

DESIGNATION of the

MISCOE, WARREN AND WHITEHALL WATERSHEDS RESOURCE AREA

AREA OF CRITICAL ENVIRONMENTAL CONCERN

located in portions of the

MUNICIPALITIES OF GRAFTON, HOPKINTON AND UPTON

WITH SUPPORTING FINDINGS

Following an extensive formal review required by the regulations of the Executive Office of Environmental Affairs (301 C.M.R. 12.00) including nomination, review, on-site visits, research, public information meetings, a public hearing and written comment period, and evaluation of all public comment and assembled data, I, the Secretary of Environmental Affairs, hereby designate the Miscoe, Warren and Whitehall Watersheds Resource Area, located in portions of the municipalities of Grafton, Hopkinton and Upton, as an Area of Critical Environmental Concern (ACEC). I take this action pursuant to the authority granted me under Mass. Gen. L. ch. 21A, § 2(7).

I also hereby find that the wetland resource areas included in the Miscoe, Warren and Whitehall Watersheds ACEC are significant to the protection of groundwater supply and private water supplies, the prevention of pollution, flood control, the prevention of storm damage, the protection of fisheries, and the protection of wildlife habitat - all of which are public interests defined in the Wetlands Protection Act and regulations promulgated thereunder.

I. Procedures Leading to ACEC Designation

On October 14, 1999 I received a letter of nomination from the Grafton, Hopkinton, and Upton Boards of Selectmen, Planning Boards and Conservation Commissions pursuant to the ACEC Regulations at 301 C.M.R. 12.05. On November 29, 1999 I accepted the Miscoe, Warren and Whitehall Watersheds Resource Area nomination for full review. In this letter I outlined the ACEC nomination review process, and scheduled three initial public information meetings to be held in January and February 2000. Notice of these public information meetings also was included in the December 22, 1999 issue of The Environmental Monitor, published by the Massachusetts Executive Office of Environmental Affairs.

Public information meetings were held at the Municipal Center or Town Halls in Grafton on January 27, in Hopkinton on February 2, and in Upton on February 3, 2000. Following these meetings, in correspondence to the nominators dated February 18, 2000 I confirmed the scheduling of two additional public information meetings, to be held on March 9 and 16 at the town office or town hall of Grafton and Upton, respectively. These public information meetings were held as scheduled. All five of the public meetings were well attended. Additional letters of support for the nomination were received from the Grafton Board of Selectmen dated February 25, from the Grafton Planning Board dated February 29, and from the Grafton Conservation Commission dated February 29, 2000

In correspondence dated April 7, 2000 I notified the nominators that another public information meeting would be held in Upton on May 4, followed by a public hearing in Upton on May 18, 2000. A copy of the public notice for the hearing was included in this correspondence. Over 200 copies of the letter and public notice were mailed to state legislators, state and regional agencies, environmental organizations, residents, and other interested parties.

A copy of the public notice was published in the April 8, 2000 issue of The Environmental Monitor. Copies of the public notice also were published in the April 17, 2000 editions of the Worcester Telegram and Gazette, Metrowest Daily News, and the Milford Daily News.

The May 4 public information meeting was held as scheduled, in the Upton-Mendon (Nipmuck) Regional High School auditorium. This public meeting also was well attended.

I conducted a public hearing regarding the nomination on May 18, 2000, at the Upton-Mendon Regional High School auditorium. Oral and written testimony was received from over 60 people representing individual residents and a variety of groups and organizations. A ten-day period for the submission of additional written comments, until May 30, 2000, followed the public hearing. I received written notification that the Grafton Board of Selectmen voted to withdraw support for the nomination on May 16, and the Grafton Planning Board voted to withdraw its support on June 5. However, I find that these latter two actions have no bearing on the formal review status of the nomination as an eligible ACEC nomination. Following the May 18, 2000 public hearing I also met separately with representatives of opponents of the nomination (July 10, 2000) and representatives of the nominators (July 12, 2000), for site visits to the nominated area and further discussions about the nomination.

In the course of the overall nomination review written and oral testimony was received from numerous individuals, private organizations and public agencies. Copies are on file at the offices of the ACEC Program at the Department of Environmental Management, Division of Resource Conservation in Boston. Approximately 200 comments, plus several form letters from over 275 citizens, were received in the course of the public participation and review process.

II. Description of the Resources of the Miscoe, Warren and Whitehall Watersheds ACEC

Resource Overview

A brief summary of the resources of the ACEC is provided in this designation document. Additional useful information regarding these resources is provided in the Miscoe, Warren and Whitehall Watersheds Resource Area ACEC nomination document (October 14, 1999) and other materials and correspondence assembled as part of the nomination review.

The total amount of acres included in the nominated area was approximately 9,560 acres. The size of the designated ACEC is approximately 8,700 acres. Approximately 5,230 acres are located in Upton, 3,010 in Grafton, and 460 in Hopkinton. The ACEC includes all nine groups of the inland resource features listed in the ACEC Regulations, of which a minimum of four are required for nomination review.

The resources of the ACEC are located in portions of five sub-watersheds – Miscoe Brook, located principally in Grafton; Warren Brook, located principally in Upton; a small portion of Center Brook, located

principally in Upton; and small portions of two sub-watersheds in Upton and Hopkinton that drain into the Sudbury River watershed. One of the Sudbury River sub-watershed areas flows into Whitehall Reservoir. Miscoe, Warren and Center Brooks drain southerly to the West River and the Blackstone River. The portions of the Sudbury River sub-watersheds in Upton and Hopkinton flow northerly to the Sudbury River, part of the larger SuAsCo (Sudbury, Assabet and Concord Rivers) Basin. (Note: The watersheds of Miscoe, Warren and Center Brooks technically are sub-watersheds of the larger West River and Blackstone River watersheds. Depending on the context, either the term watershed or sub-watershed is used to describe the drainage areas of Miscoe, Warren and Center Brooks.)

