exceed 1:12, and textured or yellow paint			n/a

PICNICKING			
Specification	*Yes*	*No*	*Comments/Transition Notes*
A minimum of 5% of the total tables must be accessible with clear space under the table top not less than 30" wide and 19" deep per seating space and not less than 27" clear from the ground to the underside of the table. An additional 29" clear space (totaling 48") must extend beyond the 19" clear space under the table to provide access			**Only one picnic table, on smooth paved surface. Short distance over fairly level grass area from parking lot.**
For tables without toe clearance, the knee space under the table must be at least 28" high, 30" wide and 24" deep.			**Not evaluated**
Top of table no higher than 32" above ground	X		
Surface of the clear ground space under and around the table must be stable, firma nd slipresistant, and evenly graded with a maximum slope of 2% in all directions	X		
Accessible tables, grills and fire rings must have clear ground space of at least 36" around the perimeter	X		
NOTES **Vietnam Memorial Park is located on South Spencer Road adjacent to the South Spencer School. Dedicated in 1975, it pays tribute to the three Spencer men who lost their lives in the Vietnam War. It consists of a monument, cannon, ~~and picnic table.~~ There are no other facilities at this park.**			



Parking, Bemis Memorial Park



Bemis Memorial Park Monument

LOCATION #7: Bemis Memorial Park [Route 9, northeast of intersection with Route 49]

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Approximately 12-15	**1**	**None specifically marked**

*Parking spaces are not marked. Parking is along access drive.			
Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance			**No specifically designated space. Memorials are visible from ;paved parking area**
Minimum width of 13ft includes 8ft space plus 5 ft access aisle			**n/a**
Van space - minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle			**n/a**
Sign with international symbol of accessibility at each space or pair of spaces	**X**		**No sign**
Surface evenly paved or hard-packed (no cracks)	**X**		
Surface slopes of less than 1:20, 5%	**X**		
Curbcut to pathway from parking lot at each space or pair of spaces, if sidewalk (curb) is present		**X**	
SITE ACCESS, PATH OF TRAVEL, ENTRANCES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Path of travel **Stairs required to access rear memorials.**			
NOTES **The site consists of a group of memorials on a grass field. The field is accessible via a staircase from the access drive. All memorials are visible from the access drive. This park is a designated state roadside rest area. There are no designated picnic areas.** **There are no restrooms, structures, or other facilities on site.**			



Isaac Prouty Park

LOCATION #8: Isaac Prouty Park [Main Street – near 293]

PARKING **There are no designated parking spaces for this park.**
NOTES

This park is located on Main Street near the old David Prouty High School. The park was presented to the Town in 1905 and laid out with pathways, trees and shrubs. The park currently consists of an open, partially wooded area with a large monument. There are no restrooms, structures, or other facilities on site. The site does not appear to be accessible. Relatively steep slopes would impede improvements.

NO ACCESIBLE

LOCATION #9: Spencer Fairgrounds

46 Smithville Road (Assessors Map 32, Parcel 28)

PARKING		
Total Spaces	Required Accessible Spaces	Accessible Spaces Provided
Several hundred*	**Unable to determine**	**8 van spaces, plus a couple dozen unmarked accessible spaces in the same vicinity**

*** Most parking for the general public is on grass fields. Spaces are not marked. There are 8 marked accessible spaces for vans. Additional accessible parking is on a level grassed area just off of a paved driveway. There is room for roughly 15 cars in this area, with additional handicapped parking nearby (on gravel track).**

Specification for Accessible Spaces	*Yes*	*No*	*Comments/Transition Notes*
Accessible space located closest to accessible entrance	X		
Minimum width of 13ft includes 8ft space plus 5 ft access aisle	X		
Van space – minimum of 1 van space for every accessible space, 8 ft wide plus 8 ft aisle. Alternative is to make accessible spaces 11 ft wide with 5 ft aisle			**See notes above**
Sign with international symbol of accessibility at each space or pair of spaces			**Van spaces marked; others not marked.**
Sign minimum 5 ft, maximum 8 ft to top of sign	X		
Surface evenly paved or hard-packed (no cracks)	X		
Surface slopes of less than 1:20, 5%	X		
RAMPS			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Slope Maximum 1:12	X		**Small Ramp to information building was only ramp noted on site visit**
Non-slip surface	X		
Level platforms (4ft x 4ft) at every 30ft, at top, at bottom, at change of direction		X	
SITE ACCESS, PATH OF TRAVEL, ENTRANCES			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Site Access			
Accessible path of travel from passenger disembarking area and parking area to accessible entrance	X		
Disembarking area at accessible entrance	X		

Surface evenly spaced or hard-packed	X		
No ponding of water	X		
Path of travel			
Path does not require the use of stairs	X		
Path is stable, firm and slip resistant	X		
3 ft wide minimum	X		
Slope maximum 1:20 (5%) and maximum cross pitch is 2% (1:50)	X		
Continuous common surface, no changes in level greater than ½"	X		
Any objects protruding onto the pathway must be detected by a person with a visual disability using cane	X		
Objects protruding more than 4" from the wall must be within 27" of the ground, or higher than 80"	X		
Entrances			
Primary public entrances accessible to person using wheelchair, must be signed, gotten to independently, and not be the service entrance	X		
Level space extending 5 ft. from the door, interior and exterior of entrance doors	X		
Minimum 32" clear width opening (i.e. 36" door with standard hinge)	X		
At least 18" clear floor area on latch, pull side of door	X		
Door handle no higher than 48" and operable with a closed fist	X		
Vestibule is 4 ft plus the width of the door swinging into the space	X		
Entrance(s) on a level that makes elevators accessible	X		
Emergency egress - alarms with flashing lights and audible signals, sufficiently lighted			**Not evaluated during site visit**
STAIRS AND DOORS			
Specification	*Yes*	*No*	*Comments/Transition Notes*
Stairs **The only stairs are stairs to a 2nd story of one building (all other structures are single-story). The staircase was not reviewed in detail. The 2nd floor is also accessible by a wheelchair lift.**			
Doors **Doors were not evaluated in detail, but all doors have clear, with level thresholds and are of sufficient width to accommodate wheelchairs.**			
RESTROOMS **There is an accessible bathroom in the Exhibit Hall. There is a permanent freestanding bathroom building that was constructed less than 10 years ago; it contains a total of 5 accessible toilet stalls (3 ladies/2 men). Portable toilets, including accessible portable toilets, are used during the annual Spencer Fair. Accessible portable hand-washing stations are also provided.**			

