

Appendix A. Plan Contributors

Name	Affiliation	Area of Expertise
<i>Department of Conservation and Recreation</i>		
Backman, Andy	Office of Regional Planning, Director	Planning
Berkland, Ellen	Office of Cultural Resources	Archaeological resources
Black, Barbara	Office of the General Counsel	Permits and agreements
Boogdanian, Dolores	Office of the General Counsel	Deeds and agreements
Brown, Stephen	Office of Landscape Architecture	Energy efficiency
Buls, Barbara	MassParks	Interpretive services
Carlin, Steve	MassParks	Park operations
Cavanagh, Paul	Office of Regional Planning	Natural resources planning
Echandi, Alexandra	MassParks	Natural resource management
Fiesinger, Anne	Office of External Affairs and Partnerships	Public outreach
Fisher, Sean	Office of Cultural Resources	Agency history
Forgione, Darryl	Division of Engineering	Park operations
Garcia, Kathryn	MassParks	Park operations
Geigis, Priscilla	MassParks, Director	Park operations
Goodwin, David	Bureau of Forestry	GIS
Hamilton, Susan	MassParks	Park operations
Harris, Jeffrey	Office of Cultural Resources	Historic resources
Howard, Jennifer	Office of Land Protection Planning, Director	Land acquisition and protection
Johnson, Rob	Bureau of Forest Fire Control	Fire control
Milano, Susan	Office of the General Counsel	Permits and agreements
Moran, Barbara	Office of External Affairs and Partnerships	Web content
Orfant, Joe	Bureau of Planning and Resource Protection, Chief	Planning
Pearl, Wendy	Office of Cultural Resources	Historic resources
Penniman, Harris	Bureau of Forestry	Forest ecology and management
Pernaa, Chuck	Bureau of Forestry	Forest ecology and management
Plocinski, Loni	Office of Regional Planning	Planning, GIS
Rayworth, Tim	MassParks	Environmental education
Rowcroft, Jessica	Bureau of Planning and Resource Protection	Planning
Salomaa, William	Office of Dam Safety, Director	Dam infrastructure
Stowe, Jennifer	MassParks	Park regulations and public safety
Thurlow, Matthew	Office of Landscape Architecture	Playgrounds
Woodward, Emily	Office of the General Counsel	Permits and agreements
<i>Other Affiliations</i>		
Bernardo, Celeste	National Park Service, Superintendent	Park operations
Brownrigg, Tom		Wild birds and mammals
Faticanti, Peter	City of Lowell	Lowell recreation
Forman-Orth, Jennifer	Department of Agricultural Resources	Invasive species
Gaudet, Arthur		Wild birds and mammals
Haggerty, Sarah	Natural Heritage & Endangered Species Program	Rare species
Hannon-Rizza, Peggy	Town of Billerica	Billerica recreation
Harper, Lynn	Natural Heritage & Endangered Species Program	Rare species
Herlihy, Jack	National Park Service	Agency history

Continued on next page.

Appendix A. Plan Contributors (Continued)

Name	Affiliation	Area of Expertise
<i>Other Affiliations (continued)</i>		
Maier, Sarah	Natural Heritage & Endangered Species Program	Rare species
Marion, Paul	University of Massachusetts Lowell	Lowell Public Art Collection
Nigzus, Jim	Boston & Maine Railroad Historical Society	Railroad history, preservation
Nowell, Frederick	Boston & Maine Railroad Historical Society	Railroad history
O'Mara, Edward	Merrimack River Watershed Council	Water quality sampling
Reese, Carol	Historic Civil Engineering Landmark Program	Historic landmarks
Riopelle, Mark	Dracut Water Supply District	Water supply infrastructure

Appendix B. Public Participation

In accordance with M.G.L. Chapter 21: Section 2F, the Resource Management Plan (RMP) for the Lowell/Great Brook Planning Unit was developed in conjunction with a public participation process to ensure that interested parties had an opportunity to review the draft RMP and offer input in its development. This appendix identifies the public participation process used to inform and review this RMP.

B.1. THE PUBLIC PARTICIPATION PROCESS

Input into Development of the RMP

Public input into the development of the Lowell/Great Brook RMP began in the spring of 2012. A notice of a public meeting and of the DCR's intent to prepare an RMP for the Lowell/Great Brook Planning Unit was published in the July 11, 2012 issue of the Environmental Monitor. Additional announcements were made on the DCR web page and press releases were provided to local newspapers.

An initial public meeting was convened in the Hart Barn, at Great Brook Farm State Park in Carlisle, on July 23, 2012. Twenty people attended the meeting, which ran from 6:30–8:00 PM.

Written input on the plan was solicited at the initial public meeting, through the Environmental Monitor announcement, on the DCR web page and in press releases. Between July 23 and August 22, 2012, six individuals, organizations, or agencies submitted written comments.

Comments made at public meetings and those submitted in writing are not independent. Some speakers at the public meeting also submitted written comments, often to reiterate or expand upon their verbal comments.

Public Comment on Draft RMP

Notice of a public meeting to present the draft RMP for the Lowell/Great Brook Planning Unit, and of the draft plan's availability, was published in the July 9, 2014 issue of the Environmental Monitor. The meeting was held on July 21, 2014 in Alumni Hall at the University of Massachusetts Lowell; 17 people attended.

As part of the review process, the draft RMP was provided to the Massachusetts Natural Heritage and

Endangered Species Program (NHESP) because of their mission, expertise and statutory responsibility for resources in the Lowell/Great Brook Planning Unit. In addition, the Massachusetts Endangered Species Act (310 CMR 10.05(2)(c)), requires that the NHESP review land management plans for state owned properties where state listed species are known to occur.

The public comment period on the draft Resource Management Plan ran from July 21, 2014 through August 29, 2014; eight sets of written comments were received.

B.2. CHANGES TO THE FINAL DRAFT OF THE LOWELL/GREAT BROOK PLANNING UNIT RESOURCE MANAGEMENT PLAN

All comments received during the public comment period were given consideration. Those consistent with federal and state law, and the DCR's mission, regulations and policies were used to guide revisions. In some instances, the revision process required the gathering of additional information, generation of new data, or discussions with regulators.

The following changes were made to the draft RMP. Normal editing activities, such as correcting typographical errors or revising formatting, are not identified.

Executive Summary

The summary of management recommendations was updated, based on edits that were made to Section 10.

Information related to the second public meeting for this RMP was added.

The following recommendations were added to the Action Plan:

Establish relationships with local neighborhood associations and other local citizens groups that are interested in these properties. [Planning Unit]

Formalize the main parking area at the forest's main entrance on Trotting Park Road in Lowell; consider signing and expanding the area, lining the spaces and designating at least one accessible space. [LDT SF]

Appendix B. Public Participation (Continued)

Update the inventory of benches on the Vandenberg esplanade and make repairs, or replacements, where necessary. [Lowell Heritage]

Keep the vegetation on Old North Road trimmed back to ensure emergency access capabilities. [Great Brook Farm SP]

Review all buildings for visibility of street numbers, and correct where needed. [Great Brook Farm SP]

Section 1. Introduction

Information related to the second public meeting for this RMP was added.

Section 2. Management Resources and Practices

Information related to the DCR's Memorials and Commemorative Gifts policy was added.

Section 4. Lowell Heritage State Park

The description of the Rynne bathhouse was updated to include information about the accessibility of the public restrooms.

A correction was made to the description of the Blacksmith Shop.

Corrections were made to the condition description of the Northern Canal Wasteway Gatehouse.

Information about recent repair work to the Tremont Gatehouse was added.

Information about recent repair work to the Swamp Locks Gatehouse was added.

Information about funding of canal wall vegetation removal was added.

Information about the Brick Vault was added.

The description of the National Park Service boat tours was updated.

Information about the benches along the Vandenberg esplanade was added.

Information about the Pawtucket Falls Overlook project was added.

Information about the 512 Agreements between the DCR and City of Lowell was added.

Section 5. Great Brook Farm State Park

Corrections were made to the dates of establishment of the cross-country ski concession and the current operators.

Wording adjustments were made to the conditions statements of historic buildings, in order to be consistent with terminology used elsewhere in the RMP.

Additional information regarding utilities was added, where available, for the buildings at the park.

Corrections were made to the description of the Hounds House.

Corrections were made to the description of the equestrian jumps.

Wording adjustments were made to the ski trail maintenance activities.

A correction was made to the miles of ski trails that are groomed.

Section 10. Recommendations

The Zone 3 description for Lowell-Dracut-Tyngsborough State Forest was edited to include the area of the forest that contains the Dracut Water Supply District infrastructure.

The following recommendations were added or edited:

Table 10.1. Explore the use of technology to make interpretive materials and trail maps readily available, such as using QR codes to direct visitors to online self-guided tours. [L, 2]

Table 10.1. Establish relationships with local neighborhood associations and other local citizens groups that are interested in these properties. [H, 1]

Table 10.2. Formalize the main parking area at the forest's main entrance on Trotting Park Road in Lowell; consider signing and expanding the area, lining the spaces and designating at least one accessible space. [H, 2]

Table 10.2. Investigate the options for establishing a more suitable parking area on Trotting Park Road in Tyngsborough, as well as additional formal parking areas within the forest. [L, 1]

Appendix B. Public Participation (Continued)

Table 10.2. Install an updated DCR Main Identification sign and several new Road Marker signs at the forest. [M, 1]

Table 10.3. Renovate the public restrooms in the Rynne bathhouse to make them universally accessible. [H, 3]

Table 10.3. Coordinate with the National Park Service on the repair of the cracked end wall of the Pawtucket Gatehouse. [M, 2]

Table 10.3. Coordinate with the National Park Service on the development and implementation of a preservation plan for the Hamilton Wasteway Gatehouse. [H, 1]

Table 10.3. Coordinate with the National Park Service on the removal of Boston ivy from the Boott Dam Gatehouse. [M, 2]

Table 10.3. Coordinate with the National Park Service on assessing the impacts to the Northern Canal Wasteway Gatehouse, and design and implement a permanent solution to stabilize the building. [H, 3]

Table 10.3. Maintain the plantings within the Victorian garden to reflect the original design of the space and replace plant material, as needed. [M, 2]

Table 10.3. Update the inventory of benches on the Vandenberg esplanade and make repairs, or replacements, where necessary. [H, 2]

Table 10.3. Install an updated Main Identification Sign at Francis Gate Park. [M, 2]

Table 10.4. Working with the local fire department and the conservation commission, revisit the suggestion to dredge the duck pond for emergency firefighting use. [H, 3]

Table 10.4. Keep the vegetation on Old North Road trimmed back to ensure emergency access capabilities. [H, 2]

Table 10.4. Review all buildings for visibility of street numbers, and correct where needed. [H, 1]

Table 10.4. Continue to work with the cross-country ski concessionaire to assess and continue to improve upon separation of winter uses on the trail system. [M, 2]

Table 10.7. Consider moving the northernmost DCR gate on Treble Cove Road further into the property by 25 to 50 feet to make room for the establishment of a small formal parking area to facilitate safe access to the forest. [M, 3]

Table 10.7. Identify an appropriate location and install a DCR Main Identification sign for the forest. [H, 1]

Table 10.8. Working with the MA Department of Fish & Game and Town of Billerica, identify an appropriate location and install a DCR Main Identification sign for the park that recognizes the partners. [H, 2]

Appendix E. GIS Supplemental Information

The Zone 3 description for Lowell-Dracut-Tyngsborough State Forest was updated to reflect the changes that were made to Section 10.

Table E.1. The 2013 Color Ortho Imagery datalayer was added.

Appendix G. Species Lists

The sighting of American bittern at Great Brook Farm State Park was added.

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Appendix C. Overview of Coordination Process with the Massachusetts Natural Heritage and Endangered Species Program (NHESP)

C.1. BACKGROUND

Since its inception, the DCR's Resource Management Planning Program has actively sought and applied the expertise of the NHESP. In 2006, the NHESP and DCR established the Biodiversity Stewardship Project. The main purposes of this project were to:

- Develop a process by which the two agencies would work together to facilitate NHESP delivery of biodiversity information and provision of management recommendations for RMPs; and
- Guide DCR land managers in the on-site management of rare species habitat.

Between 2006 and 2008 the NHESP prepared 10 biodiversity assessments covering 17 DCR properties (Table C.1). Information from available biodiversity assessments has informed the Existing Conditions and Recommendations sections of RMPs already adopted by the DCR Stewardship Council and has resulted in appropriate management recommendations for rare species. Information from the remaining biodiversity assessments will be used to inform future RMPs. The NHESP continues to provide guidance to the RMP Program, and in 2009 and 2012 the DCR and NHESP worked together to identify the actual and potential impacts of the DCR's trails and trail maintenance activities on rare species and their habitats. In addition, the NHESP informs and reviews RMPs on an ongoing basis.