The distinguishing characteristics of these sub-watersheds are that they are located at the headwaters of their respective watersheds; provide crucial inputs of high quality surface water to downstream waters and communities; share a large expanse of unfragmented and diverse wildlife habitat and public and private open space extending across drainage divides and municipal borders; and are subject to intense and ever-increasing development pressures. The area provides important surface water and ground water inputs to public drinking water supplies. Rare species habitats are located throughout the ACEC. The Miscoe Brook watershed contains a large, unique and valuable wetlands complex, the Great Meadow system, and the water quality of both Miscoe and Warren Brooks supports prized native brook trout populations. Agriculture and forestry are important components of the overall resource complex. The area contains unique and highly significant archaeological and historical resources. According to maps and data prepared for the review of the nomination by the Department of Environmental Management (DEM), using the Geographic Information System (GIS) of the Executive Office of Environmental Affairs (EOEA), rare species habitats cover approximately 1,680 acres or 19% of the area. Public open space and Chapter 61/61A/61B lands combined total approximately 3,900 acres, or 45% of the ACEC. Approximately 89% of the ACEC is comprised of forest, non-forested wetlands, and open lands and farmland.

Surface Waters

As stated above, the ACEC includes portions of five sub-watersheds. The upper reaches of Miscoe Brook are located in Grafton and Westborough, north of the Massachusetts Turnpike. Miscoe Brook flows southerly until it joins Warren Brook in Upton, where the two brooks combine to form the West River, just outside of the boundary of the ACEC. As stated in the nomination, several feeder streams contribute to Miscoe Brook throughout its length, the largest of which is Flagg Brook. The 220-acre Great Meadow is located along Miscoe Brook. Impoundments along Miscoe Brook include Cider Mill Pond and Silver Lake in Grafton, and Lake Wildwood and Baker Pond in Upton. Cider Mill Pond is a shallow four-acre pond just downstream of the Great Meadow. Silver Lake is 26 acres in size and is used for public swimming, fishing and other water-related activities. Lake Wildwood is a 42-acre impoundment with recreational boating access, and Baker Pond is a shallow 2-3 acre pond north of Route 140 that flows into Lake Wildwood.

Warren Brook in Upton flows southerly and, as mentioned above, joins Miscoe Brook to form the West River. Unnamed tributaries flow into Warren Brook. According to the nomination, the Warren Brook watershed contains many productive vernal pools and several ponds, the largest of which is Davidson Pond. This pond is about 6 acres in size and drains westerly to Warren Brook. In the Center Brook sub-watershed, an unnamed tributary stream flows southerly into Dean Pond, a 15-acre impoundment located within Upton State Forest. The outfall of Dean Pond, an unnamed tributary stream, then flows southerly to Pratt Pond and Center Brook, outside of the ACEC.

In the two Sudbury River sub-watersheds, unnamed tributary streams in Upton flow northerly to Sandra Pond (also known as Westboro Reservoir), and unnamed tributary streams in Hopkinton flow northerly to Whitehall Reservoir.

Wetlands

According to GIS data, wetlands cover approximately 700 acres or 8% of the ACEC. According to the nomination, the Great Meadow wetland system along Miscoe Brook in Grafton is the largest wetland in the region. It is a mixture of deep and shallow fresh marsh, shrub swamp, peat bog, wet meadow and wooded swamp. The many distinct plant communities support a large variety of wildlife. Plants include purple-fringed orchid, pitcher plant, and sundew, characteristic of a bog community but unusual for this area. A quaking bog is also found within the Great Meadow. Further important information regarding this wetland is provided in the nomination.

In Grafton, according to the nomination, approximately 150 acres of wetlands are located in the Warren Brook watershed, mostly along Warren Brook, in the State Forest next to Westboro Road, and in isolated locations in the northern portion of the watershed. Most of the wetlands are wooded or shrub swamp. The Westboro Road wetland is a cedar swamp and provides habitat for a state-listed endangered dragonfly. Another highly significant wetland and cedar swamp also providing habitat for the state-listed dragonfly is located in the Whitehall Reservoir sub-watershed in Hopkinton. According to GIS data, this wetland area is approximately 140 acres in size. In addition to these two wetlands that provide habitat for state-listed rare species, and the Great Meadow system mentioned above, rare species habitats are also located along two stretches of Warren Brook and its adjacent wetlands, and in a stretch of Miscoe Brook and adjacent wetlands south of Silver Lake extending to Lake Wildwood.

Natural Hazard Areas

Natural hazard areas, according to the ACEC regulations, include floodplain areas. Floodplains are shown on the GIS maps prepared for the ACEC, and according to GIS data, cover approximately 520 acres, or 6% of the ACEC. The majority of this amount, about 340 acres, is located in Grafton along the Miscoe Brook-Great Meadow-Cider Mill Pond-Silver Lake corridor. In Upton, floodplains are located along the southern reaches of Warren Brook and Lake Wildwood, and along the unnamed stream flowing into and out of Dean Pond.

Habitat Resources

The wildlife habitat resources of the Miscoe, Warren and Whitehall Watersheds ACEC are diverse and extensive. These resources include both general wildlife habitat and rare species habitat. As mentioned above in the Resource Overview, approximately 7,730 acres or 89% of the ACEC is comprised of forest, non-forested wetlands, and open lands and farmland. Of this total, 6,610 acres or 76% is forest; 940 acres or 11% is open lands and farmland; and 180 acres or 2% is non-forested wetland. Rare species habitats cover approximately 1,680 acres or 19% of the area. The ACEC is comprised of large areas of contiguous open space, relatively unfragmented wildlife habitat. Much of the open land is located in Grafton. Much of Upton is forested. Important stream corridors, ponds and wetlands are located in all three towns.