LOCATION

FLOORS, DRINKING FOUNTAINS, TELEPHONES			
Specification	*Yes*	*No*	*Comments/Transition Notes*

Floors			
Non-slip surface	X		
Carpeting is high-density, low pile, non-absorbent, stretched taut, securely anchored			**No carpeting**
Corridor width minimum is 3 ft	X		
Objects (signs, ceiling lights, fixtures) can only protrude 4" into the path of travel from a height of 27" to 80" above the floor	X		**No obvious projections**
SHOWER ROOMS - **Showers are wheelchair accessible**			
NOTES **The Spencer Fairgrounds are owned by the Town of Spencer, but managed by the Spencer Agricultural Association (SPA). The site is used for the annual Spencer Fair, held each year on Labor Day weekend. The site is only occasionally used at other times of the year. The Exhibit Hall is the only 2-story structure; the 2nd floor is accessible by a chair lift. All other structures are single-story. All permanent structures have been built since the 1980s and all level with the ground with wide entrances and smooth, concrete floors. The grandstands are handicapped accessible.**			





Chairlift, Spencer Fairgrounds



Accessible Bathroom Building, Spencer Fairgrounds



Accessible Grandstands, Spencer Fairgrounds



Accessible Grandstands, Spencer Fairgrounds

Massachusetts Cultural Resource Information System

MACRIS

MACRIS Search Results

Search Criteria: Town(s): Spencer; Resource Type(s): Area, Building, Burial Ground, Object, Structure;

Inv. No.	Property Name	Street	Town	Year
SPE.A	Main Street Area		Spencer	
SPE.B	Wire Village		Spencer	
SPE.C	South Spencer		Spencer	
SPE.D	Hillsville		Spencer	
SPE.E	Grove Street Area		Spencer	
SPE.F	Maple - Elm Streets Area		Spencer	
SPE.G	Summit - Cherry Streets Area		Spencer	
SPE.H	High - Lincoln Streets Area		Spencer	
SPE.I	Ash Streetscape		Spencer	
SPE.J	Cherry Streetscape		Spencer	
SPE.K	East Main - Cherry Streets Area		Spencer	
SPE.L	Maple - Church Streets Area		Spencer	
SPE.M	Denny Hall Area		Spencer	
SPE.N	Spencer Town Center Historic District		Spencer	
SPE.O	East Main Street - Cherry Street Historic District		Spencer	
SPE.P	Spencer State Forest - Headquarters Area		Spencer	
SPE.Q	Spencer State Forest - Howe Pond Area		Spencer	
SPE.R	Spencer Town Center Historic District		Spencer	
SPE.S	East Main Street - Cherry Street Historic District		Spencer	
SPE.910	Shaw Site (4,5,6)		Spencer	
SPE.105	Saint Joseph's Abbey	Alta Crest Rd	Spencer	1951
SPE.265		3 Ash St	Spencer	r 1955
SPE.90	Kelaher, P. House	5 Ash St	Spencer	r 1860
SPE.89	Starr, Hezekiah P. House	8 Ash St	Spencer	r 1880
SPE.91	Kelley, P. House	9 Ash St	Spencer	r 1845
SPE.88	Dermody, M. House	10-12 Ash St	Spencer	r 1860
SPE.92	Prouty, William H. House	11 Ash St	Spencer	1882

Inv. No.	Property Name	Street	Town	Year
SPE.87	Jones, Erastus and Company Worker Housing	14 Ash St	Spencer	c 1870
SPE.266		18 Ash St	Spencer	r 1955
SPE.86	Draper, James - Jones, Erastus House	22 Ash St	Spencer	r 1825
SPE.85	Griffin, T. - Comins, Thomas J. House	24 Ash St	Spencer	r 1845
SPE.267		26 Ash St	Spencer	r 1955
SPE.34	Cranson, Elisha House	Bacon Hill Rd	Spencer	c 1748
SPE.903	Boston and Albany Main Line Railroad Bridge #59.31	Bacon Hill Rd	Spencer	1914
SPE.14		14 Bell St	Spencer	r 1875
SPE.928	Brooks Pond Road Bridge	Brooks Pond Rd	Spencer	1939
SPE.151		5 Brown St	Spencer	r 1870
SPE.149		7 Brown St	Spencer	r 1870
SPE.150		9 Brown St	Spencer	r 1870
SPE.285	Cherry Street Fire House	Cherry St	Spencer	1884
SPE.284		7 Cherry St	Spencer	c 1900
SPE.65	Prouty, Charles N. Carriage House	26 Cherry St	Spencer	c 1879
SPE.66	Bacon, John Edward House	36 Cherry St	Spencer	r 1860
SPE.81	Boyden, John House	37-37 1/2 Cherry St	Spencer	r 1865
SPE.80	Prouty, B. - Bacon, William E. House	39 Cherry St	Spencer	r 1860
SPE.119	Prouty, B. - Bacon, William E. Carriage House	39 Cherry St	Spencer	r 1870
SPE.67	Prouty, Isaac Lothrop House	40 Cherry St	Spencer	r 1860
SPE.68	Prouty, Thomas A. House	46 Cherry St	Spencer	r 1875
SPE.79	Sibley, Emery F. House	47 Cherry St	Spencer	r 1875
SPE.69	Pease, Aurelius G. House	48-48 1/2 Cherry St	Spencer	r 1875
SPE.78	Dyer, Sophia C. House	49 Cherry St	Spencer	r 1875
SPE.70	Bemis, John E. House	50 Cherry St	Spencer	r 1845
SPE.77	Tyler, Isaac - Prouty, Fields M. House	51 Cherry St	Spencer	r 1875
SPE.71	Clark, Cynthia W. House	52 Cherry St	Spencer	r 1875
SPE.76	Browning, William E. House	53 Cherry St	Spencer	r 1875
SPE.72	Ayres, Charles S. House	54 Cherry St	Spencer	r 1875
SPE.75	Bemis, Arthur C. - Hobbs, Samuel D. House	55 Cherry St	Spencer	r 1880
SPE.73	Starr, John B. House	56 Cherry St	Spencer	r 1875
SPE.74	Livermore, Lorenzo House	59 Cherry St	Spencer	c 1872
SPE.268		60 Cherry St	Spencer	r 1880
SPE.269		62 Cherry St	Spencer	r 1875
SPE.270		63 Cherry St	Spencer	r 1950
SPE.271		64 Cherry St	Spencer	r 1875
SPE.272	Trail, William W. House	65 Cherry St	Spencer	r 1880

