



Massachusetts Department of Conservation and Recreation



# MYSTIC RIVER MASTER PLAN

Arlington | Boston | Everett | Medford | Somerville

November 2009





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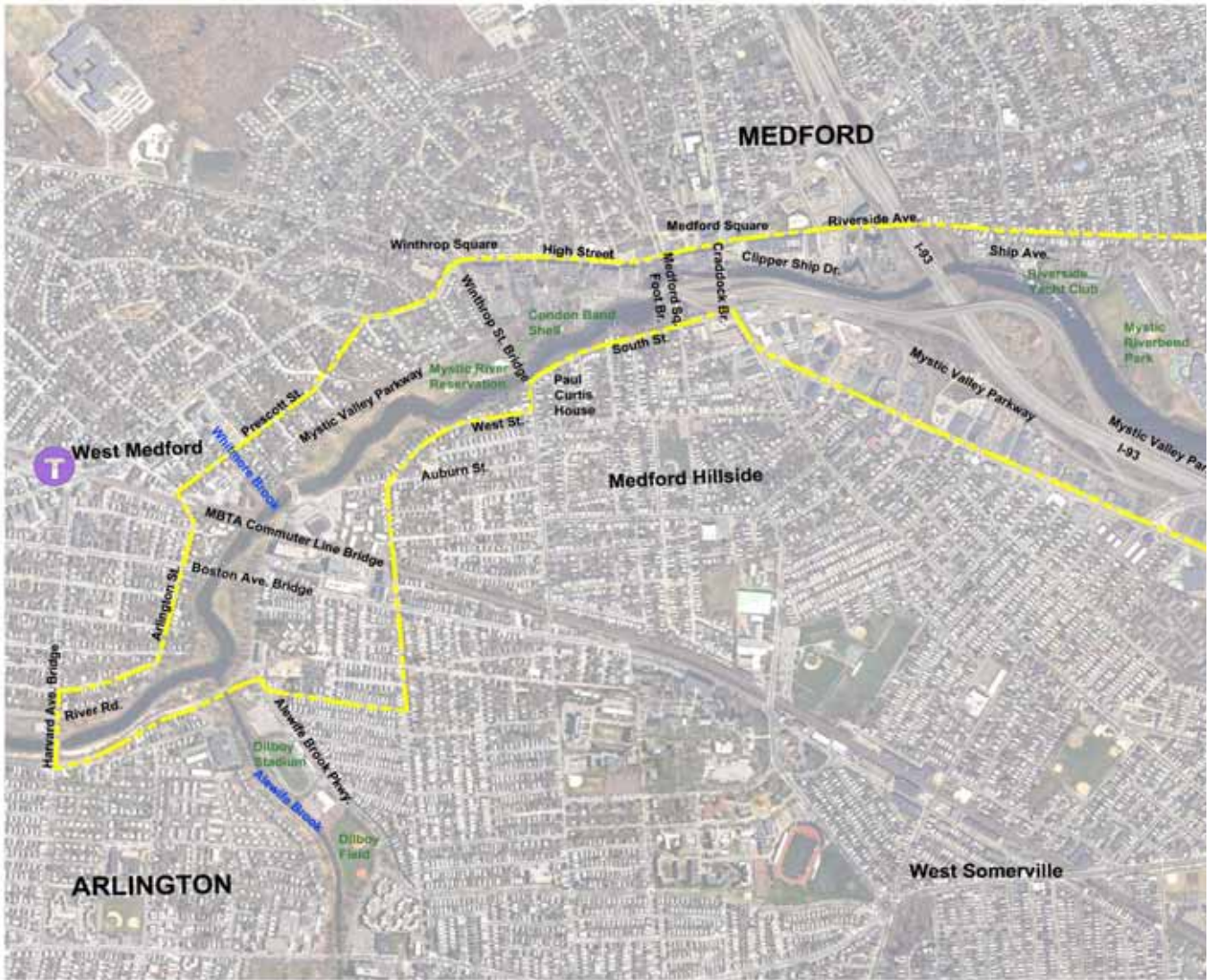


## CHAPTER I: INTRODUCTION

The Mystic River Reservation was one of the original five reservations delineated by the Metropolitan Park Commission in 1893. The Commission acquired 80 acres of land along the Mystic River in 1895 and by the end of 1899, “the Commissioners reported that practically the entire banks of the Mystic River in Medford had been taken for the use of the public, and that the last takings which lay in Arlington and Somerville would be complete in 1901.” The Mystic Valley Parkway, a key component of the Reservation, opened to the public in September 1897.

A number of studies and plans regarding specific issues and/or portions of the Reservation have been prepared over the years. A preliminary master plan for the Metropolitan District Commission’s property along the River from the Amelia Earhart Dam to the Mystic Valley Parkway’s Harvard Street Bridge was prepared in 1966 (*Land Use and Development Report: Mystic River Basin*, Charles A. Maguire & Associates). A 1969 Report (*Open Space and Recreation Program for Metropolitan Boston, Volume 3: The Mystic, Charles, and Neponset Rivers*, The Commonwealth of Massachusetts: Metropolitan Area Planning Council, Metropolitan District Commission and Department of Natural

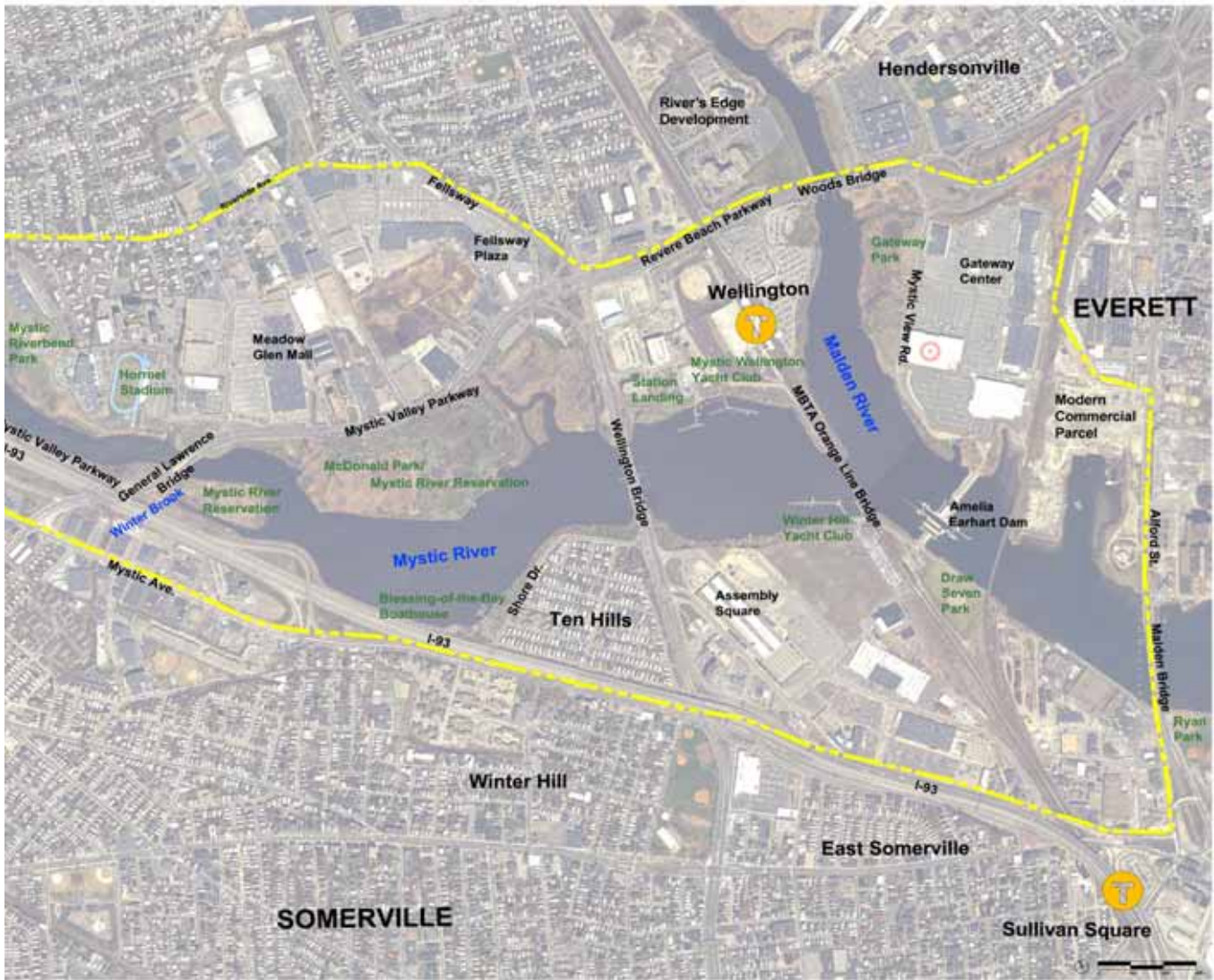




The Project Area is shown on the aerial photograph above, outlined in yellow.

Resources) outlined the intent to link the Mystic Lakes with uninterrupted access to the Boston Harbor. The plan “proposed a visionary open space acquisition and development program in order to maximize the full recreational potential of the Mystic River, and also addressed the needs of pollution abatement, conservation of wetlands, and targeted key areas for acquisition and easement” (*The Mystic River: Inventory, Analysis and Opportunity*, 1997, p.12). Some of the recommended Mystic River Reservation improvements were completed in the early 1980’s; the improvements provided a continuous





greenspace with bicycle and pedestrian trails, conservation areas, parking areas and active recreational facilities. Other plans have called for development of recreational facilities along the Malden River, public use of the Amelia Earhart Dam as an educational attraction and pedestrian crossing, pedestrian and bike access along the Mystic River to and from the Wellington MBTA station, and redesign of Medford Square’s riverfront to create a vibrant town center that embraces the water and provides continuous access.

This Master Plan project was initiated by the Massachusetts Department of Conservation and Recreation to build on those earlier studies and the improvements to the Reservation completed to date.



The immediate study area reaches from the Harvard Avenue Bridge between Medford and Arlington to the Malden Bridge between Somerville and Everett. The Reservation within the project area, including parkways, encompasses approximately 370 acres. In addition to the Mystic River itself, the project area incorporates roughly one to two blocks on either side of the river.

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## PROJECT GOALS

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This Master Plan was developed to respond to the following goals:

- Restore river banks and edges to promote both increased recreational use and the river's ecological health.
- Develop a continuous multi-use pathway system along both banks of the Mystic River from the Harvard Avenue Bridge to the Malden Bridge.
- Determine areas most suitable/desirable by location and type for recreation, education and preservation.
- Protect and enhance the wildlife habitat by improving natural areas.
- Increase opportunities for water-related activities, including fishing and non-motorized boating.
- Strengthen the open space network with links to adjacent public open space and neighborhoods
- Develop guidelines and techniques for management and operation of the parkland.

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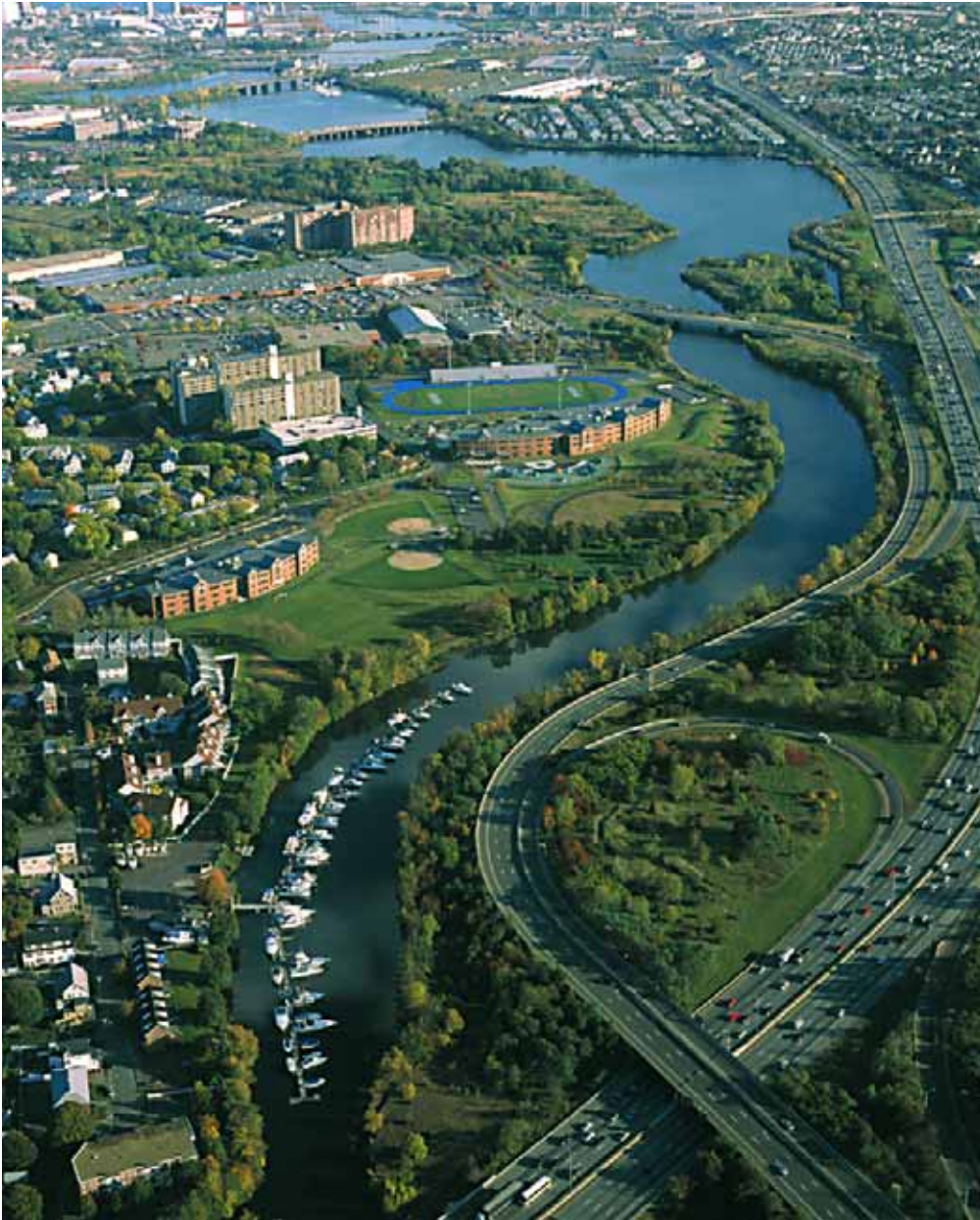
## PUBLIC PROCESS

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Two public meetings were held during development of this master plan. At the first meeting, on November 28, 2007, the team presented the project scope and goals, as well as an analysis of existing conditions.

At the second meeting, held on June 16, 2008, the team presented a draft of the recommendations described in this plan. Displays around the room, staffed by members of the consultant team, provided attendees an opportunity to gather more information and offer comments on topics of particular interest to them. Notes from both meetings are included as Appendix B.

In addition, a number of public charrettes and meetings were held with the Mystic River Watershed Association and other stakeholder organizations.



## CHAPTER II: EXISTING CONDITIONS

The Mystic River Watershed, encompassing nearly 76 square miles and 21 communities, begins at the Aberjona River in Reading and flows into the Upper Mystic Lake and Lower Mystic Lake, which then drain into Boston Harbor via the Mystic River. Historically, the area has been highly developed and intensively industrialized at its mouth, and remains this way today with a



population of roughly 500,000. “The watershed is plagued by environmental problems including significant urban runoff, diminished and deteriorating wetlands and habitats, and combined sewer overflows” (The Mystic River: Inventory, Analysis and Opportunity, 1997, p.2). In April 2007, the river received a “D” rating from the US Environmental Protection Agency for high levels of bacterial contamination.

In addition to water quality problems, the Mystic River also faces limitations to public open space and accessibility. “Despite public ownership of most of the Mystic riverfront, very little land had been developed for recreational use. Unlike the Charles River which was dammed early in the 20<sup>th</sup> century, the Mystic remained tidal until the mid 1960s, and largely undeveloped for recreational use until the late 1970s” (The Mystic River: Inventory, Analysis and Opportunity, 1997, p.10). A significant portion of riverfront land is designated as public open space and is in public ownership. Connectivity of the Mystic, Neponset and Charles Rivers has not been completed due to the need to enhance access in a few key segments.

Several recent plans and development proposals have revisited the concepts from the earlier studies, including public use of the Amelia Earhart Dam, redevelopment of the Medford Square riverfront, pedestrian and bike access along the river to and from the Wellington “T” station, continuous bike and pedestrian trails along both sides of the Mystic River, acquisition of undeveloped parcels and recreational development along Alewife Brook.

This Master Plan builds on many of the goals outlined in the earlier master plan and takes into consideration current planning and development initiatives within the Project Area.

See **Appendix D** for a summary of existing land use, demographics, access, dams, bridges and views.

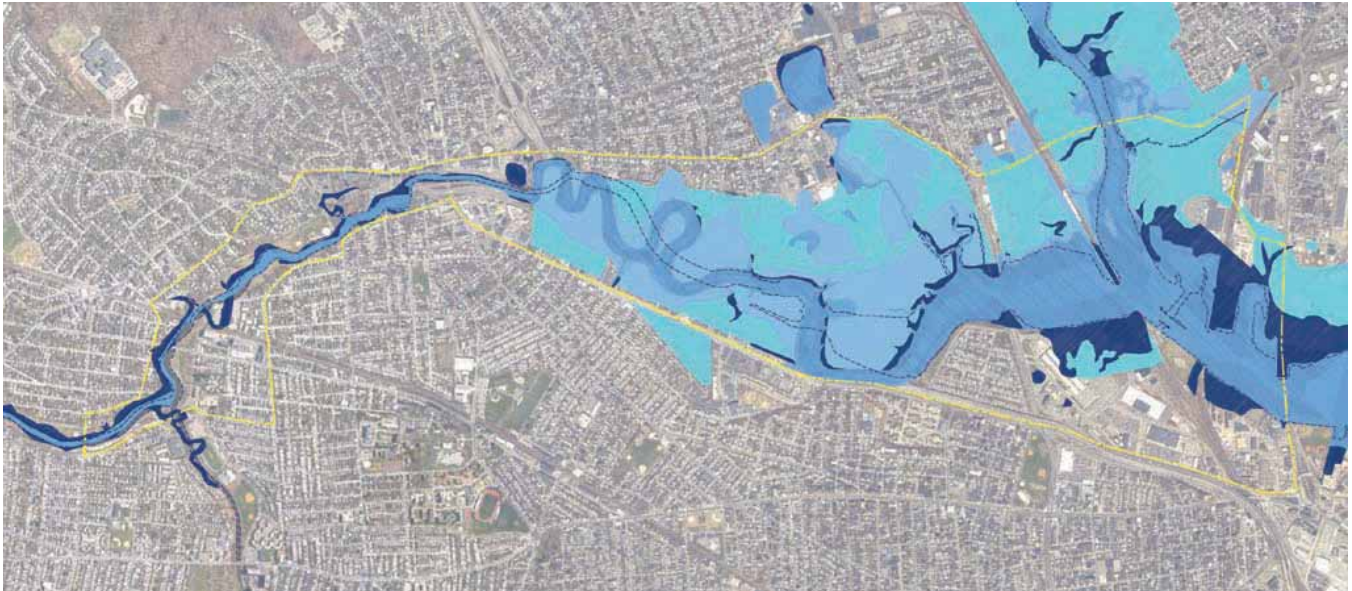
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## NATURAL RESOURCES

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The natural resources of the Mystic River Reservation have been shaped by greater than 300 years of historic development, flood control and acquisition of public parkland. The publicly protected lands along the Mystic River are an invaluable asset for the thousands of people who visit them and for the wildlife that utilize them.

The importance of the preservation of open space along the metropolitan area rivers was recognized in the 1890s when the first plan for the Metropolitan Park








Commission recommended public control and development of these areas. The landscape architects and Secretary of the Metropolitan Park System, Charles Eliot and Sylvester Baxter, stressed the importance of protecting open space along the three major rivers (Charles, Mystic and Neponset) that flow into Boston Harbor. Most of the riverfront is now in public ownership.

Historic development has greatly influenced the character of the natural resources of the Mystic River. In 1846, a 40-foot wide dam was constructed between the upper and lower Mystic Lakes to separate the fresh water from the tidal salt water in order to provide drinking water for the towns of Charlestown and Somerville. This dam not only raised the water level of the Upper Mystic Pond six feet, but also altered the natural ecosystem of this water body from brackish to freshwater.

More recently, two large infrastructure projects were responsible for totally reshaping the lower Mystic River basin in the mid 1960s. The construction of Interstate 93 most radically reshaped the area with the extensive dredging and realignment of the lower river channel, including the straightening of meanders and the filling of marshes. The Mystic River Elevation Control Project resulted in the construction of the Amelia Earhart Dam in 1966. The dam was constructed to regulate the water level of the Mystic River and prevent harbor pollution from moving upstream with the tides. This action also changed the water of the river from brackish to freshwater, consequently altering the habitat of the riparian plants and aquatic organisms which inhabited the Mystic and its tidal tributaries. The operation of this dam has a significant impact on the ability of

Changes in the shoreline over time

**LEGEND**

-  1903 RIVER COURSE
-  1903 WETLAND
-  1946 RIVER COURSE
-  1946 WETLAND
-  LIMIT OF WORK





Natural Resource Areas

LEGEND	
	FOREST
	MOWED AREA WITH CANOPY
	MOWED AREA
	RIVER BANK
	WETLAND
	MIXED HERBACEOUS, SHRUB & TREE
	MCDONALD PARK IMPROVEMENT PROJECT
	RIVERBANK RESTORATION AREA
	WETLAND RESTORATION AREA
	BARE GROUND / SPARSE VEGETATION
	LIMIT OF WORK

herring to migrate up the Mystic River during spawning season. The DCR, as the operator of the dam, the state Division of Marine Fisheries and the Mystic River Watershed Association have developed a protocol to allow for some fish passage through the dam, which does not have a fish ladder. Presently, herring are not able to get past the Upper Mystic Lakes dam, but plans are underway for construction of new fish ladder in 2009.

All of the land uses within the towns and cities bordering the Mystic River and its tributaries have had a significant impact on the water quality and hydrological characteristics of the river. Although the Amelia Earhart Dam may have prevented pollution from traveling upstream, the water quality of the river, its tributaries and lakes remains poor because of the continued influx of fecal coliform bacteria from a significant number of combined sewer overflow (CSO) pipes as well as degradation from other point and non-point source nutrients and metals. Historic and modern pollution, as well as the physical impediment of the dam, caused the degradation of aquatic habitats upon which fish (such as alewives and herrings) depended for spawning. Once these fish began to disappear in the late 19th century, the disappearance of birds such as the heron and bittern followed.

Greater than 300 years of historic development along the Mystic River has resulted in major changes to the natural resources of the river, including perhaps most importantly the filling of virtually all of the wetlands bordering the river (see Page 7). This is not to say that the Mystic River does not provide important wildlife habitat and recreational opportunities to the public. On the contrary,

many people use protected lands along the river every day, and the Reservation provides important habitat in a highly developed urban area.

The following sections describe the natural resources associated with the Mystic River in the study area from the Harvard Avenue Bridge to the Amelia Earhart Dam. The inventory focuses on broadly defined habitats and their major components, namely trees, shrubs and mowed areas. The habitats along the Mystic River are highly managed but can be characterized by their plant communities and how they are managed. Six general types of habitat along the Mystic River have value for wildlife: aquatic habitat, river bank, wetlands, forest, open mowed areas and playfields, and mowed areas with tree canopies.

### **Aquatic Habitat**

The Mystic River itself is an important habitat characterized by slowly flowing water. Water is one of the basic requirements of life and an attractant for many species of animals. Pollution from urban runoff, boat traffic, the presence of the Amelia Earhart dam and a lack of associated wetland vegetation along the river banks reduce the appeal of the river to many species of wildlife that would be found in a less urbanized river setting.

The Massachusetts Division of Water Pollution Control classifies the water quality of the Mystic River from the outlet of the Harvard Avenue Bridge to the Amelia Earhart dam as Class B (314 CMR 4.05). This indicates that the river water quality meets the standards for swimming and other water contact sports and for habitat for fish and other wildlife except during storms when pollutants from CSOs discharge into the river. Storm sewers, carrying urban runoff, and CSOs, carrying both urban runoff and sewage, are the major source of pollutants flowing into the river. In 2006, there was no evidence that the water quality in the river had substantially improved (or worsened) in the preceding five years.

### **River Bank**

The bank of the river is defined by a variety of conditions. Along much of the lower portion of the river the bank is armored with stone riprap to prevent erosion. This hardened edge provides limited opportunity for vegetation to establish. Other areas have a steep earthen bank with tree and/or shrub roots serving as a deterrent to erosion. Still other areas are eroding, with parts of the earthen bank falling into the river and being washed down stream. There are almost no bordering vegetated wetland areas with emergent wetland vegetation – such as cattails (*Typha sp.*) and arrow arum (*Peltandra virginica*) – that normally occur along the edge of local, unaltered rivers.



The 4.9 miles of banks along the Mystic River from the Harvard Bridge to the Malden Bridge, while highly altered by human activity, provide some of the best resources for wildlife. The banks support a diversity of trees, shrubs and herbaceous vegetation that could provide both food and cover for wildlife; however, extensive lengths of riverbank are sparsely vegetated by narrow and fragmented bands of trees and shrubs including invasive species which provide less attractive habitat for wildlife. Common trees include red maple (*Acer rubrum*), cherries (*Prunus sp.*) and oaks (*Quercus sp.*). Apples (*Malus sp.*), locusts (*Robinia sp.*), elms (*Ulmus sp.*), Norway maples (*Acer platanoides*) and birches (*Betula sp.*) are common in some locations but absent in other stretches of the river. The most common shrubs and vines include Asiatic bittersweet (*Celastrus orbiculatus*), alders (*Alnus sp.*), trees of heaven (*Ailanthus altissima*), sumacs and multiflora rose (*Rosa multiflora*).

Several species of wildlife prefer river and river bank habitats. A partial list of wildlife species commonly seen on healthy urban rivers in Eastern Massachusetts is shown below and at right. Several of these wildlife species were observed. Specifically Canada goose, ring-billed gull, mallard, double-crested cormorant, tree swallow, great blue heron, American goldfinch (*Carduelis tristis*), and Eastern painted turtle were seen during field investigations in the Mystic River Reservation, either on the river banks or in the river along the banks.



Birds Typically Seen in Riverbank Areas (from top left):

- American Coot (*Fulica americana*)
- Canada Goose (*Branta canadensis*)
- Ring-billed gull (*Larus delawarensis*)
- Mallard (*Anas platyrhynchos*)
- Double-crested Cormorant (*Phalacrocorax auritus*)
- Great Blue Heron (*Ardea Herodias*)
- Tree Swallow (*Tachycineta bicolor*)
- Spotted Sandpiper (*Actitis macularia*)
- Common Yellowthroat (*Geothlypis trichas*)
- Mute Swan (*Cygnus olor*)







Other Animals Typically Seen in Riverbank Areas (from top left):

- Eastern Painted Turtle (*Chrysemys picta*)
- Snapping Turtle (*Chelydra serpentina*)
- Northern Water Snake (*Nerodia sipedon*)
- Coyote (*Canis latrans*)
- Raccoon (*Procyon lotor*)
- Muskrat (*Ondatra zibethicus*)

The narrow width and fragmented nature of river bank vegetation represents the greatest limit to the habitat value of this area. The wildlife species listed above use both the aquatic and upland resources associated with the river for food, basking, cover and breeding. The lack of a continuous vegetated zone on the riverbank results in an unsatisfactory buffer between human recreational use (i.e., the walking paths) and wildlife requirements.

## Wetlands

Before the construction of the Amelia Earhart Dam at the mouth of the Mystic River, the river was tidal as far upstream as the Mystic Lakes. Early maps show extensive marsh along the banks of all the rivers flowing into Boston Harbor with forest on the surrounding uplands. Apart from extensive areas of common reed (*Phragmites australis*; hereafter referred to as *Phragmites*) in the marsh at McDonald Park, there are almost no remaining wetlands along the river. There are a few locations with limited areas of wetland vegetation, like the small stream near Winthrop Street and the wetland restoration area in Riverbend Park. Small stands of cattails, *Phragmites* and purple loosestrife (*Lythrum salicaria*) occur along the River edge in a few locations. There are approximately 32 acres of wetlands including the areas of *Phragmites* at McDonald Park.

A partial list of animals that prefer wetland habitats and are commonly seen in small wetland areas in Eastern Massachusetts is shown on the following page. During field investigations, red-winged blackbird, mallard, Canada goose, great blue heron, and muskrat were observed in the wetlands of the Mystic River Reservation.



The small, disconnected areas coupled with non-native vegetation prevalent in the wetlands along the Mystic River greatly reduce the habitat value of these resource areas. Native wildlife species typically use wetlands for food, cover, breeding and resting habitat. The dominance of invasive vegetation in the wetlands limits the value of the habitat as native species typically do not use non-native vegetation as a food source.



Birds Typically Seen in Wetland Areas (from top left):

- Red-winged Blackbird (*Agelaius phoeniceus*)
- Mallard
- Common Yellowthroat
- Common Grackle (*Quiscalus quiscula*)
- Black-crowned Night Heron (*Nycticorax nycticorax*)
- Canada Goose
- American Goldfinch
- American Coot



Other Animals Typically Seen in Wetland Areas (from top left):

- Eastern Painted Turtle
- Mink (*Mustela vison*)
- Northern Water Snake
- Spring Peeper (*Pseudacris crucifer*)
- Muskrat
- Virginia Opossum (*Didelphis virginiana*)



## Forest

There are a few, very limited areas of hardwood forest along the Mystic River, encompassing a total of approximately 62 acres. There are no coniferous forest areas. The hardwood forest areas are fragmented and at various stages of succession. These upland habitats are too small to attract a full complement of hardwood forest animals, but they do provide space for nesting and secure foraging areas for many species of birds that would not enter into the more altered areas along the river. A few areas, especially near Interstate 93 and its access ramps, are young forests with a mixture of shrubs and sapling trees. The most dominant vegetation within the forested areas are oaks and red maples, with cherries, gray birch, elms and ashes (*Fraxinus sp.*) also occurring.

A partial list of animals that prefer hardwood forest habitats and are commonly seen in small forest areas in Eastern Massachusetts is shown below and on the following page. American crow, mourning dove, gray squirrel, and opossum were seen in the forested areas of the reservation during field investigations.

As with the other habitats described previously, the disjointed nature of forested areas along the river limit the habitat value. Continuously forested areas along the river would act as a wildlife corridor that would allow safe passage of wildlife to different habitats throughout the area. The Mystic River is located in a highly urbanized setting and it would be unrealistic to return large sections of



Birds Typically Seen in Forest Areas (from top left):

- Black-capped Chickadee (*Poecile atricapillus*)
- Blue-jay (*Cyanocitta cristata*)
- American Crow (*Corvus brachyrhynchos*)
- Mourning Dove (*Zenaidura macroura*)
- Downy Woodpecker (*Picoides pubescens*)
- European Starling (*Sturnus vulgaris*)
- Tufted Titmouse (*Baeolophus bicolor*)
- Northern Cardinal (*Cardinalis cardinalis*)





Other Animals Typically Seen in Forest Areas (from top left):

- Gray Squirrel (*Sciurus carolinensis*)
- Striped Skunk (*Mephitis mephitis*)
- Coyote
- White-footed Mouse (*Peromyscus leucopus*)
- Raccoon
- Virginia Opossum

the Reservation to forestland; however, the enhancement and maintenance of forested areas would provide greater nesting, cover and food opportunities for a variety of species.

### Open Mowed Areas and Playfields

Open mowed areas and playfields comprise the most extensive habitat type along the Mystic River, encompassing approximately 109 acres of the total 370 acres of reservation land within the project area. Unfortunately, this is also the most barren habitat for wildlife. Closely mowed grass provides no cover and very little food. There are a few areas where grasses are not mowed as frequently or as closely as the majority of the area under this habitat type. Such areas potentially are more able to support wildlife.

Typical wildlife that potentially utilizes the open mowed areas along the Mystic River is shown on the following page. American crow, European starling, Canada goose, and gray squirrel were seen in the open mowed areas of the Reservation during field investigations.

While it is important to maintain open mowed areas and playfields for human recreation, small steps may be taken that could enhance the habitat value of these areas. In areas bordering other habitat types such as forest and/or wetland, the grass could be allowed to grow longer. If this were to happen, the insect population would likely increase, thereby attracting more wildlife species that utilize insects as food. Longer grass would also provide better cover and foraging opportunities for a variety of small mammals and birds. These areas would not be allowed to grow unchecked; rather, this habitat would be mowed less often than it is now and would not be cut as short.



Opened mowed areas and playing fields comprise a large part of the Project Area (top). Areas mowed less frequently are more able to support wildlife (bottom).



Birds Typically Seen in Open Mowed Areas and Playfields (from top left):

- Common Grackle
- Ring-necked Pheasant (*Phasianus colchicus*)
- Brown-headed Cowbird (*Molothrus ater*)
- Northern Flicker (*Colaptes auratus*)
- European Starling
- American Robin (*Turdus migratorius*)



Other Animals Typically Seen in Open Mowed Areas and Playfields (from top left):

- Eastern Cotton Tail (*Sylvilagus floridanus*)
- Gray Squirrel
- Raccoon
- Striped Skunk



### Mowed Areas with Tree Canopy

Slightly less barren than the closely mowed areas without tree canopies, mowed areas with tree canopies, encompassing approximately 51 acres, provide more diverse sources of food and cover, and attract a wider diversity of wildlife. Many of the trees in this habitat are volunteers or planted specimens. They often occur in even-aged stands. Typical species include oaks, cherries, Norway maples, poplars (*Populus* sp.) and red maples.

Commonly seen wildlife that may utilize this habitat type are shown on the following page. During field investigations, American robin, rock dove, American crow, mourning dove, Eastern cottontail, and gray squirrel were observed in the mowed areas with tree canopy.

The same management techniques described under Open Mowed Areas above could also be utilized in mowed areas with tree canopy to increase wildlife use.





Birds Typically Seen in Open Mowed Areas with Tree Canopy (from top left):

- Black-capped Chickadee
- Tufted Titmouse (*Baeolophus bicolor*)
- Blue Jay
- American Robin
- White-breasted Nuthatch (*Sitta carolinensis*)
- Rock Dove (*Columba livia*)
- European Starling
- American Crow



Other Animals Typically Seen in Open Mowed Areas with Tree Canopy (from top left):

- Eastern Cottontail
- Raccoon
- Gray Squirrel
- Red Fox (*Vulpes vulpes*)
- Field Mouse (*Mus musculus*)
- Little Brown Myotis (*Myotis lucifugus*)

### Invasive Species

Non-native trees, shrubs, vines and herbs are common along portions of the Mystic River. Some of these plants lack natural predators and other biological controls of their native lands, and have adapted to their new environments so well that they spread and crowd out native plants and the species of animals

that depend on them. Ultimately, such invasive species reduce biological diversity. Several invasive species grow along the Mystic River, including Tartarian honeysuckle (*Lonicera tartica*), multiflora rose, Japanese knotweed (*Polygonum cuspidatum*), common buckthorn (*Rhamnus frangula*) and *Phragmites*.

### Areas of Environmental Sensitivity

Several areas within McDonald Park are being managed for the benefit of wildlife. One such area is the Torbert McDonald Park Improvement Project. This improvement project is a joint venture between General Electric (GE), the Massachusetts Departments of Environmental Protection (DEP) and Conservation and Recreation (DCR), the City of Medford, and other agencies. This 0.6-acre project consists of the cleanup of the park's drainage channel and the planting of several native trees and shrubs, including weeping willow (*Salix babylonica*), sweet gum (*Liquidambar styraciflua*), river birch (*Betula nigra*), speckled alder (*Alnus rugosa*) and pussy willow (*Salix discolor*).

Additional areas designated as wildlife habitat are found throughout McDonald Park, including the entire Wellington Marsh area. This historic marsh has been altered over the years and is now dominated by *Phragmites* stands with goldenrod (*Solidago sp.*), raspberry (*Rubus sp.*) and Asiatic bittersweet evident. Other areas are also designated as wildlife habitat and are typically separated from the existing bike and walking paths by chain link fencing.

Another area of environmental sensitivity consists of a wetland restoration area within Riverbend Park. The 0.1-acre wetland shelf restoration project consists of approximately 300 linear feet of shoreline near the northwest end of the park. In this area, the riprap has been removed from the shoreline and the shoreline has been shaped for a more natural contour. Several different species of wetland plants, including manna grass (*Glyceria striata*), sedge (*Carex stricta*) and rushes (*Juncus effuses*), were planted within the restoration area and on the adjacent shoreline. Since its construction, this area has been colonized by other wetland plants, including broadleaf cattail (*Typha latifolia*), and invasive species such as purple loosestrife and *Phragmites*. Other environmentally sensitive areas of note within Riverbend Park include both dry and wet meadow habitats.

Two adjacent areas of riverbank restoration sponsored by the Friends of the Mystic River and the DCR are located to the west of the Winthrop Street Bridge and east of the Auburn Street Bridge on the northern side of the river. The first area consists of several hundred feet of shoreline that have been protected by biodegradable coir fascines (coconut fiber rolls with plugs of aquatic vegetation)



Torbert McDonald Park Improvement Project sign and drainage channel





Riverbank restoration area sponsored by the Friends of the Mystic River and the DCR



Fragrant water lilies on the Mystic River

that are staked parallel to the riverbank, perhaps acting as a breakwater. The coir fascines act to protect the river bank from erosion and scouring from the currents and wakes of passing motor boats. The area between the coir fascine and the river bank has not filled in with sediment as presumably was intended. However, the fascines have been successful in protecting the river bank. The river bank restoration area is dominated by Japanese knotweed, an invasive species, though a few large soft-stem bulrushes (*Scirpus validus*) were noted.

The second restoration site, located upstream of the first, also has coir fascines protecting the river bank. As in the first restoration site, the area between the coir fascine and the river bank has not filled in with sediment as presumably was intended. The river bank itself has been vegetated by black cherry (*Prunus serotina*) and oak (*Quercus* sp.) trees and saplings, elderberry (*Sambucus canadensis*) shrubs, raspberries (*Rubus idaeus*), and purple loosestrife. The restoration appears successful, with natural, likely planted, native vegetation dominating the riparian area. However, purple loosestrife (*Lythrum salicaria*), an invasive species, was observed growing on the coir fascine.

It should also be noted that slower flowing sections of the river throughout the project boundaries provide habitat for fragrant water lilies (*Nymphaea odorata*). These attractive white flowers and lily pads provide great aesthetic value to the river and give it more of a rustic feel.

Water chestnut (*Trapa natans*) also is present in the Mystic River throughout much of the project area. The species is an invasive, aquatic plant that is usually rooted. Because it can form extensive, dense floating mats, water chestnut can impede navigation and likely inhibits the growth of more desirable aquatic plants. Due to its low food value for wildlife, it can substantially reduce use of an area by waterfowl and other wildlife.

The entire river bank of the Mystic River within the project boundaries is considered to be an area of environmental sensitivity. Upstream of the Interstate 93 Bridge, lengthy portions of the banks on both sides of the river are currently eroding and are being undercut by the flow of the river, freeze thaw cycles and the wake of passing motor boats. This is especially evident in the area near the Condon Band Shell, where a portion of the walking path has slumped into the river. The riverbanks downstream of the I-93 Bridge appear to be more stable as large sections have been reinforced by riprap. One area that currently is not armored with riprap is located directly east of the General Lawrence Bridge. This area consists of a peninsula dominated by *Phragmites*. The river bank along this section is eroding and slumping into the river.



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## CULTURAL RESOURCES

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### Mystic River History

The Native American Pawtucket and Menotomet tribes inhabited the area, which they referred to as “Missi-Tuk” or “great tidal river,” until English settlers arrived in the early 1600s. The first ship built by Europeans in Massachusetts, the Blessing of the Bay, was launched in 1631 from the Mystic River shores. In 1637 the first bridge across the Mystic was constructed.

Initially one of the most important settlement areas of the Massachusetts Bay Colony, the Mystic River estuary would eventually become a secondary center to the Charles River estuary and Boston Harbor. Focusing on agriculture and shipbuilding, the area continued to grow, particularly in Medford and Charlestown. Riverfront banks, marshes and estuaries gave way to manufacturing and processing centers, industrial uses, agriculture, mining and residential areas.



As shown in this drawing, Medford Square was well established on the river by 1880



Medford became known for its construction of clipper ships and import and export trade, and Medford Square developed as the commercial and residential center. Residential areas continued to grow around the Mystic River, especially following a large increase in immigration starting around 1890. The Boston and Lowell and Boston and Maine Railroads established passenger rail stations in Medford Center, transforming the city into a commuter suburb of Boston.

