



# Fiscal Year 2022 Final Report



*Quabbin Gate 40 bridge/culvert repair*

September 2022

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Massachusetts Department of Conservation and Recreation  
Division of Water Supply Protection  
Office of Watershed Management

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# **FY2022 Accomplishments**

**DCR/DWSP Office of Watershed Management  
FY2022 End of Year Highlights**

**Wachusett/Sudbury Region**

**A. Land Acquisition**

Two projects went to record a 13.8-acre fee acquisition in Princeton (Thorell) and a 169.9-acre fee acquisition in Princeton (Princeton Land Trust f/ Cusanello). Three projects are underway at various stages of due diligence totaling over 220 acres at the close of FY22.

MWRA approved two acquisitions: a 9-acre fee in Sterling on October 20, and a 28-acre fee acquisition in Sterling on May 25. Two virtual LAP meetings were held this year and a total of two Wachusett fee projects were approved. Work continues on one previously proposed donation of a 44-acre fee transfer in Rutland and work to identify priority parcels is ongoing.

**B. Watershed Preservation Restrictions (WPR)**

WPR Coordinator and Regional Monitors completed 21 WPR monitoring visits in FY22. The WPR Coordinator assisted Regional Monitors with training, monitoring visits, and report writing and reviewed all monitoring reports completed by Regional Monitors. Aerial Monitoring software, Lens was piloted and completed 3 reports using this software were completed.

Forest Legacy WPR monitoring was completed in FY22. All WPR land ownership was reviewed for property transfers.

The Restriction Working Group met four times to discuss enforcement issues and requests to exercise reserved rights. The Natural Resources Director and WPR Coordinator also conferred on minor WPR violations and Reserved Rights requests as needed and the WPR webpage was completed and published. Options for distributing an electronic newsletter to landowners were explored.

**C. Land Management**

A five-year internal review of the Land Management Plan is ongoing.

Four forestry lots were proposed for a combined 226 acres. Regeneration and terrestrial invasive species plots were taken and detailed narratives for each lot were written. Proposed locations of landings, haul roads, and stream crossings were mapped and lot review walks with Natural Resources staff took place. Silviculture proposals were reviewed for compliance with Land Management Plan guidelines. Forestry lots were walked with foresters and biologists where any vernal pools or potential vernal pools on the lots were surveyed and rare species and habitat maps from NHESP were reviewed. Story maps were developed and shared with the public for review and comment.

Several site visits were attended for a proposed new well site on Division property currently leased as a hayfield on Crowley Road. This proposal is in the initial stages and many steps are required before MassDEP approval.

The DCR Archaeologist was consulted after an open well was brought to our attention. The well has been covered with plywood and coordinates have been entered into the statewide database, following agency guidance. The well will be closed with a more permanent covering in the beginning of the next FY.

Four forestry lots were marked on a combined 244 acres throughout the watershed. Six lots on a combined 351 acres were shown with only one lot going unsold. Cutting plans were completed and filed for all lots and photo monitoring points were established. Six lots on a combined 419 acres were supervised this fiscal year during active operations. Four of these lots on a combined 241 acres were completed. New protocols were established between the environmental quality and forestry sections for monitoring of harvest sites.

For the first time, Continuous Forest Inventory plots were established at Wachusett and Sudbury. 114 plots are now established at Wachusett and 12 plots at Sudbury and all data has been entered in a comprehensive DWSP Continuous Forest Inventory database.

Division boundaries were maintained over 13.4 miles of during this fiscal year. Upon a thorough inspection of the property boundary GIS layer, it now appears that the first round of maintenance of the 255 miles of maintainable property boundary line is complete. Boundary survey on three different projects were completed.

Field mowing, awarding of a new hayfield lease, and restoration mowing of two overgrown fields was completed. Contracted and staff-conducted invasive control work was conducted in the Smith fields, additional seeding of the pollinator meadows took place, and new native flower beds were installed at the front entrance to John Augustus Hall. All fields scheduled to be mowed this year were mowed according to the 2022 mowing plan.

Numerous potentially hazardous tree situations were brought to our attention this year. All were investigated and dealt with appropriately with and records were kept. A total of \$71,154.63 was spent on the removal of hazardous trees this fiscal year. Division management met with the West Boylston Light Department to discuss roadside hazardous trees throughout the town.

#### **D. Wildlife Management**

The Bird Harassment Program ran successfully during the 2021-2022 season. All goals were met and bacteria recorded at the Carroll Water Treatment Plant did not exceed regulatory thresholds. Programmatic modifications were made for the upcoming year and policies for Standard Operating Procedures were updated. Equipment for the program was inventoried and necessary items were purchased. Twenty-three weekly reports and the 2021-2022 season final report were produced and distributed. The contract with MassDOT continued in FY22 and an Unmanned Aircraft System (drone) was used on five evenings to photograph gulls at the roost. Regional parking lot surveys of gulls and feeding by the public continued. Monitoring at wastewater treatment plants and surveys at the Fitchburg-Westminster landfill continued where USDA performed their seasonal harassment.

Goose eggs were treated at Wachusett; a total of 13 nests with 75 eggs were treated and two additional nests were located. These eggs had been predated and didn't require treatment. A

total of 26 nests with 140 eggs were treated at Sudbury in FY22. Another five (5) nests were located, but eggs had been predated and didn't require treatment. Coyote decoys were deployed on South Dike for much of the year to help deter Canada goose populations.

A total of 13 beaver were trapped at Wachusett and only two were trapped in the pathogen zone. Fecal samples were sent to a lab for pathogen analysis. Problem beaver dams were addressed throughout the year at four sites and dikes and dams were monitored for burrowing animal activity. No new activity was discovered.

Research and management for Common Loons on the DWSP waterbodies continued and the annual report for the 2021 season was completed. Collection of lead tackle and monofilament line from the Quabbin, Wachusett and Ware River watersheds totaled 6 lb. 9 oz. in 2021.

Hunting occurred at both the Wachusett and Sudbury Reservoirs beginning with archery season in October and ended on Dec. 31, 2021. A 2021 Deer Hunt Report provided all relevant information. Pellet Counts were done at the Sudbury Reservoir lands this quarter. Analysis suggests that the deer herd continues to remain under the 20 deer/mi<sup>2</sup> threshold.

American kestrel boxes were monitored in FY22. Two boxes were active, but only one nest successfully hatched three chicks. Whip-poor-will surveys were conducted around the Wachusett watershed, and grassland bird surveys revealed breeding activity of eastern meadowlark and grasshopper sparrow at new sites in the watershed. All information was shared with the State Ornithologist and NHESP.

#### **E. Public Access Management**

Watershed Rangers continue to patrol the watershed. Rangers continue to carry out assigned duties and continue submitting daily patrol logs for interactions. Effective April 29, 2022, Rangers are no longer allowed to issue citations or written warnings. This will be challenging when dealing with repeat offenders. In FY22 Rangers catalogued 13,847 visitor contacts with 638 rule violations noted. Thirty-Five written warnings were issued, 71 noncriminal citations were issued, and 44 parking tickets were given.

Rangers continue to inspect the conditions and placement of all signage within the Watershed. They also continue to post No Parking after Dark signs in areas that are appropriate and have had issues. Seasonally updated postings with information for public about rules, hunting and fishing seasons were placed. Provided information to different user groups for rules and regulations throughout the year. The Sudbury Public Access plan was approved in late June 2022. Due to public access changes, Rangers have updated signage to concur with new plan.

#### **F. Watershed Security**

Ranger staff continues to maintain an active presence in the watershed. All Wachusett/Sudbury staff inform Rangers of any unusual activities. Interactions and coordination with MWRA, State Police, Environmental Police, and other enforcement personnel continued throughout the year. DCR Rangers and Massachusetts Environmental Police met and coordinated plans for joint enforcement on Opening Day of Fishing, which can be continued annually. Rangers continue to update Law Enforcement and MWRA Security of any ongoing issues on Watershed property.

## **G. Infrastructure**

Monthly assessments on dams were performed, and all summary reports were provided. High priority roads and drainage structures were inspected this year and spot checks for lower priority roads were conducted. All DWSP owned structural BMPs were inspected and maintained as needed. Fifty-two work requests were completed by watershed maintenance staff.

A significant amount of work was accomplished on Wachusett facilities utilizing \$294,723 in Asset Mitigation Initiative (AMI) funding. Repairs were made to the Stillwater Farm barn through a combination of Office of Cultural Resources, DWSP, and AMI funding to address an immediate need for additional shoring and temporary roof repairs to slow the deterioration of the structure. Shingles were removed, a new roof was installed, and asbestos was removed from the basement at the DWSP Salem End Road house in Framingham.

The area where a new salt shed will be placed at the Clinton maintenance yard was prepared.

## **H. Watershed Protection Act**

A new Planner to oversee the Watershed Protection Act (WsPA) was hired late summer 2021 due to a vacancy left from a retirement. A new ArcGIS based WsPA database with vastly improved functionality for tracking, reporting, and documenting both active and historical WsPA applications was developed and over 4,000 historical records were imported. Forty-nine WsPA applications were received, and 34 decisions were issued. Staff continued to visit active sites to ensure compliance with DCR decisions.

## **I. Education and Outreach**

Several videos were created throughout the year and have been made available on the DCR website and YouTube. Topics included small mammal survey, an overview of the watershed, stormwater BMPs, salt use reduction, and fishing line recycling program.

In-person programs returned over the year to a full calendar of program offerings attended by over 1,000 visitors. Staff also offered a weekend hiking series, homeschool (and families) outdoor education programs, macroinvertebrate identification, nature journaling club, pollinator walk, and guided hikes. A story walk utilizing the book *Trout are Made of Trees* was very well received by the public. Girl Scout Weekend, Park Serve Day and Earth Day activities were also highlights of the year.

MassDCR featured Drinking Water Week by sharing DCR's Office of Watershed Management website link and promoted Dam Day. The Central MA Regional Stormwater Coalition shared DCR DWSP brochures on Twitter and the local newspaper shared photos of the Dam Day event on their website and social media.

Current DWSP brochures were delivered to all watershed town halls and staff provided guidance to the Southboro Trails Committee for a social media and on the ground dog waste outreach campaign and signage.

Mass Envirothon Steering Committee meetings were held remotely for the entire year and one in person workshop was held at Mount Toby. The annual May competition was held in person at Quabbin Reservoir.

## **J. Water Quality and Hydrologic Monitoring**

A total of 108 phytoplankton samples were analyzed and 56 profiles were collected in conjunction with phytoplankton and nutrient sampling. Data from MWRA remote sensing buoys were monitored and used to augment sampling programs as necessary.

All regular weekly and bi-weekly tributary and quarterly nutrient samples were successfully collected, discharge measurements completed, and an annual water quality report is in draft form.

Five new Mayfly stations were installed, six snow surveys were completed and staff continued to respond to and planned for water quality issues.

Staff participated in an MWRA/EPA/DEP/DPH joint four-day water contamination exercise to simulate the response and water quality sampling capacity to a hypothetical near reservoir spill event. This exercise included tabletop exercises as well as real world joint sampling with DCR and MWRA staff collecting samples on Wachusett Reservoir.

Two watershed towns, West Boylston and Holden, were awarded matching grants as part of the second year of DWSP's Salt Reduction Grant initiative. An educational video about the importance of road salt reduction was created and posted on the DCR web page. A salt specific presentation was made to the Water Supply Citizens Advisory Committee. DCR and MWRA cooperated to cover the cost of Baystate Roads training on Snow and Ice Operations in November, which was attended by 29 individuals from DCR, MWRA and personnel from five Wachusett watershed towns. Specific salt related tasks for staff throughout the section were identified and assigned. Discussions have been held with DEP staff to establish additional chloride monitoring locations in reservoir tributaries starting in the fall of 2022. DWSP will continue working with UMass, MWRA, DOT and local towns as we begin to develop ways to address this watershed scale environmental impact. Several conversations took place with municipal officials regarding conductivity levels in groundwater surrounding the town drinking water wells. After conversations with DOT's salt remediation staff, an initial meeting was held to form a multi-agency salt task force including DCR, DOT, DEP and other groups that will meet quarterly to advance salt issues at the statewide level.

DWSP purchased a few "Heat Trax" mat systems to be used at the main entrance of John Augustus Hall this winter to monitor the effectiveness and resulting reduced salt use.

Samples were collected at all 26 macroinvertebrate sites and a new Survey123 application was developed to collect habitat assessment data at each site. The Lake Trout mark recapture program continued with 124 new fish tagged and released, bringing the total number of Wachusett Lake Trout tagged to over 880 fish. The Creel Survey conducted every five years was initiated in April using a newly developed application. To date 1,300 anglers have been surveyed in this collaboration between DCR Biologists, DCR Rangers, and MassWildlife.



## **K. Watershed Monitoring and Assessment**

The Quinapoxet Subbasin was the focus of hydrologic mapping efforts this year. To date, 20 out of 29 Subbasins have been completed and nine subbasins are in progress. Field work was conducted in support of these efforts.

The Reservoir District Environmental Quality Assessment and all agricultural inspections in Reservoir and Gates Brook subbasins were completed. Observations have found a distinct increase in the number of small hobby farms with chickens since the start of the Covid pandemic, which have been added into the agricultural tracking application. Hazardous materials releases and clean up were monitored; one new release occurred in Wachusett Watershed and six in Sudbury Watershed. PFAS contamination in Princeton was monitored for potential water quality impacts to an Outstanding Resource Water.

Outreach on leaded aviation fuel (AvGas) was conducted for all local small airports and flight schools and several conversations with pilots and airport managers took place.

## **L. Aquatic Invasive Species**

The entire Wachusett Reservoir littoral zone was surveyed for Aquatic Invasive Species (AIS) in summer 2021. No new AIS and no significant increases in AIS were observed. One outlying plant of variable milfoil was detected and subsequently removed by the Diver Assisted Suctioning Harvest project. A new divisional AIS plan is under development for FY23.

New contracts for management of South Meadow Pond complex were developed and focused on reassessment of the invasive species present and management of the pond system as a whole. Management of *Najas minor* (brittle naiad) in the three Lily Ponds continued and included a new systemic treatment. Surveys of Clamshell Pond resulted in no observations of *Egeria densa* for the fourth year since treatment and low numbers of *Trapa natans* were observed and removed.

The partnership between MWRA and DCR on AIS removal in Wachusett Reservoir continued in FY22. Biologists continued support of removal efforts by maintaining ArcGIS Online tools for data collection from contractors and sharing with project partners. Biologists also inspected watercraft prior to equipment launch and assisted in allocating diver effort. All watercraft and gear were inspected prior to launch in the reservoir including MassDOT bridge inspection gear and contractor vessels.

DCR Biologists continue to communicate new AIS risks to ranger and interpretive staff as they arise.

## **M. Wastewater Management**

Assistance was provided in the first two quarters of FY22 in the form of plan reviews and comments. A new environmental engineer was hired into the Environmental Quality group to fill a vacancy and resume tasks of compiling septic system information and provide plan review and interpretation to Boards of Health once onboarded. Wastewater information was reviewed during the Environmental Quality Assessment process during the interim.

Monitoring of the sewer trunk line continued, and encroachments remained the same as in previous years - swimming pools, fences, and foundations. All sewer bills were issued in a timely manner.

#### **N. Stormwater Management**

Test pits were performed, a public hearing was scheduled for the Route 110 direct discharge project, and a Watershed Protection Act exemption letter for the project was provided. According to Mass DOT, construction could take place in FY24 to complete the only outstanding direct discharge into the reservoir.

Division MS4 information was provided to the towns of Boylston, Holden and West Boylston during their EPA reporting time period. All watershed towns were provided the link to Division stormwater videos for their use, brochures were distributed to town halls, and technical assistance was provided to the Southboro Trails Committee for their dog waste outreach campaign and signage.

Technical assistance was provided for the Town of Southboro GIS grant proposal and desired deliverables for impervious surfaces mapping; a letter of support for the project was also provided. Input was provided to the City of Leominster consultant for interpretive signage which will be added as a part of a Municipal Vulnerability Preparedness Grant.

Documentation and inspections by DWSP staff provided the important supporting information which ultimately led to an agreement for an operator of a construction site to pay a penalty of \$10,500 for violations of EPA's NPDES General Permit for Discharges from Construction Activities. Regular inspections were conducted on sites that disturbed greater than one acre and Watershed Protection Act projects. Regular inspections took place at Greenwood Estates and National Grid linework.

#### **O. Emergency Response**

Wachusett Reservoir Railroad Incident 2022 full-scale exercise was conducted on May 18, with 84 attendees representing 10 agencies. There were 12 trainings and exercises with a total of 206 people attending allowing staff to remain familiar with ICS and emergency response techniques. TIGER training also provided an additional nine spill response and safety trainings. Trailers and supplies were inventoried. MWRA will be providing two new trailers to replace the Regional and On Water Trailers.

#### **P. Support**

Core office functions, such as accounting, payroll, human resources, mail services, inquiries and voicemails to the main office, and work orders were all supported by staff who were primarily working remotely. John Augustus Hall was reopened to five days a week in November 2021.

Many major projects were kicked off during FY22 and completed or had significant progress made on reaching the final goal. Highlights include debuting a new DCR-DWSP Trails and Roads data layer in ArcGIS Online (for internal and public use) which shows locations of trails and roads within Wachusett/Sudbury and includes detailed access and use information in an easy-to-read format within the pop-up. This can enable us to create a system-wide public access

application in the future. The new Watershed Protection Act database is up and running in ArcGIS Online with planning staff now using this to enter and track new WsPA filings. A series of tools enables staff to easily enter and update files, a Dashboard allows staff to view WsPA files spatially like never before. Most historic data have been entered to the new database. Some additional progress was made on the Wachusett Hydrology Data project.

A total of \$8,367,913 was distributed in Payments in Lieu of Taxes to 31 Watershed System communities. Within the Wachusett Reservoir watershed, \$3,564,910, or 42% of the total, went to seven towns. The five towns in the Sudbury Reservoir watershed received \$855,461, which is 10% of the total PILOT.

Staff continued to work to fill vacancies in the Section. Ten full time positions were posted and filled. One Regional Planner III vacancy was posted and filled. Two Environmental Quality vacancies were posted and filled by transfer. One Ranger I was posted and filled by transfer. Our vacant Civil Engineer II position was filled. Our Painter I and F&P I positions were filled by internal promotions. Three Laborer II vacancies were posted and filled.

The fiscal year ended with five vacancies and two staff on IA, which was representative of the level for the fiscal year.

## **Quabbin/Ware Region**

### **A. Land Procurement**

Four projects went to record this fiscal year, two in Quabbin and two in Ware. These projects included a 157-acre WPR in Wendell (Afferica), a 40-acre WPR donation in Barre (Mt. Grace/Gionet), an 8.7-acre fee donation in Hubbardston (Shelter Island), and 12.4-acre WPR in Petersham (Finneran).

### **B. Watershed Preservation Restrictions (WPR)**

Monitors completed 52 WPR monitoring visits, including 17 Forest Legacy WPRs and four high-priority visits. Two baseline reports were completed in-house.

### **C. Land Management**

Treatment of buckthorn, bittersweet, and Japanese knotweed was conducted at various locations around the watersheds including Quabbin Park Cemetery, below Goodnough Dike and various roads in Pelham, Shutesbury, and New Salem.

Forestry staff prepared and sold 16 timber sales in FY22. Information on all timber sales was prepared and posted on the DCR website as well as on a sign at the timber sale site. New forestry proposals were submitted for 15 lots at Quabbin and three at Ware River and were presented to advisory committees. Forestry staff provided oversight and supervision on 14 active timber sales in FY22.

Work continued on the long-term paired watershed study. Four storm events were sampled this fiscal year, encompassing a seasonal range and characterizing numerous hydrological conditions and corresponding responses in water chemistry.

Work on CFI analysis involved development of a comprehensive database and addition of all DWSP CFI data. Database work and documentation ongoing and will continue as needed in FY23 to supplement the LMP 5-year review.

Approximately five miles of boundary were marked.

#### **D. Wildlife Management**

The gull harassment program operated for 27 consecutive weeks from 10/4/21 – 4/8/22. Active harassment took place on only one scheduled night. There were no coliform exceedances during the program. All operations were performed safely, and training continues on program orientation, cold water and trailer operations, pyrotechnics, and laser use.

Unmanned Aircraft Systems (UAS, or drones) flights were conducted at Quabbin weekly from October 2021 to mid-April 2022. The UAS program has been very successful and a very useful tool for the Bird Harassment Program. The weekly roost counts varied weekly with the highest count of 1,568 gulls on March 8, 2022.

The Canada goose control zone was surveyed during the nesting season; one nest was located, and six eggs were treated to prevent hatching. The annual report was produced.

Seven beavers were removed from the Wildlife Pathogen Control Zone. In addition, work continued to prevent beaver-related flooding issues, including monitoring and maintaining culverts, maintaining culvert fence guards, and repairing beaver-deceiver piping.

Research and management for common loons on DSWP waterbodies continued and the annual report was completed for the 2021 season. The lead tackle and fishing line canister program was completed for the 2021 season and totals recorded. Two adult loons were captured, banded for identification, and sampled for containments during the 2021 breeding season.

Deer hunting was conducted at Quabbin in New Salem, Pelham, and Hardwick during the two-week shotgun season in December 2021. Up to 50 deer were reported by hunters (15 in Pelham, 18 in Hardwick and 17 in New Salem). Final deer report was completed and shared with staff ahead of the 2022 deer hunt planning meeting. Quabbin ended up with over 640 applications to hunt in 2021.

#### **E. Public Access Management**

Information on access policies and regulations was distributed through the Quabbin Visitor Center and through numerous public contacts by the watershed rangers. The Rangers logged approximately 38,000 visitor contacts during FY22.

The three Quabbin Boat Launch Areas (BLAs) operated daily. The 2021 season opened on its normal date in April to private boats and rental boats. The 2021 season closed on October 16, 2021. The 2022 season opened on time in mid-April to both private and rental boats. The boat inspection

and decontamination programs were implemented again this year, with both boat washings and cold weather quarantines overseen by DWSP staff. Staff continued to use iPads to implement the boat seal program. All three BLAs went to a credit payment only system in June 2022. No cash payments were allowed.

EQ staff conduct regular inspections through EQA fieldwork that occasionally uncover recreation-related water quality concerns. These concerns are analyzed and mitigated as needed.

No work was done on the Ware River Public Access Management Plan. The plan has been on hold since winter 2020, pending the Commissioner's review.

Staff provided support and maintained the boat launch at Comet Pond. In addition, they supervise and support the needs for portable toilet availability at the BLAs and during the Quabbin Deer Hunt.

## **F. Watershed Security**

The Watershed Rangers conducted regular patrols of high-vulnerability areas around the reservations, and weekly summaries were submitted to MWRA. Rangers documented 230 violations in Quabbin and 856 violations in the Ware River.

Inspections of gates and bar ways on the reservations were performed and necessary repairs made.

Interactions and coordination with the State Police, Environmental Police, the State Police Marine Unit and other enforcement personnel continued throughout the year.

## **G. Infrastructure**

Civil Engineering staff performed and reported on monthly inspections and piezometer readings. DWSP staff conducted mowing, brush-cutting, and other maintenance operations on dams and dikes.

Site visits were conducted for dams on Brigham Pond, Asnacomet Pond, Demond Pond, and Peppers Mill Pond.

Exterior renovations were completed on the Quabbin Park Cemetery office this FY utilizing EEA Asset Mitigation Funds.

Routine grounds maintenance was completed in Quabbin Park, including field mowing, weed whacking, and the removal of several hazardous trees or limbs. Staff prepared for Memorial Day in the Quabbin Park Cemetery with numerous plantings and assisted with burials in the cemetery.

Road work performed by DWSP staff included clearing several miles of roadside brush, cleaning drains, and filling potholes in Quabbin Park.

DWSP staff also monitored gravel extractions by the towns of New Salem and Petersham. The Gravel management plan was finalized for the Barre Heath pit.

## **H. Watershed Protection Act**

Staff implemented the Watershed Protection Act through the review of applications, site visits, meetings with applicants and their representatives, holding variance hearings, and the issuance of decisions. Staff received 35 cases in the Ware River Watershed and an additional 14 cases were received for the Quabbin Watershed. Staff investigated several violations in the Ware River and Quabbin watersheds.

Agendas and minutes were reviewed for all the relevant town boards in both watersheds. Staff contacted several towns regarding projects within WsPA jurisdiction.

## **I. Education and Outreach**

The Quabbin Visitor Center was open to the public all year, with a 6-day per week schedule. About 4,600 people visited the Visitor Center. Approximately 630 calls were received, and information provided. A variety of remote programs were provided.

The DCR website was regularly updated with new information about the Quabbin Controlled Deer Hunt, fishing programs, AIS, meeting announcements, the boat decontamination program, plan developments, and forestry projects.

IS staff coordinated with the Sign Shop and the Watershed Rangers to place trailhead signs and trail markers to improve that Quabbin Park Trail System. This project was completed this FY.

## **J. Water Quality and Quantity Monitoring**

EQ staff conducted routine biweekly water quality monitoring of Quabbin Reservoir watershed (Reservoir and tributaries) and Ware River tributaries. Phytoplankton sampling was conducted following the established monitoring plan. The Quabbin Aquatic Biologist resigned prior to the start of the summer sampling season; sampling, however, continued uninterrupted with the assistance of Wachusett staff.

