

# PUBLIC WORKS

## PUBLIC WORKS COMMISSION

James Terry, Chair, Chair  
Andrew Boardman, Vice Chair  
David De Long  
Jef Fasser  
K.C. Winslow



The Public Works Commission acts as the Town's Road, Water and Sewer Commissioners, and advises the Public Works Director in the Department's efforts to maintain and protect the Town's public works, utility and solid waste/recycling services. The Commission also advises Town Meeting, the Town Manager, Planning Board and other Town officials and boards on matters that concern Town water and sewer service, drainage and roads. The Commission is also responsible for setting policy and rate schedules for water, sewer and solid waste services; for acting as an appeals board for right of way permits and water and sewer regulations and account matters; and for approving minimum standards for the final layout of Town roads.

The Public Works Commission also provides a forum for review of water, sewer and solid waste rates, the annual roads and sidewalk program, public street layout, and water and sewer extensions.

The ongoing activities of the Commission can be found throughout the year on the web at [concordma.gov](http://concordma.gov).

Highlights of the Commission's activities for 2020 included (in chronological order):

- Conducted a Public Hearing and approved revised curbside collection and disposal rates effective April 1, 2020. In addition, effective April 1, 2020, the cost of weekly disposal tags increased from \$1.50 to \$1.80 each and the cost of six month barrel stickers was increased from \$39 to \$46.80 each.
- Conducted a Wastewater Capacity update/discussion.
- Conducted executive sessions to discuss litigation strategy relative to the Nagog Pond Water Rights and Treatment Facility Upgrade.
- Conducted a Roads Program Briefing.
- Discussed various Town Meeting Articles with no unusual items requiring a presentation at Town Meeting.
- Wished Commissioner Steve Ng well upon his departure from the Commission after many years of valued service.
- Conducted the Water and Sewer Rate public hearing and approved the FY21 rate schedules.
- Discussed the Integrated Water Management Plan – Municipal Vulnerability Preparedness Plan Grant Application which the Commission voted to provide a letter of support.
- Reviewed and voted affirmatively to approve the request from the Mass. Dept. of Conservation and Recreation to allow a private sewer installed in 1948 within the Walden Street right-of-way to serve the Walden Pond State Reservation.
- Discussed the State of Water Conservation Update and voted to retroactively implement a one day per week outdoor watering restriction with watering permitted before 9 AM and after 5 PM.
- Reviewed and voted affirmatively to approve the requested waiver of Sewer Regulations in order to approve a single service sewer connection to 19A Central Street.
- Expressed gratitude to Peter Wallis for serving two complete 3-year terms on the Public Works Commission.
- Commissioner Jef Fasser was welcomed as a new member of the Commission.
- Reviewed and voted affirmatively to approve the request for a water main extension at Keuka Road.

- Discussed Traffic Management Coordination issues including citizen requests for crosswalks and pedestrian/bicycle amenities in different locations in Town.
- Commissioner David DeLong was welcomed as a member of the Commission.
- Participated in a presentation regarding winter maintenance preparations at Concord Public Works.

The Public Works Commission and Concord Public Works continue to focus on their joint goal of promoting greater community involvement in Concord Public Works projects and programs. This deliberate strategy has resulted in greater responsiveness to all stakeholders and positive project outcomes. Examples of these efforts include neighborhood on-site meetings for large infrastructure improvement projects, and outreach meetings for the Roads Program. In addition, the Director continues to review the activities of Concord Public Works through the monthly Director’s report and the Public Works Commission sets aside time for public comment during each meeting.

## CEMETERY COMMITTEE

Paul Cooke, Chair  
 Andrea Solomon, Vice Chair  
 Leo Carroll  
 Brian Davidson  
 Jerry Soucy

2020 was a challenging year for the Concord Cemetery Committee due to the COVID-19 pandemic. Thanks to Town Staff, the committee was able to begin meeting again via Zoom in July and therefore able to accomplish a great deal. Sleepy Hollow Cemetery proved to be a great blessing for many Concord citizens and visitors during this difficult time by being both a site for remembering and honoring those who have died and also a place where the living could be refreshed by taking a walk or enjoying the peaceful surroundings in this beautiful place. Cemetery Superintendent Miklosko carefully tended to the overall concerns of

the Town’s cemeteries while Cemetery Supervisor Tish Hopkins managed burials, cemetery upkeep and grounds, plot purchases and sales. We are very thankful for their hard work and very fortunate to have them working for Concord. This year, Erik Shaw came on board as the new Assistant Superintendent. Susan Bates of the Select Board continued as our Liaison to the Board; the Committee was pleased and encouraged by her presence at its meetings. We welcomed Justine St. John, the new administrative assistant for Highway and Grounds, who will be keeping track of our minutes going forward.