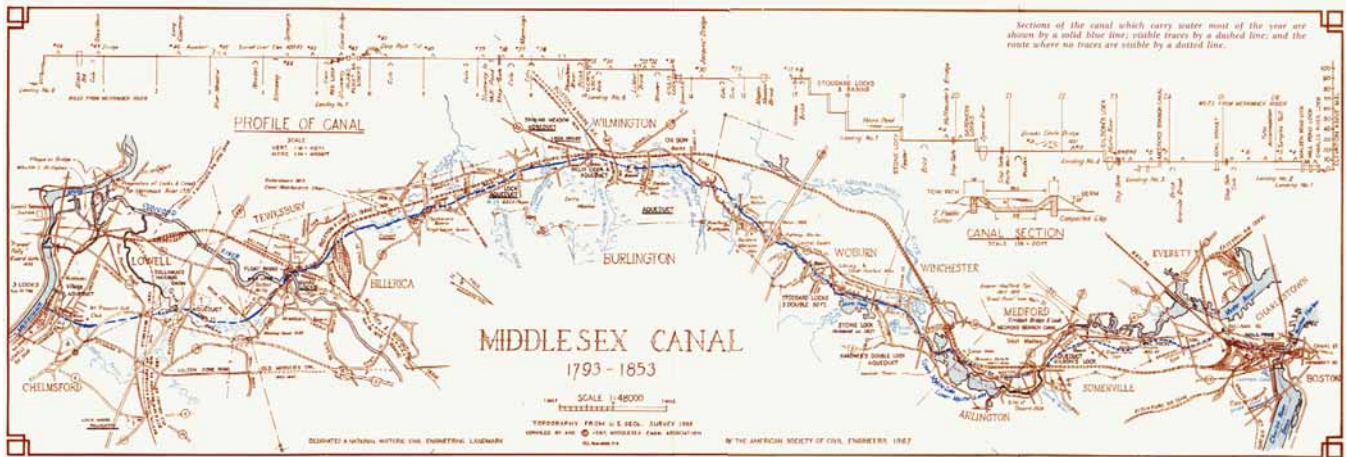
Industrial use along the river in Somerville increased rapidly in the eighteenth century, transforming formerly agricultural land into brick and pottery factories, meat packing plants, food processing centers, and later auto factories and glassworks. Industry dominated the shoreline, leaving little opportunity for public open space, and heavily polluting the River.

Agriculture, brick factories and small scale manufacturing were the predominant land uses in Everett until the late nineteenth century, when major industry took over. As the population of the city increased, tidal salt marshes were filled for industrial growth, including oil and petro-chemical storage and iron, steel, gas, oil, coke and energy manufacturing. In 1968, the New England Chemical Company was founded; it was the precursor to the Monsanto Chemical Works, one of the city's largest industries until the late 1980s (the property would later become Gateway Center).

Completed in 1803, the Middlesex Canal provided a continuous waterway between the Mystic River and the Middlesex River in Lowell. The nearly twenty-eight mile, three foot deep canal was the oldest canal of its size in the United States. The thirty-three foot wide canal, coupled with the ten foot wide tow path on one side and a five foot berm on the other, was a significant barrier between surrounding neighborhoods and the River. Following the introduction of the Boston and Lowell Railroad in the 1840s, the canal was no longer profitable and was closed in 1851. Although very little of the canal remains in the project area - the only significant remnants being the three stone piers and abutments of the original aqueduct which now support the Boston Avenue bridge - the historic canal route should be included in interpretive elements.

### **Historic Properties**

The Project Area includes multiple historic properties listed in the State and National Registers of Historic Places and in the Inventory of Historic and Archaeological Assets of the Commonwealth (see Table 2.1 on page 22). The majority of the historic properties are outside of the Reservation. The parkways, including the Mystic Valley Parkway, Alewife Brook Parkway and Fellsway, and



Historic Middlesex Canal route

many of the bridges, are listed on the National Register of Historic Places. The entire DCR Reservation Park System is eligible for the National Register.

A review of the State and National Registers of Historic Places and the Inventory of Historic and Archeological Resources indicates several historic and pre-historic archaeological sites are located within and in the immediate vicinity of the Project Area. Previously unidentified archaeological resources may also be present in this area. The location of archaeological resources is privileged information and is not included in this report.

DCR Cultural Resources staff should coordinate review of proposed projects within the Reservation area with the MA State Archaeologist to determine if archaeological resources are present within the Reservation project areas. Effects to historic properties listed in the State and National Registers and included in the Inventory should be identified and appropriate coordination with the Massachusetts Historical Commission is recommended.



Paul Curtis House ("Grandfather's House") at 114 South Street, from the 1884 Lydia Maria Child poem "Over the River and Through the Woods"





Cultural Resources (numbers and letters refer to Table 2.1))

**Table 2.1: Cultural Resources Within and Around the Project Area\***

#	Name	Address	Designation
<b>Resources with Official Designation</b>			
A	Mystic Valley Pkwy. & Tree Canopy	Arlington, Medford, Somerville, Winchester	Nat'l Reg. Dist.
A1	Mystic Valley Pkwy. - Decatur St. Isl&	Decatur St., East Arlington	Nat'l Reg. Dist.
A2	Mystic Valley Pkwy. – Alewife Brook Bridge	Mystic Valley Pkwy., Arlington & Somerville	Nat'l Reg. Dist.
A3	Mystic Valley Rotary & Meters	West Somerville	Nat'l Reg. Dist.
A4	Mystic Valley Pkwy. – Auburn St. Bridge	Auburn St., Somerville & Medford	Nat'l Reg. Dist.
A5	Mystic Valley Pkwy. – Armory Bridge	Mystic Valley Pkwy., Medford	Nat'l Reg. Dist.
B	Alewife Brook Pkwy. – Northern Segment & Tree Border	West Somerville	Nat'l Reg. Dist.
C	B & M RR Bridge over Mystic Valley Pkwy.	Mystic Valley Pkwy., West Somerville	Nat'l Reg. Dist.
D	George P. Fernald House	12 Rock Hill St., Medford	Nat'l Reg. Ind. Prop.
E	Marm Simonds Hill Historic Dist.	High St. & Woburn St., Medford; Including 24 Woburn St.; 247, 265, 298 High St.; 16 Whitman Road	Local Historic Dist.
E1	Jonathan Brooks House	2 Woburn St., Medford	Local Historic Dist., Nat'l Reg. Ind. Prop.
E2	Charles Brooks House	309 High St., Medford Preservation Restriction	Local Historic Dist., Nat'l Reg. Ind. Prop.,
E3	Jonathan Fletcher House	285 High St., Medford	Nat'l Reg. Ind. Prop.
E4	John Wade House	253 High St., Medford	Local Historic Dist., Nat'l Reg. Ind. Prop.
F	Johnson-Whitman House	16 Whitman Road, Medford	Local Historic Dist.
G	Grace Episcopal Church	160 High St., Medford Restriction	Nat'l Reg. Ind. Prop., Preservation
H	Unitarian Universalist Church & Parsonage	147 High St., Medford	Nat'l Reg. Dist.
I	Rev. David Osgood House	141 High St., Medford	Nat'l Reg. Dist.
J	John B. Angier House	129 High St., Medford	Nat'l Reg. Ind. Prop.
K	Paul Curtis House	114 South St., Medford	Nat'l Reg. Ind. Prop.
L	Hillside Avenue Historic Dist.	Hillside Avenue, Medford Including 8, 26, 27-37 Grand View Avenue & 7, 15, 16, 20, 21, 24, 26, 27, 30-32, 35, 36 Hillside Ave.	Local Historic Dist., Nat'l Reg. Dist.

\* Resources in blue text are owned by DCR

Table 2.1: Cultural Resources Within and Around the Project Area (continued)\*

#	Name	Address	Designation
M	Lawrence Light Guard Armory	90 High St., Medford	Nat'l Reg. Ind. Prop.
N	Isaac Hall House	43 High St., Medford	Nat'l Reg. Ind. Prop.
O	Jonathan Wade House	13 Bradlee Road, Medford	Nat'l Reg. Ind. Prop.
P	Old Medford High School	22-24 Forest St., Medford	Nat'l Reg. Ind. Prop.
Q	US Post Office – Medford Main	20 Forest St., Medford	Nat'l Reg. Ind. Prop.
R	Bigelow Block	Salem St., Medford	Nat'l Reg. Ind. Prop.
S	Salem St. Burying Ground	Medford Square, Medford	Nat'l Reg. Ind. Prop.
T	Isaac Royall House	15 George St., Medford	Nat'l Historic Landmark, Nat'l Reg. Ind. Prop., Preservation Restriction
U	Old Ship St. Historic Dist.	Pleasant St. Area, Medford; Including 14, 22-24, 30, 38, 46, 50 Park St.; 6, 10 Pleasant Court; 3-5, 7, 8, 11, 12, 15, 16, 19, 20, 22, 23, 26, 30, 31, 34, 43, 44, 46, 49, 50, 55-60, 65 Pleasant St.; 152-154, 158, 166, 170 Riverside Avenue	Nat'l Reg. Dist.
V	Peter Tufts House	350 Riverside Avenue, Medford	Nat'l Historic Landmark, Nat'l Reg. Ind. Prop., Preservation Restriction
W	Fellsway & Fells Connector Pkwy.s, Fellsway Median System	Medford & Somerville	Nat'l Reg. Dist.
W1	Fells Connector Pkwy. - Wellington Circle Rotary	The Fellsway, Medford	Nat'l Reg. Dist.
X	Seman Klous Rowhouses	8-16 Cross St. East, Somerville	Local Historic Dist.

**Resources Included in the State Inventory as Potentially Historic, but without Official Designation**

1	Margaret Dale House	76-80 Decatur St., East Arlington	Inventory
2	Timothy Murray House	89 Decatur St., East Arlington	Inventory
3	Alewife Brook Pumping Station	392 Alewife Brook Pkwy., West Somerville	Inventory
4	West Medford Baptist Church	59 Boston Avenue, West Medford	Inventory
5	Bower St.scape	Bower St., West Medford	Inventory Dist.
6	Prince House	9 Bower St., West Medford	Inventory
7	Crossing Tender's Shanty - Boston & Lowell R. R.	High St., West Medford	Inventory
8	Usher Block	478 High St., West Medford	Inventory
9	Canal House Tavern	76 Canal St., Medford	Inventory
10	Ginn House	80-84 Canal St., Medford	Inventory
11	Boston & Lowell Railroad Bridge	Mystic River, W. Somerville & W. Medford	Inventory
12	North St. Bridge	North St., Medford	Inventory
13	Teel House	411 High St., Medford	Inventory
14	Daniel Gleason House	375 High St., Medford	Inventory
15	Hall-Sargent House	360 High St., Medford	Inventory
16	Rev. David Haskins House	77 Mystic St., Medford	Inventory
17	Judkins Square	High St.	Inventory Dist.
18	Luther W. Puffer House	321 Winthrop St.	Inventory
19	Alvin D. Puffer House	203 High St.	Inventory
20	Winthrop St. Bridge	Winthrop St., Medford	Inventory
21	Theophilus B. Johnson House	4-6 Winthrop Court, Medford	Inventory
22	Jotham Stetson House	102 South St., Medford	Inventory
23	Gardiner P. Gates House	21 Touro Avenue, Medford	Inventory
24	Saint Joseph's Roman Catholic Church	120 High St., Medford	Inventory
25	Medford Historical Society Museum	10 Governors Avenue, Medford	Inventory
26	Swan - Bemis House	80 High St., Medford	Inventory
27	South St.scape	South St., Medford	Inventory Dist.
28	Henry Bradlee Jr. House	11 Turrell Avenue, Medford	Inventory
29	Henry Bradlee House	44 Bradlee Road, Medford	Inventory
30	Masonic Apartments	20-30 High St., Medford	Inventory
31	James McCollum House	47 Forest St., Medford	Inventory

\* Resources in blue text are owned by DCR



Table 2.1: Cultural Resources Within and Around the Project Area (continued)\*

#	Name	Address	Designation
32	Joseph K. Manning House	35-37 Forest St., Medford	Inventory
33	Timothy Cotting House	23 Forest St., Medford	Inventory
34	Mystic Congregational Church	26 Salem St., Medford	Inventory
35	Dyer Building	36 Salem St., Medford	Inventory
36	Medford City Hall	85 George P. Hassett Drive, Medford	Inventory
37	Mystic Valley Bridge over Rt. 38	Mystic Valley Parkway, Medford	Inventory
38	Cotting - Bigelow House	34-36 Thomas St., Medford	Inventory
39	Water & Sewer Department Building	Swan St., Medford	Inventory
40	Benjamin Hall House	41 Mystic Ave., Medford	Inventory
41	Pinkham "Octagonal" House	24 Brooks Park, Medford	Inventory
42	Ebenezer Waterman House	27 Pearl St., Medford	Inventory
43	Haskell - Spaulding House	24 Pearl St., Medford	Inventory
44	I-93 Bridge over Riverside Ave.	I-93, Medford	Inventory
45	Eells House	142-144 Riverside Ave., Medford	Inventory
46	Charles Vaughn House	8 Sprague Court, Medford	Inventory
47	Rebecca Sprague House	16 Foster Court, Medford	Inventory
48	Hatch - Sawyer House	306 Riverside Ave., Medford	Inventory
49	Isaac Sprague House	314 Riverside Ave., Medford	Inventory
50	General Lawrence Bridge	Mystic Valley Parkway, Medford	Inventory
51	Joseph Gleason House	562 Riverside Ave., Medford	Inventory
52	George Blanchard House	14 Bradbury Ave., Medford	Inventory
53	Wellington House	10-12 Bradbury Ave., Medford	Inventory
54	Saint Polycarp's Roman Catholic Church & Rectory	100-114 Temple St., Somerville	Inventory
55	Hyman M. Hillson Tinware Factory	16 Taylor St., Somerville	Inventory
56	Williams Table & Lumber Company	356 Mystic Ave., Somerville	Inventory
57	Christ Episcopal Church	66 Fellsway West, Somerville	Inventory
58	Helen Keene House	56 Fellsway West, Somerville	Inventory
59	T.G. Smith Rowhouse	18-26 Fellsway West, Somerville	Inventory
60		Middlesex Avenue, Somerville	Inventory
61	Assembly Square	Somerville	Inventory
62	Ford Motor Company Assembly Plant	Middlesex Ave., Somerville	Inventory
63	First National Store Warehouse	Foley St., Somerville	Inventory
64	First National Store Warehouse & Office	5 Middlesex Ave., Somerville	Inventory
65	B & M RR East Somerville Locomotive Shop	Foley St., Somerville	Inventory
66		23 Benedict St., Somerville	Inventory
67	Woods Memorial Bridge	Revere Beach Pkway., Medford & Everett	Inventory
68	Leavitt Peanut Butter Co. Office & Factory	100 Santilli Highway, Everett	Inventory
69	B & M Railroad Bridge	Tileston St., Everett	Inventory
70	Sexton Can Company	31 Cross St., Everett	Inventory
71	Broadway - Charlton St. Industrial Area	Charlton St., Everett, including 210 Broadway & 3, 7-41 Charlton St.	Inventory
72	Lemuel Edmester House	199 Bow St., Everett	Inventory
73	Everett Station Garage	145 Broadway, Everett	Inventory
74	H. K. Porter & Sons Battery Clippers Factory	6 Ashland St., Everett	Inventory
75	Colonial Beacon Oil Refinery Business Office	30 Beacham St., Everett	Inventory
76	Boston Elevated RR Yard - Power Station, Carpentry Shop, Bus Repair Facility, Metal Shop	80 Broadway, Everett	Inventory
77	Mystic River Railroad Bridge	Mystic River, Everett & Somerville	Inventory
78	Middlesex Canal, Medford	Medford & Somerville	Inventory

\* Resources in blue text are owned by DCR



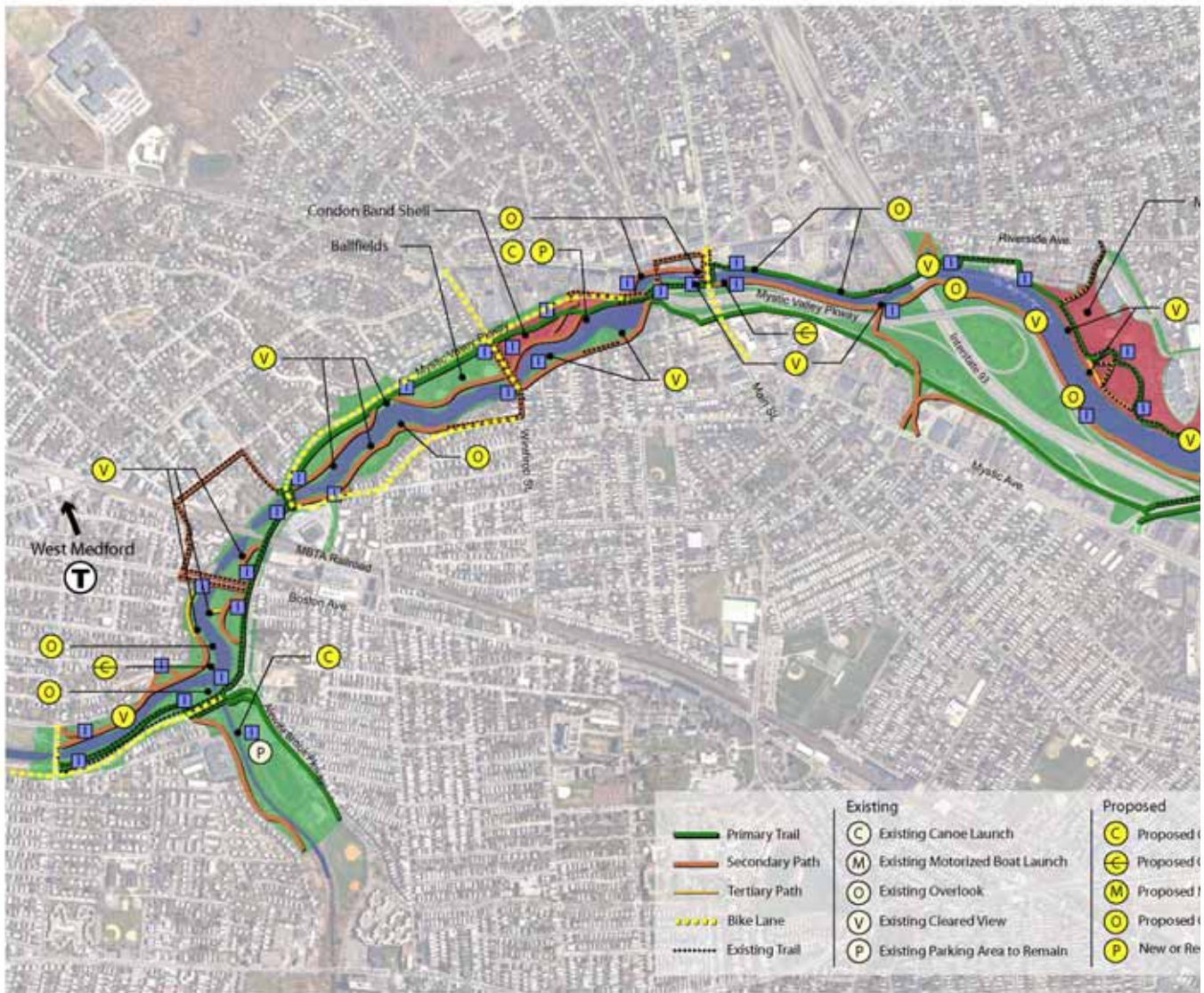
## CHAPTER III: THE PLAN

While implementation of the overall plan may take as many as ten to fifteen years, phasing will allow for immediate implementation of some recommendations outlined in the plan. This comprehensive master plan will allow the DCR to work closely with developers, municipalities and other regulatory agencies to identify opportunities for public/private partnerships as well as potential impacts to (and appropriate mitigation measures for) the Reservation and other DCR properties.

Through the public meeting process, the goals described in Chapter I were distilled into the following priorities that guided that development of the Master Plan:

- A continuous River corridor path system, including a multi-use path that will provide a direct connection between recreation areas and major MBTA stops and commuter paths.
- A balance between recreational activities and conservation actions to protect important natural resources.

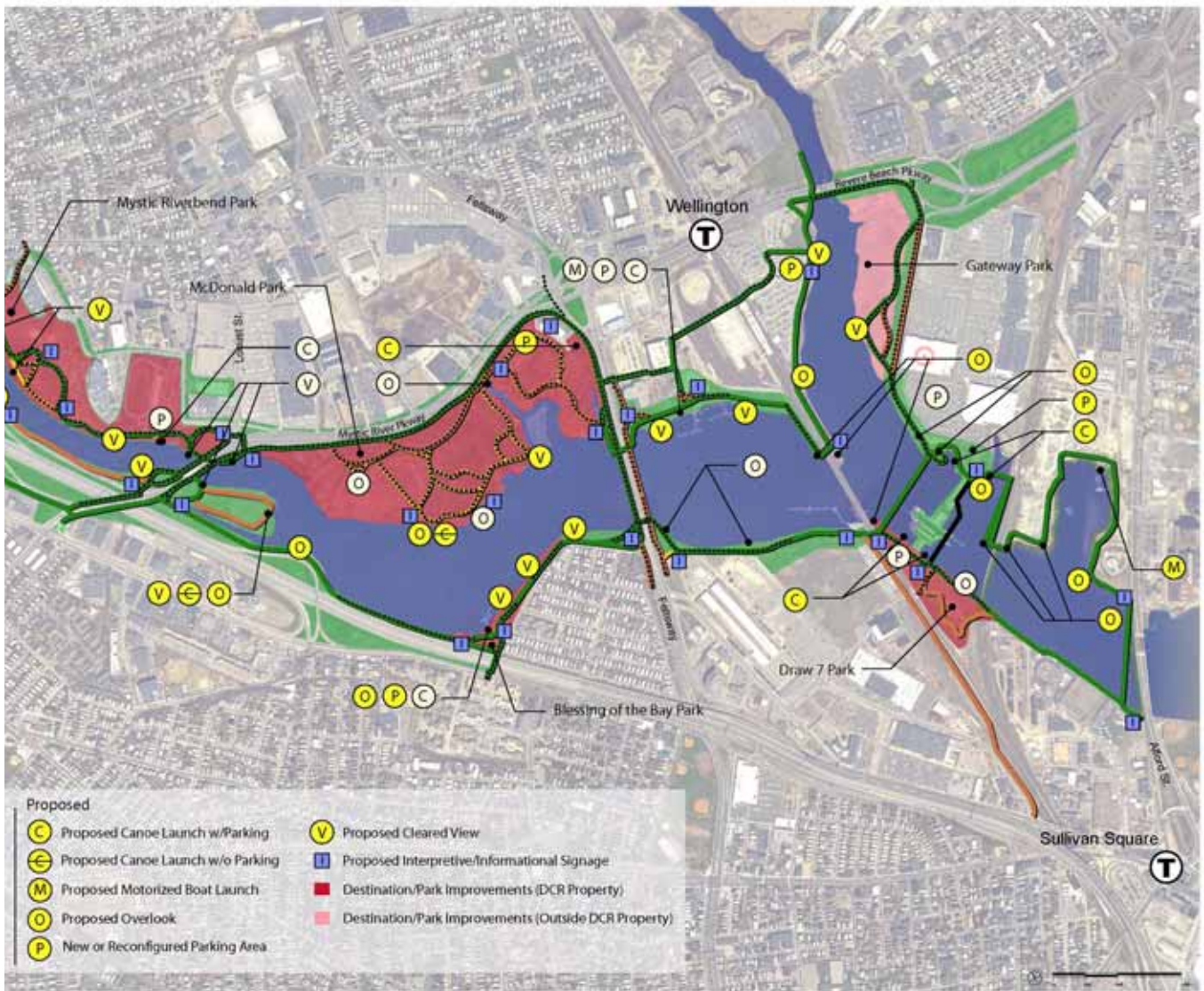




Illustrative plan

- Identification of numerous access points from both sides of the River, and development of access corridors leading to these points that would facilitate connections between surrounding neighborhoods and the River, as well as connections from the Reservation to adjacent open space and recreational corridors.
- Safety and security, including traffic safety at access points.
- Enhanced views of the River and the Reservation for pedestrians and drivers.





- Signage for wayfinding and activities, as well as interpretive signage identifying important natural areas and significant cultural/historic features.
- Clean-up of the riverfront, stabilization of banks, removal of invasive species and restoration of wetlands to promote improved water quality and ecological health.
- Reduction of mowed lawn area, to be replaced by managed meadows and successional re-vegetation.



- Increased waterfront access and amenities, including small craft launches and pull-outs, designated fishing locations and pedestrian overlooks, provision of facilities for canoe/kayak rental and benches and picnic tables.

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## CONTINUOUS RIVER CORRIDOR TRAIL SYSTEM

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The key element of the plan is a continuous River corridor trail system from the Harvard Avenue Bridge to the Malden Bridge. This trail system will provide access to an almost continuous stretch of DCR property along both banks of the Mystic River, and will link recreation areas, overlooks, and canoe/kayak launches and pull-outs. The trail system will connect to existing trail networks along the Malden River and Alewife Brook, and will provide for future access to the Mystic Lakes and Lower Mystic waterfront. The path alignment and other proposed improvements are shown on the diagram on page 43.

The trail system was designed to:

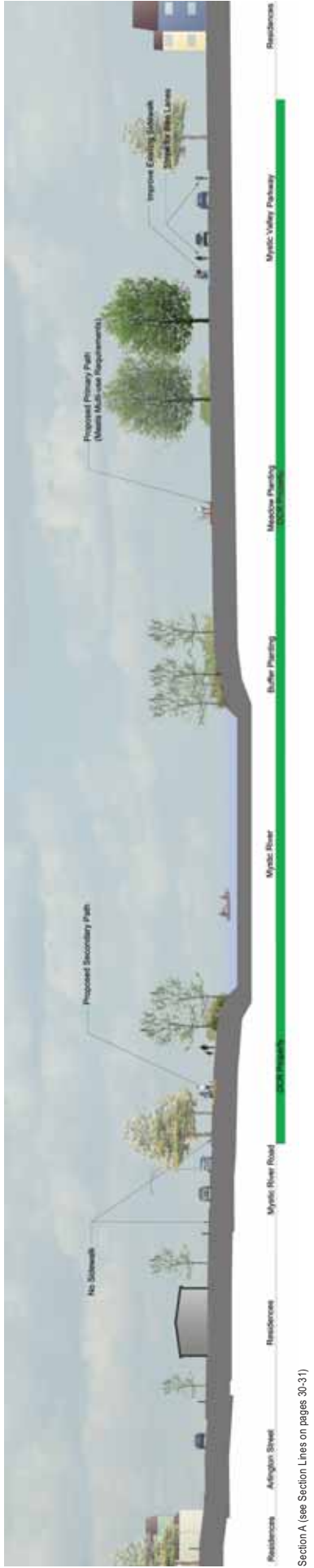
- Provide safe access to the Mystic River from MBTA subway and bus stops and surrounding neighborhoods
- Connect to local pedestrian pathways and bicycle trails
- Provide recreational loop trails where possible
- Connect destinations including:

### *Public Parks*

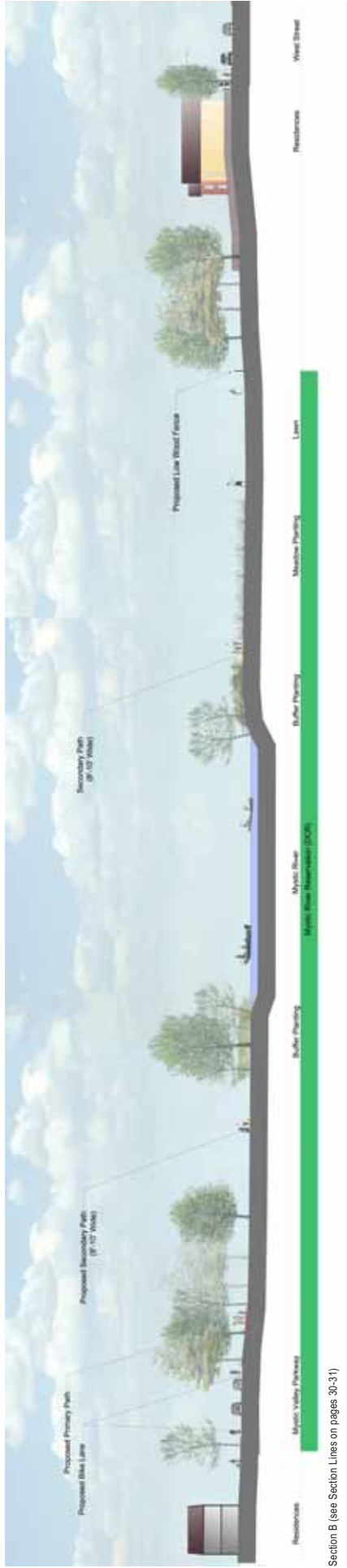
- Dilboy Fields and Stadium
- Condon Band Shell
- Mystic Riverbend Park/Hormel Stadium
- McDonald Park
- Draw Seven Park
- Gateway Park

### *Marinas and Boathouses*

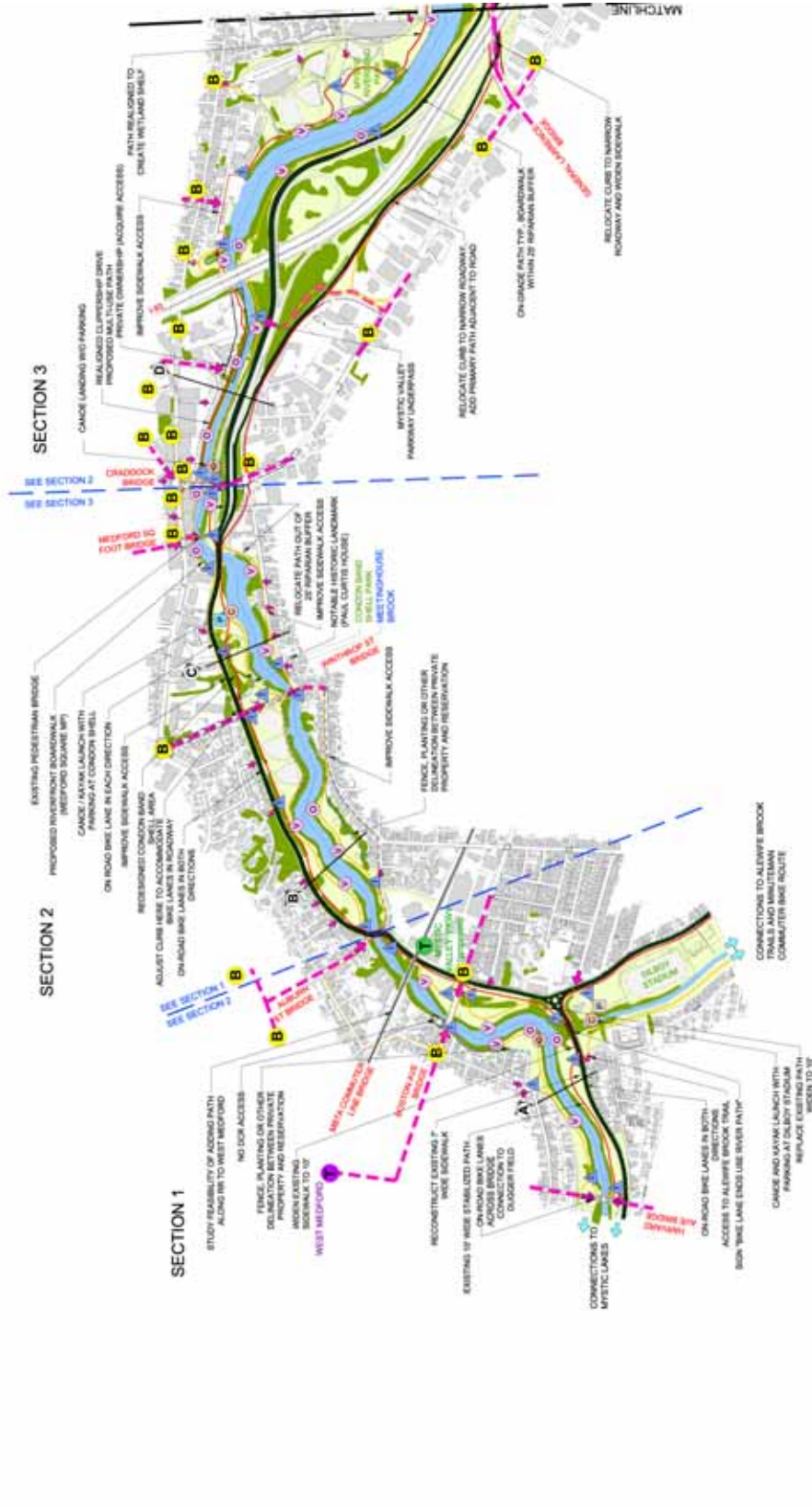
- Winter Hill Yacht Club
- Riverside Yacht Club
- Mystic/Wellington Yacht Club
- Blessing of the Bay Boathouse
- Tufts University Boathouse (outside of Project Area)



Section A (see Section Lines on pages 30-31)

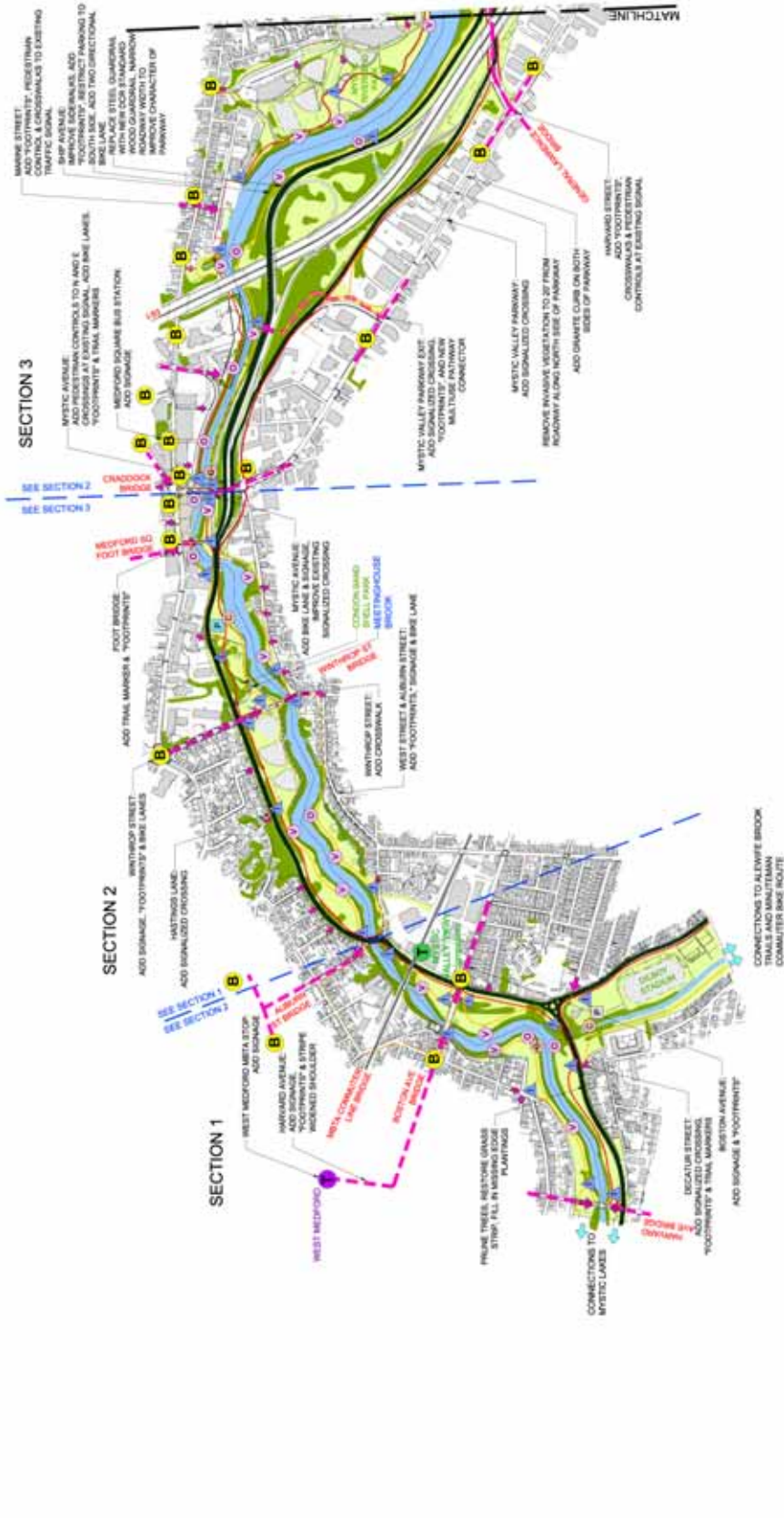


Section B (see Section Lines on pages 30-31)



- LEGEND**
- DCR OPEN SPACE PROPERTY
  - DCR PARKWAY
  - PRIMARY PATH ON GRADE (15' PAVED PATH)
  - PRIMARY PATH ON BOARDWALK
  - PRIMARY PATH ON SIDEWALK / ROAD
  - SECONDARY PATH ON GRADE (8'-10' STABILIZED PATH)
  - SECONDARY PATH ON BOARDWALK
  - SECONDARY PATH ON SIDEWALK / ROAD
  - TERTIARY PATH ON GRADE
  - TERTIARY PATH ON BOARDWALK
  - EXISTING PATH MEETING MULT-USE REQUIREMENTS
  - PROPOSED FENCE OR GUARDRAIL
  - PEDESTRIAN BRIDGE
  - PROPOSED CANOE LAUNCH W/ PARKING
  - PROPOSED MOTORIZED BOAT LAUNCH
  - PROPOSED CANOE LANDING W/NO PARKING
  - EXISTING CANOE LAUNCH
  - EXISTING MOTORIZED BOAT LAUNCH
  - PROPOSED OVERLOOK - BOARDWALK OR STRUCTURE
  - PROPOSED CLEARED VIEW
  - EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
  - EXISTING CLEARED VIEW
  - PROPOSED SEATING / PICNIC AREA
  - INTERPRETIVE / INFORMATIONAL SIGNAGE
  - NEW OR RECONFIGURED PARKING AREA
  - EXISTING PARKING AREA TO REMAIN
  - EXISTING TREE CANOPY
  - POTENTIAL RIVER CROSSINGS
  - SIGNIFICANT ACCESS ROUTE
  - PRIMARY ACCESS POINT
  - SECONDARY ACCESS POINT
  - MBTA SUBWAY/COMMUTER RAIL STOP
  - MBTA BUS STOP
  - POTENTIAL ACQUISITIONS/EASEMENTS







**LEGEND**

	DCR OPEN SPACE PROPERTY
	DCR PARKWAY
	PRIMARY PATH ON GRADE (10' PAVED PATH)
	PRIMARY PATH ON BOARDWALK
	PRIMARY PATH ON SIDEWALK / ROAD
	SECONDARY PATH ON GRADE (8'-10' STABILIZED PATH)
	SECONDARY PATH ON BOARDWALK
	SECONDARY PATH ON SIDEWALK / ROAD
	TERTIARY PATH ON GRADE
	TERTIARY PATH ON BOARDWALK
	EXISTING PATH MEETING MULTI-USE REQUIREMENTS
	PROPOSED FENCE OR GUARDRAIL
	PEDESTRIAN BRIDGE
	PROPOSED CANOE LAUNCH W/ PARKING
	PROPOSED MOTORIZED BOAT LAUNCH
	PROPOSED CANOE LANDING W/ PARKING
	EXISTING CANOE LAUNCH
	EXISTING MOTORIZED BOAT LAUNCH
	PROPOSED OVERLOOK - BOARDWALK OR STRUCTURE
	PROPOSED CLEARED VIEW
	EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
	EXISTING CLEARED VIEW
	PROPOSED SEATING / PICNIC AREA
	INTERPRETIVE / INFORMATIONAL SIGNAGE
	NEW OR RECONFIGURED PARKING AREA
	EXISTING PARKING AREA TO REMAIN
	EXISTING TREE CANOPY
	POTENTIAL RIVER CROSSINGS
	SIGNIFICANT ACCESS ROUTE
	PRIMARY ACCESS POINT
	SECONDARY ACCESS POINT
	MBTA SUBWAY/COMMUTER RAIL STOP
	MBTA BUS STOP
	POTENTIAL ACQUISITIONS/EASEMENTS