Inv. No.	Property Name	Street	Town	Year
SPE.273	Manley, Gilbert E. House	66 Cherry St	Spencer	r 1880
SPE.274		68 Cherry St	Spencer	r 1875
SPE.275		69 Cherry St	Spencer	r 1875
SPE.276		70 Cherry St	Spencer	r 1920
SPE.277	Hughes, James House	72 Cherry St	Spencer	r 1875
SPE.218		73 Cherry St	Spencer	r 1870
SPE.175		93 Chestnut St	Spencer	r 1870
SPE.176		95 Chestnut St	Spencer	r 1870
SPE.33	Wilson, Jacob House	Chickering Rd	Spencer	c 1800
SPE.114	Wilson Barn	Chickering Rd	Spencer	r 1880
SPE.177		19 Church St	Spencer	r 1870
SPE.178		47 Church St	Spencer	r 1870
SPE.186		5-7 Cottage St	Spencer	r 1880
SPE.148		9 Duggan St	Spencer	r 1870
SPE.179		13 Elm St	Spencer	r 1870
SPE.180		23 Elm St	Spencer	r 1870
SPE.15		7 Emmett St	Spencer	r 1880
SPE.35		13 George Wilson Rd	Spencer	c 1790
SPE.211		21 Grant St	Spencer	r 1885
SPE.31	Bemis, Eleazer House	Greenville Rd	Spencer	c 1822
SPE.16		35 Greenville Rd	Spencer	r 1880
SPE.30	Crague, Nathan House	57 Greenville Rd	Spencer	c 1830
SPE.286		10 Grove St	Spencer	c 1920
SPE.287	Fay, Julia A. House	13 Grove St	Spencer	c 1875
SPE.152	Cutter, E. P. House	14 Grove St	Spencer	r 1870
SPE.153	Prouty, D. House	15 Grove St	Spencer	c 1875
SPE.288	Draper, H. P. House	17 Grove St	Spencer	c 1875
SPE.154	Pope, Joseph House	18 Grove St	Spencer	c 1875
SPE.289	Livermore, W. J. House	19 Grove St	Spencer	c 1875
SPE.290	Cummings and Bass House	20 Grove St	Spencer	c 1880
SPE.291	Hamilton, A. F. House	21 Grove St	Spencer	c 1875
SPE.264	Grove Street School	23 Grove St	Spencer	1876
SPE.155	Bryant, D. House	24 Grove St	Spencer	c 1875
SPE.292	Stearns, L. N. House	28 Grove St	Spencer	c 1875
SPE.293	Prouty, Isaac First House	29 Grove St	Spencer	c 1850
SPE.157		31 Grove St	Spencer	r 1870
SPE.158		32 Grove St	Spencer	r 1870
SPE.159		34 Grove St	Spencer	r 1870

Inv. No.	Property Name	Street	Town	Year
SPE.160		37 Grove St	Spencer	r 1870
SPE.161		52 Grove St	Spencer	r 1870
SPE.162		54 Grove St	Spencer	r 1870
SPE.194	Livermore Inn - Temple, Alonzo House	1 High St	Spencer	c 1800
SPE.294	Sugden, Richard House	7 High St	Spencer	c 1875
SPE.295	Sugden, Richard Caretaker's House	7 High St	Spencer	1903
SPE.296		8 High St	Spencer	c 1940
SPE.297	Bemis, L. House	10 High St	Spencer	c 1880
SPE.195	Grout, J. N. House	11 High St	Spencer	c 1855
SPE.298	Watson, H. S. House	12 High St	Spencer	c 1880
SPE.299		12R High St	Spencer	c 1900
SPE.300	Eldridge, S. C. House	15 High St	Spencer	r 1860
SPE.301	Stone, E. E. House	16 High St	Spencer	c 1875
SPE.302	Nichols, Ashbury House	18 High St	Spencer	c 1880
SPE.198	Grant, George F. House	19 High St	Spencer	c 1865
SPE.303		20 High St	Spencer	c 1920
SPE.304	Ward, Dennis W. House	23 High St	Spencer	c 1850
SPE.197		24 High St	Spencer	c 1892
SPE.305	Prouty, L. W. House	25 High St	Spencer	c 1865
SPE.196	Sagendorph, Noah House	26 High St	Spencer	c 1880
SPE.306	Prouty, C. P. House	27 High St	Spencer	c 1884
SPE.307		28 High St	Spencer	c 1945
SPE.308	Hill, Luther House	29 High St	Spencer	c 1870
SPE.199		30 High St	Spencer	c 1886
SPE.309	Wilson - Stone House	31 High St	Spencer	c 1870
SPE.310	Pickup, James House	32 High St	Spencer	c 1875
SPE.311	Lyford, W. C. House	34 High St	Spencer	c 1875
SPE.312	Tripp, C. M. House	35 High St	Spencer	c 1884
SPE.313	Bellows, A. L. House	36 High St	Spencer	c 1880
SPE.314		40 High St	Spencer	c 1890
SPE.315		40 1/2 High St	Spencer	c 1890
SPE.316	Sagendorph, Noah House	41 High St	Spencer	c 1870
SPE.317		43 High St	Spencer	c 1950
SPE.318		45 High St	Spencer	c 1900
SPE.319		47 High St	Spencer	c 1885
SPE.320		49 High St	Spencer	c 1900
SPE.200		51 High St	Spencer	r 1885
SPE.321		51 High St	Spencer	c 1885