According to comments submitted by the Natural Heritage and Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries and Wildlife,

The unique biological value of the nominated MWW [Miscoe, Warren and Whitehall Watersheds] ACEC lies in the generally unfragmented nature of much of the area within the proposed boundaries. Given the intense development in the past decade in eastern and central Massachusetts relatively few natural areas have escaped extensive fragmentation. This is also true for most rare species habitats in this part of the state. Populations of rare salamanders and turtles are directly affected by road mortality and loss of habitat in these highly fragmented areas. Biologists often question whether these isolated populations of rare species are sustainable. MWW appears to represent an area that can sustain viable populations of the listed rare species because of the large contiguous habitat with few roads or major residential/commercial development.

According to NHESP's comment letter, 5 state-listed species occur within the ACEC. These species include the Jefferson's Salamander, the Wood Turtle and the Spotted Turtle, listed as species of "Special Concern" pursuant to the Massachusetts Endangered Species Act; the Marbled Salamander; listed as "Threatened;" and a dragonfly (name protected), listed as "Endangered."

The GIS maps prepared for the review of the nomination show the general location and extent of known rare species habitat within the ACEC. Both Priority Habitats and Estimated Habitats for Rare Wildlife for state-listed species are shown. Priority Habitats delineate all habitats for known rare plant and animal populations protected under the Massachusetts Endangered Species Act Regulations. Estimated Habitats represent a subset of Priority Habitats that delineate the approximate geographical extent of known habitats of state-listed rare wildlife and indicate approximate locations of certified vernal pools for use with the Wetlands Protection Act Regulations and the Forest Cutting Practices Act

As mentioned above, the locations of the rare species habitats shown on the GIS maps are found in the cedar swamp areas in Upton and Hopkinton; in the Great Meadows system in Grafton; along the Warren Brook corridor in Upton; and along the Miscoe Brook corridor south of Silver Lake to Lake Wildwood. The Estimated Habitats and Priority Habitats generally overlap in each of the six areas shown on the rare species map.

Additional information regarding wildlife and fisheries is provided in the nomination document. As mentioned above, Miscoe Brook and Warren Brook are cold-water fisheries, with prolific and self-sustaining native brook trout populations. Other surface waters have healthy, diverse warm water fisheries. According to the nomination three ongoing bird-banding studies in the vicinity of the Merriam Road Conservation Area, underway for several years, have banded 86 different species. These studies contribute data to an international effort to document the migration of birds through the Americas, and indicate the importance of the Great Meadow area as a stopover for migratory birds. The area provides food, cover and water for over 30 species that briefly stop on their long-distance routes. Forty of the species migrate but stay and use the area for breeding, and over a dozen species are permanent residents. The nomination states that extensive bird and animal populations in the Great Meadow system include wood duck, black duck, mallard, great blue heron, piedbill grebe, beaver, mink, otter, raccoon, deer, bobcat, coyote and fisher, illustrating the kinds of wildlife found within the ACEC.

Finally, the extensive wildlife habitat of the ACEC illustrates the close ecological interdependence of the various natural and cultural resource features of the ACEC, including surface waters, wetlands, floodplains, open fields and farmlands, and forest.

Agricultural Areas

Both the nomination document and comments submitted by the Massachusetts Department of Food and Agriculture (DFA) describe the role and importance of agriculture to the ACEC. According to DFA:

Agriculture is a multi-faceted component of the watersheds under consideration. By maintaining a small scale, locally owned and land-based economy providing local products to residents, preserving substantial amounts of open space including grasslands, tilled fields, scenic areas and riparian buffers, farms play a vital role in maintaining the vitality and environmental quality of these communities. There are also cultural resources, adding a sense of continuity to residents' lives through their historic field patterns, traditional farm buildings and early dwelling houses....

DFA continues:

Farmland on Estabrook, George Hill and Merriam Roads covers 786 acres, including approximately 250 acres of cropland and over 500 acres of woodland and wetlands. Other agricultural parcels in the area add to these figures, and are often leased by larger farms which rely upon their availability.

In Upton a variety of agricultural operations are found within the Warren Brook corridor. Typically these farms include three or four acres of woodland and wetland to every acre of fields and pasture. Enterprises are varied, producing hay, beef, Christmas trees, and lamb.... Over 230 acres of agricultural lands lie within the river corridor.

In addition to these figures provided by DFA, GIS data provided by DEM regarding land use shows an overall figure of approximately 940 acres of open lands and farmland. Chapter 61/61A/61B lands cover approximately 1490 acres in Grafton and Upton, about 17% of the ACEC. The great majority of these lands are classified as Chapter 61A, agricultural land, and are located in Grafton. Using slightly different figures (GIS data as well as Chapter 61A figures are approximate and can vary), the nomination states that approximately 1,570 acres in Grafton are registered under Chapter 61A (agriculture), and 110 acres under Chapter 61 (forestry) and Chapter 61B (recreation). In Upton the Warren Brook watershed total is approximately 190 acres under Chapter 61/61A/61B, mostly under 61A (agriculture).

Water Supply Areas

According to written comments submitted by the Massachusetts Department of Environmental Protection (DEP), there are significant drinking water resources present within the ACEC. These include a Zone II aquifer recharge area for a public well in Upton; tributaries (also classified as Outstanding Resource Waters pursuant to 314 C.M.R. 4.00, Massachusetts Surface Water Quality Standards) to a surface water drinking reservoir (Sandra Pond, or Westboro Reservoir) in Westborough; a portion of an Interim Wellhead Protection Area (IWPA) for two public wells in Hopkinton (next to Whitehall Reservoir) for which DEP is currently defining a Zone II; a non-transient, non-community public well providing 100% of the drinking water at the Touchstone Community School in Grafton; and medium yield aquifer areas in Grafton.