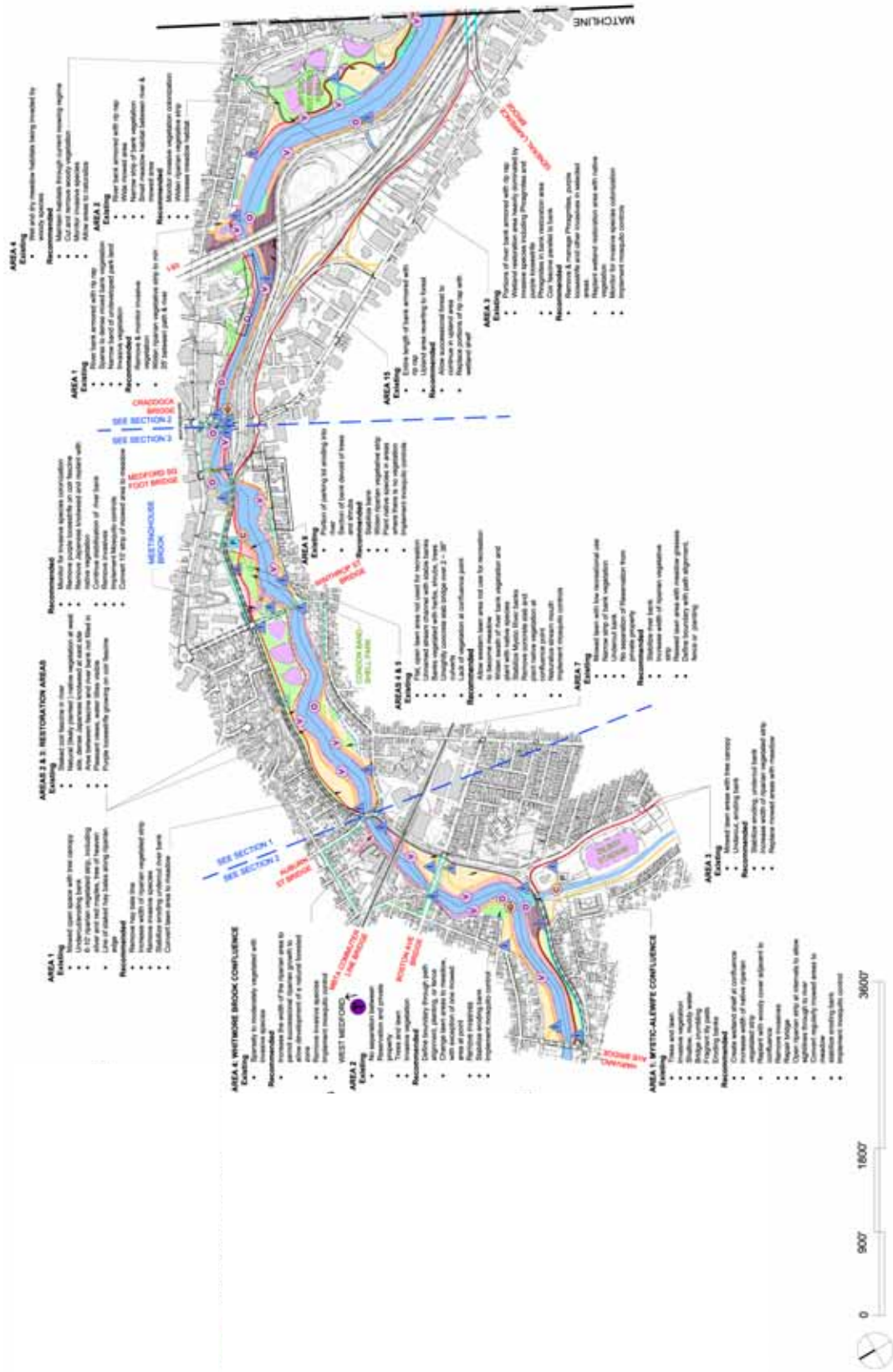


**SECTION 4**

MATCHLINE

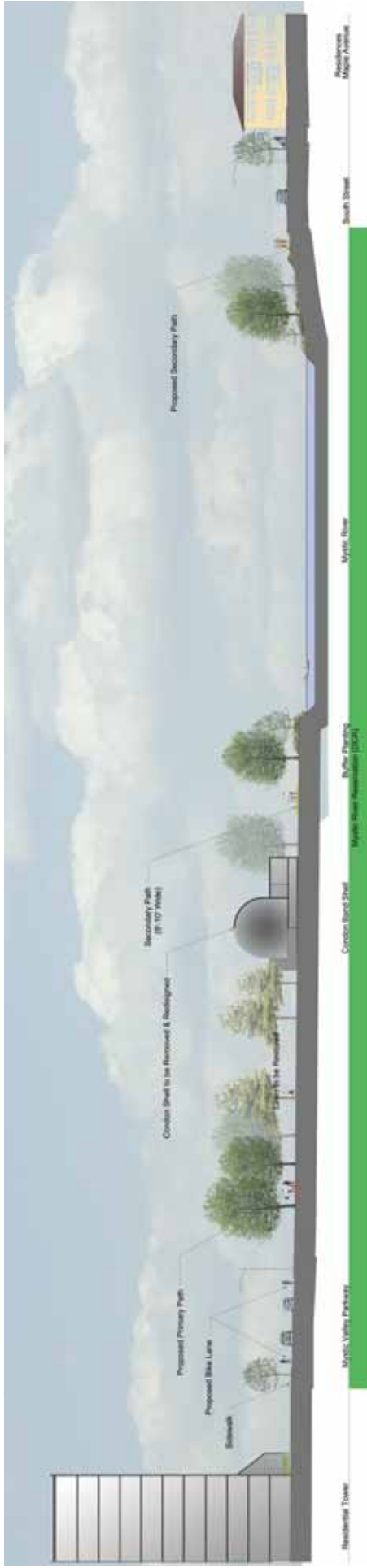
SEE SECTION 3

SEE SECTION 4





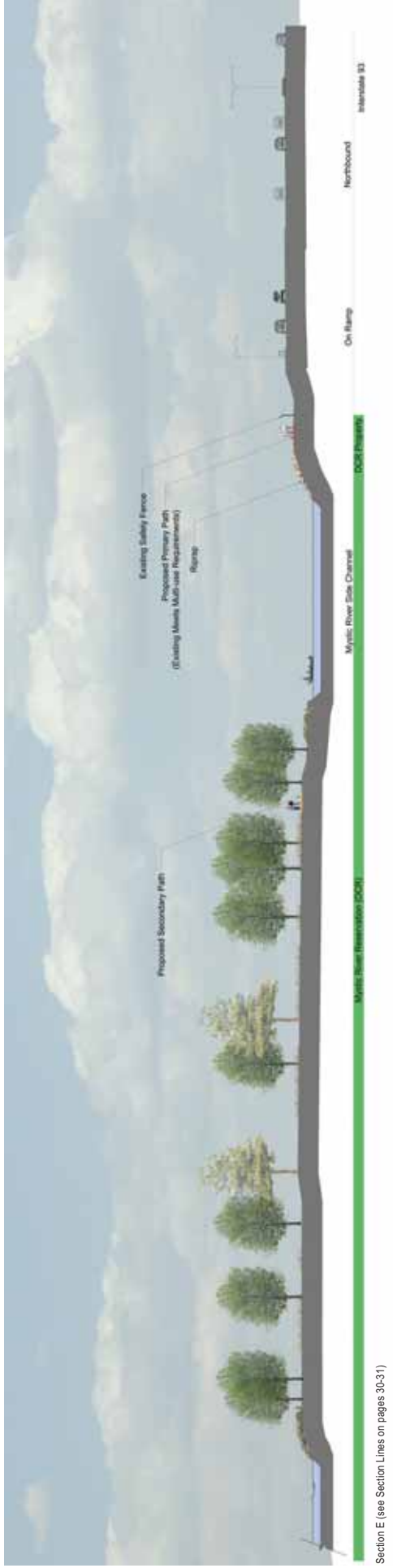




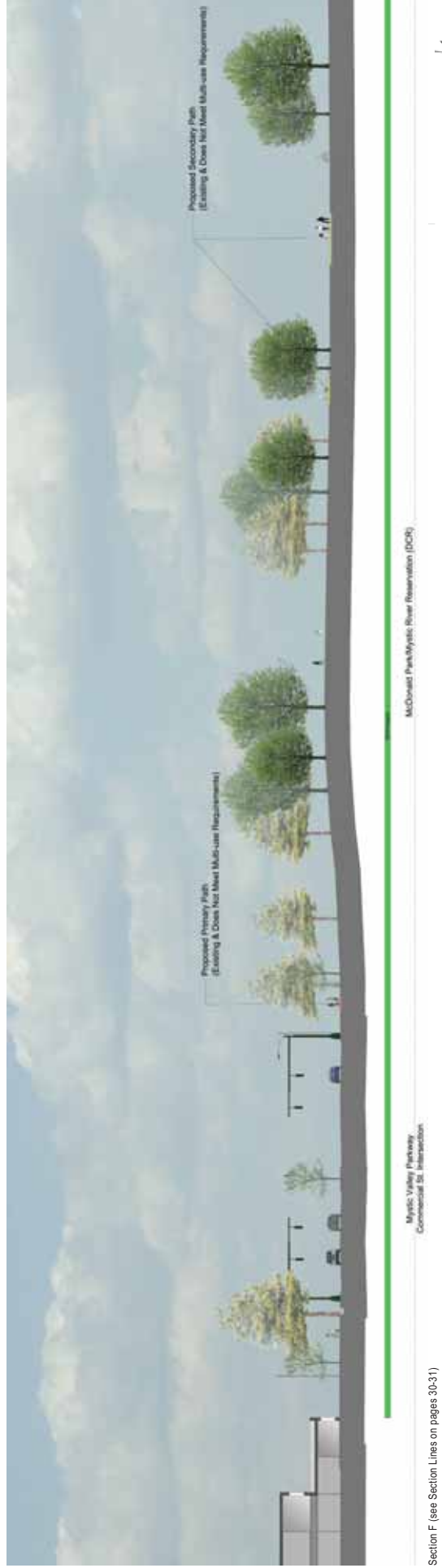
Section C (see Section Lines on pages 30-31)



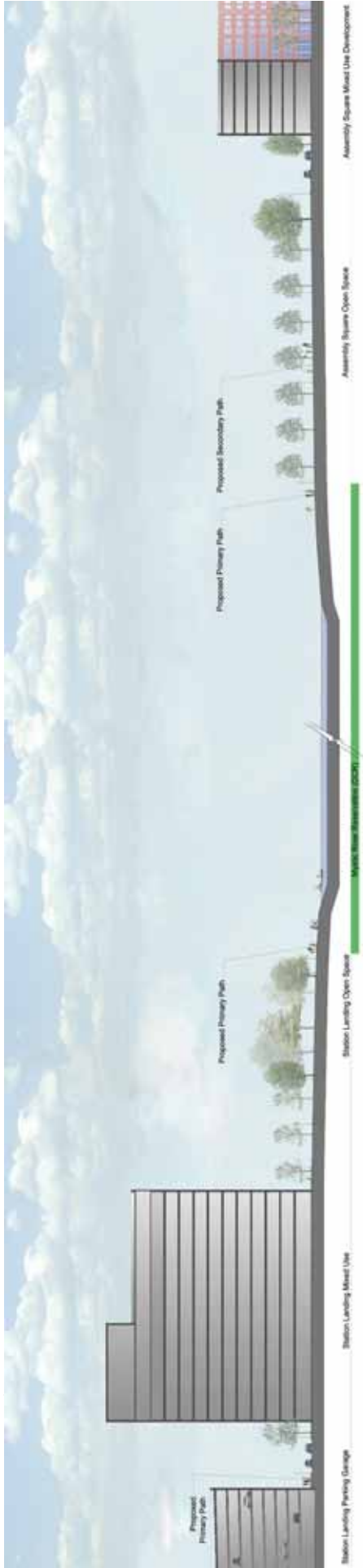
Section D (see Section Lines on pages 30-31)



Section E (see Section Lines on pages 30-31)



Section F (see Section Lines on pages 30-31)



Section C (see Section Lines on pages 30-31)

*Commercial areas or development sites with existing or proposed future public access to the River*

- Medford Square
- Station Landing
- Gateway Plaza
- Assembly Square: existing shopping area and proposed adjacent mixed-use high-rise with proposed MBTA Orange Line stop
- Modern Continental site: future use of this contaminated riverfront parcel has not been determined at this time

Other factors that guided trail alignment and design include:

- Available, continuous DCR property for trail construction
- Physical opportunities (view sheds, existing trails) and constraints (slopes, geography, and other environmental factors)
- Conservation and protection of natural areas

### **Trail Descriptions**

Three levels of trail development are proposed. The design of each of these trails is described below.

#### ***Primary Trail***

The primary trail would be the main, continuous riverway connector and would follow the most direct, uninterrupted route. The route would follow the Mystic Valley Parkway where possible and would be located adjacent to the roadway. Bicycle activity would be high along the primary path, as it would provides links between the Minuteman Commuter Bike Path, major T-stops and downtown Boston.

The primary path would be paved with bituminous concrete, striped for two-way travel. The trail would be 10 feet wide where feasible. In cases where the location of existing trees, steep slopes and property issues limit the width of the path, the path would be a minimum of eight feet wide.

The trail would be located a minimum of 25 feet from the riverbank edge. In instances where the trail must be located within the 25 foot riparian buffer, the pathway would be constructed as boardwalk in order to minimize impact to wildlife habitat and control erosion. Existing trails meeting multi-use standards, but constructed within the 25 foot buffer, may be relocated where possible, but will remain if there are retaining walls or armored banks to control erosion.



### *Secondary Paths*

Secondary paths would bring trail users closer to the River edge, marsh or sensitive woodland areas where an asphalt trail is not desirable. Secondary paths also would be 10 feet wide but may be paved with stabilized stone or soil surfacing or constructed as boardwalk, depending on location. The secondary paths would not be striped and, in most cases, would not intersect with major roadways.

While bicyclists are expected to make use of the secondary paths, path alignment and materials would encourage slower speeds than on the primary paths and help to ensure the safety of all users.

### *Tertiary Paths*

These smaller, four to five foot wide pathways would provide access to sensitive areas and River overlooks. Tertiary paths would be constructed with stabilized soil surfacing or boardwalk and may be located within the 25' riparian buffer.

### *Elevated Boardwalks*

For any of the above paths, in cases of sensitive resource areas, steep or eroded slopes, or where meeting grades would require excessive earthwork or vegetation removal, elevated boardwalks would be used. Overlooks and viewing platforms may be built into the boardwalks to provide scenic views.

### *Railings*

There are several areas along the trail that are adjacent to sensitive ecological areas or steep riverbank slopes. In these areas it is recommended that a low (12 inch) wooden railing be added to define the path and encourage pedestrians and bicyclists to stay on the pathway. All elevated boardwalks will require higher railings to meet state and ADA guidelines and standards.

### *Bridges*

Within the Project Area there are nine pedestrian accessible bridges along the Mystic River, as well as one across the Malden River and one across Alewife Brook. Many of the existing sidewalks on these bridges do not meet the multi-use path standards and none have a striped bike lane. These sidewalks should be widened and striped bike lanes added where possible. Recommended bridge alterations and modifications will have to be carried out over time by the municipalities in which they are located. Recommendations for improvements are described by Subdistrict, beginning on page 63.

The existing footbridge in Medford Square should meet all ADA requirements for accessibility. A second footbridge is proposed near the Amelia Earhart Dam.

### *Intersections with Roadways*

There are many instances where the pathway system will intersect with side streets and major roadways. Access points at these crossings should be clearly marked as entrances to the Reservation and trail system. Large granite posts are proposed to mark entrances. All intersections should be clearly marked with striped crosswalks and pedestrian-activated signals where possible. “Yield to pedestrians” signs should be added in both directions where the signals are not feasible. Many of the crosswalk and signal recommendations will have to be carried out by the municipalities in which they are located.

Pedestrian underpasses will permit uninterrupted travel at intersections with busy roadways. There are existing underpasses on both banks of the River at the General Lawrence Bridge. These underpasses are bituminous concrete pathways with retaining walls. Underpasses constructed as elevated boardwalks are proposed for the Wellington Bridge (both banks). An on-grade underpass is recommended for both banks at I-93; sufficient clearance exists. A signalized crossing is recommended at Mystic Valley Parkway, where volumes are low.

### **Parkways**

The Mystic Valley Parkway snakes through the Reservation forming a boundary in many places between the surrounding neighborhoods and the parkland that lies between the Parkway and the River. It also facilitates access to the River and provides its own way of experiencing the River and the Reservation. Historically, the parkways were built for travel at a slower speed than is now common on the parkways. They have always been intended for use by multiple modes of travel which now includes cars, bicycles and pedestrians.

The Mystic Valley Parkway is designated as a “Connecting Parkway” type in the Metro-Boston Historic Parkways Survey. As with most Connecting Parkways, it has pathways on both sides, and in places, a planted median strip between the lanes. It runs through dense urban and suburban areas and has turf and plantings of trees and shrubs beyond the curb line.

Its secondary designation is as a River Parkway for “general traffic” rather than “pleasure traffic”. In keeping with the characteristics of River Parkways it generally follows the path of the watercourse and is bounded on the River side by parkland, and on the other by private residential or commercial development.



Granite posts help to mark entrances to the trail system and Reservation.



The historic character of the Parkway is intact in areas, but in places, particularly where it accommodates the off and on ramps to Route 93, it has lost much of its parkway character. Steps are proposed to both preserve and enhance the intact areas, and restore some feel of the historic parkway to the sections which have been adversely altered. Location specific recommendations for landscaping, lighting and guardrails at Mystic Valley and Revere Beach Parkways are included under the individual subdistrict sections.

In keeping with the recommendations in the 2006 document *Historic Parkway Preservation Treatment Guidelines*, bicycle lanes would be accommodated on-road where possible. In general, it is assumed that commuting cyclists would use the on-road lanes, while other groups of cyclists such as family or recreational cyclists would use the primary path.

General improvements that should be made the length of the Parkway are as follows:

- Prune deadwood from trees
- Prune trees for views to the River
- Fill in missing tree plantings along roadway
- Replace sick or damaged plantings
- Repair stone or cobble used in median strips less than 4' wide
- Replace Type SS metal guardrails with steel backed wood post/timber guardrail
- Aerate compacted lawn areas
- Replace light fixtures the length of the Parkway with historically appropriate fixtures

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## OVERLOOKS AND VIEWS

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Small segments of the River are visible from roadways and pedestrian trails, but a significant portion remains hidden from view. Recommendations for selected clearing are designed to provide greater visual access and a greater sense of connection to the River as driver, bicyclist or pedestrian. Recommended locations (shown on the plan on page 30) include:

- Places that provide good views across or up and down the River, or of bridges



- Places where required removal of vegetation would be minimized
- Places that provide periodic stopping points for Reservation visitors

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## WATER TRAIL

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Canoeing or kayaking down the River provides a very different experience than that of the land trail. In some places the River is wide open with dense development right up to the edge and in others it is very narrow with vegetation on both sides. The River is well-suited to canoeing and kayaking from the Amelia Earhart Dam to the Harvard Avenue Bridge (and farther up-River). The proposed “Water Trail” would include 14 (11 new and 3 existing) canoe launches (with parking) or landings (without parking) between Harvard Avenue and the Dam that would provide opportunities to pull-out, enjoy the view, explore land trails and/or have a small picnic. The area down-River of the dam is also suited for small non-motorized boats; a canoe launch on either side of the River is recommended. There is an existing launch at the Schrafft’s building in Charlestown and a boat dock at Mary O’Malley Park in Chelsea east of the Project Area. A seasonal canoe and kayak rental facility at the former police boathouse in McDonald Park would provide broader access to the water trail. The rental facility, as well as other new canoe landings and launches, are described in more detail below under Specific Recommendations by Area. Canoe and small boat facilities are recommended for the following locations:

### *With Parking*

- Alewife Brook near Dilboy Stadium
- Condon Shell
- Mystic Riverbend (repair existing)
- McDonald Park rental facility (former police boathouse); a facility in this location would require a path and/or dredging
- Blessing-of-the-Bay Boathouse
- Wellington Yacht Club (existing)
- Draw Seven Park, up-River of Dam
- Draw Seven Park, down-River of Dam
- Gateway Park, up-River of Dam
- Gateway Park, down-River of Dam



### *Without Parking*

- North bank, near the foot of Jerome Street
- Medford Square
- Reservation peninsula near General Lawrence Bridge
- McDonald Park dock (existing)

All canoe launches, where parking is provided, including upgrades to existing facilities, should be made accessible (if feasible) in accordance with ADA guidelines.

Access to new landings should be made from natural materials, including stabilized soil for pathways and granite or stone for terracing/stepping slopes. More formal docking facilities have been designed for the Blessing of the Bay Boathouse and should be considered at the park adjacent to the Condon Shell.

Motorized boat access is currently provided at the Mystic Wellington Yacht Club by Station Landing. This location allows access to both Boston Harbor downriver and the Mystic Lakes upriver. No new ramps are proposed.

There is a five mile per hour wake limit throughout the Project Area. Jet skis are prohibited west of the Amelia Earhart Dam because they exceed this speed restriction and are destructive to the natural environment.

A separate study, currently underway by others (not DCR), is assessing the feasibility of a water shuttle system along the River to connect riverfront communities. Possible locations include:

- Medford Square
- Condon Shell Park
- Assembly Square/ Wellington Station/ Station Landing

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## SIGNAGE AND INTERPRETIVE ELEMENTS

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A signage system is recommended to make the trail more prominent both to pedestrians and drivers, encourage passerby to use the trails and other resources and provide a wayfinding system for the continuous trail network. Entry signs to destinations should include a list of facilities at each destination, Reservation rules, a map of the Reservation and a map showing connections to other DCR resources. Interpretive signage should highlight important natural and cultural resources along the trail. Possible locations for interpretive signage include:

- Confluence of Alewife Brook and the Mystic River
- Bank restoration area between Auburn Street and Winthrop Street
- Paul Curtis House
- South Street Historic Area
- Medford Square
- Clipper Ship Drive
- Mystic Riverbend Park wetland shelf restoration area
- Reservation peninsula near General Lawrence Bridge
- McDonald Park wetland restoration area
- McDonald Park meadow
- McDonald Park dock
- Gateway Park wetland area
- Amelia Earhart Dam
- Bridge overlooks

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## FENCING STRATEGY

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In general, the Mystic River is open and not fenced. It should remain that way to maximize visual access to the water.

Where property demarcation is desired, the edge of the Reservation can be visibly marked in one of two ways. A continuous low wood rail can be used along property lines where an uninterrupted view is preferred and there is little need to block access to adjacent property. In locations where it is important to more clearly define the boundary and discourage pedestrian access beyond Reservation land, a three to four foot high fence, preferably split-rail wood, is recommended. Where applicable, plant material would be substituted for fencing.

There may also be areas within the Reservation that would need to be fenced from the pathway for safety or conservation purposes. In most instances the three to four foot high wooden split-rail fence would be sufficient to deter pedestrian access.

There are two Project Area locations with existing six foot high chain link fencing. The first area is adjacent to the River at the recreational fields near the Winthrop Street Bridge. It is recommended that, for safety purposes, the



area remain fenced, but that the fencing be replaced with four foot high safety fencing. Four foot fencing is consistent with that used in many tot lots to help prevent children from running out into busy streets.

Chain link fencing is also used at McDonald Park in the wetland restoration area to the east of the park. The fencing, designed to prevent visitors from entering these sensitive areas, is present only on the River side of the path. There are several breaks in the existing fences, with trails leading from them. The landward side of the path uses signage to discourage entry. It is recommended that the six foot high chain link fencing be replaced with low wood rails (two to three feet high) along both sides of the path and additional signage discouraging entry. Although most visitors will stay on the path, unwanted uses in these conservation areas will need to be deterred through better surveillance.

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## PROPERTY ACQUISITIONS AND EASEMENT NEEDS

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DCR owns approximately 80 percent of the Mystic River shoreline within the Project Area. In most cases, this master plan confines recommendations to property owned by DCR. However, there are several shoreline parcels not in DCR ownership that create interruptions to the continuous path system. It is recommended that DCR pursue acquisition of, or easements through, the following parcels (shown on the Pathways and Recreational Facilities Plan on page 30):

- Senior housing and apartments east of Medford Square, Medford – Easement recommended to construct boardwalk and trail past site
- MBTA Wellington Station, Medford – Easement recommended to facilitate construction of trail system
- Modern Continental Site, Everett – Acquisition or easement recommended to ensure continuation of trail system through site
- MWRA Pump Station – Easement recommended to permit continuation of riverfront trail
- MBTA Bus Yard, Somerville – Easement recommended to facilitate construction of Charlestown Riverwalk portion of trail

Residential properties between the Boston Avenue Bridge and the Auburn Street Bridge (Medford) disrupt continuous riverfront access. However, provision of public access through these parcels would be very difficult. Therefore, acquisition or an easement is not recommended.

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## ENCROACHMENT ON PUBLIC LAND

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There are several residential areas between the Auburn Street Bridge and the Mystic Valley Parkway Bridge at Medford Square where backyards and docks encroach into DCR land. The path would be routed around these residences to facilitate implementation of the path, although owners would be advised of a proposed vegetation management program to stabilize riverbanks and reduce mowed lawn areas. A goal of this Master Plan is the eventual reclamation of encroached areas and the continuation of the trail network through these sections where appropriate.

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## ACCESS AND CONNECTIONS

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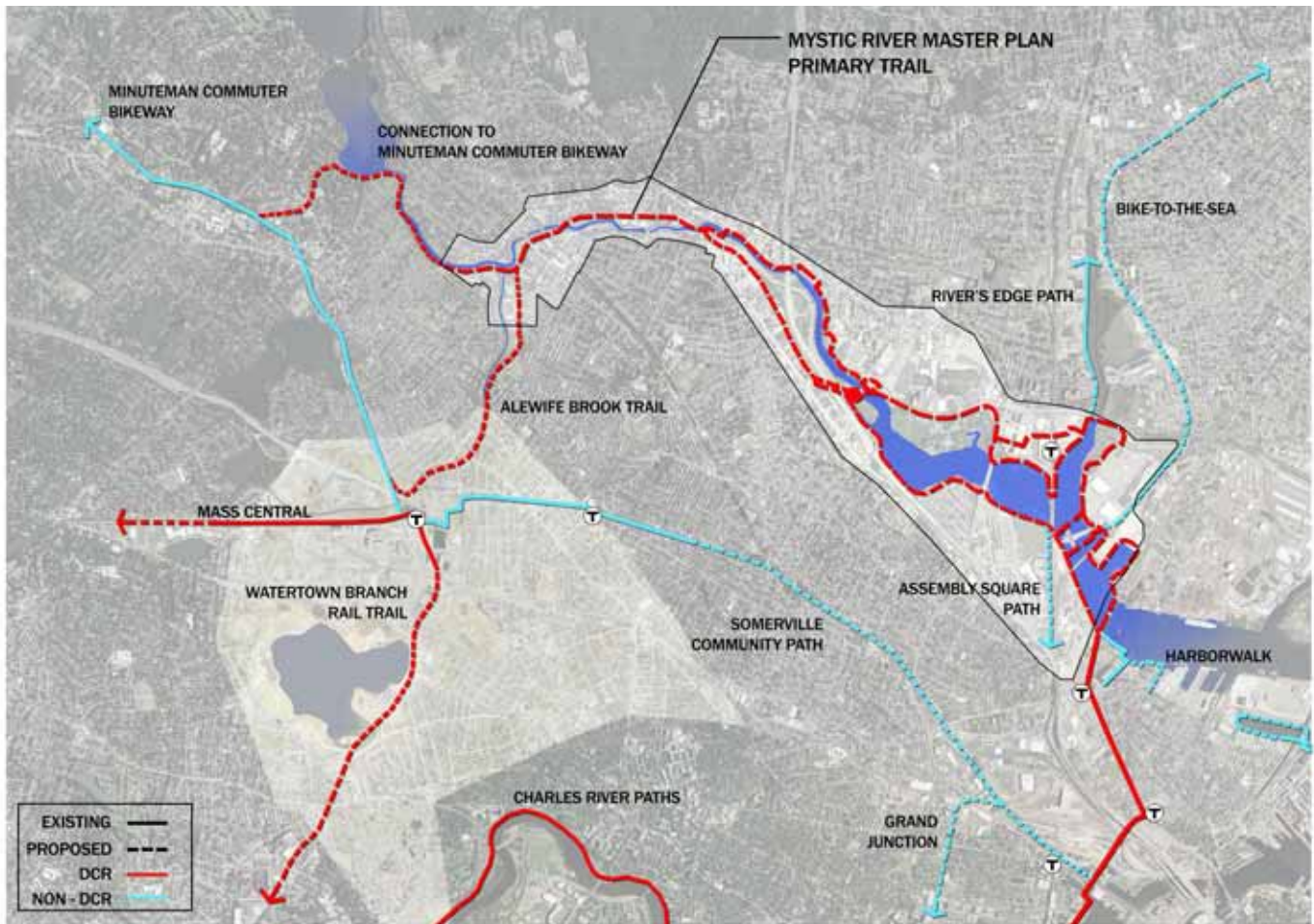
The Mystic River is a resource both for the immediate surrounding communities as well as part of a larger regional open space system. Improving connections from adjacent neighborhoods and regional trail networks was an important consideration in developing the Master Plan.

### Regional Open Space Connections

It is important that the Reservation and trails connect to the larger surrounding open space network to create a continuous regional trail system, consistent with the historic goals of the Metropolitan Park System. The Master Plan trail system ends at the Harvard Avenue Bridge in Arlington and West Medford, but trails are designed to connect to the Lower Mystic Lakes through the continuation of the multi-use path that has been partially constructed on the south bank. This route would also continue north and west to the Minute Man Commuter Bike Path, which travels through Bedford, Lexington, Arlington and Cambridge. To the east of the Project Area, past the Malden Bridge in Boston and Everett, there are plans for the future development of a riverfront trail system through the industrial waterfront in Charlestown and Chelsea (east of Mary O'Malley Park).

Following final implementation of DCR's Alewife Brook Master Plan, the trail system will connect to recreational trails along Alewife Brook and will provide a southern route to the Minute Man Commuter Bike Path. North of the Woods Bridge, the trail will connect to existing River Edge trails and the Tufts Boat House. The proposed Northern Strand Community Trail, extending from Gateway Center to the Lynn Waterfront, will allow future connections to Saugus, Revere, Revere Beach, Lynn, and Nahant. A trail extension south from Assembly





Regional open space connections

Square following the rail lines past Sullivan Square will create connections west to the proposed Community Path through Somerville and east to downtown Boston. Sections of many of these connecting paths, including the Watertown Branch Rail Trail, the Alewife Brook Trail and the Somerville Community Path, have been funded for construction.

### Local Connections

While one of the primary goals of the master plan is to create and improve trails along the length of the River, an equally important goal is to be able to connect surrounding neighborhoods to these trails. In some instances, residential neighborhoods are located close to the River and trail network, while in others, entire neighborhoods are essentially cut off from trail access by highways, busy side roads and commercial development. MBTA subway, commuter line and bus stops are located throughout these neighborhoods and provide access to the broader public who travel to the River from outlying areas.

In order to provide safer, easier access to the River, existing primary access routes were identified and recommendations have been outlined to improve sidewalk conditions and crossings. Where existing routes are not sufficient to provide safe and easy public access it is recommended that new routes be created. Many of these improvements are for roadways not owned by DCR; implementation will therefore require the cooperation of the municipalities (see Table 2 below). These recommendations are described in further detail in each section in which they are located.

Recommended access improvements include:

- Improved street crossings and better delineated pathways to the River at existing access points
- New access paths, including new crosswalks
- Signage and better delineation of pathways to the River from MBTA bus stops and stations for pedestrians and bicyclists
- Pathways to the River may be marked (painted or imprinted) with a symbol (such as footprints) that users come to associate with the Mystic River.

Community	Location	
Arlington	Harvard Avenue Boston Avenue	Decatur Street
Medford	West Medford MBTA Station Harvard Avenue Boston Avenue Hastings Lane Medford Square Footbridge Winthrop Street Mystic Avenue Medford Square Bus Station	Mystic Valley Parkway (DCR) Harvard Street Maple Street Ship Avenue Locust Street Fellsway (DCR) Station Landing
Somerville	Shore Drive Assembly Square	

Table 3.1: Location of Access Improvements

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## DOG RECREATION

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DCR’s proposed policy for dog recreation is to provide clean-up bags throughout the park properties so that pet owners and dogs can use all parkland while dogs are leashed.



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## SPECIFIC RECOMMENDATIONS BY AREA

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Trail locations and general recommendations for each of the four Project Areas are described below. More detailed recommendations for conservation areas are described beginning on page 90.

### Section 1: Harvard Avenue Bridge to Auburn Street Bridge

This westernmost portion of the Project Area is bounded predominantly by residential neighborhoods. There are no active recreation areas or major destinations in this section, although the Alewife Brook trail system connects south to Dilboy Stadium. Limited access along the north bank prevents continuous trails along a portion of both edges of the River.

#### *Trail Location*

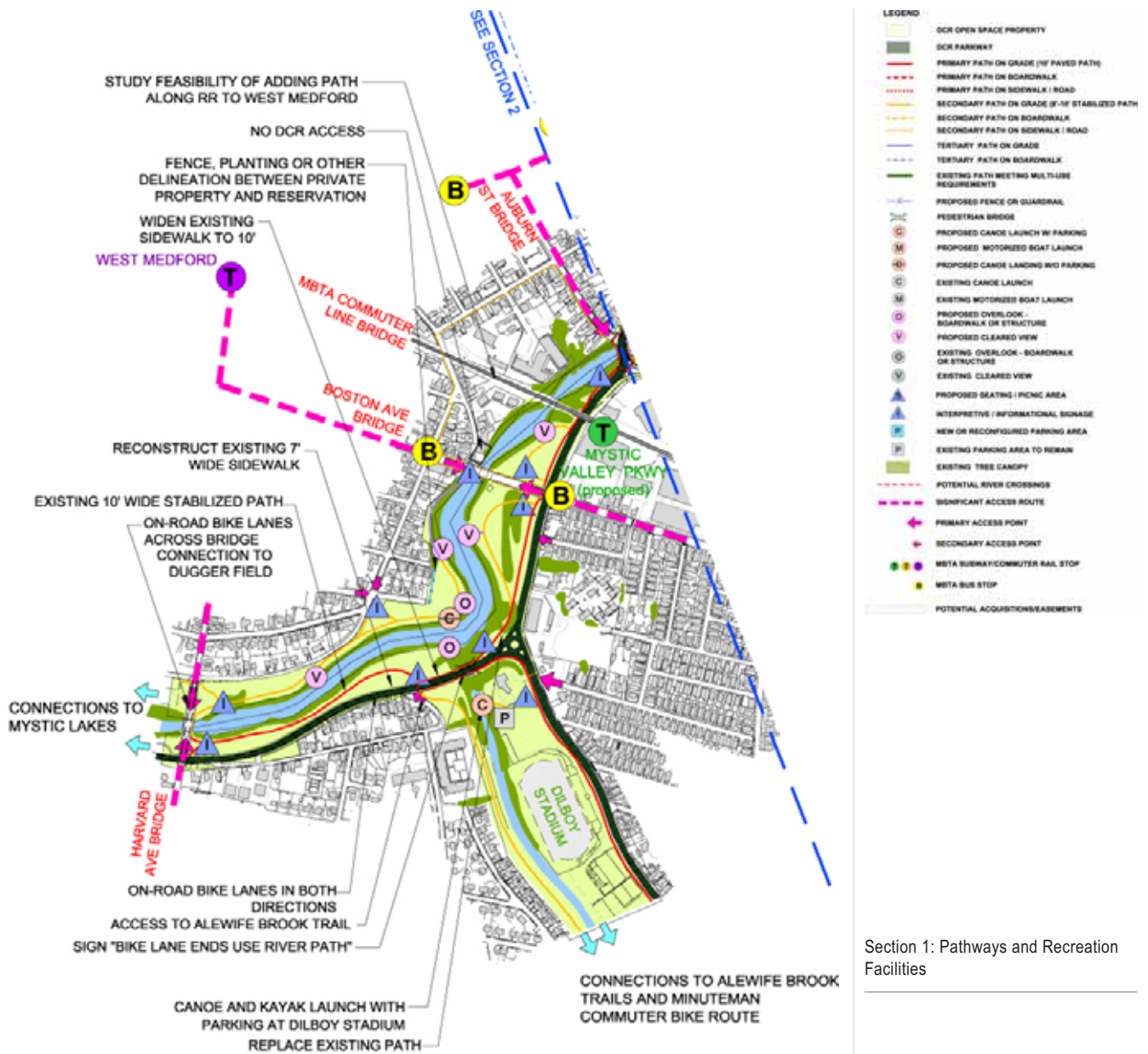
##### Primary Path

The primary path would commence at the Harvard Avenue Bridge in Arlington. The new ten foot wide path would replace the existing 5-foot to 8-foot wide sidewalk that parallels the Mystic Valley Parkway and would be set back a minimum of five feet from the Parkway.

It is recommended that a pedestrian traffic signal be installed at DeCatur Street to provide a safe connection to the Alewife Brook path system. The primary path would then continue east as it crosses the Mystic Valley Parkway Bridge over Alewife Brook. This bridge is in poor condition and may require significant restoration or reconstruction. Currently the bridge consists of two 17-foot travel lanes and two 8-foot sidewalks. It is recommended that the travel lanes be reduced to 12 feet if possible, in order to accommodate 10-foot sidewalks and 5-foot bike lanes. A boardwalk below the bridge along the east bank of Alewife Brook would provide safe connections to Alewife Brook trails.

East of the bridge, the primary trail would follow along the River, returning to the Mystic Valley Parkway at the Boston Avenue intersection due to steep grades along Boston Avenue closer to the River. The path would then cross a signalized intersection at the Auburn Street Bridge. All sidewalks and pathways in this intersection should be 10 feet wide. It is recommended that the Auburn Street Bridge cross-section be modified to provide a 12 foot sidewalk on the east side which will function as a two-way multi-use trail. The existing bridge width can accommodate this sidewalk in addition to the 9.5 foot sidewalk on the west side and two 12 foot travel lanes in each direction.





Section 1: Pathways and Recreation Facilities

### Secondary Paths

A secondary path system would bring park users closer to the River edge on both sides of the River and provides access to overlooks and canoe launches. Following the north bank of the River, a narrow strip of land between residences and steep riverbanks just west of Boston Avenue would need to be constructed as an elevated boardwalk ramping up to meet grade at Boston Avenue. The path would be routed across the Boston Avenue Bridge to the southern shore, as access prohibits a riverfront path on the north bank.





Access improvements at (from top) West Medford MBTA commuter rail stop, Boston Avenue, Boston Avenue East, and Decatur Street

Tertiary paths would permit closer observation of the River at the Alewife Brook confluence and near the Boston Avenue Bridge.

### *Parkway Improvements*

The section of Parkway from the Harvard Avenue Bridge to the Parkway Bridge at Alewife contains significant oak and ash tree plantings, perhaps some of the largest trees along the Parkway. Plantings, expansive lawn areas and good views of the River throughout strengthen the Parkway’s character.

The sidewalk along the non-River side of the Parkway should be redone and missing edge plantings should be filled in where sight lines permit. From the Parkway Bridge to the Auburn Street Bridge plantings on the neighborhood side of the Parkway are sparse. The sidewalk should be redone and curb cuts narrowed or eliminated where possible.

Parkway lighting through this section consists of cobrahead luminaires on concrete poles changing to cobraheads on utility poles in the Medford area. The concrete poles are less visually intrusive. When lighting is updated for the Parkway, changing to the concrete pole should be considered as well as changing all lights to the DCR Boulevard type light noted in the Historic Parkway Preservation Treatment Guidelines.

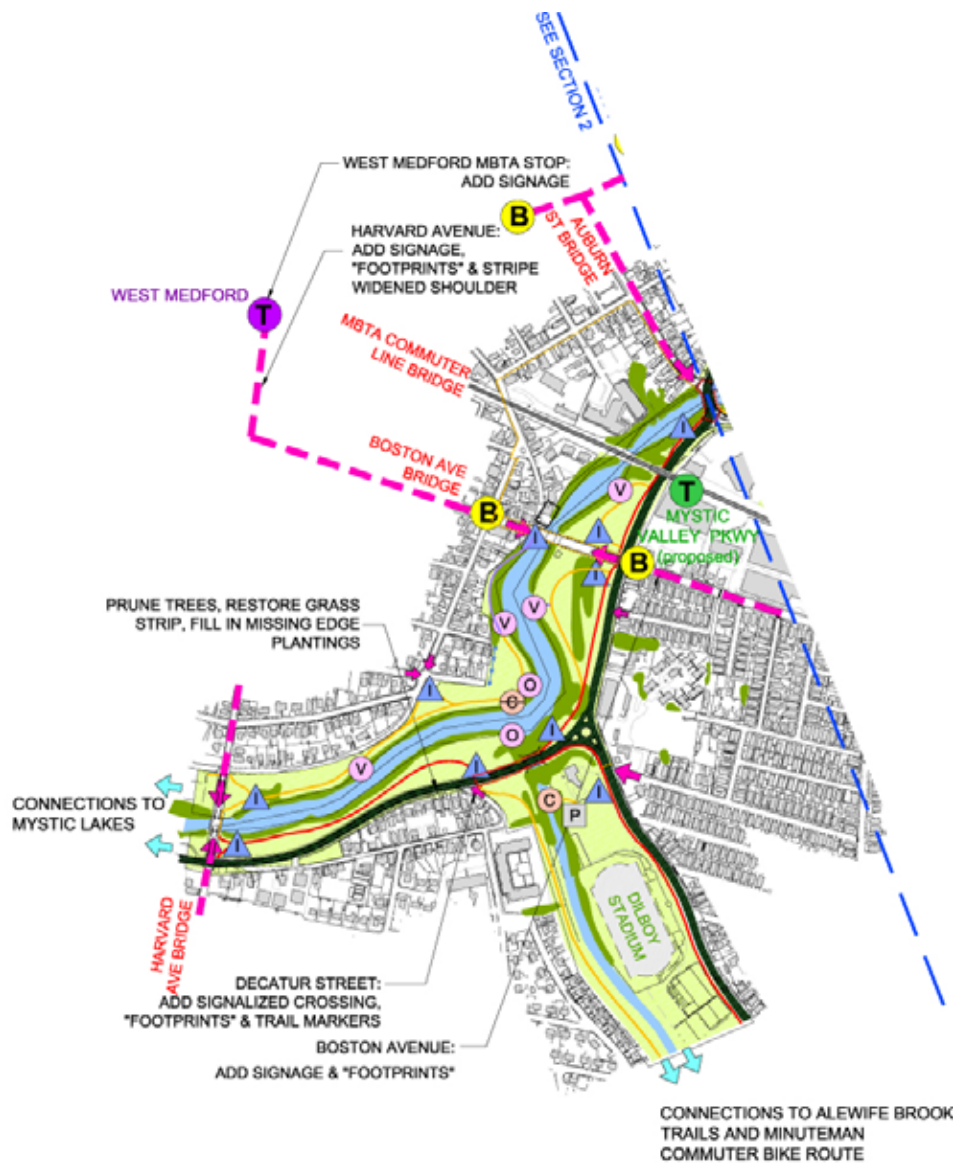
### *Bike Lane*

In keeping with DCR’s intent to accommodate all modes of transportation along parkways where possible, on-road bike lanes should be located in this stretch. There is enough width in the existing roadway to accommodate them. After crossing the Parkway Bridge, the bike lanes would end where the primary path meets the roadway. Signs reading “Bike lane ends, use River path” should be located at this juncture as the roadway from the Parkway Bridge to the Auburn Street Bridge is too narrow to accommodate on-road bike lanes.

