1 INTRODUCTION

Alewife Reservation and the Alewife Brook Parkway are part of the Metropolitan Park System, the first regional park system in the country. Established in 1893, the system today comprises almost 20,000 acres of woodlands, rivers, coastline, wetlands, and urban parklands.

The Alewife Brook and its adjacent Parkway are important linear connections within the Metropolitan District Commission's park system. Near the end of the 19th century, the visionary landscape architect Charles Eliot planned the Alewife Brook Parkway as one link in his network of carriageway parks winding their way through the suburbs of Boston. Such carriageways, and later parkways for automobiles, were a synthesis of road and adjacent landscape designed for driving as a leisurely, recreational, and aesthetically enjoyable activity. Increased traffic and other development pressures have obscured the parkland component so that the road now dominates public perception of many historic parkways.

The Alewife Reservation, which has existed since the early 20th century, was purchased with the intent to fulfill Eliot's desire to connect the Mystic River with Fresh Pond. The intrinsic ecological value of the Alewife area was not recognized at the time.

Today the Reservation is one of Boston's largest urban wilds, a remnant of the Great Swamp that once stretched from Fresh Pond to Spy Pond. This relic of the former expanse of wetlands still provides valuable ecological functions such as wildlife habitat and filtering stormwater runoff. It also

serves as critical floodplain. These ecological values are being eroded as connections to other natural resource areas are lost to urban development.

The Alewife area's ecological and recreational virtues are often overlooked because it receives stormwater and combined sewer overflows from surrounding communities and is therefore perceived as a source of pollution and flooding. The Alewife Brook, the central landscape feature of the Alewife Brook corridor, lies unseen from the Parkway and fenced off from walkers, joggers and bicyclists. The Reservation has been used for Route 2 construction fill, illegally used as dumping grounds, inhabited by homeless people, encroached upon by abutters, and intensely developed along its border. Clearly the Alewife Reservation and Alewife Brook Greenway require and deserve renewed attention, resources and stewardship.

A. THE NEED FOR A MASTER PLAN

The Metropolitan District Commission (MDC) is a major property owner in the Alewife area, having management control of the majority of the green space located there, including the 115-acre Alewife Reservation and the 2.5-mile-long Alewife Brook and adjacent Parkway. The MDC has a renewed commitment to improve the Alewife Reservation and Alewife Brook corridor. The MDC commissioned this Master Plan to provide recommendations and guidelines by which the desired improvements of the Alewife Reservation and Alewife Brook corridor could be achieved.

This Master Plan envisions significant restoration of wildlife habitat and ecological and hydrological functions; enhanced recreational and educational opportunities; and improved connections to the system of protected natural areas and corridors in metropolitan Boston. In particular, the purpose of this Master Plan is to address the following key principles of ecological restoration deemed necessary by the MDC:

FIGURE 1. The great blue heron is one of many wildlife species that are found in the Alewife Reservation.

- Preserve and protect existing aquatic and riparian (shoreline) resources from threats of further degradation.
- Restore, wherever possible, ecological structure and function in ways that are self-sustaining through time. Use bioengineering techniques, which rely on native plants and natural reinforcing methods.
- Consider recommendations for the Reservation and the Alewife Brook corridor within a larger watershed and landscape context.
- Address ongoing causes of degradation from a multidisciplinary perspective, applying the principles of geomorphology, ecology, hydrology, and hydraulics to develop comprehensive solutions.
- Add public access and recreational components.

This Master Plan presents a comprehensive set of planning and design recommendations. Both short-term and long-term actions are proposed to set this process in motion. The actions described in this document should be understood as setting the foundations for a sustainable future in which people and wildlife can harmoniously coexist in an urban wetland–river corridor landscape.

