

2018 Water Bodies Assessment and Recommendation Report

Arlington Conservation Commission January 2019

The Arlington Conservation Commission (ACC), through its Water Bodies Working Group, continued the assessment of fourteen water bodies in the Town of Arlington, including five lakes and ponds and nine streams. A majority of these are negatively impacted by polluted runoff and stormwater discharges due to the highly urban nature of Arlington and surrounding towns. Most of these water bodies also have excessive aquatic invasive plants that degrade water quality, impede recreational use, and degrade aesthetics. In determining which water bodies could benefit from management measures using Town funding, we have taken a triage-based approach:

1. Water bodies that are in generally good shape, do not need much help, or whose issues are being addressed by other agencies or funding sources, e.g., Upper & Lower Mystic Lakes and Mystic River
2. Water bodies with some issues that could benefit from directed intervention, e.g. Spy Pond, Arlington Reservoir, Hills Pond, McClennen Park Detention Ponds (Reeds Brook)
3. Water bodies that are in poor shape with many issues that would need major efforts and additional funding to improve, e.g. Mill Brook and Alewife Brook.

Based on our analysis we have identified the following priority locations for the coming year.

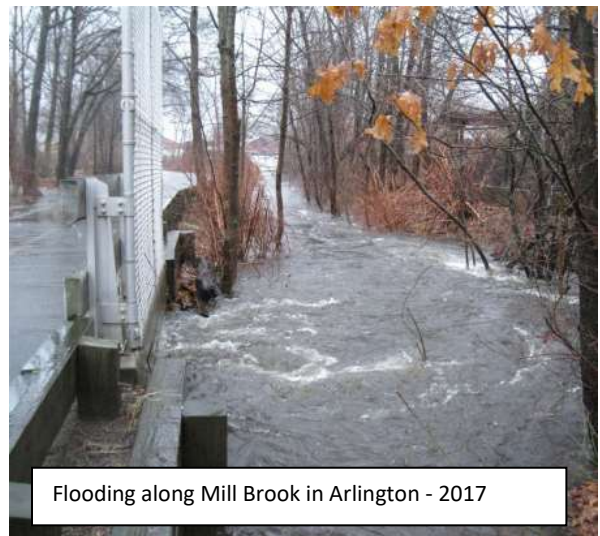
- **Arlington Reservoir** – A Town-owned water body in Arlington and Lexington with aquatic invasive water chestnuts that form dense, impenetrable mats at the water’s surface, which impair public use and water quality. The Conservation Commission recommends continuing the current management practices to mechanically remove water chestnut plants. Additionally, the Mystic River Watershed Association (MyRWA) has been organizing hand harvesting events in the more shallow areas. Once the water chestnuts’ seed bank is further depleted, the harvesting efforts and costs will be reduced. This water body was assessed as part of the Reservoir Master Plan project supported with CPA funding. One recommendation was that the water chestnuts be harvested earlier than they have been in recent years and it be completed in early July in order to reduce seed production.



Water Chestnut
Hand-Harvesting
Event at Reservoir
2017

- **Hills Pond** – A small pond in the heavily used Menotomy Rocks Park with water quality and invasive plant problems. The Conservation Commission recommends continuing chemical treatments to control algae and other detrimental water plants. The Friends of Menotomy Rocks Park (FoMRP) and the Town DPW have reinstalled the aeration pump system in 2018 to improve pond water quality. Monthly site visits to be pro-active in treatments in 2018 proved successful in seeing a reduction of invasives, based on the annual report by the vendor, SOLitude.
- **Mill Brook** – The poor water quality increased marginally in 2017 to C- up from D+ in 2016 (EPA/MyRWA 2017 Water Quality Report: <https://mysticriver.org/epa-grade/>). Mill Brook's poor water quality is primarily due to stormwater runoff; however, there may be illicit discharges to the brook from surrounding properties. The brook and its adjacent shore provide valuable wildlife habitat and opportunities for nature views.

The Mystic River Watershed Association (MyRWA) received CPA funds for improving public access, investigating illicit discharges and monitoring water quality of Mill Brook near Wellington Park. A design and engineering consultant, Weston and Sampson, has been hired to produce an environmental analysis of the Mill Brook corridor and schematic design for Wellington Park. Phase I of the project, which included schematic designs, was completed in Summer 2018.