### *Access Improvements*

Proposed access improvements (by the communities) include:

- West Medford MBTA commuter rail stop: new signage (Medford)
- Harvard Avenue: signage, “footprints,” and a striped, widened shoulder for bikes (Medford & Arlington)
- Boston Avenue: signage, footprints and a striped, widened parking lane for bikes (Medford & Arlington)
- Decatur Street: signalized pedestrian crossing, “footprints” and trail markers (Arlington)



Section 1: Access Improvements

### Canoe/Kayak Landings

An unofficial canoe/kayak launch currently exists through a break in the fence near the Dilboy Stadium parking lot and the MWRA building, just south of the Project Area. It is recommended that this launch be recognized and reconstructed to project canoe/kayak launch standards, with a pervious path from the parking lot to the shoreline, a floating dock for waterfront access, and an appropriate opening in the fence. A new canoe/kayak landing (without parking) is proposed for the north bank, near the foot of Jerome Street.



### *Destinations*

There are no noted destinations in this section. Recommendations for Dilboy Stadium and Fields, located south of the Project Area, are outlined in the Alewife Brook Master Plan.

### *Views and Overlooks*

New overlooks on either bank at the confluence of Alewife Brook would allow for expansive River views, while existing clearings would remain to provide views of the Harvard Avenue, Boston Avenue and railroad bridges.

## **Section 2: Auburn Street Bridge to Craddock Bridge**

### *Trail Location*

#### *Primary Path*

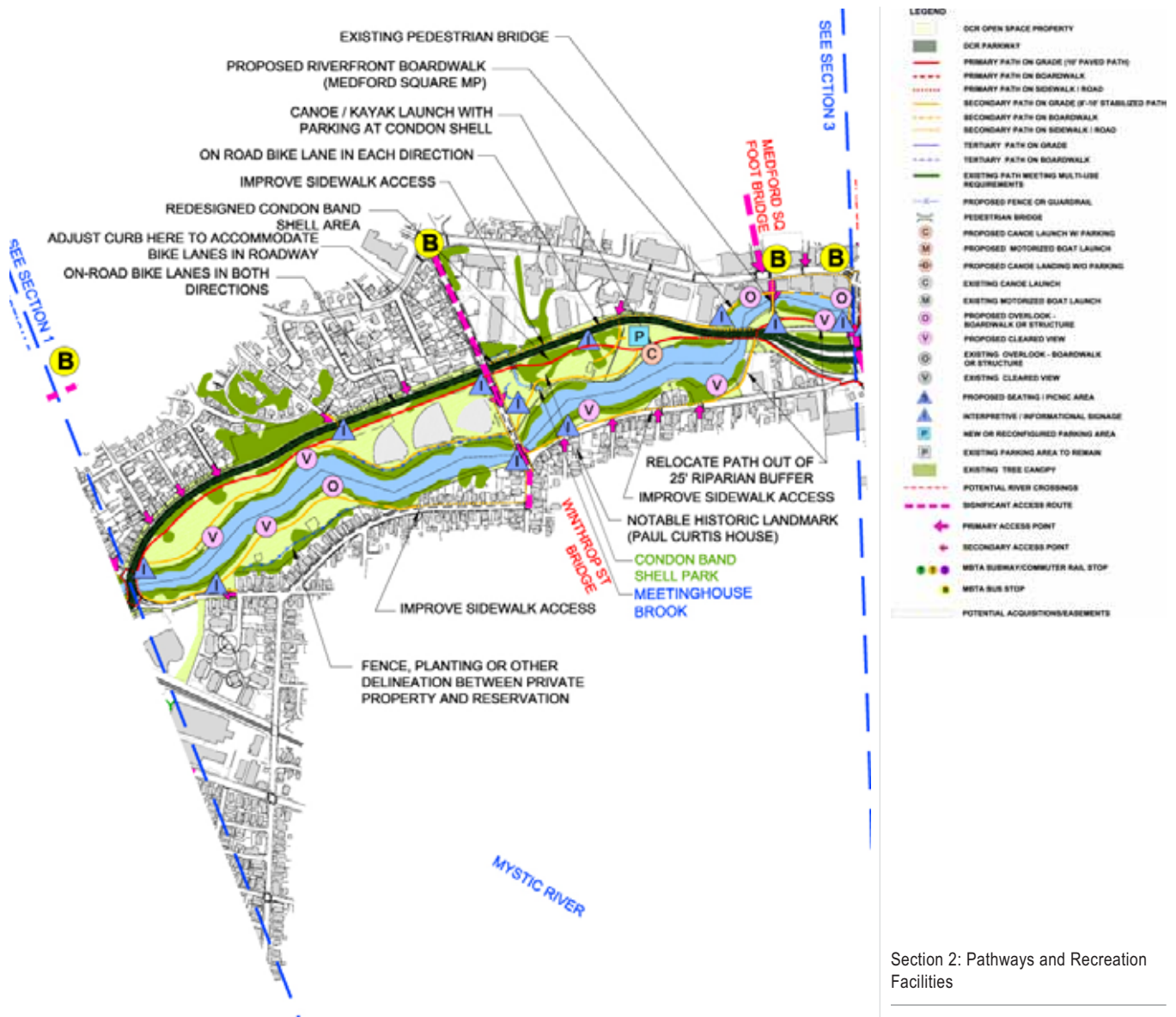


Existing path by the Condon Band Shell

The primary path would cross the River at the Auburn Street intersection and continue along the Mystic Valley Parkway on the north bank. The path would be set back from the Parkway a minimum of five feet, and would be diverted around existing trees. The path would cross Winthrop Street at a signalized intersection and continue along the Condon Band Shell property. A culverted creek would require a cantilevered or constructed pedestrian bridge that would accommodate the multi-use trail. The trail would continue through the Condon Band Shell property on the River side of the parkway area to the Mystic Valley Parkway Bridge. A five foot striped bike lane would be added in each direction (leaving a 17 foot vehicular travel lane in each direction), adjacent to the existing sidewalk at the Mystic Valley Parkway Bridge near Medford Square, continuing east until the path crosses the Parkway at an existing signalized pedestrian crossing. Reducing the travel lanes to 15.5 feet would allow the existing sidewalks to be widened to 8 feet. The primary path would then follow the existing pedestrian bridge to Medford Square north of the River or follow an existing asphalt path that would be realigned out of the riparian buffer on the south bank. It is recommended that a signalized pedestrian crossing be considered at the intersection south of the Craddock Bridge to increase pedestrian safety. Additionally, a primary path would continue along the Mystic Valley Parkway where curbs can be reset to allow for an off-road bike route south of the parkway.

#### *Secondary Paths*

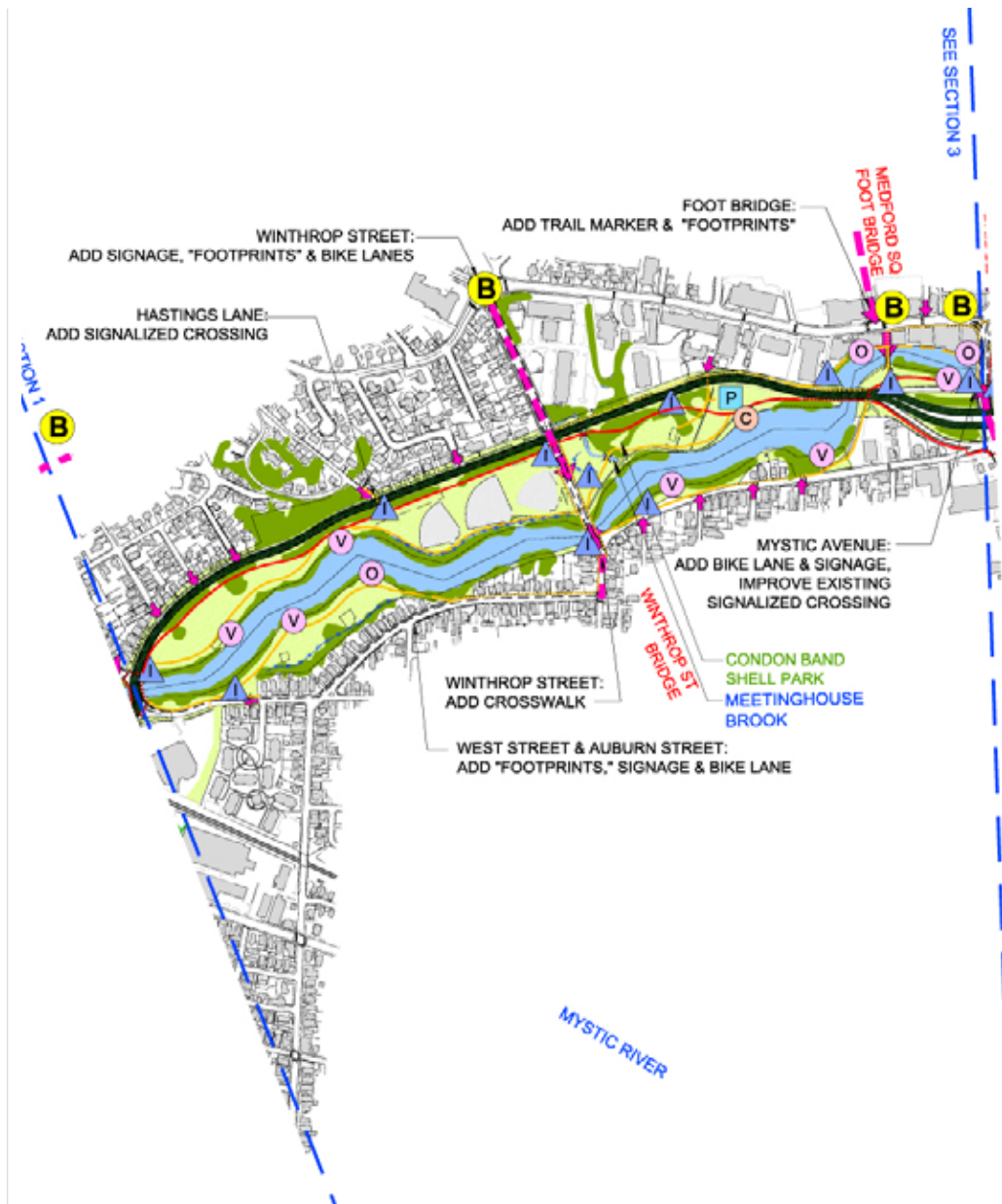
The secondary path on the north bank would follow the River. Adjacent to the baseball fields, safety fencing would separate the path from the River. The secondary path would cross Winthrop Street at an existing pedestrian crossing and continue through the redesigned Condon Shell area. Rather than follow the



Section 2: Pathways and Recreation Facilities

existing path, which is located too close to the shoreline and is causing erosion problems, the path would be routed across the creek via a boardwalk bridge, along the back side of the Condon Shell, eventually meeting the primary path along the Parkway.

To remain on the north bank, the secondary path would cross over the Parkway by the Condon Shell parking lot. It is recommended that the existing striped crossing be replaced with a signalized pedestrian crossing (pending a warrant analysis). The Medford Square Master Plan proposes an elevated boardwalk adjacent to the existing retaining walls. The path would follow this boardwalk to the Craddock Bridge.



Section 2: Access Improvements

The secondary trail along the south bank would follow the existing sidewalk east of the Auburn Street Bridge, moving closer to the River edge behind a small residential neighborhood. An elevated boardwalk, located beyond private property boundaries, would connect the path back to the existing sidewalk along West Street. Encroachments of backyards and private docks behind the houses along West Street would complicate the construction of a waterfront path; therefore, the path would be on sidewalk to the Winthrop Street Bridge. Directional signage should be added in this section to identify the route back

to the River. It is recommended that the existing striped crossing be relocated further south on Winthrop Street to improve sight distances for pedestrian safety.

New sidewalks would be added on the River side of South Street to continue the secondary path east of the Winthrop Street Bridge where encroachments of backyards and private docks behind the houses along South Street would complicate the construction of a waterfront path. At Manning Street, an existing multi-use path follows the River to the Mystic Valley Parkway where the secondary path would intersect with the primary path.

### *Parkway Improvements*

Parkway plantings in this section are generally in good condition. Plantings and views of the River strengthen the Parkway's character although tree canopies should be thinned in some locations to allow for better sightlines to the River. Missing edge plantings should be replaced. Median plantings should be improved at the bridge just before the pedestrian overpass.

Lighting consists of cobrahead luminaires on utility poles. When lighting is updated, the historic Boulevard type fixture is recommended in the Historic Parkway Preservation Treatment Guidelines.

### *Bike Lane*

On-road bike lanes should be located on the Mystic Valley Parkway between the Auburn Street and Mystic Valley Parkway Bridges. Although road widths allow for bike lanes throughout most of this stretch, some curb realignment would be needed at Winthrop Street. The roadway would require re-striping throughout.

### *Access Improvements*

Recommended access improvements (which would need to be done by the City of Medford) include:

- Hastings Lane: new signalized crossing
- Medford Square footbridge: trail marker and "footprints"
- Winthrop Street: signage, "footprints," and bike lane
- Winthrop Street: new crosswalk
- Mystic Avenue: pedestrian controls for the north and east crossings at the existing signal, bike lanes, "footprints" and trail markers
- West Street and Auburn Street: signage, "footprints" and bike lane



Access improvements at (from top) Hastings Lane, Medford Square footbridge, Winthrop Street (2) and West Street



Proposed improvements to Condon Shell park



### *Canoe/Kayak Landings*

The existing unofficial riverfront access at the Condon Shell parking lot should be designated as a canoe/kayak launch. Existing eroded banks require restoration. A proposed new access path would lead to a floating dock.

### *Destinations*

#### *Condon Shell*

The design of a new performance space and the surrounding park is being developed as a separate project by the City of Medford. The facility will be programmed for community events and various performing arts groups events and will be a destination along the River.

Recommendations include:

- New bandstand located farther from River edge
- New location for vendors
- New canoe launch convenient to parking
- New children’s play area



- Relocated waterfront trail
- Replacement of concrete culvert bridge with boardwalk
- Replacement of benches and drinking fountains

### *Views and Overlooks*

West of the Winthrop Street Bridge existing openings in riverfront vegetation would be enhanced and a decked overlook would be added at the River bend. Pruning of selected vegetation along South Street would provide views of the Condon Shell area and the Parkway Bridge.

### *Unresolved Issues*

The Medford Square Master Plan proposes a boardwalk from the Mystic Valley Parkway Bridge to the Craddock Bridge, which cantilevers off of existing buildings and retaining walls. The timing of the implementation of that plan is unknown, and alternate routes may be required. The path could continue over the Parkway Bridge to the Medford Square foot bridge and into the Square, where there is a signalized crossing. Alternatively, the path could remain on the south bank until the Craddock Bridge.

Significant encroachments exist along West Street and South Street. The narrow width of DCR property would make a riverfront path difficult. Therefore, it is recommended that the path be diverted around these residences. It is also recommended that the encroachments be resolved and that planting be used to formalize the public area.

## **Section 3: Craddock Bridge to Wellington Bridge**

### *Trail Location*

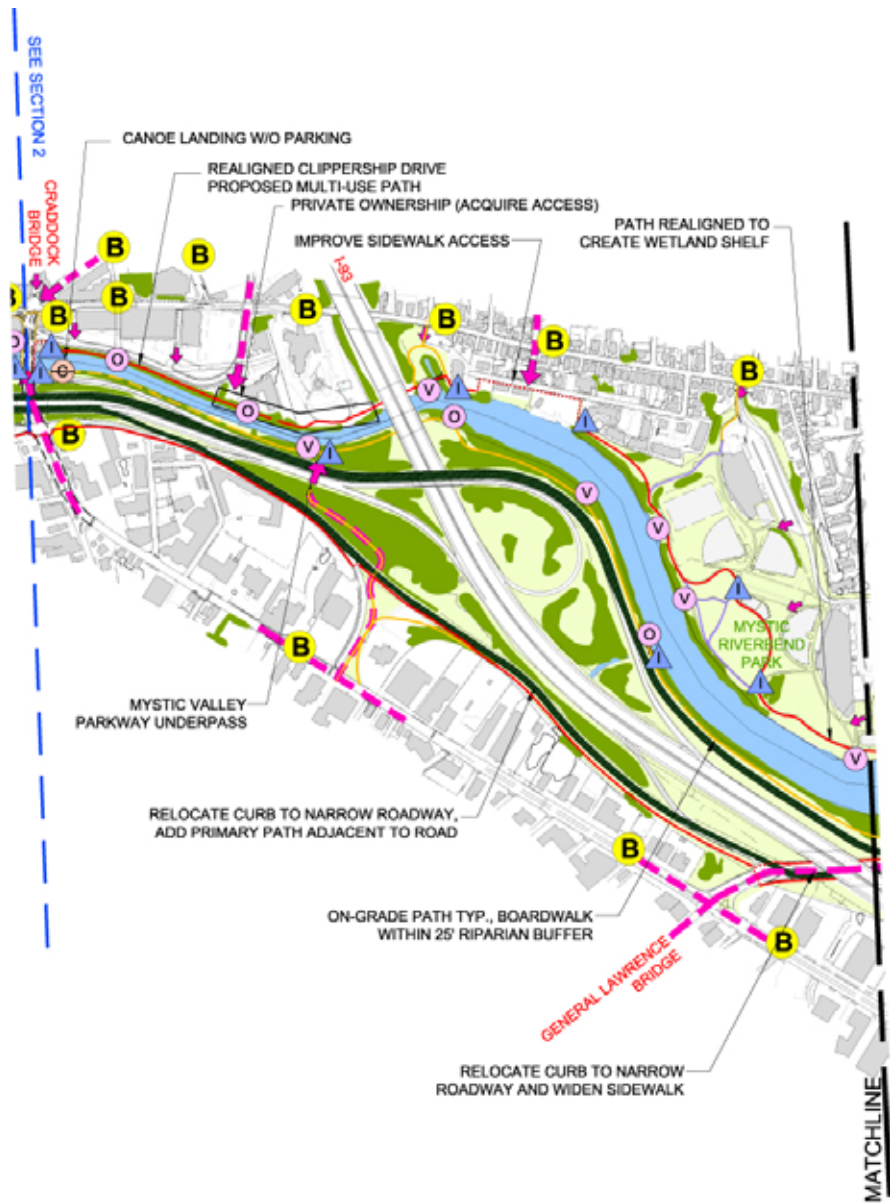
#### *Primary Path*

Primary paths would continue on both sides of the River and along the Mystic Valley Parkway where curbs would be reset to allow for a 10' wide off-road bicycle route.

#### *South Bank*

The primary path would continue on-grade along the south bank of the River past the renovated canoe landing. The path would then switch to elevated boardwalk for approximately 1000 feet due to very steep slopes and narrow passage between the Parkway exit and the riverbank. Where there is sufficient width and level ground, the path would resume on-grade and continue under the I-93 Bridge and east to the General Lawrence Bridge. There may be some





Section 3: Pathways and Recreation Facilities

shorter segments in this section that would require the path to be constructed on boardwalk. The path would connect with the existing underpass at the General Lawrence Bridge, and split to follow both banks of the River.

The southern primary path would follow the existing multi-use trail which extends from the General Lawrence Bridge to the Blessing-of-the-Bay Boathouse. East of the Boathouse a new path would follow the shoreline around the Ten Hills neighborhood, leading to a proposed pedestrian underpass at the Fellsway Bridge.



*North Bank*

East of the Craddock Bridge, the realignment of Clippership Drive would create a River walk and small park. The primary path would follow the River to the adjacent private senior housing facility. It is recommended that the path continue past this facility to connect to DCR property to the east. The path would continue on-grade through this property and under the I-93 Bridge (this will





Access improvements at (from top) Medford Square Bus Station, Mystic Avenue, Mystic Valley Parkway Exit, Mystic Valley Parkway Exit Crossing, and Mystic Valley Parkway

require an easement from MHD and from the Senior Housing development). The path could either be routed on-grade around an existing inlet or cross the inlet on boardwalk. Due to private encroachments and waterfront access requirements at the Riverside Yacht Club, it is recommended that the trail be diverted to sidewalks along Ship Avenue. Existing narrow sidewalks would require improvements. The trail would follow the east edge of the Yacht Club property where it would continue east along the River edge to Mystic Riverbend Park.

The northern path would cross under the General Lawrence Bridge and continue east along the existing multi-use trail following the Mystic Valley Parkway through McDonald Park. The existing path varies in width and may need to be widened in some areas to meet 10-foot wide guidelines. Path continuity would need to be improved east of the McDonald Park parking lot and along the Fellsway, as there are several interrupted sections in the existing path. The path would follow the proposed underpass below the Wellington Bridge; alternatively it could continue south over the Bridge to reconnect with the southern primary path.

### Secondary Paths

#### *North Bank*

Secondary paths would follow the existing path system in Mystic Riverbend Park. Within McDonald Park, trails vary in width and may need improvements to meet secondary path guidelines. Improvements would be required at the bridge over the culvert near the Mystic Valley Parkway. The path would follow the existing trail through the conservation area, but the chain link fence would be replaced with wood railing and located farther from the trail to improve the sense of safety and security in this isolated area. The bridge over the creek near the Fellsway will require improvements to meet secondary path guidelines and ADA requirements. From McDonald Park the path would join the primary path to continue east via the proposed underpass at the Wellington Bridge.

#### *South Bank*

There would be no secondary paths along the south bank of the River in this section because of limited space. A pathway around the perimeter of the opened island just east of the Parkway Bridge is accessible by boat only.

Tertiary paths at Mystic Riverbend Park, the Reservation peninsula and McDonald Park would allow access closer to the River edge and through sensitive ecological areas.

### *Parkway Improvements*

The Parkway in this section has lost much of its parkway character. Eastbound, between Medford Square and General Lawrence Bridge, it runs along a weedy vegetated area between the Parkway and Route 93. The fence separating the parkway and vegetated area should be replaced, with a lower railing if possible, for a more groomed parkway edge. Invasive vegetation should be cut back from the edge of the parkway. The primary path would be located on an improved sidewalk along the south side of the roadway. Relocating the curb to provide more space for the primary path and planting would improve the character of the Parkway. Parkway tree plantings would be added along this stretch.

Westbound, between General Lawrence Bridge and Medford Square, the Parkway affords good views of the River. Replacing guardrails with the historic parkway guardrail noted in the Historic Parkway Preservation Treatment Guidelines and replacing lighting to match the lighting fixture proposed for the Parkway would improve Parkway character.

Parkway improvements adjacent to McDonald Park should include replacing light fixtures and guardrails.

### *Bike Route*

Although bicycle lanes are not recommended along the Parkway adjacent to McDonald park, the wide shoulders should be signed as a bicycle route for those bicyclists who prefer road travel.

### *Access Improvements*

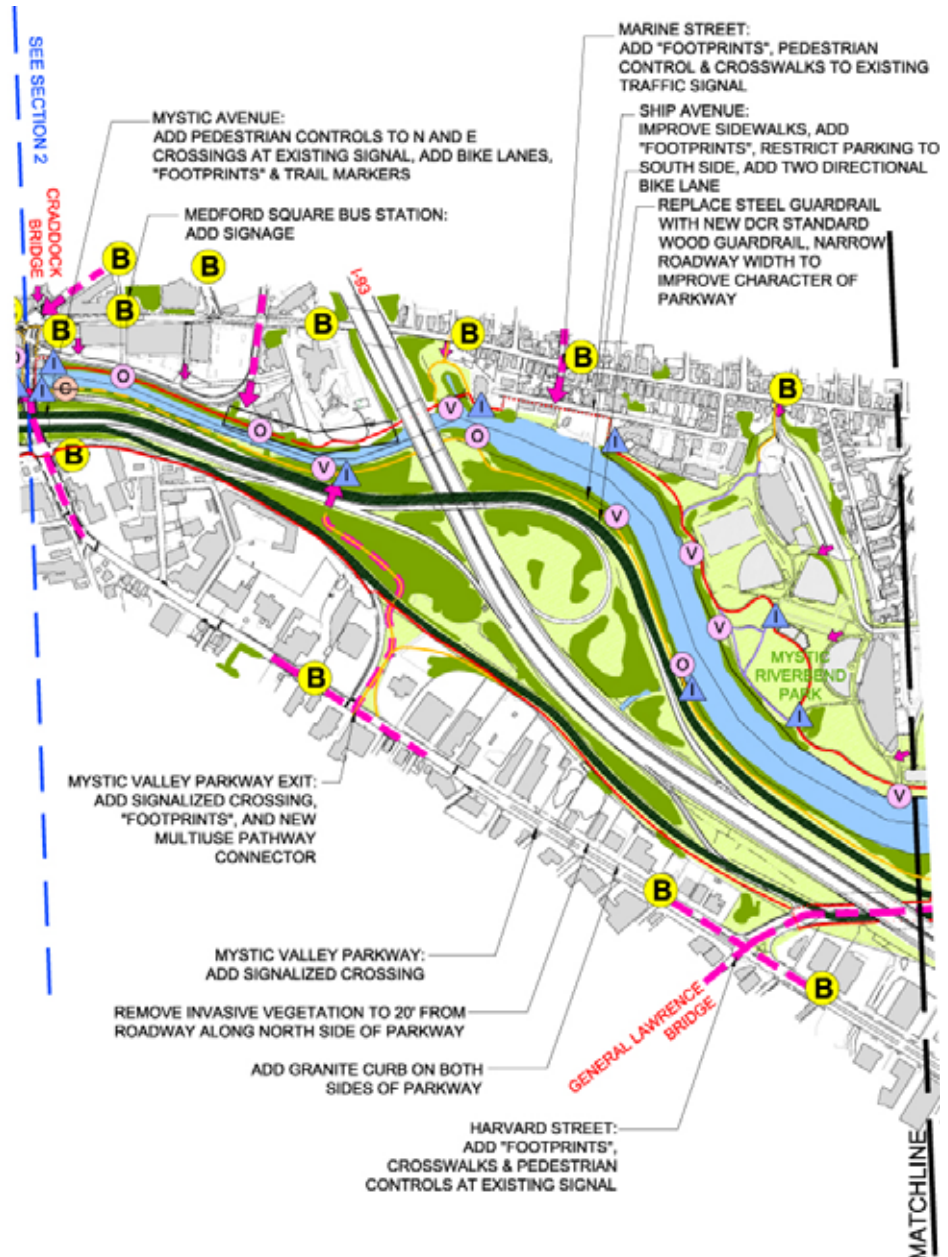
Recommended access improvements include:

- Medford Square bus station: new signage (Medford)
- Mystic Avenue: bike lane and signage improvements at the existing signalized crossing (Medford)
- Mystic Valley Parkway exit: signalized pedestrian crossing, new multi-use pathway connector and “footprints”, consider underpass at Mystic Valley Parkway (Medford)
- Mystic Valley Parkway: signalized pedestrian crossing
- Harvard Street: footprints, crosswalks and pedestrian controls at the existing signal (Medford)
- Marine Street: “Footprints”, pedestrian control at the existing traffic signal, crosswalks (Medford)



Access improvements at (from top) Harvard Street, Marine Street, Ship Avenue, Locust Street and Ten Hills





Section 3: Access Improvements

- Ship Avenue: sidewalk improvements and “footprints”; restrict parking to south side; new two-directional bike lane (Medford)
- Locust Street: new signage and “footprints”; rebuild sidewalk and stripe shoulder for bike use (Medford)
- Ten Hills (Shore Drive): improve lighting; add “footprints” and crosswalk west of signal (Somerville)
- Fellsway: add “footprints”



*Canoe/Kayak Landings*

An inactive concrete boat ramp is located east of the Craddock Bridge in Medford Square. It is recommended that this ramp be reduced in size and modified for use as a canoe/kayak landing. Due to the absence of parking, this landing would





Recommended improvements to McDonald Park

be accessed via water only, but would allow users to pull up and explore Medford Square.

A new park created by the realignment of Clippership Drive is being considered for a boat docking facility. If this facility is constructed, the ramp east of the Craddock Bridge may be removed, depending on the programming and use of the new facility.



View of Mystic Riverbend Park from the General Lawrence Bridge

An existing canoe/kayak launch is located at Mystic Riverbend Park near Hormel Stadium. The access path to the launch is significantly eroded. It is recommended that the path be restored and waterfront access be converted from a flat pull out to a floating dock.

To provide waterside access to the Reservation peninsula, it is recommended that a dock be provided just south of the point of the peninsula. Visitors could pull up and follow the secondary trail loop to view the diverse habitats on the peninsula.

A new dock is proposed at McDonald Park west of the existing fishing dock. It is recommended that this new dock be accessible from canoes and kayaks via attached floating docks. Alternatively, the existing fishing dock at McDonald Park could be made accessible from canoes and kayaks via attached floating





docks. Visitors could explore the trails at McDonald Park or rest at the nearby picnic area.

Restoration of the existing police boat house for use as a canoe and kayak rental is proposed as part of the McDonald Park recommendations. Nearby parking would facilitate access to the boat rental facility. The potential need for dredging would increase the cost of this facility.

The Blessing-of-the-Bay Boathouse near the Ten Hills neighborhood on the south bank provides canoe, kayak and paddleboat rentals and permits launching of private canoes and kayaks. The docks can also accommodate rowing shells used by several crew programs. Nearby picnic areas also make this an important landing location. However, the boathouse and surrounding landscape are in poor condition and the existing docks are not ideal for crew activities. (See Blessing of the Bay Boathouse below for recommended improvements.)

### *Destinations*

#### *Clippership Park*

Improvements to Clippership Drive and Clippership Park were recommended as part of the City of Medford's Downtown Master Plan and a first phase of



improvements is being implemented by the City. Clippership Drive is being realigned, creating more space form a proposed multi-use pathway and significant open space along the River which may be developed into a park. Other specific recommendations include:

- New interpretive elements and signage highlighting the history of the River and the Square
- New design for the 1.5-acre Clippership Park, consisting of a continuous waterfront promenade with opportunities for views and overlooks, walking and biking paths, areas for passive recreation and community activities, and possibly boat docking

### Mystic Riverbend Park

Mystic Riverbend Park was developed in 2002 and remains in good condition. Recommendations include only minor changes or improvements to existing facilities. Specific recommendations include:

- Realign small section of secondary path out of 25-foot riparian buffer
- Restore canoe launch area
- Clear/prune selected sections of vegetation to enhance views

It is also recommended that public use of the school sports fields be allowed when the fields are not in use by the schools.

### McDonald Park

The plan for McDonald Park would provide for a wider range of visitor experiences, adding elements such as canoeing/kayaking facilities, an interpretive boardwalk and a new Reservation visitor center, while protecting important conservation areas. Specific recommendations include:

- New visitor center facility and DCR administrative offices in existing police building
- New boardwalk through meadow area
- New dock at end of boardwalk with interpretive elements and small craft docking area
- Improve existing dock
- Improve primary paths to meet guidelines and ADA requirements
- New canoe/kayak rental facility in existing police boathouse
- Clear/prune selected sections of vegetation to enhance views



Views of boardwalk through McDonald Park (top) and Boston skyline from McDonald Park (bottom)



Renderings illustrate potential new interpretive boardwalks along the channel and through the meadow area at McDonald Park

- Improve safety in conservation areas by removing chain link fence and widening mowed strips in selected areas

### Reservation Peninsula

The key recommendation for this area involves dredging a small channel to turn the peninsula into an island. As discussed in the conservation recommendations, this action would help to improve water quality around the peninsula. The island would be accessible by boat only, limiting the number of visitors and helping to protect the natural environment. Specific recommendations include:

- New canoe/kayak landing
- New secondary trail loop
- Clear/prune selected sections of vegetation to enhance views and create decked overlook

### Blessing-of-the-Bay Boathouse

The Blessing of the Bay Boathouse is on DCR property and is informally managed by the Somerville Boys and Girls Club. Rowing crews from Somerville High School, Gentle Giant and Lesley University have used this location to launch and store shells. The following recommendations were included in the 2004 Master Plan developed by COG Design.

- New boathouse and dock more suitable for crew activities and storage
- New picnic areas and gathering places
- New trail alignment
- Selective clearing/pruning to open views to the River
- New overlooks

A 2009 grant from the Massachusetts Environmental Trust Fund will be used for dock improvements and a path to Foss Park (the Blue Heron Trail) south of I-93 and Mystic Avenue.



Recommended improvements to  
Blessing of the Bay Boathouse



***Views and Overlooks***

A number of new overlooks, as well as selected clearing to open views on both banks of the River, would allow for expansive River views along this entire stretch of the River.

***Unresolved Issues***

The private senior housing facility east of Clippership Drive is currently under private ownership. If a DCR easement is not possible in this section it is suggested that the path be routed along the parking lot to the north of the building and back toward the River along the adjacent property’s western fence line.

Encroachments and waterfront access requirements at the Riverside Yacht Club complicate construction of a continuous riverfront boardwalk. A long term goal of the Master Plan is the elimination of encroachments on these properties to create an uninterrupted multi-use path.

Pedestrian underpasses are proposed at both ends of the Wellington Bridge. As part of the mitigation for the Assembly Square redevelopment, Federal Realty is funding the design and construction of a pedestrian underpass at the southern end of the Wellington Bridge. National Development is funding the planning and preliminary design of an underpass on the northern end at Station Landing. Until completion of these underpasses is achieved, the path should be routed to nearby signalized intersections.

## Section 4: Wellington Bridge to Malden Bridge

### *Trail Location*

Following the south bank, the primary path would continue east along the shoreline from the Wellington Bridge underpass. Path design and development for the Assembly Square area will be provided as mitigation for the Assembly Square Redevelopment. The Wellington Bridge underpass also will be constructed as part of the mitigation package (see above). At the Winter Hill Yacht Club the path would follow the existing route in front of the Club to the underpass at the MBTA Bridge. East of the bridge the primary path would pass by the proposed pedestrian bridge and the Amelia Earhart Dam and connect with the redesigned path system at Draw 7 Park. The proposed MBTA Charlestown Riverwalk then would connect the primary route on elevated boardwalk from Draw 7 to the Malden Bridge. Though the Master Plan design for the primary path ends at this bridge, the establishment of the path up to this point will facilitate future development of a continuous multi-use path to downtown Boston.

East of the Wellington Bridge the primary path would continue on boardwalk along the north shore until connecting with improved existing paths at Station Landing and the Wellington Yacht Club. The existing path east of the Yacht Club would be moved farther from the shore, out of the 25-foot riparian buffer, up to the constructed peninsula where it would remain in the existing location but be widened to meet primary path guidelines. The primary path would continue past the MBTA underpass to a new path along the Malden River shoreline of the MBTA parcel north to the Woods Memorial Bridge. The poor condition of the existing bridge necessitates reconstruction. It is recommended that pedestrian boardwalk underpasses on both banks be included in this reconstruction to connect to existing trails north of the bridge, or that the bridge span be widened to include at-grade underpasses, thus keeping a wider water surface. Additionally, access from the trail to the bridge would be improved to continue the path to the east.

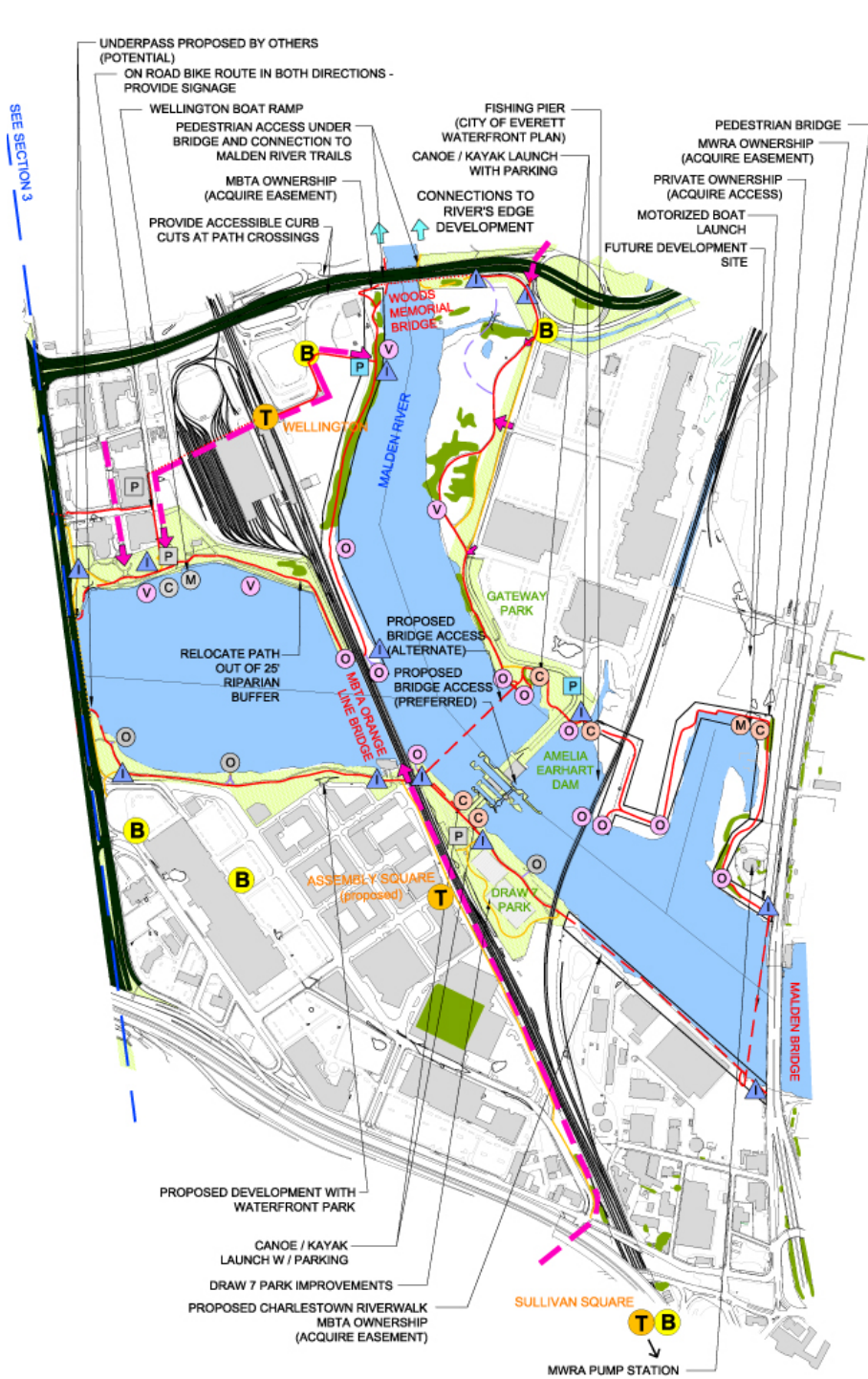
From the Woods Memorial Bridge the primary path would follow existing (improved) sidewalks along Revere Beach Parkway and Mystic View Road to the improved riverfront path at Gateway Park. A proposed pedestrian bridge would connect Gateway Park and Draw 7 Park. The path would cross the access road to the Amelia Earhart Dam and continue on elevated boardwalk over an inlet and mudflat to a proposed fishing pier west of the MBTA Bridge. The path would connect under the MBTA Bridge to the Modern Continental site and could be designed as part of the future redevelopment of that site. To connect to the Malden Bridge the path would follow the shoreline along the MWRA site.



Existing path by Mystic Landing and Wellington Yacht Club



- LEGEND**
- DCR OPEN SPACE PROPERTY
  - DCR PARKWAY
  - PRIMARY PATH ON GRADE (10' PAVED PATH)
  - PRIMARY PATH ON BOARDWALK / ROAD
  - PRIMARY PATH ON SIDEWALK / ROAD
  - SECONDARY PATH ON GRADE (8'-10' STABILIZED PATH)
  - SECONDARY PATH ON BOARDWALK
  - SECONDARY PATH ON SIDEWALK / ROAD
  - TERTIARY PATH ON GRADE
  - TERTIARY PATH ON BOARDWALK
  - EXISTING PATH MEETING MULTI-USE REQUIREMENTS
  - PROPOSED FENCE OR GUARDRAIL
  - PEDESTRIAN BRIDGE
  - PROPOSED CANOE LAUNCH W/ PARKING
  - PROPOSED MOTORIZED BOAT LAUNCH
  - PROPOSED CANOE LANDING W/ PARKING
  - EXISTING CANOE LAUNCH
  - EXISTING MOTORIZED BOAT LAUNCH
  - PROPOSED OVERLOOK / BOARDWALK OR STRUCTURE
  - PROPOSED CLEARED VIEW
  - EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
  - EXISTING CLEARED VIEW
  - PROPOSED SEATING / PICNIC AREA
  - INTERPRETIVE / INFORMATIONAL SIGNAGE
  - NEW OR RECONFIGURED PARKING AREA
  - EXISTING PARKING AREA TO REMAIN
  - EXISTING TREE CANOPY
  - POTENTIAL RIVER CROSSINGS
  - SIGNIFICANT ACCESS ROUTE
  - PRIMARY ACCESS POINT
  - SECONDARY ACCESS POINT
  - MBTA SUBWAY/COMMUTER RAIL STOP
  - MBTA BUS STOP
  - POTENTIAL ACQUISITIONS/EASEMENTS



Section 4: Pathways and Recreational Facilities

Secondary paths would lead to overlooks at Assembly Square, Draw 7 Park and the MBTA Bridge peninsula. Circulation paths at Gateway Park and Draw 7 Park also would be designated as secondary paths.

