

## Acknowledgements

The Massachusetts Water Resources Authority (MWRA) and the City of Cambridge held public hearings to respond to neighborhood concerns about the proposed changes to the Combined Sewer Overflow (CSO) Control Plan for Alewife Brook. The CSO plan includes a constructed stormwater wetland to treat and store stormwater separated from combined sewers. Several meetings were held on the wetland basin to explore the design concepts and scientific possibilities for the stormwater system. They have funded the project and are responsible for overseeing its development and maintenance.

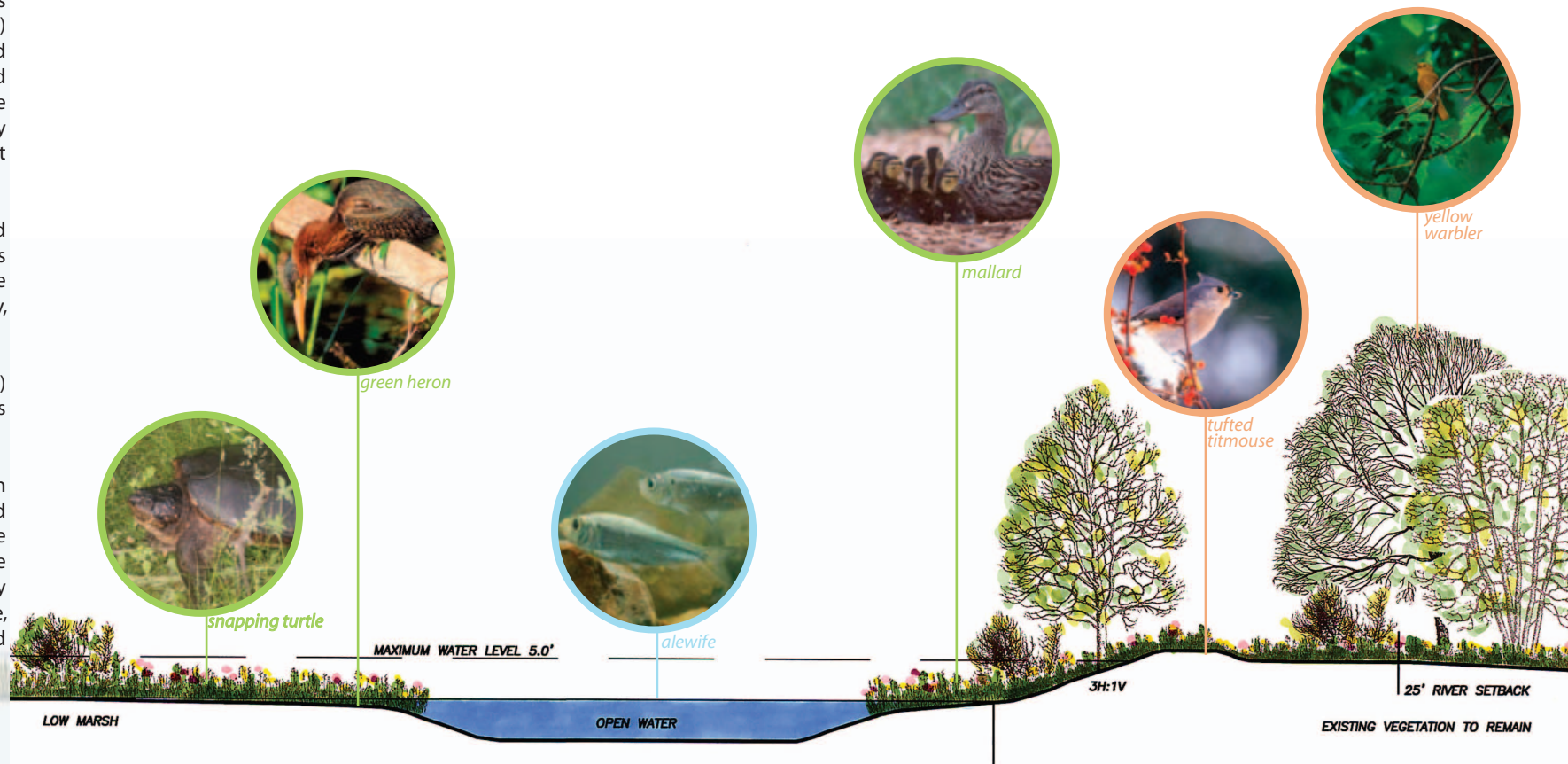
SEA Consultants, Inc. managed the design of the sewer separation and stormwater management program. Montgomery Watson Harza's engineers and designers studied the area for proper detention and flow. The Bioengineering Group, Inc. developed the basin concept, channel, forebay, flow system, plant communities and environmental learning amenities.

The Massachusetts Department of Conservation and Recreation (DCR) oversees the Alewife Reservation. The constructed wetland design is integrated into the DCR Master Plan.

Friends of Alewife Reservation (FAR) educates and stewards the area with tours and public education. FAR sponsored the 90-foot community painted mural which depicts the area's ecosystems, now displayed at the Alewife MBTA station. This brochure was funded by the Riverways Program of the Massachusetts Department of Fish and Game. The brochure was created by FAR Stream Team brochure committee: Arlene Olivero, Jane Claire Hastie, Janet Childs, Ellen Mass, John Walker, Rachel Calanto. Brochure layout and graphics supplied by The Bioengineering Group, Inc., Salem, Ma.