Flooding along Mill Brook in Arlington - 2017

Phase II of the project consists of designing more flood storage capacity at the park and removing invasive terrestrial plants. CPA funds from Phase I were leveraged to get Municipal Vulnerability Preparedness (MVP) implementation funding from the State's Executive Office of Energy and Environmental Affairs. This MVP funding of almost \$400,000 will be used to construct the designs developed in Phase II. Construction will begin in Spring 2019. Arlington received MVP planning funding from the State in early 2018 to facilitate stakeholder engagement and identify Arlington's most vulnerable areas. Flooding from Mill Brook was identified as one of the primary threats to vulnerability, thus the MVP implementation funding for the Wellington Park Project is directly addressing one of the community's most chronic hazards. Updates to this project can be found at: <https://mysticriver.org/millbrook>.

The Working Group also has concerns about the section of Mill Brook next to the Reservoir, which has bank erosion and invasive plant issues. The Conservation Commission recommends supporting and building on the MVP grant work to enhance public access and investigate / mitigate illicit discharges into Mill brook along with improved flood storage and stormwater management.

- **McClennen Park Detention Ponds on Reeds Brook** – These are small constructed ponds that have major value for stormwater control and provide wildlife habitat. A preliminary review of the detention ponds indicated that there may be seepage from the landfill material – which was capped but not lined, as evidenced by the brown color (iron flocculation) of the ponds in certain locations.

Surface water and sediment data collected to-date do not appear to support the hypothesis that the iron source is the landfill leachate. However, not all data have been evaluated as of December 2018.

The Water Bodies Working Group continued investigating the iron flocculation at the McClennen Park Detention Ponds to improve the site's aesthetic, recreational, and wildlife values and functions. The Water Bodies review of the prior results of the sampling and analysis performed in 2016-2017 by the contractor Brown & Caldwell recommended further investigation of the potential ecological risk in this water body.



Sampling in
McClennen Park
Detention Pond –
May 2018

Woods Hole Group (WHG) was contracted in 2017 and performed two sampling events in 2018, consistent with the Sampling and Analysis Plan approved by the ACC. Results from these 2018 sampling and analysis events (Spring and Fall), along with the prior results, will be used to determine whether or not a condition of “readily apparent harm” (as defined by MassDEP) to organisms exists at the site. This evaluation is expected in the early part of 2019, when all data should be available.

- **Spy Pond** – One of Arlington's most heavily used open spaces for recreation. Spy Pond has an invasive plant problem in and around the pond. The surrounding managed landscape contributes to nutrient loading and low oxygen levels. Left untreated, invasive plants impair recreational use. Furthermore, there is erosion along portions of the shoreline from wind, wave, and recreational activity. In 2016, the Conservation Commission recommended assessing, designing, and implementing strategies for shoreline erosion control. These efforts received CPA funding for the shoreline erosion assessment and evaluation of design options. Currently, these designs are being implemented in a project sponsored by the Conservation Commission and Parks & Recreation Commission, funded by CPA and CDBG. Construction for erosion control, slope stabilization, pathway resurfacing, and invasive species removal will begin in Spring 2019 and be completed sometime in the Fall 2019.

The Working Group and the Spy Pond Committee met in December 2018 to discuss future management of Spy Pond. The Commission recommends that a comprehensive study of this water

body be performed to develop a best management program for the future to improve water quality, reduce invasives, and hopefully reduce the reliance on chemical controls for invasive species in the pond, taking into account the recreational uses of the pond.

- **Mystic River** – Though this water body has a good EPA/MyRWA water quality rating of A- as of 2017, it was directly impacted by an oil spill, making it eligible for grant funding for restoration. The ACC and the Town of Arlington was awarded a MassDEP Natural Resource Damages Assessment (NRDA) grant for the restoration of an outfall area impacted during the 2013 Mystic River oil spill. The Restoration project will create a native riverbank (riparian) habitat and improve



Mystic River Restoration Project – October 2018

storm water quality. It is located along the Mystic River at the end of Park Street.

Work began in October of 2017 to stabilize the slope along the riverbank, remove a broken concrete headwall at the stormwater outfall, repair the drainage pipe, create a swale for flood storage to percolate

stormwater runoff, and move the dirt footpath around this newly created riparian habitat. In 2018, native plantings were installed to create a riparian habitat. The final phase of the restoration will include direct involvement from the community, through a community planting event in Spring 2019 to enhance the riparian habitat with additional native vegetation and to provide outreach and education about this project.