According to the GIS Water Resources map prepared for the nomination review, the Upton public well is located south of Glen Avenue in Upton, in the Glen Avenue well field, just outside of the ACEC boundary. The Zone II recharge area is located along the Warren Brook corridor and a southern portion of the Lake Wildwood area. The tributary streams and sub-watershed for the Sandra Pond surface water drinking

reservoir in Westborough are located in the northeast section of Upton and the ACEC. The waters of this sub-watershed flow northerly to the Sudbury River. The Interim Wellhead Protection Area in Hopkinton extends from Whitehall Reservoir to the cedar swamp in Hopkinton, the northeast corner of the ACEC. Tributary streams and drainage from the cedar swamp flow toward Whitehall Reservoir and the two Hopkinton public wells. Medium yield aquifers in Grafton are located along the Miscoe Brook corridor.

According to the nomination, the Glen Avenue well field includes 24 gravel pack wells, operates at capacity year-round, and supplies about 25% of Upton's public water supply. Water quality is excellent and no treatment is required. The two public wells in Hopkinton have excellent water quality and support about 60% of Hopkinton's residents and virtually all of its businesses.

Historical/Archaeological Resources

The ACEC contains a wealth of historic and archaeological resources. According to comments provided by the Massachusetts Historical Commission (MHC):

Review of MHC's Inventory of the Historic and Archaeological Assets of the Commonwealth and the summary of historic and archaeological resources prepared by the nomination proponents indicates that a wide range of significant historic and archaeological properties are located within the proposed ACEC.

Known archaeological sites within the area include a rock shelter and quarry site associated with the Native American settlement of the Blackstone Valley between 5,000 and 3,000 years ago.... Four additional ancient sites have been recorded in MHC's Inventory Additional sites are undoubtedly present that have not yet been recorded....

More recent archaeological sites include a seventeenth-eighteenth century Native American burial ground near Kittville in Grafton The western portion of the MWWW [Miscoe, Warren and Whitehall Watersheds] includes part of the Nipmuck community of Hassanamesitt, established in the seventeenth century in what is now Grafton. Archaeological sites associated with that community are likely to be located within the proposed ACEC....

MHC's Inventory of the Historic and Archaeological Assets of the Commonwealth also lists more than 100 recorded historic structures, landscapes, and other properties such as cemeteries that are located within the proposed MWWW ACEC....

In summary, the proposed Miscoe, Warren and Whitehall Watersheds ACEC contains significant historic and archaeological resources. The archaeological resources can provide important information for our understanding of Native American and EuroAmerican history. Surviving eighteenth and nineteenth century structures and landscapes have helped preserve the historic character of this area....

The nomination document also provides extensive information about the historic and archaeological resources of the ACEC.

Special Use Areas

The ACEC regulations cite "undeveloped or natural areas, public recreational areas, or significant scenic sites" as examples of "special use areas." Undeveloped or natural areas have already been described in the sections above. These areas are a central feature of the ACEC.

There are also extensive public recreational areas within the ACEC. The GIS maps provided for the nomination review show the location and extent of state, municipal and privately owned open space. Geographic analysis indicates that approximately 2,400 acres of open space land, or 28%, are located within the ACEC, as follows: state, 1,810 acres, or 21%; municipal, 570 acres, or 7%; and private nonprofit, 20 acres (less than 1%). (These figures do not include the 1,490 acres of Chapter 61 lands that are often included in open space calculations. However, Chapter 61 land is a temporary, not a permanent, protection.) The state lands are all portions of the Upton State Forest, owned by the Department of Environmental Management, and provide an extensive system of public trails and excellent public access. About 230 acres of land within the Hopkinton portion of the ACEC are part of the Upton State Forest, and in Grafton, this figure is about 1,580 acres. Major town-owned recreational lands within the ACEC include Silver Lake, the 52-acre Merriam Road Conservation Area, and the 48-acre Blithewood Property in Grafton; and the 230-acre Warren Brook Watershed Conservation Area in Upton.

Finally, a large portion of the area in Grafton is included in the 1982 Massachusetts Scenic Landscape Inventory prepared by the Department of Environmental Management. In the Inventory, “Distinctive” and “Noteworthy” classifications and maps are provided for about 9% of the Commonwealth’s very best landscapes. These areas in Grafton are classified as “Noteworthy,” and include the rolling farmlands, hillsides, meadows and wetlands that have characterized this area for generations.

Resource Analysis and Mapping

The Department of Environmental Management, in the course of administering the review of the nomination, prepared a series of environmental resource maps regarding the nominated area. This information was mapped using the Geographic Information System (GIS) of the Executive Office of Environmental Affairs (EOEA). The maps, which were used to assist in the evaluation of the nomination and the determination of final boundaries, are part of the public record of the Miscoe, Warren and Whitehall Watersheds Resource Area ACEC designation, and are on file at the offices of the ACEC Program at the DEM, Division of Resource Conservation.

The EOEA GIS was used to map and evaluate several categories of information: surface waters and drainage basins; wetlands; public drinking water supplies and aquifers; floodplains; rare and endangered species habitat; land use; Chapter 61 (forestry), 61A (agriculture), and 61B (recreation) properties; scenic landscapes; and protected open space, conservation and recreation lands owned by federal, state, and municipal governments and nonprofit organizations.

The resources of the area are further summarized below in the Discussion of the Criteria for Designation.

III. Boundary of the Miscoe, Warren and Whitehall Watersheds ACEC

Upon review of the boundary as recommended in the nomination letter, oral testimony presented at the public hearing, correspondence submitted to the Secretary, and information gathered in the course of EOEA agency review, the final boundary of the ACEC is reduced in size as compared to the boundary proposed in the nomination, and includes several modifications and minor adjustments. According to Geographic Information System (GIS) data provided by the Department of Environmental Management, the nominated boundary included approximately 9,560 acres. According to GIS data, the final ACEC boundary includes approximately 8,700 acres.