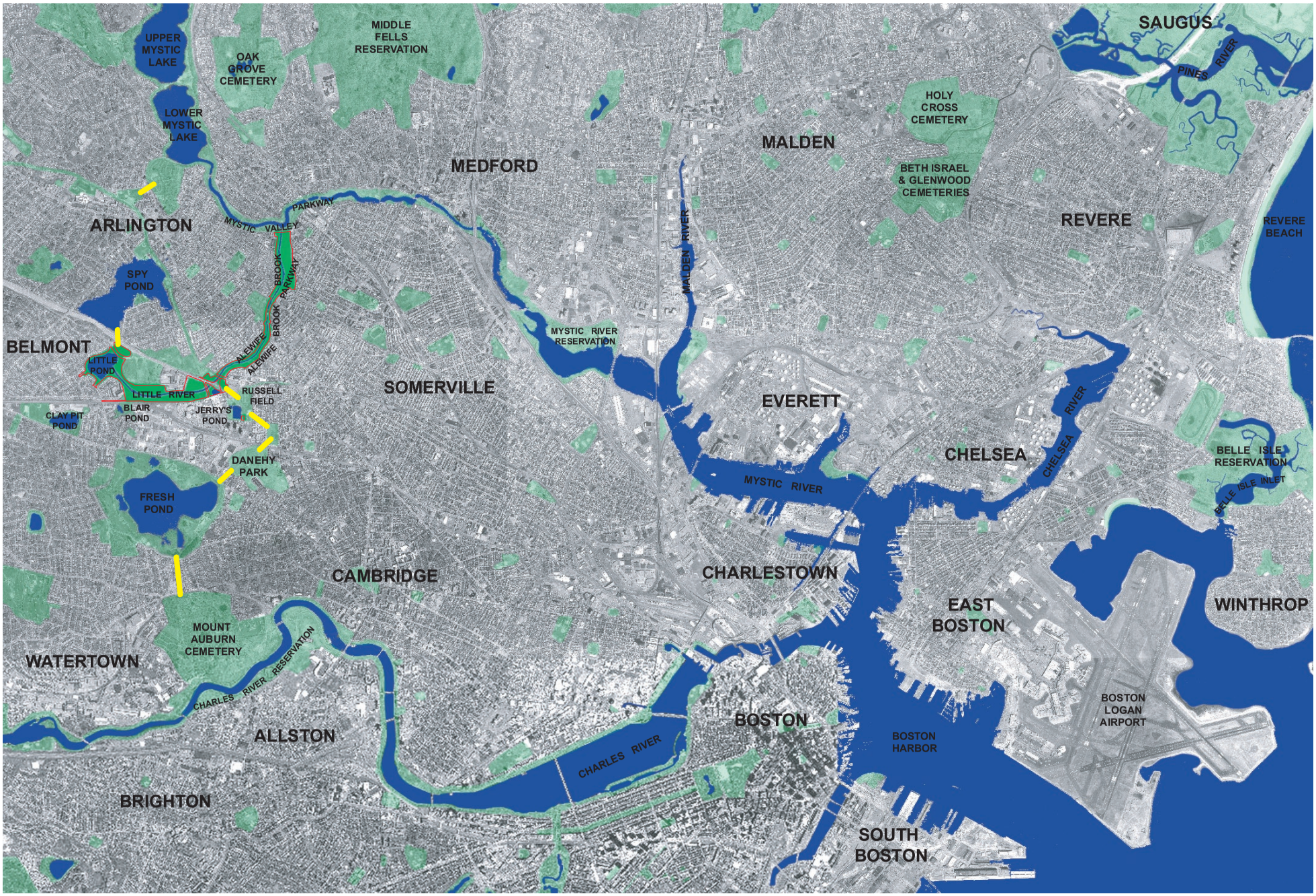

Figure 2. The study area for this Master Plan is outlined in red. The shaded green areas show major public and private open space areas in the metropolitan Boston region. The Alewife Brook joins the Mystic River, which empties into Boston Harbor.

B. THE SETTING FOR THE MASTER PLAN

B1. The Study Area

Alewife Reservation and Alewife Brook lie within the 9-square-mile Alewife Brook subwatershed. This subwatershed in turn forms part of the Mystic River watershed, a 79-square-mile area that drains to Boston Harbor.

The study area of this Master Plan encompasses the Alewife Reservation and the Alewife Brook Greenway north of Route 2 and is located along the borders of four towns and cities, namely, Arlington, Belmont, Cambridge, and Somerville (see Figure 2).

The Alewife Reservation roughly spans the area from Little Pond to the west, Yates Pond to the east, the Boston and Maine Railroad and Blair Pond to the south, and the Acorn Office Park [formerly Arthur D. Little (ADL) headquarters] and Route 2 to the north (see Appendix E, Master Plan for boundary-defining features). However, the study area excludes Blair Pond and its adjacent land (7 acres) from the 115-acre Reservation because a planning document was recently completed for Blair Pond (MDC, 1999). Interested citizens can contact the MDC planning office for a copy of the plan and brochure.