In conjunction with this project, the Town has agreed to install and maintain a new pretreatment system on Park Street for the storm drain pipe that leads to the outfall at this location. A perforated pipe will be installed below the existing outlet pipe to the drainage system so that infiltration will be prioritized, but overflow to the drainage system still allowed during higher volume storms. This separate but linked project managed by DPW will reduce contamination and sedimentation from reaching the Mystic River. Projects will be completed in 2019.

- **Alewife Brook** – The poor water quality of this Brook, based on a grade of D+ from EPA/MyRWA in 2017 due to stormwater inputs, requires attention. In 2018, the Town of Arlington and MyRWA with EPA funding constructed two stormwater bioretention basins in east Arlington to filter storm water and thereby “clean” the storm flows into Alewife Brook to improve water quality.



Green Infrastructure: Bioretention Basin construction at Egerton Rd/Herbert Rd, Arlington – September 2018

The Water Bodies Working Group has collected information for all the water bodies evaluated in support of this report. The Conservation Commission recommends that other locations that have not been identified above as a priority for current Town Water Bodies funding should continue to be monitored, and recommendations for actions and funding should be reviewed on an annual basis.

Respectfully Submitted by:

Water Bodies Working Group of the Arlington Conservation Commission:

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Approved by the Conservation Commission on January 17, 2019

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Water Bodies Program Analysis
Report Date: 2/25/2019 - THD

The purpose of this schedule is to show activity of the Water Bodies and Phragmites Account over several years, specifically with a 5 year review of revenue and expenditures, current year projection and the three years of budget based on current information available.

Please note that the difference between fiscal years is one day. The ending balance as of 6/30 each year is carried forwarded to the top of the subsequent column as the opening, 7/1 balance.

1 2 3 4 5 6 7 8 9

Water Bodies Account History: 5 Years of Actual, Current Year Expected, 3 Years of Projected

| MUNIS # | FY14 Actual | FY15 Actual | FY16 Actual | FY17 Actual | FY18 Actual | FY19 In Process | FY20 Budget | FY21 Budget | FY22 Budget | |
|----------|-------------------------|--------------|--------------|--------------|--------------|-----------------|--------------|--------------|--------------|--------------|
| | Beginning Balance - 7/1 | \$ 23,890.23 | \$ 27,865.23 | \$ 58,915.23 | \$ 38,435.85 | 50,110.19 | \$ 84,118.19 | \$ 97,968.19 | \$ 88,468.19 | \$ 75,968.19 |
| | Spy Pond Reserve | | | | | 14,000.00 | \$ 28,000.00 | | | |
| 230 4972 | Revenue/Appropriation | 50,000.00 | 40,000.00 | 40,000.00 | 50,000.00 | 55,000.00 | 60,000.00 | 60,000.00 | 60,000.00 | 60,000.00 |
| 230 4831 | Revenue/Donations | 1,300.00 | 1,800.00 | 800.00 | 1,950.00 | 1,450.00 | 1,800.00 | | | |
| 230 5299 | Expenses - Spy Pond | (29,200.00) | - | (41,279.38) | (15,280.00) | (10,155.00) | (40,450.00) | (37,000.00) | (47,000.00) | (45,000.00) |
| 230 5299 | Expenses - Reservoir | (18,125.00) | (10,750.00) | (20,000.00) | (15,000.00) | (15,000.00) | (16,500.00) | (16,500.00) | (16,500.00) | (16,500.00) |
| 230 5299 | Expenses - Hills | - | - | - | - | (1,287.00) | (4,000.00) | (4,000.00) | (4,000.00) | (4,000.00) |
| | Expenses - McClennen | | | | | (10,000.00) | (2,000.00) | | | |
| 230 5299 | Expenses - CC Other | - | - | - | (9,995.66) | - | (10,000.00) | (5,000.00) | (5,000.00) | (5,000.00) |
| 1 | Ending Balance - 6/30 | \$ 27,865.23 | \$ 58,915.23 | \$ 38,435.85 | \$ 50,110.19 | 84,118.19 | \$ 97,968.19 | \$ 88,468.19 | \$ 75,968.19 | \$ 65,468.19 |