Discussion of Final ACEC Boundary

Boundary Modifications

The final ACEC boundary, as compared to the boundary proposed in the October 14, 1999 ACEC nomination, was modified in four locations. The two largest changes excluded the area north of the Massachusetts Turnpike in Grafton, and the area west of the Grafton and Upton Railroad right-of-way in Grafton. Two minor boundary adjustments were made in the Pigeon Hill area of Grafton and the Pratt Hill area of Upton. No land was included within the final boundary of the ACEC that was not part of the original nomination.

The area north of the Massachusetts Turnpike in Grafton - bounded generally by Westboro Road and the Grafton-Westborough town line to the west and north and east, and by the Turnpike to the south - was not included because most of this area drains northerly away from the Miscoe Brook sub-watershed, to the Sudbury River sub-watershed of the SuAsCo (Sudbury-Assabet-Concord) Watershed. Surface water and stormwater drainage and wildlife habitat in this area are generally cut off from the Miscoe, Warren and Whitehall watersheds by the barrier of the Turnpike. However, the rare species habitat located in this area north of the Turnpike, and the surface waters and wetlands that drain southerly to Miscoe Brook – although not included within the ACEC – merit special attention and review because of their proximity to the ACEC and potential impacts to the resources of the ACEC.

The area west of the Grafton and Upton Railroad in Grafton, which I will refer to as the Keith Hill area, was not included within the final ACEC boundary. In the nominated boundary, this area was bounded generally by portions of Browns Road, Old Upton Road, Keith Hill Road, and the New England Power Company right-of-way to the north and west and south, and by the railroad right-of-way to the east. To the north and south of the Keith Hill area, the nominated boundary followed the railroad right-of-way north to the Pigeon Hill area and south into Upton. Most of the Keith Hill area is located within the Miscoe Brook watershed, draining into Miscoe Brook and Silver Lake. An area south of the Keith Hill area, extending into Upton, was not included in the nomination, but is also part of the Miscoe Brook watershed, draining into Miscoe Brook and Lake Wildwood. A former road, shown on the USGS topographical map, which approximated the Miscoe Brook drainage divide and extended from Keith Hill Road southerly to Milford Road, may have provided a suitable means to continue the nominated boundary south into Upton. By using this former road, a potential boundary could have included the Keith Hill area and the area south of Keith Hill. This would have been consistent with ACEC Program guidelines to use roads, right-of-ways and other public bounds where possible to delineate nominated or final ACEC boundaries. However, this former road shown on the USGS map no longer exists as a public roadway or right-of-way, and no other suitable potential ACEC boundary could be identified in the nomination review process. Rather than include the Keith Hill area and not the area to the south of it, the final ACEC boundary is more consistent by following the railroad right-of-way from Sibley Street in Grafton to Glen Street in Upton. However, it is important to add that any proposed development in this area of Grafton and Upton, located west of the former railroad and that drains into Miscoe Brook, Silver Lake and Lake Wildwood, merits special attention and review regarding potential impacts to the resources of the ACEC, especially to surface water quality, ground water, and rare species habitat.

In the area of Pigeon Hill in Grafton, the ACEC boundary was reduced slightly to follow the road layout of Woodside Drive from Chestnut Street to Pigeon Hill Drive. The originally proposed boundary in this location followed a road shown on the USGS topographical map, but this road does not exist on the ground

or on Town Assessors Maps. The intent of the proposed boundary was to follow Woodside Drive for this segment of the ACEC boundary. In the area of Pratt Hill in Upton, the ACEC boundary was reduced slightly to follow the Upton State Forest boundary from Warren Street to the New England Power Company right-of-way. Town Assessors maps currently do not show the entire location of the El Paso/Tennessee Gas Pipeline right-of-way (used as a boundary in the nomination) from the State Forest to the New England Power Company right-of-way, so the State Forest Boundary was used for this segment of the boundary.

Other Proposals to Modify the Nominated Boundary

Several proposals to change the nominated ACEC boundary were submitted in the course of the public review.

Two requests to expand the final boundary to include land adjacent to the proposed boundary were submitted by residents and landowners in Grafton and Hopkinton. The property in Grafton is located adjacent to the nominated and final ACEC boundary along the Grafton and Upton Railroad right-of-way, within the area of land located west of the former railroad line (see the discussion of this resource area above). The property in Hopkinton is located adjacent to the proposed and final boundary along the Upton State Forest boundary. Both proposals include resources related to the ecosystem of ACEC, have merit, and reflect the owners' values of dedicated and thoughtful environmental resource stewardship (see also the discussion below regarding additional important resource areas in Hopkinton). However, ACEC Program guidelines for the delineation of ACEC boundaries discourage the use of private property lines for use as ACEC boundaries, and these requests must be respectfully declined.

A request to exclude approximately 90 acres of private property, located in Upton in the southeast portion of the ACEC and owned by a sand and gravel company, must be respectfully declined.

A compromise proposal to reduce the boundary of the ACEC was submitted by State Representative George Peterson, Jr. at the May 18 public hearing. Elements of this proposal were addressed in reducing the size of the final boundary by excluding areas north of the Massachusetts Turnpike and west of the Grafton and Upton Railroad right-of-way in Grafton (see above). However, other aspects of the proposal would have eliminated resources and land areas essential to the ACEC, and must be respectfully declined.

