

DCR – DIVISION OF WATER SUPPLY PROTECTION COMPREHENSIVE LAND MANAGEMENT PLAN 2017



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MA Department of Conservation and Recreation
Division of Water Supply Protection



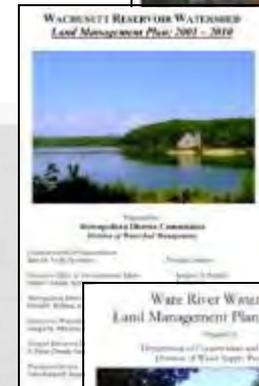
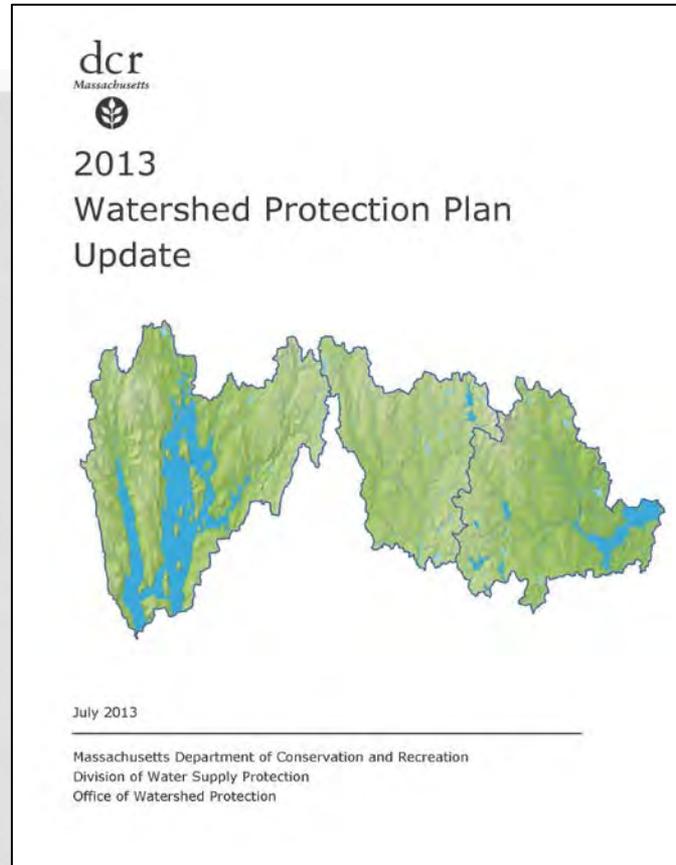
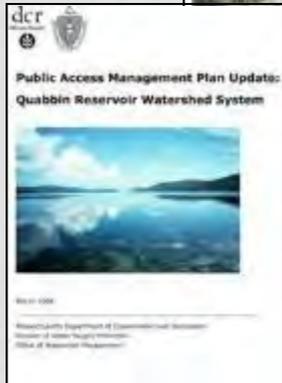
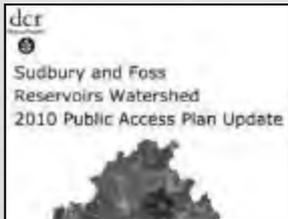
ACKNOWLEDGEMENTS

- DCR: Steve Anderson (retired), Greg Buzzell, Peter Church, Herm Eck, Craig Fitzgerald, Phil Lamothe, Thom Snowman (retired)
- MWRA: Dave Coppes, John Gregoire, Steve Estes-Smargiassi
- DEP: Kim Longridge, Kathy Romero
- Water Supply Citizens Advisory Committee (WSCAC)
- MassWildlife: Chris Buelow, Tim Simmons

MISSION

- ...construct, maintain and operate a system of watersheds, reservoirs, water rights and rights in sources of water supply [to] supply thereby a sufficient supply of pure water to the Massachusetts Water Resources Authority, and [to] utilize and conserve said water and other natural resources to protect, preserve and enhance the environment of the Commonwealth and to assure the availability of pure water for future generations.

WATERSHED MANAGEMENT PLANNING

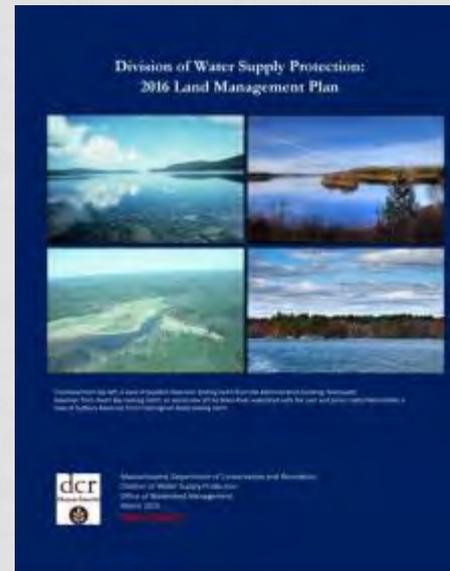
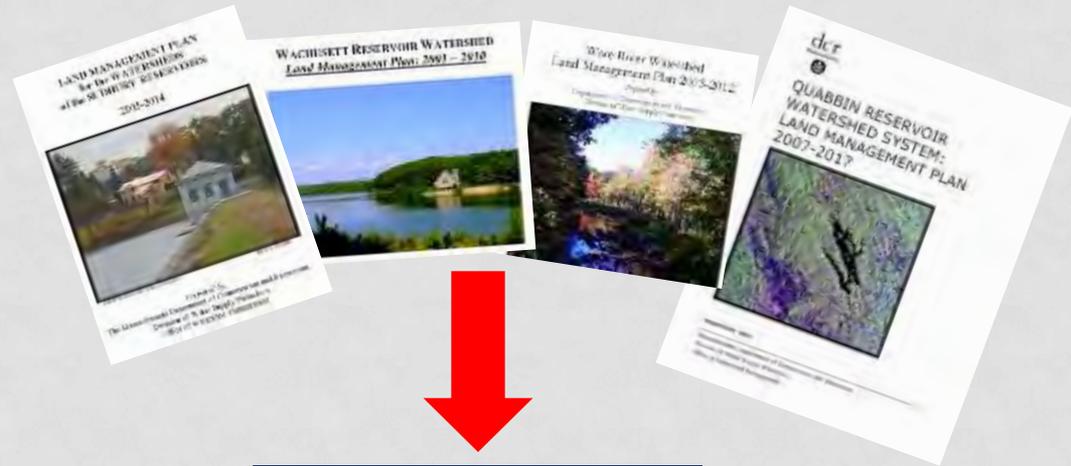


Watershed Protection Plans: 5 years [Next revision: 2018]
Access Plans: 5-10 years [Next revision: Quabbin – in process]
Land Management Plans: 10 years [Next revision: Comprehensive - in process]
Other Reports/Studies: Water Quality (annual); Gulls; Invasives