Inv. No.	Property Name	Street	Town	Year
SPE.168		10 Highland St	Spencer	r 1870
SPE.169		11 Highland St	Spencer	r 1870
SPE.190		9 Holmes St	Spencer	r 1880
SPE.193		18 Holmes St	Spencer	r 1880
SPE.36	Bemis, Joshua - Howe, Hiram House	Howe Rd	Spencer	c 1790
SPE.282	Spencer State Forest - CCC Headquarter Building	Howe Rd	Spencer	1937
SPE.283	Spencer State Forest - Staff Housing	Howe Rd	Spencer	1937
SPE.912	Spencer State Forest - Howe Pond	Howe Rd	Spencer	
SPE.913	Spencer State Forest - Howe Pond Dam	Howe Rd	Spencer	1937
SPE.914	Spencer State Forest - Howe Road Stone Bridge	Howe Rd	Spencer	1937
SPE.915	Spencer State Forest - Howe Family Monument	Howe Rd	Spencer	
SPE.187		5-9 Irving St	Spencer	r 1880
SPE.156	Bryant, D. Carriage House	3 Jones St	Spencer	c 1875
SPE.388	Stearns, L. N. Carriage House	5 Jones St	Spencer	c 1875
SPE.32	Baldwin, Levi House	Leonard Rd	Spencer	r 1830
SPE.115	Baldwin Barn	Leonard Rd	Spencer	r 1830
SPE.322		2 Lincoln St	Spencer	c 1870
SPE.208		47 Lincoln St	Spencer	r 1885
SPE.209		57 Lincoln St	Spencer	r 1870
SPE.210		68 Lincoln St	Spencer	r 1870
SPE.278		2 Linden St	Spencer	r 1955
SPE.17	Universalist Church - Church of Our Father	8 Linden St	Spencer	1882
SPE.279		10 Linden St	Spencer	r 1955
SPE.84	Stone, Ralph B. House	11 Linden St	Spencer	r 1890
SPE.83	Lyndes, M. House	12 Linden St	Spencer	r 1880
SPE.20	Ladd, George P. House	13 Linden St	Spencer	1882
SPE.82	Bullard, George L. - Jones, Erastus House	14 Linden St	Spencer	r 1880
SPE.280		15 Linden St	Spencer	r 1955
SPE.281	Bullard, Dexter House	16 Linden St	Spencer	r 1860
SPE.1		Main St	Spencer	c 1800
SPE.2	Prouty, David Junior High School	Main St	Spencer	1888
SPE.3	First Congregational Church	Main St	Spencer	1863
SPE.233	United Methodist Church	Main St	Spencer	r 1845
SPE.261	Shopper's Village	Main St	Spencer	r 1950
SPE.801	Spencer Old Burial Ground	Main St	Spencer	1742
SPE.902	Bemis, Samuel Monument	Main St	Spencer	1901
SPE.911	Bemis, Capt. Edmund Memorial	Main St	Spencer	1901

Inv. No.	Property Name	Street	Town	Year
SPE.323	Kelly, Hugh House	9 Main St	Spencer	c 1875
SPE.121		10 Main St	Spencer	r 1850
SPE.122		14 Main St	Spencer	r 1850
SPE.123	Kane, C. House	15 Main St	Spencer	c 1860
SPE.324	Forest, E. House	17 Main St	Spencer	c 1880
SPE.325	Karey, M. House	25 Main St	Spencer	c 1880
SPE.326	Sinnott, Andrew H. House	27 Main St	Spencer	r 1855
SPE.124	Grout - Carne, B. House	29 Main St	Spencer	c 1870
SPE.327	McCormick, E. House	35 Main St	Spencer	r 1875
SPE.328	Plante's Auto Body Shop	37 Main St	Spencer	c 1935
SPE.125	Moreland, J. W. - Prouty, J. House	41 Main St	Spencer	c 1850
SPE.330	Snow, V. - Nolan, William L. House	47 Main St	Spencer	c 1850
SPE.331		53 Main St	Spencer	c 1940
SPE.332		59 Main St	Spencer	c 1910
SPE.333		63 Main St	Spencer	c 1885
SPE.334	Rice, H. House	65 Main St	Spencer	r 1860
SPE.335		69 Main St	Spencer	c 1900
SPE.126	Capen - Howland House	71 Main St	Spencer	c 1830
SPE.127	Livermore - Comins House	75 Main St	Spencer	c 1850
SPE.128	Mullett, George House	83 Main St	Spencer	c 1850
SPE.336		85 Main St	Spencer	c 1900
SPE.219		95 Main St	Spencer	c 1870
SPE.221		99 Main St	Spencer	c 1950
SPE.129		100-102 Main St	Spencer	r 1870
SPE.220	Kenwood Diner	100 Main St	Spencer	1945
SPE.106	Massasoit Hotel	101 Main St	Spencer	1873
SPE.260	Kingsley Block	102-108 Main St	Spencer	1898
SPE.259	Spencer Auto Showroom	116 Main St	Spencer	c 1915
SPE.222	Sugden Block	117 Main St	Spencer	1888
SPE.258		120 Main St	Spencer	c 1910
SPE.257	Ames Block	124 Main St	Spencer	1876
SPE.223		125 Main St	Spencer	c 1834
SPE.256		126-130 Main St	Spencer	1876
SPE.255		132 Main St	Spencer	c 1880
SPE.224		135 Main St	Spencer	c 1870
SPE.254	Bacon, Kent and Company	136 Main St	Spencer	1875
SPE.225		137 Main St	Spencer	c 1856
SPE.253		138 Main St	Spencer	c 1885