Proposals for Future Study and Consideration

Following the May 18 public hearing, and in the course of EOEA agency review of the nomination, several resource areas were identified for future study and consideration by the towns and residents, and for potential future inclusion in the Miscoe, Warren and Whitehall Watersheds Resource Area ACEC or for separate ACEC nominations, as follows:

- The Town of Upton public water supply well field located south of Glen Street is an important part of the overall resource complex of the ACEC, and could be added to the ACEC using a series of public roads following Route 140 south of Glen Street, Russell Street, Farm Street, Hartford Street, and the Grafton and Upton Railroad right-of-way. This relatively small area includes important resources: the confluence of Miscoe and Warren Brooks; associated floodplains and wetlands; and a public water supply well, high yield aquifer and delineated Zone II aquifer recharge area.

- The wetlands corridor in Hopkinton that extends from the ACEC boundary to Whitehall Reservoir merits further study either as a potential addition to the current ACEC, or as part of a larger ACEC nomination for the Whitehall Corridor (see below). This relatively small area includes another portion of the Upton State Forest just outside of the current ACEC, as well as private open space parcels containing resources related to the ACEC (see discussion above regarding Hopkinton resident proposal to include land within the ACEC).
- The Whitehall Corridor ACEC proposal, submitted to me for review by the Hopkinton Planning Board on October 14, 1999, and subsequently withdrawn by the Board on January 13, 2000, merits further study and discussion within the town. This proposal would connect the Miscoe, Warren and Whitehall Watersheds ACEC to the Cedar Swamp ACEC in Hopkinton and Westborough. My November 14, 1999 letter to the Board requesting additional information can serve as a starting point for further research, study and discussion.
- The Mill River corridor extends southward from the ACEC and includes a variety of resources, including wetlands, floodplains, surface waters, aquifers and protected open space. I encourage the towns and residents of this area, and the Blackstone Watershed Basin Team, to target this area for further research and study.

Staff of the ACEC Program and other EOEA agencies can provide further information and technical assistance regarding these proposals.

Final ACEC Boundary Description

The final boundary is shown on the attached map taken from the Milford, Massachusetts 1982 (double quadrangle) United States Geological Survey (USGS) 7.5 minute series, 1:25,000-scale metric topographic quadrangle map. An official map and supplemental maps are on file at the offices of the ACEC Program at the DEM, Division of Resource Conservation.

The USGS map is supplemented by the following maps:

- Town of Grafton Assessors Map Sheet 66 (July, 2000), showing Chestnut Street, Woodside Drive, and Pigeon Hill Drive; and
- Town of Upton Assessors Maps 19, 204 and 15 (revised to January 1, 2000), showing Merriam Way, Jonathan's Way and Ephraim's Way.

Specifically, the boundary of the ACEC is defined as follows (moving in a counter-clockwise direction from the north):

Beginning in the Town of Grafton, at the intersection of Old Westboro Road and the Massachusetts Turnpike (I-90), the ACEC boundary proceeds southwesterly along Old Westboro Road to the intersection of Old Westboro Road and North Street; thence southerly along North Street to the intersection of North Street and Chestnut Street; thence easterly along Chestnut Street to the intersection of Chestnut Street and Woodside Drive; thence southerly, easterly, southerly, and westerly along Woodside Drive to the intersection of Woodside Drive and Pigeon Hill Drive, as shown on the Town of

Grafton Assessors Map Sheet 66; thence southerly along Pigeon Hill Drive to the intersection of Pigeon Hill Drive and Route 140 (Upton Street);

Thence easterly along Route 140 to the intersection of Route 140 and Sibley Street; thence southwesterly along Sibley Street to the intersection of Sibley Street and the Grafton & Upton Railroad right-of-way; thence southeasterly along the Grafton & Upton Railroad right-of-way, into the Town of Upton, and continuing along the right-of-way to the intersection of the railroad right-of-way and Glen Street; thence northerly along Glen Street to the intersection of Glen Street and Route 140 (Grafton Street)(also shown as Main Street on the Town of Upton Assessors Map 19); thence southerly along Route 140 to the intersection of Route 140 and Merriam Way; thence northeasterly along Merriam Way to the first intersection of Merriam Way and Jonathan's Way, thence northerly and easterly along Jonathan's Way to the intersection of Jonathan's Way and Ephraim's Way, and thence northerly along Ephraim's Way to the intersection of Ephraim's Way and Warren Street, as shown on the Town of Upton Assessors Maps 19, 204 and 15;

Thence northerly along Warren Street to the intersection of Warren Street and the boundary of the Commonwealth of Massachusetts (Department of Environmental Management) Upton State Forest; thence northeasterly along the southern and eastern perimeter of the Upton State Forest (SF) boundary to the intersection of the boundary and the New England Power Co. right-of-way; thence easterly along the New England Power Co. right-of-way to the intersection of the right-of-way and Hopkinton Road; thence northeasterly along Hopkinton Road to the intersection of Hopkinton Road and Forest Road; thence northerly along Forest Road to the intersection of Forest Road and the Upton-Hopkinton-town line;

Thence northerly along the Upton-Hopkinton town line to the intersection of the town line and the Upton SF boundary; thence northerly along the eastern perimeter of the Upton SF boundary in the Town of Hopkinton to the intersection of the Upton SF boundary and Pond Street; thence northerly along Pond Street to the intersection of Pond Street and Spring Street; thence southwesterly along Spring Street to the intersection of Spring Street and the Upton SF boundary; thence westerly along the Upton SF boundary to the intersection of the boundary and the Hopkinton-Upton town line;

Thence northerly along the Hopkinton-Upton town line to the intersection of the Hopkinton-Upton-Westborough town lines; thence westerly along the Upton-Westborough town line to the intersection of the town line and the Massachusetts Turnpike; thence westerly along the Massachusetts Turnpike in the Town of Upton to the intersection of the Turnpike and the Upton-Westborough town line; thence westerly along the Upton-Westborough town line to the intersection of the Upton-Westborough-Grafton town lines; thence northerly along the Grafton-Westborough town line to the intersection of the town line and the Massachusetts Turnpike; thence westerly along the Turnpike in the Town of Grafton to the beginning point of the boundary at the intersection of the Turnpike and Old Westboro Road.