Mausoleum Lots—The Concord Cemetery Committee voted on rates for the sale of five mausoleum lots at a public rate hearing held online on December 2, 2020. These lots are now available for sale in Sleepy Hollow Cemetery; three in the older part and two in the new area. The process to offer mausoleum plots began in 2015 after receiving a request for one. There is one existing mausoleum, the Pope Tomb, which is located near the Melvin Memorial. No requests had been made for such a lot since 1930 and the Committee decided it would not be feasible to lay out and price new mausoleum sites until first conducting a major update of the Sleepy Hollow Master Plan.

This update was done in 2017-2018, paying particular attention to the supply of gravesites. During the creation of the Master Plan, an investigation and inquiry was conducted regarding use, design and sales of mausoleum sites at other historic cemeteries in the Boston area. Then a public hearing was held in November, 2018, to discuss mausoleum sites and other burial options; public responses were all positive. The Committee affirmed that any mausoleum built must conform to the historic tenor of Sleepy Hollow Cemetery. After the public hearing the Committee and Superintendent created and approved a set of rules and regulations for the design and building of mausoleums, including rates for purchasing mausoleum lots.

Headstone Restoration Project— In 2017 the Committee and Cemetery Administration decided to dedicate funds, time and effort to a number of older headstones that have fallen, broken, or were in need of repair or restoration. Tish Hopkins did a

superlative job of photographing all such headstones and created an inventory and priority repair list. The Committee decided in 2019 to make this an annual commitment with an allocation of at least \$10,000.



*Stone reads "In Memory of Mrs. Bathsheba Lee, who died October 25, 1792, aged 70", one of 28 stones restored in 2020*

In 2020 the Superintendent and the Cemetery Supervisor solicited bids for this work and a contract for \$12,600 was awarded to Ta Mara Conde of Historic Gravestone Services. Starting in April, she restored 28 individual gravestones. The project summary can be viewed online on the Cemetery Committee's webpage.

Records Scanning— Up until this year all of Concord's cemetery's records, including deeds, were kept in hand-written paper format. Knowing this is not a secure means for keeping track of this important information and wishing to place them in a more accessible electronic format, this year the Committee worked with the Highway and Grounds Superintendent, Cemetery Supervisor, and Town's Archivist Nathaniel Smith to plan and award a contract, ultimately Boston Computer Scanning was chosen. The project aims to make these records accessible to the public scanning all of these documents into electronic files which will be easily searchable and will also be coordinated via GPS with maps showing where each grave is located.

Cemetery Clean-up—Einstein's Landscaping's contract was renewed to do cemetery lawn care and spring and fall cleanups after it was decided that Einstein's has been performing their job well.

Bicycle Use of Cemetery Trails—The Committee heard concerns this year that bicyclists using unpaved trails may be contributing to erosion on cemetery property and that bicyclists using pathways in the cemetery have occasionally disturbed funeral services. The Committee also noted the Bruce Freeman Trail Committee hopes to connect that trail to the Reformatory Branch Trail which borders Sleepy Hollow Cemetery along its northern side. The Committee realizes this may bring more bicycle traffic into the cemetery. Agreeing that enforcement of a "No Bicycles" rule would be difficult, the Committee decided as an alternative to post signs alerting bicyclists to be more careful. Committee member Brian Davidson attended a Concord Natural Resources meeting to gain perspective on their views regarding bicycle use in Concord and later drafted a letter the Committee sent to other town committees regarding concerns about bicycle use in the cemetery.