The Alewife Brook Greenway is a corridor that includes the Alewife Brook, the open space/parkland on the east and west sides of the brook, and the Alewife Brook Parkway. (The Parkway itself comprises the road surface, planted median, and rows of planted trees on both sides of the roadway.) The Greenway stretches between the Route 2 rotary (the former "Dewey and Almy rotary") and the Mystic Valley Parkway. The area west of the brook (Arlington side) is spacious, with an average width of 300 feet whereas on the eastern side (Somerville), the open space consists of a narrow strip 50 feet wide. The Parkway lies to the east of the brook.

Alewife Brook Parkway stretches from the Route 2 rotary south to the Fresh Pond rotary. This section is not included in the study area. Recent improvements have been made by MDC along this section.

B2. The Ecological Value of Alewife Reservation and Alewife Brook

The Alewife Reservation and Alewife Brook are examples of two important ecological systems: an urban wetland and an urban river corridor.

Urban Wetland

Wetlands such as those found in the Alewife Reservation are a key part of the hydrological cycle, and have significant impacts on both water quantity and quality. Wetlands slow down and absorb stormwater runoff, then gradually release the stored water over a prolonged period. The resulting reduction of peak flows helps to reduce flooding downstream. The slow movement of water through wetlands allows physical, chemical and biological processes to improve water quality by retaining and removing environmental contaminants such as heavy metals, phosphorous, and nitrogen.

FIGURE 3. This wetland is south of the Little River in the Reservation.

The complex physical form and variable water depths of wetlands allows emergent, submerged, and floating vegetation to develop, which in turn attracts a wide variety of animals for spawning, nesting, breeding, feeding, refuge from predators, and nursery rearing purposes. In highly developed areas such as Metropolitan Boston, an urban wetland can function as a refuge for a range of flora and fauna. In addition, because they constitute a transition between fully terrestrial and aquatic environments, wetlands provide a network of connections between other existing wildlife habitats.

Because Native Americans and European colonists often settled close to wetlands due to their role as food sources, these regions harbor a rich cultural heritage. Wetlands also offer myriad opportunities for natural history study and outdoor learning.

Urban River Corridor

As an urban river corridor, the Alewife Brook provides a number of significant ecological functions. Where the riparian (shoreline) edge is vegetated, surface water runoff is filtered before entering the river channel. Biochemical and physical processes remove contaminants and thereby improve water quality and protect downstream aquatic environments from diffuse pollution sources.

Rivers bounded by riparian forests act as corridors for the relatively safe movement of animals between isolated patches of habitat in a landscape that is increasingly fragmented by urban development. In many regions, river corridors serve as protected habitat for animals and support a biodiversity much greater than that found in nearby terrestrial, upland regions.

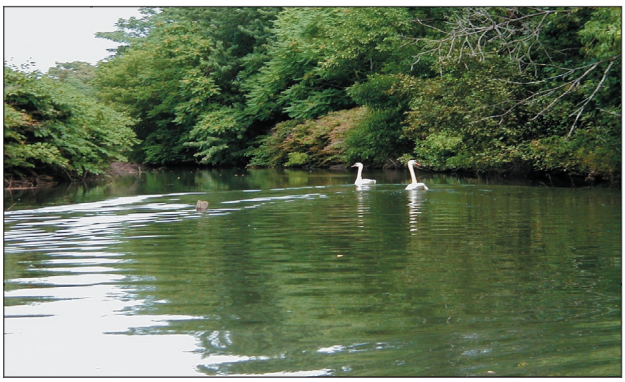

FIGURE 4. The Alewife Brook corridor between Broadway and the Mystic Valley Parkway Bridge

FIGURE 5. Confluence of Alewife Brook and Mystic River

Riverfronts have been and continue to be focal points for human economic and social activity. Particularly at the confluences of streams, which are depositional areas, artifacts of earlier human settlements are frequently found, making these important archeological sites. Contemporary uses of riverfronts range from the industrial to the recreational. People are drawn to rivers for contemplation, solace, and emotional rejuvenation, as well as for walking, birding, fishing, and more passive forms of recreation. Linear trail systems can provide extended routes for hikers and bicyclists uninterrupted by motorized traffic. Thus river corridors like the Alewife Brook can offer a respite from urbanization.