Three additional stream gauge monitoring stations were installed this fiscal year. In addition to a new stream gauge at Fever Brook, two Mayfly sensors were installed at core monitoring locations (Gates Brook and West Branch Swift), enhancing monitoring with real-time stage, temperature, and specific conductance data.

Annual water quality report was completed.

## **K. Watershed Monitoring and Assessment**

Staff regularly conducted site assessments, attended local board meetings, and monitored online databases to identify potential threats to water quality. Staff investigated various potential violations in the watersheds and followed up as needed. The Quabbin Northwest and Ware River Coldbrook/Longmeadow EQA reports were completed.

The Yearly Operating Plans for vegetation management work on both the National Grid and Providence & Worcester Railroad rights-of-way were reviewed, and comment letters were submitted.

## **L. Aquatic Invasive Species**

Staff provided AIS information to the public through visitor contacts, displays in the Visitor Center, watershed kiosks, the DCR website, and distribution of brochures during Boat Decontamination and Cold Weather Quarantine programs.

There were 92 boats sealed through CWQ in 2021 over five dates in November.

The 2022 macrophyte survey on the Quabbin Reservoir was completed, and a final report is forthcoming. Staff also inspected and maintained the fragment barriers at BLA 2 and BLA 3. Other work included inspecting gear and equipment prior to use in the reservoir for State Police diving exercises.

## **M. Wastewater Management**

No water quality issues were identified from septic systems, and the oversight provided by Title 5 was generally sufficient.

## **N. Stormwater Management**

Inspections of stormwater BMPs were conducted in the Ware River watershed. EQ staff inspected storm water BMPs at two subdivision development sites, Brice-Lemon and Brintnal Estates (both in Rutland), and recorded storm drain locations using GPS.

## **O. Emergency Response**

Emergency Contact Information was updated by staff online in SSTA. BLA emergency SOP was also reviewed and updated.

FY22 Spill Response Training was conducted through TIGER training. Emergency response trailers were inventoried and regularly stocked.

Nine spill plans were prepared for timber harvesting operations.

## **P. Support**

Staff participated in a wide variety of job-related trainings and workshops, interagency planning teams, and professional organizations.

All PILOT obligations met as required by regulations. Final distribution was \$8,479,324. Total distribution for Quabbin towns: \$2,918,368, or 35% of total. Five towns received payments for land annexed from disincorporation of four Quabbin towns. Payments for Annexed Lands: \$662,153, or 23% of Quabbin watershed distribution or 8% of all PILOT. Ware River towns received \$1,066,310, or 13% of total PILOT. Coordinated with DOR to have data shown on their municipal gateway website.

# **FY2022 Work Plan Final Summary**



# Wachusett/Sudbury FY 22 Final Report



From July 1, 2021- June 30, 2022

Task No.	Description	Final Report Comments
1	<b>A. Land Acquisition</b>	
2	A1 Acquire land. Coordinate due diligence and other tasks/services from DCR and private contractors to complete survey, appraisal, title, engineering, and environmental assessments for proposed acquisitions. Negotiate WPR language, purchase prices and conditions of sale with sellers of property.	Two projects went to record a 13.8-acre fee acquisition in Princeton (Thorell) and a 169.9-acre fee acquisition in Princeton (Princeton Land Trust f/ Cusanello). Three projects are currently underway at various stages of due diligence totaling over 220 acres.
3	A2 Develop individual parcel presentation materials and meet with MWRA Board for approval.	MWRA approved two acquisitions: 9 acre fee in Sterling on October 20th, and a 28 acre fee acquisition in Sterling on May 25th.
4	A3 Communicate with and convene LAP meetings to review parcels and prioritize land purchases.	Two virtual LAP meetings were held this year (1/21/22 and 4/22/22). A total of two Wachusett fee projects were approved.
5	A4 Use the LAP Prioritization Model to identify priority parcels in the watersheds.	Work to identify priority parcels is ongoing.
6	A5 Continue to solicit and work with landowners in donating conservation interests in land and assist in advising landowners on the tax incentives available when donating conservation interests.	Work continues on one previously proposed donation of a 44-acre fee transfer in Rutland.
7	A6 Establish regularly scheduled land/legal meetings to address attorney assignments and project logistics.	Work to identify priority parcels is ongoing.
8	<b>B. Watershed Preservation Restriction Monitoring</b>	
9	B1 Monitor WPRs on a regular basis, following monitoring procedures	WPR Coordinator and Regional Monitors completed 21 WPR monitoring visits in FY22. WPR Coordinator assisted Regional Monitors with training, monitoring visits, and report writing. WPR Coordinator reviewed all monitoring reports completed by Regional Monitors. WPR Coordinator piloted Aerial Monitoring software, Lens, and completed 3 Aerial Monitoring reports using the software.
10	B2 Complete baseline documentation reports for new WPRs prior to acquisition or within a reasonable time after acquisition, following EOEEA specifications. Baselines will be done in-house or through appropriate contracts.	No Baseline Reports completed in FY22.
11	B3 Meet with Restriction Stewardship Working Group and confer with legal to respond to enforcement issues and requests to exercise reserved rights.	The Restriction Working Group met 4 times in FY22 to discuss enforcement issues and requests to exercise reserved rights. The NR Director and WPR Coordinator also conferred on minor WPR violations and Reserved Rights requests as needed.
12	B4 Track changes in landownership for WPRs.	WPR Coordinator and Regional Monitors completed landownership checks for FY22.
13	B5 Explore additional ways to reach out to landowners through the use of social media and web-based content.	The WPR webpage was completed and published in FY22. The WPR Coordinator explored options for distributing an E-newsletter to WPR landowners.
14	B6 Implement WPR records procedure with DCR records manager	Ongoing
15	<b>C. Land Management</b>	
16	C1 Implement the system-wide comprehensive Land Management Plan (LMP).	The 5 year internal review of the LMP is ongoing.
17	C2 Prepare forest harvest proposals for next fiscal year including data on proposed harvest areas, characteristics of stands, soils, cultural resources, wetlands, wildlife, unique features, and priority habitats. Proposals shall also include information on lot layout, landings, stream crossings, wetland crossings, and stonewall crossings.	Four lots were proposed on a combined 226 acres. Regeneration and terrestrial invasive species plots were taken. Detailed narratives for each lot were written and the proposed locations of landings, haul roads and stream crossings were mapped. Lot review walks with NR staff took place.
18	C3 Plan and conduct an internal review of proposed logging operations for the coming year, including assessments of silviculture, water quality, wildlife, and other potential impacts/benefits. Review lots to ensure consistency with aspects of the CLMP, including wildlife, forestry objectives, and environmental quality.	Internal reviews were conducted in May. All reviewer comments were included in a final Internal Review document and sent out to forestry staff prior to public presentations.
19	C4 Present annual forest harvest proposals a public meeting. Publish Online Public Review document/story map. Accept public comment and respond as needed.	All aspects of this task were performed as appropriate this year.
20	C5 Plan, lay out, mark products for removal, prepare maps and permits, establish photo monitoring points, file Forest Cutting Plans, seek bids, award permits, and properly advertise and post forest management operations consistent with the Forest Cutting Practices regulations, the LMP, and approved harvest proposals.	Four lots were marked on a combined 244 acres throughout the watershed. Six lots on a combined 351 acres were shown (not counting one lots that was shown multiple times) with only one lot going unsold. Cutting plans were completed and filed for all of the lots and photo monitoring points were established in all lots.

	Task No.	Description	Final Report Comments
21	C6	Provide supervision and oversight of all forest harvesting operations on DWSP property. Assure compliance with applicable DCR and NHESP regulations and restrictions, approved BMPs, and all Permit conditions. Maintain adequate site visit records. Monitor post-harvest and collect photo point images consistent with internal policy.	Six lots on a combined 419 acres were supervised this fiscal year. Four of these on a combined 241 acres were completed.
22	C7	Monitor water quality (turbidity) at active harvesting stream crossing sites to measure effectiveness of BMPs.	New protocols for EQ/Forestry communications established. 2 results > 5 NTU from FY22, both were documented, no follow up action needed.
23	C8	Continue to implement long-term paired watershed monitoring to assess impact of DWSP forest management on tributary water quality.	Quarterly storm sampling remains on hold until after the harvest begins
24	C9	Conduct periodical regeneration and invasive species surveys to monitor forest health and development resulting from silvicultural activities or other natural disturbances and processes.	For the first time, CFI plots were established at Wachusett and Sudbury. For comparison, CFI plots were first established at Quabbin in 1960 and at the Ware River in 1962. In the end, 114 plots are now established at Wachusett and 12 plots at Sudbury. All data has been entered in a comprehensive DWSP CFI database.
25	C10	Conduct periodic reviews and monitoring of land management activities and forest conditions to assure compliance and consistency with Land Management Plan.	Designed and implemented CFI for the Wachusett and Sudbury section (see also C.9).
26	C11	Collect data and maintain GIS datalayers related to forest structure, composition, regeneration, roads, boundary information, stone walls, wetlands, streams, and other data to guide the land management program. Maintain GIS data documenting the location, extent, and intensity of all silvicultural operations.	All aspects of this task were performed as appropriate this year.
27	C12	Assess all new fee land acquisitions, documenting existing conditions of forests, access roads, bridges and culverts, boundary markings, and restoration needs. Integrate these lands into existing GIS datasets and land management, public access, and other watershed management programs.	All aspects of this task were performed as appropriate this year.
28	C13	Locate, mark, and maintain property boundaries periodically and as needed.	13.4 miles were maintained during this fiscal year. Upon a thorough inspection of the property boundary GIS layer, it now appears that the first round of maintenance of the 255 miles of maintainable property boundary line is complete. This work was informally commenced in 2013 with a more dedicated and consistent approach beginning in 2015. There is still a handful of boundaries that cannot be marked until corner monuments are installed though survey contract work that is administered through the Wachusett civil engineering section.
29	C14	Develop scope of work and manage contracted property boundary survey work.	Completed boundary survey projects on 3 projects
30	C15	Document and pursue resolution of all property boundary encroachments.	Rangers continue to use ArcGIS for encroachment monitoring and a tiered system of letters.
31	C16	Identify, plan, and oversee non-forest or other unique habitat restoration, field reclamation, and maintenance work.	Accomplishments for the FY include completion of scheduled field mowing, awarding of a new hayfield lease, restoration mowing of two overgrown fields, contracted and staff-conducted invasive control work in the Smith fields, additional seeding of the pollinator meadows, and new native flower beds installed at the front entrance to JAH.
32	C16.4	Monitor conditions on non-forested land; oversee and conduct follow-up work using mechanical and chemical methods to ensure long-term success of restoration efforts.	FY22 accomplishments include continued mechanical and chemical control efforts in the Smith fields, initiation of mowing in the Antinerella and Marshall fields after years of neglect and invasive shrub growth, and spot control of invasives in the designated pollinator meadows.
33	C17	Identify, prioritize, and implement terrestrial invasive plant (TIP) control projects in line with the Terrestrial Invasive Plant Management Strategy (TIPMS). Respond as needed to newly discovered and controllable TIP populations.	Control projects this FY included hand-pulling mile-a-minute vine at two known locations in the watershed; mowing stiltgrass at two sites in the watershed; control of known Ailanthus trees/sprouts with basal bark treatments; combination of mechanical mowing and chemical treatment of Canada thistle in the Smith Field habitat restoration project. Monitored wire mesh control trial of Japanese knotweed in West Boylston, but results suggest this potential control method to be impractical.
34	C18	Collect data and maintain datasets, GIS datalayers, and related maps and reports of rare and listed plants and communities.	NPT conducted various surveys on DWSP properties, and submitted records to NHESP as needed. MA State Botanist, Robert Wernerehl sampled and identified all aquatic plants found in the area between the Quag and West Waushacum and verified that no rare or state listed species were growing or would be impacted due to replacement of the bridge. Reported to NHESP.
35	C19	If available, use unmanned aerial system (UAS) to document forest conditions, map openings, identify invasive plant populations, assess internal road conditions, or conduct other activities.	Although UAS flights have been done to monitor gull roost activity, we have not received approval from EEA to expand the UAS flights to other projects for forestry.
36	C20	Continue to work with DCR Asian Longhorned Beetle Program and USDA to oversee beetle eradication in watershed areas.	All aspects of this task were performed as appropriate this year.
37	C21	Hazardous Tree Removal	Numerous potentially hazardous tree situations were brought to our attention this year. All were investigated and dealt with appropriately with and records kept. This includes contracting for the removal of roadside hazardous trees. \$71,154.63 was spent on the removal of hazardous trees this fiscal year.

	Task No.	Description	Final Report Comments
38	C22	Maintain deer exclosures and sample vegetation periodically to assess impacts of herbivore browsing.	Monitored integrity of all WA deer exclosures; no repairs needed. Vegetation differences inside/outside in the oak stand exclosure only; no obvious change in the uncut stand near the Lily Ponds; ferns continue to dominate the pine stand patch cut inside gate 35, although controlled patches from previous season remain free of ferns.
39	C23	Organize, inventory, and categorize permit, lease, and easement information and enter information into the database.	Ngala will organizing the permit files and entering information into a database in FY23
40	C24	Participate in process to transfer lands surrounding Framingham Reservoirs 1 and 2 to DCR Parks.	There has been some discussion but no action has been taken on transferring these lands.
41		<b>D. Wildlife Management</b>	
42	D1	Continue the active harassment of gulls within the Pathogen Control Zone at Wachusett Reservoir, using human presence, boats, pyrotechnics, passive scare devices, and other techniques. Continue to identify and test new harassment techniques.	Program ran successfully during the 2021-2022 season. All goals met. Bacteria recorded at the Carroll Water Treatment Plant did not exceed regulatory thresholds. No safety issues.
43	D1.2	Planning for FY22 season, including finalizing a updated program SOP, purchasing of equipment and supplies.	Programmatic modifications made. Policies in SOP updated. Equipment inventoried and necessary items purchased. Surveys updated.
44	D1.4	Produce weekly report during active Bird Harassment Program season.	23 weekly reports produced and distributed.
45	D2	Observe and document the nocturnal roost of gulls on the reservoir weekly during the months of September- March.	Gull numbers at the roost ranged from a low of zero on Oct 18th to a high of 1,600. The average gull count throughout FY 22 was 434 gulls.
46	D3	Control Canada geese populations at Wachusett Reservoir by treating eggs during nesting season to prevent hatching.	Goose eggs were treated at Wachusett and Sudbury in FY22.
47	D4	Identify places in MA where human derived food is available and work to prevent feeding through educational signage, interaction and enforcement.	Regional parking lot surveys continued throughout FY22. Outreach is implemented when feeding is observed at regular problem areas (e.g., certain grocery store parking lots, fast food restaurants). No new problem sites were recorded.
48	D4.1	Monitor area landfills for feeding gulls. Work cooperatively with landfill operators to ensure DEP landfill regulations are being followed.	Surveys at the Fitchburg-Westminster landfill continued in FY22 and USDA continued their seasonal harassment here. Gull numbers remained low during our surveys (0-50) and are much lower than the historical levels recorded here.
49	D5	Aquatic Mammal Control: Remove beaver and muskrat in the Aquatic Wildlife Pathogen Control Zone at Wachusett.	A total of 13 beaver were trapped at Wachusett in FY22. Only two (2) were trapped in the pathogen zone.
50	D5.3	Respond to beaver complaints caused by beaver on DCR property and provide assistance, as time allows.	Beaver activity and dams were monitored and dealt with as needed at Gates Brook in West Boylston, Baldarelli site in Sterling, and Fairbanks St site in Sterling during FY22. Correspondence with neighboring land owners and DOT continued throughout the year.
51	D6	Respond to problems of burrowing animals on dams and dikes; take appropriate action.	Dikes and dams were monitored for burrowing animal activity in FY22. No new activity was discovered.
52	D7	Research and manage for common loons on DWSP waterbodies; provide nesting platforms, capture and sample birds for contaminants.	Research and management for Common Loons on the DWSP waterbodies continued and the annual report for the 2021 season was completed. Collection of lead tackle and monofilament line from the Quabbin, Wachusett and Ware River watersheds totalled 6 lb 9 oz. in 2021.
53	D8	Continue long-term wildlife resource monitoring program.	Data from the 2021 summer season were analyzed and a report was compiled.
54	D9	Work with MA Department of Fisheries and Wildlife (DFW) to survey for and document breeding bald eagles on the reservoir.	The bald eagle nest on Wood Island had a successful nest in FY22 with 2 chicks. This information was relayed to MassWildlife.
55	D10	Plan for the White-tailed Deer Management Program on DWSP lands at Wachusett and Sudbury; Administer the applications, permits, and orientations for the Wachusett Reservoir Zone Deer Hunt	Hunting occurred at both the Wachusett and Sudbury Reservoirs beginning with archery season in October and ended on Dec. 31st, 2021. Results are published in the 2021 Deer Hunt Report.
56	D10.1	Oversee and operate the annual Wachusett Reservoir Zone Deer Hunt.; analyze results of hunt.	Hunting occurred at both the Wachusett and Sudbury Reservoirs beginning with archery season in October and ended on Dec. 31st, 2021. Results are published in the 2021 Deer Hunt Report.
57	D11	Coordinate with the Massachusetts Natural Heritage and Endangered Species Program concerning rare species occurrences and protection	American kestrel boxes were monitored in FY22. Two boxes were active, but only one nest successfully hatched 3 chicks. Whip-poor-will surveys were conducted around the Wachusett watershed, and grassland bird surveys revealed breeding activity of eastern meadowlark and grasshopper sparrow at new sites in the watershed. Common loon nesting activity was regularly monitored and managed as well. All information was shared with the State Ornithologist and NHESP.
58		<b>E. Public Access Management</b>	
59	E1	Proactively patrol watershed lands to ensure compliance with DCR regulations and policies. Tally visitor contact and produce quarterly and annual summary reports. Conduct trend analysis on visitor statistics and rule violations.	Rangers continue to carry out assigned duties and continue submitting daily patrol logs for interactions. Rangers are no longer allowed to issue citations or written warnings. This will be challenging when dealing with repeat offenders.

	Task No.	Description	Final Report Comments
60	E2	Continue to cooperate with state, environmental, and local police for help with enforcement when required.	The ranger supervisors and group have worked well with all levels of law enforcement.
61	E3	Continue to use DCR social media accounts for advertisement of interpretive programs, including general or emergency information (such as closings).	Website updated as needed.
62	E4	Develop public outreach regarding allowed uses on DCR Wachusett lands.	Rangers continue to inspect the conditions and placement of all signage with in the Watershed. We continue to post No Parking after Dark signs in areas that we feel are appropriate and have had issues. Seasonally update postings with information for public about rules, hunting and fishing seasons. Provide information to different user groups for rules and regulations. Foss access has changed and rangers have updated signage to concur with new Sudbury Access Plan.
63	E5	Continue updates and improvements to access points with signs, gates and improved parking areas. Conduct regular inspections of gates and access barriers.	Rangers continue to inspect all access points with signs and gates. Ranger submit work orders when necessary. Ranger shave have been replacing rules and regulation signs along the Sudbury Reservoir so that it concurs with the ne wsudbury access plan.
64	E6	Regularly evaluate and modify policies within the current Public Access Plan and publish annual appendices with policy modifications or to regulate new proposed uses on DWSP lands.	Ongoing
65	E7	Continue to conduct "special operations" such as night operations, ATV, and snowmobile operations, as needed.	Rangers continue to conduct different form of operational deployments when necessary.
66	E8	Enforce rules and regulations of 313 CMR 11.09 through the use of citations. Issue written warnings and/or non-criminal citations for repeat offenders and serious violations.	A major detriment to the Ranger program occurred during Q4 when DCR general counsel advised that Rangers were no longer allowed to issue citations or warnings for violations of rules and regulations. Rangers have reverted to education for compliance and will utilize state, local and environmental police for more serious offenses.
67	E9	Evaluate and modify, if necessary, specific access plan policies as part of the Sudbury and Wachusett Reservoir Watershed Public Access Plan updates	After a lengthy process, the updated Sudbury Public Access Plan was approved and went into effect on June 22, 2022.
68		<b>F. Watershed Security</b>	
69	F1	Maintain an active presence in the watershed. Monitor watershed lands, roadways, and railways for unusual or suspicious activities; provide appropriate response.	Rangers are continuously proactively patrolling all Wachusett/Sudbury lands and monitoring visitor activity. DCR Rangers issue verbal warnings to address violations and educate. All DCR Rangers were given a cease and desist order from EOE legal and can no longer issue citations or written warnings. Rangers have been giving verbal warnings and educating and removing visitors as necessary.
70	F2	Continue ongoing communication and coordination with local, state, and federal emergency responders; coordinate with MWRA on all security issues.	Rangers communicate and properly notify all proper authorities when necessary. Rangers contact all local and state Law Enforcement when needed. Rangers communicate with MWRA Security and Command staff.
71	F3	Continue program of enhancing security infrastructure around Wachusett Reservoir.	Rangers are continuously proactively patrolling all Wachusett/Sudbury lands and monitoring visitor activity. DCR Rangers issue verbal, written warnings and citations to address violations. All DCR Rangers were given a cease and desist order from EOE legal and can no longer issue citations or written warnings. Rangers have been giving verbal warnings and educating and removing visitors as necessary.
72	F4	Inspect, maintain, and monitor gates, barways, and signage throughout the watersheds for security and access control.	Rangers while proactively patrolling the watershed lands regularly inspect all signage, parking and gate conditions. Rangers replace and relocate signage when necessary and fill out work order requests.
73		<b>G. Infrastructure</b>	
74	G1	Assess Wachusett and Sudbury dams, spillways, and dikes monthly. Forward all significant issues to the Regional Director and the MWRA. Coordinate with MWRA on biannual dam safety inspections for compliance with 302 CMR 10.00.	Performed monthly assessments, coordinated with watershed maintenance staff, and issued monthly summary reports to MWRA.
75	G2	Assess DWSP smaller dams semi-annually; review maintenance plans and revise as necessary.	Performed semi-annual assessment of smaller dams and prepared summary report.
76	G3	Continue maintenance plans for the improvement of the Wachusett and Sudbury dams and dike structures. Monitor conditions and maintenance activities and revise plans, as necessary.	Performed monthly assessments, coordinated with watershed maintenance staff, and issued monthly summary reports to MWRA.
77	G4	Conduct annual inspection/evaluation of Wachusett internal roads, drainage structures and shoreline access points; update GIS data layers as needed and develop list of maintenance and repairs needs.	High priority roads and drainage structures were inspected. Spot checked lower priority roads.
78	G5	Develop annual plan for internal road repair/reconstruction projects.	Prepared annual work plan and continued to coordinate work tasks with maintenance staff.
79	G6	Monitor the stability of River Street in Clinton.	N/A = DCR no longer monitoring. MWRA's contract to rebuild River Street is complete.
80	G7	Conduct road and dam maintenance/repair projects using in-house staff and resources. Provide oversight to ensure protection of water resources.	Oversaw various road and dam maintenance and repair projects.