Table C.1. NHESP Biodiversity Reports Prepared for the Resource Management Planning Program

Report Title	Date
Biodiversity Stewardship Initiative: Biodiversity Data Products and Technical Assistance for Managing Massachusetts' Forests, Parks & Reservations. Final Report of the FY06 Pilot Project. [Includes Horseneck Beach State Reservation and Mohawk Trail State Forest]	2006
Biodiversity of Blue Hills Reservation	2007
Biodiversity of J. A. Skinner and Holyoke Range State Parks	2007
Biodiversity of Mt. Tom State Reservation and Adjacent Conservation Lands	2007
Biodiversity of Mt. Sugarloaf State Reservation	2007
Biodiversity of Myles Standish State Forest	2007
Biodiversity of Lower Spectacle Pond, Sandisfield	2008
Biodiversity of Nickerson State Park and Hawksnest State Park	2008
Biodiversity of Bash Bish Falls State Park, Jug End State Reservation, Mt. Everett State Reservation, and Mt. Washington State Forest	2008
Biodiversity of Gilbert A. Bliss State Forest	2008
Recreational Trail Maintenance and Biodiversity Conservation. June 30, 2009	2009
Middlesex Fells Reservation: Field Surveys 2011. Prepared by the NHESP for Massachusetts Department of Conservation and Recreation. June 30, 2011	2011
Recreational Trail Maintenance and Biodiversity Conservation: Select DCR Urban Parks. July 30, 2012	2012

Appendix C. Overview of Coordination Process with the Massachusetts Natural Heritage and Endangered Species Program (NHESP) (Continued)

C.2. ONGOING COORDINATION AND REVIEW

The DCR follows a standard approach to coordinate the preparation and review of RMPs with the NHESP. This approach may be modified in response to the particular circumstances associated with each RMP. This approach includes:

- **Staff Coordination.** The NHESP has designated an official point of contact for RMPs and it is through this contact that all subsequent interaction with the NHESP is coordinated.
- **Advance Notice.** The DCR provides the NHESP with a list of current and upcoming RMPs.
- **Data Request.** Up to date information is formally requested by the DCR at the start of the planning process.
- **Consultation.** Informal consultation regarding interpretation of data provided by the NHESP may occur following the NHESP's response to data request.
- **Application of Other NHESP Data.** Information and recommendations contained in biodiversity assessments, if applicable, are incorporated into the draft RMP early in the writing process.
- **Submission of Internal Draft RMP to the NHESP.** The internal version of the draft RMP is submitted to the NHESP for formal review. This takes place before the draft plan is released to the public, so that the public review draft includes revisions made in response to NHESP comments and recommendations.
- **Response to Comments.** The NHESP provides comment letters on the draft RMP that distinguish between what must be done (i.e., actions required for compliance under MESA) and additional actions that may be taken to enhance rare species populations and habitats. As a rule, both types of recommendations are added to the revised draft. (*Note:* because the NHESP's recommendations are incorporated into RMPs, each RMP contains a *de facto* management strategy and guidance for all state-listed species within a planning unit.)
- **Submission of Public Draft RMP to the NHESP.** The public draft RMP is submitted to the NHESP for formal review and comment.
- **Response to Comments.** NHESP comments are addressed with all others received during the public comment period.
- **Additional Coordination.** The NHESP is frequently consulted, in their roles as both regulator and subject matter expert, to discuss other (i.e., non-NHESP) rare species-related comments.

C.3. COORDINATION AND REVIEW FOR THIS RMP

- **August, 2012.** The DCR officially requested rare species and natural community information from the NHESP on August 15. Subsequent to this, the NHESP and DCR shared spatial data to identify the boundaries of properties included in this RMP, so that the NHESP could respond to the data request; the NHESP provided the DCR the requested data on August 16.
- **June, 2014.** On June 26, the NHESP was provided an internal review draft of the RMP.
- **July, 2014.** The NHESP provided comments on the draft RMP on July 11. The observations, comments, and recommendations provided therein were incorporated into the public review draft RMP.

A copy of the NHESP's July 11, 2014 comment letter is included below.



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

July 11, 2014

Jessica Rowcroft
Bureau of Planning & Resource Protection
Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114

RE: Draft *Lowell/Great Brook Planning Unit Resource Management Plan*

Dear Ms. Rowcroft:

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) is pleased to offer comments on the June, 2014, draft of the *Lowell/Great Brook Planning Unit Resource Management Plan*. In general, we support the Resource Management Plan as written, excepting a minor issue, and we appreciate DCR's attention to rare species issues. Our concerns are noted below, by page number of the draft.

3.3 Lowell-Dracut-Tyngsborough State Forest, Existing Conditions

Page 4, Rare Species: Since the time when NHESP furnished DCR with information on MESA-listed species in this State Forest, one species, Blue-spotted Salamander, has not been re-observed at the site since 1989 and will be considered to be Historic at this site at the end of 2014. We consider records older than 25 years to be Historic and do not regulate such areas under MESA. Blue-spotted Salamanders may still inhabit the State Forest; this Historic status here may be due to a lack of survey effort.

10.2 Landscape Designation

Page 2: NHESP agrees with DCR's designation of properties in the Lowell/Great Brook Planning Unit as Parkland.

10.3 Land Stewardship Zoning

Pages 3-4: NHESP agrees with DCR's recommendations for the placement of Zones 1, 2, and 3 at the Lowell/Great Brook properties.

Thank you for allowing NHESP the opportunity to comment on the draft Resource Management Plan. If you have any questions regarding our comments, please contact Lynn Harper, Habitat Protection Specialist, in our West Boylston office at 508-389-6351.

Sincerely,

A handwritten signature in black ink that reads "Thomas W. French".

Thomas W. French, Ph.D.
Assistant Director
Natural Heritage &
Endangered Species Program

www.nhesp.org



Natural Heritage & Endangered Species Program

100 Hartwell Street, Suite 230, West Boylston, MA 01583 Tel: (508) 389-6360 Fax: (508) 389-7890

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Appendix D. DCR Cultural Resources Policy

POLICY: The Department of Conservation and Recreation shall provide for the stewardship of all known and potential cultural resources on DCR property through sensitive resource management and planning and compliance with local, state, and federal historic preservation regulations. DCR actions and activities shall promote and foster the preservation, protection, and appreciation of these resources.

APPLICABILITY: All Divisions, Departments, Bureaus, and Staff

PROCEDURES:

I. Definitions

The following definitions explain terms used throughout this policy directive:

Cultural Resource—A district, site, building, structure, landscape, object or ethnographic resource that is at least fifty years old and has important historical, cultural, scientific, or technological associations. Cultural resources also include pre-historic or historic archaeological sites containing physical remains or indications of past human activity and/or any artifacts that have been constructed or manipulated by human influence and holding potential significance for understanding past, present, or future human behavior.

Cultural Resources Inventory (CRI)—A baseline inventory of cultural resources in the DCR system, consisting of location maps, related reports, and individual site inventory forms with background historical information.

National Register—The National Register of Historic Places is the official federal list of districts, sites, buildings, structures and objects significant in American history, architecture, archaeology, engineering and culture.

Project—Any action, activity, program, construction or land modification that is directly undertaken by DCR, receives any financial assistance from DCR, or requires the issuance of a license or permit by DCR.

Project Notification Form—The form that is completed by DCR or a private project proponent in order to notify the Massachusetts Historical Commission of a project requiring review under state or federal historic preservation regulations.

Secretary of the Interior's Standards for the Treatment of Historic Properties—General guidelines for the preservation, rehabilitation, restoration, and reconstruction of historic buildings, established by the National Park Service to encourage consistent preservation practices at the national, state, and local levels.

Site—The location of a significant event, a prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing structure.

Appendix D. DCR Cultural Resources Policy (Continued)

State Register—The State Register of Historic Places includes the following properties:

- All districts, sites, buildings, or objects listed in the National Register of Historic Places or formally determined eligible for listing in the National Register of Historic Places by the Keeper of the Register, United States Department of the Interior;
- All local historic districts or landmarks designated under local ordinances or by-laws;
- All structures and sites subject to preservation restrictions approved or held by the MHC;
- All historical or archaeological landmarks certified or listed pursuant to MGL Ch. 9, Sec. 26D and 27.

II. Mission Statement—Office of Cultural Resources

The Office of Cultural Resources (OCR) preserves the cultural heritage of Massachusetts through stewardship of DCR's historic buildings, structures, landscapes, archaeological sites, and archival resources; through training, public education, and advocacy; and through the development of innovative tools for protecting historic landscapes.

The OCR staff provides expertise, technical assistance, and project management skills in landscape preservation, historic preservation planning, archaeology, archival records management, and compliance with local, state and federal historic preservation laws. In addition to leading OCR initiatives and programs, OCR staff directly support activities undertaken by other bureaus and divisions within DCR.

III. Implementation

The Commissioner shall designate a staff person to coordinate agency implementation of this policy.

The Commissioner shall ensure that an archaeologist is on staff who meets the professional qualifications and standards for investigation and reporting as outlined in 950 CMR 70.00 and retains DCR's state permit for archaeological investigations on public lands or lands in which the Commonwealth has an interest.

The agency shall provide training on all aspects of this policy to DCR planning, engineering, project management and operations staff.

IV. Regulatory Compliance—Project Planning

During the project planning process DCR shall comply with historic preservation laws at the local, state, and federal levels, listed below. OCR serves as the Department's liaison with local historic district commissions and the Massachusetts Historical Commission (MHC) pertaining to project notifications and requests requiring assistance from and consultation with these commissions. All inquiries from MHC shall be directed to OCR.

A. Local Landmarks and Historic Districts

Many municipalities within the Commonwealth have designated local historic landmarks and historic districts to protect the distinctive characteristics of important sites and districts and to encourage new structural designs that are compatible with their historic setting. Local Historic District Commissions review all applications for exterior changes to landmarks or properties within local districts to ensure that changes to properties will not detract from their historic character. Review criteria are determined by each municipality.

MGL Ch. 40C <http://www.mass.gov/legis/laws/mgl/gl-40c-toc.htm>

Appendix D. DCR Cultural Resources Policy (Continued)

B. State Register Review

DCR must notify MHC, through filing of a Project Notification Form (PNF) or Environmental Notification Form (ENF), of any projects undertaken, funded, permitted, or licensed in whole or in part by the agency in order that MHC can make a Determination of Effect of the project on historic and archaeological resources listed in the State Register. DCR shall send copies of PNFs or ENFs to the local historical commissions in those communities that have received Certified Local Government status from MHC. It is the responsibility of the MHC to determine whether State Register properties exist within the project's area of potential impact. When MHC determines a proposed project will have an adverse effect on historic properties, DCR must consult with MHC and any interested parties to explore feasible and prudent alternatives that would eliminate, minimize, or mitigate the adverse effects and, following consultation, adopt such alternatives.

DCR may enter into a Programmatic Memorandum of Agreement (PMOA) with the MHC to streamline the state review process, including identifying possible activities that qualify as categorical exemptions. OCR is responsible for the coordination of any PMOA with the MHC and directly oversees implementation.

MGL Ch. 9, Sec. 26-27C <http://www.mass.gov/legis/laws/mgl/9-27c.htm>
950 CMR 71

C. Massachusetts Environmental Policy Act (MEPA)

Some DCR projects may require filing an ENF with MEPA in addition to the State Register Review. MHC reviews all ENFs and comments on those in which there are concerns that the project has the potential to affect significant historic or archaeological properties. MEPA regulations state that an ENF must be filed if a project involves: 1) demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth; or 2) destruction of all or any part of any Archaeological Site listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth unless the project is subject to a Determination of No Adverse Effect by MHC or is consistent with a Memorandum of Agreement with MHC that has been the subject of public notice and comment.

301 CMR 11.00 <http://www.mass.gov/envir/mepa/thirdlevelpages/meparegulations/meparegulations.htm>

D. Section 106 Review

DCR is required to comply with Section 106 of the National Historic Preservation Act when undertaking projects that require a permit, funding, license, or approval from a federal agency. The federal agency (or, in many cases, the recipient of federal assistance or permits) is required to notify MHC of such projects and take into account the effects of the project on historic properties that are listed or eligible for listing in the National Register of Historic Places. When the federal agency, in consultation with the MHC as the Office of the State Historic Preservation Officer, determines that a project will result in an adverse effect to those properties, the federal agency must take prudent and feasible measures to avoid, minimize, or mitigate those effects. Other interested parties such as local historical commissions or Indian Tribes are also consulted as part of the process.

16 USC 470 et seq <http://www.cr.nps.gov/local-law/nhpa1966.htm>
36 CFR 800 <http://www.achp.gov/regs-rev04.pdf>

Appendix D. DCR Cultural Resources Policy (Continued)

V. Regulatory Compliance—Other (See also *Emergency Scenarios/Procedures below*)

Other DCR activities require compliance with additional state historic preservation laws:

A. Massachusetts Unmarked Burial Law

When human skeletal remains are discovered or if human remains are disturbed through construction or agricultural activity, DCR staff must immediately notify the Office of the Chief Medical Examiner (617-267-6767, ext. 176). The Medical Examiner shall conduct an inquiry to determine whether the remains are suspected of being 100 years old or more, and, if so determined, shall immediately notify the State Archaeologist at MHC. The State Archaeologist conducts an investigation to determine if the skeletal remains are Native American. If the remains are deemed likely to be Native American, the State Archaeologist shall immediately notify the Massachusetts Commission on Indian Affairs, which shall cause a site evaluation to be made to determine if the place where the remains were found is a Native American burial site. Consultation occurs to develop a written agreement to preserve the burials in situ or, if no other feasible alternative exists, to excavate the burials.