Unless otherwise specified, the boundary described above extends to and includes the entire width of the rights-of-way of public and private streets, roads and highways, and other rights-of-way such as railroads and utility easements.

If, in the future, additional property is acquired by the Department of Environmental Management adjacent to and extending outside of any DEM property boundaries that delineate the current ACEC boundary, the ACEC boundary shall expand to include this additional property.

The size of the Miscoe, Warren and Whitehall Watersheds ACEC, according to GIS data, is approximately 8,700 acres. The approximate acreage located in each municipality is as follows:

Grafton	3,010 acres
Hopkinton	460 acres
Upton	5,230 acres

IV. Discussion of the Criteria for Designation

In the review process leading to the designation of a nominated area, the Secretary must consider the factors specified in 301 C.M.R. 12.09 of the ACEC Regulations regarding the designation of Areas of Critical Environmental Concern. As stated in the regulations, the factors need not be weighed equally, nor must all of these factors be present for an area to be designated. The strong presence of a single factor may be sufficient for designation.

Based on the information presented in the letter of nomination, at the public hearing, in written comments received throughout the public review process, and in agency research and review, I find the following factors relevant to the designated ACEC.

(1) Threat to the Public Health through Inappropriate Use

According to written comments regarding the nomination submitted by the Massachusetts Department of Environmental Protection (DEP), there are significant drinking water resources present within the ACEC. These include a Zone II aquifer recharge area for a public well in Upton; tributaries (also classified as Outstanding Resource Waters pursuant to 314 C.M.R. 4.00, Massachusetts Surface Water Quality Standards) to a surface water drinking reservoir (Sandra Pond) in Westborough; a portion of an Interim Wellhead Protection Area (IWPA) for two public wells in Hopkinton for which DEP is currently defining a Zone II; a non-transient, non-community public well providing 100% of the drinking water at the Touchstone Community School in Grafton; and medium yield aquifer areas in Grafton. I find that a significant threat to the public health exists through potential inappropriate uses of the resources of the area.

Inappropriate development in the floodplains of the ACEC would also constitute a threat to public health. Potential adverse impacts to the water quality of Silver Lake, a public swimming area, also constitute a threat to public health. Finally, as stated in the nomination document, continued high-quality inputs from these headwater tributaries to the West River and Blackstone River systems are essential to help maintain and restore water quality downstream. Thus inappropriate use or contamination of the Miscoe or Warren Brook watersheds could pose a threat in downstream communities as well.

(2) Quality of the Natural Characteristics

The high quality of the natural characteristics of the ACEC is described extensively in the nomination document and in public comments received during the public review. These high quality resources range from the extensive surface water and wetlands system of Miscoe Brook to the agricultural and forested landscapes that extend from Grafton into Upton and Hopkinton. The cold water fisheries of Miscoe and Warren Brooks, which include reproducing populations of native trout, and the extensive and diverse wildlife

habitat, including rare species habitat for five state-listed species, reflect the high quality of the natural characteristics of the ACEC. This criteria alone would support designation.

(3) Productivity

As indicated in the Quality of the Natural Characteristics of the area, the Miscoe, Warren and Whitehall Watersheds Resource Area is rich in hosting a high diversity of wildlife. Preserving these unfragmented ecosystems is a key to preserving biodiversity and the productivity of native habitats in Massachusetts.

(4) Uniqueness of Area

The uniqueness of the area also strongly supports designation. According to written comments regarding the nomination submitted by the Massachusetts Natural Heritage and Endangered Species Program, the unique biological value of the area is highlighted by the unfragmented nature of much of the area. The final area included within the ACEC includes 5 state-listed species: the Spotted Turtle, Wood Turtle, and Jefferson's Salamander, listed as species of Special Concern; the Marbled Salamander, listed as a Threatened species; and a dragonfly, listed as an Endangered species. Rare species habitat covers approximately 1,680 acres, or 19% of the ACEC, according to GIS mapping and data.

According to written comments regarding the nomination submitted by the Massachusetts Historical Commission (MHC), the ACEC includes a wide range of significant historic and archaeological properties. Known archaeological sites within the area, associated with Native American settlement of the Blackstone Valley, date back 3,000-5,000 years. Part of the Nipmuck community of Hassanamesitt, established in the seventeenth century, was located within the Grafton portion of the ACEC. The MHC's Inventory of the Historic and Archaeological Assets of the Commonwealth lists more than 100 properties within the nominated area. MHC concludes that the ACEC contains significant historic and archaeological resources.

(5) Irreversibility and Magnitude of Impact

The nomination document describes the high degree of interdependence of the ecosystems of the ACEC, and the opportunity to preserve this significant natural area located at the headwaters of the Blackstone River Watershed. The Miscoe and Warren Brook ecosystems also extend to include an area of highly significant rare species habitat in Hopkinton and the Sudbury River Watershed. The loss of the opportunity to preserve and manage the rich diversity and quality of these resources for present and future generations would be irreversible should habitat fragmentation replace interconnected ecosystems.

(6) Imminence of Threat to the Resource

Throughout the public review the intense development pressures on the communities of Grafton, Hopkinton and Upton were cited as reasons to work together, with the help and support of an ACEC, to preserve the resources of the Miscoe, Warren and Whitehall Watersheds. This area, located in the vicinity of I-495 and the Massachusetts Turnpike, indeed is facing strong and unrelenting growth and development pressures, and I find that these pressures are an imminent threat to the resources, character and quality of life of these communities and the region.

(7) Economic Benefits

The intrinsic natural, cultural and historic values of the area, and the wise preservation and management of these resources, can only help to support the quality of life of the communities of Grafton, Hopkinton, and Upton, and thus provide indirect long-term economic benefits to the towns.