Inv. No.	Property Name	Street	Town	Year
SPE.252		140 Main St	Spencer	c 1910
SPE.226		141 Main St	Spencer	c 1875
SPE.251		142 Main St	Spencer	c 1910
SPE.227		143 Main St	Spencer	c 1875
SPE.250		144 Main St	Spencer	
SPE.228		145 1/2 Main St	Spencer	c 1875
SPE.229		145 Main St	Spencer	c 1926
SPE.249		148 Main St	Spencer	c 1870
SPE.248		150 Main St	Spencer	r 1840
SPE.247	Marsh Block	152-154 Main St	Spencer	r 1865
SPE.231	Spencer Fire Station	155 Main St	Spencer	1883
SPE.230	Spencer Memorial Town Hall	157 Main St	Spencer	1926
SPE.246		158 Main St	Spencer	r 1840
SPE.232		159 Main St	Spencer	r 1820
SPE.245		162-170 Main St	Spencer	r 1950
SPE.234		163 Main St	Spencer	1888
SPE.244	Spencer National Bank Block	172-174 Main St	Spencer	1875
SPE.235	Prouty, David House	175 Main St	Spencer	1851
SPE.243	Spencer Savings Bank	176 Main St	Spencer	1981
SPE.236		177 Main St	Spencer	r 1900
SPE.237		181 Main St	Spencer	r 1950
SPE.130	Jones, Asa T. House	182 Main St	Spencer	c 1856
SPE.107	Starr, Hezekiah House	185 Main St	Spencer	c 1868
SPE.132	Jones, Erastus House	186 Main St	Spencer	c 1845
SPE.133	Denny, Charles House	188 Main St	Spencer	1844
SPE.239	Jones, Eratus and Company	194 Main St	Spencer	r 1870
SPE.108	Dutton, Frank House	204 Main St	Spencer	1876
SPE.120	Dutton, Frank Carriage House	204 Main St	Spencer	c 1876
SPE.238		208 Main St	Spencer	r 1950
SPE.47	Livermore, Walton House	215 Main St	Spencer	r 1815
SPE.46	Smith - Watson House	217 Main St	Spencer	r 1815
SPE.5	Denny Hall	220 Main St	Spencer	1857
SPE.45	Hersey, Nathan House	221 Main St	Spencer	r 1845
SPE.44	Hersey, Nathan Barn	223 Main St	Spencer	r 1855
SPE.109		224 Main St	Spencer	r 1750
SPE.43	Morse, Joseph W. House	225 Main St	Spencer	r 1845
SPE.48	Morse, George W. House	226 Main St	Spencer	r 1840
SPE.49	Stone, L. G. House	230 Main St	Spencer	r 1880

Inv. No.	Property Name	Street	Town	Year
SPE.50	Sibley, H. E. House	232 Main St	Spencer	r 1890
SPE.51	Sanderson, E. House	234 Main St	Spencer	r 1845
SPE.52	Searles, William E. House	238 Main St	Spencer	r 1890
SPE.6	Sanderson, Tilson J. House	239 Main St	Spencer	c 1870
SPE.113	Sanderson, Tilson J. Carriage House	239 Main St	Spencer	1884
SPE.53	Searles, William E. - Curtis, Albert W. House	240 Main St	Spencer	r 1880
SPE.42	Avery, John G. House	241 Main St	Spencer	1883
SPE.54	Muzzy, William G. House	242 Main St	Spencer	r 1880
SPE.41	Bemis, Davis House	243 Main St	Spencer	r 1845
SPE.55	Green, Samuel B. House	244 Main St	Spencer	r 1860
SPE.40	Drury, F. House	245 Main St	Spencer	r 1875
SPE.56	Davis, George S. House	246 Main St	Spencer	r 1880
SPE.57	Muzzy, J. House - Congregational Church Parsonage	248 Main St	Spencer	r 1845
SPE.39	Boyce - Allen House	249 Main St	Spencer	r 1860
SPE.58	Grout, Joseph C. House	252 Main St	Spencer	r 1880
SPE.38	Green, Josiah - Green, Charles H. House	253 Main St	Spencer	r 1845
SPE.59	Hersey, Thomas House	254 Main St	Spencer	r 1845
SPE.60	Bemis, George 2nd House	256 Main St	Spencer	1891
SPE.37	Green, Henry R. Farmhouse	259 Main St	Spencer	1856
SPE.61	Watson, Jeremiah House	260 Main St	Spencer	r 1840
SPE.62	Watson, Lorenzo House	266 Main St	Spencer	r 1845
SPE.63	Watson, Frank B. House	270 Main St	Spencer	r 1875
SPE.4	Green, Josiah Shoe Factory	273-275 Main St	Spencer	c 1834
SPE.64	Green, Josiah House	282 Main St	Spencer	r 1815
SPE.144		288 Main St	Spencer	r 1859
SPE.145		294 Main St	Spencer	r 1860
SPE.146		298 Main St	Spencer	r 1860
SPE.147		301 Main St	Spencer	r 1850
SPE.8		321 Main St	Spencer	r 1775
SPE.172		14-16 Maple St	Spencer	r 1870
SPE.170		18 Maple St	Spencer	r 1870
SPE.171		20 Maple St	Spencer	r 1870
SPE.173		24 Maple St	Spencer	r 1870
SPE.174		53 Maple St	Spencer	r 1870
SPE.98	Manley, Gilbert E. House	4-6 May St	Spencer	r 1890
SPE.99	Sibley House	7 May St	Spencer	r 1875
SPE.97	Lovell, E. H. House	8 May St	Spencer	r 1890