MGL Ch. 38, Sec. 6 <http://www.mass.gov/legis/laws/mgl/38-6.htm>

MGL Ch. 9, Sec. 26A and 27C <http://www.mass.gov/legis/laws/mgl/9-26a.htm>

<http://www.mass.gov/legis/laws/mgl/9-27a.htm>

MGL Ch. 7, Sec. 38A <http://www.mass.gov/legis/laws/mgl/7-38a.htm>

B. Preservation Restrictions

When DCR seeks to acquire a preservation restriction on a property, MHC must review and approve the language of the restriction before it is finalized. A preservation restriction means a right, whether or not stated in the form of a restriction, easement, covenant or condition, in any deed, will or other instrument executed by or on behalf of the owner of the land or in any order of taking, appropriate to preservation of a structure or site historically significant for its architecture, archaeology or associations, to forbid or limit any or all (a) alterations in exterior or interior features of the structure, (b) changes in appearance or condition of the site, (c) uses not historically appropriate, (d) archaeological field investigation without a permit, or (e) other acts or uses detrimental to appropriate preservation of the structure or site. Certain projects on properties with a preservation restriction require MHC approval.

MGL Ch. 184, Sec. 31-33 <http://www.mass.gov/legis/laws/mgl/184-31.htm>

<http://www.mass.gov/legis/laws/mgl/184-32.htm>

<http://www.mass.gov/legis/laws/mgl/184-33.htm>

C. Consultation with Massachusetts Native Americans

DCR must consult directly with Wampanoag (Gay Head and Mashpee) Tribal Councils and the Massachusetts Commission on Indian Affairs (MCIA) for management of the reservation in the Fall River-Freetown State Forest. DCR must consult with the Wampanoag and Nipmuc Tribal Councils on matters affecting each of those tribes. DCR must consult with the MCIA and with other tribal and intertribal councils on matters that affect all other tribes.

Executive Order 126 <http://www.lawlib.state.ma.us/ExecOrders/eo126.txt>

Appendix D. DCR Cultural Resources Policy (Continued)

VI. Resource Management and Planning

A. OCR Program of Inventory and Evaluation

One of the primary objectives of OCR is to provide an ongoing program of inventory and evaluation of cultural resources on DCR property. This first and most critical step in cultural resource management entails identifying potentially significant cultural resources and discovering the significance or meaning of each resource within a local, statewide, and national context. To this end, OCR shall develop, maintain and oversee the use of its own statewide baseline inventory of cultural resources, known as the Cultural Resources Inventory (CRI). Information from the CRI shall be available for use by DCR staff, but it shall not be made available to the public without approval from the OCR Director, and particularly, the written approval of the State Archaeologist for requests of disclosure of archaeological site locations.

In order to recognize highly significant cultural resources, OCR shall identify those that appear to meet the criteria for the National Register of Historic Places and, in consultation with MHC, nominate them for listing on the National Register. OCR shall initiate and manage the nomination process in consultation with other DCR staff and the MHC.

OCR shall expand and update the CRI as necessary to supplement historical background and geographical information on currently inventoried cultural resources, add newly discovered cultural resources, and update baseline information on cultural resources on properties acquired or disposed by DCR, and provide information on newly inventoried cultural resources to the MHC to coordinate with MHC's Inventory of Historic and Archaeological Assets of the Commonwealth.

The CRI shall also be supplemented with other cultural resource-oriented data and publications, such as MHC inventory forms, historic structure reports, condition assessments, interpretive materials, maintenance/repair records, and archaeological impact studies.

OCR shall provide CRI information to district, regional and facility supervisors with the understanding that archaeological site locational information is confidential, not a "public record," and must be secured from inadvertent or unauthorized disclosure or from subsequent disclosure without written permission of the State Archaeologist (MGL Ch. 9, Sec 26A and 27C (950 CMR 70.13(7))). The CRI shall be used by DCR to enable informed preservation decisions as part of DCR's resource planning and management activities, including the prioritization of capital projects for stabilization, repair and adaptive reuse.

B. Procedures for Protecting Cultural Resources

1. Acquisition of Land and Conservation/Preservation Restrictions

OCR staff shall sit on the DCR Lands Committee and provide assistance and input into the protection of properties of significance to the state's cultural heritage through acquisition in fee, conservation restrictions, or preservation restrictions. Once an acquisition is complete, the OCR shall determine whether a baseline inventory should be undertaken on the property to identify cultural resources. Preservation restrictions must be reviewed and approved by MHC prior to DCR acquisition.

Appendix D. DCR Cultural Resources Policy (Continued)

2. Resource Management Plan Development

OCR staff shall provide technical support toward the Resource Management Planning Program to insure that the protection of cultural resources is a core component of Resource Management Plans. Depending on the type of DCR facility and the scope of the RMP, this support may range from data collection and documentation to property analysis and treatment recommendations.

3. Project Planning

DCR shall make every effort to protect cultural resources on DCR property. For projects planned at any Department level, appropriate Department staff shall consult with OCR to consider potential project impacts on cultural resources. Consultation with OCR shall occur as early as possible in the planning process, but no later than the 25% design development phase. When a conflict between a project location and its impact on cultural resources is identified, cultural resource management strategies shall be brought into consideration to determine if the impact to the resource can be avoided, adverse impacts mitigated, or whether additional site investigation is necessary. OCR shall initiate and manage those activities that will minimize or mitigate adverse impacts to cultural resources.

When necessary, OCR shall conduct a coordinated program of basic and applied research to support planning for and management of cultural resources on DCR property. Repairs, rehabilitation, and other preservation activities shall follow the guidelines in the *Secretary of the Interior's Standards for the Treatment of Historic Properties*. Adequate research to support planning and compliance with MHC Review will precede any final decisions about the treatment of cultural resources or operational activities which may impact cultural resources.

For each DCR project, a Project Notification Form (PNF), including a project description, a site plan, and photographs, shall be provided to OCR. OCR shall forward the PNF to MHC and, where required, local historic district commissions. If outside consultants are preparing the PNF, then OCR staff shall be given an opportunity to review the draft PNF before it is submitted. The submission of an Environmental Notification Form (ENF) under the Massachusetts Environmental Policy Act (MEPA) satisfies MHC notification, and no PNF is needed for project undergoing MEPA review. Copies of ENFs shall be provided to OCR.

MHC has a maximum of 30 days to make a Determination of Effect on historic resources or request supplemental information in order to make a Determination of Effect. In the event that the MHC makes a determination of “no effect” or “no adverse effect” on historic resources, the project may proceed. If MHC determines that the proposed project will have an “adverse effect” on historic resources, DCR shall consult with MHC to explore options to avoid, minimize, or mitigate the adverse effect. If, after consultation, no feasible or prudent alternative exists that would avoid the adverse effect, a Memorandum of Agreement between DCR, MHC and any other interested parties is required to resolve the adverse effect and complete the consultation process.

Local historic district commission review will vary by municipality.

No physical work for projects shall occur until the review process has been completed with MHC and (if applicable) the local historic district commission.

Appendix D. DCR Cultural Resources Policy (Continued)

4. Emergency Scenarios/Procedures

In the event an unanticipated site of archaeological or cultural significance is encountered during the project implementation stage, project work shall be halted and OCR shall be notified. OCR shall initiate the review process with MHC and make a recommendation to the Deputy Commissioner of Planning & Engineering whether or not to suspend all aspects of project implementation during consultation with MHC.

If human remains are discovered during project implementation, project work shall be halted, the area must be secured, the State Police must be notified, and the Medical Examiner (617-267-6767 ext, 176) and the DCR staff archaeologist must be contacted to determine if the remains are over 100 years old. No one should touch or remove the remains. If the remains are over 100 years old, the State Archaeologist at MHC must be notified and will consult with DCR (and the Massachusetts Commission on Indian Affairs if the remains are Native American) to avoid or mitigate impacts to the graves. In any such situation, DCR staff shall work with OCR to comply with the state's Unmarked Burial Law.

If DCR must take immediate action to avoid or eliminate an imminent threat to public health or safety or a serious and immediate threat to the environment, OCR shall be notified as soon as possible. OCR shall attempt to seek prior oral approval of the MHC for the project via telephone if written notice is not practicable, provide written notification of the emergency work within ten days, and commence full compliance with MHC review requirements within thirty days, under the terms of 950 CMR 71.10.

5. Day-to-Day Operations

Management of DCR's property shall be carried out with cultural resource protection in mind. Adverse impacts to cultural resources should be avoided and mitigated, where possible, with appropriate protection strategies. Cultural resources shall be adequately maintained, following recommended techniques where formal guidelines are in place. Cultural resource management decisions should be made with input from OCR.

Discovery of artifacts should be reported immediately to OCR, noting the exact location of the find. Be aware of sites that may be exposed or threatened by erosion or visitor impacts. Any vandalism, unauthorized digging, or removal of artifacts should be reported to the appropriate law enforcement personnel and OCR. Archaeological investigations on public lands require a permit from the State Archaeologist at MHC (MGL Ch. 9, Sec 26A and 27C (950 CMR 70)).

6. Lease/Permit Programs

The issuance of leases and permits by DCR for activities involving the physical alteration of a property must undergo MHC review with OCR and MHC, as outlined above.

The proposed issuance of DCR permits to investigate archaeological sites shall be reviewed by OCR. OCR shall coordinate the issuance of a special use permit with the State Archaeologist at MHC, who must also issue a concurrent State Archaeologist permit for any field investigations on DCR property (MGL Ch. 9, Sec 26A and 27C (950 CMR 70)).

Appendix D. DCR Cultural Resources Policy (Continued)

7. Disposition of Real Property

The protection of cultural resources, including the preservation and continued use of significant historic buildings and structures, shall be accommodated as part of any disposition of DCR property. Under the State Register review regulations (950 CMR 71.05(e)), the transfer or sale of a State Register property without adequate conditions or restrictions regarding preservation, maintenance, or use will result in an “adverse effect” determination from MHC. DCR must consult with MHC and any interested parties to resolve the effect of the proposed transfer or sale of the State Register property.

Appendix E. GIS Supplemental Information

E.1. METHODOLOGY

The following is a summary of the GIS methodology used by the Department of Conservation and Recreation (DCR) GIS Program to generate and present data within the Lowell/Great Brook Planning Unit Resource Management Plan (RMP).

Property Boundaries

The digital boundaries for each property within the Lowell/Great Brook Planning Unit can be described, based on the source data, one of three ways: highly accurate, reasonably accurate and less than accurate. Approximately 52% of the digital boundaries are based on highly accurate data, e.g. surveys and/or hydrographic or town boundaries. An additional 44% of the digital boundaries are based on reasonably accurate data, e.g. draft parcel data, georeferenced plans and/or orthophotography. The remaining digital boundaries (4%) are based on less than accurate data, e.g. a digital sketch or an undocumented source.

Maps

Figure 2 Lowell-Dracut-Tyngsborough State Forest. A DCR GIS Specialist digitized the location of the DWSD Infrastructure, Headquarters Site and parking areas in ArcGIS using the 2008-2009 Color Ortho Imagery datalayer as a reference. The location of Gage Hill and Whortleberry Hill were also digitized using the USGS Topographic Quadrangle Images as a reference.

Figure 3 Lowell Heritage State Park. A DCR GIS Specialist digitized the location of buildings, structures and parking areas in ArcGIS using the 2008-2009 Color Ortho Imagery datalayer as a reference.

Figure 4 Great Brook Farm State Park. A DCR GIS Specialist digitized the location of the District 6 Fire Control Office and Garage, Nature Center Pavilion, Farm Complex, The City and parking areas in ArcGIS using the 2008-2009 Color Ortho Imagery datalayer as a reference. The remaining buildings and structures were GPSed and spatially corrected, to rooftop accuracy, by a DCR GIS Specialist in ArcGIS using the 2008-2009 Color Ortho Imagery datalayer as a reference.

Figure 6 Warren H. Manning State Forest. A DCR GIS Specialist digitized the location of the Spray Deck, Bathhouse and parking area in ArcGIS using the 2008-2009 Color Ortho Imagery datalayer as a reference.

Figure 7 Billerica State Forest. A DCR GIS Specialist digitized the location of Gilson Hill in ArcGIS using the USGS Topographic Quadrangle Images datalayer as a reference.

Figures 9, 10 and 11 Land Stewardship Zoning for Lowell-Dracut-Tyngsborough State Forest, Great Brook Farm State Park and Warren H. Manning State Forest. A DCR GIS Specialist digitized the Zone 1, Zone 2 and Zone 3 datalayers in ArcGIS. The 2008-2009 and 2013 Color Ortho Imagery, Forest Roads and Trails, Hydrography and Lowell/Great Brook Planning Unit datalayers were used as a guide for defining the Zone 1, Zone 2 and Zone 3 areas. Every attempt was made to use “on the ground features,” such as trails or wetlands, as the boundary for each zone in an effort to make the areas easily identifiable for DCR field staff.

For Lowell-Dracut-Tyngsborough State Forest, the boundary of Spruce Swamp was buffered by 50 feet in order to establish the Zone 1 area. For the Zone 3 areas, the centerline of the loop road at the former headquarters site was buffered by 10 feet and the existing footprint of the disturbed area, where the buildings were located, was approximated. The existing footprint of the main parking area was buffered by 30 feet to the west, 40 feet to the east, and 75 feet to the south along the eastern side of Trotting Park Road. The centerline of the administrative road that provides access to the Dracut Water Supply District infrastructure was buffered by 10 feet; the centerline of the cleared vegetated corridor was buffered by 20 feet; and the existing footprint of the remaining infrastructure was merged with these buffered areas.

At Great Brook Farm State Park, the existing trails immediately surrounding “The City” were used as the boundary for the Zone 1 area. The existing trails and property boundary were also used to define the Zone 3 area.