B3. Native American and Colonial Cultural History

The Alewife area is steeped in a rich cultural history. In pre-colonial times, Pawtuckeog Indians inhabited the area. Archeological evidence shows that a permanent winter camp existed at the confluence of the Menotomy River (now the Alewife Brook) with the larger Mystic River. In the spring of each year, these Native Ameri-

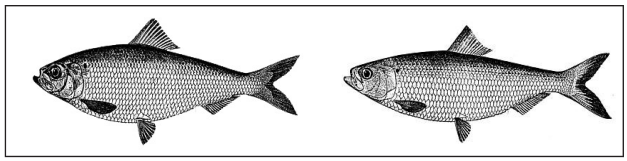

FIGURE 6. Alewife and blueback herring are the major anadromous fish species in the Alewife system.

cans would establish seasonal camps along the shores of Spy and Little Ponds, as well as on the natural high point (later referred to by European settlers as "Black Island") situated near the present-day Alewife subway station. The Pawtuckeog were drawn to this area by the annual runs of alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*), anadromous fish that migrate from the ocean to fresh water to spawn. In-stream fishing weirs along the Alewife Brook were used to gather the abundant fish, which were then dried, smoked, and stored for later use as a major winter food staple. High points in and around the marsh

FIGURE 7. A 1904 photograph showing agricultural activities near the border of the marsh, where flooding occurred only seasonally.

were used as hunting camps for parties pursuing the abundant waterfowl that the wetland supported. It was along the Alewife Brook that Squaw Sachem, a local tribal leader, deeded to