Subcommittee Formed to Plan for Columbarium— Andrea Solomon and Jerry Soucy volunteered to form a subcommittee to study building a columbarium in the New Area of Sleepy Hollow Cemetery. Since the public hearing on gravesite supply in 2018 the Committee has been aware of a demand in Concord for an above-ground structure for the interment of ashes, or cremains, as they are termed. The full Committee, agreeing that the design, financing and construction of this structure will be a priority for 2021.

Concord Cemeteries in the News— The making of the film, "Little Women" turned attention to Sleepy Hollow in an article to do with Marc Daniels whose is on Authors Ridge in the G. W. Hosmer plot. Daniels was a pioneering television director who directed a live TV Ford Theater production version of "Little Women." The author of Little Women, Louisa May Alcott, is buried nearby. Then in May, the cemetery was again in the news for how graves would be marked for Memorial Day during the unusual circumstances surrounding the COVID-19 Pandemic.

Friends of Sleepy Hollow—The Friends’ Board of Directors led by President Kevin Plodzick designed and purchased signs for 26 indigenous trees, one for each of 26 species, in Sleepy Hollow. This is the latest of a long line of generous and thoughtful contributions the Friends have made as they continue to be a much appreciated asset to the cemetery.

Statistics—In 2020 there were 108 interments and one disinterment at Sleepy Hollow Cemetery. Fifty-three of these interments were Concord residents at the time of their death. Forty-one of the interments were full burials and sixty-seven were cremations. Lot sales for the year totaled 114 with 10 of those being sold to eligible former residents.

## ADMINISTRATION

Alan H. Cathcart  
Director of Public Works

The Concord Public Works Team continues to focus on its principal mission to enhance the quality of life for those living, working or visiting the Town of Concord, and through sound management, communication, leadership, innovation, teamwork and vision provide dependable, high quality, responsive public works and utility services, consistent with community values and at reasonable costs to Concord’s citizens, businesses, institutions and visitors for today and into the future.

This year our Department, the Town and the World responded to a global pandemic (COVID-19 Virus) that altered the very foundation of everything we do. Despite this unprecedented challenge, under the direction of an entirely new leadership group within CPW, our employees continued to provide essential services to the residents, businesses and regional institutions that we serve. To do so, the Administration observed first hand individual and group sacrifices made by CPW employees whom banded together to selflessly accomplish this mission. Public Works Director Alan Cathcart expressed his feelings of pride and being humbled

to work with such a fine group of individuals. The Administration felt that it has been equally helpful and rewarding to be provided with the support and understanding of the residents and businesses we serve as we continue to navigate through what is becoming “the new normal” with respect to day-to-day functions.

### **Protecting the Town’s Infrastructure/Providing Essential Services**

Concord Public Works (CPW) is comprised of four Divisions. These include two staff Divisions, Administration (including Recycling and Solid Waste Management) and Engineering and two line Divisions, Highway & Grounds (which includes Cemetery Operations) and the Water & Sewer Division. The Department is responsible for planning and managing a large segment of the Town’s infrastructure.

These assets include Concord’s roads and roadsides; curbs and sidewalks; catch basins, storm drains, culverts and outfalls; traffic islands; guardrails; street signs and traffic signals; public shade trees and park trees; Town parks, common areas, playgrounds, ball fields, and recreation equipment; Town cemeteries; the Town’s compost site and closed landfill, including the earth products and snow storage facility; the public water supply including its storage, pumping, and distribution systems; the Town’s sewer collection, pumping, and treatment systems; and CPW buildings and equipment.

Delivering key services including water service; sewer service; recycling, curbside trash collection and disposal service; yard waste disposal; and winter snow and ice management along with other storm and safety services is also a core responsibility of Concord Public Works.

### **Keys to Organizational Excellence**

CPW’s strategy for success in meeting its goals relies on the principles of ingenuity, fact based problem solving, accountability, safety and environmental stewardship, context sensitivity, respect and integrity, diversity, customer satisfaction, empowerment, communication and continuous improvement. These key principles along with the experience and dedication of the CPW team leads to organizational excellence.

## **CPW Team, Programs & Organization**

Concord Public Works is made up of 53 dedicated individuals with a wealth of experience. It is a team that is passionate about Concord, which takes great pride in their work, and fully understands their stewardship responsibilities.