A tertiary boardwalk path at Gateway Park would provide access through sensitive ecological areas. Tertiary paths also would lead to overlooks along the water edge.

### *Parkway Improvements*

The appearance of the parkway through this section should be improved through the replacement of fencing and guardrails using the new DCR historic parkway wood and steel guardrail and placing guardrails between pedestrians and the road. Many sidewalks need to be reconstructed and lighting needs to be replaced with the proposed light fixture.

### *Bike Lane*

Narrow roadways and high speed traffic do not allow for bicycle lanes in this section.

### *Access*

Recommended access improvements include:

- Station Landing: add signage and “footprints”
- Assembly Square: add trail through inactive MBTA railyard
- New pedestrian bridge adjacent to Amelia Earhart Dam (see Page x for a discussion of crossing alternatives)

### *Canoe/Kayak Landings*

The existing boat launch at the Mystic Wellington Yacht Club provides parking and water access for canoes and kayaks as well as motorized boats. It is recommended that the jet skis be relocated to a new motorized launch south of the MBTA bridge.

East of Gateway Park canoe and kayak launches are added both upriver and downriver of the Amelia Earhart Dam. Parking for the launches is added along the access road to the Dam.

As part of the development planning for the Modern Continental site it is recommended that both a motorized boat ramp and a canoe/kayak launch be included in any marina design.

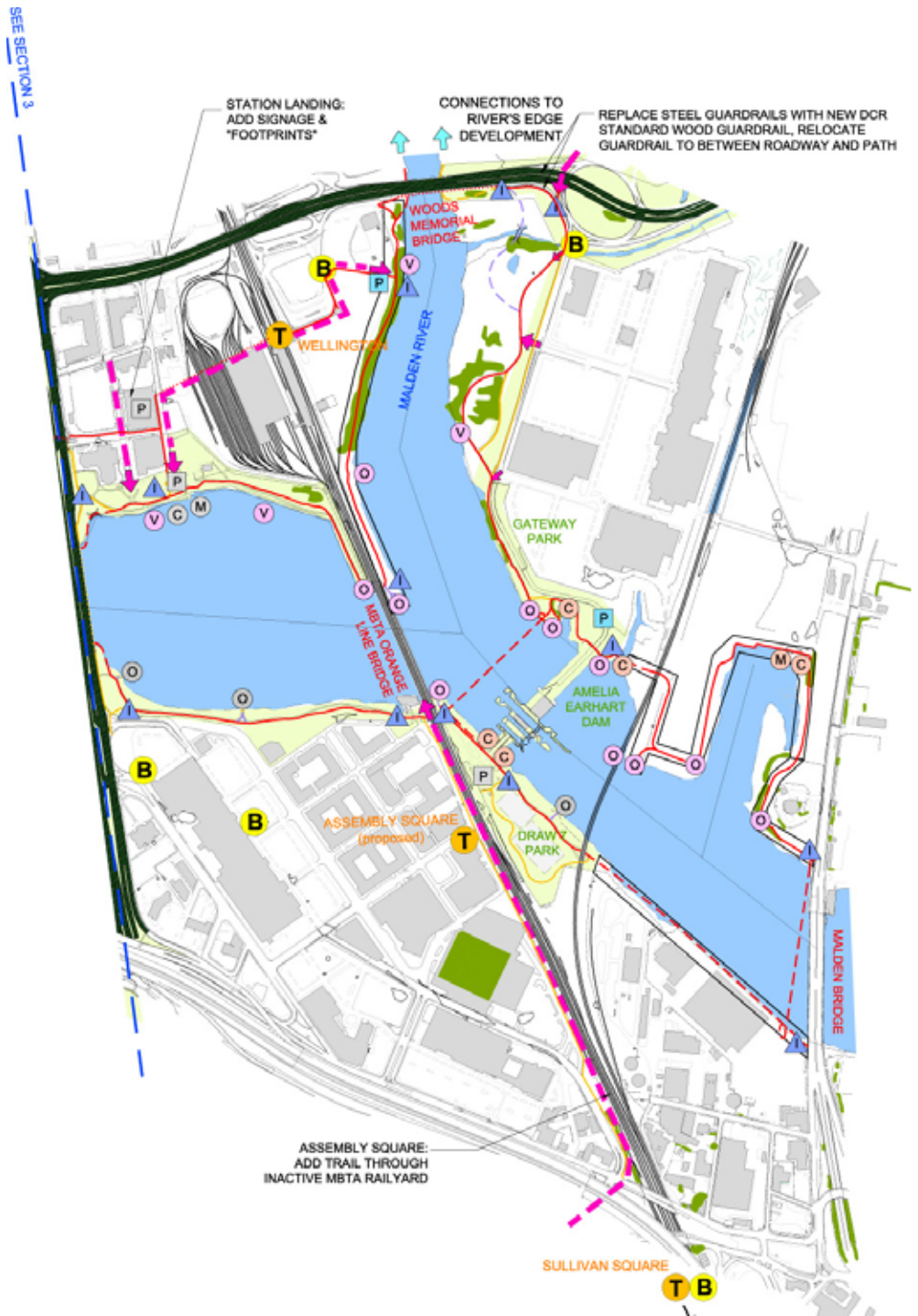
Adequate riverfront parking and ease of River access at Draw 7 Park facilitate small craft launch areas. Currently, canoes and kayaks can be launched along



Access improvements at Station Landing and Assembly Square



- LEGEND**
- DCR OPEN SPACE PROPERTY
  - DCR PARKWAY
  - PRIMARY PATH ON GRADE (10' PAVED PATH)
  - PRIMARY PATH ON BOARDWALK
  - PRIMARY PATH ON SIDEWALK / ROAD
  - SECONDARY PATH ON GRADE 8'-10' STABILIZED PATH
  - SECONDARY PATH ON BOARDWALK
  - SECONDARY PATH ON SIDEWALK / ROAD
  - TERTIARY PATH ON GRADE
  - TERTIARY PATH ON BOARDWALK
  - EXISTING PATH MEETING MULTI-USE REQUIREMENTS
  - PROPOSED FENCE OR GUARDRAIL
  - PEDESTRIAN BRIDGE
  - PROPOSED CANOE LAUNCH W/ PARKING
  - PROPOSED MOTORIZED BOAT LAUNCH
  - PROPOSED CANOE LAUNCH W/ NO PARKING
  - EXISTING CANOE LAUNCH
  - EXISTING MOTORIZED BOAT LAUNCH
  - PROPOSED OVERLOOK, BOARDWALK OR STRUCTURE
  - PROPOSED CLEARED VIEW
  - EXISTING OVERLOOK, BOARDWALK OR STRUCTURE
  - EXISTING CLEARED VIEW
  - PROPOSED SEATING / PICNIC AREA
  - INTERPRETIVE / INFORMATIONAL SIGNAGE
  - NEW OR RECONFIGURED PARKING AREA
  - EXISTING PARKING AREA TO REMAIN
  - EXISTING TREE CANOPY
  - POTENTIAL RIVER CROSSINGS
  - SIGNIFICANT ACCESS ROUTE
  - PRIMARY ACCESS POINT
  - SECONDARY ACCESS POINT
  - MBTA SUBWAY/COMMUTER RAIL STOP
  - MBTA BUS STOP
  - POTENTIAL ACQUISITIONS/REQUIREMENTS



Section 4: Access Improvements



the length of the beach downriver of the dam. It is recommended that a specific launch site be designated with docking facilities. A similar launch also would be added upriver of the dam.

### *Destinations*

#### *Gateway Park*

Gateway Park was developed as mitigation when the Gateway Shopping Center was built. The park provides pathways along the River and through the large natural area to the north. Specific recommendations include:

- Widen existing paths to meet primary path guidelines
- Clear/prune selected sections of vegetation to enhance views

#### *Draw Seven Park*

The Draw Seven Park soccer fields are heavily used by nearby neighborhoods, and together with the fields at the Medford Schools Complex, are the only designated fields within the Project Area. Recommendations for this park include improving the soccer fields and associated amenities, as well as enhancing boating and fishing facilities to bring more people to the River. A proposed new MBTA Orange Line Station at Assembly Square will greatly improve access to this park.

Recommended improvements include:

- Realign & re-sod existing soccer field; add new children's soccer field
- New public facilities for soccer fields (benches, bathrooms, storage)
- New fishing pier
- New canoe launches up-River & down-River of the Amelia Earhart Dam
- New overlook up-River of the Dam
- Improve existing paths to meet primary path guidelines
- Stabilize riverbank and increase width of riparian area except at boat launch
- Improve circulation and plantings
- New granite entrance piers

Redevelopment plans for Assembly Square include a mitigation commitment to provide in-kind cash funding for Draw 7 Park enhancements and for the Route 99/Draw 7 Park connector trail.





Recommended improvements to Draw 7 Park

### *Views and Overlooks*

There are many opportunities for views and overlooks in this section of the Project Area due to the expansiveness of the River basin and limited existing vegetation. Clearings in vegetation should occur at Station Landing and east of the Wellington Yacht Club to improve views of the River and the Boston skyline. Views of the Malden River and Woods Bridge should be added along the MBTA Wellington parcel and Gateway Park. Decked overlooks would be constructed at the peninsulas along the River, including MBTA bridges, the southern point of Gateway Park, and both sides of the inlet at the Modern Continental site. Existing overlooks at the Assembly Square/Mystic View site should be improved to meet current ADA standards. The existing fishing pier at Draw 7 Park should be restored or rebuilt for fishing and as an overlook area.

### *Unresolved Issues*

At this time DCR does not own shoreline property along the MBTA Wellington site. An easement is necessary to facilitate the continuous path system through this site. This connection is an extremely important link and it is recommended that the acquisition process be started as early as possible.

As discussed more fully in Appendix A, in 2009, DCR, in cooperation with Exelon New England Holdings, LLC, conducted a study to evaluate the feasibility of providing a bicycle and pedestrian crossing over the Mystic River in the vicinity of the Amelia Earhart Dam. It was determined that the most feasible option was an independent bridge structure upriver of the Dam. At this time no design work beyond the feasibility study has been completed. The bridge is not imperative to the completion of the continuous riverfront path, and the crossing could be completed at a later date; in the short-term, the River crossing could occur at the Malden Bridge only.

The MBTA Charlestown Riverwalk is also incorporated in the feasibility study for the Dam crossing. There are several issues preventing construction of this path, including acquisition of a waterfront easement through the MBTA site and the removal of a munitions storage facility on the site. It is unknown at this time when design of the Riverwalk will commence. As this section is a critical link to the continuous path system, it is recommended that easement acquisition and Riverwalk design be pursued as early as possible. It is necessary that either the pedestrian bridge or the Riverwalk be completed to link the continuous path system to Assembly Square and Draw 7 Park.

Development plans for the Modern Continental site are unknown at this time. It is recommended that future site planning incorporate path guidelines outlined in this Master Plan.

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## CONSERVATION PLAN

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### Overview

This section provides a description of the existing conditions for the conservation areas within the Project Area, and discusses recommendations for improvements to the natural environment that should be made in order to improve wildlife habitat, restore impacted areas, or mitigate increased human activity.

Conservation recommendations focus on the following objectives:

- Conserve, expand, and enhance a mix of habitats – i.e., terrestrial, wetland, riparian, and aquatic – to support ecosystem functions and values
- Control, reduce, or eliminate invasive and undesirable plant populations to protect biodiversity and ecosystem stability
- Stabilize riverbanks
- Minimize the use of energy, water, chemical herbicides, and fertilizers



The four Project Area sections have been further divided into 32 study areas. These areas include large recreational areas consisting primarily of mowed grass with scattered tree canopies, fragmented sections of forested uplands, wetlands areas, and areas currently being restored to a more natural condition. The diversity of land types within the Project Area provide a range of different habitat values, such as food, shelter, and cover for a variety of wildlife. Through additional conservation and environmental measures, the goal is to improve the wildlife habitat capacity while simultaneously integrating public recreation in an environmentally-sensitive manner and preserving the natural areas for the future.

The landscape character changes dramatically from the quiet residential areas to the west of the Project Area, to the more urban and intensively used recreation areas near Medford Square, to riverbanks separated by extensive elevated highways and industrial sites. Specific conservation recommendations have considered the character of each River basin in determining how best to achieve conservation and recreation objectives while preserving and enhancing the natural beauty of the River.

### **Section 1: Harvard Avenue Bridge to Auburn Street**

#### ***Area 1: Mystic-Alewife Confluence***

Area 1 is located on the south bank of the Mystic River, downstream of the Harvard Avenue bridge. This area is noteworthy as Alewife Brook flows from the south, northward into the Mystic River creating a small area of wetlands. Here Alewife Brook is shallow – approximately three feet deep – and its water is muddy. The riverbank throughout Area 1 typically is vegetated by a four- to eight-foot width of trees, shrubs, and vines. The bank is eroding, presumably due to the wakes from passing motor boats. The banks of the Alewife at the confluence are gradually sloping and are sparsely to moderately vegetated by trees and shrubs, providing a good deal of shade. However, common reed (*Phragmites australis*) and Japanese knotweed (*Polygonum cuspidatum*) also were noted. Fragrant water lilies (*Nymphaea odorata*) and other aquatic vegetation are evident at the confluence, and the invasive water chestnut occurs in the Mystic River throughout this area. Area 1 contains linear areas of mowed grass with scattered tree canopies, and paved and unpaved (dirt) recreational paths. The underside of the Mystic Valley Parkway bridge is crumbling; DCR is scheduled to restore the bridge under the Accelerated Bridge Program.

Proposed recreational paths adjacent to the confluence of Alewife Brook and the Mystic River should be carefully located to avoid large trees. Wherever possible, the path should be located in upland area in order to avoid impacting the

LEGEND	
	PRIMARY PATH ON GRADE (10' PAVED PATH)
	PRIMARY PATH ON BOARDWALK
	PRIMARY PATH ON SIDEWALK / ROAD
	SECONDARY PATH ON GRADE (8'-10' STABILIZED)
	SECONDARY PATH ON BOARDWALK
	SECONDARY PATH ON SIDEWALK / ROAD
	TERTIARY PATH ON GRADE
	TERTIARY PATH ON BOARDWALK
	EXISTING PATH MEETING MULTI-USE REQUIREMENTS
	POTENTIAL RIVER CROSSINGS
	PROPOSED FENCE OR GUARDRAIL
	PEDESTRIAN BRIDGE
	PROPOSED CANOE LAUNCH W/ PARKING
	PROPOSED MOTORIZED BOAT LAUNCH
	PROPOSED CANOE LANDING W/O PARKING
	EXISTING CANOE LAUNCH
	EXISTING MOTORIZED BOAT LAUNCH
	PROPOSED OVERLOOK - BOARDWALK OR STRUCTURE
	PROPOSED CLEARED VIEW
	EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
	EXISTING CLEARED VIEW
	PROPOSED SEATING / PICNIC AREA
	INTERPRETIVE / INFORMATIONAL SIGNAGE
	NEW OR RECONFIGURED PARKING AREA
	EXISTING PARKING AREA TO REMAIN
	EXISTING TREE CANOPY
	EXISTING MARSH
	MANAGED MEADOW
	WETLAND / WETLAND SHELF
	RIVERFRONT VEGETATION PLANTINGS
	MANAGED WOODY COVER
	MOWED LAWN

#### AREA 4: WHITMORE BROOK CONFLUENCE

##### Existing

- Sparsely to moderately vegetated with invasive species

##### Recommended

- Increase the width of the riparian area to permit successional riparian growth to allow development of a natural forested zone
- Remove invasive species
- Implement mosquito control

#### AREA 2

##### Existing

- No separation between Reservation and private property
- Trees and lawn
- Invasive vegetation

##### Recommended

- Define boundary through path alignment, planting, or fence
- Change lawn areas to meadow, with exception of one mowed area at point
- Remove invasives
- Stabilize eroding bank
- Implement mosquito control

#### AREA 1: MYSTIC-ALEWIFE CONFLUENCE

##### Existing

- Trees and lawn
- Invasive vegetation
- Shallow, muddy water
- Bridge crumbling
- Fragrant lily pads
- Eroding banks

##### Recommended

- Create wetland shelf at confluence
- Increase width of native riparian vegetated strip
- Replant with woody cover adjacent to confluence
- Remove invasives
- Repair bridge
- Open riparian strip at intervals to allow sightlines through to river
- Convert regularly mowed areas to meadow
- stabilize eroding bank
- Implement mosquito control

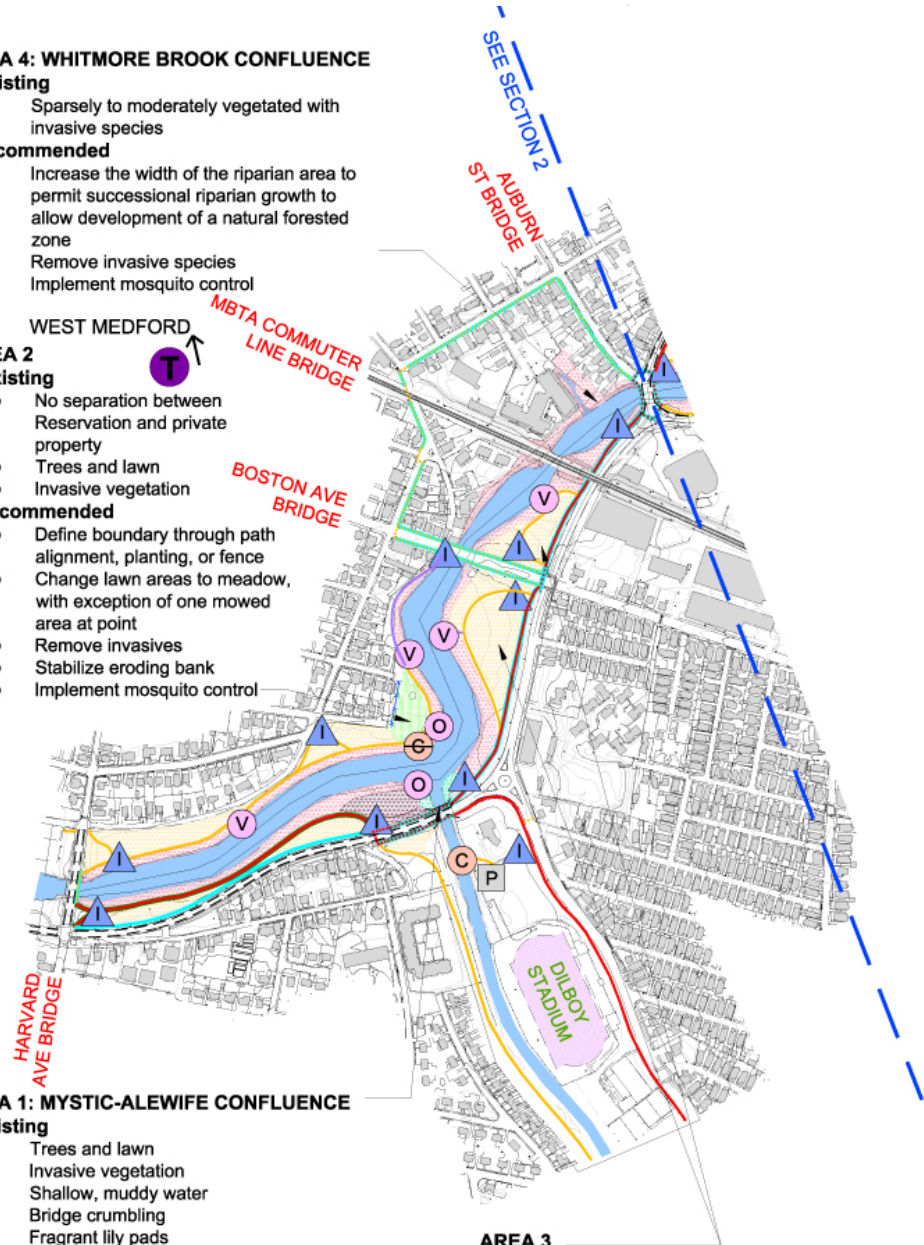
#### AREA 3

##### Existing

- Mowed lawn areas with tree canopy
- Undercut, eroding bank

##### Recommended

- Stabilize eroding, undercut bank
- Increase width of riparian vegetated strip
- Replace mowed areas with meadow



riverbanks and the small wetland at the confluence. If necessary, footbridges or boardwalks should span Alewife Brook to avoid impacting the water course and to permit safe passage. Areas where the proposed path will disturb the existing vegetation should be reviewed and new vegetation may need to be added along the path to promote stability and limit the growth of nuisance vegetation.

Where feasible, and in conjunction with the construction of a new path, invasive species should be removed. Invasive species including Japanese knotweed, *Phragmites*, and glossy buckthorn (*Frangula alnus*) were observed in the area. Desirable species that would provide wildlife habitat improvements should be planted in place of the invasive species.

As with most sections within the Project Area, the width of the vegetation strip along the riverbanks should be increased to provide enhanced habitat for birds and mammals. A wide strip of natural vegetation along the riverbanks will provide a wildlife corridor providing food, nesting, and cover opportunities for a variety of wildlife. Examples of native plant species that are suitable for planting in riparian areas are presented in Appendix D. To allow views of the River from the recreation path, the riparian vegetation should be kept open at intervals.

To improve habitat value in the shallow water area at the Mystic River-Alewife Brook confluence, creation of a wetland shelf and the expansion of the small wetland in this area should be considered. Eroding banks in Area 1 should be stabilized using the techniques outlined in Appendix D.

Additional opportunities to increase the wildlife habitat value of the area are related to the mowing regimen. Regularly-mowed lawn areas should be converted to meadow by implementing a professional meadow maintenance plan. By allowing the grasses adjacent to the edge of the vegetated riverbanks to grow, a meadow-like habitat will be created.

Recommendations for Area 1 comprise the following:

- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation. This same recommendation is used throughout. The minimum desired width is 35 feet, although 100 feet is preferable.
- Create a wetland shelf at the confluence of the Mystic River and Alewife Brook
- Remove invasive species adjacent to the confluence and replant with native, woody cover, such as red maple (*Acer rubrum*), speckled alder (*Alnus rugosa*), gray birch (*Betula populifolia*), silky dogwood (*Cornus amomum*), winterberry [common winterberry] (*Ilex verticillata*), pussy

willow (*Salix discolor*), elderberry [American black elderberry] (*Sambucus canadensis* [*Sambucus nigra canadensis*]), meadowsweet [white meadowsweet] (*Spiraea latifolia* [*Spiraea alba* var. *latifolia*]), steeplebush (*Spiraea tomentosa*), highbush blueberry (*Vaccinium corymbosum*), arrowwood [southern arrowwood] (*Viburnum dentatum*), and arrowleaf tearthumb (*Polygonum sagittatum*). In particular, dense plantings of speckled alder, silky dogwood, and pussy willow are recommended for bank stabilization and protection – the other species are recommended for vegetation community diversity and for their value to wildlife.

- Convert regularly-mowed lawn areas to meadow by implementing a professional meadow maintenance plan
- Open the riparian strip at intervals to allow views of the River
- Stabilize the eroding bank
- Implement mosquito controls (see Page 109)

## **Area 2**

Area 2 is located across the Mystic River from Area 1, on the left bank of the River, and extends downstream from the Harvard Avenue Bridge. Between Jerome Street and Boston Avenue, there is no separation between the Reservation and the abutting private properties. As a result, activities associated with the residential uses extend onto the Reservation, toward the riverbank. As in Area 1, the riverbank typically is vegetated by a four- to eight-foot strip of trees, shrubs, and vines and the riverbank is eroding. *Phragmites* and Japanese knotweed occur in portions of the riparian area. Fragrant water lilies and other aquatic vegetation, including the invasive water chestnut, are present in the River. Area 2 contains areas of mowed grass with scattered tree canopies, and an unpaved walking path along the riparian area.

The boundary between the Reservation and the private properties should be better defined, by constructing a fence or by planting. Regularly-mowed lawn areas should be converted to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan, allowing the grasses adjacent to the edge of the vegetated riverbank and on either side of the recreational path to grow. However, the area on the point across from the confluence of Alewife Brook should be maintained as lawn for passive recreation.

Where feasible, and in conjunction with the construction of a new path, invasive species should be removed. Desirable species should be planted. In addition, eroding banks should be stabilized.



Recommendations for Area 2 comprise the following:

- Define the boundary between the Reservation and the private properties
- Convert regularly-mowed lawn areas to meadow by decreasing the frequency of mowing (excluding area at point to be maintained as lawn) and instituting a professional meadow maintenance plan
- Remove invasive species and replant with native vegetation
- Stabilize the eroding bank
- Implement mosquito controls (see Page 109)

### *Area 3*

Area 3 extends along the south bank of the Mystic River, both upstream and downstream of the Boston Avenue bridge. Fragrant water lilies and other aquatic vegetation, including the invasive water chestnut, are present in the River. The riverbank in this area is undercut by erosion, likely resulting from the wakes of passing power boats. The area is characterized by a narrow riparian area along the River. Adjacent to the riparian fringe are broad mowed areas and mowed areas with tree canopies parallel the Mystic Valley Parkway. A paved path runs through this last cover type, also paralleling the parkway. Poorly defined, dirt paths traverse the mowed lawns.

Recommendations for Area 3 comprise the following:

- Stabilize the eroding, undercut bank
- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Convert regularly-mowed lawn areas to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan

### *Area 4: Whitmore Brook Confluence*

Area 4 is located on the north bank of the Mystic River, between the MBTA Commuter Line bridge and the Auburn Street bridge. This area comprises the confluence of the southerly flowing Whitmore Brook and the Mystic River. Early successional riparian vegetation, including several invasive species, dominates at this confluence.

Invasive species should be selectively removed and desirable woody, riparian species should be planted. The riparian area should be allowed to succeed toward a forested riparian zone, dominated by native species.



Recommendations for Area 4 comprise the following:

- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Remove invasive species and replant with desirable vegetation
- Implement mosquito controls (see Page 109)

## **Section 2: Auburn Street to Mystic Valley Parkway Bridge Just West of Medford Square**

### ***Area 1***

Area 1 in Section 2 is located immediately upstream of the Auburn Street Bridge along the north bank of the Mystic River. The area currently consists of mowed areas with tree canopies adjacent to the Mystic Valley Parkway and mowed areas closer to the River. A narrow riparian fringe, ranging in width between approximately 6 and 10 feet, runs along the bank. Tree species in the riparian area include silver and red maple (*Acer saccharinum* and *A. rubrum*), and tree of heaven (*Ailanthus altissima*). The riverbank is undercut and eroding. Fragrant water lilies and other aquatic vegetation, including the invasive water chestnut, are present in the River.

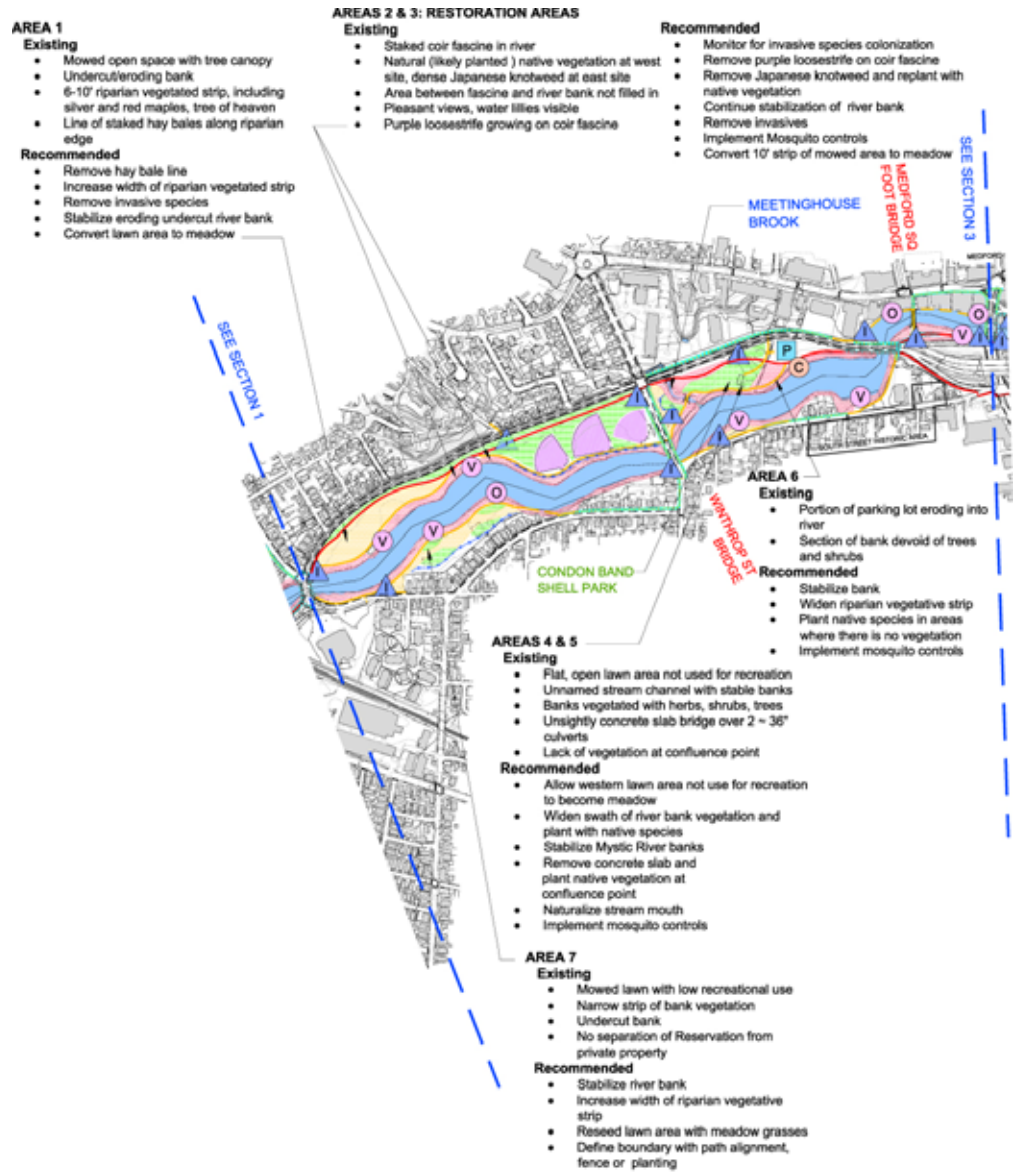
The passive recreational areas are traversed by a paved path adjacent to the parkway and a dirt walking and jogging path paralleling the riparian area. At the upstream end of the mowed area, near the Auburn Street bridge, there is a line of old, staked hay bales that parallel the riparian fringe. The hay bales are remnants of a completed construction operation.

Recommendations for Area 1 comprise the following:

- Stabilize the eroding, undercut bank
- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Within a 10-foot-wide band adjacent to the riparian fringe, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan, to further enhance the habitat for wildlife
- Remove the line of old hay bales and restore this area to meadow
- Remove invasive vegetation and replant with desirable vegetation



LEGEND	
	PRIMARY PATH ON GRADE (10' PAVED PATH)
	PRIMARY PATH ON BOARDWALK
	PRIMARY PATH ON SIDEWALK / ROAD
	SECONDARY PATH ON GRADE (8'-10' STABILIZED)
	SECONDARY PATH ON BOARDWALK
	SECONDARY PATH ON SIDEWALK / ROAD
	TERTIARY PATH ON GRADE
	TERTIARY PATH ON BOARDWALK
	EXISTING PATH MEETING MULTI-USE REQUIREMENTS
	POTENTIAL RIVER CROSSINGS
	PROPOSED FENCE OR GUARDRAIL
	PEDESTRIAN BRIDGE
	PROPOSED CANOE LAUNCH W/ PARKING
	PROPOSED MOTORIZED BOAT LAUNCH
	PROPOSED CANOE LANDING W/O PARKING
	EXISTING CANOE LAUNCH
	EXISTING MOTORIZED BOAT LAUNCH
	PROPOSED OVERLOOK - BOARDWALK OR STRUCTURE
	PROPOSED CLEARED VIEW
	EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
	EXISTING CLEARED VIEW
	PROPOSED SEATING / PICNIC AREA
	INTERPRETIVE / INFORMATIONAL SIGNAGE
	NEW OR RECONFIGURED PARKING AREA
	EXISTING PARKING AREA TO REMAIN
	EXISTING TREE CANOPY
	EXISTING MARSH
	MANAGED MEADOW
	WETLAND / WETLAND SHELF
	RIVERFRONT VEGETATION PLANTINGS
	MANAGED WOODY COVER
	MOWED LAWN



Section 2: Conservation Plan

### Areas 2 and 3: Restoration Areas

Area 2 is located along the Mystic River at the downstream end of Area 1. Area 2 is a riverbank restoration site. The area comprises an approximately 60-foot length of riverbank with a staked coir fascine parallel to the riverbank. The bank itself is vegetated by black cherry (*Prunus serotina*) and oak (*Quercus* sp.) trees and saplings, elderberry (*Sambucus canadensis*) shrubs, raspberry (*Rubus idaeus*), and purple loosestrife. Although the area between the coir fascine and the riverbank has not filled in with sediment as presumably was intended, the restoration appears successful, with natural, likely planted, native vegetation

dominating the riparian area. The bank is stabilized, perhaps because the coir fascine works as a type of breakwater, calming the water hitting the bank. No further action to protect the bank is needed. However, purple loosestrife (*Lythrum salicaria*), an invasive species, was observed growing on the coir fascine.

Area 3 is located immediately downstream of Area 2 and is another riverbank restoration site. Within Area 3, a dense growth of invasive Japanese knotweed occurs in the riparian fringe along the bank. A few large soft-stem bulrushes (*Scirpus validus*) are growing at the bottom of the bank. An approximately 100-foot-long staked, coir fascine parallels the bank. As in Area 2, the area between the coir fascine and the riverbank has not filled in with sediment, although the bank has been stabilized.

Mowed areas and a paved path are located between both the Area 2 and the Area 3 restoration sites and the Mystic Valley Parkway. A dirt path runs parallel to the edge of the riparian strip. The comparatively low vegetation of the riparian area allows pleasant views of the River from the dirt path and the lawn. Fragrant water lilies are visible from the bank and invasive water chestnut occurs in this section of the River.

Recommendations for Areas 2 and 3 comprise the following:

- Monitor for invasive species colonization
- Remove purple loosestrife growing on coir fascine
- Continue effort to stabilize the riverbank
- Within a 10-foot-wide band adjacent to the riparian fringe, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan
- Implement mosquito controls (such as bat boxes - see Page 109) to reduce mosquito problem at ball fields between Area 3 and the Winthrop Street bridge

Recommendations for Area 3 comprise the following:

- Remove Japanese knotweed and replant with native vegetation

#### **Area 4**

Area 4 is located immediately downstream of the Winthrop Street bridge on the north bank of the River. The area is dominated by a flat, open, mowed lawn that does not appear to be used for recreational purposes. A narrow riparian area borders the River and the riverbank is eroding. On its downstream side, the area



abuts the riparian fringe and stream that comprises Area 5. Fragrant water lilies are visible from the bank and invasive water chestnut occurs in this section of the River. Paved sidewalks run along Winthrop Street and the Mystic Valley Parkway, and a paved path runs along the riparian area that borders the River.

Recommendations for Area 4 comprise the following:

- Convert sections of the regularly-mowed lawn area, not planned for future recreational use, to meadow by implementing a professional meadow maintenance program
- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Stabilize the eroding bank
- Implement mosquito controls (see Page 109)

### *Area 5*

Area 5 is located immediately downstream of Area 4. The area comprises Meetinghouse Brook that flows southerly into the Mystic River and the associated riparian fringe on both banks of the stream. At the confluence of the stream and the River, two approximately three-foot-diameter culverts carry the stream flows into the River. A large, unsightly concrete slab overlies the culverts and carries the paved path across the stream. Upstream of the slab and culverts, the banks of the stream are well-vegetated by herbs, shrubs, and trees and the banks are stable. However, at the stream-River confluence, shrub and tree cover is absent from the banks and the banks are undercut and eroding. Fragrant water lilies are visible in the River, upstream and downstream of the stream mouth, and invasive water chestnut occurs in this section of the River.

Recommendations for Area 5 comprise the following:

- On both sides of Meetinghouse Brook and abutting the brook's riparian fringe, convert a strip of the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan
- Remove the culverts and the concrete slab, and restore the stream channel and banks by stabilizing the stream bed and planting native vegetation on the banks
- Construct a new bridge across Meetinghouse Brook either in the same location or further upstream
- Naturalize the stream mouth by planting native vegetation to merge the stream and River riparian areas

- Stabilize the undercut, eroding banks at the steam-River confluence
- Implement mosquito controls (see Page 109)

### *Area 6*

Area 6 is situated downstream of Area 5 at the southwestern extent of the parking lot that serves the Condon Band Shell. As the riverbank is undercut and eroding, this portion of the parking lot is collapsing into the River. The riverbank in this location lacks cover and protection by vegetation. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in the Mystic River throughout this section.

Recommendations for Area 6 comprise the following:

- Remove the southwestern extent of the parking lot and restore by planting native vegetation
- Establish a riparian fringe along the area comprising native vegetation
- Stabilize the eroding, undercut bank
- Implement mosquito controls to reduce mosquito problem at the Condon Band Shell (see Page 109)

### *Area 7*

Area 7 is located along the south bank of the Mystic River, immediately across the River from Area 1. The area is dominated by a mowed lawn that appears to support limited recreational use. A narrow riparian area borders the River, being most narrow along the middle portion of the shoreline and somewhat wider at the upstream and downstream extents. The riverbank is undercut and eroding. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

An informal, unpaved path runs along the narrow riparian fringe along the River. There is no separation between the Reservation and the abutting private properties. As a result, activities associated with the residential uses extend onto the Reservation. Two large, well-established gardens, presumably established and maintained by the owners of the adjacent properties, occur on Reservation property.

Recommendations for Area 7 comprise the following:

- Convert regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan, excluding area to be maintained as lawn for informal recreation



- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Stabilize the eroding bank
- Define the boundary between the Reservation and the private properties, either by aligning a recreational path along the boundary or by constructing a fence or planting

### Section 3: MVP Bridge to Wellington Bridge

#### *Area 1*

Area 1 in Section 3 is located on the east bank of the Mystic River immediately downstream of the Interstate 93 bridge. The riverbank is armored with riprap and bank cover ranges from sparsely vegetated to densely vegetated with herbs, shrubs, saplings, and trees. The upstream portion of Area 1 is forested, with a moderately-dense tree canopy. The downstream portion comprises a narrow band of mowed lawn around a wide channel, with a narrow riparian fringe, that protrudes approximately perpendicular to the River.

Some invasive vegetation was noted in the forested area and in the riparian fringes, both along the River and the perpendicular channel. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

Recommendations for Area 1 comprise the following:

- Remove invasive vegetation, replant with native vegetation, and monitor for invasive species colonization
- Increase the width of the riparian area to a minimum of 25 feet between the new recreational path and the riverbank; plant native vegetation

#### *Area 2*

Area 2 comprises the upstream extent of Mystic Riverbend Park, on the east bank of the Mystic River. This area consists of a mowed lawn between a typically narrow, riparian area, comprising trees, shrubs, and herbs, and a multi-family, residential complex. Along the downstream portion of Area 2, there is a well-established meadow habitat of good width that functions as an ecotone (the zone where two or more different communities meet and integrate) between the riparian fringe and the mowed lawn.

The riverbank is armored with riprap. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

Recommendations for Area 2 comprise the following:

- Increase the width of the riparian area to enhance the habitat for wildlife and plant native vegetation
- Extending upstream from the existing meadow habitat, convert a band of the regularly-mowed lawn area to meadow along the riparian area
- Monitor for invasive species colonization

### **Area 3**

Area 3 is located in the upstream portion of Mystic Riverbend Park, immediately downstream from Area 2. The area is a restored riverbank and wetland shelf along the Mystic River. The restoration site is heavily dominated by invasive vegetation, including *Phragmites* and purple loosestrife. The restored riverbank, in particular, comprises a dense stand of *Phragmites*. Ball fields abut the restoration area.