Phragmites Acct - Spy Pond - supported by donations - for use on phragmites only: 5 Years of Actual, Current Year Expected, 3 Years of Budgeted

| MUNIS # | FY14 Actual | FY15 Actual | FY16 Actual | FY17 Actual | FY18 Expected | FY19 Budget | FY20 Budget | FY21 Budget |
|----------|-------------------------|-------------|-------------|-------------|---------------|-------------|-------------|-------------|
| | Beginning Balance - 7/1 | \$ 4,120.00 | \$ 4,120.00 | \$ 2,870.00 | \$ 2,870.00 | | | |
| 230 4830 | Revenue/Donations | - | - | - | - | | | |
| 230 5290 | Expenses | - | (1,250.00) | - | (2,870.00) | | | |
| 2 | Ending Balance - 6/30 | \$ 4,120.00 | \$ 2,870.00 | \$ 2,870.00 | 0.00 | | | |

Subtotal of Water Bodies and Phragmites Acct Ending Balances (Above)

| MUNIS # | FY14 Actual | FY15 Actual | FY16 Actual | FY17 Actual | FY18 Expected | FY19 Budget | FY20 Budget | FY21 Budget |
|---------|-------------------|--------------|--------------|--------------|---------------|-------------|-------------|-------------|
| | Water Bodies Fund | 23,890.23 | 27,865.23 | 58,915.23 | 38,435.85 | | | |
| | Phragmites Fund | 4,120.00 | 2,870.00 | 2,870.00 | - | | | |
| 3 | Available Balance | \$ 28,010.23 | \$ 30,735.23 | \$ 61,785.23 | \$ 38,435.85 | | | |

- Notes**
- 1) Control eurasian watermilfoil -- Treatment with "Sonar" occurs in May, every three years.
 - 2) Harvesting water chestnuts -- Mechanical harvesting occurs in July to reduce the seed bed for the following year.
 - 3) Control excessive vegetation -- Treatment with "Reward" occurs in May or early June, as needed.
 - 4) Control algae -- Treatment with a copper compound occurs in July or August if there is an algae bloom.
 - 5) Water bodies and watershed survey -- Checks the health of Arlington's water bodies and invasive plants and animals. FY20 & FY21 needs are uncertain and depend on further studies.

Water Bodies Program Analysis
Expense Detail - Actual and Projected

The purpose of this schedule is to provide a beakout of the expenditure detail that is summarized on the preceeding tab.

| Detail - FY 18 - Actual | Spy Pond | Reservoir | Hills | McClennen | Other | FY Total | Spent to date | \$\$ available | Comments |
|--|------------------|------------------|-----------------|---------------------|-------------|------------------|------------------|----------------|--------------------|
| treatment/sonar - spend in FY19 | | | | | | - | 0 | | Saved 14k for FY19 |
| treatment/reward | 10155.00 | | | | | 10,155 | 10155 | | Spiny naiad |
| water chestnuts/hand pull | | 15000.00 | | | | 15,000 | 15000 | | Res chestnuts |
| algae treatment | | | | | | - | | | |
| water quality testing/plant id/Hills treatment | | | 1287.00 | | | 1,287 | 3017 | | Hills |
| McClennen detention basin | | | | 10000.00 | | 10,000 | 10000 | | |
| ConsCom - other water bodies | 0.00 | 0.00 | 0.00 | | 0.00 | - | - | - | |
| Total | <u>\$ 10,155</u> | <u>\$ 15,000</u> | <u>\$ 1,287</u> | <u>\$ 10,000.00</u> | <u>\$ -</u> | <u>\$ 36,442</u> | <u>\$ 38,172</u> | <u>\$ -</u> | |