	Task No.	Description	Final Report Comments
81	G8	Conduct regular inspection and maintenance of all DWSP BMPs.	DCR DSWP BMPs were inspected and maintained as necessary.
82	G9	Evaluate Sudbury watershed access, internal roads and develop work plan, as necessary.	With the return to full staff levels, anticipating evaluation of Sudbury roads will be accomplished in next FY.
83	G10	Provide supervision, coordination, oversight, and technical support or assistance for all engineering, construction, and renovation work in Section.	Significant amount of work was accomplished to Wachusett facilities utilizing AMI funding
84	G11	Maintain records regarding property plans & data; reservoir and facility construction and maintenance operations.	Respond to requests for plans. Beginning work on organizing plan room and better digitizing our documents.
85	G12	Implement annual Major Projects	Stillwater Barn: The repairs made through a combination of OCR, DWSP and AMI funding have addressed the immediate need for additional shoring and temporary roof repairs to slow the deterioration of the structure.
86	G13	Coordinate with WM to provide access to water quality monitoring stations and perform occasional maintenance activities at stream gages	Work orders submitted as needed.
87	G14	Evaluate and coordinate the monitoring of facilities for compliance with state and federal regulations. Develop and update required documents, as necessary	Need to address tank alarm for air boat sheds, provide training in case of tank failure/spills and need to document various maintenance activities and deliveries. Review of the plan shows Wachusett Earthday is following suggested protocols.
88	G15	Maintenance of forest roads, dams, dike, fields, parking areas, drainage structures , snowplowing, boat launch areas, and other management activities.	New salt shed will be installed in FY23.
89	G16	Prioritize and schedule online workorders for division staff and add to daily work plan.	Watershed Maintenance completed 230 work requests in FY22.
90	G17	Assist division staff with specific workorders as needed.	Ongoing
91	G18	Maintenance of grounds at MWRA facilities as needed. Clinton (Cosgrove), Oakdale (Shaft One)	Ongoing
92	G19	Conduct building maintenance activities, including painting, carpentry, cleaning, minor repairs, and other routine maintenance	Building Maintenance completed 89 work requests in FY22.
93	G20	Inspect all Wachusett facilities, buildings, related structures and building utility systems. Determine needed costs of materials for maintenance, repair and replacement of parts as needed.	Repairs and upgrades at all facilities took place throughout the year.
94		<b>H. Watershed Protection Act</b>	
95	H1	Continue implementation of the WsPA.	Led by the GIS group, staff developed a new ArcGIS based WsPA database with vastly improved functionality for tracking, reporting, and documenting both active and historical WsPA applications. Over 4,000 historical records were imported into this new database. More than forty WsPA decisions were issued. Staff continued to visit active sites to ensure compliance with DCR decisions.
96	H2	Convene the Watershed Protection Act Working Group regularly to discuss policy and address specific problems related to the WsPA	WsPA staff met regularly over the year with GIS and EQ staff to develop an ArcGIS based database program to enter and track all WsPA applications. WsPAWG meetings were held as well to discuss WsPA issues.
97	H3	Review permits for watershed towns on a monthly basis with letters sent to property owners of affected parcels.	New staff resumed this activity; staff began reaching out to watershed town building departments to obtain this information.
98	H4	Review property transfers for seven towns on a monthly basis with letters sent to new property owners of affected parcels informing them of the WsPA and how they may obtain additional information.	New staff resumed this activity; staff began reviewing property transfers in the seven towns and determining if they were located in WsPA jurisdiction.
99	H5	Review files from previous year on an ongoing basis, including contact with owners and site visits as needed. Emphasis placed on monitoring active variances.	Field work was prioritized to mostly include active projects with loss of one staff engineer and new staff still onboarding; this will resume with more effort in FY23
100	H6	Provide Town Halls with WsPA maps, brochures and applications on a regular basis.	Staff began contacting towns to find out how many maps, brochures and applications they needed for the public. Towns expressed an interest for electronic documents and website links to these resources.
101		<b>I. Education and Outreach</b>	
102	I1	Review, implement, and amend the Wachusett Interpretive Services Plan.	Education materials were ordered to complement upcoming programs. Several videos were created throughout the year and are available on the DCR website and YouTube. Topics include small mammal survey, an overview of the watershed, stormwater BMPS, salt use reduction, fishing line recycling program and others.
103	I2	Coordinate Educational and Outreach programs	In- person programs returned over the year to a full calendar of program offerings.
104	I3	Maintain and enhance kiosks and bulletin boards throughout the watershed.	Seasonal flyers were updated as needed, kiosk panels updated and reprinted

	Task No.	Description	Final Report Comments
105	I4	Perform inventory of signage and make recommendations for improvements and additions of stewardship signs	Rangers have posted new signage and replaced old worn out signs as necessary. Several new rules and regulation signs have been posted throughout Sudbury, Foss and Wachusett Reservoirs. Rangers have received new No Trespassing and No Parking after dark signs for several lots around Wachusett and continue to place as needed.
106	I5	Analyze and update current brochures. Determine need for new brochure topics and develop as needed.	Current brochures were delivered to all watershed town halls. No new brochures were created. Staff provided guidance to Southboro Trails Committee for social media and on the ground dog waste outreach campaign and signage.
107	I6	Partner with other organizations on watershed programs	Collaborated with orgs to enhance public programs. West Boylston High School School-to-Career program was rewarding experience, bringing new ideas to outreach.
108	I7	Provide educational materials, teacher training, and support for Mass Envirothon	Steering Committee meetings continued to be held remotely for the entire year and 1 in person workshop was held. The competition was also held in person at Quabbin Reservoir on 5/12. This task will be given to Kathryn Parent for the upcoming year.
109	I8	Maintain and update website with relevant news and information	Website was regularly updated with current information. Several videos were posted as well as a redesigned information regarding land conservation.
110	I9	Organize existing photographs and develop an inventory of new photos for Sudbury Watershed	Photos were taken as needed but have not been inventoried.
111	I10	Investigate the possibility of creating a water quality/stormwater mural on the Rail Trail Route 190 overpass abutments	No work has been completed on this task due to section and DOT vacancies.
112		<b>J. Water Quality and Hydrologic Monitoring</b>	
113	J1	Continue routine sampling of tributaries for bacteria, turbidity, nutrients, and field parameters.	All expected samples for FY22 collected
114	J2	Continue sampling of the reservoir for plankton, pH, temperature, dissolved oxygen, chlorophyll a, and nutrients.	A total of 108 phytoplankton samples were analyzed this fiscal year. 56 profiles were collected in conjunction with phytoplankton and nutrient sampling. Data from MWRA remote sensing buoys are monitored and used to augment sampling programs as necessary.  All quarterly nutrient samples were successfully collected this fiscal year.  Wachusett aquatic biology staff are assisting the Quabbin EQ section with phytoplankton collection and analysis starting in May due to resignation of Quabbin staff.
115	J3	Conduct reservoir bacteria transect sampling monthly or more frequently in conjunction with gull harassment program.	All expected samples for FY22 collected
116	J4	Produce annual water quality report and sampling plan.	Draft report has been completed. Delays occurred due to SharePoint Migration. Final revisions to be made in FY23 Q1
117	J5	Maintain continuous stream flow gages in all four watersheds through USGS contract. Coordinate with USGS to ensure proper performance of all gages, and accurate and timely reporting of data.	No issues in FY22, no changes to program needed for FY23
118	J6	Augment hydrologic data in Wachusett watershed through monitoring of stream flows, groundwater levels, and precipitation. Take snow pack measurements. Develop and maintain accurate rating curves.	See specific subtasks below
119	J7	Generate solute loading estimates for flow monitored tributaries using Flux, RCMODEL, or other statistical software. Expand to include smaller tributaries and Quabbin transfer when sufficient data has been collected.	Not worked on this FY due to other priority projects
120	J8	Continue contract to work with UMass to use results of water quality models and other watershed/water quality analyses to help to make watershed management decisions. Project will include topics in Quabbin/Ware watersheds as appropriate.	Group meeting with UMass and EQ staff to discuss parameters and ideas for FY23-24 ISA. Contract language drafted and placed in to ISA form. Draft ISA reviewed by DCR and UMass finance departments. ISA finalized by UMass, signed off at DCR Docket, and finalized contract was shared back to UMass. Side discussions on specific topics such as salt loading, modelling and fate have also been discussed.
121	J9	Identify and outline system-wide water quality issues and challenges. Bring to ResOPs and/or WQSAT for discussion and integrate into water quality modeling work with UMass.	Staff responded to and planned for a number of water quality issues this fiscal year, some examples include: Increased densities of Cyanobacteria were observed in Wachusett Reservoir this fall. Additional sampling and discussion was ongoing by DCR and MWRA. WQSAT team met twice to go over sampling plans and approaches for 2022. A status update on chlorides in the watershed was presented to WSCAC and the Reservoir Operations Group; EQ staff participated in two reservoir transfer operation meetings with MWRA staff. Staff participated in an MWRA/EPA/DEP/DPH joint four-day water contamination exercise to simulate the response and water quality sampling capacity to a hypothetical near reservoir spill event. This exercise included tabletop exercises as well as real world joint sampling with DCR and MWRA staff collecting samples on Wachusett Reservoir.



Task No.	Description	Final Report Comments
122	J10	Work with local DPWs, massDOT, UMASS, MWRA, and others to reduce applications of road salt in the watershed and prevent additional increases in chloride concentrations in tributaries and the reservoir.
		Two watershed towns, West Boylston and Holden, were awarded matching grants as part of the second year of DWSP's Salt Reduction Grant initiative. An educational video about the importance of road salt reduction was created and posted on the DCR web page. A salt specific presentation was made to the Water Supply Citizens Advisory Committee. DCR and MWRA cooperated to cover the cost of Baystate Roads training on Snow and Ice Operations in November, which was attended by 29 individuals from DCR, MWRA and personnel from five Wachusett watershed towns. Specific salt related tasks for staff throughout the section were identified and assigned. Discussions have been held with DEP staff to establish additional chloride monitoring locations in reservoir tributaries starting in the fall of 2022. DWSP will continue working with UMass, MWRA, DOT and local towns as we begin to develop ways to address this watershed scale environmental impact. Several conversations took place with municipal officials regarding conductivity levels in groundwater surrounding the town drinking water wells. After conversations with DOT's salt remediation staff, an initial meeting was held to form a multi-agency salt task force including DCR, DOT, DEP and other groups that will meet quarterly to advance salt issues at the statewide level.
123	J11	Advance knowledge of and response to potential cyanobacteria/harmful algal blooms
		Routine plankton monitoring continues to include screening for cyanobacteria and collection of cyanotoxin data related to UCMR4 requirements, in collaboration with MWRA. Biologists also responded to surface aggregations of the cyanobacteria Microcystis aeruginosa in early October. Additional reservoir sampling and surveys were conducted to document the event through early November. Overall concentrations remained low and were determined to not be a threat to water entering the intake. Staff continue to attend conferences and virtual events to keep current with cyanobacteria research and detection methods. A plan for response to cyanobacteria presence and blooms in the reservoir and watershed was drafted. Review and finalization will be carried out in FY23.
124	J12	Continue monitoring stormwater basins at Rt 12/140 intersection for water quality, invasive species, and mosquito larva.
		Monthly monitoring continued including surveys for mosquito larva which were not detected. Biologists accompanied NR staff for management of woody and invasive species and performed a cut of Phragmites in the basin at Gate 25. A pioneer infestation of Phragmites was also removed from a Rt 140 stormwater basin.
125	J13	Determine needs for stormwater sampling based on analysis of historical data. Sample storm events as determined necessary.
		Not worked on this FY due to other priority projects
126	J14	Continue to develop database backed tools and applications (R,GIS,MS Access, SQL Server) to facilitate data management, review and analysis, writing reports and modeling efforts.
		Major changes to computing infrastructure required major changes (twice) to all data management workflows. Application and scripts had to be updated to operate within new SharePoint environments. Major enhancements made to TribTools for Mayfly Stage temperature compensation and conductivity fouling correction. WAVE and WIT apps were maintained and are fully operational.
127	J15	Complete data compilation/interpretation for 30+ Year Water Quality Report (1988-2018) and publish. Include assessment of impacts of climate change on water quality and hydrology.
		The outline for the report was shared with Quabbin staff. This task has been postponed due to the amount of staff time required to deal with migration of data to the cloud and establishing new work flows.
128	J16	Ongoing field/lab equipment/supply management (including maintenance and calibration)
		Two YSI ProPlus handheld field meters were damaged and replaced with ProQuatro units. Old cable assembly failed on 1 YSI and a replacement was ordered.
129	J17	Develop a study to identify trends in the long-term phytoplankton and water quality data sets and identify variables influencing these dynamics.
		Collaboration with UMass/RWU continues to incorporate phytoplankton and chlorophyll a into the CE-QUAL-W2 model.
130	J18	Update and maintain water quality and hydrologic monitoring SOP documents
		As of FY22 Q3 the SOP for STF monitoring was overhauled with new monitoring criteria. A memo and map were produced, outlining the rationale for the changes and indicating which stream crossings would be monitored going forward
131	J19	Develop Quality Assurance Project Plan (QAPP) for Water Quality and Hydrologic Monitoring Programs
		Draft QAPP has been written and will be reviewed and finalized in FY23
132	J20	Increase understanding of reservoir dynamics by collecting profiles in South Basin, Andrews Harbor, etc. in late summer or early fall when the interflow is well established.
		A summary of work thus far was included in the 2020 Annual Report. Additional spatial and temporal data is necessary to quantify the relationship between thermocline, interflow, and depth and will be collected in future years.
133	J21	Conduct benthic macroinvertebrate sampling, continue identification and assessment of historic samples.
		Samples were collected at all 26 macroinvertebrate sites in May and June. A new Survey123 application was developed to collect habitat assessment data at each site. Identification continues as time and resources allow.
134	J22	Continue cooperative study of current population status, life history, and sustainable yield of lake trout.
		The Lake Trout mark recapture program continued with 124 new fish tagged and released, bringing the total number of Wachusett Lake Trout tagged to over 880. The Creel Survey conducted every five years was initiated in April using a newly developed Survey123 app. To date 1.3k anglers have been surveyed in this collaboration between DCR biologists, DCR rangers, and MassWildlife. Results of these studies will continue to inform potential food web impacts of apex predators on plankton as well as provide information on watershed land use.
135	J23	Conduct basic fish monitoring in the reservoir in collaboration with MA DFW. Assess goals and explore optimal sample methods with MA DFW.
		DCR staff assisted MassWildlife with fish sampling activities in reservoir tributaries.
136	K. Watershed Monitoring and Assessment	

	Task No.	Description	Final Report Comments
137	K1	Continue to review local records and conduct watershed surveillance to identify potential issues in the Wachusett and Sudbury watersheds that could impact water quality. Work with local boards and land owners when problems are identified. Document all work in EQ database.	Staff continue to identify issues, respond to reports, and work to resolve new issues. The EQ Access database is not running efficiently in the new cloud environment; and a new solution will need to be prioritized next fiscal year.
138	K2	Provide technical assistance to state and municipal boards and commissions.	Agendas and Minutes of assigned Wachusett Conservation Commissions reviewed. Action taken as necessary and activity documented.
139	K3	Review files in EQ database and resolve any inconsistencies with paper records. Maintain records of all water quality related issues and EQ actions taken in EQ database. Make improvements to structure and data as needed	Paper files have been maintained. Read access and data entry access have been very fluid as we continue to try new workflows in the cloud storage environment. We will evaluate whether to continue with the existing database or explore other options based on results from the WsPA database development process.
140	K4	Maintain, verify and improve Wetlands and Waterbodies GIS datalayer using plans, field observations and other available data as part of the Wachusett Watershed Hydrology Mapping Project.	Quinapoxet Subwatershed was the focus of these efforts. 20 out of 29 Subbasins completed. 9 subbasins in progress. Field work conducted in support of these efforts.
141	K5	Finalize Reservoir District EQA and use recommendations to develop tasks for FY23 Work Plan.	Reservoir District EQA completed.
142	K6	Monitor hazardous materials spills and releases until considered complete for Wachusett and Sudbury watersheds. Compile and update hazardous materials sites, USTs and ASTs.	There was 1 new release in Wachusett and 6 new releases in Sudbury added to the database and monitored this FY. Princeton PFAS contamination was monitored on a regular basis and input for ORW provided to DEP as needed. 3 additional Underground Storage tank sites were identified.
143	K7	Inspect all agricultural operations in Wachusett Reservoir District and continue to compile an inventory of agricultural sites in Sudbury using iPad app	Agricultural operations inspections were completed for both the Reservoir District and Gates Brook. Several smaller hobby farms were added to the database this year and important to note is the increase in the amount of homes that have chickens since the start of Covid.
144	K8	Develop and implement outreach strategies and programs for topics identified through EQAs	No work completed on this task
145	K9	Monitor placement and additions of turf fields in both watersheds and remain up to date on all research and studies of PFA concentrations resulting from turf fields	Continued to follow research, reports and news articles on the use of turf fields and potential PFAS issues. No new fields were constructed or proposed.
146	K10	Continue to communicate with MassDOT on roadway projects. Emphasize need for contractor to maintain safe conditions at all times. Investigate possibility of requiring contractor to have absorbent materials at work area for the duration of the project.	No work was completed on this task due to Covid restrictions and then 2 vacant EQ positions from approximately December to the end of May
147		<b>L. Aquatic Invasive Species</b>	
148	L1	Prioritize and conduct visual surveys of watershed/local waterways to inspect reservoirs, lakes, ponds, and tributaries for presence of aquatic invasive species.	The entire Wachusett Reservoir littoral zone was surveyed for AIS in summer 2021. This assessment is conducted every five years and serves to detect new AIS or expansion of known AIS. No new AIS and no significant increases in AIS were observed. One outlying plant of variable milfoil was detected and subsequently removed by DASH. A new divisional AIS plan is under development for FY23.
149	L2	Conduct surveys, gather information, and make recommendations for management actions on an individual basis if/when new infestations are found in accordance with the Wachusett AIS management plan.	No new infestations were detected in FY22.
150	L3	Administer AIS control contracts as appropriate and conduct aquatic vegetation surveys in conjunction with management of the Lily Ponds, South Meadow Pond complex, and Clamshell Pond.	New contracts for management of South Meadow Pond complex have been developed and focus on reassessment of the invasive species present and management of the pond system as a whole. Management of Najas minor (brittle naiad) in the three Lily Ponds continued in FY22 including a new systemic treatment in June 2022. Surveys of Clamshell Pond resulted in no observations of Egeria densa for the fourth year since treatment and low numbers of Trapa natans were observed and removed.
151	L4	Continue to use appropriate methods to prevent the spread of Phragmites along the reservoir shoreline.	Decreases in above-ground biomass allowed for a decrease in management effort in 2021. A single cut was conducted for all Phragmites beds around the reservoir. Pioneer infestations in reservoir stormwater basins were also removed in the fall.
152	L5	Perform aquatic vegetation surveys prior to reservoir AIS management projects. Provide results to MWRA and contractors to guide 2021-2022 plant removal efforts.	The partnership between MWRA and DCR on AIS removal in Wachusett Reservoir continued in FY22. Biologists continued support of removal efforts by maintaining ArcGIS Online tools for data collection from contractors and sharing with project partners. Biologists also inspected watercraft prior to equipment launch and assisted in allocating diver effort.
153	L6	Monitor, advise, and assist contractors with plant removal operations as necessary, including boat decontamination inspections and data management through ArcGIS Online apps.	DCR continues to maintain data submission portals and viewers via ArcGIS Online.
154	L7	Enforce the decontamination procedures for all watercraft entering the reservoir by inspecting each vessel and collecting completed decontamination certification forms.	All water craft and gear were inspected prior to launch in the reservoir including DOT bridge inspection gear and contractor vessels.
155	L8	Educate ranger and interpretive staff on AIS topics for incorporation into routine education program.	DCR Biologists continue to communicate new AIS risks to ranger and interpretive staff as they arise.



Task No.	Description	Final Report Comments
156	L9 Monitor beaver activity; if necessary make recommendations to NR for removal where contributing to spread of invasive plants or causing water quality impacts due to flooding abutting property	Observations of beaver activity made during field surveys were provided to NR via ArcGIS Online.
157	<b>M. Wastewater Management</b>	
158	M1 Provide plan review and interpretation, if requested, to Boards of Health.	Assistance provided in the first 2 quarters in the form of plan reviews and comments. New environmental engineer hired into the EQ group to resume these tasks once onboarded.
159	M2 Compile septic system information (installation date, repair date, location, etc) from watershed communities in wastewater database. Include linked electronic plans where available.	Assistance provided in the first 2 quarters in the form of plan reviews and comments. New environmental engineer hired into the EQ group to resume these tasks once onboarded.
160	M3 Obtain sewer connection information from Holden and West Boylston; add to Wastewater database and GIS datalayer	No activity.
161	M4 Continue to provide management support, with the MWRA, of the Rutland-Holden trunk sewer and Rutland Holden Relief trunk sewer. Coordinate inspections and maintenance projects for the sewer lines. Prepare and submit quarterly bills to the user communities in a timely manner.	Bills issued in timely manner.
162	M5 Research and provide sewer management information for legal issues regarding the Trunk and Relief sewer lines, as necessary. Work with legal and MWRA to research the option of transferring ownership of sewer lines to MWRA or the communities (would require legislative action).	Trial to take place in late July/early August.
163	M6 Evaluate and manage new trunk line connections. Monitor trunk line for encroachments; resolve any problems.	Encroachments remain the same as previous years - swimming pools, fences, foundations.
164	M7 Address I/I issues within trunk and relief sewers per DEP requirements (this is dependent upon DEP acceptance of our I/I submittal).	Report to be reviewed and submitted to DEP.
165	<b>N. Stormwater Management</b>	
166	N1 Treat direct discharges at Rt 110 Sterling	Test pits and a public hearing are scheduled for this summer. Based on DOT comments, construction could take place in FY24.
167	N2 Continue to work with towns and private landowners for regular maintenance of BMPs to ensure proper performance	No work has been completed on this task and the EQ section will decide if this project is still a priority for FY23
168	N3 Work with watershed towns to ensure compliance with MS4 requirements.	Division MS4 information provided to Boylston, Holden and West Boylston during their reporting time period. All watershed towns were provided the link to Education Coordinator stormwater videos for their use, brochures were distributed, technical assistance was provided for Southboro Trails Committee for dog waste outreach campaign and signage.
169	N3.1 Provide details of DWSP activities that indirectly support town MS4 requirements (education, sampling, inspections)	Division MS4 information provided to Boylston, Holden and West Boylston during their reporting time period.
170	N4 Maintain, verify and improve Streams and Pipes GIS datalayer using plans, field observations and other available data as part of the Wachusett Watershed Hydrology Mapping Project.	Quinapoxet Subwatershed was the focus of these efforts. 20 out of 29 Subbasins completed. 9 subbasins in progress. Field work conducted in support of these efforts.
171	N5 Maintain, verify and improve Drainage Structures GIS datalayer using plans, field observations and other available data. This is part of the Wachusett Watershed Hydrology Mapping Project.	Quinapoxet Subwatershed was the focus of these efforts. 20 out of 29 Subbasins completed. 9 subbasins in progress. Field work conducted in support of these efforts.
172	N6 Modify subbasin lines in ArcGIS based on stormwater mapping results	Quinapoxet Subwatershed was the focus of these efforts. 20 out of 29 Subbasins completed. 9 subbasins in progress. Field work conducted in support of these efforts.
173	N7 Conduct regular inspections of all construction sites greater than one acre.	Documentation and inspections by DWSP staff provided important supporting information which ultimately led to an agreement for the operator to pay a penalty of \$10,500 for violations of EPA's NPDES General Permit for Discharges from Construction Activities.
174	N8 Continue work with local DPWs to identify locations of concern, evaluate options for BMP installation, and ways to cooperatively implement recommendations.	Ongoing communications with Sterling Conservation Agent for available grants for culvert replacement.
175	<b>O. Emergency Response</b>	
176	O1 Coordinate Emergency Spill Response training with MWRA and local responders.	TIGER training provide 9 spill response and safety trainings.
177	O2 Update contact list and information in Comprehensive Emergency Management Plan, EAPs, and other emergency response plans.	Plans and contact information updated as needed.

	Task No.	Description	Final Report Comments
178	O3	Organize and maintain emergency response supplies and services.	MWRA will be providing two new trailers to replace the Regional and On Water Trailers
179	O4	Update multi-year Training and Exercise Plan.	Plan updated as necessary
180	O5	Provide and coordinate ICS, emergency response and safety trainings to appropriate staff. Work with other agencies to provide trainings and exercises	There were 12 trainings and exercises with a total of 206 people attending.
181	O6	Evaluate, monitor and oversee spill clean-ups that impact or threaten water resources of DWSP property. Work with appropriate local, state and federal agencies to ensure that containment, cleanup, and mitigation of the spill are proceeding in a manner that protects drinking water quality	No reported releases.
182		P. Support	
183	P1	Prepare and submit to MWRA and the Water Supply Protection Trust Annual Work Plans, budgets, progress reports, and program goals and objectives. Track Section progress in meeting program goals.	Completed as required
184	P2	Administer the Payment in Lieu of Taxes (PILOT) program.	All PILOT obligations met as required by regulations. Final distribution was \$8,479,324. Wachusett towns received \$3,564,910, or 42% to total PILOT. Coordinated with DOR to have data shown on their municipal gateway website.
185	P3	Configure and maintain both internal and external facing ArcGIS Online applications. Work with staff to generate field data collection tools using Survey123 and/or Collector for ArcGIS. Maintain existing field data collection tools for staff; maintenance includes archiving of data (as needed) and ensuring that Surveys and Maps remain functional through upgrades to ArcGIS Online and mobile apps.	Many major projects were kicked off during FY22 and completed or had significant progress made on reaching the final goal. Highlights include debuting a new DCR-DWSP Trails and Roads data layer in ArcGIS Online (for internal and public use) which shows locations of trails and roads within Wachusett/Sudbury and includes detailed access and use information in an easy-to-read format within the pop-up. This can enable us to create a system-wide public access application in the future. The new Watershed Protection Act database is up and running in ArcGIS Online with planning staff now using this to enter and track new WsPA filings. A series of tools enables staff to easily enter and update files, a Dashboard allows staff to view WsPA files spatially like never before. Most historic data has been entered to the new database. Some additional progress was made on the Wachusett Hydrology Data project, hopefully momentum carries into FY23.
186	P4	Publish hosted feature layers, tile layers and tile packages on an as-needed basis to support projects. Ensure that all public-facing data has proper metadata added as per the EEA ArcGIS Online Best Practices.	Data developed and shared as required throughout the year.
187	P5	Develop staff training plan for migrating from ArcMap to ArcGIS Pro. Provide staff with a variety of self-paced training options via the Esri Training Catalog.	The second half of FY22 saw many staff training opportunities including a series of lunch and learn trainings to help staff transition to utilizing ArcGIS Online as a data source (instead of network drives) and a month-long series of training on using ArcGIS Pro. Pro training was moderately well-attended and we are considering additional training in FY23.
188	P6	Train staff in GIS on an as-needed basis to provide them with knowledge needed to complete basic GIS-related tasks.	See previous comments.
189	P7	Assist staff with GIS project requests by providing maps, data analysis, data exports and data collection.	Requests for maps or analysis are met as needed and products delivered in a timely manner.
190	P8	Maintain and update the GIS database on the shared G Drive as needed; ensure all data is current and available to staff and has updated FGDC-compliant metadata. If new data is added to the G Drive, ensure that a layer file is created and data is added into the Data Viewer.	A major shift took place this year to move GIS data from network drives into the cloud - either ArcGIS Online or Teams/SharePoint. This migration was tackled by all GIS staff and went smoothly. A series of trainings were offered to staff over the winter to assist with this transition. So far it seems well-received.
191	P9	Use GPS equipment to capture and maintain data for all staff. Coordinate use of GPS equipment and download and process all GPS data.	Provided on an as-needed basis.
192	P10	Create parcel maps for Land Acquisition Coordinator meetings with landowners and MWRA board. Create and maintain one Story Map per FY for Land Acquisition Panel meetings, with one section per potential property. Should be provided to LAP meeting attendees prior to meeting.	The LAP StoryMap continues to be a success.
193	P11	Complete GIS-related special projects	Special projects completed as needed throughout the year.
194	P11.3	Keep current in new and emerging GIS technologies by attending webinars, taking self-paced trainings and attending conferences (where possible).	Getting staff to conferences for continued education and training is key. In-state training and conferences are limited and staff need support to be able to attend other out of state conferences. This is not an issue at the DWSP level, but higher up in the DCR approval chain. The DWSP GIS program can not improve or progress and keep up with new technologies if we can not attend conferences.
195	P12	Operate administrative offices, including answering phones, greeting visitors, etc.	JAH is open to the public 5 days a week. Staff are covering the front office 5 days a week, 8am-4pm. Vacant OSS I has been posted. Hope to conduct interviews and select candidate in early FY23.
196	P13	Provide payroll assistance and personnel services for all Section employees.	Services were provided as needed throughout the year.