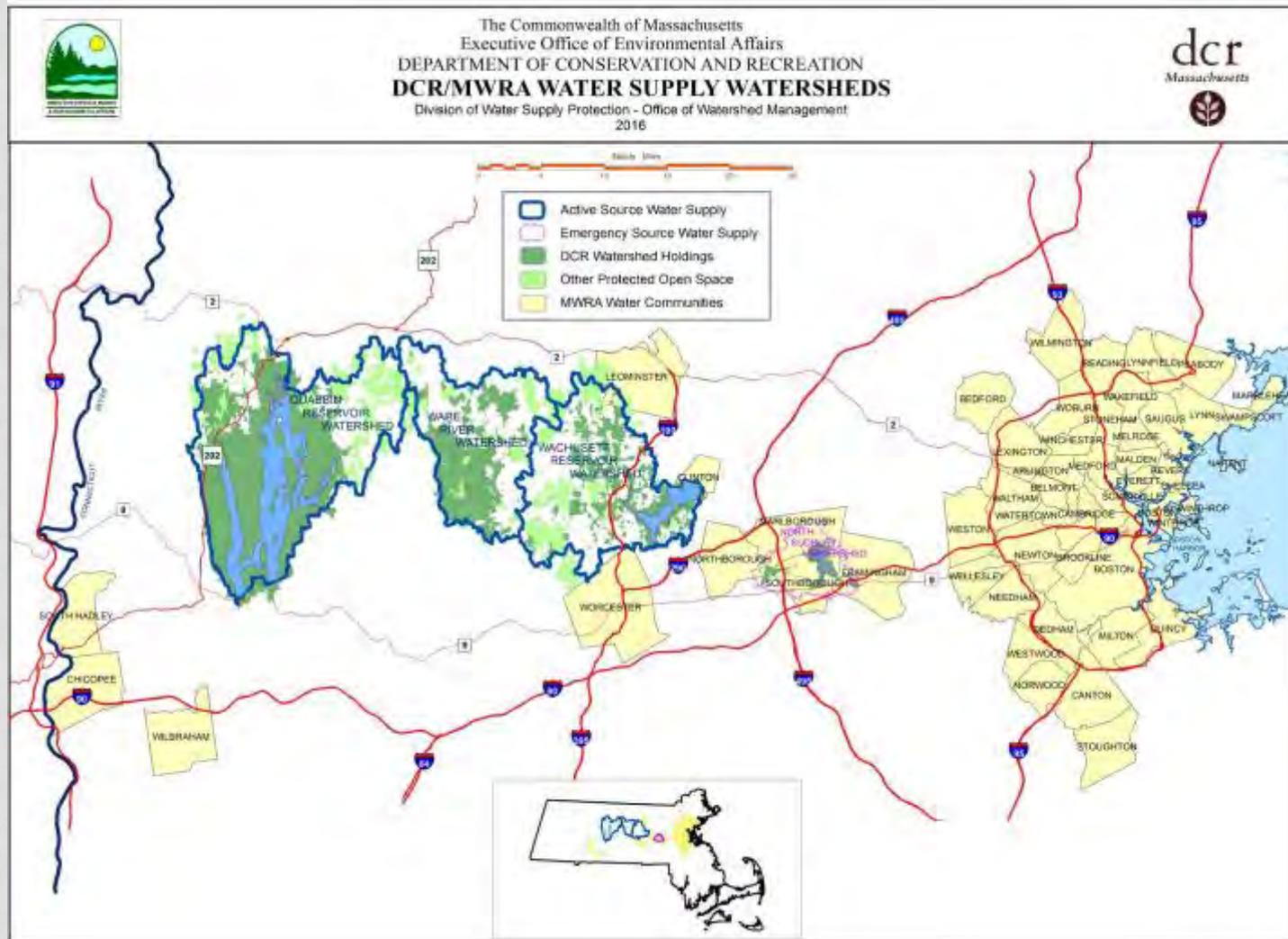


LAND MANAGEMENT APPROACH

- Individual watershed plans – every 10 years
- Now combined into one comprehensive LMP
- Guiding document for a variety of activities



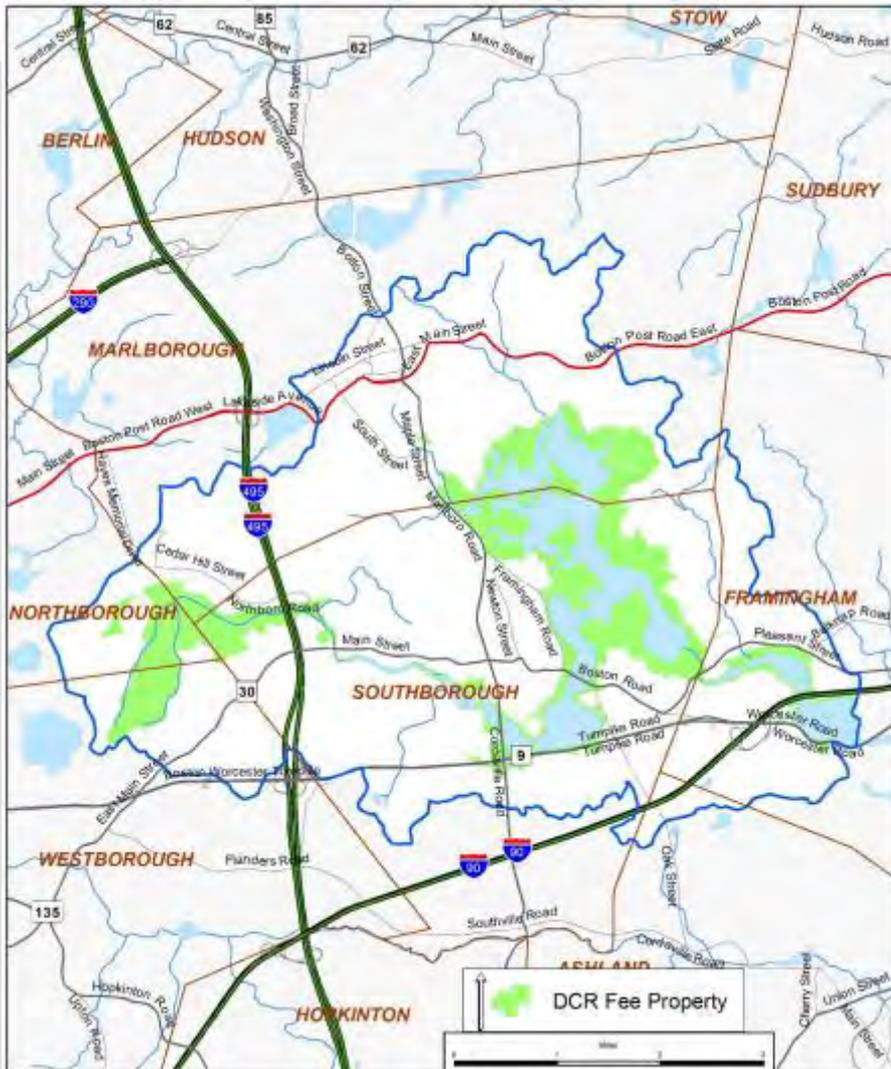
DCR-MWRA WATER SUPPLY WATERSHEDS



LAND MANAGEMENT PLAN SECTIONS

- Agency organization
- Description of Watersheds
 - Land use
 - Soil
 - Hydrology
 - Forest and wildlife conditions
- Management goals, objectives, methods
 - Land acquisition
 - Hazardous trees
 - Roads
 - Forested areas
 - Non-forested areas
 - Wildlife
 - Cultural Resources
- Research, inventory, monitoring