Appendix E. GIS Supplemental Information (Continued)

For Warren H. Manning State Forest, the footprint of the existing parking area, bathhouse, picnic area and spray deck was approximated.

E.2. DATALAYERS

A summary of the GIS datalayers used by the DCR GIS Program to generate and display data within the Lowell/Great Brook Planning Unit RMP is presented below, in Table E.1.

Table E.1. Summary of Datalayers Used to Create the Lowell/Great Brook Planning Unit RMP

Datalayer Name	Source	Additional Information
2008-2009 Color Ortho Imagery	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/colororthos2008.html
2013 Color Ortho Imagery	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/colororthos2013.html
Aquifers	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/aquifers-.html
Building Footprint	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/structures.html
Forest Roads and Trails	MassGIS and DCR GIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/dcrtrails.html
Hydrography	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/depwetlands112000.html http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/hd100.html
Land Stewardship Zoning	DCR GIS	
Lowell/Great Brook Planning Unit	MassGIS and DCR GIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/osp.html
No Hunting Area	DCR GIS	
Parking Area	DCR GIS	
Roads	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/eotroads.html
Skating Rink	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/icerinks.html
State Boundary (Massachusetts)	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/townsurvey.html
Swimming Pool	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/pools.html
Town Boundary (Massachusetts)	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/townsurvey.html
USGS Topographic Quadrangle Images	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/imquad.html

Appendix F. Select Regulations Applicable to the Lowell/Great Brook Planning Unit^a

CMR ^b	Title	Comments
105 CMR 410.00	State Sanitary Code Chapter II: Minimum Standards of Fitness for Human Habitation	Includes public health and safety regulations for buildings and sanitary facilities.
105 CMR 435.00	State Sanitary Code Chapter V: Sanitary Standards for Swimming Pools	Includes construction, and operation and maintenance regulations for swimming pools.
105 CMR 445.00	State Sanitary Code Chapter VII: Minimum Standards for Bathing Beaches	Specifies water quality monitoring and closure posting requirements at bathing beaches.
301 CMR 11.00	Massachusetts Environmental Policy Act (MEPA)	Requires the systematic review of any work or activity undertaken by an agency (e.g., the DCR); involving state permitting or financial assistance; or a transfer of state land.
302 CMR 10.00	Dam Safety	Includes information on the size and hazard classification of dams, as well as dam inspection, repair, alteration, and removal.
302 CMR 11.00	Parkways, Traffic and Pedestrian Rules	Requires construction and access permits for the digging up or physically modifying any DCR parkway or other property, or the dumping of material or planting of trees on the same.
304 CMR 7.00	Management Plans and Massachusetts Wildlands	Requires a management plan for each state reservation, park, and forest under the control of the Department of Environmental Management. This regulation was superseded by MGL Chapter 21: Section 2F, which requires management plans for all DCR “reservations, parks, and forests.”
304 CMR 12.00	Forests and Parks Rules	Extensive regulations governing all aspects of park operations including, but not limited to: hours of operation; public behavior; consumption of alcohol; the presence of pets; fires; special use permits; hunting, fishing, and trapping; traffic rules and parking; campsites; trail use; and wind and board surfing.
310 CMR 9.00	Waterways	<p>These regulations protect and promote the public’s interest in tidelands, Great Ponds, and non-tidal rivers; preserve and protect the public’s rights in tidelands; protect the public health, safety, and general welfare as it may be affected by any project in tidelands, Great Ponds, or non-tidal rivers; support efforts to revitalize unproductive property along urban waterfronts; and foster the rights of the people to values identified in Article XCVII of the Massachusetts Constitution.</p> <p>For the purpose of these regulations, all lands lying below the high water mark of the Merrimack River, such as those at the Rourke Brothers Memorial Boat Ramp, are considered to be “trust lands.”</p>
310 CMR 10.00	Wetlands Protection Act	<p>Regulates many activities within 100 feet of wetlands and certified vernal pools, and within 200 feet of perennial streams and rivers.</p> <p>This Act (310 CMR 10.58, Section 2g) specifies that there is no riverfront area associated with the manmade canals in Lowell.</p>
310 CMR 15.00	Title 5: State Environmental Code	Standard requirements for the siting, construction, inspection, upgrade and expansion of on-site sewage treatment and disposal systems for the transport and disposal of septage.
310 CMR 22.00	Drinking Water	Includes regulations for Transient Non-community Water Systems, which provide water to 25 or more persons at least 60 days/year.

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Appendix F. Select Regulations Applicable to the Lowell/Great Brook Planning Unit^a (Continued)

CMR ^b	Title	Comments
314 CMR 4.00	Massachusetts Surface Water Quality Standards	These standards “secure to the Commonwealth the benefits of the Clean Water Act.” They designate the most sensitive uses for which the waters of the Commonwealth shall be enhanced, maintained and protected; prescribe minimum water quality criteria; and contain regulations necessary to achieve designated uses and maintain water quality. These standards include the identification and regulation of Outstanding Resource Waters.
320 CMR 2.00	Public Access Facilities	Regulates use of Office of Fish and Boating Access (formerly Public Access Board (PAB)) boat ramps. These facilities may only be used for “the launching and retrieval of any trailered or cartop watercraft and parking of the vehicle used to launch and retrieve watercraft in a properly marked parking area.”
321 CMR 2.00	Miscellaneous Regulations Relating to Division of Fisheries and Wildlife	Addresses a variety of fish and wildlife issues, including scientific collecting permits and the importation, liberation, and transportation of fish, amphibians, reptiles, birds, and mammals.
321 CMR 3.00	Hunting	Regulates hunting and trapping in Massachusetts. Additional hunting and trapping regulations, specific to DCR parks, are identified in 304 CMR 12.00.
321 CMR 4.00	Fishing	Regulates the taking of freshwater fish in Massachusetts. Additional fishing regulations, specific to DCR parks, are identified in 304 CMR 12.00.
321 CMR 10.00	Massachusetts Endangered Species Act (MESA)	MESA protects rare species and their habitats by prohibiting the “Take” of any plant or animal species listed as Endangered, Threatened, or Special Concern. Activities that may alter rare species habitat (e.g., trail maintenance, vista pruning) are subject to regulatory review. On state-owned land, “all practicable means and measures shall be taken to resolve conflicts between the protection, conservation, and restoration of state-listed species...and other uses of such lands in favor of the listed species.”
323 CMR 3.00	The Use of Recreation Vehicles and Snow Vehicles	These regulations specify that no person shall operate a snow or recreation vehicle on publicly-owned property except on trails marked and designated for such use; or in a manner that causes damage to... lands owned or managed by the Department of Conservation and Recreation. They also specify a minimum average depth of four inches of packed snow, or such other depth as is determined by the person in charge of said land, for the operation of snow machines.
323 CMR 4.00	The Operation of Personal Watercraft	Provides rules related to the safe operation of personal watercraft.
333 CMR 10.00	Certification and Licensing of Pesticide Applicators	Requires that anyone applying herbicides, insecticides, or other pesticides on non-residential property (i.e., all DCR properties) must be certified and licensed.
330 CMR 4.00	Cattle	Regulates the dealing, transportation, importation and testing of cattle.
330 CMR 25.00	Agricultural Composting Program	Specifies the requirements for registering and operating agricultural composting facilities.
330 CMR 27.00	Standards and Sanitation Requirements for Raw Milk	“Establishes standards and sanitation requirements for raw milk and milk products for pasteurization, ultra pasteurization or aseptic processing and standards and sanitization requirements for raw milk for retail sale.”

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Appendix F. Select Regulations Applicable to the Lowell/Great Brook Planning Unit^a (Continued)

CMR ^b	Title	Comments
521 CMR 19.00	Architectural Access Board; Recreational Facilities	Accessibility standards for rinks, pools, beaches, playgrounds, picnic areas, campsites, and other indoor and outdoor facilities. Requires that 5% of picnic facilities be accessible.
521 CMR 23.00	Architectural Access Board; Parking and Passenger Loading Zones	Specifies dimensional, pavement marking, and sign requirements for accessible parking spaces and passenger loading zones.
801 CMR 4.02	Fees for Licenses, Permits, and Services to be Charged by State Agencies	Specifies fees for camping; parking; use of picnic pavilions, athletic fields, ice rinks, golf courses; special use permits; timber harvests, forester licensing, well digging, dam safety permits, and other miscellaneous activities.
950 CMR 70.00	Massachusetts Historical Commission	Standardizes procedures for conducting archaeological investigations in Massachusetts by controlling activities that will disturb archaeological properties. Requires a permit from the State Archaeologist for conducting “field investigation activities on any land owned or controlled by the Commonwealth.”
950 CMR 71.00	Protection of Properties Included in the State Register of Historic Places	Requires Massachusetts Historical Commission notification of projects undertaken, funded, or licensed by a state body.
<p>a. A variety of state regulations apply to both the operation of state parks and the behavior of visitors to these parks. This table includes only those regulations directly related to topics addressed in the main body of this RMP.</p> <p>b. The Code of Massachusetts Regulations, or CMR, “contains regulations promulgated by state agencies” (Massachusetts Trial Court Law Libraries 2012). These regulations “have the force and effect of law like statutes.”</p>		

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Appendix G. Species Lists

Table G.1. Wild Birds of the Lowell/Great Brook Planning Unit. Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists' Union (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SF ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Anatidae	Snow goose	<i>Chen caerulescens</i>	-	-	X	-	9
Geese, Swans, and Ducks	Canada goose	<i>Branta canadensis</i>	-	X	-	X	1, 2, 6, 8
	Mute swan	<i>Cygnus olor</i>	-	X	-	-	9
	Wood duck	<i>Aix sponsa</i>	-	X	-	X	1, 2, 6, 8
	Gadwall	<i>Anas strepera</i>	-	X	-	-	9
	American wigeon	<i>Anas americana</i>	-	X	-	X	6, 9
	American black duck ^c	<i>Anas rubripes</i>	-	X	-	X	1, 2, 6
	Mallard	<i>Anas platyrhynchos</i>	-	X	-	X	1, 2, 6, 8
	Blue-winged teal	<i>Anas discors</i>	-	X	-	X	6, 9
	Green-winged teal	<i>Anas crecca</i>	-	X	-	X	1, 2, 6
	Ring-necked duck	<i>Aythya collaris</i>	-	X	-	X	2, 6, 9
	Lesser scaup	<i>Aythya affinis</i>	-	X	-	-	9
	White-winged scoter	<i>Melanitta fusca</i>	-	X	-	-	9
	Bufflehead	<i>Bucephala albeola</i>	-	X	X	-	9
	Common goldeneye	<i>Bucephala clangula</i>	-	-	X	-	9
	Hooded merganser	<i>Lophodytes cucullatus</i>	-	X	-	X	1, 2, 6
	Common merganser	<i>Mergus merganser</i>	-	X	-	X	6, 9
Phasianidae	Ruffed grouse ^c	<i>Bonasa umbellus</i>	-	-	-	X	6
Partridges, Grouse, Turkey, and Old World Quail	Wild turkey	<i>Meleagris gallopavo</i>	-	-	-	X	2, 6
Podicipedidae	Pied-billed grebe ^c	<i>Podilymbus podiceps</i>	E	X	-	-	9
Grebes	Horned grebe	<i>Podiceps auritus</i>	-	X	-	-	9
	Red-necked grebe	<i>Podiceps grisegena</i>	-	X	-	-	9
Phalacrocoracidae	Double-crested cormorant	<i>Phalacrocorax auritus</i>	-	X	-	X	1, 6
Cormorants	Great cormorant	<i>Phalacrocorax carbo</i>	-	-	X	-	9
Ardeidae	American bittern ^c	<i>Botaurus lentiginosus</i>	E	X	-	X	9, 11
Bitterns and Herons	Great blue heron	<i>Ardea herodias</i>	-	X	-	X	1, 2, 6, 8
	Great egret	<i>Ardea alba</i>	-	X	-	-	9
	Green heron ^c	<i>Butorides virescens</i>	-	X	-	X	1, 6
	Black-crowned night-heron ^c	<i>Nycticorax nycticorax</i>	-	X	-	-	9
Cathartidae	Turkey vulture	<i>Cathartes aura</i>	-	X	-	X	1, 2, 6
American Vultures							
Pandionidae	Osprey	<i>Pandion haliaetus</i>	-	X	-	X	1, 6, 9
Ospreys							
Accipitridae	Bald eagle ^c	<i>Haliaeetus leucocephalus</i>	T	X	X	X	6, 7, 9
Kites, Eagles, and Hawks	Northern harrier ^c	<i>Circus cyaneus</i>	T	X	-	X	6, 9
	Sharp-shinned hawk ^c	<i>Accipiter striatus</i>	SC	X	-	X	1, 6
	Cooper's hawk	<i>Accipiter cooperii</i>	-	X	-	X	1, 2, 6
	Northern goshawk	<i>Accipiter gentilis</i>	-	X	-	X	5, 6
	Red-shouldered hawk	<i>Buteo lineatus</i>	-	X	-	X	2, 4, 6
	Broad-winged hawk ^c	<i>Buteo platypterus</i>	-	X	-	X	1, 2, 6
	Red-tailed hawk	<i>Buteo jamaicensis</i>	-	X	-	X	1, 2, 6, 8
	Rough-legged hawk	<i>Buteo lagopus</i>	-	X	-	-	9

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Appendix G. Species Lists (Continued)