	Task No.	Description	Final Report Comments
197	P14	Provide contract administration, financial management, record-keeping, purchasing of goods and services, and other financial support services.	A total of 255 encumbrances were processed and 817+ invoices were paid in FY22 for the Wachusett/Sudbury Section. A total of 20 encumbrances were processed and 19+ invoices were paid in FY22 for the NR Section.
198	P15	Coordinate with EEA IT to provide local MIS support for the Section. Update IT Plan as required addressing technology needs for the coming year.	
199	P16	Administer Logging Permit program, including mailings, bid openings, financial management, database management, permit and key issuance, etc.	Services provided by RD, DRD and foresters. This will be a task of the new OSS I for the upcoming year.
200	P17	Plan and implement vehicle and equipment purchases and leases.	Completed as required; due to chain issues, vehicles ordered in 2021 were not available for delivery by the end of FY22
201	P18	Inspect, provide regular maintenance, and repair vehicles, boats and other motorized equipment, utilizing Fleet Wave system. Maintain up-to-date records of all vehicles and equipment in Fleet Wave system.	Garage staff completed 229 work request in FY22.
202	P19	Complete watershed-wide vulnerability assessment to identify potential impacts of climate change on the water supply	Following guidance of agency Climate Change personnel.















# Quabbin/Ware FY 22 final Report



Update on all tasks in the Quabbin/Ware workplan for July 1, 2021 to June 30, 2022.

Task #	Task Description	Percent Complete	Final Report Comments
<b>A. Land Acquisition</b>			
1	Acquire land. Coordinate due diligence and other tasks/services from DCR and private contractors to complete survey, appraisal, title, engineering, and environmental assessments for proposed acquisitions. Negotiate WPR language, purchase prices, and conditions of sale with sellers of property.	●	Four projects went to record this fiscal year, two in Quabbin and two in Ware. These projects included an 157-acre WPR in Wendell (Afferica), a 40-acre WPR donation in Barre (Mt. Grace/Gionet), an 8.7-acre fee donation in Hubbardston (Shelter Island), and 12.4-acre WPR in Petersham (Finneran). Twelve projects are currently underway at various stages of due diligence including ten projects in the Quabbin totaling 482 acres and three projects in the Ware River totaling 149 acres.
2	Develop individual parcel presentation materials and meet with MWRA Board for approval.	●	One Quabbin project was approved by the MWRA Board this fiscal year on February 16: a 67-acre fee acquisition in Petersham and Barre.
3	Communicate with and convene LAP meetings to review parcels and prioritize land purchases.	●	Three LAP meetings were held this year, two virtually (1/21/22 and 4/22/22) and one by email (3/17/2022). A total of six Quabbin projects (four fee and two WPR) were approved and three Ware projects (two fee and one WPR) were approved.
4	Use the LAP Prioritization Model to identify priority parcels in the watersheds.	●	Work to identify priority parcels is ongoing.
5	Continue to solicit and work with landowners in donating conservation interests in land and assist in advising landowners on the tax incentives available when donating conservation interests.	●	Two Ware River donation projects went to record: 40-acre WPR in Barre (Mt. Grace/Gionet) and 8.7-acre fee donation in Hubbardston (Shelter Island). Work continues on the three previously proposed donations, two in Quabbin and one in Ware River.
6	Establish regularly scheduled land/legal meetings to address attorney assignments and project logistics.	●	Meetings with legal are ongoing.
<b>B. Watershed Preservation Restrictions</b>			
1	Monitor WPRs on a regular basis, following monitoring procedures	●	WPR Coordinator and Regional Monitors completed 52 WPR monitoring visits, including 17 Forest Legacy visits and 4 high-priority visits. WPR Coordinator assisted Regional Monitors with training, monitoring visits, and report writing. WPR Coordinator reviewed all monitoring reports completed by Regional Monitors. WPR Coordinator piloted Aerial Monitoring software called Lens, and completed 5 Aerial Monitoring reports using the software.
2	Complete baseline documentation reports for new WPRs prior to acquisition or within a reasonable time after acquisition, following EOEEA specifications. Baselines will be done in-house or through appropriate contracts.	●	2 Baseline Reports completed this FY. One Baseline Report in progress.
3	Meet with Restriction Stewardship Working Group and confer with legal to respond to enforcement issues and requests to exercise reserved rights.	●	The Restriction Working Group met 4 times in FY22 to discuss enforcement issues and requests to exercise reserved rights. The NR Director and WPR Coordinator also conferred on minor WPR violations and Reserved Rights requests as needed.
4	Track changes in landownership for WPRs.	●	WPR Coordinator and Regional Monitors completed landownership checks for FY22.
5	Implement WPR records procedure with DCR records manager.	●	Ongoing
6	Explore additional ways to reach out to landowners through the use of social media and web-based content.	●	The WPR webpage was completed and published in FY22. The WPR Coordinator explored options for distributing an E-newsletter to WPR landowners.
<b>C. Land Management</b>			
1	Implement the 2017 system-wide comprehensive Land Management Plan following the 10-year cycle.	●	All elements of the Land Management Plan were followed this FY.
2	Prepare forest harvest proposals for next fiscal year including data on proposed harvest areas, characteristics of stands, soils, cultural resources, wetlands, wildlife, unique features, and priority habitats. Proposals shall also include information on lot layout, landings, stream crossings, wetland crossings, and stonewall crossings..	●	Completed and submitted for review 15 proposals at Quabbin and 3 at Ware River. GIS data updated for inclusion in basemaps and online story maps for public review and comment. 7 of the Quabbin lots were re-submittals of proposals where approvals had expired (>3 years old), mainly due to focus shift in the past few years to salvage operations. 2 proposals are for oak-pitch pine barrens habitat restoration, and 1 is for a Young Forest Focus Area patch.
3	Plan and conduct an internal review of proposed logging operations for the coming year, including assessments of silviculture, water quality, wildlife, and other potential impacts/benefits Review lots to ensure consistency with aspects of the CLMP, including wildlife, forestry objectives, and environmental quality.	●	Internal reviews completed as planned. Several Quabbin proposals were re-submittals from prior years. New DCR archaeologist reviewed all forestry proposals and submitted comments/recommendations; requested updates were applied after correspondence and additional information submitted. NR completed the internal review of wildlife resources and vernal pool verification surveys for the FY23 DWSP Quabbin and Ware River watershed proposed forestry lots. Staff made use of the Arrow GPS unit to start recording more accurate pool locations and perimeter of pools.

Task #	Task Description	Percent Complete	Final Report Comments
4	Present annual forest harvest proposals at public meetings. Publish Online Public Review document/story map. Accept public comment and respond as needed.	●	Public story maps were prepared, posted to the DWSP website, and presented to QWAC and WRWAC in June. Letters to Select boards were sent. No public comments received as of the end of Q4.
5	Plan, lay out, mark products for removal, prepare maps and permits, establish photo monitoring points, file Forest Cutting Plans, seek bids, award permits, and properly advertise and post forest management operations consistent with the Forest Cutting Practices regulations, the LMP, and approved harvest proposals.	●	Prepared and sold 16 timber harvests and started preparation of 3 harvests to be sold in FY23, including all associated tasks (planned, laid out, marked products for removal, prepared maps and permits, established photo monitoring points, filed Forest Cutting Plans, sought bids and awarded permits), consistent with the Forest Cutting Practices regulations, the LMP, and approved harvest proposals. Completed transition of the Timber database to new server. Began training of Leah Mustakangas (OSS II) on timber sale administration.
6	Provide supervision and oversight of all forest harvesting operations on DWSP property from sale until final service forester sign-off and bond return. Assure compliance with applicable DCR and NHESP regulations and restrictions, approved BMPs, and all Permit conditions. Maintain adequate site visit records. Monitor post-harvest and collect photo point images consistent with internal policy.	●	Provided supervision and oversight of 14 forest harvesting operations on DWSP property from sale until final service forester sign-off and bond return. Assured compliance with applicable DCR and NHESP regulations and restrictions, approved BMPs, and all Permit conditions. Maintained site visit records. Monitored post-harvest and collected photo point images consistent with internal policy.
7	Monitor BMP effectiveness at active or completed stream crossings utilizing customized assessment protocol.	●	This effort has stalled. However, EQ short term stream monitoring has provided enough assurance of the effectiveness of BMP application on timber harvesting projects at all DWSP watersheds.
8	Continue to implement long-term paired watershed monitoring to assess impact of DWSP forest management on tributary water quality.	●	EQ met all sampling objectives this FY including monthly grab sampling and quarterly seasonal storm-event sampling trips. Four storm events were sampled this fiscal year, encompassing a seasonal range and characterizing numerous hydrological conditions and corresponding responses in water chemistry. Precipitation and streamflow monitoring equipment continues to be routinely downloaded and maintained for long-term use. ISCO autosamplers are routinely rinsed and maintained following event-based sampling. YSI field probes for water quality parameters are calibrated on a monthly basis and probes are maintained/replaced on a routine schedule. Data (precipitation, streamflow, field parameters, etc) continue to be downloaded and processed on a routine basis. A standard operating procedure (SOP) was developed to detail project study design and methods and has served as a platform for staff training for implementing project sampling. Numerous analyses and summary reporting sections have been completed for the calibration period reporting. Calibration report is on track for a Q1 FY23 completed draft.
9	Conduct periodical regeneration and invasive species surveys to monitor forest health and development resulting from silvicultural activities or other natural disturbances and processes.	●	Conducted regeneration and invasive species surveys of harvests completed in 2006 to monitor forest health and development resulting from silvicultural activities or other natural disturbances and processes.
10	Conduct periodic reviews and monitoring of land management activities to assure compliance and consistency with land management plans.	●	Work on CFI analysis involved development of a comprehensive database and addition of all DWSP CFI data. Database work and documentation ongoing, and will continue as needed in FY23 to supplement the LMP 5-year review.
11	Collect data and maintain GIS datalayers related to forest structure, composition, regeneration, roads, boundary information, stone walls, wetlands, streams, and other data to guide the land management program. Maintain GIS data documenting the location, extent, and intensity of all silvicultural operations.	●	Collected data and maintained GIS datalayers related to forest structure, composition, regeneration, roads, boundaries, stone walls, wetlands, streams, and other data to guide the land management program. Maintained GIS data documenting the location, extent, and intensity of all silvicultural operations.
12	Complete assessments on all new land acquisitions, including descriptions of fire/access roads, bridges, restoration needs, and forest conditions. Integrate these lands into land management, public access, and other watershed management programs.	●	No new fee acquisitions this fiscal year.
13	Locate, mark, and maintain property boundaries periodically or as needed.	●	Located, marked, and maintained 26,807 feet (5 miles) of property boundaries.
14	Develop scope of work and manage contracted property boundary survey work.	●	Six surveys were completed this FY to identify DCR boundaries and any encroachment issues.
15	Document and pursue resolution of all property boundary encroachments.	●	No work this year on encroachments. Task reassigned in FY 23.
16	Identify, plan, and oversee non-forest or other unique habitat restoration, field reclamation, prescribed fire implementation and maintenance work.	●	Habitat Restoration: Funding from the EEA Stewardship Program was used to mulch/mow 30-acres at Barre Heath for fuel reduction and fire break construction. Additionally, invasive species control occurred at sites in the Ware River- Riis Hill, Twin Hill and Barre Heath. All non-administrative fields were mowed. Internal staff work included treatments at Quabbin cemetery, Blue Meadow Road, and Twin Hill. Monitoring included photo points taken at Barre Heath.
17	Maintain the non-silvicultural lands described in the land management plan (e.g., viewsheds, gravel pits).	●	Whitney pit expansion taking place, including prep work to remove trees, stumps and top soil. Barre heath pit access road in place. Seasonal restrictions stopped work. Will resume in fall of 22'. Various viewsheds being maintained as necessary.












Task #	Task Description	Percent Complete	Final Report Comments
18	Identify, prioritize, and implement terrestrial invasive plant (TIP) control projects in line with the Terrestrial Invasive Plant Strategy. Respond as needed to newly discovered and controllable TIP populations.		TIP Management Plan progress began in earnest early in FY22 but was put on hold by Q4 to focus on other duties and begin LMP 5-year review. At Quabbin this year invasive plant control took place at the forested entrance to Quabbin Park Cemetery (bittersweet), the grassland on Blue Meadow Road (mostly bittersweet), the rare plant habitat restoration project below Goodnough Dike (bittersweet, porcelain-berry, others), and various roads in Pelham, Shutesbury, and New Salem (Japanese stiltgrass). At Ware River this year most of the invasive control work was contracted and was targeted primarily at buckthorn at Barre Heath and in the open fields on Riis Hill and Twin Hill.
19	Collect data and maintain datasets, GIS datalayers, and related maps and reports of rare and listed plants and communities.		Rare species were monitored either by DWSP staff, with coordination with NHESP botanists, and or with Native Plant Trust volunteer monitors.
20	If available, use a UAS (unmanned aerial system) to document forest conditions, map openings, identify invasive plant populations, internal road conditions, or other activities.		Contract with DOT was used to implement UAS to monitor the gull roost at Quabbin. We have not received approval from EEA to expand the UAS flights to other projects for forestry.
21	Complete 2020 Continuous Forest Inventory Data entry and analysis.		Data collection and data entry completed, including QA/QC plot revisits. Database design and analysis ongoing. Coordination with FEMC on data preparation and sharing. Dataset documentation nearly completed.
22	Update and Implement Quabbin Park Operation and Maintenance Plan		Update on the Quabbin Park Operation and Maintenance Plan was deferred to FY 23. A variety of work was conducted in the Park under the current plan. Methods implemented for invasives by F&P III and staff are producing results on dam and dike and other areas and will be updated in plan. In addition, DCR-Quabbin staff met with DCR-Dam safety staff and private consultants this FY to develop a new dam/dike maintenance plan. Plan will be completed in FY 23.
23	Implement Quabbin and Ware River Road Management Plan		Road Management Plan still in draft form in anticipation of new staff being hired and contributing to the final version. Road working group twice this FY, including a meeting where road work requests were reviewed and projects prioritized. Routine road maintenance continued throughout the year in addition to specific road improvement projects on Shearer road (Prescott) and Gate 49.
24	Begin watershed-wide climate resiliency assessments		Regional managers are participating in various DCR' Office of Climate Resilience trainings.
<b>D. Wildlife Management</b>			
1	Continue the active harassment of birds within the Bird Harassment Zone at Quabbin Reservoir, using human presence, boats, pyrotechnics, passive scare devices, and other techniques. Continue to identify and test new harassment techniques.		The 2021-2022 Quabbin Bird Harassment program operated for 27 consecutive weeks. The program began on October 4, 2021, and continued through April 8, 2022. The 2021-2022 Program began with 8 weeks of shoreline observations and was followed by 19 weeks of active harassment with boats only being used once.
2	Observe and document the nocturnal gull roost on Quabbin Reservoir.		UAS flights were conducted at Quabbin weekly from October 2021 to mid-April 2022. The UAS program has been very successful and a very useful tool for the Bird Harassment Program. The weekly roost counts varied weekly with the highest count of 1568 gulls on March 8, 2022.
3	Control Canada geese populations on Quabbin Reservoir (focus in the Bird Harassment Zone) by treating eggs during nesting season to prevent hatching.		The Canada goose control zone was surveyed for active nests; there was 1 nest located and 6 eggs were treated to prevent hatching. Coyote decoys were placed at the hanger lawn and Winsor Dam fields. The barrier fencing was installed on the hanger ramp and fencing maintained along the water's edge to keep geese from accessing the administration lawns. Barrier fencing remains at each end of the Winsor Dam to prevent geese from walking up the slope and accessing the upper Administration lawns.
4	Identify places in MA where human derived food is available and work to prevent feeding through educational signage, interaction and enforcement.		Regional gulls surveys began in the fall of 2021 and continued into April 2022 with no new feeding areas discovered.
5	Remove beaver and muskrat in the Aquatic Wildlife Pathogen Control Zone at Quabbin. Address beaver concerns outside the control zone.		Seven beaver were removed from the Aquatic Wildlife Pathogen Control Zone this FY. An additional 4 beaver were removed outside the zone. Additional site checks and culvert protection maintenance were done on DWSP property as needed. One out of 6 fecal samples collected at Quabbin was positive for Giardia. The positive sample contained very low levels of Giardia.
6	Respond to problems of burrowing animals on dams and dikes; report problems and take appropriate action.		Two groundhog holes were treated this FY.
7	Research and manage for common loons on DWSP waterbodies; provide nesting platforms, capture and sample birds for contaminants.		Research and management for Common Loons on the DWSP waterbodies continued and the annual report for the 2021 season was completed. Collection of lead tackle and monofilament line from the Quabbin, Wachusett and Ware River watersheds totalled 6 lb 9 oz. in 2021.

Task #	Task Description	Percent Complete	Final Report Comments
8	Continue long-term wildlife resource monitoring program.	●	Long-term wildlife resource monitoring that includes vegetation surveys, owl monitoring, breeding bird surveys, bat surveys and small mammal surveys were conducted on the habitat restoration areas located in the Quabbin and Ware River Watersheds. The annual Breeding Bird Surveys were completed at the Prescott and Petersham established routes in June. In addition bird surveys were completed at the habitat restoration areas on Quabbin and Ware River watersheds and grassland fields at Ware River. The Prescott beaver survey took place in November and the 2021 Prescott Beaver Survey Report was completed.
9	Work with DFW to survey and document breeding bald eagles around Quabbin Reservoir.	●	A Quabbin Eagle Fields survey app was created by the Watershed GIS Coordinator and the Quabbin Bald Eagle surveys began with five nesting pairs observed.
10	Administer the applications, permits, and orientations for the annual Quabbin Controlled Deer Hunt; analyze results of hunt.	●	Results of the 2021 deer hunt were finalized and publish in the Annual Deer report (attached). Pellet Surveys were completed in Quabbin Park, Hardwick, and New Salem this quarter. A total of 62 total transects averaging 1 mile were walked and 2,743 plot sampled. Results are published in the Annual Deer Report.
11	Coordinate with the Massachusetts Natural Heritage and Endangered Species Program concerning rare species occurrences and protection.	●	DCR continued a collaboration with NHESP to document rare species for their occurrences and protection through snake board surveys, acoustic bat recordings, breeding bird surveys, Whip-poor-will surveys, small mammal sampling as well as loon and eagle nest monitoring.
12	Finalize, get approval, and implement the deer management plan for Quabbin Park	●	Still pending Commissioner approval. Pellet Surveys were done in this section again in 2022 and this area is still well over the 20 deer /mi2 threshold.
<b>E. Public Access Management</b>			
1	Proactively patrol watershed lands to ensure compliance with DCR regulations and policies. Tally visitor contacts and produce quarterly and annual summary reports. Conduct trend analyses on data collected (e.g., rule violations, access permits, encounters).	●	Total visitor contacts for FY22 is 38,269 and 1,086 violations. Quabbin totals for FY22 include 26,739 visitor contacts and 230 violations. Ware River Watershed totals for FY22 include 11,530 visitor contacts and 856 violations. Watershed Rangers patrol 7 days a week. Patrol routes are varied based on needs and observations. Patrols consist of foot, vehicle, boat, bike, ATV, ski, and snowshoe. Trail cameras continue to be used in both the WRW and Quabbin, especially in areas of high concern and where repeat violation are observed. Trail cameras were set up and changed out at 16 different locations during the year to monitor varying activities: drug use (paraphernalia left behind on two occasions), illegal OHV use, brush cutting, surveillance of MWRA gates, problem dumping locations, motor vehicle activity on the MCRT. Review of photos allowed us to see the frequency that these areas are visited, by who, and what activities are taking place aside from just the ones we are looking for.
2	Continue to cooperate with state, environmental, federal, and local police for help with enforcement when required.	●	Rangers continue to work with MSP (C7 and Marine 12) and MEP weekly. ATVs utilized on watershed roads and MCRT to increase Ranger visibility. Some illegal trails visited for documentation (limited due to accessibility issues) and submitted as required to MA DEP.
3	Use Agency social media accounts for advertisement of interpretive programs, including general info or emergency info (e.g., closings).	●	IS staff has had some small success getting alerts posted to agency social media. A larger social media presence has the potential to better educate the public on watershed management.
4	Continue to implement Quabbin Public Access Management Plan. Enforce rules and regulations of 313 CMR 11.09 through the use of citations. Issue written warnings and/or non-criminal citations for repeat offenders and serious violations. Complete semi-annual Compliance and Enforcement Reporting to MassDEP.	●	Ranger staff continued to implement the Quabbin Public Access Management Plan in FY22. Total visitor contacts for FY22 is 38,269 and 1,086 violations. Quabbin totals for FY22 include 26,739 visitor contacts and 230 violations. Ware River Watershed totals for FY22 include 11,530 visitor contacts and 856 violations. Reports are submitted weekly, monthly, and quarterly. One kiosk repaired after winter vandalism. New posters printed and hung in three kiosks. 6 new signs, specific to frequent violations for the area, posted around Long Pond. Five similar signs posted at Brigham Pond, Lackey Lane, and Covered Bridge Road, Rice Road, and Brigham Rd. 15 "No Motor Vehicles" signs posted at MCRT trail entrances and various trailheads around the watershed. Great strides this year in both signage production and installation with a current focus replacing and improving signage in the Quabbin Park, and at "hot spots" on DWSP lands in the Ware River Watershed.
5	Conduct night operations, as needed (e.g., night access permits, ATV use monitoring, illegal camping)	●	Night operations completed July and August '21.
6	Operate the boat fishing program in designated portions of Quabbin Reservoir in a manner that minimizes threats to water quality and accommodates visitors with accessibility needs.	●	BLAs went to credit transactions only in June 2022. Credit card only is working out good with only a few glitches. Staff are doing a good job getting used to the new system as well as the public. Less and less pay vouchers being submitted. Annual Quabbin Fishing Report was finalized in December 2021 and presented to QWAC during their monthly meeting. Over the past two years, IS Staff has successfully migrated the fishing guide to be a primarily on line resource. We still produce a one page map with an overview of the program and fees.

