WATERSHED CHARACTERISTICS



SUDBURY WATERSHED

16,300 Acres of Land

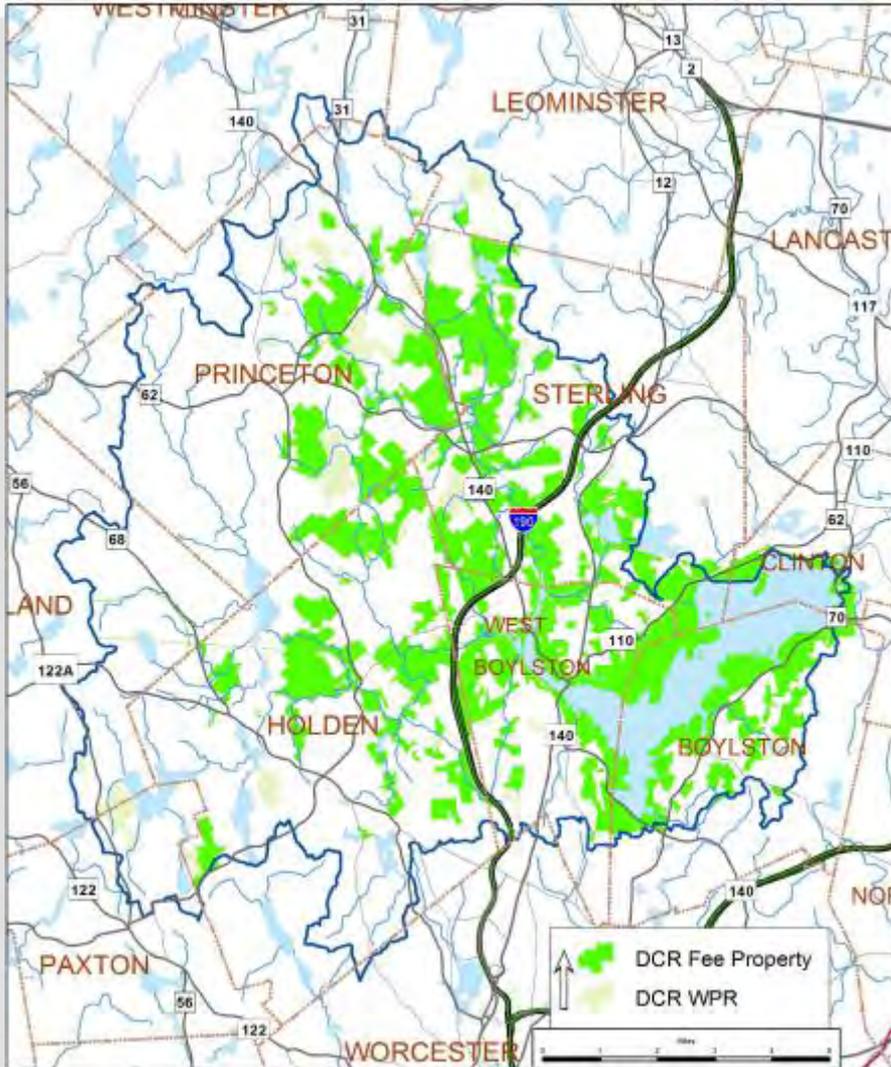
1,400 Acre Reservoir

41% Forested

14.6% DWSP Protected

10.5% Other Protected

WATERSHED CHARACTERISTICS



WACHUSETT WATERSHED

70,600 Acres of Land

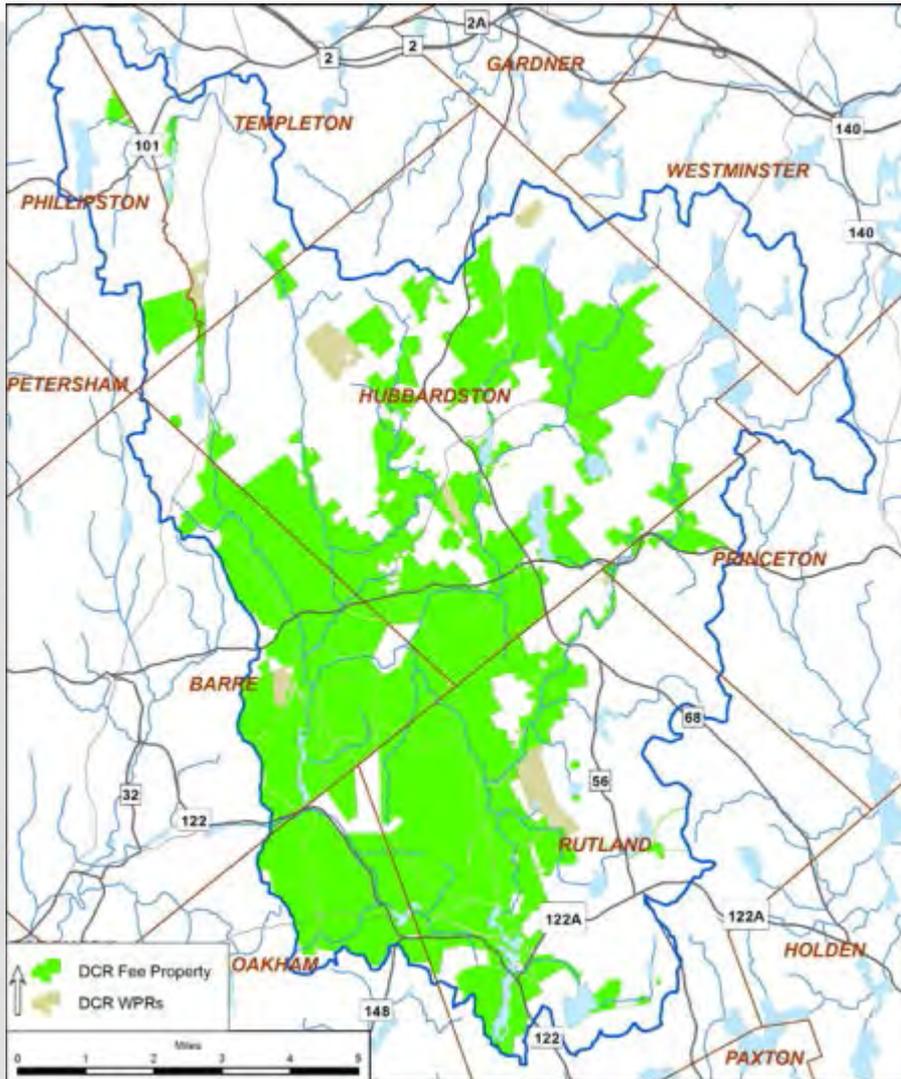
4,100 Acre Reservoir

70% Forested

27.9% DWSP Protected

17.6% Other Protected

WATERSHED CHARACTERISTICS



WARE RIVER WATERSHED

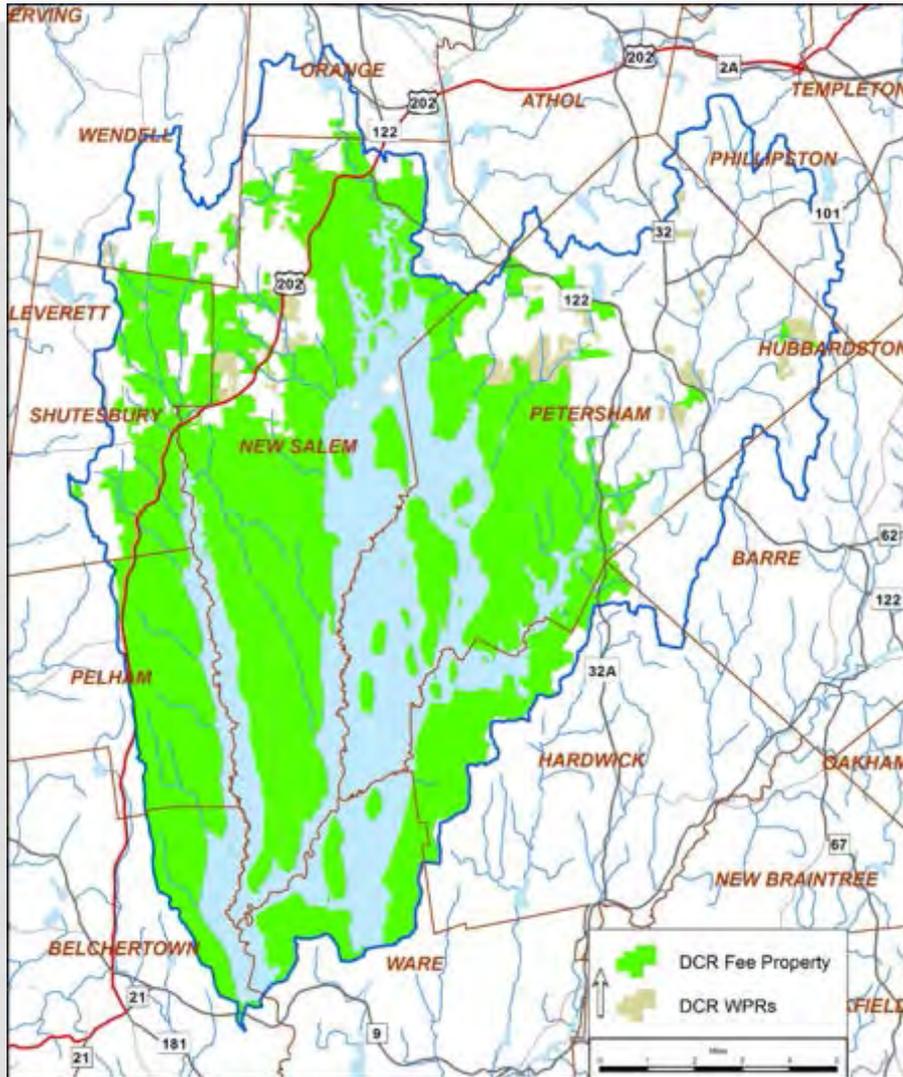
61,700 Acres of Land

76% Forested

39.8% DWSP Protected

12.0% Other Protected

WATERSHED CHARACTERISTICS



QUABBIN WATERSHED

95,500 Acres of Land

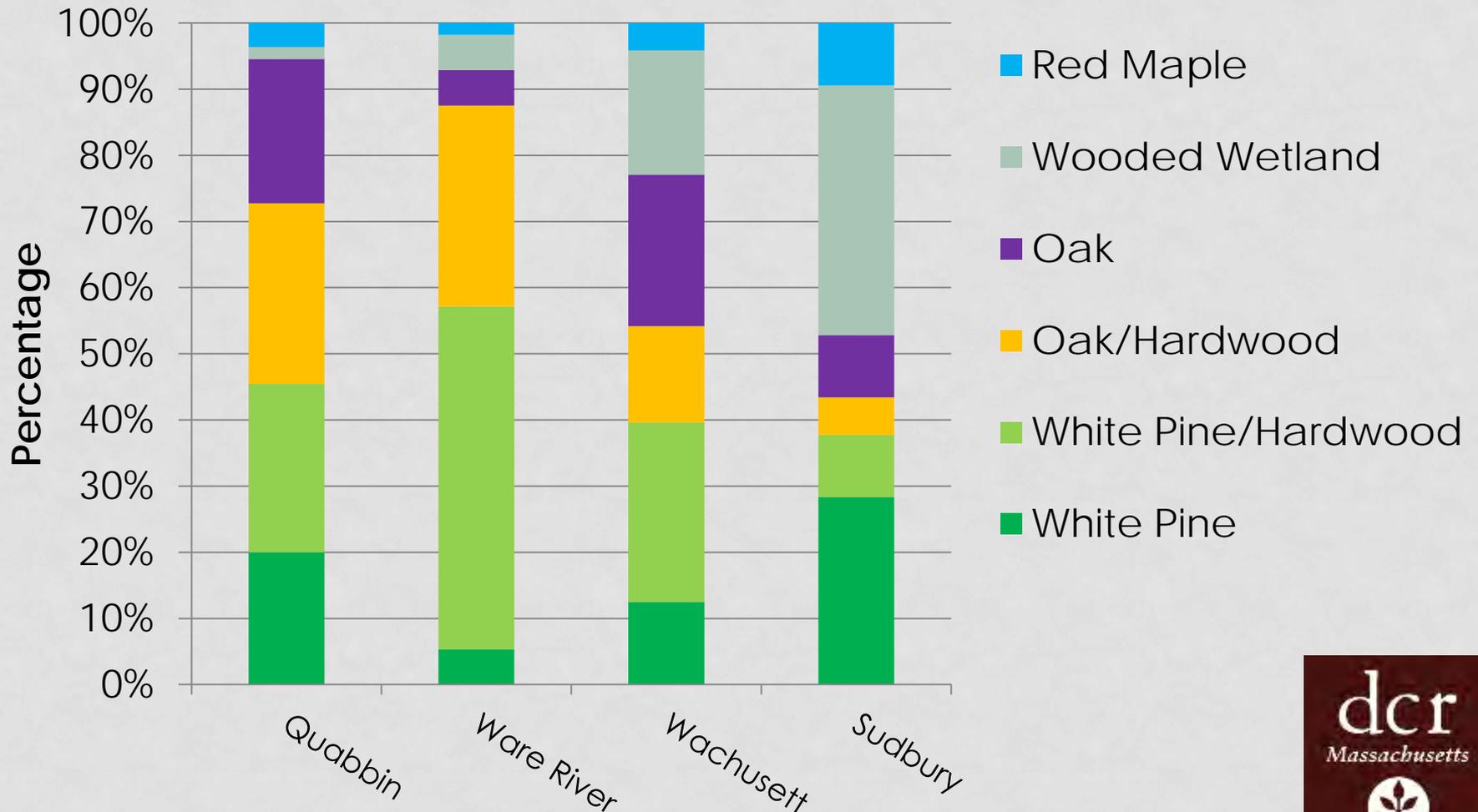
24,500 Acre Reservoir

88% Forested

60.3% DWSP Protected

16.1% Other Protected

CURRENT FOREST CONDITIONS





FORESTRY AND CLIMATE CHANGE

- Predicted Effects of Climate Change:
 - Northeast U.S. likely more strongly impacted
 - Average precipitation increases
 - Warmer, wetter winters and drier summers
 - Longer growing season
 - Extreme events more frequent
- Practices to help prepare:
 - Manage to diversify age structure and species composition
 - Expect shifts in native species ranges; promote transitions (?)
 - Control herbivores and invasive plants
 - Improve culverts and other infrastructure
 - Conserve more land to provide connectivity and refugia



LAND ACQUISITION

- Program started in 1985
- Land purchased in fee and through Watershed Preservation Restrictions (WPR)
- Effort focused on Quabbin and Wachusett watersheds
- \$135 million dollars spent (funded by MWRA)
- \$113 million @ Wachusett, \$13 million @ Ware River, \$9 million @ Quabbin
- From 1985-January 2015, percent of Wachusett under Division control went from 7.9% to 28.4%



FOREST MANAGEMENT: STAC REVIEW

- Began April 2010; report completed February 2013
- Recommendations:
 - Develop short briefing documents explaining DWSP forest management
 - Continue to buy and protect watershed lands at Wachusett
 - Resume active forest management using irregular group shelterwood (1/4-2 acre openings), with adaptations
 - Improve BMP and regeneration monitoring and reporting efforts
 - Monitor water quality effects of active forest management



FOREST MANAGEMENT: STAC IMPLEMENTATION

- DWSP released *From Here Forward* in August 2013
 - Improved public access to harvesting information through internet postings, public meetings, and signage
 - Improvements in internal review process
 - Changes to openings and marking specifications
 - Irregularly shaped and sized, with separation
 - Green-tree retention within most openings >1/2 acre
 - Promotion of late-seral stage forest characteristics through thinning practices
 - BMP monitoring
 - Regeneration monitoring and photo documentation
 - Short-term water quality monitoring at stream crossings