Portions of the bank are armored with riprap and, parallel to the remainder of the bank, a coir fascine runs along the shallow edge of the River. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

Recommendations for Area 3 comprise the following:

- Remove *Phragmites*, purple loosestrife, and other invasive vegetation
- Replant the wetland and bank restoration site with native vegetation
- Monitor for invasive species colonization
- Implement mosquito controls to reduce mosquito problem the adjacent ball fields (see Page 109)

### **Area 4**

Area 4 is located in Mystic Riverbend Park, downstream of the ball fields. This area comprises two restored meadows; one restored as a wet meadow and the other as a dry meadow. The wet meadow is being overrun by invasive woody vegetation, predominantly gray birch (*Betula populifolia*).

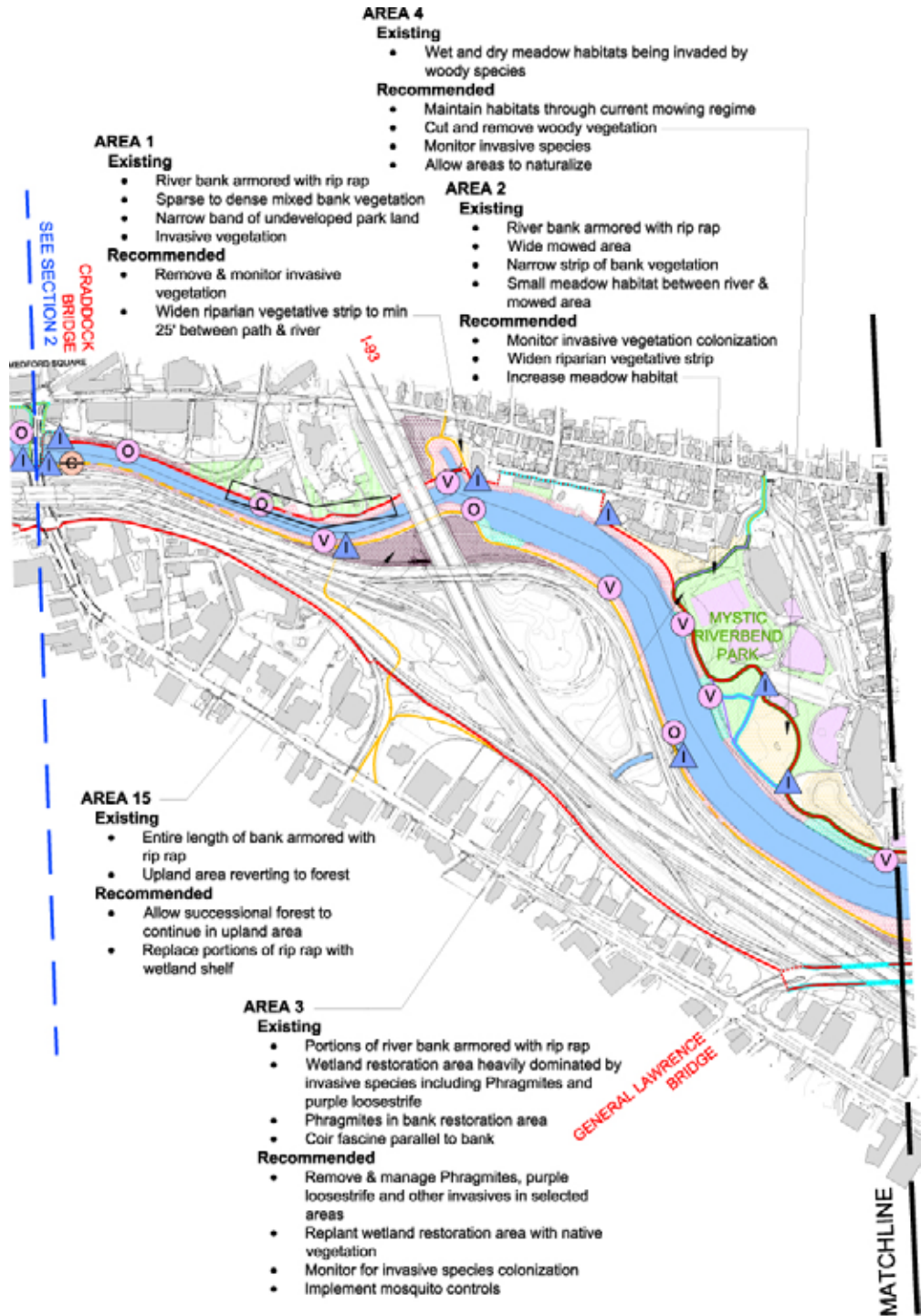
Recommendations for Area 4 comprise the following:

- Cut and remove woody vegetation
- Monitor for invasive species colonization
- Maintain meadow habitats and control reinvasion of woody vegetation through once yearly mowing regime
- Allow areas to naturalize



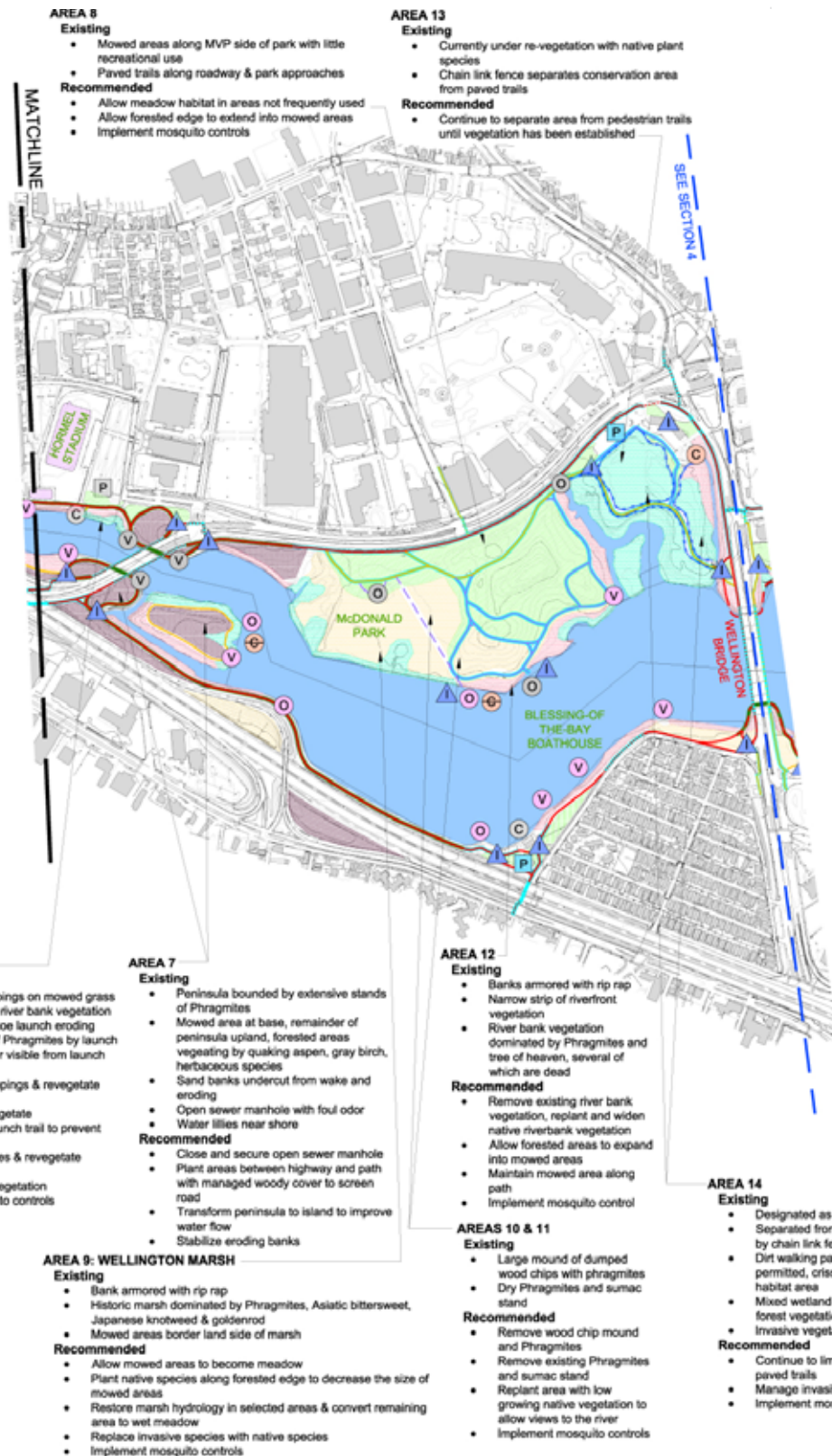
**LEGEND**

	PRIMARY PATH ON GRADE (10' PAVED PATH)
	PRIMARY PATH ON BOARDWALK
	PRIMARY PATH ON SIDEWALK / ROAD
	SECONDARY PATH ON GRADE (8'-10' STABILIZED)
	SECONDARY PATH ON BOARDWALK
	SECONDARY PATH ON SIDEWALK / ROAD
	TERTIARY PATH ON GRADE
	TERTIARY PATH ON BOARDWALK
	EXISTING PATH MEETING MULTI-USE REQUIREMENTS
	POTENTIAL RIVER CROSSINGS
	PROPOSED FENCE OR GUARDRAIL
	PEDESTRIAN BRIDGE
	PROPOSED CANOE LAUNCH W/ PARKING
	PROPOSED MOTORIZED BOAT LAUNCH
	PROPOSED CANOE LANDING W/O PARKING
	EXISTING CANOE LAUNCH
	EXISTING MOTORIZED BOAT LAUNCH
	PROPOSED OVERLOOK - BOARDWALK OR STRUCTURE
	PROPOSED CLEARED VIEW
	EXISTING OVERLOOK - BOARDWALK OR STRUCTURE
	EXISTING CLEARED VIEW
	PROPOSED SEATING / PICNIC AREA
	INTERPRETIVE / INFORMATIONAL SIGNAGE
	NEW OR RECONFIGURED PARKING AREA
	EXISTING PARKING AREA TO REMAIN
	EXISTING TREE CANOPY
	EXISTING MARSH
	MANAGED MEADOW
	WETLAND / WETLAND SHELF
	RIVERFRONT VEGETATION PLANTINGS
	MANAGED WOODY COVER
	MOWED LAWN



Section 3: Conservation Plan





- AREA 8**
- Existing**
- Mowed areas along MVP side of park with little recreational use
  - Paved trails along roadway & park approaches
- Recommended**
- Allow meadow habitat in areas not frequently used
  - Allow forested edge to extend into mowed areas
  - Implement mosquito controls

- AREA 13**
- Existing**
- Currently under re-vegetation with native plant species
  - Chain link fence separates conservation area from paved trails
- Recommended**
- Continue to separate area from pedestrian trails until vegetation has been established

- AREA 5 & 6**
- Existing**
- Pile of mower clippings on mowed grass between path and river bank vegetation
  - Gravel path to canoe launch eroding
  - Extensive stand of Phragmites by launch
  - Water lilies in river visible from launch
- Recommended**
- Remove grass clippings & revegetate naturally
  - Allow area to revegetate
  - Stabilize canoe launch trail to prevent erosion
  - Remove Phragmites & revegetate naturally
  - Monitor invasive vegetation
  - Implement mosquito controls

- AREA 7**
- Existing**
- Peninsula bounded by extensive stands of Phragmites
  - Mowed area at base, remainder of peninsula upland, forested areas vegetating by quaking aspen, gray birch, herbaceous species
  - Sand banks undercut from wake and eroding
  - Open sewer manhole with foul odor
  - Water lilies near shore
- Recommended**
- Close and secure open sewer manhole
  - Plant areas between highway and path with managed woody cover to screen road
  - Transform peninsula to island to improve water flow
  - Stabilize eroding banks

- AREA 12**
- Existing**
- Banks armored with rip rap
  - Narrow strip of riverfront vegetation
  - River bank vegetation dominated by Phragmites and tree of heaven, several of which are dead
- Recommended**
- Remove existing river bank vegetation, replant and widen native riverbank vegetation
  - Allow forested areas to expand into mowed areas
  - Maintain mowed area along path
  - Implement mosquito control

- AREA 9: WELLINGTON MARSH**
- Existing**
- Bank armored with rip rap
  - Historic marsh dominated by Phragmites, Asiatic bitternsweet, Japanese knotweed & goldenrod
  - Mowed areas border land side of marsh
- Recommended**
- Allow mowed areas to become meadow
  - Plant native species along forested edge to decrease the size of mowed areas
  - Restore marsh hydrology in selected areas & convert remaining area to wet meadow
  - Replace invasive species with native species
  - Implement mosquito controls

- AREAS 10 & 11**
- Existing**
- Large mound of dumped wood chips with phragmites
  - Dry Phragmites and sumac stand
- Recommended**
- Remove wood chip mound and Phragmites
  - Remove existing Phragmites and sumac stand
  - Replant area with low growing native vegetation to allow views to the river
  - Implement mosquito controls

- AREA 14**
- Existing**
- Designated as wildlife habitat
  - Separated from paved trails by chain link fence
  - Dirt walking paths, though not permitted, crisscross the habitat area
  - Mixed wetland and upland forest vegetation
  - Invasive vegetation
- Recommended**
- Continue to limit access to paved trails
  - Manage invasive species
  - Implement mosquito controls



### *Areas 5 and 6*

Areas 5 and 6 are located within the downstream portion of Mystic Riverbend Park. Area 5 comprises a pile of mower clippings disposed of between the riparian area and the paved recreational path. Area 6 comprises the nearby canoe launch, a gravel path leading from the paved recreation path to the shore of the Mystic River. The steep, gravel path is eroding in a series of rills. A dense stand of *Phragmites* is at the bottom of the path. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

Recommendations for Areas 5 and 6 comprise the following:

- Remove the pile of mower clippings and stop this disposal practice
- Allow area to revegetate naturally
- Stabilize the canoe launch path to prevent further erosion, possibly through the installation of steps and diversions to check runoff
- Remove the *Phragmites* at the bottom of the canoe launch and replant the site with native vegetation
- Implement mosquito controls (see Page 109)
- Monitor invasive vegetation

### *Area 7*

Area 7 is a peninsula located along the west bank of the Mystic River, downstream of and abutting the approach to the General Lawrence Bridge. At the base of the peninsula, near the bridge, a network of paved recreational paths traverse mowed lawns planted with isolated coniferous and deciduous trees. An unpaved path leads out onto the peninsula through a forested area comprising a deciduous canopy, and shrub and herb layers. Quaking aspen (*Populus tremuloides*) and gray birch dominate the canopy. A low, earthen levee and two gravel spillways were noted in this upland forested area, at the downstream end of the peninsula.

A partially-exposed, concrete sanitary sewer line runs along the River side of the peninsula, at the base of the slope down to the River. An open sewer manhole, emitting a foul odor, was observed in this location. On the opposite side of the peninsula, on the side closest to Interstate 93, a shallow, stagnant channel separates the peninsula from the mainland. Purportedly, this channel is the source of periodic, noxious odors.

The predominantly upland peninsula is fringed by stands of *Phragmites*. The banks of the peninsula appear to comprise sandy soils and are undercut and eroding, presumably due to the wakes from passing motor boats. Fragrant water lilies and other aquatic vegetation are evident along this area, and the invasive water chestnut occurs in this section of the River.

Recommendations for Area 7 comprise the following:

- Plant a band along the bridge approach as managed forest to screen the road
- Stabilize the eroding banks
- Close and secure the open sewer manhole, and inspect and as required repair the exposed portions of the sewer line
- Cut a channel across the peninsula to connect the upstream end of the channel to the Mystic River, thereby improving water circulation in the channel and converting the peninsula to an isolated island for wildlife habitat
- Monitor invasive vegetation

### **Area 8**

Area 8 is located in McDonald Park, on the east bank of the Mystic River, and extends the length of the park. The area comprises the landward edge of the park, most distant from the River, where a paved recreational path runs adjacent to the Mystic Valley Parkway and along the Fellsway. Along the paved path are open mowed areas and mowed areas with tree canopies.

Recommendations for Area 8 comprise the following:

- Convert the unused mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan
- Where forested areas occur proximate to the paved path, allow the forested edge to expand into the mowed areas and plant native vegetation, but leave a five-foot wide strip of regularly-mowed grass on both sides of the path
- Implement mosquito controls (see Page 109)

### **Area 9: Wellington Marsh**

Area 9 is Wellington Marsh in McDonald Park. Today this historic marsh lacks the appropriate hydrology to function as a wetland over most of its area. The



vegetation community is dominated by *Phragmites* in a broad band around the edges of the marsh, and several upland species, including Oriental bittersweet (*Celastrus orbiculatus*), Japanese knotweed, goldenrod (*Solidago* sp.), and greenbrier (*Smilax* sp.). *Phragmites*, Oriental bittersweet, and Japanese knotweed are invasive. Mowed areas and mowed areas with tree canopies border the land side of the marsh along its northern and eastern edges. A small stream crosses the upstream (western) portion of the marsh, flowing from a culvert under the Mystic Valley Parkway to the Mystic River. A narrow, forested area bounds the upstream extent of the marsh, between the stream and the mowed area along its upstream edge. Along the Mystic River, the bank is armored with riprap.

Recommendations for Area 9 comprise the following:

- Along the northern and eastern borders of Wellington Marsh, between the marsh edge and the first paved path, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan, but leave a five-foot wide strip of regularly-mowed grass next to the path
- Along the upstream border of the marsh, between the River and the Mystic Valley Parkway, allow the forested edge to expand into the mowed areas and plant native vegetation
- Initiate a feasibility analysis and restoration planning to:
  - Restore marsh hydrology in selected areas; e.g., along the Mystic River and along the stream in the upstream portion of the marsh
  - Convert the remaining marsh to wet meadow
  - Remove invasive vegetation and replant the site with native plants
- Implement mosquito controls (see Page 109)

### **Area 10 and 11**

Areas 10 and 11 are located in McDonald Park, along the downstream (eastern) edge of Wellington Marsh. Area 10 comprises a sparse *Phragmites* stand growing on a large mound of dumped wood chips. Area 11 comprises a dense stand of *Phragmites* and sumac (*Rhus* sp.) close to the River. Both areas provide only limited habitat value and, despite the presence of *Phragmites* (although often associated with wetlands, *Phragmites* is a facultative species, equally likely to occur in wetlands or non-wetlands), both areas appear to lack wetland hydrology. The *Phragmites* and sumac stand in Area 11 blocks views of the River from the paved walking path that runs along the Mystic River and the downstream border of Wellington Marsh.

Recommendations for Areas 10 and 11 comprise the following:

- Remove the mound of wood chips in Area 10 and stop this disposal practice
- Remove the *Phragmites* and sumac in both areas
- Replant both areas with native plants, using low-growing vegetation in Area 11 to allow views of the River
- Implement mosquito controls (see Page 109)

### **Area 12**

Area 12 is located in McDonald Park in the general vicinity of an existing, wooden overlook structure that extends from the shoreline out into the Mystic River. Along the River, the bank is armored with riprap. The riverbank throughout Area 12 typically is vegetated by a narrow strip of riparian vegetation. The riverbank vegetation is dominated by *Phragmites* and tree of heaven, with reeds more abundant upstream of the overlook and trees more abundant downstream. Many of the trees are dead. Mowed areas and mowed areas with tree canopies border the land side of the riparian fringe.

Recommendations for Area 12 comprise the following:

- Remove the existing riparian vegetation and replant the site with native, riparian plants
- Along the land side of the riparian area, allow the forested edge to expand into the mowed areas to within approximately three to five feet of the paved path and plant with native vegetation
- On the River side of the paved path, maintain the remaining three- to five-foot strip of regularly-mowed grass area
- Implement mosquito controls (see Page 109)

### **Area 13**

Area 13 is the site of the ongoing Torbert McDonald Park Improvement Project, implemented by GE Energy in cooperation with the DCR and other state and local agencies. The project entails the cleanup of the channel that runs through the site and the planting of a variety of native trees, shrubs, and grasses along the channel banks. Among the vegetation planted are weeping willows (*Salix × sepulcralis*), sweet gum (*Liquidambar styraciflua*), River birch (*Betula nigra*), speckled alder (*Alnus incana*), and pussy willow (*Salix discolor*). A chain link fence has been installed temporarily to protect the new plantings and separates the conservation area from the surrounding recreation areas and paths.



Recommendations for Area 13 comprise the following:

- Continue to exclude recreation access from the conservation area until vegetation is well established

#### ***Area 14***

Area 14 is located in the downstream portion of McDonald Park, bordered by the Mystic Valley Parkway to the north and the Fellsway to the east. The area currently is designated as wildlife habitat. Two paved recreation paths traverse Area 14 and a dense network of informal, dirt trails crisscross throughout the habitat areas. Chain link fences prevent recreational users from leaving the paved paths and accessing some of the dirt trails, with the objective of protecting portions of the conservation area from continuing damage. Other portions of the area are accessible and recreational users were observed walking the dirt trails. The vegetation in Area 14 is a mixture of upland forest and wetland communities, with invasive species present.

Recommendations for Area 14 comprise the following:

- Further limit access to dirt trails in habitat areas, possibly using additional fencing, signage, and volunteer patrols
- Remove invasive vegetation and monitor for invasive species colonization
- Implement mosquito controls (see Page 109)

#### ***Area 15***

Area 15 is located on the west bank of the Mystic River on both sides of the approach to the Interstate 93 bridge over the Mystic River. Along the River, the bank is armored with riprap. The upland areas in Area 15 do not appear to be used for recreational purposes and are succeeding to forest.

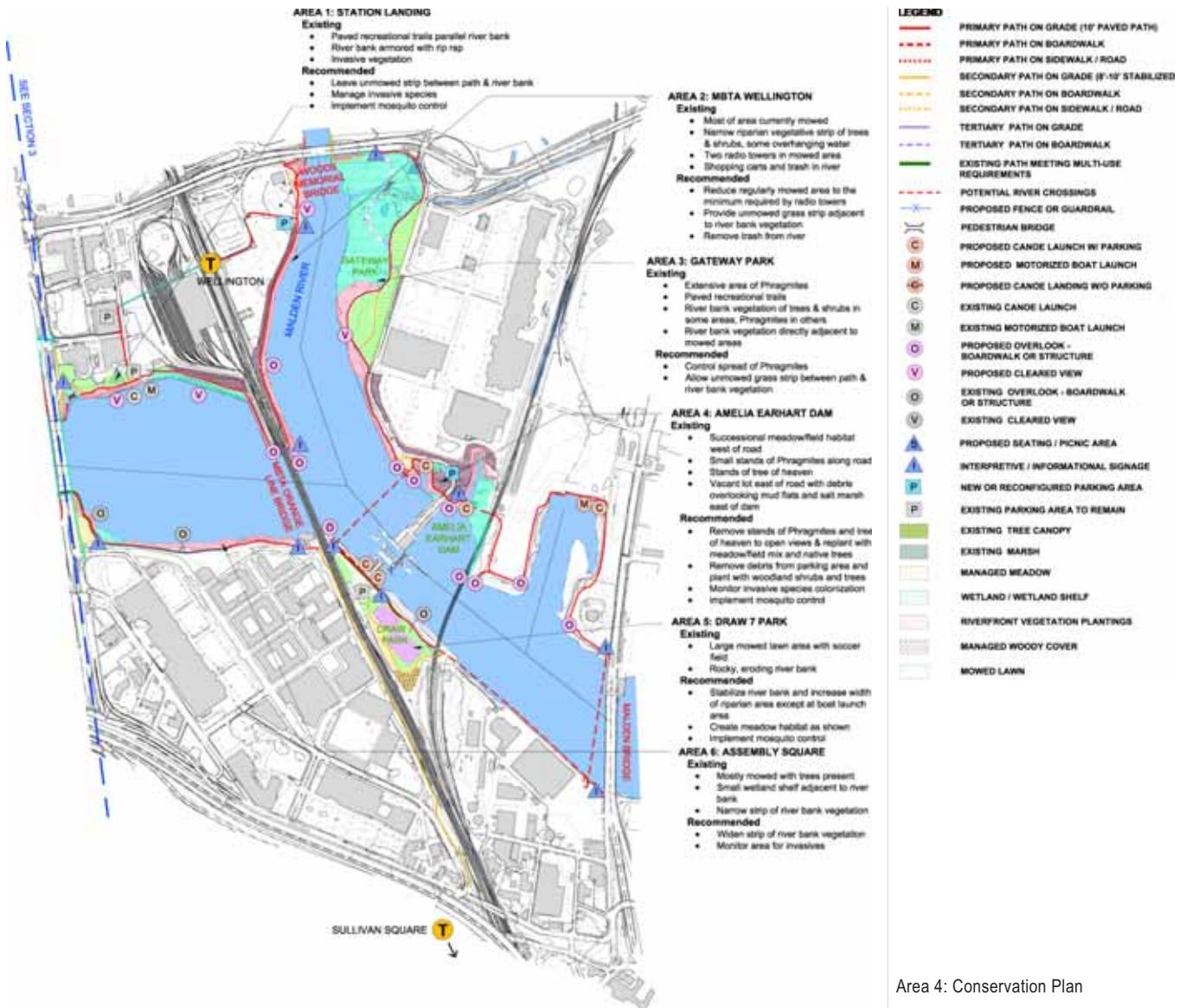
Recommendations for Area 15 comprise the following:

- Along portions of riverbank, remove the existing riprap and replace with a constructed wetland shelf
- Allow uplands to continue to succeed to forest
- Monitor for invasive species colonization

### **Section 4: Wellington Bridge to Malden Bridge**

#### ***Area 1: Station Landing***

Area 1 is located at Station Landing, along the north bank of the Mystic River. The area is bordered by the Fellsway to the west and the MBTA Orange Line



Area 4: Conservation Plan

subway and commuter rail right-of-way to the east. Mowed areas with tree canopies predominate Area 1. The riverbank throughout Area 1 typically is vegetated by a narrow strip of riparian vegetation, dominated by *Phragmites*, shrubs, and small and medium height trees. A paved recreational path parallels the riparian vegetation, in some locations directly abutting the riparian fringe and in others separated by a narrow strip of mowed grass. The riverbank is armored with riprap. Fragrant water lilies and other aquatic vegetation were observed in the River, particularly along the upstream extent of Area 1, adjacent to the Fellsway.



Recommendations for Area 1 comprise the following:

- Increase the width of the riparian area to enhance the habitat for wildlife by eliminating mowing between the path and the existing riverbank vegetation and plant native vegetation
- Remove invasive vegetation, replant with native vegetation, and monitor for invasive species colonization
- Implement mosquito controls (see Page 109)

### ***Area 2: MBTA Wellington***

Most of Area 2 is a narrow strip of riparian fringe at the Mystic River confluence with the Malden River, downstream of the Revere Beach Parkway (Route 16) bridge over the Malden River. Near the bridge, a large mowed area around two radio towers is located landward of the riparian fringe. Area 2 is bordered to the west by the MBTA Wellington Station, and the building and parking area of a radio station. Throughout most of its extent, the riparian vegetation comprises a dense cover of trees and shrubs, with a narrow fringe of *Phragmites* along the shore. A few of the trees overhang the River. Along the northern-most portion of Area 1, the riparian vegetation comprises a patchwork of dense, broad stands of *Phragmites* and dense stands of trees and shrubs. Throughout Area 2, the riverbank is armored with riprap. Close to the Woods Memorial Bridge, shopping carts, tires, and other large debris were observed in the Malden River.

Recommendations for Area 2 comprise the following:

- Reduce the extent of the regularly-mowed area around the radio towers to the minimum required to support the operation and maintenance of the towers
- In regularly mowed areas not required for the towers, as appropriate, convert the portion of the mowed area closest to the towers to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan; allow the remainder of the area to succeed to forest by eliminating mowing and planting native vegetation
- Remove large debris from the River

### ***Area 3: Gateway Park***

Area 3 comprises Gateway Park, bordered by Revere Beach Parkway (Route 16) to the north and Mystic View Road to the east. The majority of the riparian zone and most of the northern half of the park are dominated by *Phragmites*, interspersed with large and small stands of shrubs and trees. A stream channel bisects the extensive stand of *Phragmites* in the northern portion of the park. A



paved recreational path separates the stand of *Phragmites* from a large mowed area, along Mystic View Road. The recreational path extends south along the riparian fringe, with a three- to five-foot wide, regularly-mowed grass strip between the path and the riparian vegetation. The mowed area also extends south, following the roadway. In the southern portion of the park, a mowed area with tree canopies lies between the riparian fringe and the mowed area along the road. At its extreme southern extent, the park diminishes in width to a narrow strip; here the recreational path, mowed area, and riparian fringe extend south to the Amelia Earhart Dam (Area 4).

Recommendations for Area 3 comprise the following:

- In the southern portion of Area 3, remove the existing riparian vegetation and replant the site with native, riparian plants; monitor for invasive species colonization
- In the southern portion of the area, on the west side of the proposed path, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan
- In the extreme southern extent of Area 3, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing to once yearly, but leave a five-foot wide strip of regularly-mowed grass on both sides of the path

#### ***Area 4: Amelia Earhart Dam***

Area 4 is located along the east bank of the Mystic River at the northern end of the Amelia Earhart Dam. Mystic View Road bisects Area 4. To the west of the road is a meadow that is succeeding to forest, with small stands of *Phragmites* along the edge of the road. Stands of tree of heaven and shrubs are prevalent north and south of the meadow. To the east of the road, the northern portion of Area 4 comprises a vacant lot, with demolition debris scattered throughout (not owned by DCR). The southern portion is a forested area in a location that, in recent years, was a patchwork of meadow and shrubs. The shoreward edge of Area 4 slopes down steeply to the Mystic River along the west and south sides of the area, and to tidal mud flats and salt marsh along the east side. Fill and construction debris occur along the base of these slopes, along the shore.

Recommendations for Area 4 comprise the following:

- Remove *Phragmites* and tree of heaven stands to open views of the Mystic River and the Amelia Earhart Dam; replant with meadow-field seed mix and native trees and native shrubs to increase habitat value



- Remove debris from vacant lot and plant the lot with meadow-field seed mix and native shrubs
- Monitor for invasive species colonization
- Implement mosquito controls (see Page 109)

#### ***Area 5: Draw 7 Park***

Area 5 comprises Draw Seven Park, located along the west bank of the Mystic River at the southern end of the Amelia Earhart Dam. On the west, the area is bordered by MBTA Orange Line subway and commuter rail right-of-way. Regularly-mowed lawn areas dominate in Area 5. However, a narrow strip of riparian vegetation, comprising trees and shrubs, occurs at the northern end of the area along the River. Along the length of Area 5, a paved recreation path parallels the River, separated from the riparian fringe in the northern part and separated from the shore in the southern part by a narrow strip of regularly-mowed grass. This tidal section of the riverbank is rocky and eroding.

Recommendations for Area 5 comprise the following:

- Stabilize the eroding bank
- In the northern portion, increase the width of the riparian area to enhance the habitat for wildlife by discontinuing mowing between the path and the existing riverbank vegetation; plant native vegetation
- Along the rail right-of-way and to the west of the soccer field, convert the regularly-mowed lawn area to meadow by decreasing the frequency of mowing and instituting a professional meadow maintenance plan; plant new evergreens
- Implement mosquito controls (see Page 109)

#### ***Area 6: Assembly Square***

Area 6 is a narrow strip of riparian fringe, comprising shrubs and small and medium height trees, along the right bank of the Mystic River, with regularly-mowed lawn areas and mowed areas with tree canopies landward. A paved recreational path traverses the length of Area 6, generally paralleling the River. Two wooden overlook structures extend from the shoreline out into the Mystic River, one in the center of Area 6 and the other near the upstream end. A narrow wetland shelf is present along the riverbank.

Recommendations for Area 6 comprise the following:

- Increase the width of the riparian area to enhance the habitat for wildlife by discontinuing mowing between the path and the existing riverbank

vegetation and planting native vegetation, but leave a five-foot wide strip of regularly-mowed grass next to the path

- Monitor area for invasives

### **Conservation and Environmental Management Through Education**

Creating and providing programs and information to the public would give people the tools necessary to help develop a sustainable, healthy, clean, and safe conservation and recreation area. Outreach to the community, utilizing current environmental advocacy organizations and non-profit groups, can play an essential role in preserving the Mystic River and its surrounding natural areas.

Informative signage placed in areas of high human contact can be an effective means of communication to the public. Information kiosks at major entries can provide information ranging from maps of the path system and natural features, to pictures of invasive and undesirable plant species, to information on River clean up days and other recreational activities occurring along the River, to signage emphasizing carry in/carry out, removal of dog waste, and fines for littering.

Minimal and carefully integrated signage along the paths may be used to point out historical points and areas of bank stabilization projects, and to remind people to carry in/carry out. Boulders or other low impact techniques should be used to minimize “signs.”

Coordination with local organizations and the community will play an important role in the success of any education and community outreach programs.

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## **PERMITTING**

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### **MEPA Review (MEPA Office of the Secretary of Environmental Affairs)**

Massachusetts Environmental Policy Act (MEPA) review is a formal administrative process intended to inform any interested agency or person on the potential environmental impacts of projects for which state agency action is required. MEPA applies to projects of a certain size that require a permit, financial assistance, or land transfer from state agencies.

Preparation of an Environmental Notification Form (ENF) will be required for any projects that will alter 5,000 square feet or more of bordering or isolated vegetated wetlands or alteration of one-half or more acres of any other wetlands (301 CMR 11.03(3)(b)(1)(d)). An ENF and Environmental Impact Report (EIR)



will be required for alteration of one or more acres of bordering vegetated wetlands or ten or more acres of any other wetlands (301 CMR 11.03(3)(a)(1)). In addition, an ENF is required if 25 or more acres of land are altered or 5 or more acres of impervious area are created (301 CMR 11.03(1)(b)(1)-(2)). Preparation of an EIR will be required if there is the direct alteration of 50 or more acres of land or 10 or more acres of impervious land are created (301 CMR 11.03(1)(a)(1)-(2)). Finally, an ENF is required if any designated significant habitat of an endangered or rare species is altered (301 CMR 11.03(2)(b)(1)).

Implementation of some component projects recommended in the Mystic River Comprehensive Master Plan may require the filing of an ENF if such projects potentially would exceed the review threshold of altering 5,000 square feet or more of bordering or isolated vegetated wetlands or altering one-half or more acres of any other wetlands. Based on the plan recommendations, the 5,000 sf or one-half acre threshold may be triggered. Some wetlands alterations will occur as part of actions by other parties and it is not clear if they would be counted in the total for this Master Plan.

#### **Regulatory Riverfront Area**

The riverfront area typically is a 200-foot-wide corridor on each side of the Mystic River, and other perennial rivers and streams, measured from the mean annual high water line of the river. In Everett and Somerville, and in “densely developed areas” designated by the Secretary of the Executive Office of Environmental Affairs, the riverfront area is 25 feet wide. The Riverfront Protection Act does not create a new permitting process, but rather builds on the existing procedures of the Massachusetts Wetlands Protection Act. The Everett, Medford, and Somerville conservation commissions would review proposed projects to ensure that the riverfront area is protected for the eight interests in the Wetlands Act.

#### **Water Quality Certification (DEP Division of Wetlands and Waterways)**

A Water Quality Certification is required under Section 401 of the federal Clean Water Act for certain activities in wetlands and waters under federal jurisdiction. The Massachusetts Department of Environmental Protection (DEP) reviews projects that must obtain federal permits and that result in discharge to state waters to ensure that the projects will comply with Massachusetts Surface Water Quality Standards. The Water Quality Certificate (WQC) is necessary for the federal permit to be valid and any certification conditions become conditions of the federal permit.

Wetland impacts of less than 5,000 square feet of wetlands, for which an Order of Conditions has been issued (see below), are generally excluded from state review and are certified under the U.S. Army Corps of Engineer's Massachusetts Programmatic General Permit. If this threshold is exceeded, a Water Quality Certification from DEP will be required. Dredging over 100 cubic yards of material is also a trigger for a WQC.

When final designs for the Mystic River Comprehensive Master Plan component projects " which could include riverbank restoration, construction of recreational paths, or transformation of a small peninsula to an island " are prepared, if the volume of material to be removed in the Mystic River or in bordering vegetated wetlands exceeds 100 cubic yards or if over 5,000 square feet of wetlands are altered, then a WQC would be necessary.

#### **Chapter 91 Waterways License (DEP Division of Waterways)**

Chapter 91 and its regulations require a license or permit for activities located in, under, or over flowed tidelands, filled tidelands, great ponds, and certain non-tidal rivers and streams. For flowed tidelands, any project in, on, over, or under tidal waters implemented below the current mean high water requires Chapter 91 authorization. This is also true for projects located in, on, over, or under non-tidal, navigable rivers where public funds have been applied.

Work such as repairing the Mystic River Bridge or building foot bridges may require a license, and work such as bank stabilization would require further analysis to determine whether a license is needed.

#### **Order of Conditions (Medford, Somerville, and Everett Conservation Commissions)**

The Massachusetts Wetlands Protection Act (General Law Chapter 131, Section 40) and Regulations (310 CMR 10.00) were established to protect the Commonwealth's wetland resources. Any removal, dredging, filling, or altering of wetland resource areas requires the filing of a Notice of Intent with the applicable municipal Conservation Commission. Any activity, other than minor activities defined in 310 CMR 10.02 (2)(b)(1), conducted within 100-feet of a resource area also requires a permit.

Wetland permitting differs between Medford and the municipalities of Somerville and Everett under both state and municipal regulation. The Massachusetts Rivers Protection Act establishes a 25-foot riverfront protection area in Somerville and Everett and a 200-foot riverfront protection area in Medford. While the individual Conservation Commission mostly align with the Massachusetts Rivers Protection Act, the City of Everett considers projects



within 200 feet of rivers and perennial streams to be within their jurisdiction and thus requires a review by the Commission.

The affected Conservation Commissions would each hold a public hearing to review the proposed activities subject to the jurisdiction of the Wetlands Protection Act and issue a permit via a document called an Order of Conditions. An Order of Conditions would be required for construction of portions of the recreational path system in Medford, Somerville, and Everett.

### **Building Inspector Approvals**

Approvals may be required from the local Building Inspector for work within the floodplain and outside Commonwealth property. Further review of the need for flood hazard approval will depend upon further analysis of more detailed plans as the component projects of the Mystic River Comprehensive Master Plan are implemented.

### **NPDES Construction General Permit**

The National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Coverage under the Construction General Permit (CGP) is required for construction projects that disturb one or more acres, including smaller areas of disturbance when part of a larger common plan for development.

To comply with the CGP, a Storm Water Pollution Prevention Plan (SWPPP) is required and a Notice of Intent (NOI) must be submitted to the U.S. Environmental Protection Agency at least 48 hours prior to the start of construction. The purpose of the SWPPP is to establish requirements and instructions for the management of construction-related storm water discharges. Best Management Practices (BMPs) are identified and incorporated into the SWPPP.

A permit would be required only if construction disturbs more than one acre at any one time. More detailed phasing plans will be required to determine the necessity for a permit.

### **U.S. Army Corps of Engineers Permit (Section 10 and/or Section 404)**

The Army Corps of Engineers (the Corps) regulates structures or work in or affecting navigable waters of the United States (under Section 10 of the Rivers and Harbors Act) and the discharge of dredged or fill material into waters of

the United States (under Section 404 of the Clean Water Act). The Corps has issued a Programmatic General Permit (PGP) for expedited review of minimal impact work in waters and wetlands of Massachusetts. There are three permit categories under the PGP: Category I, II, and III.

- Projects that impact less than 5,000 square feet of a federally-defined wetland or water body qualify as Category I and do not require reporting to the Corps.
- A Category II permit application must be filed if impacts to wetlands are greater than 5,000 square feet but less than 1 acre. Projects submitted under Category II will be reviewed through interagency screening (including the U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, and National Marine Fisheries Service) to determine whether such activities may be authorized under the PGP. After review of the application, the Corps will determine if: (1) more information is required before making a decision; (2) the project meets the criteria of the PGP; or (3) the project does not meet PGP criteria and requires an Individual Permit.
- Category III, or an Individual Permit, is typically required for projects which exceed the criteria for Category II. Note, however, that the Corps has discretionary authority to require an Individual Permit and/or Environmental Impact Statement even if the PGP criteria are met.

The Programmatic General Permit will most likely cover most activities related to implementation of the Mystic River Comprehensive Master Plan as long as an Order of Conditions is issued. Bridge crossings may require a Category II filing under the Programmatic General Permit.

### **Historical and Archaeological Resources**

DCR files PNFs with the Massachusetts Historical Commission for all projects.

### **Anticipated Permits for Early Action Items**

Implementation of the overall Master Plan will trigger a need for an ENF under MEPA. The MEPA regulations contain an anti-segmentation clause, which states that the Secretary of Environmental Affairs shall consider the entirety of the project, and that the proponent cannot segment the project to avoid or defer MEPA review.

Construction of recreational paths would occur within the Riverfront Area, Bordering Vegetated Wetlands, and Bordering Land Subject to Flooding.



**Permit Regulatory Agency Review Time**

Order of Conditions – Medford Conservation Commission 2 - 4 weeks

Order of Conditions – Somerville Conservation Commission 2 - 4 weeks

Order of Conditions – Everett Conservation Commission 2 - 4 weeks



## CHAPTER IV: ONGOING OPERATIONS

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### MAINTENANCE

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Regular and routine maintenance is an essential tool when creating and protecting conservation areas, open space, and parkland along the Mystic River. The daily impacts from routine public use, storm and flooding conditions, and vandalism can quickly degrade an area. Regular maintenance will improve the conditions and enhance the experience of visitors to the Reservation.