Inv. No.	Property Name	Street	Town	Year
SPE.96	Prentice, William H. House	10 May St	Spencer	r 1880
SPE.95	Smith, F. House	12 May St	Spencer	r 1875
SPE.100	Kittridge, A. House	13 May St	Spencer	r 1875
SPE.94	Clapp, S. House	14 May St	Spencer	r 1880
SPE.101	Walker, J. A. House	17 May St	Spencer	r 1875
SPE.93	Luther, S. House	18 May St	Spencer	r 1875
SPE.102	Brewer, Oliver J. House	19 May St	Spencer	r 1875
SPE.24	Garfield, Samuel House	McCormick Rd	Spencer	c 1748
SPE.337	U. S. Post Office - Spencer Main Branch	10 Mechanic St	Spencer	1930
SPE.338		11-13 Mechanic St	Spencer	c 1930
SPE.339	Powers, M. J. Block	14 Mechanic St	Spencer	c 1900
SPE.340	New England Telephone Building	15 Mechanic St	Spencer	1929
SPE.341	Nichols, Ashbury Store	17 Mechanic St	Spencer	c 1880
SPE.342	Heffernan Block	18 Mechanic St	Spencer	1894
SPE.343	Nichols, Morton Store	19 Mechanic St	Spencer	c 1880
SPE.344	Powers, M. J. Block	22 Mechanic St	Spencer	c 1870
SPE.346	Weatherbee Drug Store and House	23-25 Mechanic St	Spencer	1873
SPE.345	Morse, Mary House	24 Mechanic St	Spencer	c 1860
SPE.347		28-30 Mechanic St	Spencer	c 1881
SPE.348	Green Block	31 Mechanic St	Spencer	1882
SPE.349	Kane Block	37-39 Mechanic St	Spencer	1878
SPE.25		North Brookfield Rd	Spencer	r 1775
SPE.110		North Brookfield Rd	Spencer	
SPE.111		North Brookfield Rd	Spencer	
SPE.392	Barnes - Hill House	12 North Brookfield Rd	Spencer	c 1790
SPE.181		3 Parent St	Spencer	r 1870
SPE.389	Luther Hill Park - Bath House and Concession Stand	Park St	Spencer	c 1950
SPE.390	Luther Hill Park - Public Restroom	Park St	Spencer	c 1950
SPE.391	Luther Hill Park - Public Restroom	Park St	Spencer	c 1970
SPE.916	Luther Hill Park	Park St	Spencer	1888
SPE.918	Luther Hill Park - Pump House Foundations	Park St	Spencer	1905
SPE.919	Luther Hill Park - Children's Play Area	Park St	Spencer	c 1950
SPE.920	Luther Hill Park - Tennis - Skateboard Court	Park St	Spencer	1954
SPE.921	Luther Hill Park - Badminton Green	Park St	Spencer	c 1990
SPE.922	Luther Hill Park - Shuffleboard Court	Park St	Spencer	c 1950
SPE.923	Luther Hill Park - Horse Tie-Up Wall	Park St	Spencer	c 1888
SPE.924	Luther Hill Park - Granite Entry Posts	Park St	Spencer	1926

Inv. No.	Property Name	Street	Town	Year
SPE.925	Luther Hill Park - Stone Walls	Park St	Spencer	r 1850
SPE.926	Luther Hill Park - Pine and Boulder Grove	Park St	Spencer	1888
SPE.927	Luther Hill Park - Park Roadway System	Park St	Spencer	1888
SPE.7	Spencer Schoolhouse #3	8 Park St	Spencer	1856
SPE.26	Laureldale Farm	Paxton Rd	Spencer	c 1750
SPE.18	Underwood, Dea. Reuben House	21 Paxton Rd	Spencer	c 1775
SPE.182		15-17 Pearl St	Spencer	r 1870
SPE.183		21 Pearl St	Spencer	r 1870
SPE.103	Sugden, Richard Public Library	Pleasant St	Spencer	1888
SPE.350	Adams, Samuel House	13 Pleasant St	Spencer	c 1884
SPE.351	Prouty, J. H. Three Decker	14 Pleasant St	Spencer	c 1895
SPE.201		15 Pleasant St	Spencer	r 1870
SPE.352	Prouty, J. H. Three Decker	16 Pleasant St	Spencer	c 1895
SPE.353		18 Pleasant St	Spencer	c 1895
SPE.354	Watson, W. C. House	19 Pleasant St	Spencer	c 1855
SPE.202		20 Pleasant St	Spencer	c 1885
SPE.355	Capen, James M. House	22 Pleasant St	Spencer	c 1880
SPE.356	Capen, James M. House	23 Pleasant St	Spencer	c 1860
SPE.203		24 Pleasant St	Spencer	r 1885
SPE.357		24 Pleasant St	Spencer	c 1885
SPE.358		25 Pleasant St	Spencer	c 1915
SPE.204	Howland, Pardon House	28 Pleasant St	Spencer	1855
SPE.359		29 Pleasant St	Spencer	c 1960
SPE.360	Howland, E. H. House	31 Pleasant St	Spencer	c 1865
SPE.205	Howland, H. P. House	34 Pleasant St	Spencer	c 1875
SPE.917	Howland, H. P. Fountain	34 Pleasant St	Spencer	c 1884
SPE.206		35 Pleasant St	Spencer	c 1885
SPE.361	Tucker, George House	38 Pleasant St	Spencer	c 1845
SPE.362	Clark, Thomas House	39 Pleasant St	Spencer	c 1875
SPE.363	Adams, E. House	40 Pleasant St	Spencer	c 1830
SPE.364		41 Pleasant St	Spencer	c 1890
SPE.365		43 Pleasant St	Spencer	c 1890
SPE.366	Tower, Arthur M. House	46 Pleasant St	Spencer	c 1850
SPE.207	Thayer, C. T. House	47 Pleasant St	Spencer	c 1890
SPE.367	Wright, T. S. House	48 Pleasant St	Spencer	c 1850
SPE.368	Biscoe, R. House	49 Pleasant St	Spencer	c 1880
SPE.369	Belcher, H. House	50 Pleasant St	Spencer	c 1875
SPE.370	Biscoe, R. House	51 Pleasant St	Spencer	c 1880