Table G.1. Wild Birds of the Lowell/Great Brook Planning Unit. (Continued) Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists' Union (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SP ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Rallidae	Virginia rail	<i>Rallus limicola</i>	-	X	-	-	9
Rails, Gallinules, and Coots	American coot	<i>Fulica americana</i>	-	X	-	-	9
Gruidae	Sandhill crane	<i>Grus canadensis</i>	-	-	-	X	6
Cranes							
Charadriidae	Killdeer	<i>Charadrius vociferus</i>	-	X	-	X	2, 6, 9
Plovers and Lapwings							
Scolopacidae	Spotted sandpiper	<i>Actitis macularia</i>	-	X	-	X	1, 6
Sandpipers and Allies	Solitary sandpiper	<i>Tringa solitaria</i>	-	X	-	X	1, 6
	Greater yellowlegs	<i>Tringa melanoleuca</i>	-	X	-	X	6, 9
	Lesser yellowlegs	<i>Tringa flavipes</i>	-	X	-	X	9, 10
	Least sandpiper	<i>Calidris minutilla</i>	-	X	-	X	9, 10
	Pectoral sandpiper	<i>Calidris melanotos</i>	-	-	-	X	6
	Wilson's snipe	<i>Gallinago delicata</i>	-	-	-	X	6
	American woodcock ^e	<i>Scolopax minor</i>	-	X	-	X	6, 9
Laridae	Ring-billed gull	<i>Larus delawarensis</i>	-	X	-	-	1, 6
Jaegers, Gulls, Terns, and Skimmers	Herring gull	<i>Larus argentatus</i>	-	X	-	X	1, 2, 6
	Great black-backed gull	<i>Larus marinus</i>	-	X	-	X	6, 9
Columbidae	Rock pigeon	<i>Columba livia</i>	-	-	-	X	2, 6
Pigeons and Doves	Mourning dove	<i>Zenaidura macroura</i>	-	X	-	X	1, 2, 6, 8
Cuculidae	Yellow-billed cuckoo	<i>Coccyzus americanus</i>	-	-	-	X	6
Cuckoos	Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	-	-	-	X	6
Strigidae	Great horned owl	<i>Bubo virginianus</i>	-	X	-	X	1, 2, 3, 6
Typical Owls	Barred owl	<i>Strix varia</i>	-	X	-	X	2, 6, 9
	Northern saw-whet owl	<i>Aegolius acadicus</i>	-	-	-	X	6
Caprimulgidae	Common nighthawk	<i>Chordeiles minor</i>	-	X	-	X	1, 2, 6
Goatsuckers							
Apodidae	Chimney swift	<i>Chaetura pelagica</i>	-	X	-	X	1, 2, 6, 8
Swifts							
Trochilidae	Ruby-throated hummingbird	<i>Archilochus colubris</i>	-	X	-	X	1, 2, 6
Hummingbirds							
Alcedinidae	Belted kingfisher	<i>Megascops alcyon</i>	-	X	-	X	1, 2, 6
Kingfishers							
Picidae	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	-	X	-	-	1, 5
Woodpeckers	Red-bellied woodpecker	<i>Melanerpes carolinus</i>	-	X	-	X	1, 2, 5, 6, 8
	Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	-	X	-	X	2, 6, 9
	Downy woodpecker	<i>Picoides pubescens</i>	-	X	-	X	1, 2, 5, 6, 8
	Hairy woodpecker	<i>Picoides villosus</i>	-	X	-	X	1, 2, 5, 6, 8
	Northern flicker	<i>Colaptes auratus</i>	-	X	-	X	1, 2, 5, 6, 8
	Pileated woodpecker	<i>Dryocopus pileatus</i>	-	X	-	X	1, 2, 5, 6
Falconidae	American kestrel ^e	<i>Falco sparverius</i>	-	X	-	X	1, 6
Falcons	Merlin	<i>Falco columbarius</i>	-	X	-	X	3, 6
	Peregrine falcon ^e	<i>Falco peregrinus</i>	E	X	-	-	9

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Appendix G. Species Lists (Continued)

Table G.1. Wild Birds of the Lowell/Great Brook Planning Unit. (Continued) Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists' Union (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SP ^c	Lowell heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Tyrannidae	Eastern wood-pewee	<i>Contopus virens</i>	-	X	-	X	1, 2, 6, 8
Tyrant Flycatchers	Yellow-bellied flycatcher	<i>Empidonax flaviventris</i>	-	X	-	-	9
	Alder flycatcher	<i>Empidonax alnorum</i>	-	X	-	-	8
	Willow flycatcher ^e	<i>Empidonax trailii</i>	-	X	-	X	2, 6, 9
	Least flycatcher	<i>Empidonax minimus</i>	-	-	-	X	2, 6
	Eastern phoebe	<i>Sayornis phoebe</i>	-	X	-	X	1, 2, 6
	Great-crested flycatcher	<i>Myiarchus crinitus</i>	-	X	-	X	1, 2, 6, 8
	Eastern kingbird	<i>Tyrannus tyrannus</i>	-	X	-	X	1, 2, 6, 8
Laniidae	Northern shrike	<i>Lanius ludovicianus</i>	-	-	-	X	1, 6
Shrikes							
Vireonidae	Yellow-throated vireo	<i>Vireo flavifrons</i>	-	X	-	X	6, 8
Vireos	Blue-headed vireo	<i>Vireo solitarius</i>	-	X	-	X	6, 9
	Warbling vireo	<i>Vireo gilvus</i>	-	X	-	X	2, 6, 8
	Red-eyed vireo	<i>Vireo olivaceus</i>	-	X	-	X	1, 2, 6, 8
Corvidae	Blue jay	<i>Cyanocitta cristata</i>	-	X	-	X	1, 2, 6, 8
Jays, Magpies, and Crows	American crow	<i>Corvus brachyrhynchos</i>	-	X	-	X	1, 2, 6, 8
	Fish crow	<i>Corvus ossifragus</i>	-	X	-	X	2, 6, 9
	Common raven	<i>Corvus corax</i>	-	X	-	X	2, 6, 9
Aluadidae	Horned lark	<i>Eremophila alpestris</i>	-	-	-	X	6
Larks							
Hirundinidae	Tree swallow	<i>Tachycineta bicolor</i>	-	X	-	X	1, 2, 6, 8
Swallows	Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	-	X	-	X	2, 6, 9
	Bank swallow	<i>Riparia riparia</i>	-	-	-	X	6
	Barn swallow	<i>Hirundo rustica</i>	-	X	-	X	1, 2, 6, 8
Paridae	Black-capped chickadee	<i>Poecile atricapillus</i>	-	X	-	X	1, 2, 6, 8
Titmice	Tufted titmouse	<i>Baeolophus bicolor</i>	-	X	-	X	1, 2, 6, 8
Sittidae	Red-breasted nuthatch	<i>Sitta canadensis</i>	-	X	-	X	1, 2, 6, 8
Nuthatches	White-breasted nuthatch	<i>Sitta carolinensis</i>	-	X	-	X	1, 2, 6, 8
Certhiidae	Brown creeper	<i>Certhia americana</i>	-	X	-	X	1, 2, 6, 8
Creepers							
Troglodytidae	House wren	<i>Troglodytes aedon</i>	-	X	-	X	2, 6, 8
Wrens	Winter wren	<i>Troglodytes hiemalis</i>	-	X	-	X	1, 2, 6
	Carolina wren	<i>Thryothorus ludovicianus</i>	-	X	-	X	1, 2, 6
Poliopitilidae	Blue-gray gnatcatcher	<i>Poliopitila caerulea</i>	-	X	-	X	2, 6, 9
Gnatcatchers							
Regulidae	Golden-crowned kinglet	<i>Regulus satrapa</i>	-	X	-	X	1, 2, 6
Kinglets	Ruby-crowned kinglet	<i>Regulus calendula</i>	-	X	-	X	2, 6, 9

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Appendix G. Species Lists (Continued)

Table G.1. Wild Birds of the Lowell/Great Brook Planning Unit. (Continued) Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists' Union (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SF ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Turdidae	Eastern bluebird	<i>Sialis sialis</i>	-	X	-	X	1, 2, 6
Bluebirds and Thrushes	Townsend's solitaire	<i>Myadestes townsendi</i>	-	X	-	-	9
	Veery	<i>Catharus fuscescens</i>	-	X	-	X	1, 2, 6, 8
	Swainson's thrush	<i>Catharus ustulatus</i>	-	X	-	X	6, 9
	Hermit thrush	<i>Catharus guttatus</i>	-	X	-	X	1, 2, 6
	Wood thrush ^e	<i>Hylocichla mustelina</i>	-	X	-	X	2, 6, 8
	American robin	<i>Turdus migratorius</i>	-	X	-	X	1, 2, 6, 8
Mimidae	Gray catbird	<i>Dumetella carolinensis</i>	-	X	-	X	1, 2, 6, 8
Mimic Thrushes	Northern mockingbird	<i>Mimus polyglottos</i>	-	X	-	X	2, 6, 9
	Brown thrasher ^e	<i>Toxostoma rufum</i>	-	X	-	X	2, 6, 9
Sturnidae	European starling	<i>Sturnis vulgaris</i>	-	X	-	X	1, 2, 6
Starlings							
Motacillidae	American pipit	<i>Anthus rubescens</i>	-	-	-	X	2, 6
Pipits							
Bombycillidae	Cedar waxwing	<i>Bombycilla cedrorum</i>	-	X	-	X	1, 2, 6, 8
Waxwings							
Calcariidae	Snow bunting	<i>Plectrophenax nivalis</i>	-	-	-	X	1, 2, 6
Longspurs							
Parulidae	Ovenbird	<i>Seiurus aurocapillus</i>	-	X	-	X	1, 2, 6, 8, 9
Wood Warblers	Louisiana waterthrush ^c	<i>Parkesia motacilla</i>	-	X	-	X	6, 9
	Northern waterthrush	<i>Parkesia noveboracensis</i>	-	X	-	X	1, 6, 9
	Blue-winged warbler ^c	<i>Vermivora cyanoptera</i>	-	X	-	X	6, 9
	Black-and-white warbler	<i>Mniotilta varia</i>	-	X	-	X	1, 2, 6
	Nashville warbler	<i>Oreothlypis ruficapilla</i>	-	X	-	X	6, 9
	Mourning warbler ^c	<i>Geothlypis philadelphia</i>	SC	-	-	X	2
	Common yellowthroat	<i>Geothlypis trichas</i>	-	X	-	X	1, 2, 6, 8
	American redstart	<i>Setophaga ruticilla</i>	-	X	-	X	1, 2, 6
	Northern parula ^c	<i>Setophaga americana</i>	T	X	-	X	6, 9
	Magnolia warbler	<i>Setophaga magnolia</i>	-	X	-	X	1, 6
	Bay-breasted warbler	<i>Setophaga castanea</i>	-	X	-	-	9
	Blackburnian warbler	<i>Setophaga fusca</i>	-	-	-	X	6
	Yellow warbler	<i>Setophaga petechia</i>	-	X	-	X	1, 2, 6, 8
	Chestnut-sided warbler	<i>Setophaga pensylvanica</i>	-	X	-	X	2, 6, 9
	Blackpoll warbler ^c	<i>Setophaga striata</i>	SC	X	-	X	6, 9
	Black-throated blue warbler	<i>Setophaga caerulescens</i>	-	X	-	X	2, 6, 9
	Palm warbler	<i>Setophaga palmarum</i>	-	X	-	X	1, 2, 6
	Yellow-rumped warbler	<i>Setophaga coronata</i>	-	X	-	X	1, 2, 6
	Prairie warbler ^c	<i>Setophaga discolor</i>	-	X	-	-	9
	Black-throated green warbler	<i>Setophaga virens</i>	-	X	-	X	6, 9
	Pine warbler	<i>Dendroica pinus</i>	-	X	-	X	1, 2, 6, 8
	Canada warbler ^e	<i>Cardellina canadensis</i>	-	X	-	X	6, 9

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Appendix G. Species Lists (Continued)