The approach to maintenance that DCR currently employs along the Mystic River Parkway should be implemented along the new recreational path along the Mystic River. Through an integrated maintenance approach and the use of sustainable environmentally friendly methods to control nuisance species, stabilize the banks of the River, and construct park infrastructure, the goal of a long-term maintenance program should ultimately be to generate a sustainable system within the natural areas and minimize work within park and landscaped areas.

The integrated maintenance and management approach should utilize the following strategies:

- Routine/general maintenance involving weekly, monthly, seasonal, and yearly activities
- Education and outreach programs to the surrounding community members, specifically targeting neighborhood and individual abutters to the Mystic River
- Nuisance/invasive species control monitoring and management program
- Vista pruning methodology and schedule
- Habitat enhancement
- Bank stabilization monitoring and repairing of unstable banks

#### Routine/General Maintenance

Routine maintenance ranges from the daily activities required to manage the conservation areas and park system along the Mystic River to the yearly activities that need to occur in order to maintain a safe, healthy, and clean system of parks and natural areas. The establishment of trails and recreational areas will require increased maintenance at specific locations.



### *Pruning*

Dead and dying trees and trees that hang over roadways and the recreational path should be pruned at least once a year or removed if possible. Priority should be given to trees creating a hazard.

### *Trash Removal*

Maintaining a clean, trash-free park system is a routine problem that burdens most park and conservation areas surrounded by heavily populated urban neighborhoods. Involving the surrounding communities and neighborhoods, and instilling in them a sense of ownership of and pride in the park system and the Mystic River, will bring the community together and help keep the parks clean.

Educational signs informing people to “carry in/carry out” and signs depicting fines for littering should be placed in parking areas and near trail entrances. The number of trash receptacles placed around parks and natural areas should be kept to a minimum and placed in interior locations along the trail or at parks. Limiting the total amount of receptacles will minimize the time spent collecting trash and minimize the maintenance effort.

### *Yard Waste*

Yard waste and organic material that is illegally dumped or has collected in publicly accessible areas should be gathered and brought to a compost site which will likely be off premises. This compost can be used to repair damaged lawn areas within the park, as compost around new plantings and in flowerbeds, and along the banks when soil and seed is required for stabilization. Abutters should be educated regarding the negative impacts of dumping yard waste on DCR property.

### *Clean-Up Days*

Bi-annual clean up of large debris and trash should be completed in the early spring and late fall when possible. Many sections of the River have shopping carts, tires, and other large objects. The large debris should be removed and sent for appropriate recycling or disposal. Additional support for DCR for organizing and performing clean-up days would certainly be useful, possibly through the Mystic River Watershed Association, the Boston Natural Areas Network, or other neighborhood/advocacy groups. Alternatively, a friends group created specifically for the Mystic River Reservation could take responsibility for clean-up days.

### *Mosquito Control*

Public use can be improved through mosquito reduction, particularly in areas of high use during warm evenings, such as sports fields, high-use parks, and the lawns around the Condon Band Shell. Areas that capture runoff and maintain shallow, standing water – e.g., stream mouths and wetlands with standing water behind poorly sized outlets or outlets in disrepair – have a high potential for supporting the development of mosquito larvae. To reduce the mosquito population, both natural and chemical methods could be applied. A potential natural solution would include the use of bat boxes placed throughout the project area and around the identified mosquito breeding areas. These boxes could provide a long-term solution to mosquito control. Other treatment options include *Bacillus thuringiensis*-based insecticides, which can be used in almost any aquatic habitat with no restrictions and little or no effect on humans, wildlife, pollinators, and most other beneficial insects; and Methprene, which is a synthetic mimic of an insect hormone used as an insecticide that acts as a growth regulator. Insecticide treatments are not permanent and must be repeated in order to effectively reduce the mosquito population.

### *Invasive Species Control*

Invasive plant species should be monitored in the parks and natural areas, as well as areas up river from Section 1. Monitoring can be completed either through professional organizations or through educational signage posted in areas that have been identified as susceptible to invasive species and in areas where ongoing restoration is occurring. If invading plants are limited, they are easily managed through physical hand removal (including removal of the rootstock). As the population of invasive species grows within an area it may be necessary to utilize other methods. Any involvement of volunteer groups must be closely monitored and directed to ensure that no wetlands areas are disturbed without Conservation Commission approval.

**Water Chestnut Control:** Water chestnut (*Trapa natans*) is present in the Mystic River throughout much of the Project Area, particularly in Section 2 and to a lesser extent in Sections 1 and 3. The species is an invasive, aquatic plant that is usually rooted. Because it can form extensive, dense floating mats, water chestnut can impede navigation and likely inhibits the growth of more desirable aquatic plants. Due to its low food value for wildlife, it can substantially reduce use of an area by waterfowl and other wildlife. Control of water chestnut has comprised primarily mechanical harvesting of the floating mats.

**Refer to Appendix B for more information on invasive species controls.**



### *Nuisance Species Control*

Poison ivy is a dominant species found along the Mystic River. It poses a potential health risk to people as they use the parks and natural areas along the River, especially in areas where primary and secondary paths are proposed. The need to control and manage the spread of poison ivy is an essential part of creating a welcoming and user-friendly park and natural environment for the public.

Poison ivy can be controlled in three ways:

- The first method involves the application of systemic herbicides such as glyphosate, commonly known as Roundup, Eraser, and other brands, or triclopyr, commonly known as Brush-B-Gone, Brush Killer, and other brands. It is important to only apply these herbicides directly to the poison ivy because these herbicides will also kill any other green leaf plants with which they come in contact. Herbicides are a very cost- and time-effective method and should be considered along the pathways.
- The second method applies to the larger vines of poison ivy typically found growing up trees. In order to protect the tree the vine should be cut near the ground and immediately treated with undiluted triclopyr (Greenlight Cut Vine and Stump Killer). It is important to apply the chemical to the freshly cut vine in order for it to be effective.
- The third method involves hand pulling. Only persons who can tolerate contact with the poison ivy oils should use this method and long gauntlet gloves should be worn to minimize the exposure to the plant. Pulling should be completed when the soils are soft and wet; it is important to pull the entire root system. This method may not be effective on large poison ivy plants.

Currently, DCR maintenance staff includes a limited number of licensed herbicide applicators. However, they are a regional resource and not dedicated to the Mystic River Reservation. The applicators have primarily used spraying of glyphosate as the treatment for poison ivy and have been successful in controlling the encroachment of poison ivy into existing areas that have high human contact. This method can be expanded to remove the plant from areas proposed for new or increased human contact.

Controlling and managing the spread of poison ivy will require ongoing maintenance. Different poison ivy control methods should be applied throughout the year to help manage either the particularly large patches of poison ivy or high contact areas.

### *Pruning*

Trees and shrubs along the Mystic River and recreational paths should be pruned annually to remove dead and dying branches and trees. Most pruning should be conducted in the fall and winter. However, vegetation that poses a safety concern should be removed immediately. Examples of trees and vegetation that should be removed include dead trees overhanging roadways, parking lots, paths, and recreation areas. Pruning occurring in areas identified for view corridors along the banks of the River should be done in a manner sensitive to the environment to ensure that the stream bank remains stable after vegetation is removed.

### *Primary and Secondary Paths*

Primary and secondary paths will require differing levels of maintenance. Primary paths should be inspected and repaired whenever a problem or potential problem arises. While any path design should limit the need for regular grass or brush mowing, mowing alongside the primary paths might be required.

Some issues to consider are erosion and stability of soils along the sides of the path and stability of informal trails that branch off the primary path and have been created by the public. Vegetation should be reestablished in areas requiring soil stabilization. There may be a need to discontinue the use of informal trails to preserve natural areas and maintain suitable ground cover to stabilize soils. In particular, informal trails that are established closer to the River and directly on top of the bank may pose a safety risk to the public and a risk to the stability of the bank.

### *Bank Stabilization*

The stability of the bank should be monitored, especially in areas where the proposed primary and secondary paths follow relatively close to the edge of the River. It is important to be proactive and stabilize the banks as soon as there are signs of pending bank failure. Taking a proactive approach can be a long-term cost savings benefit to protect infrastructure and maintain the quality of parks and natural areas.

Areas requiring stabilization should be studied to determine the appropriate method of stabilization. Typically a combination of hard and soft methods will achieve both a natural looking and functioning bank while providing the protection necessary to stabilize the bank. Stabilization methods may consist of vegetated riprap, willow stakes, rock gabions, or coconut fiber logs (for additional information and methods refer to Appendix C).



### *Snow Removal*

Snow removal should only occur along paved sections of the trail. Priority should be given to those sections that provide safe passage to schools, foot bridges, bus shelters, bus stops and transit stations, consistent with DCR policy.

### **Specific Maintenance Plans for Individual Conservation Areas**

DCR currently maintains a Maintenance Work Plan for the Mystic River Reservation that includes trash barrel pickup, litter removal, mowing, trimming and weeding. Schedules and priorities are based on existing funding and staffing levels.

The following maintenance recommendations are based on DCR assuming a stronger environmental and ecological stewardship of the Reservation, and on increased usage of the Reservation resulting from improvements recommended in this Master Plan. The recommendations are more specific than the existing Work Plan, and in some cases include additional activities. However, in some areas maintenance requirements are reduced (for example, areas where it is recommended that mown areas be converted to meadow, requiring less frequent maintenance). As a result, the recommendations do not have to create an additional burden.

The introduction of a professional meadow maintenance plan is recommended for areas that are to be maintained as meadows, including those areas that are being converted from lawn to meadow. The specific requirements of a meadow maintenance plan have not been included in the charts below.

### *Section 1: Harvard Avenue Bridge to Auburn Street*

In general, the proposed improvements to Areas 1 through 4 result in similar regular maintenance requirements. The regular maintenance tasks and associated monitoring and work frequency values are based on an estimated base requirement.

- The maintenance plan, however, does differ in terms of mosquito control. The areas where mosquito control will be required are those areas of high use during warm evenings and areas that capture runoff and maintain shallow, standing water. Also, areas where canoe landings or launches exist, or are being proposed, should have mosquito control. In Section 1, more frequent mosquito control is required in Area 3 than in Areas 1, 2 and 4.
- In addition, increased trash and litter removal is required for some of the areas due to high use. This includes areas of existing and proposed canoe

Regular Maintenance Tasks	Area	Monitoring	Work Frequency Required
Trash & Litter Removal	1,2		Weekly during Summer Monthly during other seasons
	3,4		2 times per year
Mow/Trim/Weed	1,2,3,4		Every 2 weeks during Summer
Stabilization of Banks	1,2,3	Bi-annually	As required
	4	Annually	As required
Pruning	1,2,3,4		1 time a year
Trail Maintenance	1,2,3,4		1 time a year
Sign and Information Board	1,2,3,4		Monthly
Mosquito Control	1,2,4		Spring
	3		As required
Invasive Species Management	1,2,3,4	4 times a year	As required
Infrastructure Maintenance	1,2,3,4	Monthly for Vandalism	As required

**Table 4.1: Section 1 Maintenance Schedule**

landings and launches. For Section 1, high-use areas and those with canoe access include Areas 1 and 2.

- Finally, Areas 1, 2, and 3 require a higher frequency of bank stabilization monitoring due to the current bank instability.

*Section 2: Auburn Street to Mystic Valley Parkway Bridge Just West of Medford Square*

In general, the proposed improvements to Areas 1 through 7 result in similar regular maintenance requirements. As with Section 1, the regular maintenance tasks and associated monitoring and work frequency values are based on an estimated base requirement.

- The maintenance plan, however, does differ in terms of mosquito control. The areas where mosquito control will be required are those areas of high use during warm evenings and areas that capture runoff and maintain shallow, standing water. Also, areas where canoe landings or launches exist, or are being proposed, should have mosquito control. In Section 2, mosquito control is required then for Areas 2 through 6.
- In addition, increased trash and litter removal is required for some of the areas due to high use. This includes areas of existing and proposed canoe landings and launches. For Section 2, high-use areas and those with canoe access include Areas 2, 3 and 6.



Regular Maintenance Tasks	Area	Monitoring	Work Frequency Required
Trash & Litter Removal	2,3,6		Weekly during Summer Monthly during other seasons
	1,4,5,7		2 times per year
Mow/Trim/Weed	1,2,3,4,5,6,7		Every 2 weeks during Summer
Stabilization of Banks	1,2,3,4,5,6,7	Bi-annually	As required
Pruning	1,2,3,4,5,6,7		1 time a year
Trail Maintenance	1,2,3,4,5,6,7		1 time a year
Sign and Information Board	1,2,3,4,5,6,7		Monthly
Mosquito Control	2,3,4,5,6		Spring
	1,7		As required
Invasive Species Management	1,2,3,4,5,6,7	4 times a year	As required
Infrastructure Maintenance	1,2,3,4,5,6,7	Monthly for Vandalism	As required

**Table 4.2: Section 2 Maintenance Schedule**

- Finally, all Areas require a higher frequency of bank stabilization monitoring due to the current bank instability.

*Section 3: Craddock Bridge to Wellington Bridge*

In general, the proposed improvements to Areas 1 through 15 result in similar regular maintenance requirements. As with Section 1 and Section 2, the regular maintenance tasks and associated monitoring and work frequency values are based on an estimated base requirement.

- The maintenance plan, however, does differ in terms of mosquito control. The areas where mosquito control will be required are those areas of high use during warm evenings and areas that capture runoff and maintain shallow, standing water. Also, areas where canoe landings or launches exist, or are being proposed, should have mosquito control. In Section 3, mosquito control is required for Areas 3, 5, 6, 8, 9, 10, 11, 12 and 14.
- In addition, increased trash and litter removal is required for some of the areas due to high use. This includes areas of existing and proposed canoe landings and launches. For Section 3, high-use areas and those with canoe access include Areas 3, 5, 6, 8, 9, 10, 11, 12 and 14.
- Finally, Areas 6 and 7 have a higher frequency of bank stabilization monitoring due to current instability.

*Subdistrict 4: Wellington Bridge to Malden Bridge*

In general, the proposed improvements to Areas 1 through 6 result in similar regular maintenance requirements. As with Sections 1 through 3, the regular



Regular Maintenance Tasks	Area	Monitoring	Work Frequency Required
Trash Removal and Clean Up	3,5,6,8,9,10,11,12,14		Weekly during Summer Monthly during other seasons
	1,2,4,7,13,15		2 times per year
Mow/Trim/Weed	1,2,3,4,5,6,7,8,9,10, 11,12,13,14,15		Every 2 weeks during Summer
Stabilization of Banks	6,7	Bi-annually	As required
	1,2,3,4,5,8,9,10, 11,12,13,14,15	Annually	As required
Pruning	1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15		1 time a year
Trail Maintenance	1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15		1 time a year
Sign and Information Board	1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15		Monthly
Mosquito Control	3,5,6,8,9,10,11,12,14		Spring
	1,2,4,7,13,15		As required
Invasive Species Management	1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15	4 times a year	As required
Infrastructure Maintenance	1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15	Monthly for Vandalism	As required

**Table 4.3: Section 3 Maintenance Schedule**

maintenance tasks and associated monitoring and work frequency values are based on an estimated base requirement.

- The maintenance plan, however, does differ in terms of mosquito control. The areas where mosquito control will be required are those areas of high use during warm evenings and areas that capture runoff and maintain shallow, standing water. Also, areas where canoe landings or launches exist, or are being proposed, should have mosquito control. In Section 4, mosquito control is required for Areas 1, 4 and 5.
- In addition, increased trash and litter removal is required for some of the areas due to high use. This includes areas of existing and proposed canoe landings and launches. For Section 4, high-use areas and those with canoe launches include Areas 1, 2, 4 and 5.
- Finally, Area 5 requires a higher frequency of bank stabilization monitoring due to current instability.



Regular Maintenance Tasks	Area	Monitoring	Work Frequency Required
Trash & Litter Removal	1,2,4,5		Weekly during Summer Monthly during other seasons
	3,6		2 times per year
Mow/Trim/Weed	1,2,3,4,5,6		Every 2 weeks during Summer
Stabilization of Banks	5	Bi-annually	As required
	1,2,3,4,6	Annually	As required
Pruning	1,2,3,4,5,6		1 time a year
Trail Maintenance	1,2,3,4,5,6		1 time a year
Sign and Information Board	1,2,3,4,5,6		Monthly
Mosquito Control	1,4,5,		Spring
	2,3,6		As required
Invasive Species Management	1,2,3,4,5,6	4 times a year	As required
Infrastructure Maintenance	1,2,3,4,5,6	Monthly for Vandalism	As required

Table 4.4: Section 4 Maintenance Schedule

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## STAFFING

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DCR’s Division of Urban Parks and Recreation manages large expanses of property along the Mystic River. The North Region manages this Mystic River Reservation.

DCR staff in the North Region maintain properties along the River, including mowing, brush removal, and trash pick-up, as well as snow removal along the Mystic River Parkway. The North Region has six full time rangers with two assigned to the Fells District, which includes the Mystic River Reservation, and on occasion rangers patrol the Reservation. There are currently four operations staff that are responsible for maintaining the Mystic Cluster; the Mystic River Reservation is one of several resources within this cluster.

Staff time spent in the Mystic River Reservation is the equivalent of ten percent of one full-time ranger and two full-time operations personnel. The Fells District also has 18 full-time operations staff and six to eight seasonal staff (not including lifeguards or Waterfront Services Staff, i.e., pool managers, etc.). Personnel assigned to the Mystic River Reservation includes the equivalent of approximately two full-time operations staff, one seasonal operations staff, 10% of a full-time ranger and one additional seasonal ranger.

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## SAFETY AND SECURITY

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Implementation of the Master Plan will result in improved access to the Reservation and increased use. DCR should coordinate with State and local police as segments of the Master Plan are implemented to ensure that police are aware of increased use of the Reservation.

## **APPENDICES**

**A: Community Meeting Summaries**

**B: Invasive Species Management**

**C: Bank Stabilization Techniques**

**D: Existing Conditions**



## APPENDIX A: PUBLIC MEETING SUMMARIES

Public Meeting I: Wednesday, November 28, 2007 - McGlynn Middle School Auditorium, Medford

Dan Driscoll welcomed attending members of the public, introduced the project and introduced Carole Schlessinger and CSS.

### *Presentation:*

- Project Introductions
- Extent of the Master Plan & Project Goals
- Site History & Existing Conditions Analysis
- Next Steps
- Questions (Posted for Discussion)
  - o What are the hidden gems and problems that the consultants should know about?
  - o Are there important resources that should be added to the maps?
  - o How do you use the river/reservation now?
  - o What other activities would you like to see in the reservation?
  - o What important natural areas would you like to see preserved?
  - o Are there important connections to other resources/locations that should be included in the plan?
  - o Would you like to see any changes to the draft goals?

### *Questions/Comments & Answers*

**Question/Comment:** Why is the limit of work where it is?

**Response:** The project boundary shown is a result of how much can be done for the money allotted and has been stretched as far the current funding allows. Outside of this project DCR will be working toward connections to Mystic Lakes, Everett and Chelsea. DCR has few landholdings, other than Mary O'Malley Park, east of the project boundary. DCR hopes to expand the scope at some point in the future. The breadth of the project area was based on DCR properties and areas that could provide neighborhood access.

**Question/Comment:** These future connections [from the response above] should be stated in the project goals. It is critical to make links to Chelsea Creek for the cleanup efforts there.

**Response:** We will list these additional goals in the outline, including future connections to Mary O'Malley Park, Chelsea Creek and the Malden River.

**Question/Comment:** Developers are looking to connect their properties with the river, there may be opportunities for outside partnerships. The new T stop at Assembly Square should be included.

**Response:** We have been working with adjacent developers, particularly with the Assembly Square development, with plans for the Wellington Bridge underpass and connections/improvements to Draw 7 Park.

**Question/Comment:** Dog owner commented on strong need for fenced-in, off-leash areas, possibly at Draw 7 and McDonald Park, and noted that dog areas draw in many users and increase safety. She also commented that Draw 7 was not "underutilized" as presented but is highly used for adult soccer.

**DCR Comment:** We are negotiating with developers to build connections to Alford Street, design improvements at Draw 7 and strengthen parkland along the river.

**Question/Comment:** MAPC is working to identify major projects along the entire stretch of the river and ways to push those projects and initiatives forward. They will be having a stakeholder meeting in January.

**Question/Comment:** The stretch of shore drive (along the Ten Hills neighborhood) is an area of concern. The Conservation Commission has taken action against some of the abutters. We need to work to a plan that DCR, ConComm and the neighborhood can all embrace, including a maintenance plan.

**Question/Comment:** The area east of the Wellington T station is a great opportunity. Designs may have been done by CRJA for this site. T Realty wants someone to assume liability for the site. Developments to the T station may have an effect on this parcel.

**Question/Comment:** The reservation really needs to be respected like a state park. How do you do that?

**Response:** In other locations, continuity caused territorial resistance to break down. This is also accomplished through the process of education. People need to understand that the area is being cared for and that it is part of a comprehensive plan.

**Question/Comment:** There are many changes going on in Medford Square and the Condon Shell area. Is there an effort to coordinate with these other projects?

**Response:** We are working on the Condon Shell project so that design will be coordinated with the overall master plan, and we will be incorporating the changes to Medford Square.



**Question/Comment:** Look at the important corridors that lead to Medford Square and provide connections to the river, particularly Governor's Ave.

**Question/Comment:** There is a need to address motorized boating. The public access ramp at Mystic Wellington does not provide adequate trailer parking. The city of Everett has been looking at putting in a mooring field near the confluence of the Malden River, upriver of the dam.

**Question/Comment:** People need to be able to see the river to be engaged with the river. Need to open views, to find a balance between naturalizing and views. Many of the trees have not been cut back for years.

**Response:** We are looking at that as part of the master plan, and will be focusing on ways to strengthen and restore the riverbanks, while clearing some of the trees and overgrowth to open up important views.

**Question/Comment:** Maintaining shrubs along the banks helps to reduce sediment running into the river, helping to improve water quality.

**Question/Comment:** MWRA/Cambridge – move forward with sewer at Alewife

**Question/Comment:** The EPA recently gave the Mystic a water quality grade of D. This may not be a bad thing as it will stir up initiative regarding the Mystic and its water quality. There will be a water quality summit on the Mystic March 4<sup>th</sup>.

**Question/Comment:** There are 8 straight sewer outflows (not combined sewer outflows) that flow into the Mystic, and there are 4 in the project area. Be aware of those as part of the planning process.

**Question/Comment:** There is a need for additional canoe and kayak access points: Draw 7, upriver of the dam; the parking lot at the Condon Shell, at Alewife Brook, just upstream of the confluence with the Mystic, by the corner of the Dilboy field parking lot.

**Question/Comment:** There is also an erosion control problem along the stone beach area at Draw 7.

**Question/Comment:** There is a bad water chestnut problem along the riverbanks, particularly from the Condon Shell to the east end of Medford Square.

**Response:** DCR and the EPA are looking at ways to combat the problem and have started an educational campaign to tell people to clean their propellers so that they don't spread seeds.

**Question/Comment:** The EPA has 8 people assigned to the Mystic who will be conducting studies, collecting data. Come to the meeting in early March.

**Question/Comment:** Additional comment about dog owners, need for fenced-in space safe for them and for other users

**Question/Comment:** One of the project goals should be to reduce the negative impacts of the automobile – noise, runoff, safety, etc.

**Question/Comment:** Additional comment identifying area east of Wellington T Station as access opportunity.

**Question/Comment:** The path between the General Lawrence Bridge and Blessing-of-the-Bay boathouse is an area of concern –it is a long isolated stretch. A sound barrier would be nice to block out the noise from the adjacent highway, but this would also further isolate this stretch and reduce security.

**Question/Comment:** The conservation area at McDonald Park, especially near the boardwalk from the Fellsway, also feels very isolated and unsafe because the high marsh grass comes right up to the path on both sides.

**Question/Comment:** Desire to see more evaluation of public transportation and access. How are people getting to DCR property? What are the obstacles? Where are nearby bus routes, etc.

**Response:** We will look more into that as part of the next phase of the project.

**Question/Comment:** The depth of the river from Medford Square upriver has been greatly reduced.

**Response:** Major dredging would be needed to correct this problem. Instead, we are focusing on stabilizing the riverbanks, reducing runoff, etc.

**Question/Comment:** Need to maintain an optimistic view regarding water quality improvements, and make sure the master plan provides access to the river that will in the future be fish-able and swim-able.

**Question/Comment:** Need to provide access to destinations from the river side. Jet ski/boat access to McDonald Park and other places – currently people pull up where they can and tear through existing vegetation.

**Question/Comment:** What is underway with the Assembly Square Master Plan? Are there any opportunities for sustainable practices?

**Question/Comment:** Will there be a land acquisition plan like the Neponset River Master Plan?

**Response:** Yes, important sites for acquisition will be identified.

**Question/Comment:** There is significant riverbank erosion and tree overgrowth, as well as a need to open up views - not from the highway but for pedestrians.



**Response:** There is some related wake-related erosion. Increased patrolling could help with this problem. The plan will include recommendation for selective clearing to open up views.

**Question/Comment:** When will the VHB plans for the Riverwalk be completed?

**Response:** 100% design by summer 2008. Need to address issues of safety posed by adjacent MBTA munitions depot.

**Question/Comment:** Is DCR open to organizations like Trust for Public Land taking on some of the immediate projects and later being reimbursed?

**Response:** DCR is open to partnerships. Trust for Public Land has worked with DCR on other projects but is usually involved in land acquisition, not construction. DCR is trying to redirect enhancement funds that were originally meant for these types of projects but in recent years have been used for traffic calming and other roadway projects.

**Question/Comment:** Need to produce some kind of pamphlet that identifies the master plan goals and initiatives, increased website materials, etc.

**Question/Comment:** Need for increased signage and direction, way to tell people where the path is.

**Question/Comment:** There has been talk of the Lower Mystic as part of a commuter boat service. Pick up points should be identified. Parcel 5 Mystic Marine in Everett has been mentioned. The new Assembly Square development could be the depot.

**Question/Comment:** The field behind Auburn Street is well used and should remain an open field. There should be increased signage providing access and telling people it is public space, and it should be incorporated into the trail network. Wild Oats is going to become Whole Foods. Can we work with Whole Foods on controlling trash and improving pedestrian access? Also need to improve pedestrian access from Brooks Elementary.

**Question/Comment:** The only places to park on the south side of the river are at Wild Oats and Dilboy Stadium, and there is no safe access from either of these locations.

**Question/Comment:** Can materials be available on-line? Can we have a discussion board on the web?

**Response:** We will work on getting something up on the DCR master plan website.

**Question/Comment:** How do you mitigate the impacts of I-93? (Noise, visual, access...)



**Question/Comment:** Need to draw people on foot to the river, not just from fast-moving roads and highways. Also opportunity to announce that the area is parkland – for example, banners like the Upper Charles.

**Question/Comment:** The National Park Service Rivers & Trails program is working with Chelsea on the area around Chelsea Creek. The master plan should try to link up with these new trails.

**Question/Comment:** With increased motorized boat traffic, what can be done to increase water safety for non-motorized boaters?

**Question/Comment:** We need to think about the master plan from the river up. We need to ask “what is the net impact on the river” when making any decisions. Maybe dogs don’t need to be along the river... Maybe we should decrease parking and areas of runoff near the river... etc.

**Question/Comment:** There should not be any new recreation added to the river, just better maintenance of what is there already.

**Question/Comment:** Overlooks should be added like along the Upper Charles. These could bring people closer to the river without damaging the shoreline.

**Question/Comment:** McDonald Park needs some kind of attraction to draw more users from the neighborhood and beyond, and to overcome the Rte. 16 barrier - something like a hobby railroad or some unique feature that would invite more families to use the park.

**Question/Comment:** There should be more docks to tie up boats at Medford Square and Station Landing.

**Question/Comment:** The primary goal of the master plan should be the river’s health.

**Question/Comment:** Signage needs to be added along the lower Mystic warning of the dangers of possible toxins (eating fish, swimming, etc.) and the text needs to be in multiple languages.

**Question/Comment:** There is not a strong need for other uses along the river.

**Question/Comment:** The Green Line extension should be added to the diagrams and considered as an additional public access route.

**Question/Comment:** Identify opportunities for retail overlooking the river (ie restaurants, cafes, etc.)



Public Meeting 2: Monday, June 16, 2008 - Tufts Boat House, Medford

Draft recommendations were presented by Deneen Crosby. After the presentation, stations were set up around the room so that attendees could get more specific information and/or comment on particular topics. The comments and questions are summarized below.

*Conservation*

- Designated recreational areas for people with dogs helps control feces run-off into the river by controlling waste collection.
- Section 1, Area 2: add canoe launch to OFBA system
- Section 4, Area 2: Provide unmowed grass strip adjacent to river bank vegetation *to help with geese control*
- Section 4, Area 3: Allow unmowed grass strip between path and riverfront vegetation *to help with geese control*
- Section 4, Area 5: Add boat launch to OFBA system
- Section 4, Assembly Square Mall frontage: protect wildlife habitat for seabirds, ground hogs and rabbits

*Path and Boat Access*

- Pervious materials for primary path?
- More dog parks?
- How far do bike links go?
- Traffic calming for bikes?
- Connection to new green line station important
- Canoe launch at park at far west end
- Signage plan telling people about resources
- Consider partnering with Mass. Office of Fishing and Boating Access (OFBA) in establishing the boat access points
- Improve quality of existing primary asphalt path near Boston Ave.
- Add boat access near Starbucks at Auburn St.
- Section 1, Area 2: add canoe launch to OFBA system
- Add new canoe launch near Harvard Ave. bridge
- Section 4, Area 5: Add boat launch to OFBA system

- Improve sidewalk link between river's edge and Station Landing (across Wellington T stop)

### *Access*

- Add path between West Medford and proposed new Green line T stop along RR tracks
- Consider converting 4 lanes to 3 lanes along MVP from Broadway to Auburn St. to accommodate bike lane
- Improve pedestrian signal timing at Auburn St. light- two lights are confusing here
- Remove medial striping along MVP to make room for bike lane
- Traffic calming needed along South St.
- Connection from neighborhood needed at Walnut St.
- Reduce infringement of boat docks into river at Ship Rd. boat club
- Post sign at boat club clarifying DCR land ownership
- Improve connection to park at Spring St.
- Path gets too dark near proposed island
- ADA ramps needed at interchange with Corporation Way
- Make bike and pedestrian crossing under Rte. 99 to connect to Flatley development parcel
- Add path to Inner Belt and Sullivan Station and Washington St. along RR tracks
- Add underpass at New Road to connect to East Somerville
- Provide direct access over RR tracks from T station to Draw 7 Park
- Make connection between Foss Park and Assembly Square Mall, and Foss Park, through Ten Hills neighborhood to river.
- Make a connection between Ten Hills neighborhood and Assembly Square Mall over Fellsway
- Make surface crosswalk over Fellsway in addition to underpasses on either side of bridge
- Make a raised crosswalk at end of Temple Rd. in Ten Hills neighborhood
- Improve pedestrian crossing light at Shore Drive-too short, school groups cross to boat house here



### *Parks*

- Scenic overlooks at Blessing of the Bay – keep on land
- Draw Seven – dam crossing not feasible. Crossing multi-use pathway at MBTA to Rte. 99
- Why median by Condon Shell on Route 16? Remove and put in bike lanes.
- Parking lot/canoe launch at Condon Shell. Think about how boaters get from parking to water. Is parking enough? Could get very popular. Perfect spot.
- Eroding banks at Condon Shell. Jersey Barrier.
- Finish the park by the dam/Costco/Target. Get rid of gates to park. Better access/pedestrian path from shopping area. Beautiful viewing area/dirty/overlooking dam behind Costco
- DCR bridges need safe crossing
- Dog area looks small
- Dog area at McDonald – more dog owners, less “other”
- Dog area at Boston Ave. on south side
- Dog areas need community support
- Where do the Winter Hill boats go?
- Raw sewage by Dilboy (Alewife Brook Pump Station) illegal overflow/conflict with path
- Contaminated pipes at Draw Seven?
- Draw Seven – how do you get to the water? Cross hard edge? Erosion issues.
- Recommendations for new plantings – native Mass plantings and native NE
- Suggest low planting to create/maintain view sheds

## APPENDIX B: INVASIVE SPECIES MANAGEMENT

The goal of invasive species management is to maintain or restore the health of an ecosystem and the native species of the natural area. Complete eradication of an invasive plant can be difficult to achieve and often controlling an invasive species by reducing density and population size is a more practical goal.

The following control methods include both chemical and mechanical methods. The appropriate control method depends on the population size of the invasive species and the particular site on which they are found. The risk of a control method to the health of the ecosystem and native flora and fauna should be considered.

Non-chemical management techniques should be considered before chemical techniques. If herbicides are used, proper safety precautions must be followed. Herbicides should be applied in accordance with the label instructions. The specific health hazards and precautions will be identified on the label. The minimum effective concentration of the herbicide should always be used. Only herbicides approved for use near water should be used in the Mystic River Reservation. Any required permits should be obtained before applying herbicides.

### Common Reed (*Phragmites australis*)

#### *Recommended Methods for Recreation Areas*

*Phragmites* is extraordinarily difficult to remove or control. Removal and/or control activities are very labor intensive. Removal related to wetlands restoration will require review by the appropriate Conservation Commission.

- Cutting or mowing

Mowing may be useful for eliminating any fire hazard potential, but is typically not successful in eradicating *Phragmites*. In areas where mowing is difficult or native vegetation exists, hand cutting should be used. See Tiner (1995) and Marks et al. (1993) for more information.

- Covering with plastic

Plastic covers placed after cutting or mowing create high temperatures that have led to *Phragmites* die-off in 3-4 days. See Mark et al. (1993) for details on this technique. Plastic covering typically limits the growth of all species covered and is therefore not recommended in proposed conservation areas.



- Herbicides

Herbicidal application may be effective in eradicating *Phragmites*. Glyphosate (Rodeo™) is commonly used for *Phragmites* control. Rodeo™ is a nonselective herbicide and will kill grasses and broad-leaved plants. Glyphosate biodegrades quickly and completely into natural products, and is virtually non-toxic to all aquatic animals tested. See Mark et al. (1993) and the Invasive Plant Management Guide (2001) for more information on herbicide treatment for *Phragmites*. Instructions for application are provided on the product label.

- Planting of competitive species

Planting of competitive species after removal of *Phragmites* may reduce the potential for *Phragmites* to regrow and dominate. Disturbances that remove competitors (e.g., mowing, plastic covering) may also promote the spread of *Phragmites* (Minchinton and Bertness, 2003); therefore, any native species removed should be replanted after disturbances to the area.

#### *Recommended Methods for Conservation Areas*

- Cutting or disking

In order to preserve desirable species, hand cutting is preferred over mowing in conservation areas. See Tiner (1995) and Marks et al. (1993) for details. Disking of rhizomes is a labor-intensive method which may enhance restoration. However, disking could possibly result in an increase in *Phragmites* if pieces of the rhizome, which can produce new plants, are not entirely removed (Tiner, 1995; Marks et al., 1993).

- Cut-stump herbicide treatment

In areas where it is desirable to eradicate *Phragmites* but save desirable species, a combination of cutting and herbicidal treatment has been successful. See Mark et al. (1993) for more information on this technique and Martin (2001) for an example of implementing the technique in Massachusetts.

- Planting of competitive species

Planting of competitive species after removal of *Phragmites* in conservation areas is also important to prevent the regrowth or spread of *Phragmites*.

#### *Methods Not Recommended for the Mystic River Reservation*

- Biological Control

At this time, no effective biological control agent has been identified for North America.

- Site modifications

Disturbances that alter hydrology, increase stormwater discharge, and increased water pollution have created environmental conditions that favor the growth of *Phragmites*. Site modifications to restore a site to its pre-disturbance condition, such as dredging or excavation and increased flooding and salinity may therefore be effective at eliminating *Phragmites*. See Tiner (1995) and Marks et al. (1993) for more information on site modification techniques.

Site modifications can destroy an existing community that was to be restored and therefore are not recommended for the Mystic River Reservation. Dredging or excavation are also not a desirable options for the Mystic River Reservation due to historic Polychlorinated Biphenyls (PCB) contamination. Increasing salinity in the Master Plan area is limited by Earhart Dam operations which prevent tidal inflow.

- Burning

Burning is an effective strategy of *Phragmites* control when burning penetrates the roots of the plant. However, root burn can be difficult to achieve because a layer of soil, mud, and/or water usually covers the rhizomes. See Marks et al. (1993) for recommendations on burning.

#### Purple Loosestrife ( *Lythrum salicaria* )

##### *Recommended Methods for Recreation Areas*

- Herbicides

Glyphosate (Rodeo™) has been commonly used to eradicate Purple Loosestrife. See Bender and Rendall (1987), Heidorn (1990), and the Invasive Plant Management Guide (2001) for more information on herbicide treatment. Instructions for application are provided on the product label.

- Biological Control

Biological control is an excellent option for Purple Loosestrife control. Several insect species have been identified that are very specific to Purple Loosestrife and cause significant damage to the plant. Populations of *Galerucella californiensis* and *G. pusilla*, small beetles which feed on Purple Loosestrife, have been established in Massachusetts. At high densities, these species have been successful at defoliating extensive Purple Loosestrife populations. *G. californiensis* appears to be more successful



than *G. pusilla*. Research and monitoring of the ability of native species to regrow in these areas is still required. See Blossey (2003) for more information on biological control of Purple Loosestrife.

- Cutting or mowing

Mowing of Purple Loosestrife can weaken plants and make other control techniques more effective. Hand cutting should be substituted for mowing in these areas or in areas where native vegetation is to be preserved. See the Invasive Plant Management Guide (2001) and the Integrated Pest Management Plan (2004) for more details on these methods.

- Covering

Covering plants in the early spring with black plastic or shade cloth can help eradicate small loosestrife stands by preventing photosynthesis and creating high temperatures. See the Integrated Pest Management Plan (2004) for details on implementing this technique.

#### *Recommended Methods for Conservation Areas*

- Hand removal

Hand removal is most effective for young plants and small or isolated populations. See Bender and Randall (1987), the Integrated Pest Management Plan (2004), and the Invasive Plant Management Guide (2001) for more information.

- Cutting

Hand cutting of Purple Loosestrife can weaken plants and make other control techniques more effective. In natural areas, cutting is preferred to mowing to preserve nontarget species (Invasive Plant Management Guide, 2001; Integrated Pest Management Plan, 2004).

- Spot application of herbicides

Application of Rodeo™ to individual loosestrife plants is recommended in areas where avoiding contact of the herbicide with nontarget plants is desired. See Heidorn (1990) and Bender and Randall (1987) for more information.

- Planting of competitive species

Planting of competitive species may decrease the density of Purple Loosestrife. See Bender and Randall (1987) for more information.



### *Methods Not Recommended for the Mystic River Reservation*

- Burning

Burning is not an effective method for eradication of Purple Loosestrife (Heidorn, 1990). Burning will reduce dry biomass and may make the area more accessible for mowing or herbicide treatment (Integrated Pest Management Plan, 2004).

- Site modifications

Purple Loosestrife may be removed through excavation or dredging, however the wetland contours and existing plant community will also be altered in the process. Monitoring is necessary after mechanical removal to control small areas of loosestrife regrowth along the waters edge. See the Integrated Pest Management Plan (2004) for more information on site modifications.

Site modifications can destroy an existing community that was to be restored and therefore are not recommended for the Neponset River Reservation. Dredging or excavation is also not a desirable option for the Neponset River Reservation due to historic Polychlorinated Biphenyls (PCB) contamination.

### *Japanese Knotweed ( Polygonum cuspidatum)*

#### *Recommended Methods for Recreation Areas*

- Herbicides

Glyphosate (Rodeo™), Triclopyr (Renovate3®), Imazapyr (Habitat®), and 2,4-D herbicides can be an effective method of Japanese Knotweed control. See Seiger (1991), the Integrated Pest Management Plan (2004), and the Invasive Species Management Guide (2001) for more details on herbicide application.

- Planting of competitive species

Introduction or reintroduction of competitive species may help control Japanese Knotweed populations. More research is needed to determine which species are effective competitors and how they should be introduced (Seiger, 1991).



- Covering with plastic

Japanese Knotweed requires high light environments and therefore shading may be an effective control measure for small stands. Shading may be more effective when knotweed is cut before covering (Seiger, 1991).

#### *Recommended Methods for Conservation Areas*

- Digging

Digging is an appropriate control method for small populations or in areas where herbicides cannot be used. The entire plant, including all roots and runners, should be removed. All rhizome fragments should be removed because new plants can sprout from these fragments (Seiger, 1991; Invasive Plant Management Guide, 2001).

- Cutting

Cutting may be an effective method of controlling Japanese Knotweed by reducing rhizome reserves. See Seiger (1991) and the Invasive Plant Management Guide (2001) for more information.

- Applying selective herbicides directly to plant

Cutting of Japanese Knotweed in late June may weaken the plant and make herbicide treatment more effective. Herbicides can be directly applied to individual knotweed plants to decrease the chance of impacting nontarget species. See Seiger (1991) and the Invasive Species Management Guide (2001) for more details on herbicide application.

#### *Multiflora Rose ( Rosa mutiflora)*

#### *Recommended Methods for Recreation Areas*

- Herbicides

Glyphosate (Rodeo™), 2,4-D, and Fosamine have been successful in controlling multiflora rose. See Szafoni (1990) and Eckardt and Martin (2001) for more information on herbicide application.