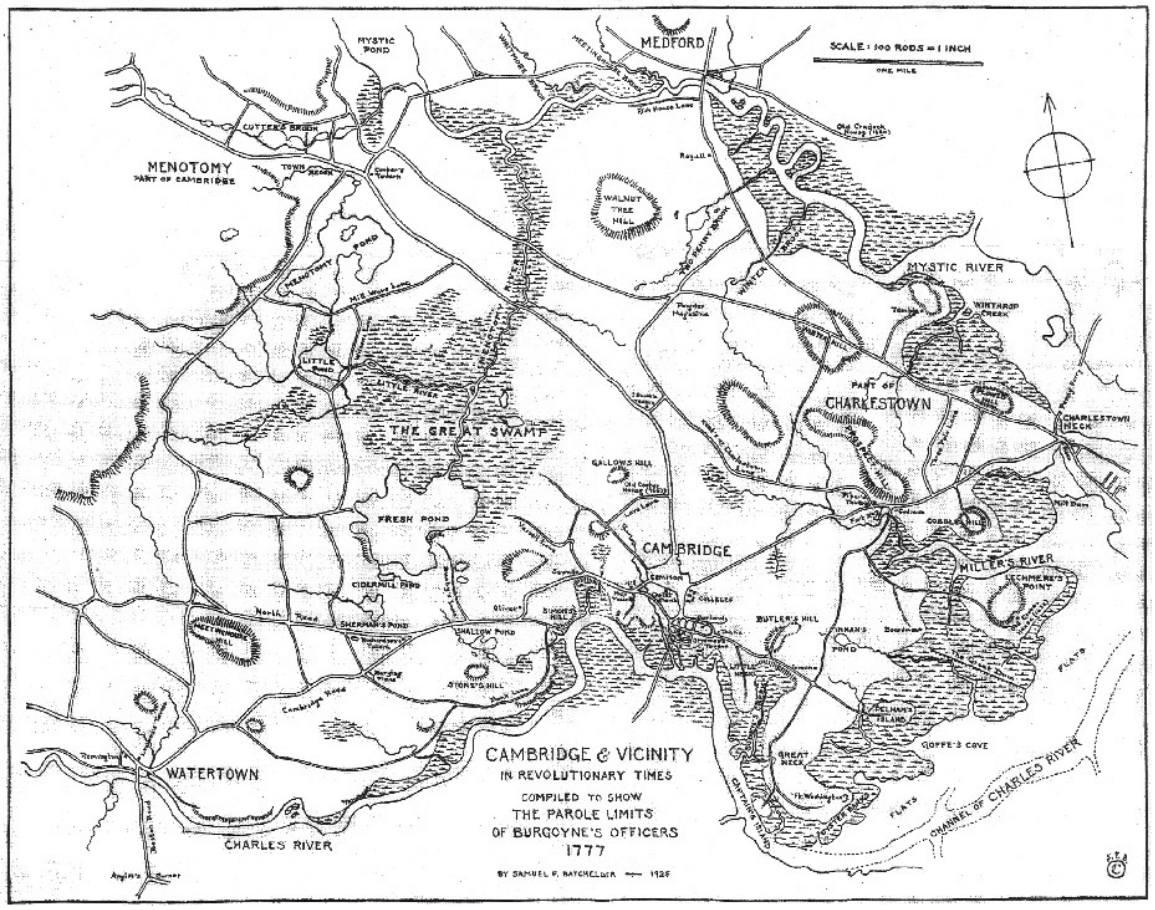

FIGURE 8. This historic map illustrates the extent of the Alewife water system when the Great Swamp was intact.

the colonists those lands that would later become the towns of Charlestown, Cambridge, and Watertown, in return for a small annual gift of corn and title to her wigwam overlooking Mystic Pond.

Given the proximity of the Alewife area to the developing towns of Boston and Charlestown, and the rich upland soils found around the perimeter of the tidal marsh, the area was used from the earliest days of European settlement in the Bay Colony. Soon to be referred to by the colonists as the "Great Swamp," the first inroads into the area were to establish the common grazing land on Black Island.

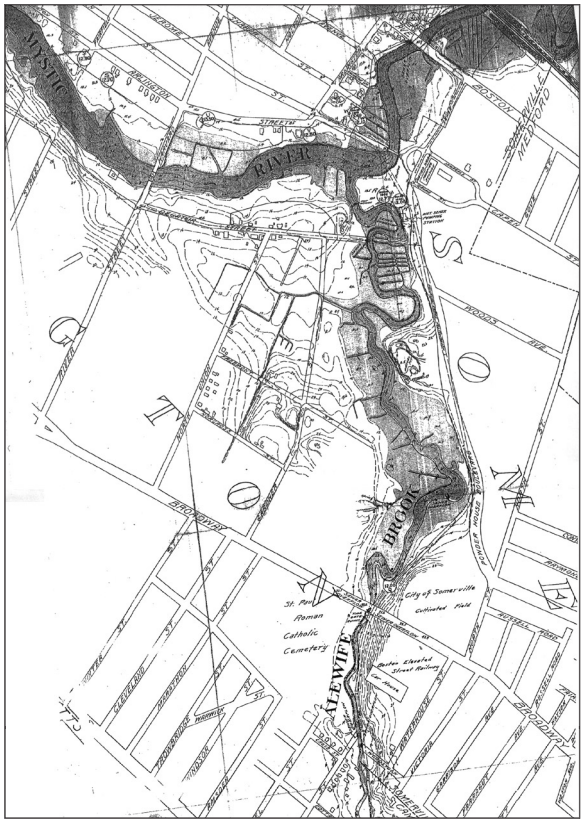

FIGURE 9. This historic map of the Alewife Brook shows its meandering course prior to channelization and straightening.

With the growth in population of Newtowne (now Cambridge), more of the marsh was ditched and drained, first for pasture land, and later for orchards. The last farm persisted until the early 1950s on what is now the Acorn Office Park. The first cartways penetrated the Great Swamp in the 17th century, linking Cambridge with Concord. Later, the British fled from the skirmishes at Concord and Lexington across the Alewife Brook at the current site of the Massachusetts Avenue bridge.

B4. Industrial Development

As industrialization took hold of the area at the beginning of the 19th century, residents saw the Great Swamp as an attractive location for industrial activities deemed undesirable in proximity to the developing town. Tanneries, slaughterhouses, glue factories, and transportation staging areas sprang up along the banks of Alewife Brook and were integral to supporting the cattle drives and markets that took place nearby at Porter Square. Ice harvesting at Fresh and Spy Ponds became one of the first international business ventures of the newly independent country, the ice being shipped around the world. However, it was the thick deposits of alluvial clay beneath the Great Swamp — a product of the last ice age — that would spawn the industry that would most transform the entire Alewife landscape.

From the middle of the 19th century through the first decades of the 20th century, numerous pits were dug into the Great Swamp to extract the valuable clay for brick making. Today, Yates, Jerry, and Blair Ponds are remnants of this period. Similar clay pits have since disappeared beneath Danehy Park and the Rindge Towers apartments. Along with the clay industry came roads and rail lines, ovens and warehouses, and housing developments and suburban infrastructure that would together accelerate the eventual filling of the Great Swamp.