Table G.1. Wild Birds of the Lowell/Great Brook Planning Unit. (Continued) Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists' Union (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SF ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Emberizidae	Eastern towhee ^e	<i>Pipilo erythrophthalmus</i>	-	X	-	X	2, 6, 9
Towhees, Sparrows, and Allies	American tree sparrow	<i>Spizella arborea</i>	-	X	-	X	1, 2, 6
	Chipping sparrow	<i>Spizella passerina</i>	-	X	-	X	1, 2, 6, 8
	Clay-colored sparrow	<i>Spizella pallida</i>	-	-	-	X	6
	Field sparrow ^e	<i>Spizella pusilla</i>	-	-	-	X	2, 6
	Savannah sparrow	<i>Passerculus sandwichensis</i>	-	X	-	X	2, 6, 9
	Fox sparrow	<i>Passerella iliaca</i>	-	X	-	X	1, 2, 6
	Song sparrow	<i>Melospiza melodia</i>	-	X	-	X	1, 2, 6, 8
	Lincoln's sparrow	<i>Melospiza lincolnii</i>	-	X	-	X	2, 6, 9
	Swamp sparrow	<i>Melospiza georgiana</i>	-	X	-	X	1, 2, 6, 8
	White-throated sparrow ^e	<i>Zonotrichia albicollis</i>	-	X	-	X	1, 2, 6
	White-crowned sparrow	<i>Zonotrichia leucophrys</i>	-	X	-	X	2, 6, 9
	Dark eyed junco	<i>Junco hyemalis</i>	-	X	-	X	1, 2, 6
Cardinalidae	Scarlet tanager	<i>Piranga olivacea</i>	-	X	-	X	1, 2, 6, 8
Tanagers, Grosbeaks, and Buntings	Northern cardinal	<i>Cardinalis cardinalis</i>	-	X	-	X	1, 2, 6, 8
	Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	-	X	-	X	1, 2
	Indigo bunting	<i>Passerina cyanea</i>	-	-	-	X	1, 2, 6
	Dickcissel	<i>Spiza americana</i>	-	-	-	X	6
Icteridae	Bobolink	<i>Dolichonyx oryzivorus</i>	-	-	-	X	6
Blackbirds, Orioles, and Allies	Red-winged blackbird	<i>Agelaius phoeniceus</i>	-	X	-	X	1, 2, 6, 8
	Eastern meadowlark ^e	<i>Sturnella magna</i>	-	-	-	X	6
	Rusty blackbird	<i>Euphagus carolinus</i>	-	X	-	X	2, 9
	Common grackle	<i>Quiscalus quiscula</i>	-	X	-	X	1, 2, 6, 8
	Brown-headed cowbird	<i>Molothrus ater</i>	-	X	-	X	1, 2, 6, 8
	Orchard oriole	<i>Icterus spurius</i>	-	-	-	X	2
	Baltimore oriole	<i>Icterus galbula</i>	-	X	-	X	1, 2, 6, 8
	Pine grosbeak	<i>Pinicola enucleator</i>	-	X	-	X	9
Fringillidae	Purple finch	<i>Haemorhous purpureus</i>	-	X	-	X	6, 9
Fringilline Finches	House finch	<i>Haemorhous mexicanus</i>	-	X	-	X	1, 2, 6
	Pine siskin	<i>Spinus pinus</i>	-	-	-	X	6
	American goldfinch	<i>Spinus tristis</i>	-	X	-	X	1, 2, 6, 8
Passeridae	House sparrow	<i>Passer domesticus</i>	-	X	-	X	1, 2, 6, 8
Old World Finches							

a. The three properties with the most species information are presented here; the remaining properties in the planning unit lack information.

b. Status of birds listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

c. An "X" indicates that the species has been observed on the property.

d. Information contained in this table was obtained from the following sources:

1. Cornell Lab of Ornithology 2013a.
2. Cornell Lab of Ornithology 2013b.
3. Gaudet 2010a.
4. Gaudet 2011.
5. Gaudet 2010b.
6. Brownrigg 2013a.
7. Maier 2012.
8. Brownrigg 2013b.
9. Gaudet 2013.
10. Brownrigg 2013c.
11. Brownrigg 2014.

e. This has been designated a Species in Greatest Need of Conservation (MassWildlife 2006, Table 4).

Appendix G. Species Lists (Continued)

Table G.2. Wild Mammals of the Lowell/Great Brook Planning Unit. Family, common, and scientific names and the sequence in which they are presented follow Cardoza et al. (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SF ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Didelphidae New World Opossums	Virginia opossum	<i>Didelphis virginiana</i>	-	P	P	P	-
Sciuridae Tree Squirrels and Marmots	Eastern gray squirrel	<i>Sciurus carolinensis</i>	-	C	P	P	2
	Red squirrel	<i>Tamiasciurus hudsonicus</i>	-	C	U	C	1, 2
	Northern flying squirrel	<i>Glaucomys sabrinus</i>	-	P	U	P	-
	Southern flying squirrel	<i>Glaucomys volans</i>	-	P	U	P	-
	Woodchuck	<i>Marmota monax</i>	-	C	U	P	2
	Eastern chipmunk	<i>Tamias striatus</i>	-	C	P	C	1, 2
Castoridae American Beaver	American beaver	<i>Castor canadensis</i>	-	C	U	C	1
Dipodidae Jumping Mice	Meadow jumping mouse	<i>Zapus hudsonius</i>	-	P	U	P	-
Cricetidae Mice, Voles, and Lemmings	Meadow vole	<i>Microtus pennsylvanicus</i>	-	C	U	P	2
	Woodland vole	<i>Microtus pinetorum</i>	-	P	U	P	-
	Southern red-backed vole	<i>Myodes gapperi</i>	-	P	U	P	-
	Common muskrat	<i>Ondatra zibethicus</i>	-	C	U	C	1, 2
	White-footed deer mouse	<i>Peromyscus leucopus</i>	-	C	U	P	2
Muridae Old World Rats and Mice	House mouse	<i>Mus musculus</i>	-	P	P	P	-
	Brown rat	<i>Rattus norvegicus</i>	-	P	P	P	-
Erethizontidae New World Porcupines	North American porcupine	<i>Erethizon dorsatum</i>	-	C	U	C	1, 2
Leporidae Hares and Rabbits	Snowshoe hare	<i>Lepus americanus</i>	-	P	U	P	-
	Eastern cottontail	<i>Sylvilagus floridanus</i>	-	C	U	P	2
	New England cottontail ^e	<i>Sylvilagus transitionalis</i>	-	U	U	U	-
Soricidae Shrews	Northern short-tailed shrew	<i>Blarina brevicauda</i>	-	P	U	P	-
	Cinereus shrew	<i>Sorex cinereus</i>	-	P	U	P	-
Talpidae Moles and Shrew-moles	Star-nosed mole	<i>Condylura cristata</i>	-	P	U	P	-
	Hairy-tailed mole	<i>Parascalops breweri</i>	-	P	U	P	-
Vespertilionidae Vesper Bats	Big brown bat	<i>Eptesicus fuscus</i>	-	P	P	P	-
	Eastern red bat ^e	<i>Lasiurus borealis</i>	-	P	P	C	1
	Hoary bat ^e	<i>Lasiurus cinereus</i>	-	P	P	P	-
	Tricolored bat	<i>Perimyotis subflavus</i>	E	U	U	U	-
	Silver-haired bat ^e	<i>Lasionycteris noctivagans</i>	-	P	P	P	-
	Little brown myotis	<i>Myotis lucifugus</i>	E	U	U	P	1
	Northern myotis	<i>Myotis septentrionalis</i>	E	U	U	U	-

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Appendix G. Species Lists (Continued)

Table G.2. Wild Mammals of the Lowell/Great Brook Planning Unit. (Continued) Family, common, and scientific names and the sequence in which they are presented follow Cardoza et al. (2013).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SP ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Felidae	Domestic cat (feral)	<i>Felis catus</i>	-	P	P	P	-
Cats	Bobcat ^e	<i>Lynx rufus</i>	-	P	U	P	-
Canidae	Coyote	<i>Canis latrans</i>	-	C	U	P	2
Dogs, Foxes, and Wolves	Domestic dog (feral)	<i>Canis lupus familiaris</i>	-	P	P	P	-
	Gray fox	<i>Urocyon cinereoargenteus</i>	-	P	U	P	-
	Red fox	<i>Vulpes vulpes</i>	-	P	U	C	1
Ursidae	American black bear ^e	<i>Ursus americanus</i>	-	P	U	P	-
Bears							
Mustelidae	North American river otter	<i>Lontra canadensis</i>	-	C	P	P	2
Weasels, Minks, Martens, and Otters	Fisher	<i>Martes pennanti</i>	-	C	U	P	2
	Ermine	<i>Mustela erminea</i>	-	P	U	P	-
	Long-tailed weasel	<i>Mustela frenata</i>	-	P	U	P	-
	American mink	<i>Neovison vison</i>	-	C	U	C	1, 2
Mephitidae	Striped skunk	<i>Mephitis mephitis</i>	-	P	P	P	-
Skunks							
Procyonidae	Raccoon	<i>Procyon lotor</i>	-	C	P	P	2
Raccoons, Coatis, and Ringtails							
Cervidae	Moose ^e	<i>Alces americanus</i>	-	U	U	U	-
Deer, Elk, and Moose	White-tailed deer	<i>Odocoileus virginianus</i>	-	C	U	C	1, 2

a. The three properties with the most species information are presented here; the remaining properties in the planning unit lack information.

b. Status of mammals listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

c. Species are classified as follows: Confirmed (C) – Species has been recorded on the property; Possible (P) – Species is known to occur in Middlesex County (Cardoza and Mirick 2009), but has not been confirmed from the property; and Unlikely (U) – Species is known to occur in Middlesex County, but appropriate habitat may be absent from the property.

d. Information contained in this table was obtained from the following sources:

1. Brownrigg 2013b.

2. Gaudet 2013.

e. This species has been designated a Species in Greatest Need of Conservation (MassWildlife 2006, Table 4).

Appendix G. Species Lists (Continued)

Table G.3. Reptiles of the Lowell/Great Brook Planning Unit. Family, common, and scientific names follow NatureServe (2013); the sequence in which they are presented follows Cardoza and Mirick (2009).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SP ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Chelydridae Snapping Turtles	Snapping turtle	<i>Chelydra serpentina</i>	-	C	P	C	1, 3
Kinosternidae American Mud and Musk Turtles	Common musk turtle	<i>Sternotherus odoratus</i>	-	P	U	C	3
Emydidae Pond Turtles	Northern painted turtle	<i>Chrysemys picta</i>	-	C	U	C	1, 3, 4
	Spotted turtle ^e	<i>Clemmys guttata</i>	-	C	U	P	4
	Wood turtle ^e	<i>Glyptemys insculpta</i>	SC	P	U	P	-
	Blanding's turtle ^e	<i>Emydoidea blandingii</i>	T	C	U	C	1, 2, 4
	Eastern box turtle ^e	<i>Terrapene carolina</i>	SC	C	U	C	2, 4
Colubridae Harmless Snakes	Racer ^e	<i>Coluber constrictor</i>	-	P	U	P	-
	Ring-necked snake	<i>Diadophis punctatus</i>	-	P	U	P	-
	Milksnake	<i>Lampropeltis triangulum</i>	-	P	C	P	1
	Northern watersnake	<i>Nerodia sipedon</i>	-	C	P	C	1, 3, 4
	Smooth greensnake	<i>Opheodrys vernalis</i>	-	P	U	P	-
	Brownsnake	<i>Storeria dekayi</i>	-	P	P	P	-
	Red-bellied snake	<i>Storeria occipitomaculata</i>	-	P	U	P	-
	Eastern ribbonsnake ^e	<i>Thamnophis sauritus</i>	-	P	U	P	-
	Common gartersnake	<i>Thamnophis sirtalis</i>	-	C	P	C	1, 3

a. The three properties with the most species information are presented here; the remaining properties in the planning unit lack information.

b. Status of reptiles listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

c. Species are classified as follows: Confirmed (C) – Species has been recorded on the property; Possible (P) – Species is known to occur in Middlesex County (Cardoza and Mirick 2009), but has not been confirmed from the property or the Herpetological Atlas (Jackson et al. 2010) survey block in which the property is located; and Unlikely (U) – Species is known to occur in Middlesex County, but appropriate habitat may be absent from the property.

d. Information contained in this table was obtained from the following sources.

1. Jackson et al. 2010.
2. Maier 2012.
3. Brownrigg 2013b.
4. Gaudet 2013.

e. This species has been designated a Species in Greatest Need of Conservation (MassWildlife 2006, Table 4).

Appendix G. Species Lists (Continued)

Table G.4. Amphibians of the Lowell/Great Brook Planning Unit. Family, common, and scientific names follow NatureServe (2013); the sequence in which they are presented follows Cardoza and Mirick (2009).^a

Family	Common Name	Scientific Name	MESA ^b	Lowell-Dracut-Tyngsborough SF ^c	Lowell Heritage SP ^c	Great Brook Farm SP ^c	Source ^d
Ambystomatidae	Blue-spotted salamander ^e	<i>Ambystoma laterale</i>	SC	C	U	P	2, 6
Mole Salamanders	Spotted salamander	<i>Ambystoma maculatum</i>	-	P	U	C	5
	Marbled salamander ^e	<i>Ambystoma opacum</i>	T	P	U	P	-
Salamandridae	Eastern newt	<i>Notophthalmus viridescens</i>	-	P	U	P	-
Newts							
Plethodontidae	Northern dusky salamander	<i>Desmognathus fuscus</i>	-	P	U	P	-
Lungless Salamanders	Redback salamander	<i>Plethodon cinereus</i>	-	C	C	C	1, 5
	Four-toed salamander ^e	<i>Hemidactylium scutatum</i>	-	P	U	P	-
	Northern two-lined salamander	<i>Eurycea bislineata</i>	-	P	U	C	1
Pelobatidae	Eastern spadefoot ^e	<i>Scaphiopus holbrookii</i>	T	P	U	P	-
Spadefoot Toads							
Bufonidae	American toad	<i>Anaxyrus americanus</i>	-	C	P	C	1, 5, 6
True Toads	Fowler's toad	<i>Anaxyrus fowleri</i>	-	P	P	P	-
Hylidae	Spring peeper	<i>Pseudacris crucifer</i>	-	C	C	C	1, 3, 5, 6
True Tree Frogs	Gray treefrog	<i>Hyla versicolor</i>	-	P	U	C	1
Ranidae	American bullfrog	<i>Lithobates catesbeianus</i>	-	C	C	C	1, 5, 6
True Frogs	Green frog	<i>Lithobates clamitans</i>	-	C	C	C	1, 5
	Pickerel frog	<i>Lithobates palustris</i>	-	C	C	C	1, 4, 5
	Northern leopard frog ^e	<i>Lithobates pipiens</i>	-	P	P	P	-
	Wood frog	<i>Lithobates sylvaticus</i>	-	C	U	C	4, 5, 6

a. The three properties with the most species information are presented here; the remaining properties in the planning unit lack information.

b. Status of reptiles listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

c. Species are classified as follows: Confirmed (C) – Species has been recorded on the property; Possible (P) – Species is known to occur in Middlesex County (Cardoza and Mirick 2009), but has not been confirmed from the property or the Herpetological Atlas (Jackson et al. 2010) survey block in which the property is located; and Unlikely (U) – Species is known to occur in Middlesex County, but appropriate habitat may be absent from the property.

d. Information contained in this table was obtained from the following sources:

1. Jackson et al. 2010.
2. Maier 2012.
3. Brownrigg 2008.
4. Brownrigg and Brownrigg 2010.
5. Brownrigg 2013b.
6. Gaudet 2013.

e. This species has been designated a Species in Greatest Need of Conservation (MassWildlife 2006, Table 4).