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7	Implement Quabbin Boat Seal Program	●	Implementation of new tools coupled with collaborative engagement across DCR-Quabbin teams has strengthened and enhanced the Quabbin Boat Seal (QBS) Program throughout FY22. EQ continued to work with GIS partners to streamline data management workflows related to QBS record collection and record-keeping, as well as develop new tools for data visualization. EQ has sought feedback and suggestions from BLA and Ranger staff who implement the QBS program in order to better adapt workflows. EQ coordinated with DCR-Quabbin teams to set up and implement private boat decontamination events. Automated processes for importing and checking QBS data allowed for quick summarization for annual reporting. The development of database records also allowed for analyses of boat use and quick responses for data requests from VC and Ranger staff.
8	Provide ongoing support and consultation to DCR's Division of Parks regarding Comet Pond beach. Maintain boat ramp launch at Long Pond and boat ramp launch and parking lot at Comet Pond.	●	WM staff continue to assist/support DCR Parks and F&W access board.
9	Coordinate and/or support special programs and events, including Memorial Day services, public meetings, paraplegic hunts, and Tuesday Tea events.	●	Quabbin IS staff will continue to support special events with the Friends of Quabbin and other associated groups.
10	Continue to implement universal accessibility compliance throughout the Quabbin/Ware Region.	●	Quabbin IS will ascertain what projects may be feasible in the next few years.
11	Continue to control and monitor research and other public access through an internal review process and permit system. Maintain electronic databases for permit issuances, access notification, and any problems.	●	Fourteen Research permits were granted this FY for work in the Quabbin/Ware River watersheds. Permits expire annually. Researchers were required to submit an annual report before being eligible to renew a research permit. The annual report was compiled and distributed to staff.
12	Manage public access permits for large groups, short-term vehicles, etc.	●	The new on line permitting process provides a clear way for individuals and groups to apply for permits. It also makes it easier for staff to manage.
13	Finalize Ware River Public Access Management Plan Update	●	Draft WRPAMP 2022 submitted as required to MA DEP.
14	Implement social media trial program	●	No work on this task this FY.
<b>F. Watershed Security</b>			
1	Continue regular ranger patrols to provide watershed security. Perform regular security checks at key access points and MWRA facilities. Use daily logbooks to record all encounters and violations. Produce periodic reports.	●	In FY 22, Watershed Rangers documented 230 violations in the Quabbin Reservoir Watershed and 856 violations in the Ware River Watershed. Ranger reports are submitted weekly, monthly, and quarterly.
2	maintain gates, barways, bollards and signage throughout the watersheds. Install barriers (such as guardrails or fences) as needed to protect properties and control public access.	●	Gates and bar ways are checked regularly by multiple staff/sections and any concerns/damage are addressed quickly. Locks maintained on all gates and bar ways.
3	Coordinate security monitoring and related activities at high vulnerability locations with MWRA.	●	Communication ongoing this FY with the State Police C-7 Barracks and also the Marine Unit. Several meetings held with the Marine Unit local commander about rental boats going beyond the buoy line and fishing in restricted areas. Regional Director sent out several fishing ban letters to individuals with the most egregious violators.
4	Work with local, state and federal responders to ensure current agency emergency contact information.	●	Emergency contact tables and protocol were updated at Management Level within DCR-DWSP and MWRA. Tables and procedures were distributed to MA SP C7 and MA SP Marine Unit in Q3. The relocation of secure video screens for watershed wide surveillance camera live footage has been approved by MWRA security within Quabbin Admin building. All DWSP and LTS staff are given Emergency Response SOPs (See Something Say Something). All DWSP staff submit Emergency contact information to Quabbin Managers and special operation program supervisors (BHP and Snow/Ice Program) in FY22
<b>G. Infrastructure</b>			
1	Conduct monthly inspections and issue findings on Winsor Dam and spillway and Goodnough Dike. Coordinate inspections with MWRA and consultants. Plan for or conduct dam repair work as called for in dam inspection reports.	●	The required monthly inspections of Winsor Dam, Quabbin Spillway and Goodnough Dike continue with inspection findings distributed to selected DCR and MWRA staff. Piezometers continue to be read on a monthly basis. Coordination with Watershed Maintenance for maintenance issues, as needed, continues. On May 25th, personnel from the DCR Office of Dam Safety (ODS) and GEI (Consulting Engineers) met to review the condition of upstream riprapped embankments for Winsor and Goodnough with special concern for invasive vines growing within the riprap. ODS determined that GEI will perform a study to outline options for controlling vegetation on the upstream side of these dams. On 8/23, a kick-off meeting for this study was held. Coordinated with Watershed Maintenance to develop a memo for possible repair of deformation observed on the left side of the downstream slope of Winsor Dam. Following discussions with manufacturer, developed memo for MWRA recommending against spillway modifications with an inflatable dam.



Task #	Task Description	Percent Complete	Final Report Comments
2	Conduct periodic inspections and issue findings on DCR's bridges and small dams in the Quabbin/Ware Region. Assure compliance with all dam safety requirements for small dams on DWSP lands, including the review of new or updated Emergency Action Plans.		Periodic reviews of Asnacomet Pond Dam, Demond Pond Dam and Peppers Mill Pond Dam are ongoing. A Phase I Inspection/Evaluation of Demond Pond Dam was completed in August 2021. The final report was submitted to DCR-ODS in January 2022. At Peppers Mill Pond Dam, coordination continues with DCR Watershed Maintenance to maintain the stoplog and downstream channel free of debris and with Natural Resources monitor for beaver issues. Quarterly Follow-Up Compliance inspections continue, as required by ODS at Brigham Pond Dam. The most recent inspection was conducted on 6/23/2022. The completed report was forwarded to ODS in August 2022. The next Follow-Up Compliance inspection is due in September 2022. Brigham dam continues to be deficient, and DCR Office of Dam Safety has DWSP for a plan.
3	Implement basic maintenance activities at the Dam, Dike, and spillway as needed		Maintenance activities vary with the season. New TIS controls (eg vinegar solution on bittersweet) were actively researched for implementation.
4	Provide oversight and technical support for engineering, construction, and renovation work in the Quabbin/Ware Region.		Work was completed on the Quabbin Park Cemetery office this FY. A structural evaluation report on the Prison Camp Structures was completed, including recommendations and associated costs. The hangar door broke this FY. It was assessed by structural engineers and a final report was delivered. Coordination with HKT to develop plans for the New Salem field office continues. Building and site plans are being refined as this work continues. Work continued on the maintenance garage project with regular meetings and decisions between RGB, MWRA, and DCR. Sixty-percent design specs were submitted. DCR continues to work with EEA IT to develop IT requirements for the building.
5	Maintain records regarding reservoir and facility construction, as well as maintenance and repair operations. Provide surveying and drafting services, maintain records, and respond to in-house and other requests for information related to land ownership, property lines, buildings, and construction projects.		CE staff maintains existing facility records that aid ongoing construction, maintenance and repair operations. The documents aid the day-to-day operations for items like meteorological data, reservoir yield, boundary records, infrastructure (dams/bridges/roads). Further confirmation and field work is completed on an as-needed basis - see sub rows for more information. The efforts to manage and document the property boundaries are ongoing. Part of this effort is to identify, clarify and delineate boundaries in the field and with the registry of deeds, if needed. In FY22, with the help of Stewardship Grant monies, the DWSP was able to secure a surveying firm to closely examine 6 unique projects in the Ware River Watershed. Multiple boundary markers were set by the firm and suspected encroachments were documented and recorded with the registry of deeds. For more details, please see the FY22 Survey Summary of Work Survey Memo, prepared by CE Staff.
6	Conduct building maintenance activities, including , cleaning, minor repairs, and other routine maintenance.		Accomplishments with in this section are limited due to staffing short fall. Maintaining minimal services with fill in staff . A new steam trap was installed on the boilers for the admin building to capture the excess condensate overflow. This will greatly reduce the amount of water that the system uses on a daily basis. We wont know the full savings until the wood boiler is utilized this coming heating season. B-G Mechanical has identified a steam leak within the wall of the gull bathroom and has made recommendations to disconnect the steam line to this bathroom and both wall bathrooms and install electric heaters. doing this will greatly reduce the fuel oil used in the boilers as well as making the bathrooms a more comfortable temperature. A request for quotes from the DCR electrician and plumber have been requested so this can be facilitated. Zac meeting with Brad to discuss this project 9-9-22
7	Conduct periodic inspections of drinking water sources and septic systems at the various Regional office buildings. Assure compliance with applicable state and federal regulations.		QAB PWS remains in compliance with MassDEP PWS sampling requirements. Routine septic services are conducted by the vendor on contract, typically Wind River Environmental.
8	Conduct periodic inspections, maintenance, or oversight of heating systems, fuel pump operations, and fuel deliveries.		All tanks have been topped off for the end of the season. Tanks remain full for the beginning of the 22-23 heating season
9	Develop specifications, bid packages and contracts for facility and infrastructure projects identified in the Major Projects List for FY22		Septic Service, Emergency Generator Service, Backflow Testing, Sprinkler Testing, Overhead Door Work, Admin Water Tank Work, Stockroom Well Testing and Road Material Purchases completed this FY
10	Conduct maintenance and management activities in Quabbin Park, including roads, roadsides, parking areas, drainage structures, fields, vistas, snowplowing, and other management activities.		Staff are doing an excellent job staying up to date on all maintenance activities throughout QP.
11	Continue to conduct routine maintenance and burial activities in the Quabbin Park cemetery.		With guidance from Paul Lapierre and Steve Mansfield we are effectively completing each burial safely. The maintenance is a continual year round project. This includes thinning out and trimming trees and shrubs near headstones that may cause a visual obstruction.
12	Conduct Quabbin Park Cemetery business and record keeping.		Thirteen interments were conducted this FY. In addition, seven cemetery lots were assigned or sold this FY.

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13	Continue to conduct road maintenance activities on DWSP lands.	●	A new grader was purchased and put into service in time for grading of gate 8 road prior to fishing season. Relatively easy winter storm wise, everything was kept open. Carter rd. was redone/upgraded. Shearer rd. section redone with drainage improvements etc. Work is ongoing through out Prescott peninsula for upcoming controlled hunt. Focus this year at the Ware River was to improve the dirt road infrastructure. With the road grader approx 4.5 miles of roads have been done, along with several more miles of road side brush cutting. These projects are on going.
14	Continue to collect data on road conditions and culvert locations.	●	<p>There are ongoing efforts to update the Road Infrastructure Management Database and the associated ArcGIS components - such as layers, maps, dashboards etc. These tools are use to collect and analyze information - making it widely available for all users to review and use for planning purposes. With around 1,100 culverts, drainage pipes, and bridges identified, it is a massive effort to update this database. With that said, a segmented approach - initially focusing on critical structures and roads that receive a lot of use or have other means of significant importance - was implemented and approximately 28% (about 300) culverts and about 80% (19) bridge have been thoroughly inspected and updated in the database.</p> <p>Several inspections have resulted in poor or critical conditions. Some even severe enough to be repaired by WM Staff. Others are noted and maintained to the best of our ability, until a plan to rehabilitate the structure is in place. An example of this is the 3 bridges in the Macedonia Area of Shutesbury.</p> <p>Another large project underway is the Gate 40 Culvert Upgrade. This is a significant project, in terms of financial allocation, as well as the implications to access the easterly side of the Quabbin Watershed. A Blue Book contract was generated for this work to be completed by an outside general contractor (awarded to R. Bates &amp; Sons). The engineer of record is Fuss &amp; O'Neill. FY22 closed out by procuring materials and reviewing submittals so the construction for the culvert upgrade can start early in FY23.</p>
15	Assess gravel pits and gravel resources on DWSP lands in the Quabbin/Ware Region. Annually review and monitor gravel extraction and site closure and Best Management Practices (BMPs).	●	Continued program activities including regular monitoring of active sites, test pits and resource characterization, and permitting of new sites. Management plan for Barre location completed. Issued letters to towns of New Salem and Petersham regarding annual volume estimates for this FY.
<b>H. Watershed Protection Act</b>			
1	Implement the Watershed Protection Act regulations in 14 Quabbin Reservoir and Ware River Watershed towns. Review and process all WsPA applications, and track the status of applications and associated projects using an Access database. Inspect sites throughout the duration of any activity to ensure compliance. Investigate and resolve violations of WsPA regulations.	●	Received and processed 35 cases in the Ware River Watershed and 14 in the Quabbin Watershed. Investigated several violations in the Ware River and Quabbin Watersheds. Conducted multiple site inspections in the Ware and Quabbin Watersheds. Field numerous calls from town boards, consultants, and home owners
2	Continue to review or evaluate public notices, local board agendas and minutes, and information provided by local sources for additional jurisdictional activities or enforcement actions.	●	Reviewed Planning Board and Conservation Commission Board agendas and minutes for all the towns in both watersheds. Contacted several towns regarding projects within WsPA jurisdiction.
3	Convene WsPA Working Group meetings.	●	Two full WsPAWG meeting were held. Ongoing communication amongst planners, GIS staff, Regional Directors, and Director facilitate implementation of the regulations throughout the year.
4	Educate and interact with local boards and officials in the watersheds about watershed protection regulations. Educate local officials, realtors, prospective buyers, land development consultants, and homeowners on WsPA regulations and procedures.	●	Fielded calls/emails from town officials, developers, engineering firms, and homeowners and assisted them with the Watershed Protection Act.
5	Provide technical assistance support to local boards through contact, meetings, and/or through regulatory review process.	●	No technical assistance requested from any of the towns; however FY 23 we are planning on providing a brochure to Conservation Commissions regarding waterfront properties in the watersheds.
6	Modernize the current Access database into a web-based platform.	●	Completed inputting historical files in the new database. The database is fully functional, staff training is the next phase.
<b>I. Education and Outreach</b>			
1	Update the Interpretive Services Plan for the Quabbin Watershed.	●	Our current interpretive programming for the Quabbin Reservoir provides a good basis for an update in the near future.
2	Develop an Interpretive Services Plan for the Ware River Watershed	●	The Ware River Watershed area will be our priority in FY 23 to develop a more robust interpretive presence in the area through in person programs as well as developing new signage. The Interpretive Services plan for the WR will also be updated.

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3	Staff and operate the Visitor Center at Quabbin to educate visitors about watershed management and related topics.	●	Approximately 4600 people visited the Quabbin Visitor Center this FY. In addition, staff answered over 630 phone calls and presented 16 in-person programs. A new addition this year was online presentations, and staff hosted 5 Zoom seminars.
4	Continue established programs of public education, including school programs and field trips on DWSP properties. Expand outreach efforts in Quabbin Park. Expand the Quabbin Reservoir watershed curriculum using materials developed by MWRA, MassDEP, EPA, ProjectWild, Project Learning Tree, Project WET, and other appropriate watershed resources. Continue to support watershed school system teachers through in-service workshops and offerings for school groups.	●	This FY, Quabbin IS staff offered a small number of outdoor programs for schools, including Palmer Middle School, Wilbraham and Monson Academy, Templeton elementary and Sanderson Academy. Staff also visited a few schools to offer presentations as well as offered a few remote presentations. During May and June, Quabbin IS offered programs to 15 schools and 750 students.
5	Collaborate with other organizations and watershed communities to reach more diverse audiences. Identify specific groups and their educational needs.	●	Quabbin IS Staff have been successful in connecting with local groups and libraries to provide educational programs about Quabbin and Ware River Watersheds. By developing relationships with these groups, IS staff hopes to strengthen ties with local communities and promote a better understanding of DCR-DWSP mission of watershed protection.
6	Maintain self-guided Quabbin Park interpretive trails focusing on natural resource management and water quality protection.	●	IS staff member Justin Gonsor coordinated with Paul Davis in the Sign Shop and the Watershed Rangers (primarily Ranger Alison Taylor) to place trailhead signs and trail markers to improve that Quabbin Park Trail System. This project was completed this FY. The purpose is to provide a clearly marked trail system to provide casual hikers a safe and clearly marked area. The hope is to be able to maintain the trails throughout the year. To accompany the new trails, Quabbin IS staff was also able to complete the new visitor map.
7	Maintain vital records collection for former Quabbin valley towns, issue official records and conduct genealogical and historical research upon request. Manage audio-visual collection of the Region including photographs, slides, oral history tapes and media coverage of Regional activities and Quabbin-related topics.	●	Work continued throughout this FY to help individuals researching genealogy. In addition, the new Quabbin Park Cemetery GIS portal is online and being used by the public. In addition, more work was done this FY by DCR and MWRA to digitize the Real Estate records and make them available through the Digital Commonwealth.
8	Continue to support and participate in the Envirothon, America's leading natural resource education program for high school students.	●	The 2022 Envirothon was held at Quabbin Reservoir this FY, and it was a tremendous success. IS staff continue to participate on the Envirothon committee to plan future events.
<b>J. Water Quality and Hydrologic Monitoring</b>			
1	Conduct routine and non-routine water quality sampling and analysis.	●	Routine and non-routine water quality sampling and analyses continued, uninterrupted. Samples were collected biweekly from core and EQA sites in QR/WR tributaries.
2	Perform Shaft 8 Intake Zone Inspections prior to MWRA diversions.	●	No diversions in FY22.
3	Monitor plankton in Quabbin Reservoir.	●	Phytoplankton monitoring and reporting was conducted as planned this FY, with assistance of several staff (including Wachusett) following ABII resignation in April 2022.
4	Collect, interpret, and manage data on reservoir elevations, water transfers and releases. Share data with DWSP staff and MWRA.	●	<p>The Stevens meter, positioned in the Winsor Dam Intake Building to collect elevation data, continues to prove itself as an incredibly valuable tool. The real-time data it publishes to an easily accessible web portal was imperative for efficiently performing spill volume calculations. There were two distinct Quabbin Reservoir spill periods during FY22: 7/19/2021 - 8/5/2021 (18 days) and 2/12/2022 - 7/2/2022 (141 days). The total volume spilled over the lower and upper spillways throughout FY22 (excluding 7/1/22 - 7/2/22) was 14,122 MG.</p> <p>Transfer from Quabbin Shaft 12 to Wachusett was active for 260 days during FY22. A total of 49,575 MG was transferred during this annual period.</p> <p>Both the By-Pass and Ross Valve were utilized different periods throughout FY22 to maintain the Winsor Dam Power Station release to the Swift River.</p>
5	Monitor water quality at active harvesting stream crossing sites to measure effectiveness of BMPs.	●	No active sites requiring water quality monitoring in either watershed during FY22. In Ware River watershed, pre-harvest baseline sampling was conducted when sites were accessible on lot WR-19-19-2 and lot WR-22-02-01. Summary reports in Ware River watershed have been completed to date, and none were required in FY22. In Quabbin watershed, post-harvest monitoring was completed at lot S11SQ in February, and a summary report completed. Pre-harvest monitoring was conducted at lot S17NQ.

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6	Continue improvements to database app for compiling of water quality, quantity, and other relevant data for data and trend analyses.		FY22 was a year of significant changes to database workflows due to database migration from Access to SQL and the agency-wide adoption of SharePoint and OneDrive cloud-based platforms. Data records have been successfully migrated and workflows have been adapted to meet the changes in IT. DCR-Quabbin data applications for data import (WIT) and data visualization (WAVE) are now accessible to all EQ staff. A Microsoft Access front-end database has been developed to offer an additional means for staff to have easy access to data records for reporting and analysis. A data management workplan was developed to identify areas of continued focus in development of the database, development of QA/QC procedures, and integration of historical records. The database has provided a platform for collaboration with EQ-Wachusett staff as well as allowing for streamlined data sharing with partner agencies (MA DEP, MA DER, USGS) and academic partners (UMASS).
7	Implement streamflow monitoring at selected sites. Coordinate flow monitoring with annual water quality sampling plan.		Three additional stream gauge monitoring stations were installed this fiscal year. In addition to a new stream gauge at Fever Brook, two Mayfly sensors were installed at core monitoring locations (Gates Brook and West Branch Swift), enhancing our monitoring with real-time stage, temperature, and specific conductance data. Routine data download was carried out on a quarterly basis with additional data download and analysis as needed at long-term forestry site locations. EQ and CE collaborated on aspects of hydrologic monitoring including a CE-led effort to evaluate runoff patterns downslope of Goodnough Dike and survey work to establish annual changes in channel geomorphology at gauge locations. Changes in IT not supporting HOBOWare Pro, a key software for hydrologic monitoring, led to some changes in workflows for processing data.
8	Assist MWRA with the continuous water quality monitoring buoy at Quabbin Reservoir		Assisted as needed to deploy, maintain, and troubleshoot the MWRA buoy throughout FY22.
9	Provide environmental oversight for Regional activities to minimize adverse water quality impacts. Conduct pre-project reviews of all DWSP projects and activities within 100' wetland buffers.		In Quabbin watershed, permitting was completed for Hank's Meadow trail bridges, and SCA completed the installation in July 2022. Permitting for Rocky Run bridge improvements is underway, with construction anticipated for late summer or fall 2022. No projects in Ware River watershed needed permitting work in FY22.
10	Implement ISA with UMass for Research		Assisted in ISA coordination and budget priorities. Continued coordination of Quabbin Total Coliform investigations.
11	Collaborate in multi-year MWRA-UMass Research Studies of Strategies to Minimize Contaminants of Concern in MWRA's Finished Water		Assisted the UMass team as needed on site access.
<b>K. Watershed Monitoring and Assessment</b>			
1	Complete Environmental Quality Assessments in the Quabbin Reservoir and Ware River watersheds according to a prescribed schedule. Present EQAs to RD and DRD.		Reports for the 2021-2022 EQAs (Quabbin Northwest, Quabbin watershed; Coldbrook and Longmeadow, Ware River watershed) were completed and included in the 8/31 DEP submittal.
2	Prioritize recommendations in completed EQAs as necessary and complete short- and long-term remedial actions.		Ongoing recommendations continue. RD/DRD briefed on recommendations following this year's EQAs in Coldbrook & Longmeadow District in Ware River watershed on Quabbin Northwest District in the Quabbin watershed.
3	Conduct routine inspections of the Winsor basin/CVA intake area. Inspect MWRA CVA screen washing when necessary. Report debris and aquatic organisms trapped on screens.		Forty-five CVA weekly inspections were conducted.
4	Coordinate with other agencies to exchange information and review projects in watershed.		MEPA Environmental Monitor reviewed routinely. Followed up on reports of water quality concerns in watersheds.
5	Review and comment on Yearly Operational Plans related to herbicide use. Monitor and inspect no-spray and limited spray zones along rights-of-way.		Completed review and worked with other DWSP staff to submit separate comment letters for 2022 National Grid YOP and 2022 Providence & Worcester YOP.
6	Work with timber harvesters to reduce the risk of introducing invasive species into the watersheds.		Checked equipment for all timber harvests prior to moving equipment onsite, to prevent invasive species from being moved onto DWSP property.
7	Monitor ROW maintenance, repair, or replacement projects on DCR lands for water quality problems.		Short-term access permits were issued and gate access issues were resolved in both watersheds. In Quabbin watershed, attended meeting with National Grid consultant and WsPA staff regarding permits needed for work on DWSP property.
8	Use site inspections, environmental quality assessments, local board meetings, and information from Watershed Rangers to identify and mitigate possible violations of state and federal regulations. Monitor progress and pursue enforcement if needed.		In Quabbin watershed, enforcement activities related to Ricard WPR wetland/WsPA/WPR violations continued, including attending concom meetings and communications with property owner, consultant and various DWSP staff. Mitigation activities approved and site brought back into compliance. Also worked with concom on culvert and bridge work. In Ware River watershed, monitoring continues for WsPA/WPA violations.
<b>L. Aquatic Invasive Species</b>			

Task #	Task Description	Percent Complete	Final Report Comments
1	Implement the AIS monitoring plan and update as necessary.	●	The AIS management summary report documenting AIS activities for Quabbin/Ware Region in 2010-2022 was completed in August 2022, with a Division-wide AIS Management Plan Update underway in FY2023. Monitoring plan was modified to ensure coverage of critical tasks and in anticipation of changes to monitoring focus.
2	Continue program to monitor AIS in the Reservoir.	●	Macrophyte and zooplankton sampling was completed for the 2021 growing season and reported in the CY2021 Water Quality report. Annual surveys of the two regulating ponds and three boat area shorelines were completed in August 2021, in conjunction with MWRA consultants ESS Group. Monthly vertical plankton tows at the core sampling sites 202, 206 and Den Hill and periodic oblique tows at the BLAs confirmed the continued absence of spiny water flea, fish hook water flea, and zebra mussel veligers. Field season work was adjusted to accomplish the most critical tasks following the ABII departure in April 2022. Aquatic vegetation surveys of several high-priority areas of the reservoir for the 2022 growing season are to be completed by September 2022. The MWRA/DCR annual macrophyte survey was coordinated with consultants ESS Group (now a TRC company), scheduled for completion in August 2022.
3	Implement the AIS emergency action plan and update as necessary.	●	Collaboration with Wachusett Aquatic Biologists, including updating of the AIS emergency action plan, will continue after new Aquatic Biology staff are hired.
4	Continue the Quabbin Boat Seal program to minimize the risk of AIS infestation of Quabbin Reservoir.	●	Boat Seal data were routinely imported and checked. The schedule for boat decontaminations was coordinated with other DWSP staff and carwash vendor and publicized, and appointment lists were provided to the carwash vendor in advance of each decontamination date. EQ, VC, Ranger, and WM-BLA staff coordinated as needed to continue implementing this program. There were 92 boats sealed through CWQ in 2021 over 5 dates in November. QAQC is complete for 2021 CWQ data. Final CWQ boat seal information was provided for the 2021 Quabbin Fishing Report.
5	Work in conjunction with MWRA contractors to survey areas of the Reservoir. Evaluate and make changes in program as needed.	●	Reviewed and commented on draft CY21 aquatic macrophytes report and scopes of CY22 work for (1) aquatic macrophytes survey and (2) AIS removal in the Shaft 8 intake area. Attended kickoff meeting for the annual aquatic macrophytes survey with MWRA and contractor TRC (formerly ESS Group). Began preparing for annual survey work at Shaft 8 intake and Quabbin Reservoir, continuing procedures/protocols of past surveys with minor adjustments because of reduced EQ staffing and anticipated change of monitoring efforts.
6	Conduct public education in coordination with DCR Lakes and Ponds and MWRA.	●	Combination of work completed by EQ and Ranger staff. Rangers maintain supplies for the AIS self-certification program, restocking kiosks as needed. When on-site, Rangers educate boat operators on the AIS self-cert program and encourage compliance by placing a self-cert form and AIS brochure on the windshields of vehicles lacking completed forms. Unable to attend this year's Comet Pond Home Owner's Association meeting, but available for questions via email and phone, in addition to in-person.
<b>M. Wastewater Management</b>			
1	Identify potential problem sites or areas through review of local records, water quality data, and other pertinent information.	●	No additional problem sites identified through review of local records or water quality data.
<b>N. Stormwater Management</b>			
1	Advise local boards on stormwater management issues related to construction activities.	●	No activity for this task due to the local boards not needing any assistance with projects this year.
2	Monitor stormwater management in the watersheds.	●	Inspections of stormwater BMPs were conducted in the Ware River watershed. EQ staff inspected storm water BMPs at two subdivision development sites, Brice-Lemon and Brintnal Estates (both in Rutland), and GPS'd storm drains.
<b>O. Emergency Response (Preparedness)</b>			
1	Develop and/or update Emergency Response materials for the Quabbin and Ware River watersheds, with up-to-date contact information, emergency procedures, and roles/responsibilities.	●	In FY 22, Q4 MWRA and DCR Managers updated contact list and protocols and distributed to MSP units C7 and Marine Unit. In FY 22, Q4 MWRA and DCR Managers updated contact list and protocols and distributed to MSP units C7 and Marine Unit. BLA Emergency Response SOPs were updated and distributed to staff in Q4 of FY 22.
2	Implement SOPs for spill response and dumping and define DCR staff roles in both assessment and response.	●	Continued preliminary draft of spill SOP - discussed in several meetings, early drafts reviewed by staff for input and edits. Did initial scoping for equipment to use on abandoned materials identification.
3	In conjunction with MWRA, coordinate spill response and/or incident command system (ICS) training to staff.	●	All scheduled spill response trainings for the season were completed as scheduled. Emergency Response trailers are up-to-date with one trailer scheduled to be replaced next fiscal. The three, Quabbin Boat Launch Areas were inventoried and supplied with items needed prior to the start of the Spring/Summer '22 fishing season.