| Detail - FY 19 - Budget | Spy Pond | Reservoir | Hills | McClennen | Other | FY Total | Spent to date | \$\$ available | Comments |
|---|------------------|------------------|-----------------|------------------|-----------------|------------------|------------------|----------------|----------|
| treatment/sonar - spend in FY19 | 15000 | | | | | 15,000 | | | |
| treatment/reward | 10450 | | | | | 10,450 | 12600 | | |
| water chestnuts/hand pull | | 15000 | | | | 15,000 | 15000 | | |
| algae treatment | 5000 | | | | | 5,000 | | | |
| water quality testing/plant id/Hills Pond | 10000 | 1500 | 4000 | | | 15,500 | 1730 | | Hills |
| spy permitting | | | | | | - | | | |
| McClennen detention basin | | | | 10,000 | | 10,000 | 10,000 | | |
| ConsCom - other water bodies | - | - | - | | 5000 | 5,000 | 3,495 | - | |
| Total | <u>\$ 40,450</u> | <u>\$ 16,500</u> | <u>\$ 4,000</u> | <u>\$ 10,000</u> | <u>\$ 5,000</u> | <u>\$ 75,950</u> | <u>\$ 42,825</u> | <u>\$ -</u> | |

| Detail - FY 20 - Budget | Spy Pond | Reservoir | Hills | McClennen | Other | FY Total | Spent to date | \$\$ available | Comments |
|---|------------------|------------------|-----------------|-----------------|------------------|------------------|---------------|----------------|----------|
| treatment/sonar - spend in FY22 | 15000 | | | | | 15,000 | | | |
| treatment/reward/in lake mgmt | 12000 | | | | | 12,000 | | | |
| water chestnuts/hand pull | | 15000 | | | | 15,000 | | | |
| algae treatment | 5000 | | | | | 5,000 | | | |
| water quality testing/plant id/Hills Pond | 5000 | 1500 | 4000 | | | 10,500 | | | |
| McClennen detention basin | | | | 2,000 | | 2,000 | | | |
| ConsCom - other water bodies | - | - | - | | 10,000 | 10,000 | - | - | |
| Total | <u>\$ 37,000</u> | <u>\$ 16,500</u> | <u>\$ 4,000</u> | <u>\$ 2,000</u> | <u>\$ 10,000</u> | <u>\$ 69,500</u> | <u>\$ -</u> | <u>\$ -</u> | |

| Detail - FY 21 - Budget | Spy Pond | Reservoir | Hills | McClennen | Other | FY Total | Spent to date | \$\$ available | Comments |
|---|------------------|------------------|-----------------|-------------|-----------------|------------------|---------------|----------------|------------------------|
| treatment/sonar - spend in FY22 | 15000 | | | | | 15,000 | | | |
| treatment/reward/in lake mgmt | 12000 | | | | | 12,000 | | | |
| water chestnuts/hand pull | | 15000 | | | | 15,000 | | | |
| algae treatment | 5000 | | | | | 5,000 | | | |
| water quality testing/plant id/Hills Pond | 5000 | 1500 | 4000 | | | 10,500 | | | |
| spy permitting & invasives treatment | 10000 | | | | | 10,000 | | | Added 5k for invasives |
| McClennen detention basin | | | | - | | - | | | |
| ConsCom - other water bodies | - | - | - | | 5,000 | 5,000 | - | - | |
| Total | <u>\$ 47,000</u> | <u>\$ 16,500</u> | <u>\$ 4,000</u> | <u>\$ -</u> | <u>\$ 5,000</u> | <u>\$ 72,500</u> | <u>\$ -</u> | <u>\$ -</u> | |

| Detail - FY 22 - Budget | Spy Pond | Reservoir | Hills | McClennen | Other | FY Total | Spent to date | \$\$ available | Comments |
|---|------------------|------------------|-----------------|-------------|-----------------|------------------|---------------|----------------|----------|
| treatment/sonar - spend in FY22 | 15000 | | | | | 15,000 | | | |
| treatment/reward/in lake mgmt | 12000 | | | | | 12,000 | | | |
| water chestnuts/hand pull | | 15000 | | | | 15,000 | | | |
| algae treatment | 5000 | | | | | 5,000 | | | |
| water quality testing/plant id/Hills Pond | 5000 | 1500 | 4000 | | | 10,500 | | | |
| spy permitting & invasives treatment | 8000 | | | | | 8,000 | | | |
| McClennen detention basin | | | | - | | - | | | |
| ConsCom - other water bodies | - | - | - | | 5,000 | 5,000 | - | - | |
| Total | <u>\$ 45,000</u> | <u>\$ 16,500</u> | <u>\$ 4,000</u> | <u>\$ -</u> | <u>\$ 5,000</u> | <u>\$ 70,500</u> | <u>\$ -</u> | <u>\$ -</u> | |