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit

Year	Chapter	Title	Comments
1941	665	An Act providing for the acquisition and improvement of certain properties in Dracut as an addition to the Lowell-Dracut State Forest.	Authorized the acquisition, for no more than \$7,500, and improvement, for no more than \$2,500, of a 95-acre parcel in Dracut that abutted the state forest.
1950	651	An Act authorizing the Department of Conservation to beautify Dracut Forest and provide recreational facilities thereat.	Authorized and directed the Department “to beautify the Dracut Forest and to provide recreational facilities which shall include a swimming pool....”
1951	806	An Act in addition to the General Appropriation Act making appropriations to supplement certain items contained therein, and for certain new activities and projects.	Disbursed \$5,000 “for the beautification of the Dracut forest, and to provide recreational facilities therein.”
1954	504	An Act providing for the conveyance by the Department of Natural Resources of certain state land to the City of Lowell.	Authorized and directed the Department to convey a portion of Lowell-Dracut State Forest to the city. The land was to be “developed and operated solely by the city as a municipal golf course and a municipal outdoor recreational area” within a period of five years or revert to the Commonwealth. In addition, if the property is developed and operated for any other use, at any other time, it is to revert to the Commonwealth.
1961	567	An Act authorizing the Department of Natural Resources to sell and convey certain forest land to the Industrial Commission of the Town of Billerica.	Authorized the Department to sell and convey, subject to the approval of the governor and council, two parcels of state forest land on the western side of Route 3 to the Industrial Commission for “industrial purposes.”
1966	611	An Act directing the Department of Natural Resources to improve and expand the facilities of the recreation area within the Lowell-Dracut State Forest.	Authorized and directed the Department to “improve and expand the facilities of the recreation area located within the Lowell-Dracut state forest....”
1970	257	An Act relative to the transfer of land for highway purposes.	Authorized and directed the Department of Natural Resources to transfer approximately 95-acres of land, which was part of Lowell-Dracut State Forest, to the Department of Public Works for the purpose of relocating Route 113 in Dracut.
1971	946	An Act authorizing the Department of Natural Resources to convey certain land to the Town of Billerica for recreational purposes.	Authorized the Department to convey 135-acres of state forest land, known as Gilson Hill, to the Town of Billerica. If the land was not used by the town for recreational purposes within five years, it was to revert to the Commonwealth.
1972	626	An Act designating the skating rink to be constructed by the Department of Natural Resources in the City of Lowell as the John J. Janas Memorial Skating Rink, and the swimming pool to be constructed by said department in said city as the Raymond J. Lord Memorial Swimming Pool.	The Department was to erect and maintain a suitable marker bearing the designation at each site.
1976	481	An Act providing for a capital outlay program for the Commonwealth.	Disbursed \$1,800,000 “for the construction of certain facilities at Heritage state park in Lowell; provided, that expenditures from this item shall be contingent upon assurance by proper federal authorities that the federal allocation for the cost of the project will not be less than nine hundred thousand dollars.”
1980	512	An Act relative to the establishment of Urban Heritage State Parks.	Amended Chapter 798 of the Acts of 1979 to allow for the entering into agreements with municipalities and redevelopment authorities for the purposes of acquisition, development and associated costs in connection with the establishment of Urban Heritage State Parks.

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
1980	546	An Act directing the Department of Environmental Management to sell and convey a certain parcel of land in the City of Lowell to the National Park Service, United States Department of Interior and to said city.	Authorized and directed the Department to sell and convey 99,761-square feet of land to the National Park Service and City of Lowell, at a price to be negotiated between the parties. The land is further described in "Book 2264, Page 182, at the northern district registry of deeds in Middlesex county."
1981	78	An Act authorizing the Department of Environmental Management to grant a permanent easement to the Tennessee Gas Pipeline Company.	Authorized the Department to grant an easement to the Tennessee Gas Pipeline Company for the purpose of installing and maintaining cathodic protection equipment on the existing gas pipeline on a portion of the Great Brook Farm State Park in the town of Carlisle.
1982	291	An Act authorizing the Department of Environmental Management to transfer a portion of riverfront park in the City of Lowell to the Department of Public Works for highway purposes.	Authorized the Department to transfer the care, custody and control of public land along Pawtucket Boulevard to the Department of Public Works for "the approaches to a bridge over the Merrimack river from state highway route 113." If the bridge was not constructed within three years of the transference, the property was to revert to the Department. In addition, if the bridge ever ceases to be used, the property is to revert to the Department.
1982	326	An Act authorizing the Department of Environmental Management to lease certain premises within the Great Brook Farm State Park, in Carlisle, for establishment and operation of an interpretive farm.	Authorized the Department to lease, for a ten year term or more, approximately 120-acres of Great Brook Farm State Park for the establishment and operation of interpretive farm facilities. <ul style="list-style-type: none"> • The lease "shall contain a fair rental fee as determined by the commissioner...." • The renewal date for the lease "shall be not less than one year prior to the end of the lease period." • The holder of the lease "shall be given the opportunity to meet the highest bid which has been accepted as valid" when the lease is being renewed. • "The use of any and all buildings and equipment to be utilized in connection with the [lease] or any renewal thereof shall be subject to the approval of the [commissioner]." • The land included in the lease "shall be delineated on a plan on file within the [D]epartment...entitled 'Land to be leased for the establishment and operation of interpretive farm facilities located on Great Brook Farm state park.'"
1983	558	An Act directing the commissioner of Capital Planning and Operations to lease certain land in the City of Lowell.	Authorized and directed the Division of Capital Planning and Operations to negotiate a lease, subject to the approval of the Department of Environmental Management, for a term not to exceed 99-years to Malcolm F. Fryer, Jr. and Richard E. Dobroth, Trustees of Wannalancit Office and Technology Center Realty Trust, approximately 36,450-square feet of land in Lowell to be used as a parking facility. In return, the lessees or their nominees, "shall lease for a term not to exceed [99]-years to the [Division], subject to the approval of the [Department], certain space in a building in the city of Lowell known as the Wannalancit Mill, comprising about [6,150-square feet] of first floor space containing turbine hatches and about [6,800-square feet] of basement space...containing seven water turbines, to be used as an interpretive exhibit facility."

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
1983	723	An Act providing for a capital outlay program for the Commonwealth.	<p>Disbursed \$30,800,000 to the Department of Environmental Management for the “preparation of plans, acquisition of land, development and associated costs in connection with the continuation of the Urban Heritage State Park Program in the cities of...Lowell...” The Act also established a requirement that the Department “file biannual progress reports detailing the status of each park, expenditures to date, types of expenditures and projected costs of completion” with the House and Senate committees on Ways and Means beginning in calendar year 1984.</p> <p>An additional \$260,000 was allocated to the Department for the “design, reconstruction and other improvements to Trotting Park Road in the city of Lowell and the towns of Dracut and Tyngsboro to a community owned road leading to and passing through the Lowell, Dracut, Tyngsboro state forest.”</p>
1984	360	An Act ceding to the United States of America concurrent jurisdiction over units of the National Park Service in the Commonwealth.	The Commonwealth ceded concurrent jurisdiction over Lowell National Historical Park, among other lands and buildings administered by the National Park Service. Jurisdiction in and over properties in this Act “shall revert to and revest in the commonwealth” when they no longer fulfill their original purpose.
1985	407	An Act authorizing the Department of Environmental Management to reimburse certain federal agencies for work performed on certain state property.	Amended Chapter 723 of the Acts of 1983 to include language that permits the Department to contract with the National Park Service “for the rehabilitation of certain historic structures in the Lowell Urban Heritage State Park.”
1985	638	An Act authorizing the Division of Capital Planning and Operations to convey certain park land and a certain easement in the City of Lowell to said city.	Authorized the Division to convey approximately 10,629-square feet of land under the control of the Department of Environmental Management to the city for highway purposes. The Division was also to grant a temporary construction easement to the city for approximately 31,000-square feet of land under the control of the Department.
1985	665	An Act authorizing the Division of Capital Planning and Operations to grant to the City of Lowell certain easements over certain park land in said city.	Authorized the Division to grant “a temporary general construction easement, for a period of time not longer than one year, and a permanent easement in and over certain park land located in said city, under the control of the department of environmental management” so that the city could install and maintain an underground sewage ejector station.
1987	326	An Act authorizing the deputy commissioner of Capital Planning and Operations to transfer certain land in the City of Lowell from the Department of Environmental Management to the Department of Public Works for highway purposes.	Authorized the Division of Capital Planning and Operations to transfer approximately 4,981-square feet of land along Pawtucket Boulevard under the care, custody and control of the Department to the Department of Public Works for the reconstruction of State Route 113. A temporary construction easement over approximately 1,280-square feet of land along Pawtucket Boulevard under the care, custody and control of the Department was also authorized.
1987	564	An Act providing for an environmental enhancement and protection program for the Commonwealth.	Disbursed \$38,000,000 to the Department of Environmental Management for “a study and the preparation of plans, acquisition of land, development and associated costs in connection with the Urban Heritage State Park Program in...Lowell...” The act also established a requirement that the Department “file biannual progress reports detailing the status of each park, expenditures to date, types of expenditures and projected costs of completion” with the House and Senate committees on Ways and Means beginning in calendar year 1988.

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
1991	289	An Act authorizing the Division of Capital Planning and Operations to grant rights and easements over certain parcels of land in the City of Lowell to the United States of America.	Authorized the Division to convey “permanent air rights and easements for canalway and trolley system development purposes...over certain parcels of land located in the city of Lowell...subject to...additional terms and conditions as the [Division] may prescribe in consultation with the department of environmental management.” In the event that the parcels described in this Act “cease to be used for the purpose for which they were intended, which is solely for public park purposes, all interests conveyed in these parcels shall revert to the commonwealth.”
1991	291	An Act authorizing the Division of Capital Planning and Operations to convey certain easements in the City of Lowell.	Authorized the Division to convey “permanent air rights and easements for the purpose of constructing, maintaining, using, repairing, removing and replacing bridges to provide access and egress, by foot and vehicle, to land owned by Boott Mills Limited Partnership, over [four] parcels of land located in the city of Lowell...subject to...additional terms and conditions as the [Division] may prescribe in consultation with the department of environmental management.” The Department may have been granted a “permanent, public access easement to use certain of the renovated courtyard areas of The Boott Mills...or any other form of compensation” in consideration for the air rights and easements described.
1991	411	An Act authorizing the Division of Capital Planning and Operations to grant certain easements.	Authorized and directed the Division, in consultation with the Department of Environmental Management, to grant Freudenberg Nonwovens Limited Partnership, its successors and assigns and all others lawfully entitled, permanent easements for the purpose of installing a steam and condensate return pipe along the walls of the Merrimack and Pawtucket canals. In the event that the easements described in this Act cease to be used for the purposes for which they were conveyed, they revert to the Commonwealth.
1991	428	An Act authorizing the commissioner of the Division of Capital Planning and Operations to transfer the care, custody and control of certain parcels of land in the City of Lowell from the Department of Environmental Management to the Department of Public Works.	Authorized the Division to transfer the care, custody and control of two parcels of land located in Lowell from the Department to the Department of Public Works for highway purposes.
1991	527	An Act authorizing the commissioner of Capital Planning and Operations to transfer certain parcels of land in the City of Lowell from the Department of Public Works to the Department of Environmental Management.	Authorized the Division of Capital Planning and Operations to sell and convey by deed three parcels of land associated with Regatta field, located in Lowell, to the Department. The parcels are further described in Book 1942, Page 144; Book 2082, Page 107; and Book 2101, Page 542 in the Northern District Registry of Deeds for Middlesex County.
1992	133	An Act making appropriations for the fiscal year 1993 for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and several bond requirements and for certain permanent improvements.	Disbursed \$14,644,039 for the Department of Environmental Management’s recreation program, provided that the funds be used to operate all department parks, heritage state parks, reservations, etc. and provided further that \$25,000 “be expended for materials and supplies at the Lowell heritage state park and that not less than three interpretive personnel be available during peak attendance months, including not more than 320 employees.”