 - Long-term water quality studies under way



FOREST MANAGEMENT: OUR TYPICAL APPROACH

- Actively manage ~75% of all forested acres
- Regenerate ~1% of managed forest annually
 - For Quabbin, Wachusett, and Sudbury:
 - 90% of regenerated acreage created through a range of opening sizes, averaging about 1 acre
 - For Ware River
 - 60 % of regenerated acreage created through a range of opening sizes, averaging about 1 acre
- Intermediate harvests (thinnings)
 - Variable, based on stand conditions

VISUALIZING THE TYPICAL APPROACH

0.5 Acre Opening; harvested in 1996



VISUALIZING THE TYPICAL APPROACH

Same opening in 2001; 5 years later



VISUALIZING THE TYPICAL APPROACH

Same opening in 2008; 11 years later



SILVICULTURAL CONSIDERATIONS

- Consider aesthetics when making openings
- Green-tree retention in openings
 - Most openings $> \frac{1}{2}$ acre will retain at least 5-10 square feet per acre in basal area of live trees
 - Retained trees dispersed singly or in small groups
 - Desirable advance regeneration protected as much as possible
- Coarse woody debris standards for wildlife habitat
- Sub-watershed rule
 - No more than 25% of the total stocking on DWSP forests can be cut in any sub-watershed in a 10-year period
 - Goal is to prevent changes to water yield/quality
- Carbon Storage
 - Calculating forest's contribution to carbon sequestration

SILVICULTURAL CONSIDERATIONS

WHILE EACH OF THE OPENING CONFIGURATIONS BELOW HAS REGENERATED WELL, THE ONES ON THE RIGHT ARE SHAPED TO THE LANDSCAPE, IRREGULAR, AND MORE VISUALLY ACCEPTABLE.



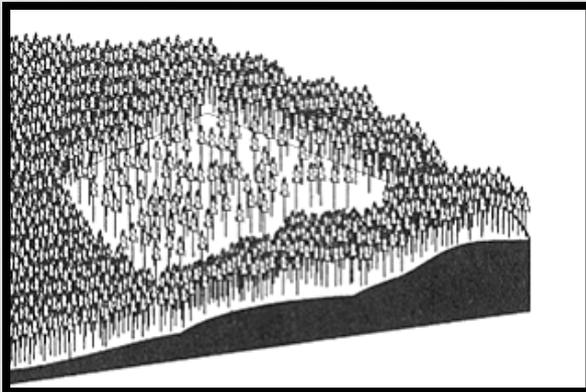
GEOMETRIC PATCH CUTS



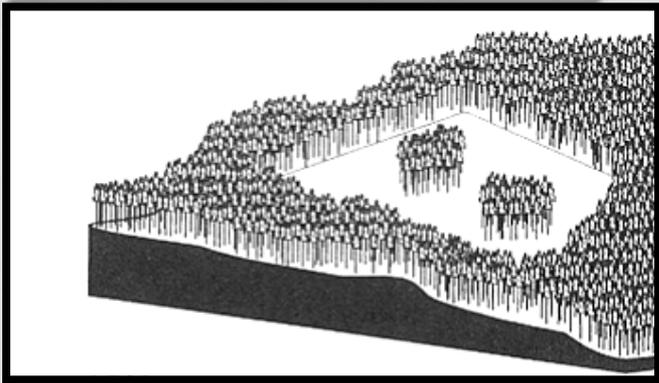
IRREGULAR OPENINGS

SILVICULTURAL CONSIDERATIONS

Small openings (<0.5 ac) with NO retention



Larger openings with dispersed retention



Larger openings with aggregated retention



FORESTRY REVIEW AND OVERSIGHT

- Internal Review process
 - Natural Resources, NHESP, Environmental Quality, Archeological Resources, and Regional Director approval
- Public presentation and comment period
- Harvesting permit
 - Water quality protections, including spill response measures
- BMP implementation meets or exceeds regulations
 - Bridge all flowing streams
 - No harvesting in wetlands
 - Expanded variable width filter strips
 - All vernal pools treated as if 'certified'
- Service Forestry review and approval
- Implementation of BMP Monitoring Protocol in 2016

FOREST MANAGEMENT: VARIATIONS FOR SPECIAL SITUATIONS

- Restorative Silviculture
 - Some objectives more easily met with larger openings
 - Short-term situations
 - Include:
 - Plantations
 - Degraded stands
 - Old field white pine
 - For Quabbin, Wachusett, and Sudbury:
 - Up to 10% of regenerated acreage in larger openings
 - For Ware River:
 - Up to 40% of regenerated acreage in larger openings