According to written comments regarding the nomination submitted by the Massachusetts Department of Food and Agriculture, agriculture is a multi-faceted component of the watersheds of the ACEC. Maintaining a small-scale, locally owned and land-based economy can provide local products to residents, preserve substantial amounts of open space including grasslands, tilled fields, scenic areas and riparian buffers, and contribute to the vitality and environmental quality of communities. Cultural resources associated with farms and historic field patterns add to the sense of continuity of residents' lives, and to the richness and essence of working landscapes of small towns.

Furthermore, the protection and preservation of surface watersheds and aquifers located within the ACEC that provide current public water supplies, as well as potential future supplies, will yield long-term economic benefits.

(8) Supporting Factors

The public debate over the nomination of the Miscoe, Warren and Whitehall Watersheds Resource Area as an ACEC was lively, sometimes contentious, with a high degree of public participation. Despite the demonstrated opposition to the ACEC, I find that the quality and uniqueness of the resources of the area, in addition to other factors described, strongly supports designation. There is also very strong support for ACEC designation, as indicated at public meetings, the public hearing, and in the written comments submitted regarding the nomination.

Summary of Comments

Approximately 200 comments plus three form letters from over 275 citizens were received in the course of the public participation and review process. Regarding municipal comment letters, in addition to the original letter of nomination submitted by the Boards of Selectmen, Planning Boards and Conservation Commissions of the Towns of Grafton, Hopkinton, and Upton, the Hopkinton Open Space Preservation Commission and the Upton Historical Commission and Upton Water and Sewer Advisory Board submitted letters of support for the nomination. The Grafton Board of Selectmen, Planning Board and Conservation Commission submitted second letters of support for the nomination in February, 2000. The Grafton Board of Selectmen and Planning Board submitted letters in June withdrawing their support of the nomination. The Grafton and Upton Conservation Commissions submitted additional letters of support for the nomination.

State Senator Guy W. Glodis and Representative George N. Peterson, Jr. submitted letters of support with the October, 1999 ACEC nomination. They subsequently withdrew their support. Representative Peterson submitted a compromise boundary proposal at the May 18, 2000 public hearing, as noted above. As stated at the May 18 public hearing, Representative Barbara Gardner communicated support of the nomination verbally to the Secretary's Office.

Written comments were submitted by 7 regional and state agencies. Letters of support for ACEC designation were submitted by the Physical Development Committee of the Central Massachusetts Regional Planning

Agency; the Drinking Water Program and the Central Regional Office of the Massachusetts Department of Environmental Protection; the Massachusetts Historical Commission; the Natural Heritage and Endangered Species Program of the Massachusetts Division of Fisheries and Wildlife; the Office of Historic Resources of the Massachusetts Department of Environmental Management; and the Massachusetts Watershed Initiative of the Massachusetts Executive Office of Environmental Affairs. The Massachusetts Department of Food and Agriculture provided information about the importance of agriculture within the nominated area.

Written comments were submitted by 8 organizations. Letters of support for the nomination were submitted by the Blackstone River Valley National Heritage Corridor Commission; the Blackstone River Watershed Association; the Grafton Land Trust; the Hopkinton Area Land Trust; the Massachusetts Audubon Society; the Metacomet Land Trust; and the Touchstone Community School, in Grafton. The Massachusetts Farm Bureau Federation submitted written comments opposing the nomination.

Approximately 87 individual letters of support for the nomination were submitted. Approximately 36 letters opposing the nomination were submitted. At the public hearing, 39 individuals provided written and oral support for the nomination, and 18 individuals provided oral and written testimony opposing the nomination.

Three different form letters opposing the nomination were submitted by approximately 280 individuals. Approximately 155 of these letters were submitted by individuals from Grafton, approximately 95 from cities and towns other than Grafton, Upton and Hopkinton, and approximately 30 from Upton. These figures may include duplicate names or addresses.

Additional Factors Supporting Designation

A large amount of the area – approximately 2,400 acres, or 28 percent - is already owned by state and local government for recreation or conservation purposes, which is also a supporting factor for designation. Given the current amount of protected open space, wetlands and surface waters, open farmland and forest lands under Chapter 61 programs, and other undeveloped private lands, there is an opportunity to sustain the ecological viability, natural characteristics and unique qualities of this ACEC. I find this a goal of immense value to the Blackstone watershed, and future generations of these towns and of the region.

The ACEC is located in three towns, and borders on a fourth (Westborough). It is important at this point to establish a means to coordinate town and regional priorities for the area, and to build bridges within the communities. I strongly encourage the formation of an ACEC stewardship group. The nomination document describes important stewardship goals and objectives for the area. These goals and objectives underscore the importance of coordination between the communities, and between all levels of government, community and environmental organizations, and residents. The ACEC designation can provide a framework and encourage this coordination and positive stewardship, and EOEA and ACEC Program staff can provide technical assistance to a stewardship committee.

In addition, the Miscoe, Warren and Whitehall Watersheds ACEC can provide a regional planning framework for environmental resource and open space preservation and management to take advantage of the goals, technical assistance and outreach of the Executive Office of Environmental Affairs' Watershed Initiative, Community Preservation Initiative, and Biodiversity Initiative.

Conclusion

Therefore, I am pleased to exercise the authority granted to me pursuant to Mass. Gen. L. ch. 21A, § 2(7), to designate the Miscoe, Warren and Whitehall Watersheds Resource Area as an Area of Critical Environmental Concern. The significance of this ACEC requires that the highest standards of environmental review and protection be applied to actions that may affect its resources.

(signed) Bob Durand July 28, 1983
Secretary of Environmental Affairs

[Original document reformatted for ACEC Program website, January 2005]