Task #	Task Description	Percent Complete	Final Report Comments
4	Coordinate cleanup operations for any spills and dumping that impact or threaten water resources. Work with the appropriate local, state and federal agencies to ensure that spill containment, cleanup, and mitigation is conducted in a manner that protects water quality.	●	Continued to monitor DEP-BWSC haz waste sites in Quabbin and Ware River. Conducted file reviews of new sites in watersheds. Attended BWSC advisory committee meetings to monitor status of MCP updates. Attended LSPA meeting on PFAS contamination in groundwater. Called DEP with non-reportable, courtesy call about a car fire on DWSP property at the canoe launch on Ware River in Barre.
5	Develop and implement spill response plans for all timber harvesting operations on DWSP lands.	●	Developed and implemented spill response plans for all timber harvesting operations on DWSP lands.
6	Conduct annual review of existing spill response access sites.	●	Ongoing
7	Develop comprehensive Emergency Preparedness Program to include natural disasters, accidents, and intentional events.	●	No work this FY.
<b>P. Support</b>			
1	Operate administrative office	●	Ongoing
2	Manage payroll through SSTA and HR/CMS.	●	Ongoing
3	Provide contract administration and financial management.	●	Contract management continues to be challenging with increasing prices and supply chain disruptions.
4	Keep records and assist in purchasing of goods and services.	●	Document attached: Requests/Orders placed through storekeeper IV for FY22 totals \$136,278.43 with a few items not delivered and moved into FY23.
5	Process revenue for BLAs, Cemetery, and Forestry	●	Ongoing. BLA revenue moved to all credit in June 2022. Process in place to grant one-time exceptions to credit rule so people can be allowed onto the Reservoir and then send in a payment.
6	Coordinate with EOEEA IT to provide local MIS support for the Quabbin/Ware Region.	●	Ongoing. Cell phones were issued throughout the fiscal year as appropriate. Phones requiring updating due to security issues were replaced by IT. iPads were replaced or purchased on an as-needed basis. A new shared "pool" of iPads was made available to staff to ensure that more availability existed for staff without an assigned device. iPad replacement plan for devices purchased in FY18 will be upcoming in next FY.
7	Provide personnel services and assistance for all Quabbin/Ware Region employees.	●	Ongoing
8	Submit regular reports to Division Director, MWRA, and the Water Supply Protection Trust Board.	●	All reports submitted on time.
9	Plan and implement vehicle and equipment purchases in coordination with WA.	●	DWSP will continue to evaluate fleet management in view of EO 584 and make adjustments/modifications as needed. Vehicle order for FY22 completed, all (8) Chevrolet Colorado trucks received. Case grader was purchased this fiscal. Working on paperwork for 6 wheel dump for first quarter to purchase.
10	Conduct truck, boat, and equipment inspections and maintenance as needed, utilizing Fleetwave.	●	All necessary inspections are completed for FY22
11	Administer the Payment in Lieu of Taxes (PILOT) program	●	All PILOT obligations met as required by regulations. Final distribution was \$8,479,324. Total distribution for Quabbin towns: \$2,918,368, or 35% of total. Five towns received payments for land annexed from disincorporation of four Quabbin towns. Payments for Annexed Lands: \$662,153, or 23% of Quabbin watershed distribution or 8% of all PILOT. Ware River towns received \$1,066,310, or 13% of total PILOT. Coordinated with DOR to have data shown on their municipal gateway website.
12	Maintain ArcGIS Online environment for all staff to successfully complete projects.	●	Ongoing
13	Configure and maintain both internal and externally facing ArcGIS Online applications. Work with staff to generate field data collection tools using Survey123 and/or Collector for ArcGIS. Maintain existing field data collection tools for staff; maintenance includes archiving of data (as needed) and ensuring that Surveys and Maps remain functional through upgrades to ArcGIS Online and mobile apps.	●	Major accomplishment of FY was to migrate WsPA database from Excel to ArcGIS Online and to consolidate two separate regional databases into one centralized database for use by both regions. Planning staff can easily enter and update WsPA filings using Survey123; filings can be explored within a "data exploration" dashboard or this can be used for reporting purposes. Report Templates have been created to allow for easy export of a variance or applicability decision to a Word document. Users can print custom maps for use in reports or for other needs. Some automated tools have been put into place, namely automatic folder creation in SharePoint for new filings, however others need to be developed. A new system-wide trails and roads dataset is now available to the public; this includes a much more detailed pop-up that clearly displays allowed uses for a trail.
14	Publish hosted feature layers, tile layers and tile packages on an as-needed basis to support projects. Ensure that all public-facing data has proper metadata added as per the EEA ArcGIS Online Best Practices.	●	Data has been migrated off network drives and into the cloud; data available to staff primarily through ArcGIS Online although some data available in Teams. A data inventory was developed by GIS staff to help users in finding data. Training was provided to assist with this transition.

Task #	Task Description	Percent Complete	Final Report Comments
15	Provide staff with training in desktop and mobile GIS applications.	●	This was a very active year for training. The following trainings were offered: Advanced Survey123 Development in January; five lunch and learn style trainings on how to find and work with GIS data in cloud locations between February and March; 4 ArcGIS Pro trainings in June.
16	Train staff in field data collection applications as needed for specific projects. Assist with setting up Collector and Survey123 to work with Bad Elf Pro+ GPS units, or with the Arrow 100 GNSS receiver.	●	Provided as-needed; met specifically with Quabbin Rangers to review Daily Log workflow and to ensure they were using it properly. Provided technical assistance to EQ on getting started with Arrow GNSS receiver.
17	Keep current in new and emerging GIS technologies by attending webinars, taking self-paced trainings and attending conferences (where possible).	●	Local conferences attended to stay up to date on emerging technology and trends. Would like to see more support at higher levels in DCR for staff to attend GIS conferences - namely the Esri user conference as EEA receives free registration. This is the best way to ensure GIS staff are up-to-date on emerging technology and to ensure we can provide the best and most effective solutions to the agency. Without being able to attend this every other year, we will stagnate.
19	Provide GIS and GPS services and associated mapping for all Regional plans, reports and projects, as needed. Keep GIS datalayers updated as new information becomes available.	●	Improved digital elevation model allowed for creation of updated EQ sanitary district, subdistrict and drainage basin boundaries. Errors from past ownership tables were identified and corrected; workflow written to ensure accurate calculation of numbers for future plans.
20	Update digital information, including all new DWSP land purchases, WsPA maps and parcels, and provide analyses for use in DWSP reports and publications.	●	Open Space updated as new acquisitions closed. Boundaries of existing open space improved upon in many watershed towns to increase accuracy of open space layer. QPC database maintained. Stonework cleaning form created for public use. QPC owner lot record vault files in the process of being digitized. Worked with Forestry on new hydrology layer to better allow for field editing. Provided staff with assistance as needed.
21	Encourage staff to participate in professional development opportunities, including professional memberships, meetings, trainings, webinars, and field trips.	●	A number of training requests were approved this FY to attend conferences, seminars, and professional development events. DWSP hosted a Society of American Foresters field tour of WRW with 50 participants. Hosted a forestry field tour of WRW for DCR Service Forestry with 12 participants.



# Summary of Wachusett Watershed Ranger Interactions

FY2022 Annual Report

Visitor Contacts: 13,841

Violations: 641

Parking Tickets: 44

313 CMR 11.09	CONDENSED CMRs	# of Violations	Written Warning	Citation
<b>Wachusett</b>				
2a1	Entrance/Exit only through gates or designated areas.	0	0	0
2a2	Allowed on Watershed land 1 hour before sunrise to 1 hour after sunset	67	4	10
2a3	No powered boats except in designated areas.	0	0	0
2a4	No acts which may pollute the water system. No litter thrown or left. Must use sanitary facility.	4	0	2
2a5	All acts injuring the property are prohibited. No person shall injure, deface, destroy remove or carry off any property, including historic artifacts and natural materials. No removal of gravel, topsoil, stones, boulders or other material. No building or constructing any object or structure on property. Collection of berries and mushrooms is allowed for personal use only.	4	0	0
2a6	No cooking or fires.	2	1	1
2a7	No wading or swimming in reservoir except wading while using boots to launch boats in designated areas.	83	1	3
2a8	No wading or swimming in Tributary or Surface Waters, except in designated areas.	14	2	3
2a9	No organized sport activities.	0	0	0
2a10	Division and employees of are not responsible for damage to or loss of property sustained by fishermen, or for any loss of life which may be incurred in connection with public use of the reservoirs and watershed system	0	0	0
2a11	No profanity or other disorderly conduct offensive to general public. No possession or drinking alcoholic beverages	10	1	3
2a12	No Motorized Vehicles. No recreational vehicles, except snowmobiles in designated areas. Motor vehicle parking in designated areas only. Operators of motor vehicles shall obey all regulatory signage unless otherwise directed. No willfully obstructing the free passage of vehicles or persons within the system.	38	0	11
2a13	No animals, except for horses and dogs at Ware River designated areas.	164	1	7
2a14	Bicycles, skis and other non-motorized transportation permitted in designated areas only.	27	0	0
2a15	No landing aircraft or causing to descend except in an emergency.	3	0	0
2a16	No parades, games, fairs, bazaars, carnivals, fishing derbies, gifts or solicitation for raising funds without written approval.	0	0	0
2a17	No lotteries, raffles, gambling or games of chance. No possession of machinery for the former.	0	0	0
2a18	No groups of more than 25 people without written permit.	0	0	0
2a19	No engaging in business, sale or display of goods or wares without written permit.	1	0	0
2a20	No commercial signs or advertising.	0	0	0



<b>313 CMR 11.09</b>	<b>CONDENSED CMRs</b>	<b># of Violations</b>	<b>Written Warning</b>	<b>Citation</b>
2a21	No persons (unless authorized by law, license, or permit) shall have possession of or discharge any weapon, firearm, fireworks or other explosive on or within the watershed system except at times and areas designated. All forms of target shooting are prohibited.	0	0	0
2a22	No hunting, shooting, or trapping animals except at designated times and areas.	1	1	0
2a23	All persons within the watershed system shall obey the lawful directions of regulatory signs, police officers, DCR Rangers, or persons in charge, or of Federal or Commonwealth wardens or enforcement officers.	65	13	7
2a24	Any part of the watershed lands may be closed for the public access at any time by the commissioner.	88	4	17
2a25	The possession of all types of metal detectors or similar devices is prohibited on all of the Watershed System property.	0	0	0
2d1	Persons in compliance with Commonwealth Fish and Game Laws and Regulations will be allowed to fish from shore of Wachusett Reservoir in areas designated by the commission or its designee.	29	6	6
2d2	Boating is prohibited in Wachusett Reservoir.	2	0	0
2d3	Fishing from the shoreline of the Reservoir shall be allowed only during a season designated by the Commission or its designee.	28	3	0
2d4	Any violation of 313 CMR 11.09 will be deemed sufficient cause for revocation of fishing privileges for not less than one year	0	0	0
<b>Sudbury</b>				
2e1	Persons in compliance with Commonwealth Fish and Game Laws and Regulations will be allowed to fish from shore of Sudbury Reservoir in areas designated by the commission or its designee.	7	0	1
2e2	Boating is prohibited on Sudbury Reservoir.	4	0	0
<b>TOTAL VIOLATIONS</b>		<b>641</b>	<b>37</b>	<b>71</b>

# Summary of Quabbin Watershed Ranger Interactions

Annual FY22

Visitor Contacts: 26,739

Total Violations: 230

Parking Tickets: 5

313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
1a	No Taking/Diverting Water.	0	0	0
1b1	No construction, filling, dredging, altering land w/out provisions to prevent erosion.	1	0	0
1b2	No construction, establishing, maintaining agricultural facilities or animal manure without adequate provision to prevent manure/other pollutants from entering Waters of Watershed System.	0	0	0
1b3	No engaging in any other activity that could degrade water quality.	0	0	0
1c	No person's property condition should result in discharge of any Pollutants into waters of Watershed system.	0	0	0
1d	Records of board of health or health agent concerning Watershed open to inspection by DCR/DEP.	0	0	0
1e	Person's causing incident/situation threatening pollutants to watershed shall notify DCR/DEP.	0	0	0
2a1	Entrance/Exit only through gates or designated areas.	6	0	0
2a2	Allowed on Watershed land 1 hour before sunrise to 1 hour after sunset (with permitted night fishing exception).	5	0	0
2a3	No powered boats except in designated areas.	1	1	0
2a4	No acts which may pollute the water system. No litter thrown or left. Must use sanitary facilities.	0	0	0
2a5	All acts injuring the property are prohibited. No person shall injure, deface, destroy remove or carry off any property, including historic artifacts and natural materials. No removal of gravel, topsoil, stones, boulders, or other material. No building or constructing any object or structure on property.	7	0	0
2a6	No cooking or fires.	4	0	0
2a7	No wading or swimming in reservoir except wading while using boots to launch boats in designated BLAs.	15	0	0
2a8	No wading or swimming in Tributary or Surface Waters, except in designated areas.	0	0	0
2a9	No organized sport activities except by written permission.	0	0	0
2a10	DCR/DWSP and employees are not responsible for damage to property, injury, or loss of life sustained by fishermen while using the reservoirs within the watershed system	0	0	0
2a11	Breach of peace, profanity or other disorderly conduct offensive to general public. No possession or drinking alcoholic beverages	8	0	0
2a12	No Motorized Vehicles. No recreational vehicles, except snowmobiles in designated areas. Motor vehicle parking in designated areas only. Operators of motor vehicles shall obey all regulatory signage unless otherwise directed. No willfully obstructing the free passage of vehicles or persons within the system.	3	2	2
2a13	No animals, except for horses and dogs at Ware River designated areas.	93	0	2

313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
2a14	Bicycles, skis and other non motorized transportation permitted in designated areas only.	4	0	0
2a15	No person shall bring land or cause to descend any aircraft within the Watershed except in an emergency.	3	0	0
2a16	No parades, games, fairs, bazaars, carnivals, fishing derbies, gifts or solicitation for raising funds without written approval.	0	0	0
2a17	No lotteries, raffles, gambling or games of chance. No possession of machinery, instruments or equipment for the former.	0	0	0
2a18	No groups of more than 25 people without written permit.	0	0	0
2a19	No engaging in business, sale or display of goods or wares without written permit.	0	0	0
2a20	No commercial signs or advertising.	0	0	0
2a21	No persons (unless authorized by law, license, or permit) shall have possession of or discharge any weapon, firearm, fireworks or other explosive on or within the watershed system except at times and areas designated. No target shooting.	0	0	0
2a22	No hunting, shooting, or trapping animals except at designated times and areas.	0	0	0
2a23	All persons within the watershed system shall obey the lawful directions of regulatory signs, police officers, DCR Rangers, or persons in charge or of Federal or Commonwealth wardens or enforcement officers.	60	0	0
2a24	Any part of the watershed lands may be closed for the public access at any time to protect the lands and waters.	2	0	0
2a25	The possession of all types of metal detectors or similar devices is prohibited on all of the Watershed property.	0	0	0
<b>Special Regulations for Quabbin</b>				
2b1	Persons in compliance with Commonwealth Fish and Game Laws and Regulations will be allowed to fish from shore in areas designated by the Commission or its designee. A valid state fishing or sporting license is required by any person renting or launching a boat at any commission facility subject to 313 CMR 11.09. Reasonable fees for the use of boats, for rental of outboard motors for fishing purposes, or use of Commission facilities including parking and boat ramps, may be charged by the Commission.	8	0	0
2b2	Persons permitted to fish from boats shall at all times be responsible for the sanitary conditions of the boat. Persons under 16 years of age must be accompanied by a person possessing a valid fishing license in order to boat on Quabbin Reservoir.	0	0	0
2b3	Only boats of a minimum length of 12 feet, and of a type considered safe by the Commission representative in charge, shall be used. No inboard motors, collapsible boats, sailboats, pontoon boats, square stern canoes, or similar craft will be permitted in the water except in areas designated for boating by the Commission or its designee. Outboard motors shall have a rating of not more than ½ the BIA or OBC rated horsepower for the boat and shall not exceed 20 horsepower, except that outboard motors for Commission boats less than 14 feet six inches shall not exceed 10 horsepower. Boats less than 14 feet shall be limited to 3 occupants, and boats of that length and in excess thereof may be licensed to carry 4 occupants. No boats shall carry more than 4 occupants. Canoes and Jon boats of a minimum of 12 feet, and a type considered safe by the Commission representative in charge, shall be used only in areas designated for boating by the Commission on	4	0	1

313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
	Pottapaug Pond above the regulating dam and at Gate 31 above the regulating dam. Canoes less than 16 feet and Jon boats less than 14 feet six inches in length will be limited to 2 occupants, and canoes and Jon boats in excess thereof may be licensed to carry 3 occupants. All boats must be in compliance with current Commonwealth Boating Laws. All boats must be clean and contain no refuse of any kind. Commission personal shall have the right to inspect all private boats launched at Commonwealth facilities and may deny access in order to protect water quality or safety of occupants. Chock blocks must be used on vehicles when removing boats from the reservoir.			
2b4	No person shall operate a motor boat at a speed other than responsible and proper or in such a manner as to annoy or endanger the occupants of other boats.	0	0	0
2b5	All privately owned boats, motors and other equipment must be removed from the property of the Commission each day.	0	0	0
2b6	Boats shall not leave the mooring areas before dawn and must at the time posted at each mooring area. The beaching of boats at any point except at the designated mooring and landing areas is strictly prohibited except in cases of extreme emergency.	0	0	0
2b7	Any violation of 350 CMR 11.09 can result in loss of fishing privileges for not less than one year	0	0	0
<b><i>Special Regulations for Ware River</i></b>				
2c1	WRW Fishing Designated Areas	0	0	0
2c2	WRW PWR Boats/PWR Canoes Prohibited	0	0	0
2c3	WRW Boat Motor Restrictions	0	0	0
2c4	WRW Revocation of Fishing License	0	0	0
<b>TOTAL VIOLATIONS</b>		<b>222</b>	<b>3</b>	<b>5</b>

# Summary of Ware River Watershed Ranger Interactions

## FY22 Totals

Visitor Contacts: 11530

Total Violations: 856

Parking Tickets: 6

313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
1a	No Taking/Diverting Water.	0	0	0
1b1	No construction, filling, dredging, altering land w/out provisions to prevent erosion.	0	0	0
1b2	No construction, establishing, maintaining agricultural facilities or animal manure without adequate provision to prevent manure/other pollutants from entering Waters of Watershed System.	0	0	0
1b3	No engaging in any other activity that could degrade water quality.	2	0	0
1c	No person's property condition should result in discharge of any Pollutants into waters of Watershed system.	0	0	0
1d	Records of board of health or health agent concerning Watershed open to inspection by DCR/DEP.	0	0	0
1e	Person's causing incident/situation threatening pollutants to watershed shall notify DCR/DEP.	0	0	0
2a1	Entrance/Exit only through gates or designated areas.	1	0	0
2a2	Allowed on Watershed land 1 hour before sunrise to 1 hour after sunset (with permitted night fishing exception).	0	0	0
2a3	No powered boats except in designated areas.	1	0	0
2a4	No acts which may pollute the water system. No litter thrown or left. Must use sanitary facilities.	62	0	0
2a5	All acts injuring the property are prohibited. No person shall injure, deface, destroy remove or carry off any property, including historic artifacts and natural materials. No removal of gravel, topsoil, stones, boulders, or other material. No building or constructing any object or structure on property.	64	0	1
2a6	No cooking or fires.	65	0	0
2a7	No wading or swimming in reservoir except wading while using boots to launch boats in designated BLAs.	9	0	0
2a8	No wading or swimming in Tributary or Surface Waters, except in designated areas.	276	0	0
2a9	No organized sport activities except by written permission.	0	0	0
2a10	DCR/DWSP and employees are not responsible for damage to property, injury, or loss of life sustained by fishermen while using the reservoirs within the watershed system	0	0	0
2a11	Breach of peace, profanity or other disorderly conduct offensive to general public. No possession or drinking alcoholic beverages	71	0	0
2a12	No Motorized Vehicles. No recreational vehicles, except snowmobiles in designated areas. Motor vehicle parking in designated areas only. Operators of motor vehicles shall obey all regulatory signage unless otherwise directed. No willfully obstructing the free passage of vehicles or persons within the system.	158	0	6
2a13	No animals, except for horses and dogs at Ware River designated areas.	54	0	0