FOREST MANAGEMENT: VARIATIONS FOR SPECIAL SITUATIONS

- Early Successional Habitat (ESH) Management
 - Young forest habitat
 - Barren habitat
- Globally or regionally rare habitat
 - Associated decline in dependent species
- Recognition of our roles as stewards
 - Can provide this habitat without degrading water quality
- Represents a small fraction of our lands
- Will be concentrated in Focus Areas
- Use of prescribed fire
- Terrestrial invasive plant control: mechanical, cultural, & chemical

ESH: YOUNG FOREST FOCUS AREAS

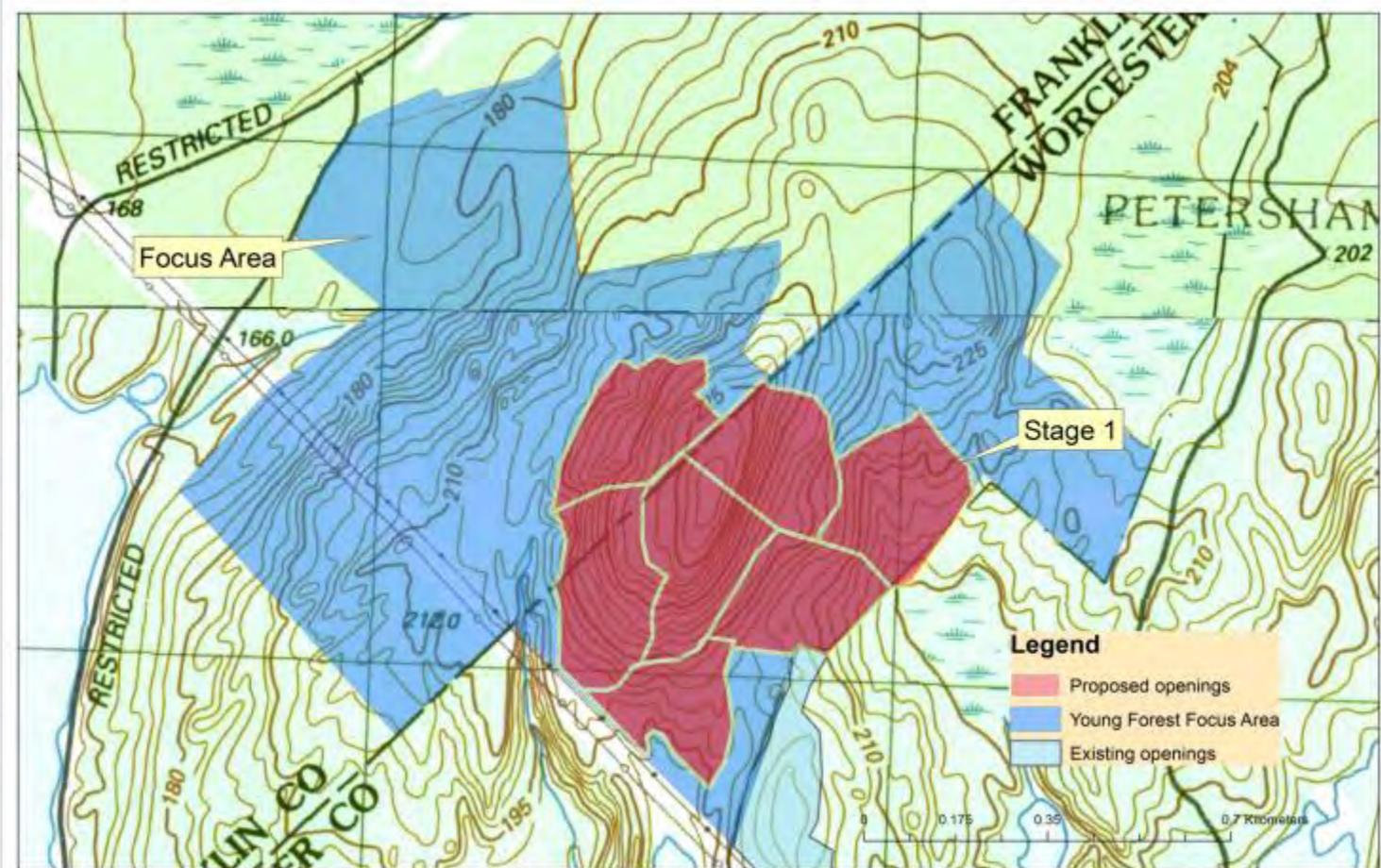
Quabbin

3 Focus areas

Located adjacent to existing open habitat

Openings at least 10 acres

One section in each area cut every 5-7 years



ESH: YOUNG FOREST FOCUS AREAS

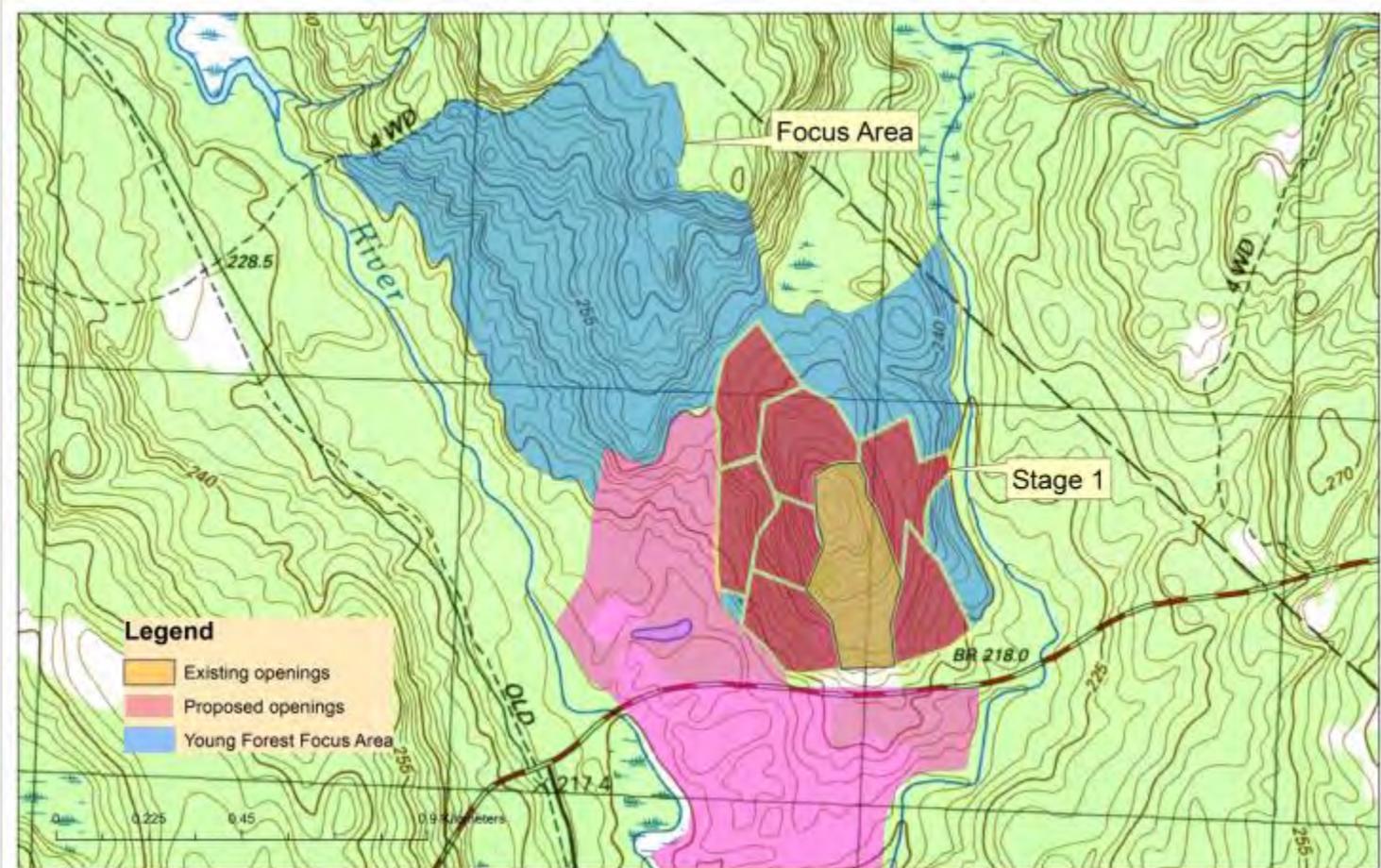
Ware River

2 Focus areas

Located adjacent to existing open habitat

Openings at least 10 acres

One section in each area cut every 5-7 years



ESH: YOUNG FOREST FOCUS AREAS

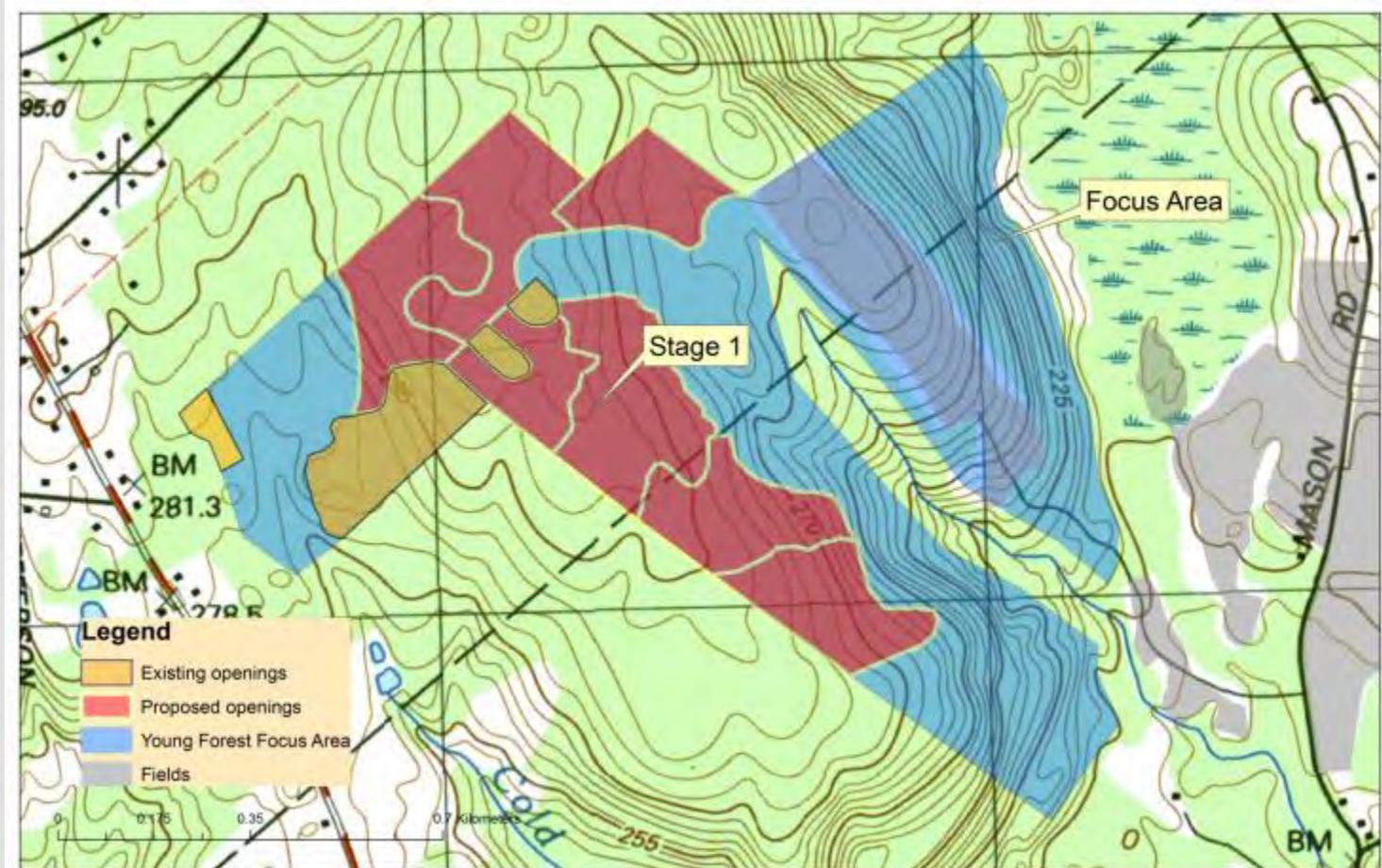
Wachusett

1 Focus area

Located adjacent to existing open habitat