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
1992	149	An Act authorizing the Division of Capital Planning and Operations to grant easements over certain parcels of land located in the City of Lowell.	Authorized and directed the Division to grant easements and air rights over certain parcels of land located in the city to the United States of America for canalway and trolley system development and “related activities pursuant to the Lowell National Historical Park Act...subject to...additional terms and conditions as [the Division] may prescribe in consultation with the department of environmental management.” In the event that the parcels conveyed were “not developed for or [cease] to be used for the purpose for which [they] were intended, which is solely for public park purposes, all interests conveyed in these parcels shall revert to the commonwealth.”
1993	113	An Act authorizing the City of Lowell to convey a certain parcel of conservation land.	Authorized the city to convey a parcel of land located on the southerly side of Pawtucket Boulevard to the Department of Environmental Management. Excepted and excluded from the conveyance were “all easements for wires, pipes, conduits, poles and other appurtenances for the conveyance of water, sewage, gas, oil, electricity and telephone communication,” as well as six itemized rights, easements and takings.
1993	437	An Act authorizing the Division of Capital Planning and Operations to grant easements and air rights over certain parcels of land located in the City of Lowell.	Authorized the Division to grant easements and air rights over certain parcels of land, including park and environmental land, in the city to the Bio Development Corporation for the construction of “energy related, steam transport pipes...subject to...additional terms and conditions as [the Division] may prescribe in consultation with the department of environmental management.” In consideration for the easements and air rights described, Bio Development Corporation “shall make a contribution to the conservation trust...based on the fair market value of the easements granted, or provided any other form of compensation” as determined by the Division in consultation with the Department.
1994	80	An Act relative to a certain conveyance of land in the City of Lowell.	Amended Chapter 113 of the Acts of 1993 to state: “Excepted and excluded from this conveyance by the city of Lowell are all easements for drainage, wires, pipes, conduits, poles and other appurtenances for the conveyance of water, sewage, gas, oil, electricity and telephone communications, as well as takings of record, and grants of flowage rights, now lawfully in or on the premises hereby conveyed.”
1994	85	An Act relative to bond authorizations for certain emergency capital projects of the Commonwealth.	Authorized the Department of Environmental Management to “lease real property under its control and supervision to any person or organization, if the commissioner of said department makes a determination that such lease will adequately ensure the preservation and maintenance of an historic property.” The Litchfield House is among the properties included in this Act.
1994	251	An Act authorizing the Division of Capital Planning and Operations to convey a certain parcel of land located in the City of Lowell.	Authorized the Division to convey a parcel of park land on Broadway Street in Lowell to the city. The Department of Environmental Management was to maintain care and control of the parcel “for any and all activities which benefit the general public.” In the event that “exterior restorations” were not substantially completed or the parcel was not developed within three years, it was to revert to the Commonwealth and be under the care and control of the Department. In addition, if the parcel “ceases to be used for any and all activities which benefit the general public at any time,” the parcel is to revert to the Commonwealth and be under the care and control of the Department.

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
1996	59	An Act designating the riverwalk on the grounds of the Lowell Heritage State Park as the Scott Finneral Memorial Riverwalk.	The Department of Environmental Management was to “erect a suitable marker bearing such designation.”
1996	319	An Act authorizing the Division of Capital Planning and Operations to grant easements over certain parcels of land located in the City of Lowell.	Authorized the Division, in consultation with the Department of Environmental Management, to grant easements, without consideration, over four parcels of land (tracts 110-05, 110-15, 107-36 and 107-37) located in Lowell to the United States of America for canal walkway development, the maintenance and operation of the Mack Building and its facilities and “the activities related to all of the foregoing purposes pursuant to the Lowell National Historical Park [A]ct.” If the parcels are used for any other purpose, they shall revert to the Commonwealth.
1997	173	An Act authorizing the Department of Environmental Management to authorize the expenditure of certain interest or other income for Urban Heritage State Parks.	Amended Chapter 798 of the Acts of 1979 and Chapter 512 of the Acts of 1980 to allow for the expenditure of “interest accumulated or income earned on funds transferred to and on deposit with said municipalities, redevelopment authorities or economic development and industrial corporations.”
1998	131	An Act relative to the conveyance of a certain parcel of land in the City of Lowell.	Repealed Chapter 251 of the Acts of 1994. Authorized the Division of Capital Planning and Operations to convey to the city a parcel of park land on Broadway Street in Lowell, including the building and improvements thereon, “for any and all activities which benefit the general public.” In the event that “exterior restorations” were not substantially completed within three years, the parcel was to revert to the Commonwealth and be under the care and control of the Department of Environmental Management. In addition, if the parcel “is not used for, or ceases to be used solely, to benefit the public,” the parcel is to revert to the Commonwealth and be under the care and control of the Department.
1998	289	An Act making appropriations for the Fiscal Year 1998 to provide for certain capital and supplemental appropriations.	Disbursed “not more than \$580,000...for a boat ramp facility on the Merrimack river in the city of Lowell including, but not limited to, the development of design and engineering plans, site preparation, construction and installation of double boat ramp, trailer spaces, a parking area, a headwall, drainage pipes, curbing and other amenities....” And “not less than \$300,000...to replace the wading pool in Warren Manning state park.”
1999	127	An Act making appropriations for the Fiscal Year 2000 for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and serial bond requirements and for certain permanent improvements.	Disbursed “not less than \$300,000...to replace the wading pool at Warren Manning state park.”

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
2000	216	An Act relative to the disposition of an interest in a certain parcel of land located within the Lowell-Dracut-Tyngsborough State Forest.	Authorized the Division of Capital Asset Management and Maintenance to convey an easement over approximately 32,000-square feet of land in Dracut under the care and control of the Department of Environmental Management to the Town of Dracut “for the purposes of planning, constructing and maintaining, repairing and replacing a sewer pipeline.” More specifically, the interest in the land authorized to be conveyed was not to be used to “increase [the] building density of [the] adjacent land of [the] grantees or to create additional subdivision lots.” The interest is to revert to the Commonwealth, with care and control assigned to the Department, if the property “ceases to be utilized for the express purposes for which it was conveyed.”
2001	88	An Act making appropriations for the Fiscal Year 2001 to provide for supplementing certain existing appropriations and for certain other activities and projects.	Authorized the Division of Capital Asset Management and Maintenance, in consultation with the Department of Environmental Management, to lease, for terms not to exceed 25 years, state-owned skating rinks, including the John J. Janas Memorial Skating Rink in Lowell, for the continued use, operation, maintenance, repair and improvement of the facilities.
2003	26	An Act making appropriations for the Fiscal Year 2004 for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and serial bond requirements and for certain permanent improvements.	Section 518: Amended item 7220-0960 of Section 2 of Chapter 267 of the Acts of 1995, related to the University of Massachusetts Lowell, and authorized the trustees of the university, or an officer designated by it, to “enter into agreements with the commissioner of conservation and recreation for repairs and improvements to, and cooperative operation and management of, the Bellegarde Boathouse property in the city of Lowell, and such cooperative management and operation of the adjacent Sampas Pavilion and Regatta Field as may be agreed upon...provided...that revenues derived from use of the boathouse property or from use of the Sampas Pavilion and Regatta Field may be deposited in a trust fund established by the university...and expended for the maintenance and operation of the boathouse....” Section 652: Authorized the Division of Capital Asset Management and Maintenance, in consultation with the Department of Conservation and Recreation (DCR) and the City of Lowell, to lease “for an initial term of 25 years with an option for 10-year renewals to any person, corporation or organization the real property under the care, custody and control of the [DCR] located at 257 Father Morissette Boulevard...known as the Tremont Yard Building....”
2003	32	An Act designating certain bridges and a park in the Town of Billerica.	“The water park in Warren Manning state park in the town of Billerica shall be designated and known as Jean F. Coppinger Memorial Park.”
2003	48	An Act designating Regatta Field in the City of Lowell as the Anne Dean Welcome Field.	“...in honor of Anne Dean Welcome of the Pawtucketville section of the city, who devoted her adult life to the preservation of open space and improving the quality of life of residents of the city.” The Department of Conservation and Recreation was to “erect and maintain suitable markers bearing the designation.”
2004	414	An Act designating a portion of the Lowell Heritage State Park as the Mary Bacigalupo Victorian Garden.	“...in honor of the tremendous service of Mary Bacigalupo, a Lowell citizen who was instrumental in the beautification of the city of Lowell.” The Department of Conservation and Recreation was to erect “suitable markers” bearing the designation. The Department was also permitted to “enter into a memorandum of agreement with the city of Lowell to facilitate this act.”

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
2006	122	An Act making appropriations for the Fiscal Year 2006 to provide for supplementing certain existing appropriations and for certain other activities and projects.	<p>Disbursed \$1,000,000 “for the demolition, design and reconstruction of the Bellegarde boat house in the city of Lowell upon transfer of care and control of the boat house to the University of Massachusetts Lowell.”</p> <p>Authorized the Division of Capital Asset Management and Maintenance to “sell and convey to the city of Lowell, for park and open space purposes a parcel of state-owned land together with all structures located on it, located in the city of Lowell.” The parcel is shown as Parcel 3 (4.931 acres) on a plan entitled “Approval Not Required (‘ANR’) Plan, Lawrence Mills Redevelopment, Lowell, Massachusetts,” dated August 14, 2003. In the event that this parcel, or any portion of it other than the roadways, ceases to be used for park and open space purposes, title to it shall revert to the Commonwealth upon the recording of notice of the reversion in the appropriate registry of deeds.</p> <p>The Division was also authorized to grant to the owner of Parcel 1 on the above mentioned plan, or to the successors and assigns of that owner, an easement over a portion of Parcel 3 “for the operation, maintenance, use, repair, and replacement of a sewer lift station for the benefit of the buildings located on said Parcel 1.”</p>
2006	139	An Act making appropriations for the Fiscal Year 2007 for the maintenance of the departments, boards, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and serial bond requirements and for certain permanent improvements.	Disbursed \$5,837,218 for the operation of the Department of Conservation and Recreation, provided that the Department “not close the Bellegarde boat house in Lowell” and provided further, that the commissioner “meet with the Lowell legislative delegation and local officials on or before July 31, 2006 to discuss and develop a plan to keep the Bellegarde boat house open, staffed and maintained with ongoing renovations.”
2006	238	An Act authorizing the conveyance of certain parcels of land in the Commonwealth.	Authorized the Division of Capital Asset Management and Maintenance, in consultation with the Department of Conservation and Recreation, to “transfer the care, custody, management and control of so much of the property known as the Pawtucket Boulevard Node as contains the Bellegarde Boathouse, together with the land and appurtenances associated therewith...to the trustees of the University of Massachusetts for nominal consideration, for use by the trustees as a boathouse and public park land.” If the property ceases to be used or is used for any other purpose, at any time, or in any way fails to comply with the Department and National Park Service policies for such facilities and park land, the care, custody, control and management of the property shall revert to the Department.
2008	182	An Act making appropriations for the Fiscal Year 2009 for the maintenance of the departments, commissions, institutions and certain activities of the Commonwealth, for interest, sinking fund and serial bond requirements and for certain permanent improvements.	Disbursed “not less than \$200,000...for the operation of the Bellegarde Boathouse in the city of Lowell.”

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Appendix H. Acts of the Massachusetts Legislature that Directly Address the Lowell/Great Brook Planning Unit (Continued)

Year	Chapter	Title	Comments
2008	312	An Act providing for the preservation and improvement of land, parks, and clean energy in the Commonwealth.	<p>Disbursed “not less than \$2,500,000” for improvements to the Bellegarde Boathouse in Lowell.</p> <p>Authorized the Division of Capital Asset Management and Maintenance, in consultation with the Department of Conservation and Recreation, to “grant to the city of Lowell or release such real property interests owned by the commonwealth as may be necessary to permit the city of Lowell to acquire fee interests, easements or other rights for an overhead bridge, pedestrian and vehicular bridges, utility services, and public highway purposes in, over and to certain parcels of land within the Lowell Heritage State Park.” The interests, easements and releases are shown on a plan entitled “Easement Plan of Land Located in Lowell, Massachusetts (Middlesex County)” dated June 5, 2008. If the real property interests cease to be used for the purposes set forth in the grant or release instruments, they shall revert to the care and control of the Department.</p>

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Appendix I. Land Stewardship Zoning Guidelines

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 properties¹ 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 decisions based upon these services, and communicate the agency's landscape scale management objectives to the public.

¹ These management systems do not apply to DCR's Division of Water Supply Protection properties.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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.”²

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.

² *Capacity Reconsidered: Finding Consensus and Clarifying Differences.* Journal of Park and Recreation Administration, Spring 2011, Vol. 29, No. 1, pp. 1-20.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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 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 silvicultural 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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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

Landscape Designation Management Guidelines → *	Reserve – <i>The least fragmented forested areas where ecological processes will predominate and inform management, and where commercial timber harvesting is not allowed.</i>	Woodland – <i>Forested areas actively managed for forest health, resource protection, sustainable production of timber, and recreation.</i>	Parkland – <i>Areas providing public recreation opportunities, connections to nature, and protection and appreciation of natural and cultural resources.</i>
Land Stewardship Zones ↓ **			
Zone 1 – <i>Highly sensitive resources requiring special management approaches.</i>	Rare species habitat, natural communities, archaeological sites, or fragile cultural sites identified as being sensitive to / easily degraded by human activities.		
Zone 2 – <i>Resources that support recreational and management activities appropriate to the site.</i>	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 – <i>Intensive use areas such as recreational sites or maintenance areas.</i>	New zone 3s will not be established in Reserves. <u>Exception</u> – 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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

- **Forest Health and Protection:** Spread of invasive species, forest pathogens and wildfires 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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

- **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 and 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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

- **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.

Appendix I. Land Stewardship Zoning Guidelines (Continued)

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.

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