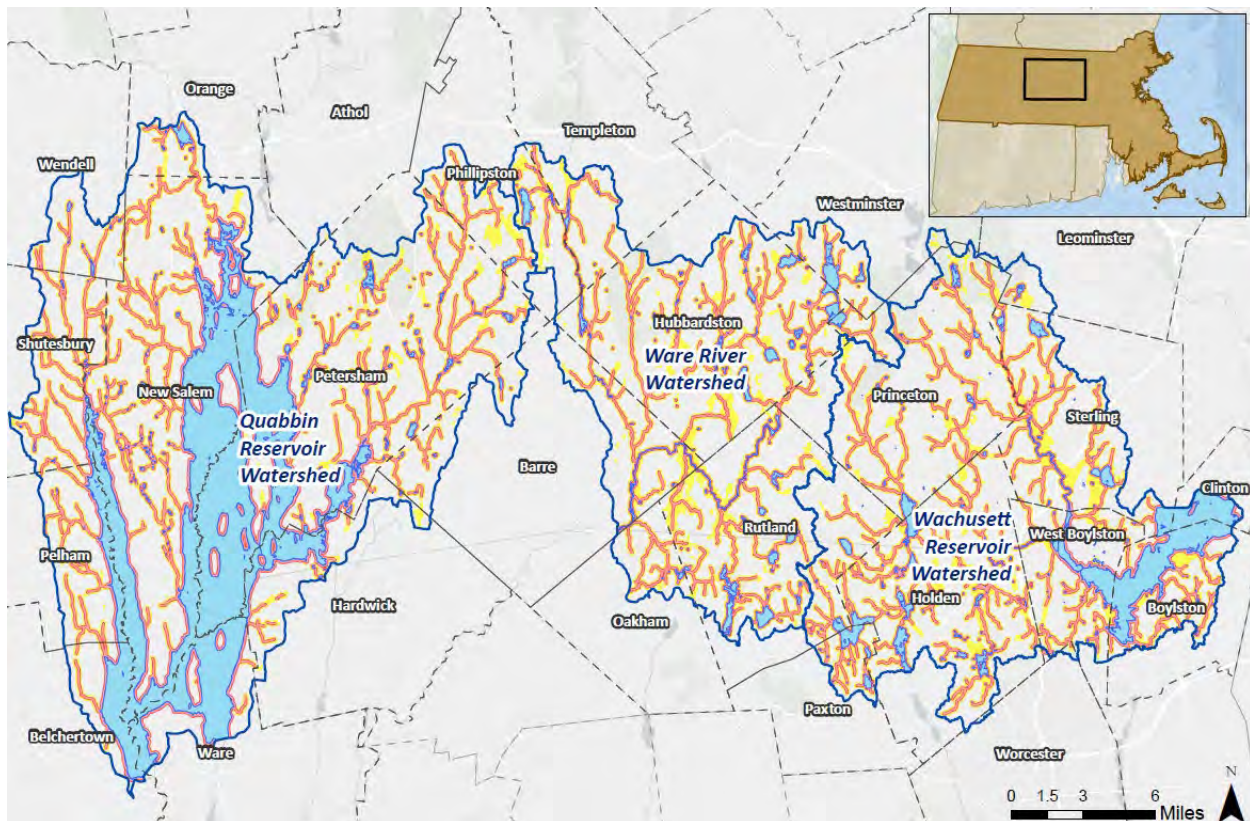
313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
2a14	Bicycles, skis and other non motorized transportation permitted in designated areas only.	0	0	0
2a15	No person shall bring land or cause to descend any aircraft within the Watershed except in an emergency.	8	0	0
2a16	No parades, games, fairs, bazaars, carnivals, fishing derbies, gifts or solicitation for raising funds without written approval.	0	0	0
2a17	No lotteries, raffles, gambling or games of chance. No possession of machinery, instruments or equipment for the former.	0	0	0
2a18	No groups of more than 25 people without written permit.	0	0	0
2a19	No engaging in business, sale or display of goods or wares without written permit.	2	0	0
2a20	No commercial signs or advertising.	14	0	0
2a21	No persons (unless authorized by law, license, or permit) shall have possession of or discharge any weapon, firearm, fireworks or other explosive on or within the watershed system except at times and areas designated. No target shooting.	6	0	0
2a22	No hunting, shooting, or trapping animals except at designated times and areas.	0	0	0
2a23	All persons within the watershed system shall obey the lawful directions of regulatory signs, police officers, DCR Rangers, or persons in charge or of Federal or Commonwealth wardens or enforcement officers.	21	0	1
2a24	Any part of the watershed lands may be closed for the public access at any time to protect the lands and waters.	2	0	0
2a25	The possession of all types of metal detectors or similar devices is prohibited on all of the Watershed property.	2	0	0
<b>Special Regulations for Quabbin</b>				
2b1	Persons in compliance with Commonwealth Fish and Game Laws and Regulations will be allowed to fish from shore in areas designated by the Commission or its designee. A valid state fishing or sporting license is required by any person renting or launching a boat at any commission facility subject to 313 CMR 11.09. Reasonable fees for the use of boats, for rental of outboard motors for fishing purposes, or use of Commission facilities including parking and boat ramps, may be charged by the Commission.	0	0	0
2b2	Persons permitted to fish from boats shall at all times be responsible for the sanitary conditions of the boat. Persons under 16 years of age must be accompanied by a person possessing a valid fishing license in order to boat on Quabbin Reservoir.	0	0	0
2b3	Only boats of a minimum length of 12 feet, and of a type considered safe by the Commission representative in charge, shall be used. No inboard motors, collapsible boats, sailboats, pontoon boats, square stern canoes, or similar craft will be permitted in the water except in areas designated for boating by the Commission or its designee. Outboard motors shall have a rating of not more than ½ the BIA or OBC rated horsepower for the boat and shall not exceed 20 horsepower, except that outboard motors for Commission boats less than 14 feet six inches shall not exceed 10 horsepower. Boats less than 14 feet shall be limited to 3 occupants, and boats of that length and in excess thereof may be licensed to carry 4 occupants. No boats shall carry more than 4 occupants. Canoes and Jon boats of a minimum of 12 feet, and a type considered safe by the Commission representative in charge, shall be used only in areas designated for boating by the Commission on	1	0	0

313 CMR 11.09	CONDENSED CMRs	Verbal Warnings	Written Warnings	Citations
	Pottapaug Pond above the regulating dam and at Gate 31 above the regulating dam. Canoes less than 16 feet and Jon boats less than 14 feet six inches in length will be limited to 2 occupants, and canoes and Jon boats in excess thereof may be licensed to carry 3 occupants. All boats must be in compliance with current Commonwealth Boating Laws. All boats must be clean and contain no refuse of any kind. Commission personal shall have the right to inspect all private boats launched at Commonwealth facilities and may deny access in order to protect water quality or safety of occupants. Chock blocks must be used on vehicles when removing boats from the reservoir.			
2b4	No person shall operate a motor boat at a speed other than responsible and proper or in such a manner as to annoy or endanger the occupants of other boats.	0	0	0
2b5	All privately owned boats, motors and other equipment must be removed from the property of the Commission each day.	0	0	0
2b6	Boats shall not leave the mooring areas before dawn and must at the time posted at each mooring area. The beaching of boats at any point except at the designated mooring and landing areas is strictly prohibited except in cases of extreme emergency.	0	0	0
2b7	Any violation of 350 CMR 11.09 can result in loss of fishing privileges for not less than one year	0	0	0
<b>Special Regulations for Ware River</b>				
2c1	WRW Fishing Designated Areas	4	0	0
2c2	WRW PWR Boats/PWR Canoes Prohibited	0	0	0
2c3	WRW Boat Motor Restrictions	24	0	1
2c4	WRW Revocation of Fishing License	0	0	0
<b>TOTAL VIOLATIONS</b>		<b>847</b>	<b>0</b>	<b>9</b>



## Watershed Protection Act Report Fiscal Year 2022

The Watershed Protection Act (WsPA; 313 CMR 11.04) regulates land use within critical areas of the Quabbin Reservoir, Ware River and Wachusett Reservoir watersheds. For more information, go to <http://www.mass.gov/dcr/wspa>.



Areas regulated by the Watershed Protection Act shown in red (Primary Protection Zone – 313 CMR 11.04(3)(a)) and yellow (Secondary Protection Zone – 313 CMR 11.04(3)(b)).

### WsPA Decisions Issued:

This table contains any application for which a decision has been issued during FY22 within the Wachusett Reservoir, Quabbin Reservoir, and Ware River watersheds. Details for each watershed are on following pages.

Application Type	# Decisions
Advisory Opinions	35
Determinations	38
Variances Decisions	8
<b>Total</b>	<b>81</b>



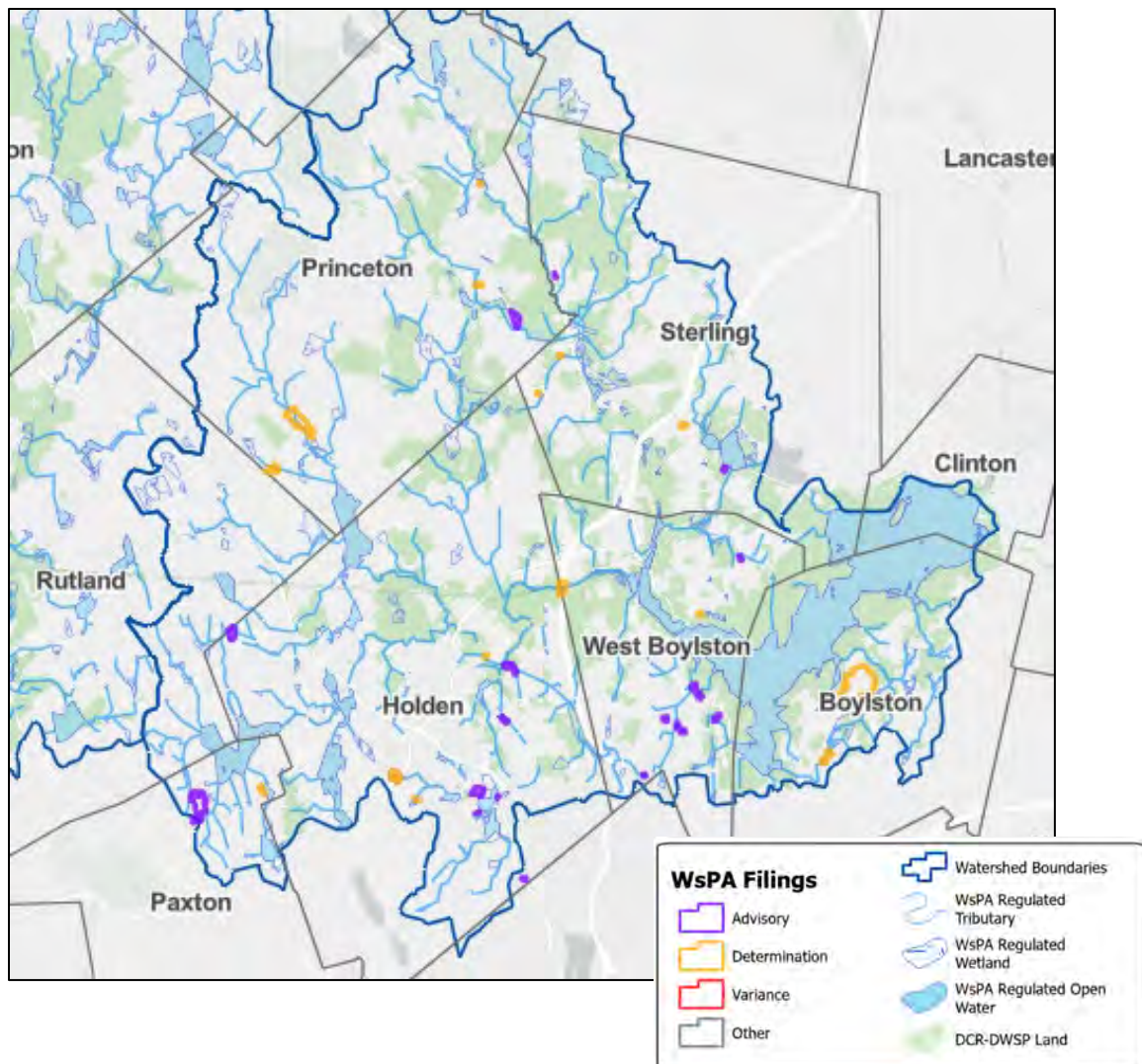
# Watershed Protection Act Report Fiscal Year 2022

## Watershed: Wachusett

### WsPA Decisions Issued:

This table and accompanying map contain any applications for which a decision has been issued during the specified time period at the top of this report.

Application Type	# Decisions
Advisory Opinions	17
Determinations	21
Variances Decisions	2
<b>Total</b>	<b>40</b>



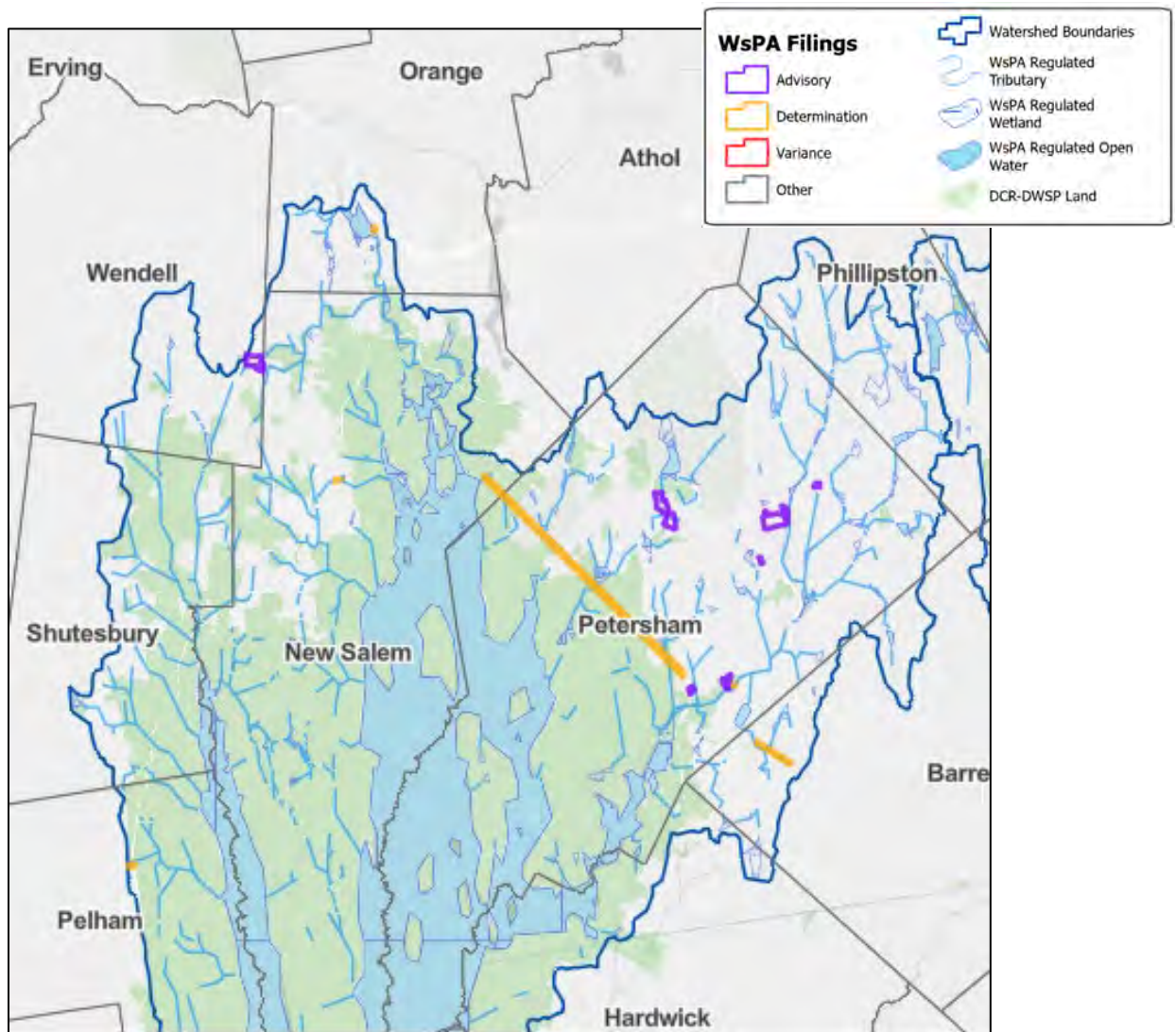
# Watershed Protection Act Report Fiscal Year 2022

## Watershed: Quabbin

### WsPA Decisions Issued:

This table and accompanying map contain any applications for which a decision has been issued during the specified time period at the top of this report.

Application Type	# Decisions
Advisory Opinions	8
Determinations	6
Variances Decisions	0
<b>Total</b>	<b>14</b>





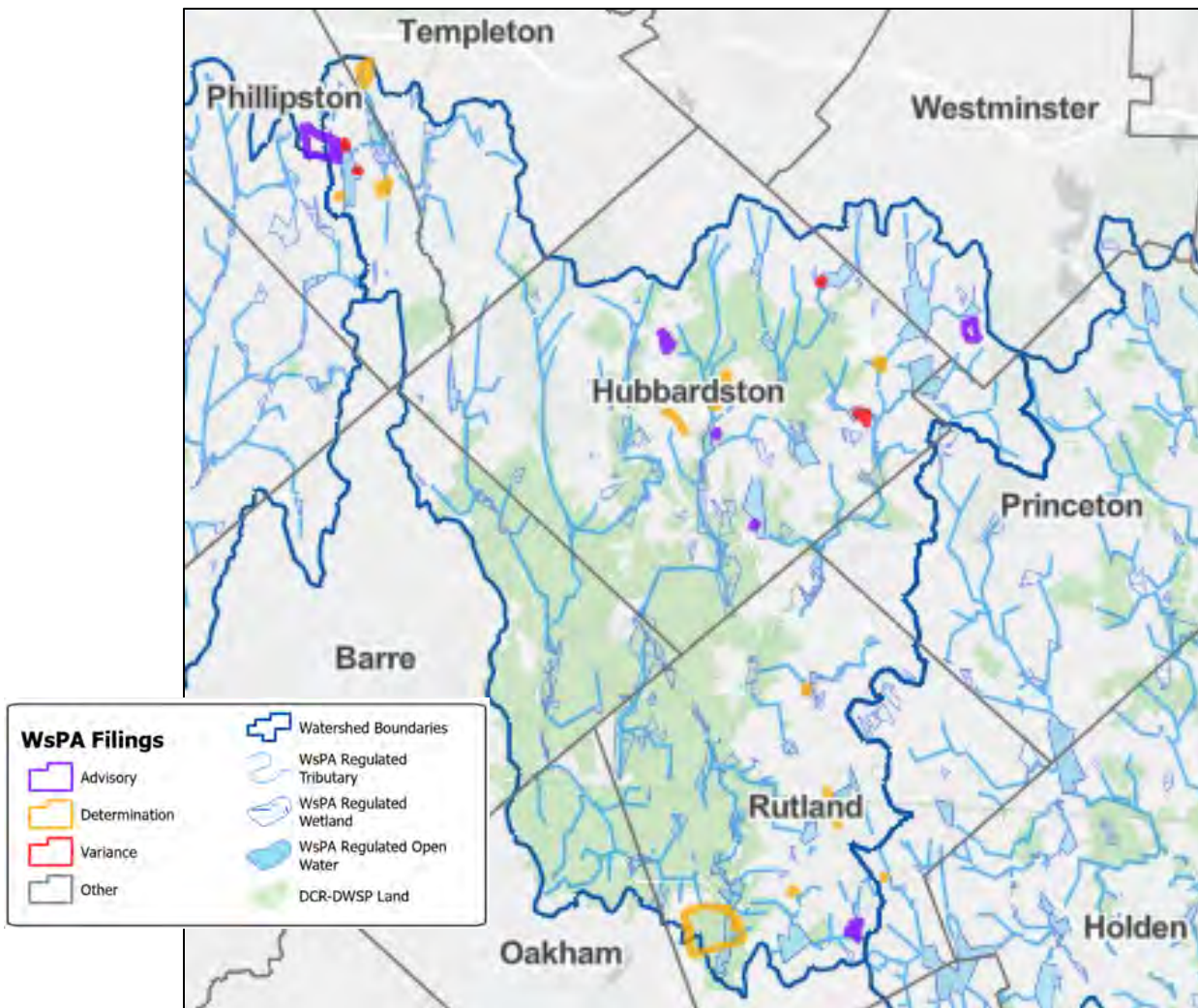
## Watershed Protection Act Report Fiscal Year 2022

### Watershed: Ware River

#### WsPA Decisions Issued:

This table and accompanying map contain any applications for which a decision has been issued during the specified time period at the top of this report.

Application Type	# Decisions
Advisory Opinions	10
Determinations	11
Variances Decisions	6
<b>Total</b>	<b>28</b>



# **FY2022 Final Expenditures**

**DCR Division of Water Supply Protection  
Office of Watershed Management  
FY2022 Expenditures**

Object Class	Object	Object Name	Total Expenditures	FY2022 Budget	Expended vs Budget Variance
AA	A01	Salaries: Inclusive	\$10,110,137.50		
	A06	Stand-By-Pay			
	A07	Shift Differential Pay	\$28,149.58		
	A08	Overtime Pay	\$228,648.56		
	A10	Holiday Pay	\$54,495.17		
	A11	Salaries-Supplemental	\$0.00		
	A12	Sick-Leave Buy Back	\$29,787.38		
	A13	Vacation-In-Lieu	\$89,610.15		
	A14	Stipends, Bonus Pay and Awards	\$416,325.65		
	AA1	Salaries: Supplemental	\$13,760.20		
AA Total			\$10,970,914.19	\$11,678,121.00	(\$707,206.81)
BB	B01	Other Out Of State Travel - Inclusive: Airfare, Hotel	\$827.84		
	B02	In-State Travel	\$330.88		
	B03	Overtime Meals	\$0.00		
	B05	Conference, Training, Registration and Membership	\$3,026.04		
	B10	Exigent Job Related Expenses	\$61.85		
	B11	Employer Refund of Non-Tax Benefits	\$0.00		
	B91	Employee Reimbursement Accounts Payable	\$891.95		
BB Total			\$5,138.56	\$20,000.00	(\$14,861.44)
CC	C01	Contracted Faculty	\$0.00		
	C04	Contracted Seasonal Employees	\$24,882.37		
CC Total			\$24,882.37	\$35,000.00	(\$10,117.63)
DD	D09	Non-Fringe Benefit Cost Recoupment (payroll tax )	\$4,018,660.14		
	D09	Fringe Benefits Costs Recoupment	\$0.00		
	D15	Workers' Compensation Chargebacks	\$224,063.45		
	D21	Health Ins Costs of Employ/Leave in Excess of 1 Y	\$0.00		
DD Total			\$4,242,723.59	\$4,631,611.00	(\$388,887.41)
EE	E01	Office & Administrative Supplies	\$6,241.66		
	E02	Printing Expenses & Supplies	\$7,771.21		
	E04	Central Reprographics Chargeback	\$0.00		
	E06	Postage	\$2,000.00		
	E12	Subscriptions, Memberships & Licensing Fees	\$302.00		
	E13	Advertising Expenses	\$2,209.70		
	E14	Exhibits/Displays	\$2,461.25		
	E15	Water Treatment - Office Water	\$1,544.17		
	E19	Fees, Fines, Licenses, Permits & Chargebacks	\$44,417.69		
	E20	Motor Vehicle Chargeback	\$49,684.68		
	E22	Temp Use Space/Confer-Incidental Includes Reservation f	\$932.15		
	E30	Credit card Purchases	\$1,320.95		
	E53	S&J: Non-reportable to claimant, sole payee	\$10,000.00		
	EE2	Conference, Training and Registration Fees	\$104.25		
EE Total			\$128,989.71	\$110,000.00	\$18,989.71
FF	F01	Food, Beverages & Preservation	\$402.39		
	F03	Laundry and Cleaning Supplies	\$97.37		
	F05	Laboratory Supplies	\$3,476.81		
	F06	Medical & Surgical Supplies	\$6,674.44		
	F09	Clothing & Footwear	\$62,087.14		
	F10	Facility Furnshings	\$58.29		
	F11	Laundry & Cleaning Supplies	\$8,746.04		
	F13	Live Animals & Related Supplies	\$79.05		
	F16	Library and Teaching Supplies and Materials	\$413.70		
	F18	Recreation, Religious & Social Supplies & Materials	\$10,771.54		
	F19	Manufacturing Supply & Materials & Raw Materials	\$7,452.51		
	F21	Navigational & Nautical Supplies	\$11,723.52		
	F24	Motor Vehicle Maintenance and Repair Parts	\$101,248.03		
	F27	Law Enforcement & Security Supplies	\$1,848.37		
FF Total			\$215,079.20	\$260,000.00	(\$44,920.80)
GG	G03	Electricity	\$61,887.23		
	G05	Fuel For Vehicles	\$188,497.92		
	G06	Fuel For Buildings	\$155,110.95		
	G08	Sewage Disposal & Water	\$2,891.05		
	G11	Natural Gas	\$723.50		
	GG1	Natural Gas Supply	\$0.00		
GG Total			\$409,110.65	\$335,000.00	\$74,110.65
HH	H09	Attorneys/Legal Services	\$8,229.98		
	HH1	Financial Services	\$39,664.15		
	HH2	Engineering, Research and Scientific Services	\$178,181.26		
	HH3	Media Design, Editorial, and Communication Servi	\$0.00		
	HH4	Health and Safety Services	\$0.00		
HH Total			\$226,075.39	\$231,000.00	(\$4,924.61)