In the 20th century, the Alewife area continued to develop. Residential development, iron works, chemical manufacturing plants, office buildings, the Fresh Pond Shopping Mall, a drive-in movie theater, automobile shops, landfills, gas stations, and entertainment clubs

have all left their mark on the landscape. Contaminated or waste disposal sites are another consequence of industrial development in this area; over 50 such sites exist on the periphery of the study area.

During the last decades of 20th century, the Alewife area became host to one of the more contentious environmental debates ever to occur in the Commonwealth of Massachusetts. The widening of the Route 2 Highway and the extension of the Red Line subway pitted groups of state and city planners and concerned citizens against one another and brought new attention to the area. (MDC opposition and public protest caused the proposed highway expansion to be shelved; the Red Line was extended from Harvard to Alewife, not to Arlington Heights as originally planned.) The long debate over the Red Line extension helped to preserve the Reservation as an urban wild; it had been slated for use as rail yards, which were subsequently moved underground.

Today, as the remaining green spaces within the Alewife area dwindle, heightened debates have begun again about how to maintain the last sliver of the Great Swamp that still exists within the Alewife Reservation, and how best to go about protecting it and the Alewife Brook Greenway from further degradation.

B5. Environmental Degradation

Development of the Alewife area has had its greatest influence on the area's hydrology. The gradual encroachment of the wetlands by colonial farms, industrial development and later suburban sprawl have all whittled away the Great Swamp through ditching, diking, draining, and dredging. Even so, during the middle of the 19th century, in the area that is today the Alewife Reservation, it was still possible to see a diversity of animals and plants.

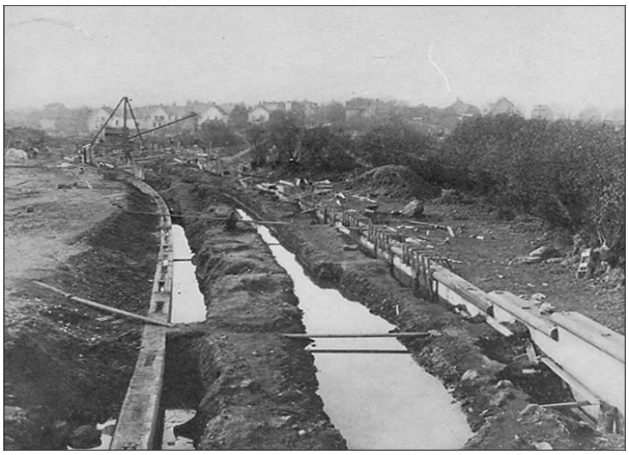

FIGURE 10. Construction of the straightened concrete channel for Alewife Brook in 1911

One of the largest hydrological changes occurred toward the end of 19th century when the connection of Alewife Brook to Fresh Pond was severed to preserve the water quality of the latter, which had become the drinking water supply reservoir for the City of Cambridge. In time, the Alewife Brook and several other inflowing tributaries would disappear under concrete and be all but lost to memory. The most serious hydrological alterations occurred in the first decade of the 20th century when the Craddock Dam was built on the Mystic River in Medford, thereby preventing tidal flows (and spawning fish) from moving upstream. What had once been a dynamic, tidally influenced marsh became a freshwater wetland in which mosquitoes bred and raised fears of potential

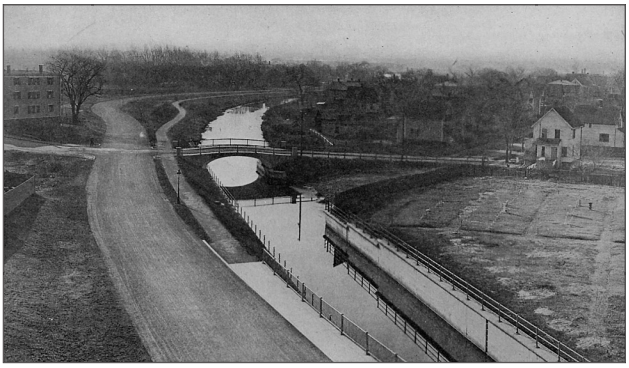

FIGURE 11. The Alewife Brook Parkway and Henderson bridge shortly after construction in 1916

malarial outbreaks. Consequently, a massive excavation project was undertaken between 1909 and 1912, and the formerly meandering Alewife Brook was straightened, deepened, and channelized. The hydraulic profile was modified and the stream restricted in its access to its floodplain, all in an effort to further drain the once Great Swamp. During the 1930s, in an effort to claim yet more land from the wetland, the Little River was moved to a new location, and its old course filled in.