- Cutting or Mowing

On large or more disturbed sites, mowing can be used to control Multiflora Rose. Mowing along edges can prevent the spread of Multiflora Rose. In areas where mowing is difficult or native vegetation exists, hand cutting should be used. See Szafoni (1990) and Eckardt and Martin (2001) for recommendations for these methods.

### *Recommended Methods for Conservation Areas*

- Hand pulling

Hand pulling may be an effective strategy for small plants. The entire plant, including the root system, must be removed to prevent resprouting (Szafoni, 1990).

- Cutting

Cutting can effectively control multiflora rose, but will not eradicate it from a site. In areas of high habitat quality, cutting is preferred over mowing in order to leave native vegetation undisturbed (Szafoni, 1990; Eckardt and Martin, 2001).

- Cut-stump herbicide treatment

Cutting can be an effective control method when combined with the use of an herbicide. This method allows the herbicide to be applied to Multiflora Rose without killing non-target species. See Szafoni (1990) for more details on this method.

### *Methods Not Recommended for the Mystic River Reservation*

- Burning

Burning has not been tested as a control method for Multiflora Rose (Eckardt and Martin, 2001).

- Biological Control

Potential biological control agents for Multiflora Rose are known, however the feasibility of these methods in natural communities is unknown. See Amrine Jr. (2002) for more information on biological control of Multiflora Rose.

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## APPENDIX C: BANK STABILIZATION TECHNIQUES

### Introduction

The techniques presented in this appendix are examples of some of the many techniques being used to stabilize streambanks. The best technique for a site will depend on the cause and severity of the erosion, the size and location of the stream, site-specific factors, and the desired goal of stabilization. Typically a combination of techniques is used to meet the project goals. Bank stabilization projects require careful planning to achieve a successful result. Any required local, state, and federal permits should be obtained before beginning a bank stabilization project.

Stabilization techniques are summarized below and illustrated on page A-21.

Canoe Launches - whether new or existing, this use poses bank stabilization issues. The stabilization technique utilized should be based on the site specific needs. Hard armoring solutions that include rip rap should be limited to steeper slopes for the study area. The hard armoring solutions are not recommended for any of the existing canoe launches. Brush mattress with live stakes should work. If the water's edge of the bank is to be disturbed, the coconut fiber rolls are recommended.

Technique	Description	Cost	Stabilization purposes			Comments
			Toe protection	Upper bank protection	Runoff control	
<b>LIVE PLANTINGS</b>						
Vegetation	Use of trees, shrubs, other vegetation to stabilize banks	Low	X	X	X	Provides habitat, aesthetic values; Shrubs generally provide better protection than trees
Vegetated riprap/ Joint planting	Layer of stone armoring that is vegetated using live stakes	Moderate to high	X	X	X	Appropriate where there is a lack of desired vegetation on the face or existing or required riprap; Root system prevents erosion of fine sediment and improves drainage in the soil base; Survival rates can be low
Live Stakes	Cut stem or branch of rootable plant is inserted into the bank and develops into a bushy riparian plant	Low		X		Appropriate for repair of small slips and slumps; Rapidly restores riparian vegetation and habitat; Can be combined with many other techniques
Rootwad revetments	Consists of interlocking tree material placed in and on streambanks	Moderate to high	X			Suited to streams where fish habitat deficiencies exist; Limited life; Site must be accessible to heavy equipment; Can create local scour and erosion
Branch packing	Alternating layers of live branches and soil	Moderate		X	X	Suitable for repairing patches of bank that have been scoured out or have slumped; Appropriate after stresses causing slump have been removed
Live fascines	Rolls of live branch cuttings that are placed in shallow trenches on the bank and staked in place	Moderate		X	X	Creates series of short slopes separated by rows of fascines; Can be combined with other techniques



Technique	Description	Cost	Stabilization purposes			Comments
			Toe protection	Upper bank protection	Runoff control	
<b>BIOENGINEERING</b>						
Vegetated geogrids	Alternating layers of live cuttings and geotextile fabric to rebuild and vegetate eroded banks	High	X	X	X	Can be installed on steeper and higher slopes; Useful in restoring outside bends where erosion occurs
Brush mattress	Thick blanket of live branch cuttings and soil	High		X	X	Provides immediate cover and restores vegetation and habitat; Limited to slope above base flow levels; Excellent candidate for combining with structural techniques
Tree revetments	Row of cut trees anchored to the toe of the bank	Low	X			Recommended for small to medium stream bends that are unstable due to removal of original tree cover; Often used in combination with other techniques; Site may need to be accessible to heavy equipment
Coconut fiber roll	Rolls of coconut husk fibers bound together and staked to the toe of the bank	Moderate	X			Native plants and live stakes usually inserted into roots; Flexible to allow for molding to bank contours
<b>HARD ARMORING</b>						
Rock riprap	Stones placed along the slope	Moderate to high	X	X	X	Provides long term durability; Can be vegetated; Site must be accessible to heavy equipment

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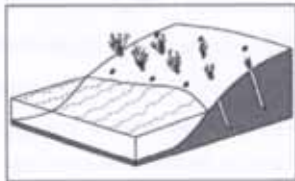
Vegetation



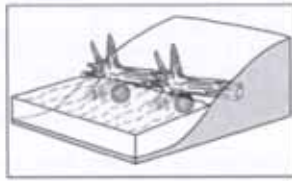
Vegetated riprap



Live stakes



Rootwad revetments



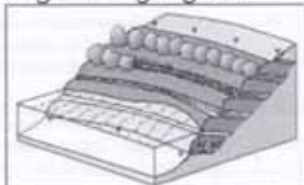
Branch packing



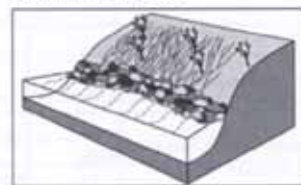
Live fascines



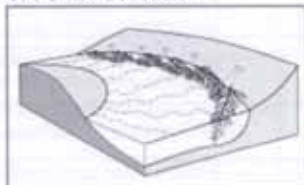
Vegetated geogrids



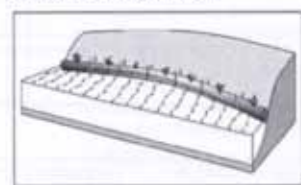
Brush mattress



Tree revetments



Coconut fiber roll



Source: "Environmentally Sensitive Channel and Bank Protection Measures." Transportation Research Board of the National Academies, TRB Publication, NCHRP Reports #544 (CRP-CD-58).





## APPENDIX D: EXISTING CONDITIONS

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### LAND USE

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Land use adjacent to the Project Area includes single and multi-family residential, commercial, industrial, transportation-related and open space. The land uses along the River have significant impacts on existing Riverside open space and recreational resources including ease of access, local demand for Riverfront open space facilities, and the potential for future open space and recreational expansion and improvements.

Historically the River has functioned as an edge to the adjacent communities, one where undesirable uses were frequently located. This Master Plan, along with current and planned redevelopment projects, provides the opportunity to transform the Riverfront into the seam that brings together the adjacent communities.

#### Overview

##### *Residential Development*

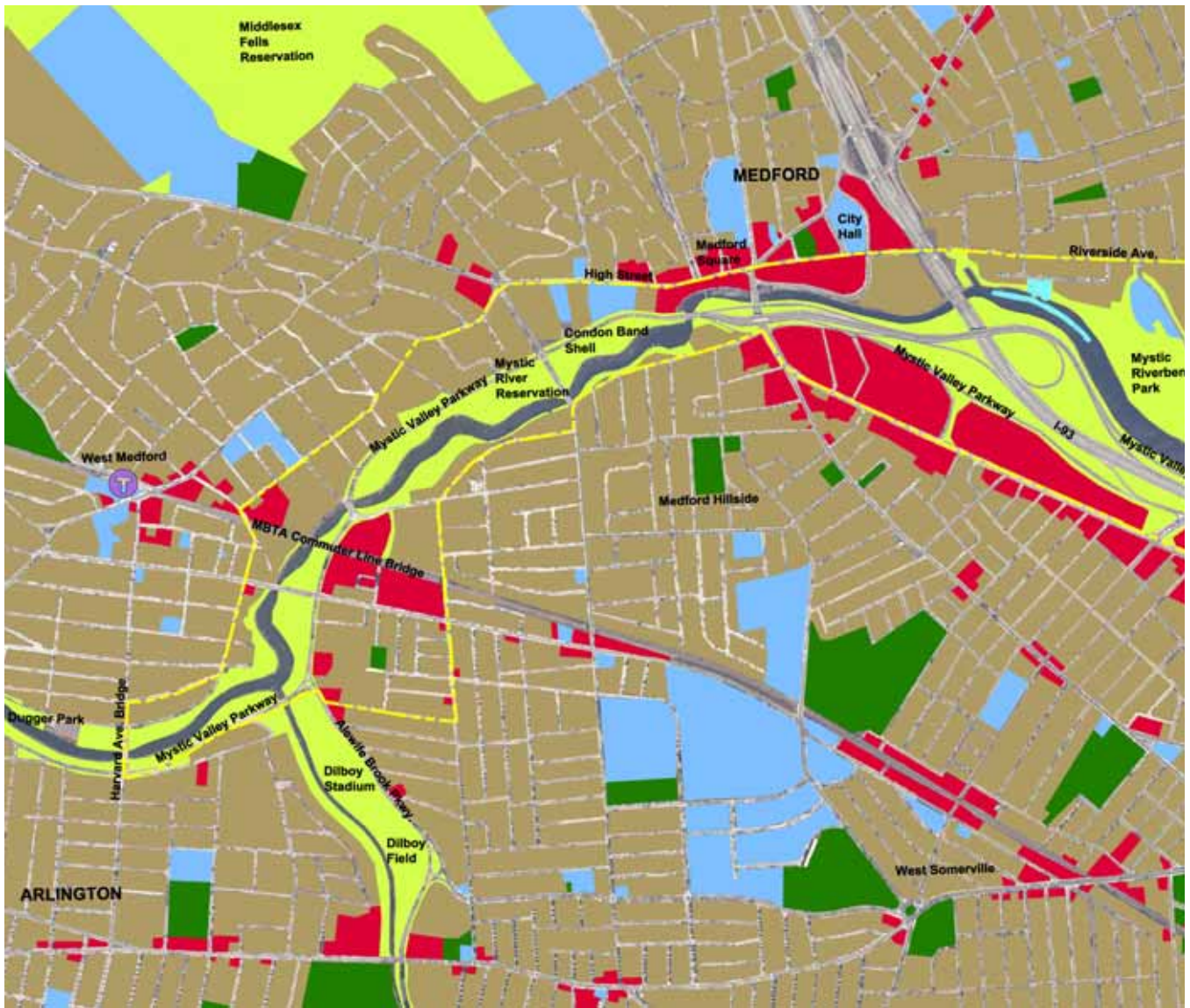
Single-family housing is the predominant land use adjacent to the Project Area, with some two and three family areas. Larger multi-family apartment buildings are concentrated along the Mystic River near Medford Square, Hormel Stadium, Station Landing, Assembly Square and near the Auburn Street Bridge. Upstream to the west of Medford Square, residential uses occur close to the River edge with little commercial development. Downstream, however, large commercial and industrial areas separate most neighborhoods, except for Ten Hills, from the River.

Approximately 45,000 people live within a 1/2 mile of the River (a 10 minute walk) and an additional 80,000 people live within a mile of the River (a 20 minute walk), providing a large population that could greatly benefit from improved access to, and amenities within, the reservation.

##### *Industrial Development*

Historically, industrial development has dominated the landscape of the Mystic River/Malden River confluence. Some of the existing Riverside industrial uses are still active and create significant Riverfront access obstacles. However, several vacant, formerly industrial Riverfront parcels near the Malden Bridge and the MBTA Orange Line Bridge potentially provide future open space and recreational opportunities. For example, the Monsanto property on the

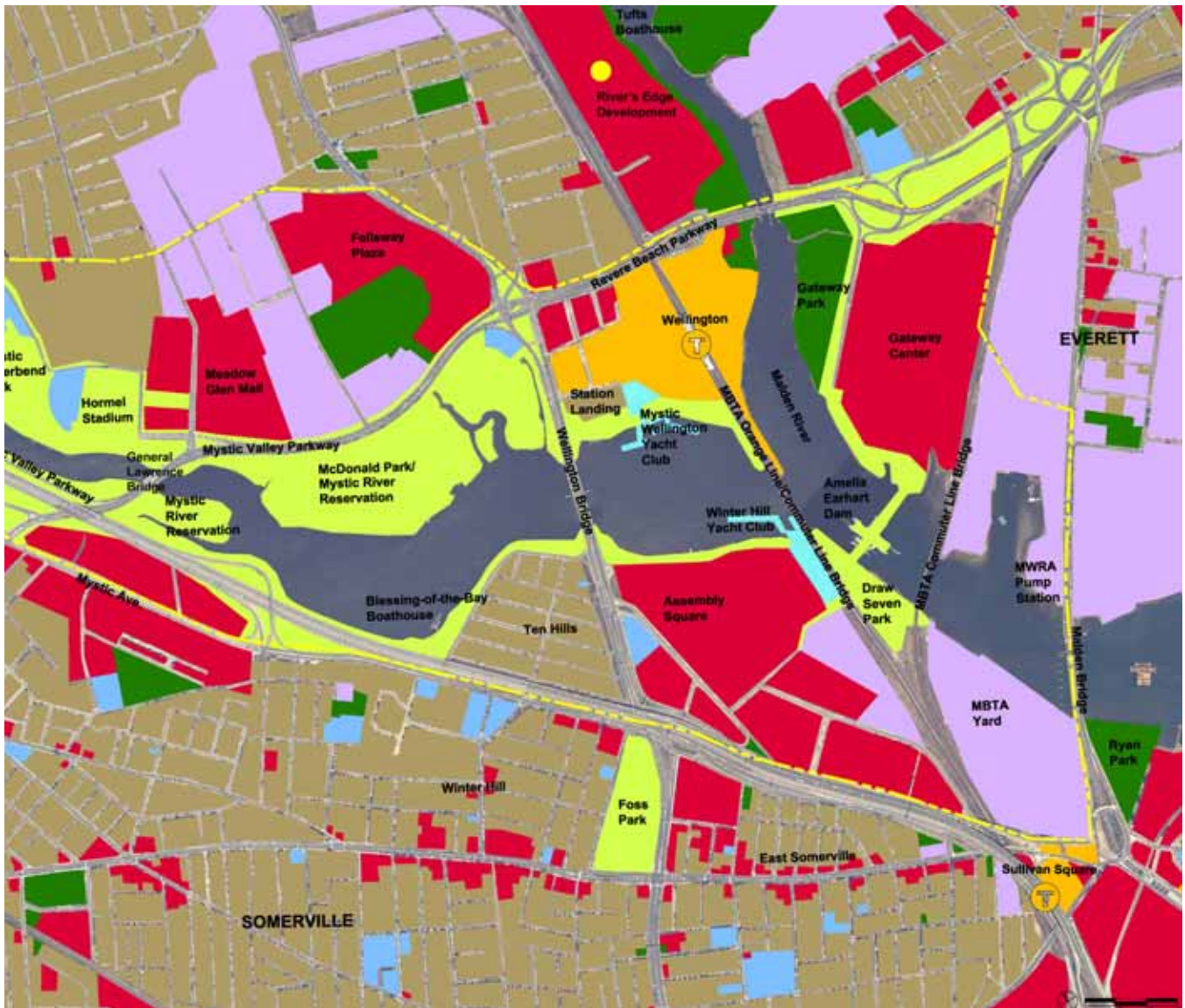




Existing land use.

Riverfront in Everett was redeveloped into the Gateway Center shopping center. As part of the redevelopment, open space and passive recreation parks were created along the River, substantially improving Riverfront access. Other former industrial parcels, such as Station Landing at Wellington Circle, are being redeveloped as mixed-use residential and commercial properties with open space amenities.

Industrial parcels remain on the north bank between the Meadow Glen Mall and Fellsway Plaza, and east of the Amelia Earhart Dam and MBTA bridge. On the south side there are several industrial lots in the Assembly Square complex and



a large industrial district between the MBTA tracks and the Malden Bridge. The future redevelopment of these parcels provides the opportunity for expanding open space and improving connections to the River.

*Transportation Facilities*

Transportation facilities include the MBTA Orange Line (Wellington Station) and the MBTA Haverhill and Newburyport/Rockport Commuter Rail Lines at the eastern end of the Project Area, and the MBTA Lowell Commuter Rail Line (West Medford Station) at the western end. The stations provide regional access





Pedestrian link from Station Landing to the Mystic River

to the reservation. Other dominant transportation-related uses are Interstate 93 and the Revere Beach Parkway/Mystic Valley Parkway which traverse the Project Area from east to west. I-93 creates a considerable barrier to physical and visual Riverfront access. The Parkways carry heavy volumes of traffic, limiting pedestrian crossings.

### *Commercial Development*

Commercial development dominates a large portion of the eastern end of the Project Area. In addition, there are several small commercial clusters and traditional commercial strips in predominately residential neighborhoods to the west – particularly south of the River in Medford and Somerville.

“Big box”, auto-oriented retail development serving a more regional market is located at the eastern end of the Project Area. Medford Square, the historical commercial center of the area, is located where the River narrows at the Craddock Bridge. Several smaller commercial clusters are located at key intersections such as High Street and Harvard Avenue, Medford Street and Broadway, and near the Auburn Street Bridge. Traditional auto-oriented commercial strips are found along Broadway, Boston Avenue, Mystic Avenue and other major arterials.

Few of these commercial centers engage the River or existing trail network, but rather act as a barrier between the River and surrounding residential neighborhoods. Access improvements described in the body of this report will help to integrate these commercial districts with the River, bringing more visitors to the Riverfront. Successful commercial and open space interactions can be seen at Station Landing, Gateway Center and just north of the Project Area on the shores of the Malden River, where Riverfront parks have been integrated into the design of large commercial parcels. Municipalities and state agencies reviewing development plans should continue to push for the inclusion of open space in the redevelopment of Riverfront parcels.

### *Open Space*

There are large areas of open space along both banks of the Mystic River, although accessibility and continuity are significantly more difficult on the southern bank. The DCR owns a considerable stretch of shoreline along the north bank, including Mystic River Reservation lands, Mystic Riverbend Park, McDonald Park and Gateway Park. These areas provide opportunities for multi-use recreational trails, athletic fields and boat launches. Two significant open spaces, Draw Seven Park and a portion of the Mystic River Reservation near the General Lawrence Bridge, exist on the southern bank. In addition to



View of McDonald Park and the Boston Skyline from the General Lawrence Bridge (top) and of the Mystic Valley Parkway as it crosses Alewife Brook (bottom)

these resources, there are several playgrounds in close proximity to the River, including Barry and Magoun Parks in Medford and Foss Park in Somerville, as well as school playgrounds. The proximity of these playgrounds provides the opportunity for creating an open space network with improved connections, and reduces the demand for playground space within the Reservation.

The Project Area is divided into four sections for more detailed analysis throughout this report: Harvard Avenue Bridge to Auburn Street Bridge; Auburn Street Bridge to Craddock Bridge; Craddock Bridge to Wellington Bridge and Wellington Bridge to Malden (Rte. 99) Bridge.

#### Subdistrict 1: Harvard Avenue Bridge to Auburn Street Bridge

Housing is the dominant land use in this section, with mostly single-family homes, although there are several multi-family complexes. Heavily traveled roads, such as Mystic Valley Parkway and Alewife Brook Parkway separate much of the residential development from the River.

There are several predominantly automobile-oriented commercial parcels, located adjacent to the MBTA rail line and near the Broadway Avenue Bridge. These commercial areas do not directly abut the Mystic River or Alewife Brook.

The MBTA Lowell Commuter Rail crosses the River near the Auburn Street Bridge, creating an obstacle to the development of a continuous Riverfront path. Access to the rail tracks is prohibited and there is no existing opportunity for an underpass. This location is being considered for a future MBTA Green Line station.

#### *Open Space*

DCR property along the northern bank of the Mystic River in some portions of this section is very narrow, varying in width from 25' to 230'. There are several locations where encroachment by adjacent residences creates barriers to a continuous open space network. The southern bank, however, includes large swaths of DCR property including bicycle and pedestrian trails.

#### Subdistrict 2: Auburn Street Bridge to Craddock Bridge at Medford Square

Single-family housing dominates this area as well. Medford Square, on the north bank of the River, is the City's commercial center. Historic buildings directly abut the River, cutting off pedestrian access along the shoreline, but providing opportunities to reorient buildings to the River, with windows and decks. Although a pedestrian bridge allows access across the River and into Medford Square, the River is not visible from most parts of the Square.



McDonald Park



Mystic Riverbend Park





The Condon Band Shell



Backyards and private docks encroach on the narrow DCR easement on the south side of the river

### *Open Space*

In this section of the Project Area, the significant open space areas are located on the north bank. Existing recreational opportunities include pedestrian trails, playing fields and the Condon Band Shell. The Reservation area east of the Winthrop Street Bridge has more established pathways, although they are in need of improvement and relocation farther from the River bank. West of the Winthrop Street Bridge pathways are undeveloped in many areas, with pedestrian traffic instead following primarily along existing neighborhood sidewalks. A chain link fence physically and visually separates the playing fields from the River. A small picnic area is located near the pedestrian bridge, but it is in need of improvement.

On the south bank of the River private backyards encroach on almost the entire stretch of the narrow DCR easement, making continuous connections difficult.

### *Subdistrict 3: Craddock Bridge to Wellington Bridge*

Three distinct commercial areas are located in this section of the Project Area. Historic Medford Square extends east of the Craddock Bridge, “big-box” plazas consume large parcels north of the River between the General Lawrence Bridge and the Wellington Bridge, and traditional commercial strips extend along Mystic Avenue south of the River (in some cases separated from the River by I-93).

A loop road and chain link fence separate the Medford Square commercial district to the east of Craddock Bridge along Riverside Avenue from the water’s edge. The aesthetic appeal of the Riverfront in this area is poor. Historically the commercial and trade center for the town, no public open or green space was ever formally developed in this area. A Medford Square Master Plan developed for the City in June of 2005 outlines the design for a waterfront promenade and public park along this shoreline. Dubbed Clippership Park, the area would highlight the town’s shipbuilding and River-related history, with a dock structure, fountain, River overlooks and public art. The City of Medford is pursuing funding to implement this proposal.

North of the General Lawrence Bridge, a large commercial and industrial area, including Meadow Glen Mall and Fellsway Plaza, creates a barrier between the River and the surrounding neighborhoods. Extensive parking lots and wide multi-lane roads discourage pedestrian traffic through this area.

South of the River, a nearly 1.5 mile stretch of auto-oriented commercial development along Mystic Avenue also creates an inhospitable pedestrian

environment. This commercial zone is separated from the River by I-93, which creates a major barrier between the adjacent residential neighborhoods and the River.

### *Open Space*



Riverfront path at Mystic Riverbend Park



Open fields and observation tower at McDonald Park

DCR parks comprise an extensive portion of the land along both the north and the south banks of the River through this section. A narrow easement follows the Riverbank on the north edge from I-93 to Mystic Riverbend Park. Encroachments and the Riverside Yacht Club create barriers to a continuous open space corridor. Mystic Riverbend Park on the north side of the River (see aerial photo on page A-5) provides numerous passive and active recreation areas, including pedestrian trails, picnic areas, community gardens, baseball fields, basketball courts, playgrounds, an ice rink, canoe access and Hormel Stadium (football field and track).

An extensive pedestrian pathway system provides a continuous link under the General Lawrence Bridge on the north side of the River, as well as connections over the bridge to the south side of the River. Following the north bank of the River from the General Lawrence Bridge to the Wellington Bridge, McDonald Park provides an extensive network of passive recreational areas including paved and unpaved pedestrian and bike paths, open fields and picnic areas.

All of the land along the south bank of the Mystic River in this section is open space. However, I-93 crosses the River and then parallels the bank, creating a virtually impenetrable barrier between adjacent neighborhoods and the River. Access is limited to the Craddock Bridge and the General Lawrence Bridge. There are currently no developed trails along this portion of the River. From the General Lawrence Bridge east, however, there is a paved bike and pedestrian path that follows the narrow strip of land along the Riverbank to the Blessing-of-the-Bay Boathouse and the Ten Hills neighborhood. The public boat launch at the boathouse is the only active recreational facility on the southern bank in this section.



Pathway under the General Lawrence Bridge (top) and Blessing of the Bay boathouse and dock (bottom).



#### Subdistrict 4: Wellington Bridge to Malden (Rte. 99) Bridge

Two large “big-box,” auto-oriented commercial centers comprise a significant portion of the land in this section. Gateway Center occupies the east bank of the Malden River to the north of the Amelia Earhart Dam. The Assembly Square Mall and other large commercial buildings are sited on the south bank of the Mystic River between the Wellington Bridge and the MBTA Orange Line tracks.

Station Landing, located on the north bank of the Mystic River east of the Mystic Wellington Bridge, is currently under development as a mixed-use center, including commercial buildings, apartment buildings and structured parking. A long-term agreement between the developer and the DCR allows for public access along the Riverfront in exchange for DCR assuming maintenance responsibilities. This development provides a good example of stepping buildings back from the River’s edge. A proposed mixed-use development located at Assembly Square will also include residential and commercial buildings, parking and potentially a new MBTA Orange Line station.

Historically, industrial land use has dominated the landscape of this section of the Project Area. However, many of these parcels have been redeveloped into the commercial and mixed-use areas mentioned above. The remaining industrial parcels are located along the east boundary of the Project Area, including the MWRA Pump Station to the north and a large parcel between the MBTA rail lines and Alford Street to the south.

The MBTA Orange Line and the Commuter Rail cross the River in this section. The Orange Line and Haverhill Commuter Rail bridge is located west of the Amelia Earhart Dam, and the Newburyport/Rockport Commuter Rail bridge is east of the Dam. These two lines converge at the southeastern corner of the Project Area. These railways create significant barriers to pedestrian access, as grade level crossings are not permitted. There is sufficient clearance, however, for access along the shoreline beneath the MBTA bridges.

#### *Open Space*

Although this section was once dominated by industrial land uses, it now offers several areas of open space along the banks of the River, and has great potential for a continuous open space network. The shoreline at Station Landing offers passive recreation, including bicycle paths, walking trails and picnic areas, as well as a public boat launch. The paved trail ends at the MBTA Orange Line Bridge, but there is an existing pedestrian underpass and potential for the trail to continue east of the bridge along the Malden River to Woods Memorial Bridge (and beyond, with the planned reconstruction of the Woods Memorial Bridge). On the east bank of the Malden River, Gateway Park also offers trails for walking



Riverfront path at Station Landing



and biking. Gateway Park is a good example of an “easement” park with private maintenance. These trails end at the Amelia Earhart Dam, where there is no pedestrian or bicycle access. The proposed Northern Strand Community Trail, or “Bike-to-the-Sea” route, would link these trails with a continuous bike path to the beaches of Lynn and Revere.

A waterfront path currently exists along the River edge at Assembly Square on the south bank. The proposed redevelopment plan would further enhance this shoreline with an enlarged Riverfront park. The paved pathway continues through the Winter Hill Yacht Club, under the MBTA Orange Line Bridge and connects to Draw Seven Park. The park includes walking and biking trails and a recreational field. It is a popular recreation area, especially for fishing. The park is extremely windy, complicating some soccer play, and the fields are in need of turf improvement. The trails currently terminate under the MBTA Commuter Rail Bridge. The proposed Charlestown Riverwalk adjacent to the MBTA’s facility would link Draw Seven Park through an existing industrial site to the City of Boston’s Ryan Park just east of the Project Area.

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## DEMOGRAPHIC PROFILE

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### Methodology

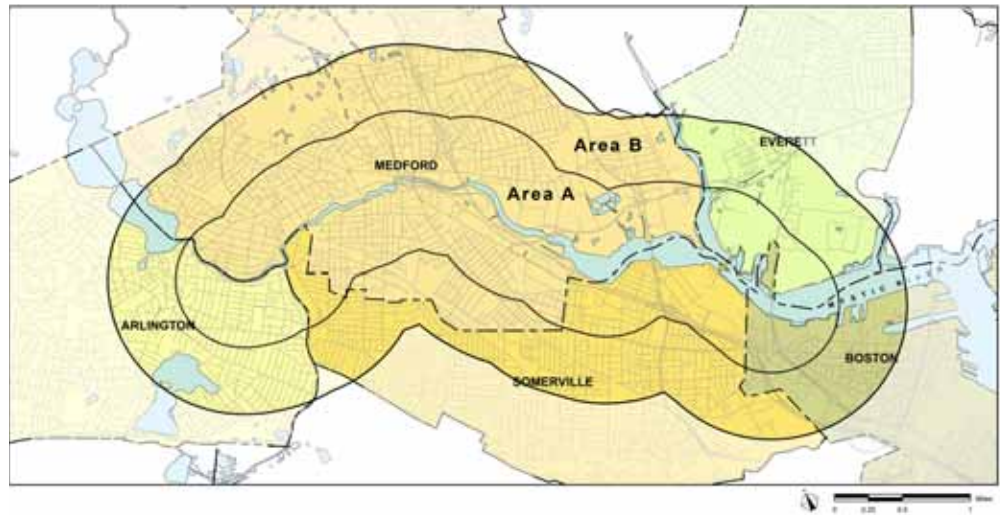
The demographic data presented in the following profile was obtained from the 2000 U.S. decennial census provided by the U.S. Census Bureau. Data was collected at the Block Group level, which allowed for a more site specific demographic analysis. The following areas were included in the analysis.

Area A: All area within approximately a half mile of the Mystic River between the Malden Bridge and the Harvard Avenue Bridge (includes block groups completely within or at least 50 percent within a half mile of the River).

Area B: All area within approximately one mile of the Mystic River between the Malden Bridge and the Harvard Avenue Bridge (includes block groups completely within or at least 50 percent within one mile of the River). *Area B includes all of the land within Area A.*

The demographic analysis areas cover five municipalities surrounding the Mystic River: Arlington, Boston, Everett, Medford and Somerville. Area A represents the area within a reasonable walking distance of the River; the Riverfront resources are further from, but still easily accessible to, residents of Area B. The Mystic River is a regional resource, and will attract visitors from the larger metropolitan area, as well as from Areas A and B.





Area included in the Demographic Analysis

### Population

The population of approximately 45,000 in Area A and 125,000 in Area B represents a large number of residents who could easily visit the Mystic River Reservation. Only about 35 percent of the total population studied lives within Area A. However, several residential neighborhoods adjacent to the River (particularly on the south side) are densely populated.

Population density is approximately 13 persons per acre in Area A and 17 persons per acre in Area B. As shown in Table D-1, Areas A and B are more densely developed than Medford, equal to or more densely developed than Arlington and less densely developed than Everett, Boston and Somerville. However, both areas are significantly more densely developed than the state average of 1.27 persons per acre. This high density residential development increases the need for access to reservation resources as less other land in the immediate area is available for public open space or private yards.

### Race

White residents make up approximately 80 percent of the population in both Area A and Area B, which approaches the state (85 percent) and national (75 percent) figures. The largest non-white group is black or African American, which makes up between nine and seven percent of the Area A and Area B populations, respectively. The racial composition of Area A is generally very similar to that of Area B.

<b>Geographic Area</b>	<b>Population Density (2000)</b>
<b>Area A</b>	<b>13 persons per acre</b>
<b>Area B</b>	<b>17 persons per acre</b>
Arlington	13 persons per acre
Boston	20 persons per acre
Everett	18 persons per acre
Medford	11 persons per acre
Somerville	29 persons per acre

Table D-1: Population Density

### Age

Areas A and B contain 20 percent and 18 percent, respectively, of residents under the age of 18, similar to the state (20 percent) and slightly lower than the national (26 percent) average. The sizeable number of children within the Project Area increases the need for family-oriented recreational resources, including playgrounds, playing fields, passive recreation areas and multiuse trails.

Residents aged 65 and over make up approximately 16 percent and 14 percent of the population in areas A and B, respectively. These percentages are similar to the state (14 percent) and slightly above the national (12 percent) averages. The large elderly population increases the demand for easily accessible walking paths and rest areas.

### Household Income

The percentage of the population living below the poverty level in both areas A and B is approximately 11 percent. This percentage is higher than the state (9 percent) and slightly lower than the national (12 percent) average. Lower income populations are more dependent on local open space resources because of their limited access to more distant resources.

## ACCESS

### Roadway Access

Alewife Brook Parkway, the Fellsway and Revere Beach Parkway (which becomes Mystic Valley Parkway west of the Fellsway interchange), owned by DCR, provide regional access to the Project Area. The challenge is in connecting this linear system to the reservation path system and to the perpendicular cross streets to provide good pedestrian access throughout the reservation.



Interstate 93 crosses the River east of Medford Square and parallels the southern bank of the River for roughly 1.3 miles, providing vehicular access to the Project Area, but creating a significant barrier between adjacent neighborhoods and the River. Mystic Avenue parallels I-93 through Medford Hills, further limiting access from these residential neighborhoods. The major streets leading to and paralleling the River provide few pedestrian crossings. Sidewalks on these streets should have clear connections to park paths.

### *River Crossings*

River crossings include several major arterials -Mystic Valley Parkway (Route 16), the Fellsway (Route 28) and Broadway/Alford Street (Route 99), as well minor arterials providing local access - Main Street, Winthrop Street and Boston Avenue. Auburn Street, River Street and Harvard Avenue are local streets.

### *Access from Subdistricts*

#### *Section 1: Harvard Avenue Bridge to Auburn Street Bridge*

Mystic River Road and Arlington Street parallel the River in West Medford, while Jerome Street and Sharon Street provide access to the River for this neighborhood. Alewife Brook Parkway (Route 16), a major arterial street, intersects with the Mystic Valley Parkway at the rotary in West Somerville.

#### *Section 2: Auburn Street Bridge to Mystic Valley Parkway Bridge at Medford Square*

A number of local streets provide access to the Mystic Valley Parkway from the Rock Hill and Judkins Square neighborhoods, but the only pedestrian crossings are located at the Auburn Street and Winthrop Street intersections. West Street and South Street parallel the River on the south bank but access to the River is limited due to private property.

#### *Section 3: Mystic Valley Parkway Bridge to Wellington Bridge*

Forest Street and Riverside Avenue provide access to Medford Square and have occasional River views. Clipper Ship Drive parallels the River in Medford Square, but has fairly heavy traffic and very few pedestrian crossings. Ship Avenue runs along the north bank of the River and is an important historic area. Freedom Way provides access to Mystic Riverbend Park and the public parking lot at Hormel Stadium. Locust Street provides residential neighborhoods north of the River access to the existing multi-use trails near General Lawrence Bridge. On the south bank, Mystic Avenue (Route 38) is a major arterial road and an important commercial strip but creates a barrier for pedestrian access to the River.

*Section 4: Wellington Bridge to Malden Bridge*

Shore Drive follows the River edge in the Ten Hills neighborhood, and all of the adjacent residential streets have access to the River. Foley Street provides access to the Winter Hill Yacht Club, Draw Seven Park and the Amelia Earhart Dam. Presidents Landing and Constitution Way are access roads in the Station Landing complex that lead to the public boat launch at the Mystic Wellington Yacht Club. Mystic View Road at Gateway Center runs along the River and Gateway Park, providing access to parking and the Amelia Earhart Dam.

**Parking**

As shown in Table D-2, there are a few parking lots within the Reservation, as well as several large parking areas outside of the reservation but within easy walking distance. The Wellington Station lot could provide a significant parking reservoir during the weekend when off-peak transit service is limited.

Parking along Alewife Brook Parkway and the Fellsway is limited to a few public lots near significant park areas. Turning into these parking areas is difficult when crossing on-coming traffic. Smaller neighborhood streets offer limited on-street parking, and access from these streets is difficult in areas (due to limited crossings at larger roads and private land ownership).

<b>Name</b>	<b>No. Spaces</b>	
<i>Inside Reservation</i>		
Draw Seven Park	36	
McDonald Park	76	
Hormel Stadium	200	
Mystic Riverbend Park	82	
Condon Band Shell	100+	
<i>Outside Reservation</i>		
Blessing of the Bay Boathouse	19	
Wellington Station	1,316	(\$3.50 parking fee)

Table D-2: Parking Availability



## Transit Access

### *Rail*

The MBTA Orange Line crosses north-south along the eastern end of the Project Area. Wellington Station is the only stop within the Project Area, although the Sullivan Square stop is located only 500 feet from the southeast boundary. An additional stop is proposed for Assembly Square. The Lowell Commuter Rail Line stops at the West Medford station, located just west of the Project Area, providing commuter rail access to the west end of the Project Area. The proposed MBTA Green Line extension may include a stop on Mystic Valley Parkway between the Auburn Street Bridge and the Boston Avenue Bridge, at the west end of the Project Area. A transit stop in this location would greatly increase regional pedestrian access to the reservation.

### *Bus*

There are a number of MBTA bus lines that serve the Project Area. There are few stops directly adjacent to the River, although there are several within one to two blocks. Major stops for several lines include Medford Square, Wellington Station and Sullivan Square. There is bus service along Boston Avenue, High Street, Riverside Avenue, Mystic Avenue, Alford Street, the Fellsway and Revere Beach Parkway. There is no bus service on Mystic Valley Parkway.

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## DAMS AND BRIDGES

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### Dams

The Amelia Earhart Dam, located just east of the confluence of the Mystic River and the Malden River, was constructed in 1966 between Everett and Somerville. The dam was built to control tidal flooding and to create a freshwater basin for public recreation. There is no public access across the dam. In 2009, DCR, in cooperation with Exelon New England Holdings, LLC, conducted a study to evaluate the feasibility of providing a bicycle and pedestrian crossing over the Mystic River in the vicinity of the Amelia Earhart Dam, *Bicycle & Pedestrian Crossing of the Mystic River*, Vanasse Hangen Brustlin, Inc. 2009. The alternatives analyzed included:

- a path over the lock gates
- a movable span bridge over the locks
- a new bridge upstream from the dam
- attaching a structure to the existing MBTA bridge



View of Amelia Earhart Dam from  
Draw Seven Park

The study found that “the alternatives that utilize the dam or portions of the dam present significant operational conflicts between the functions of the structure as a flood control and navigation structure versus bicycle/ pedestrian transportation.” Construction of a new, independent pedestrian bridge represents the only option for a new crossing. Because of the expense, construction of a new bridge will not happen for a number of years. In the short-term, it is recommended that DCR work with the adjacent communities and the Massachusetts Highway Department to modify the existing roadway bridges and approaches (Route 99/Alford Street south of the dam, Route 28/Wellington Bridge north of the dam) to provide a pedestrian and bicycle crossing over the Mystic River.

### Bridges

Three railroad bridges, nine road bridges and one pedestrian bridge cross the Mystic River. The bridges provide dramatic views of the River.

The bridges are narrower, shorter and more frequent on the upstream (western) portion of the River. These small bridges generally do not interrupt pedestrian access, as most have sufficient sidewalks and pedestrian crossings. The railroad bridge in this section, however, creates a barrier to a continuous Riverfront pedestrian route, although it can easily be bypassed on-road.

The bridges on the downstream (eastern) portion of the site either currently have pedestrian underpasses or provide sufficient clearance for such access. As part of the mitigation for the Assembly Square redevelopment, Federal Realty is funding the design and construction of a pedestrian underpass at the southern end of the Wellington Bridge. National Development is funding the planning and preliminary design of an underpass on the northern end at Station Landing.

The Woods Memorial Bridge, across the Malden River at the northern boundary of the Project Area, has no underpasses, is difficult to access and has very narrow sidewalks. The bridge is slated for complete rehabilitation under the MA Department of Transportation’s Accelerated Bridge Program. It is recommended that pedestrian underpasses and widened sidewalks be added to the extent possible within the bridge cross section.

Mystic River roadway bridges occur at:

- Harvard Avenue/River Street (western boundary)
- Boston Avenue
- Winthrop Street



View of the Malden River from the Woods Memorial Bridge





Views of the footbridge to Medford Square

- Mystic Valley Parkway (just west of the foot bridge)
- Forest Street/Main Street near Medford Square (Craddock Bridge)
- I-93 (no pedestrian access)
- Mystic Valley Parkway (General Lawrence Bridge/Veterans Memorial Bridge)
- Fellsway (Wellington Bridge)
- Broadway/Alford Street (Malden Bridge, easternmost boundary)

Tributary roadway bridges occur at:

- Mystic Valley Parkway (confluence of Alewife Brook and the Mystic River)
- Revere Beach Parkway (Woods Bridge)

The pedestrian bridge (foot bridge) at Medford Square provides a link from the residential neighborhoods south of the River to this historic commercial center.

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## IEWS

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View of the Boston Avenue Bridge

Existing views to the River are very limited throughout the Project Area, with the exception of bridge crossings and a few locations along I-93 and the Ten Hills neighborhood in Somerville. A viewing tower in McDonald Park provides panoramic views of the River and the Boston skyline.

Although the Mystic Valley Parkway parallels and crosses the River in several locations, views to the River are often obstructed by vegetation, fencing and the difference in elevation between the roadway and the River. The Parkway does, however, afford views to several Reservation park lands. New high-rise residential buildings have been developed close to the River to take advantage of River views.

Throughout much of the rest of the Project Area, the roads adjacent to the River are developed with commercial or residential properties, affording only glimpses of the River. The elevated I-93 highway creates a significant visual barrier to the River. Views throughout the Project Area could be increased and enhanced by clearing vegetation in strategic locations.