Openings at least 10 acres

One section in each area cut every 5-7 years



VISUALIZING THE YOUNG FOREST APPROACH

DCR State Parks – adjacent to DWM, just harvested



VISUALIZING THE YOUNG FOREST APPROACH

Same site, 4 years post-harvest



VISUALIZING THE YOUNG FOREST APPROACH

Wachusett watershed; right after harvest



VISUALIZING THE YOUNG FOREST APPROACH

Same site; 4 years later



ESH: BARREN FOCUS AREAS

Quabbin

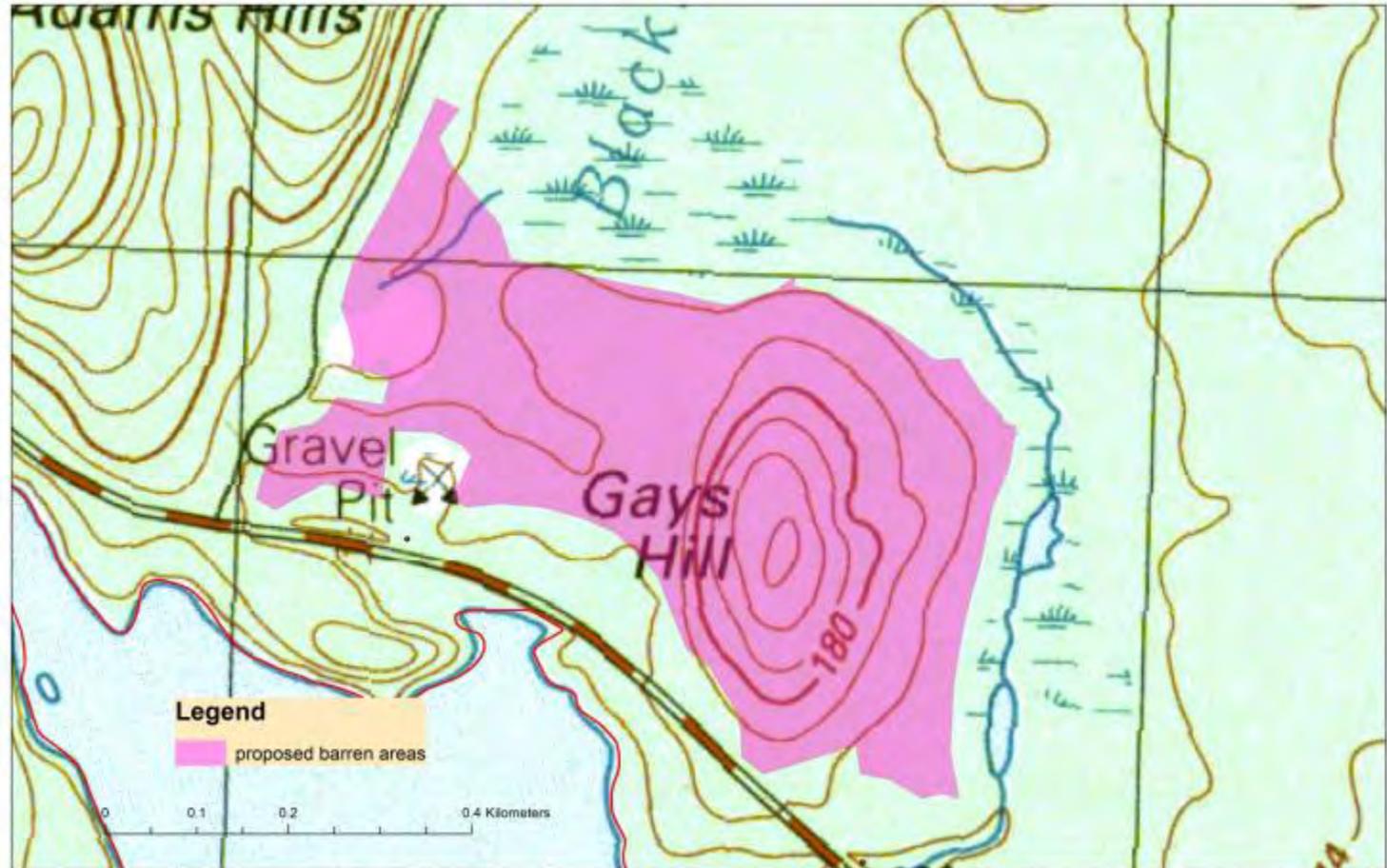
5 Focus areas

Globally rare habitat

Identified in collaboration with NHESP

Tree removal or thinning

Maintained by periodic fire



ESH: BARREN FOCUS AREAS

Ware River

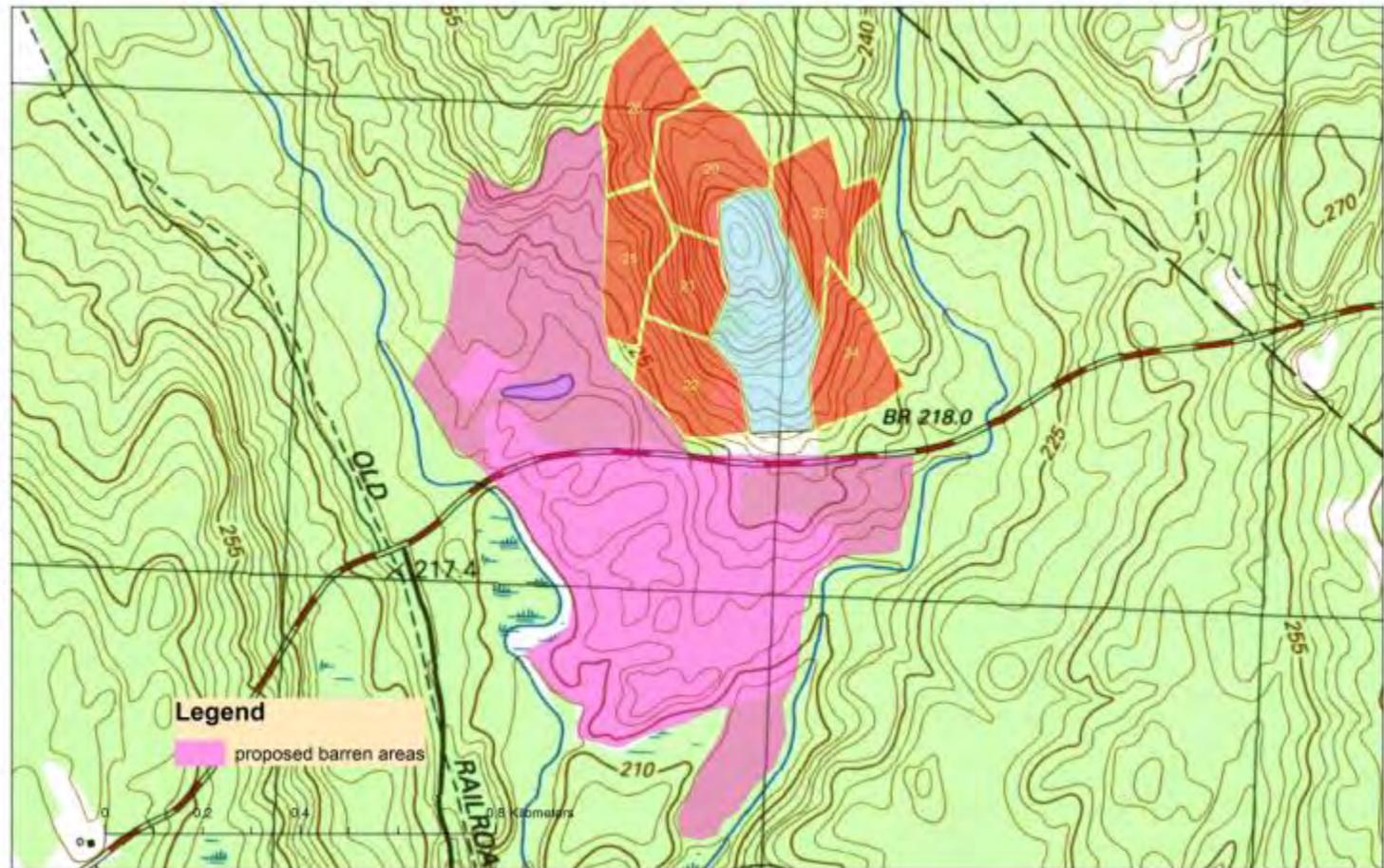
1 Focus areas

Globally rare habitat

Identified in collaboration with NHESP

Tree removal or thinning

Maintained by periodic fire



VISUALIZING BARRENS

Before restoration



VISUALIZING BARRENS

After canopy thinning and prescribed fire



WILDLIFE MANAGEMENT

- Protect water quality or infrastructure – good watershed management
- Protect rare, common, or unique wildlife and habitats – good stewardship