Inv. No.	Property Name	Street	Town	Year
SPE.371		52 Pleasant St	Spencer	c 1890
SPE.263	Pleasant Street School	54 Pleasant St	Spencer	1883
SPE.372	Horr, M. N. House	55 Pleasant St	Spencer	c 1875
SPE.373	Wilson, E. House	60 Pleasant St	Spencer	r 1885
SPE.374		62 Pleasant St	Spencer	r 1955
SPE.375		64 Pleasant St	Spencer	r 1955
SPE.376		70 Pleasant St	Spencer	c 1885
SPE.377	Barr, William A. House	72 Pleasant St	Spencer	r 1855
SPE.165		5 Pope St	Spencer	r 1870
SPE.164		7 Pope St	Spencer	r 1870
SPE.163		9 Pope St	Spencer	r 1870
SPE.166		4 Powers St	Spencer	r 1870
SPE.167		6 Powers St	Spencer	r 1870
SPE.184		5 Prospect St	Spencer	r 1870
SPE.378	Beeman, E. House	1 Prouty St	Spencer	c 1880
SPE.385		3 Prouty St	Spencer	c 1960
SPE.386		4A-4B Prouty St	Spencer	c 1985
SPE.905	Milestone, 1767	Rt 9	Spencer	1767
SPE.906	Milestone, 1767	Rt 9	Spencer	1767
SPE.907	Milestone, 1767	Rt 9	Spencer	1767
SPE.908	Milestone, 1767	Rt 9	Spencer	1767
SPE.909	Milestone, 1767	Rt 9	Spencer	1767
SPE.904	Fairgrounds Bridge	Smithville Rd	Spencer	1935
SPE.10	Capen, William House and Farm	197 South Spencer St	Spencer	c 1794
SPE.800	Pine Grove Cemetery	Spencer Rd	Spencer	1845
SPE.188		19 Summit St	Spencer	r 1880
SPE.189		23 Summit St	Spencer	r 1880
SPE.19		1 Sumner St	Spencer	r 1880
SPE.29	Guildford, John F. House	Sunberg Dr	Spencer	c 1830
SPE.116	Guildford Barn	Sunberg Dr	Spencer	c 1830
SPE.28	Guildford, Jones 2nd House	T. Casey Rd	Spencer	c 1830
SPE.117	Guildford Barn	T. Casey Rd	Spencer	c 1830
SPE.23	Cunningham, Nathaniel House	Thompson's Pond Rd	Spencer	c 1790
SPE.112	Cunningham, Nathaniel House	Thompson's Pond Rd	Spencer	c 1790
SPE.185		53 Valley St	Spencer	r 1870
SPE.379	Dustin, B. C. and Sons Bakery	5 Wall St	Spencer	1879
SPE.380	Barr, William Shoe Heel and Peg Factory	15 Wall St	Spencer	1894
SPE.381	Bemis and Hobbs Oil Company	24-28 Wall St	Spencer	c 1920

Inv. No.	Property Name	Street	Town	Year
SPE.382	Howland, H. P. Flour, Grain and Hay Company	24-28 Wall St	Spencer	1894
SPE.383	Wall Street Grocery Store and Print Shop	28 Wall St	Spencer	c 1887
SPE.387	Flex-Con Factory	39 Wall St	Spencer	c 1990
SPE.384	Spencer Center Railroad Depot	62 Wall St	Spencer	1894
SPE.802	Saint Mary's Catholic Cemetery	West Main St	Spencer	1872
SPE.901	Soldiers of the Civil War Monument	West Main St	Spencer	1911
SPE.9	Charlie's Diner - Aikens Diner - Millpond Diner	32 West Main St	Spencer	1948
SPE.262	Spencer District #9 School	45 West Main St	Spencer	1867
SPE.900	Howe Monument	45 West Main St	Spencer	1910
SPE.212		18 Wilson St	Spencer	r 1870
SPE.27	Wilson Farm	115 Wilson St	Spencer	c 1800
SPE.104	Jenks - Whittemore - Small Farmhouse	3 Wire Village Rd	Spencer	c 1767

OPEN SPACE IMPLEMENTATION COMMITTEE ACTION ITEMS

GOAL 5: ESTABLISH A CONTINUOUS OPEN SPACE PLANNING PROCESS

Planning is like driving down a winding road. It is necessary to adjust the steering often.