UPLAND PENINSULA

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# Alewife Reservation Constructed Wetland





## An Overview of the Alewife Reservation and the Stormwater Wetland

The Alewife Reservation is a 130 acre urban wild located in the northwest corner of Cambridge, with 15 acres in Belmont and a strip in Arlington. The Reservation represents a remnant of the large Great Marsh that once covered over 1000 acres and extended from Fresh Pond in Cambridge to Spy Pond in Arlington. The Great Marsh's rivers and ponds provided early inhabitants with an abundant food source of blueback and alewife herring. The marshes were drained and filled for farming during colonial times, and later cleared for commercial and industrial development.

Little River, originally called Menotomy River, once slowly meandered parallel with Route 2. It provided water that maintained the wetlands of the Great Marsh and was channelized as part of a mosquito control project in 1920. Additional draining, and filling of land greatly reduced the extent and diversity of the original wetlands. Water quality in the wetland and river was degraded further with increased urbanization of the watershed and combined sewer overflow releases to the river.



## The Constructed Wetland

After two years of public meetings by city and state scientists, engineers and consultants, a plan for sewer separation and improved stormwater management resulted in the "constructed wetland" being chosen as the optimal solution to deal with stormwater from city streets.

The constructed wetland stores, and gradually releases stormwater. The wetland design and chosen plant communities are critical in reducing the stormwater flow, allowing sediment to settle, and removing nutrients and pollutants from the water.

Several types of habitats are recreated in the constructed wetland. Existing invasive plants on the site are removed and the area is revegetated with native upland and wetland species. These habitats, ranging from deep marsh to upland forest, enrich the biodiversity that already exists on the Reservation. The new amphitheater and overlooks in the wetland provide additional recreational and environmental learning opportunities for students, visitors, and conservationists.



## 1. LITTLE RIVER

Little River runs towards Alewife Brook and the Mystic River. The bottom is composed of fine silt, sand, and mud making ideal habitat for burrowing worms, snails, aquatic insects, and freshwater mussels. Under ideal conditions, we might find sunfish, golden shiners, or a swamp darter under vegetative cover or around logs. Today, non-native carp proliferate because they tolerate low oxygen and turbid water conditions. Swimming muskrats and turtles range here and throughout the Reservation. Kingfishers may be found diving up to 30 miles an hour into the river to catch fish. Spotted sandpipers, with their wagging tail gait, search the shoreline mud flats for insects. Common tree swallows swoop over the river to catch flying insects that have emerged from the river.

## upland habitat



black chokeberry

## 5. SCRUB AND SHRUB THICKET

Scrub-Shrub thickets contain shrubs such as silky dogwood, pussy willow, black chokeberry, sweet pepperbush, meadowsweet, and highbush blueberry. Blueberry bushes provide fruits that feed many birds such as black capped chickadee, cardinal, tufted titmouse, blue jays, and Baltimore orioles. Many butterflies depend on nectar from the wildflowers and shrubs of this habitat. Muskrats and rabbits feed on all parts of the strong scented sweet pepperbushes

## 6. RIPARIAN WOODLAND

Riparian woodlands border the high marsh and pathway. Riparian woodland soils are moist. Deciduous trees with broad leaves provide shade and roots, which hold the marsh and streambank soils in place. In moister soils, trees such as red maple, alder, green ash, aspen, black willow, American elm, white oak, common winterberry, and various viburnum are found. In drier areas, gray birch, white pine, red oak, shadbush, and lowbush blueberry are found. Cottontail rabbits and other small mammals such as white footed mice feed on tender herbaceous plants and twigs and bark of young trees. House finches, black capped chickadees, yellow warblers, American goldfinch, and a variety of other songbirds are attracted to the riparian woodlands. Acorns from red oak provide abundant forage for ring-necked pheasant, turkey, rose-breasted grosbeak, and gray squirrels. The island's woodland of pine, red oak, and shadbushes provides a remote resting area and good nesting site for ducks, songbirds, and herons.



## 2. DEEP MARSH

In the deep marsh plants such as hard stem bulrush, soft stem bulrush, and lesser bur-reed thrive in water of 1-1.5 foot. In deepest marsh and open water, white water lily, pickerelweed, and northern arrowhead poke their leaves above water, which is 1.5-3 feet deep. Algae growing on the surface of submerged plants provide an important food source for animals such as tadpoles and invertebrates that scrape the algae with their rasping mouths. Listen for the croak of a frog or look for swimming turtles in the open water of the marsh.

pickerel weed



## 3. EMERGENT MARSH

The emergent marsh plants grow in 6 inches to 1 foot of water. They include arrow arum, spike rush, lesser bur-reed, green bulrush, blue flag iris, and soft stem bulrushes which attract waterfowl such as green-wing teal, mallard, and black ducks and a variety of other song birds and sparrows.



button bush

## 4. HIGH MARSH

The high marsh is a dense collection of sedges, rushes, grasses, and broadleaf floodplain plants that grow in soil inundated up to 6 inches much of the year. High marsh plants include tussock sedge, marsh marigold, riverbank wild rye, Canada rush, wool grass, and marsh hibiscus. Tussock sedges form dense green tufts that can support a person's weight and provide cover and food for small mammals. The yellow buttercup blooms of the marsh marigolds add early spring color to the high marsh. Broadleaf floodplain plants include swamp milkweed, spotted joe pye weed, cinnamon fern, royal fern, sensitive fern, and abundant wildflowers such as New England aster, swamp aster, boneset, and blue vervain. The cinnamon fern is easy to identify by the brown peach fuzz along the base of its stem and a separate spore-bearing frond. Buttonbushes, which grow in very wet conditions, grow unusual small pincushion-like balls from June-August that host tiny white flowers which are among the best nectar producing flowers

## aquatic habitat

## wetland habitat