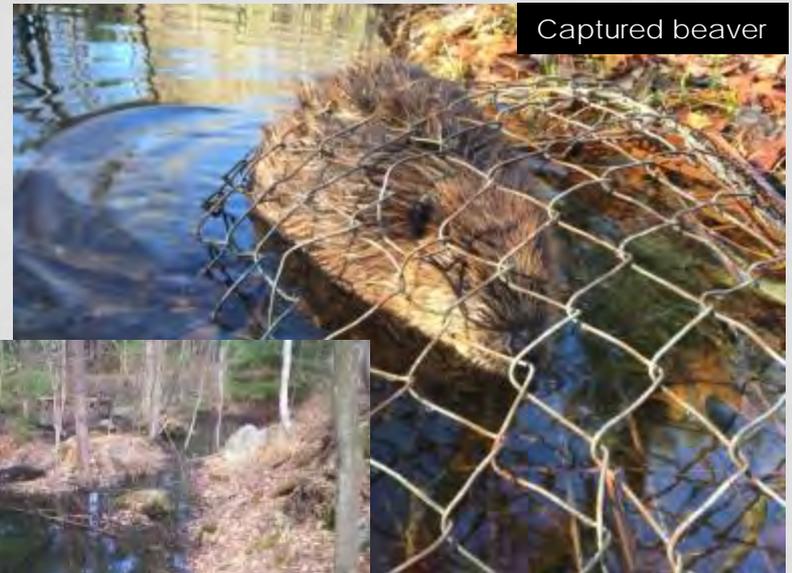
White-tailed deer



Ring-billed gull



Captured beaver



Common loon



Vernal pool

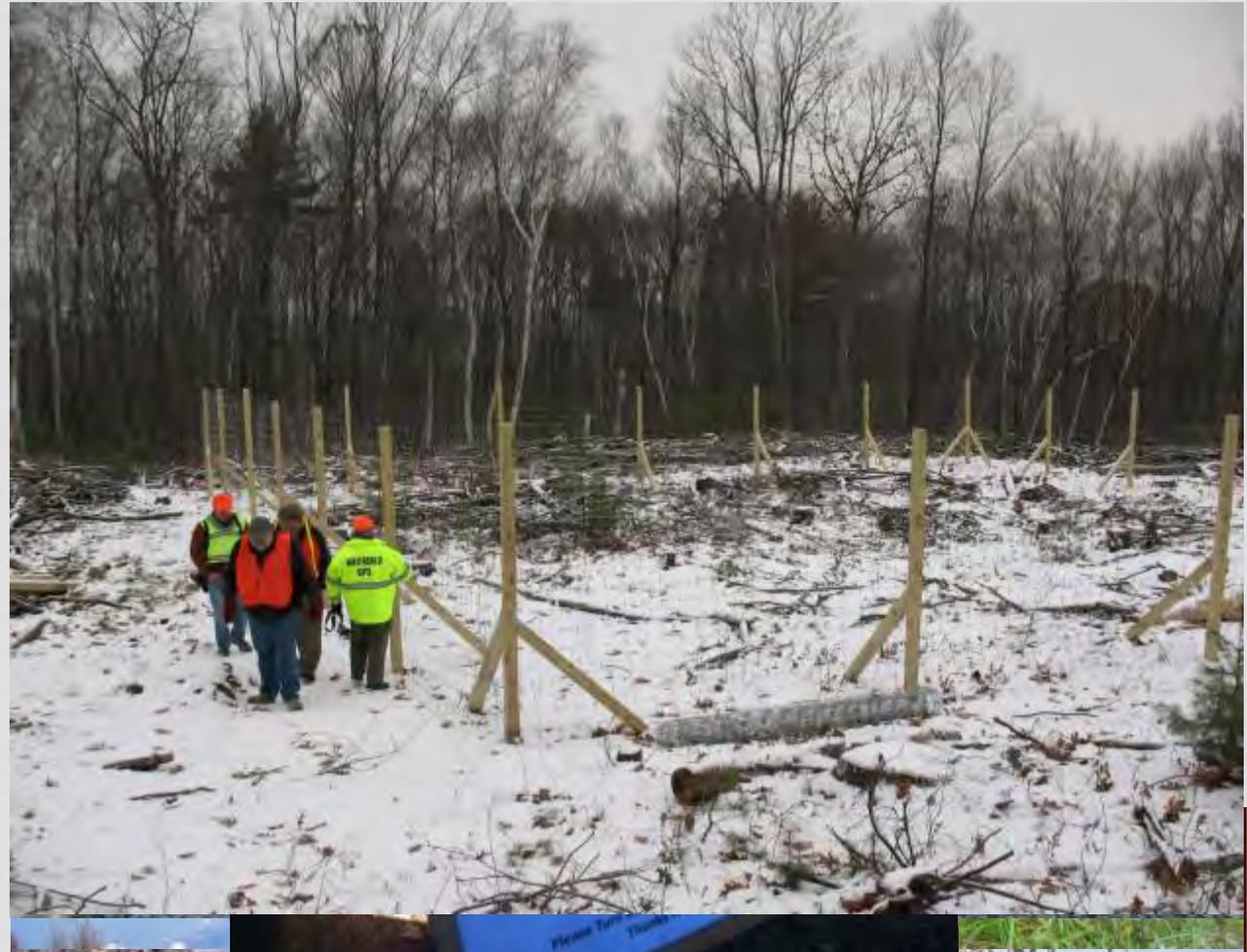


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Massachusetts

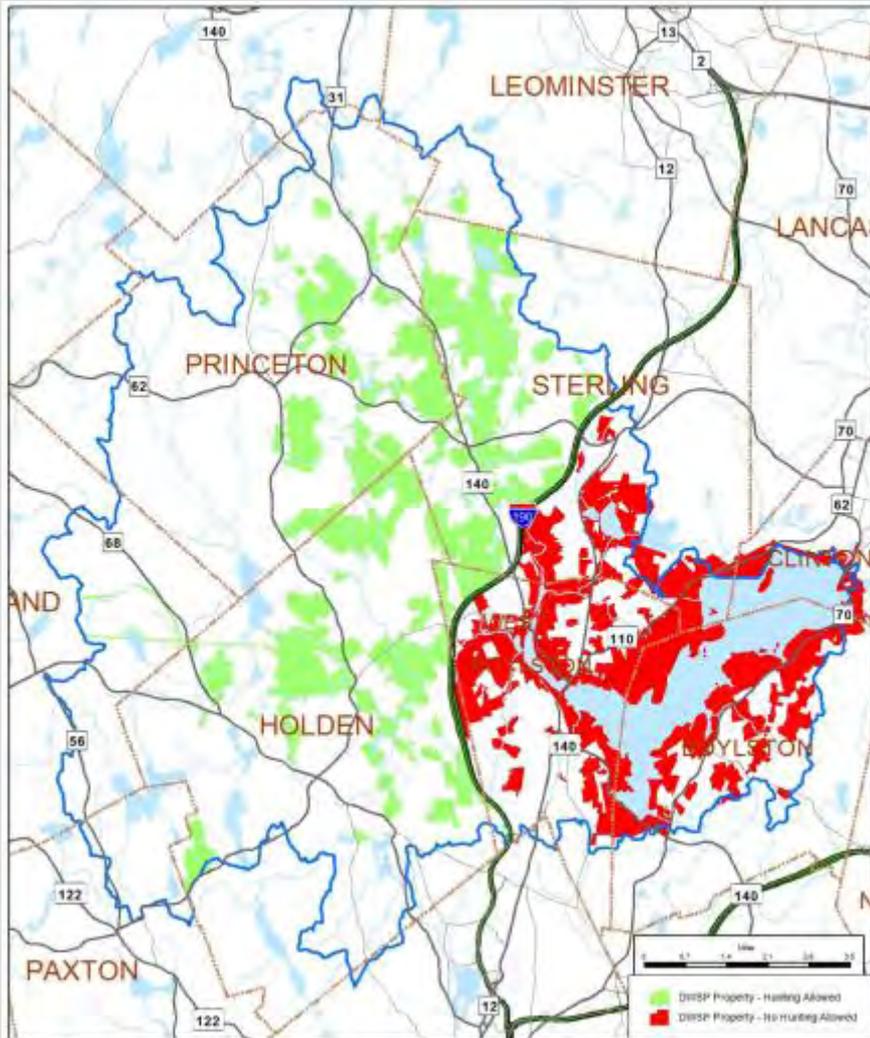


WILDLIFE PROGRAMS FOR WATERSHED MANAGEMENT

- Beaver
- Geese
- Gulls
- Deer
- Moose

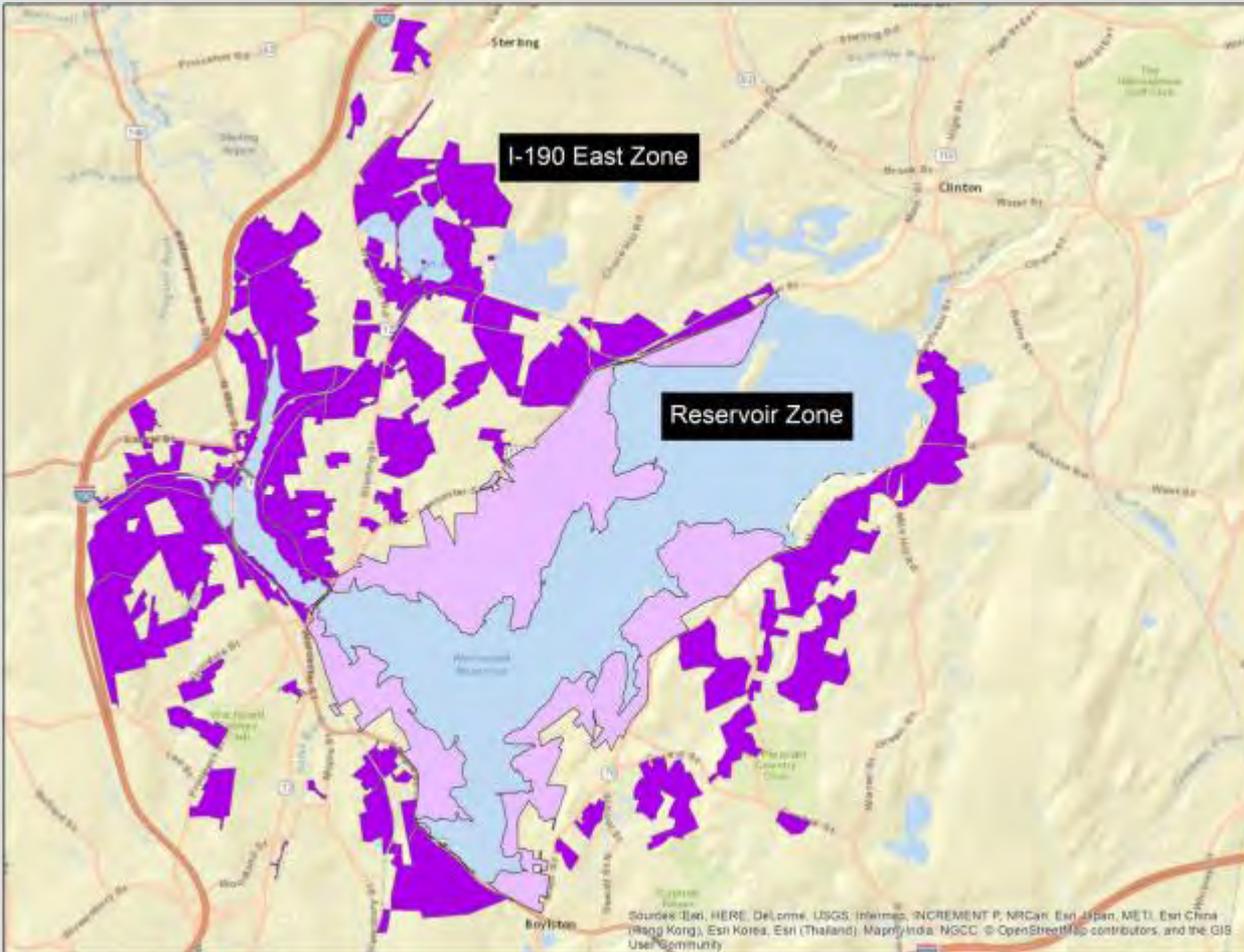


PROPOSAL: EXPANDED HUNTING AT WACHUSETT



- Current extent of allowed hunting
- West of I-190
- Permit required
- No cost
- About 10,000 acres

PROPOSED EXPANSION



- 2 new zones
- I-190 East: all seasons; no dogs; permit required but no limit; 4700 acres
- Reservoir: deer only; permit required – random drawing; 2800 acres

WILDLIFE STEWARDSHIP

- Eagles
- Loons
- Snakes
- Bats
- Kestrels
- Habitat Conservation



Co

Preserving Den Trees



CULTURAL RESOURCES

- Archeological review
- Harvesting restrictions
- Vegetation management



REVIEW PROCESS

- A copy of the plan can be found online at:
 - <http://www.mass.gov/eea/agencies/dcr>
- Written comments will be accepted until 10/20/2017
- Comments can be submitted to:
 - Online: DCR.Updates@state.ma.us
 - Note “DWSP land management plan” in the email subject line
 - Written comments to:

Department of Conservation & Recreation
Office of Public Outreach
251 Causeway Street, Suite 600
Boston, MA 02114



QUESTIONS?