**DCR Division of Water Supply Protection  
Office of Watershed Management  
FY2022 Expenditures**

Object Class	Object	Object Name	Total Expenditures	FY2022 Budget	Expended vs Budget Variance
JJ	JJ2	Auxiliary Services	\$950.00		
	J27	Laundry Services	\$11,973.80		
	J33	Photographic & Micrographic Services	\$0.00		
	J44	Surveyors	\$11,773.20		
	J50	Instructors/Lecturers/Trainers	\$0.00		
	JJ1	Legal Support Services	\$10,200.00		
JJ Total			\$34,897.00	\$60,000.00	(\$25,103.00)
KK	K02	Educational Equipment	\$0.00		
	K03	Programmatic Facility Equipment	\$37,470.19		
	K04	Motorized Vehicle Equipment	\$294,875.17		
	K05	Office Equipment	\$0.00		
	K06	Printing, Photocopying, and Micrographics Equipm	\$0.00		
	K07	Office Furnishings	\$8,006.01		
	K09	Medical Equipment	\$6,014.59		
	K10	Law Enforcement & Security Equipment	\$0.00		
	K11	Heavy Equipment	\$506,140.19		
	K12	Television Broadcasting Equipment	\$0.00		
KK Total			\$852,506.15	\$970,000.00	\$846,491.56
LL	L11	Heavy Equipment Lease-Purchase	\$0.00		
	L23	Programmatic Facility Equipment Rental or Lease	\$78,637.52		
	L24	Motorized Vehicle Equip. Rental or Lease	\$0.00		
	L25	Office Equipment Rental or Lease	\$2,609.10		
	L26	Printing/Photocopy & Micrographics Equip Rent/Le	\$16,036.80		
	L31	Heavy Equipment Rental or Lease	\$0.00		
	L42	Educational Equipment Maintenance & Repair	\$0.00		
	L44	Motorized Vehicle Equipment Maintenance & Repa	\$33,352.70		
	L45	Office Equipment Maintenance & Repair	\$195.00		
	L46	Print, Photocopying & Micrograph Equipment Main	\$2,309.74		
	L50	Law Enforcemt/Security Equipment Maintenance/R	\$2,866.82		
	L51	Heavy Equipment Maintenance/Repair	\$1,515.99		
	L63	Programmatic Equipment Maintenance & Repair	\$6,651.70		
LL Total			\$144,175.37	\$160,000.00	(\$15,824.63)
NN	N15	Building/Vertical Structure Construction	\$0.00		
	N16	Major Const/Renovation Bldg & Land Improvement	\$81,470.00		
	N17	Major Building Maintenance and Land Improvemen	\$1,199.71		
	N19	Land Acquisition and Eminent Domain	\$994.54		
	N21	Highway Horizontal/Lateral Constssruction	\$0.00		
	N22	Highway Horizontal/Lateral Maintenance & Improve	\$130,134.69		
	N23	Highway Maintenance Materials	\$31,959.65		
	N41	State Park & Recreation Facilities Construction	\$168,625.00		
	N50	Non-Major Facility Infrastructure Maintenance and	\$233,181.98		
	N52	Facility Infrastructure Maintenance & Repair Tools & Supp	\$127,807.94		
	N60	Lawn & Grounds Equipment Maint & Repair	\$29,144.19		
	N61	Lawn and Grounds Equipment	\$91,699.59		
	N63	Rental or Lease of Facility	\$0.00		
	N64	Garden Expenses, Tools and Supplies	\$46,859.26		
	N71	Exterminators/Integrated Pest Management	\$6,563.75		
	N72	Hazardous Waste Removal Services	\$117,104.33		
	N73	Non-Hazardous Waste Removal Services	\$43,325.62		
	N74	Snow Removal and Groundskeeping Services	\$79,401.97		
	N98	Reimbursement for Travel/Other Expense Infras P	\$0.00		
	NN1	Engineering, Research and Scientific Services	\$139,109.04		
NN Total			\$1,328,581.26	\$1,443,000.00	(\$114,418.74)
PP	P01	Grants to Public Entities	\$44,551.25		
PP Total			\$44,551.25	\$100,000.00	(\$55,448.75)
S11		Payment to Refund Bond Escrow Agent	\$2,500.00		
SS Total			\$2,500.00	0	\$2,500.00
TT	T04	Payments and Refunds	\$96,945.00		
TT Total			\$96,945.00	\$140,000.00	(\$43,055.00)
UU	U01	Telecommunications Services Data	\$33,601.66		
	U02	Telecommunications Services - Voice	\$92,100.57		
	U03	Software & Information Technology Licenses (IT)	\$1,512.27		
	U04	Information Technology (IT) Chargeback	\$46,456.55		
	U05	Information Technology (IT) Professionals	\$0.00		
	U06	Information Technology (IT) Cabling	\$0.00		
	U07	Information Technology (IT) Equipment	\$14,591.29		
	U09	Information Technology (IT) Equip Rental Or Lease	\$0.00		
	U10	Information Tech (IT) Equipment Maintenance & R	\$9,567.48		
	U11	Information Technology (IT) Contract Services	\$0.00		
UU Total			\$197,829.82	\$305,000.00	(\$107,170.18)
Sub-Total Expenditures			\$18,924,899.51	\$20,478,732.00	(\$1,553,832.49)
Credits		Payroll Adjustments	(61,569.32)		
		Prompt Payment Discount	(2,956.86)		
Net Grand Total Expenditures			\$18,860,373.33		

# **FY2022 Final Revenue**

**DCR Division of Water Supply Protection  
Office of Watershed Management  
FY2022 Revenue Summary**

Revenue Budget	Description	July	August	September	October	November	December	Total Collected Revenue Period 1-6
2010/0300/WMP1/DCR/0500	INTERMENT FEES	\$75.00		\$35.00	\$75.00	\$999.00	\$666.00	\$1,850.00
2010/0300/WMP1/DCR/3148	FISH & BOATING/DEER HUNT	\$25,924.00	\$33,929.00	\$24,213.00	\$17,146.00			\$101,212.00
2010/0300/WMP1/DCR/4000	RENTS							\$0.00
2010/0300/WMP1/DCR/4500	FORESTRY SALES	\$12,103.00	\$6,326.00	\$14,250.00	\$23,483.50	\$16,977.50	\$29,427.50	\$102,567.50
2010/0300/WMP1/DCR/6900	MISCELLANEOUS							\$0.00
2010/0300/WMP1/DCR/6901	PRIOR YEAR REFUNDS/ REIMBURSEMENTS							\$0.00
2010/0300/WMP1/DCR/6995	HYDROPOWER/TR LINES	\$70,354.00	\$52,445.60	\$91,223.01	\$94,318.69	\$106,420.67	\$42,651.05	\$457,413.02
<b>TOTALS</b>		<b>\$108,456.00</b>	<b>\$92,700.60</b>	<b>\$129,721.01</b>	<b>\$135,023.19</b>	<b>\$124,397.17</b>	<b>\$72,744.55</b>	<b>\$663,042.52</b>

Revenue Budget	Description	January	February	March	April	May	June	Total Collected Revenue Period 7-12	TOTAL REVENUE FY21
2010/0300/WMP1/DCR/0500	INTERMENT FEES	\$75.00	\$693.00		\$266.00	\$620.00	\$400.00	\$2,054.00	\$3,904.00
2010/0300/WMP1/DCR/3148	FISH & BOATING/DEER HUNT	\$50.00		\$9,710.00	\$7,766.00	\$33,922.00	\$52,344.00	\$103,792.00	\$205,004.00
2010/0300/WMP1/DCR/4000	RENTS							\$0.00	\$0.00
2010/0300/WMP1/DCR/4500	FORESTRY SALES	\$23,417.82	\$20,965.00		\$57,629.00	\$5,000.00	\$74,024.50	\$181,036.32	\$283,603.82
2010/0300/WMP1/DCR/6900	MISCELLANEOUS						\$2,700.00	\$2,700.00	\$2,700.00
2010/0300/WMP1/DCR/6901	PRIOR YEAR REFUNDS							\$0.00	\$0.00
2010/0300/WMP1/DCR/6995	HYDROPOWER/TR LINES	\$49,822.08	\$112,486.93	\$27,486.41	\$6,129.90	\$2,195.57	\$48,705.65	\$246,826.54	\$704,239.56
<b>TOTALS</b>		<b>\$73,364.90</b>	<b>\$134,144.93</b>	<b>\$37,196.41</b>	<b>\$71,790.90</b>	<b>\$41,737.57</b>	<b>\$178,174.15</b>	<b>\$536,408.86</b>	<b>\$1,199,451.38</b>

**Note: Does not include Special Assessment Revenues-MWRA Assessment & Debt Service Reimbursement.**

Category	FY22 Projected	FY22 Actual
Hydropower/Transmission	\$350,000	\$704,240
Forestry	\$500,000	\$283,604
Recreation	\$150,000	\$205,004
Internment/Rents/Misc.	\$20,000	\$6,604
<b>TOTAL</b>	<b>\$1,020,000</b>	<b>\$1,199,451</b>



# **FY2022 Final Land Acquisition**

**DCR Division of Water Supply Protection  
FY2022 Office of Watershed Management Land Acquisitions**

DCR acquired control of 402.3 additional acres of watershed land in FY22. DCR utilized \$860,000 of MWRA funds on land acquisition in FY22 to purchase the control of 353.5 acres of land. There were two gifts made to DWSP of just under 50 acres. Approximately 44% of these lands, 178.6 acres, were fee transactions, while the remaining 223.7 acres were Watershed Preservation Restrictions (WPR).

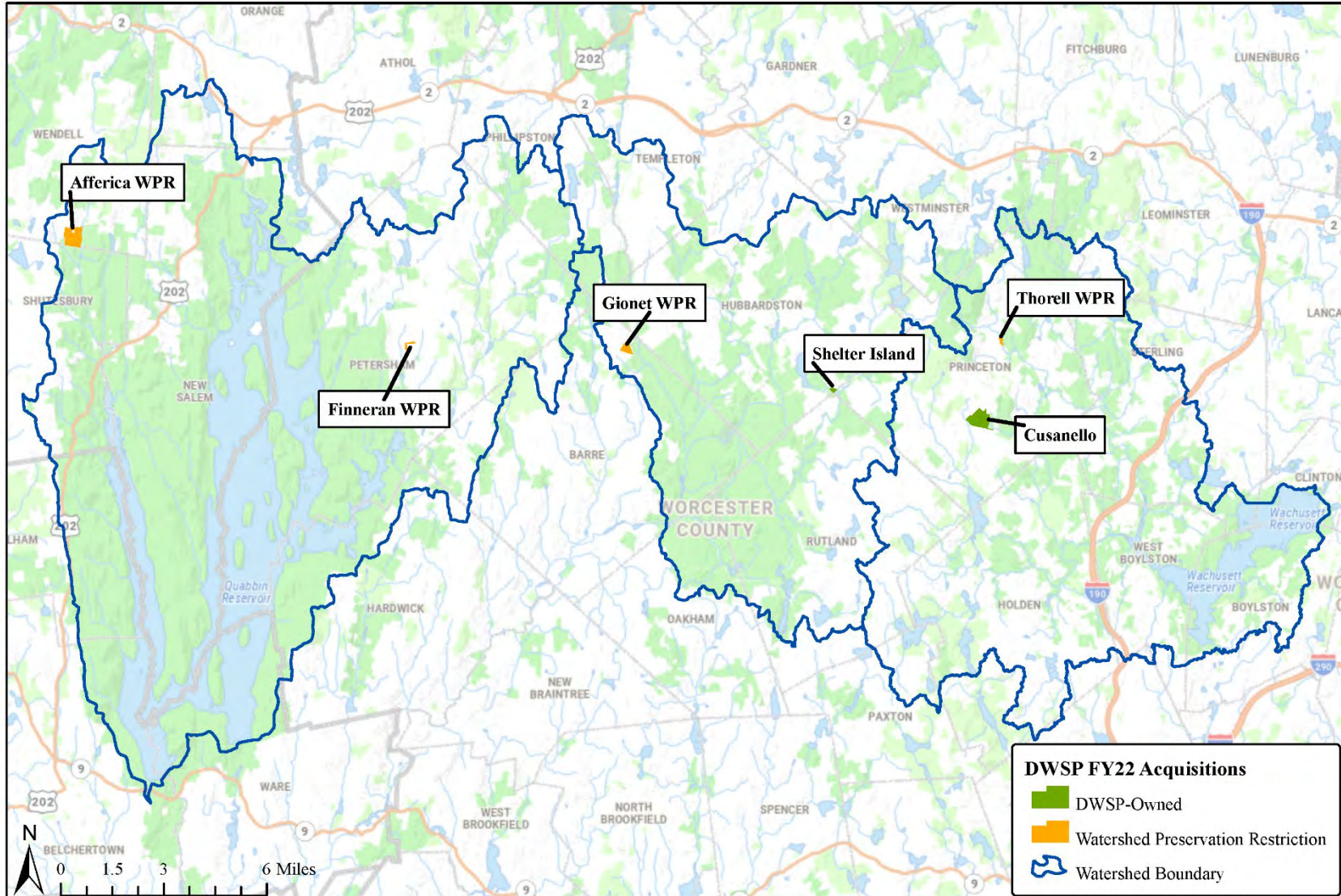
FY22 also marked the transition to a new Land Acquisition Coordinator, Felicia Bakaj. There are also new pages on the DWSP website for [Land Acquisition](#), [WPRs](#), and [Land Ownership Facts and Interactive Maps](#). These are all available through [the Land Protection web page](https://www.mass.gov/dcr-watershed-land-protection), <https://www.mass.gov/dcr-watershed-land-protection>.

Owner	Town	File #	Acres	Fee/ WPR	Date Recorded	MWRA/ Gift	Price
<b><i>Quabbin Reservoir and Ware River Watersheds</i></b>							
Finneran	Petersham	W-001219	12.4	WPR	8/9/2021	MWRA	\$37,000
Shelter Island	Hubbardston	W-000230	8.7	FEE	11/4/2021	Gift	\$0
Afferica	Wendell	W-001227	157.4	WPR	5/19/2022	MWRA	\$255,000
Mt. Grace/Gionet	Barre	W-001233	40.1	WPR	5/31/2022	Gift	\$0
<b><i>Sub-Total Quabbin and Ware Watersheds</i></b>			<b>218.6</b>				<b>\$292,000</b>
<b><i>Wachusett Reservoir Watershed</i></b>							
Thorell	Princeton	W-001223	13.8	WPR	3/21/2022	MWRA	\$143,000
Princeton Land Trust (formerly Cusanello)	Princeton	W-001217	169.9	Fee	3/31/2022	MWRA	\$425,000
<b><i>Sub-Total Wachusett Watershed</i></b>			<b>183.7</b>				<b>\$568,000</b>
<b>TOTAL FY22 LAND ACQUISITIONS</b>			<b>402.3</b>				<b>\$860,000</b>
Sub-Total MWRA			353.5				\$860,000
Sub-Total Gifts			48.8				
Sub-Total Fee Acquisitions			178.6				
Sub-Total WPR Acquisitions			223.7				



## DCR Division of Water Supply Protection

*Fiscal Year 2022 Land Acquisitions and Watershed Preservation Restrictions*



DCR/DWSP/OWM GIS 2022

**FY2022 Final**

**Payments in Lieu of Taxes**

**DCR Division of Water Supply Protection  
Office of Watershed Management**

**FY2022 Payments in Lieu of Taxes (PILOT)**

**The total PILOT paid under MGL c. 59, s. 5G for Fiscal Year 2022 was \$8,479,324.48.**

This figure represents a 1.3% increase of \$111,142 over the FY21 PILOT of \$8.367 million. This is approximately \$400,000 less than the 5% estimated increase to \$8.8 million presented in the FY2022 Work Plan. The main reason for the lower actual total is that all of the towns' tax rates were well below the 5% increase utilized to derive the estimate.

FY22 PILOT utilized the valuations set by the Department of Revenue (DOR) in 2017 that are subsequently adjusted every other year, starting in FY20, using DOR's Equalized Valuation method (EQV). EQV percentages are calculated by DOR for every community to determine the full and fair cash value in the municipality. This revaluation process was established by the Municipal Modernization Act, St. 2016, c. 218. FY2022 PILOT utilizes the valuations set by the Department of Revenue (DOR) that were adjusted this fiscal year by EQV.

Ten towns have an increased PILOT in FY2022; the remaining towns will receive the same payment as the previous year ("hold harmless" value). A total of 167 acres of land in three towns acquired by DCR through 2021 were incorporated in the FY2022 PILOT. Princeton and Sterling saw increases in PILOT, however only 12% of Princeton's increase and just 3% of Sterling's increase are associated with land acquisition.

The hold harmless clause maintained payment levels in FY22 for the rest of the watershed communities, totaling \$1,698,869.

DWSP staff is coordinating with DOR's Division of Local Services to make PILOT information available to municipalities and the public through DOR's municipal gateway starting in FY23.





Department of Conservation and Recreation  
Division of Water Supply Protection  
Office of Watershed Management  
FY22 Payments in Lieu of Taxes  
January 2022 - Final

Community	FY21 PILOT	Total 2021 Property Valuation	FY22 EQV	Total FY22 Property Valuation	Assessed Acres	Valuation per Acre	2020-2021 Acquisitions (acres)	Added Valuation for Acquisitions	Total 2022 Property Valuation	FY22 Tax Rate	FY22 Minimum PILOT Due	FY22 PILOT	Hold Harmless	Increase	% Increase
Barre	\$186,168.60	\$6,586,200	1.1062	\$7,285,700	5,420.9	\$1,344	0	\$0	\$7,285,700	\$16.84	\$122,691.19	\$186,168.60	\$63,477	\$0	0.0%
Belchertown	\$257,074.40	\$12,615,800	1.0981	\$13,853,400	3,190.2	\$4,342	0	\$0	\$13,853,400	\$17.66	\$244,651.04	\$257,074.40	\$12,423	\$0	0.0%
Belchertown - Annexed Lands	\$50,625.10	\$1,680,500	1.0981	\$1,845,400	670.0	\$2,754	0	\$0	\$1,845,400	\$17.66	\$32,589.76	\$50,625.10	\$18,035	\$0	0.0%
Berlin	\$56,632.13	\$2,034,200	1.1061	\$2,250,000	46.6	\$48,325	0	\$0	\$2,250,000	\$27.18	\$61,155.00	\$61,155.00	\$0	\$4,523	8.0%
Boylston	\$595,938.71	\$32,468,400	1.1665	\$37,874,400	2,758.2	\$13,732	0	\$0	\$37,874,400	\$15.84	\$599,930.50	\$599,930.50	\$0	\$3,992	0.7%
Clinton	\$205,948.72	\$6,598,800	1.1933	\$7,874,300	469.2	\$16,782	0	\$0	\$7,874,300	\$25.06	\$197,329.96	\$205,948.72	\$8,619	\$0	0.0%
Framingham	\$261,930.91	\$5,260,000	1.1359	\$5,974,800	235.4	\$25,366	0	\$0	\$5,974,800	\$29.00	\$173,269.20	\$261,930.91	\$88,662	\$0	0.0%
Hardwick	\$122,443.55	\$7,662,300	1.0922	\$8,368,800	4,686.9	\$1,786	0	\$0	\$8,368,800	\$14.70	\$123,021.36	\$122,443.55	\$0	\$578	0.5%
Hardwick - Annexed Lands	\$941.41	\$38,900	1.0922	\$42,500	150.0	\$283	0	\$0	\$42,500	\$14.70	\$624.75	\$941.41	\$317	\$0	0.0%
Holden	\$919,615.57	\$37,052,000	1.1231	\$41,813,100	3,910.4	\$10,642	0	\$0	\$41,813,100	\$16.56	\$689,112.94	\$919,615.57	\$230,503	\$0	0.0%
Hubbardston	\$357,113.53	\$24,113,000	1.1268	\$27,170,500	8,671.4	\$3,133	0	\$0	\$27,170,500	\$14.00	\$380,387.00	\$357,113.53	\$0	\$23,273	6.5%
Leominster	\$8,688.49	\$179,000	1.1638	\$208,300	42.5	\$4,897	0	\$0	\$208,300	\$16.56	\$3,449.45	\$8,688.49	\$5,239	\$0	0.0%
Ludlow	\$10,524.06	\$228,100	1.0503	\$239,600	50.8	\$4,717	0	\$0	\$239,600	\$19.99	\$4,789.60	\$10,524.06	\$5,734	\$0	0.0%
Marlborough	\$112,802.46	\$2,179,000	1.1675	\$2,544,000	570.4	\$4,460	0	\$0	\$2,544,000	\$22.17	\$56,400.48	\$112,802.46	\$56,402	\$0	0.0%
New Salem	\$520,470.61	\$17,936,900	1.0868	\$19,493,800	22,462.7	\$868	0	\$0	\$19,493,800	\$18.92	\$368,822.70	\$520,470.61	\$151,648	\$0	0.0%
New Salem - Annexed Lands	\$201,603.91	\$6,161,400	1.0868	\$6,696,200	11,580.0	\$578	0	\$0	\$6,696,200	\$18.92	\$126,692.10	\$201,603.91	\$74,912	\$0	0.0%
Northborough	\$103,466.89	\$5,410,700	1.1056	\$5,982,100	360.9	\$16,577	0	\$0	\$5,982,100	\$16.49	\$98,644.83	\$103,466.89	\$4,822	\$0	0.0%
Oakham	\$147,067.60	\$9,781,900	1.1616	\$11,362,700	2,537.1	\$4,479	0	\$0	\$11,362,700	\$12.72	\$144,533.54	\$147,067.60	\$2,534	\$0	0.0%
Orange	\$10,796.09	\$520,400	1.1626	\$605,000	82.8	\$7,307	0	\$0	\$605,000	\$19.12	\$11,567.60	\$10,796.09	\$0	\$772	7.1%
Pelham	\$338,086.39	\$11,717,500	1.0249	\$12,009,300	5,974.0	\$2,010	0	\$0	\$12,009,300	\$20.56	\$246,911.21	\$338,086.39	\$91,175	\$0	0.0%
Pelham - Annexed Lands	\$38,096.61	\$842,600	1.0249	\$863,800	1,080.0	\$800	0	\$0	\$863,800	\$20.56	\$17,759.73	\$38,096.61	\$20,337	\$0	0.0%
Petersham	\$296,721.61	\$10,684,400	1.0645	\$11,373,500	12,230.2	\$930	0	\$0	\$11,373,500	\$13.54	\$153,997.19	\$296,721.61	\$142,724	\$0	0.0%
Petersham - Annexed Lands	\$203,305.78	\$5,332,600	1.0645	\$5,676,600	10,000.0	\$568	0	\$0	\$5,676,600	\$13.54	\$76,861.16	\$203,305.78	\$126,445	\$0	0.0%
Phillipston	\$11,912.74	\$146,100	1.1241	\$164,200	162.8	\$1,009	0	\$0	\$164,200	\$15.58	\$2,558.24	\$11,912.74	\$9,355	\$0	0.0%
Princeton	\$279,083.96	\$17,312,900	1.1489	\$19,891,800	3,087.7	\$6,442	46.0	\$295,800	\$20,187,400	\$15.68	\$316,538.43	\$279,083.96	\$0	\$37,454	13.4%
Rutland	\$525,860.45	\$23,314,000	1.1435	\$26,659,600	6,489.0	\$4,108	0	\$0	\$26,659,600	\$15.79	\$420,955.08	\$525,860.45	\$104,905	\$0	0.0%
Shutesbury	\$299,391.54	\$7,185,600	1.1065	\$7,952,800	4,861.6	\$1,636	117.8	\$193,000	\$8,145,800	\$21.83	\$177,822.81	\$299,391.54	\$121,569	\$0	0.0%
Southborough	\$301,690.94	\$18,108,700	1.0769	\$19,501,300	1,310.6	\$14,879	0	\$0	\$19,501,300	\$16.28	\$317,481.16	\$301,690.94	\$0	\$15,790	5.2%
Sterling	\$810,129.37	\$48,820,000	1.1149	\$54,428,100	5,211.4	\$10,444	3.5	\$37,900	\$54,466,000	\$15.25	\$830,606.50	\$810,129.37	\$0	\$20,477	2.5%
Templeton	\$1,082.18	\$55,200	1.1417	\$63,000	92.1	\$684	0	\$0	\$63,000	\$15.24	\$960.12	\$1,082.18	\$122	\$0	0.0%
Ware	\$193,261.40	\$7,064,400	1.0719	\$7,572,300	4,845.0	\$1,563	0	\$0	\$7,572,300	\$19.34	\$146,448.28	\$193,261.40	\$46,813	\$0	0.0%
Ware - Annexed Lands	\$167,580.62	\$4,757,600	1.0719	\$5,099,700	3,865.0	\$1,319	0	\$0	\$5,099,700	\$19.34	\$98,628.20	\$167,580.62	\$68,952	\$0	0.0%
Wendell	\$32,706.91	\$1,332,800	1.0669	\$1,422,000	654.7	\$2,172	0	\$0	\$1,422,000	\$23.24	\$33,047.28	\$32,706.91	\$0	\$340	1.0%
West Boylston	\$683,581.59	\$22,481,400	1.1081	\$24,911,600	2,939.2	\$8,476	0	\$0	\$24,911,600	\$17.68	\$440,437.09	\$683,581.59	\$243,144	\$0	0.0%
Westborough	\$55,568.09	\$2,997,200	1.0787	\$3,233,100	190.8	\$16,947	0	\$0	\$3,233,100	\$18.49	\$59,780.02	\$55,568.09	\$0	\$4,212	7.6%
<b>TOTAL</b>	<b>\$8,367,912.90</b>	<b>\$360,660,700</b>					<b>167.3</b>	<b>\$526,700</b>	<b>\$402,633,800</b>			<b>\$8,479,324.48</b>	<b>\$1,698,869</b>	<b>\$111,412</b>	<b>1.3%</b>

NOTES:

1. Watershed PILOT, per MGL c. 59 s.5G, is determined by multiplying the DOR valuation by the local commercial tax rate. Property valuations available at [https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=BLA.DCR\\_WaterShedLand](https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=BLA.DCR_WaterShedLand) and [https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=BLA.DCR\\_WaterShedAnnexLand](https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=BLA.DCR_WaterShedAnnexLand). Calculations rounded by DOR. Tax rates available at [https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=PropertyTaxInformation.taxratesbyclass.taxratesbyclass\\_main](https://dls.gateway.dor.state.ma.us/reports/rdPage.aspx?rdReport=PropertyTaxInformation.taxratesbyclass.taxratesbyclass_main).

2. The process used by MA Department of Revenue (DOR) for valuing State Owned Land (SOL – which includes DCR Watershed Management ) under MGL c. 58 changed in FY 19. Under the new process, DOR determined a base year SOL valuation for each community as of January 1, 2017. After a hearing and appeal process, base year SOL valuations were finalized. Going forward under the new process, the base year valuations will be adjusted every two years by a percentage equal to the change in a city or town's equalized cash value (EQV). Valuations are also updated annually to include the value of any acquisitions and/or dispositions in a community.

3. "Hold Harmless" is a provision in the legislation that requires any payment never to be less than the previous year's payment. Therefore, if either valuations or tax rates drop, the municipality is guaranteed a consistent payment.

4. Acquisitions added: Shutesbury - Historical Enterprises (117.8 acres); Sterling - Kush (3.5 acres); Princeton - Martin (46.0 acres); West Boylston - Kittredge (1 acre).