The legacy of these hydrological changes has been a loss of over 90% of the surface area of the Great Swamp. Water that was once stored in the wetlands of the Great Swamp now has nowhere to go and backs up into the streets and basements of local residents. The remaining portion of the wetland, located within the Alewife Reservation and squeezed between Route 2 and several buildings to the north and the office developments and subway station to the south, is today simply incapable of absorbing all the stormwater runoff that enters into the system. As development within the watershed continues, and more land is paved over, flooding intensifies. Today, new plans are being considered to convert a portion of the Reservation into a constructed treatment wetland to remove contaminants from the stormwater entering the stream and as a vital component of Cambridge's effort to separate most of the currently combined sewer and stormwater flows.

C. THE MASTER PLANNING PROCESS

The Alewife area has been the subject of many studies and plans for both development and open space preservation. Starting in the mid 1970s, spurred by the growing controversies about the widening of Route 2 and the Red Line subway extension, and continuing until the present time, various plans have been made about how to best manage, develop or preserve the Alewife area. Topics have included industrial revitalization, sustainable development, wildlife preservation, stormwater management, transportation planning, open space management, brownfield redevelopment, office building construction, and river corridor park design.

With particular reference to the MDC's land, notable studies include two open space plans for the Alewife Reservation in 1978 and 1985, a restoration plan for segments of the Alewife Brook Parkway in 1996, and a Master Plan for Blair Pond in 1999. This current Alewife Master Plan builds upon past work and integrates many other technical studies that have been conducted over the years.

This Master Plan was developed through a multi-phase planning process. First, an inventory of physical, biological, and cultural resources in the study area was conducted. The information from the inventory was then used to formulate goals and objectives for the Master Plan.

Goals:

1. Improve water quality and restore natural hydrology.
2. Protect and enhance wildlife habitat.
3. Improve recreational, educational and other cultural opportunities.
4. Provide for maintenance that minimizes costs and maximizes effectiveness.

These goals and objectives, described in detail in Section 2B, were the framework for the subsequent Opportunities and Options phase, as well as for the development of specific recommendations discussed in Section 2D. At each phase, public meetings were held to provide a forum for concerned neighbors, abutters, local officials, and interest groups to comment on the elements of the developing Master Plan.

C1. Inventory of Resources

The Inventory of Resources consisted of a detailed program of site visits, research of previously published documents, compilation of additional relevant data from archives and libraries, and consideration of public comments. The physical resources assessed by the inventory included topography, geology, soils, hydrology, and geomorphology. Biological resources included fish, terrestrial plants and animals, habitat types, invasive species, rare or endangered species of special concern, and ecosystem functions. Finally, cultural and socioeconomic resources included historical sites, open space recreation areas, existing land uses, contaminated sites, utilities, transportation linkages, and residential areas. Section 2A provides a more detailed discussion of current site conditions as documented in the Inventory of Resources.

The inventory also includes a series of comprehensive maps identifying those locations in the Alewife Reservation and Alewife Brook corridor that are particularly significant.

C2. Opportunities and Options

In the Opportunities and Options phase, the planning team prepared two conceptual plans for the Alewife Reservation and the Alewife Brook Greenway. These designs were guided by the Master Plan goals and objectives and were based on information from the Inventory of Resources as well as comments from previous public meetings. The two alternatives differed in their relative emphasis on cultural and ecological concerns. Public meetings held during this phase generated additional responses that led finally to the development of a preferred alternative.

C3. Preferred Alternative

The preferred alternative synthesizes elements from the earlier conceptual plans that were deemed by the public, MDC administrators, and planning team as the most desirable and achievable options for implementation. This preferred alternative was then presented at a community meeting for another round of public comment. This Master Plan reflects the adjustments to the preferred alternative resulting from that public process.

FIGURE 12. At public meetings, area residents had the opportunity to interact with members of the master planning team.