5.1 Establish an Open Space and Recreation Planning Committee (TP with all parties, Year 1, H)

5.1 a) Re-establish Open Space Plan Committee or other mechanism to ensure oversight of implementation of plan, and foster and monitor proposed actions. The Committee will be tasked with the following actions and will prioritize the order in which they will be accomplished. (**TA**, TP, RC, WSS)

5.1 b) Annually report on accomplishments for Goals 1-4 in the Town Annual Report and post it on the Town Website. (TP, PB, CC, WSS, Years 1-7)

Action Items:

- Establish staff liaison to OSRPC to assist with plan implementation (**BoS,** TA)
- Identify individual to contact landowners and potential partners for land preservation projects, and negotiate with them. (TP, **TA**, CA, CC)
- Collaborate and share data with CMRPC, abutting towns, state and federal agencies, and watershed groups on goals and objectives enumerated in the plan. (CA)
- Schedule and hold meetings among Town boards, state agencies, and conservation groups to review progress and coordinate implementation of the OSRP. (OSPC, **TA**)
- Review 2020 Census data for implications on open space and recreation use and services. (**TP**)
- Develop and distribute a new survey for public input. Tabulate and review returned surveys. (TP, **OSPC**)
- Review capabilities of staff, boards, departments and budgets available for Plan Implementation. (TP, TA, **OSPC**)
- Obtain current DCS requirements for Open Space Plans to identify changes for the next update. (TP, **CA**)

Town of Spencer

Office of the Board of Selectmen
&
Town Administrator

Board of Selectmen:
Jared J.B. Grigg
Ralph E. Hicks
John J. Howard
Anthony D. Pepe
Gary E. Woodbury

Town Administrator:
Jeffrey K. Bridges
jbridges@spencerma.gov

February 28, 2022

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and
Environmental Affairs I 00 Cambridge
Street, Suite 900
Boston, MA 02114

Re: Town of Spencer 2019 Open Space and Recreation Plan

Dear Ms. Cryan,

On behalf of the Spencer Select Board, we are pleased to offer this letter of support for the development of the Town of Spencer's 2019 Open Space and Recreation Plan, as prepared by the Town of Spencer with support from the Central Massachusetts Regional Planning Commission (CMRPC).

This plan demonstrates Spencer's strong commitment to preserving and enhancing open space areas within its borders, and the contents of the plan represents a collaborative effort between a number of boards and commissions in Town. Extensive community input into this planning process was sought in order to ensure that the goals and objectives included in this plan are truly in line with community needs. Outreach efforts included a community survey, public meetings, and a community forum.

The goals, objectives, and action items outlined in this OSRP update will aid Spencer as it continues to provide open space, recreation opportunities, maintain historical sites, and seek additional grant funding. We feel the end result will serve as a valuable resource for the town for many years.

We thank you for considering this Plan and supporting our open space and recreation efforts.

Sincerely,

Gary E. Woodbury, Chair
Board of Selectmen

Town of Spencer, Massachusetts
Office of Development & Inspectional Services

Planning Board
Zoning Board of Appeals
Conservation Commission
Board of Health

Town Planner
Inspector of Buildings
Health Agent
Wetland/Soil Specialist

Memorial Town Hall
157 Main Street
Spencer, MA 01562

Tel: 508-885-7500 ext. 180
Fax: 508-885-7519

December 15, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
I 00 Cambridge Street, Suite 900
Boston, MA 02114

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This plan demonstrates Spencer's strong commitment to preserving and enhancing open space areas within its borders, and the contents of the plan represents a collaborative effort between a number of boards and commissions in Town. Extensive community input into this planning process was sought in order to ensure that the goals and objectives included in this plan are truly in line with community needs. Outreach efforts included a community survey, public meetings, and a community forum.

The goals, objectives, and action items outlined in this OSRP update will aid Spencer as it continues to provide open space, recreation opportunities, maintain historical sites, and seek additional grant funding. We feel the end result will serve as a valuable resource for the town for many years.

We thank you for considering this Plan and supporting our open space and recreation efforts.

Sincerely,

Town of Spencer Planning Board

Jeff Butensky, Vice Chair

Paul Gleason, Member

Robert Ceppi, Member

Shirley Shiver, Member

Todd Miller
Town Planner

UNUM Building,
1 Mercantile St.
Suite 520
Worcester, MA 01608
www.cmrpc.org

March 23, 2021

Melissa Cryan
Division of Conservation Services
Executive Office of Energy and Environmental Affairs
100 Cambridge St., Ste. 900
Boston, MA 02114

RE: Town of Spencer 2021 Open Space and Recreation Plan Update

Dear Ms. Cryan,

The Central Massachusetts Regional Planning Commission (CMRPC) is writing this letter in support of the Town of Spencer and its recently completed 2021 Open Space and Recreation Plan Update. The Town and its Open Space and Recreation Plan Committee are to be commended for their diligent work completing this Plan.

The Town and the Open Space Working Group have done a very thorough job, and the final document appears to meet the standards for such plans as promulgated by your office. This plan highlights the need to balance new development with the need to protect open space and natural resources, as well as enhance recreation opportunities. In particular, this Plan articulates a need for enhanced protection and upkeep of critical town-owned open spaces and waterbodies; improved trail systems and trail links on town-owned open spaces, promotion of the Town's open space and recreation opportunities for eco-tourism and economic development; and equitable access to the Town's open space and recreation facilities. Spencer's Plan provides the Town with specific guidance and action steps needed to accomplish its goals and objectives. This Plan also recognizes the need for partnerships with public and private entities to make its goals and objectives a reality. Many of these partnerships are currently being pursued by the Conservation Commission and Planning Board. Spencer will be well-served by having a State-approved, updated Plan in order to plan for its recreation facilities and programs, as well as to preserve and protect its valuable open spaces and natural resources.

Please consider this letter to be a demonstration of CMRPC's support for the Plan and the process used to develop it. We find Spencer's Plan to be fully consistent with CMRPC's Regional Open Space and Recreation Plan, our 2020 Growth Strategy for Central Massachusetts (2000), its 2012 update, and the Massachusetts Statewide Comprehensive Outdoor Recreation Plan.

Sincerely,

Trish Settles, AICP
Deputy Director Regional Collaboration and Community Planning

CC: Spencer Open Space and Recreation Plan Working Group
Spencer Planning Board
Spencer Board of Selectmen