## **CPW Leadership and Innovation**

In response to the communities growing interest in developing policies and practices that adhere to sustainable and environmentally responsible principles, CPW has taken the first step in what promises to be long journey towards developing an Integrated Water Resources Plan. As CPW is responsible for managing all of the Towns water resource related assets (drinking water, wastewater, and stormwater) we accept that it is our responsibility to manage these assets in a manner that balances community “infrastructure” needs in concert with environmental and climactic needs. With this in mind, CPW has engaged a consulting team that will help us identify other key stakeholders who will participate in determining the vision, goals and implementation actions of this plan.

## **Learning and Growth**

With the ever increasing complexity of public works operations, the need for professional development of CPW employees continues to play an important role in the organization. Concord Public Works is committed to providing its employees with opportunities to increase skills while endeavoring to make certain our team is comprised of motivated, informed and inspired team members who can utilize this knowledge for the benefit of Concord.

## **Infrastructure Improvements and Initiatives**

Once again, the team at Concord Public Works is pleased to provide the Town of Concord with quality and responsive service. The Divisional Reports that follow summarize a series of initiatives and accomplishments in 2020.

## **ENGINEERING DIVISION**

Stephen Dookran, P.E. Town Engineer

The Concord Public Works (CPW) Engineering Division is responsible for the planning, design, engineering and construction administration of the Town’s public right-of-way infrastructure including roads, sidewalks, bridges, and stormwater/drainage. Engineering provides professional engineering, construction management, and permitting administration for other CPW divisions, Town departments and boards. This work is performed by a team led by the Town Engineer and includes the Assistant Town Engineer, two Public Works Engineers, the Associate Engineer, the GIS Analyst and the Administrative Assistant. Through the COVID-19 pandemic, the Engineering Division continued to work effectively with a combination of remote operations and reduced office presence.

### **Roads Program**

There are approximately 108 miles of public roads. Engineering worked on the development of this year’s program based on the five-year plan created in 2018. However, because of COVID 19 delays and funding reductions, the scope of work was adjusted as follows:

### **Design of Road Rehabilitation Project**

Hayner Swanson Inc. prepared designs and cost estimates of road improvements for Prescott Rd., Peter Spring Rd., Minuteman Dr., Cranefield Rd. and Arrowhead Rd. to be completed in 2021. Engineering staff prepared plans and bidding documents for Bedford Ct., Lewis Rd., Park Ln., Partridge Ln. and Warner St. A contract was awarded to Newport Construction for spring 2021 work.

### **Milling and Paving (0.91 mile)**

Selected portions of Commonwealth Ave., Elm St., Old Marlboro Rd., Main St., ORNAC, and Garrison Rd. were milled and paved. Hawthorne Lane was overlaid.

### **Road Crack Sealing**

Engineering executed a contract that implemented 6.75 miles of crack sealing on selected streets.



*Milling and Filling (Paving)*

### **Complete Streets Grant**

The Town received a grant of approximately \$400,000 in 2020 for the construction of three separate projects. MassDOT has extended the completion to September 2022 because of COVID-19 delays.

*Hubbard Street* – A preliminary design was completed that includes roadway pavement reconstruction, American for Disabilities Act (ADA) compliant ramps and sidewalks, and drainage system improvements. Construction is scheduled for 2021 and 2022.

*Commonwealth Avenue* – Additional funds for the project have been secured from project abutter, Brookside Development. A contract with an engineering consultant (TEC Inc.) to design the project was prepared and made ready for execution in early 2021. Construction is expected to begin in 2021.

*Sudbury Road Crosswalk* – A preliminary design was presented to the public. The final design and construction are planned for 2021.

### **Sidewalks/ADA Compliance/Crosswalks**

**Curb Ramps Improvements** – The redesign of 15 curb ramps to meet ADA requirements was completed for construction in 2021. In 2020,

thirteen curb ramps were reconstructed on a portion of Old Marlboro Rd. while two curb ramps were constructed on Walden St.

**New Crosswalks** – The Cambridge Turnpike Improvement Project included the installation of 3 new brick crosswalks in the vicinity of Concord Museum and Emerson House as well as painted crosswalks at Mildred Cir. and Sandy Pond Rd.

**Pavement Markings** - Implemented the annual town-wide pavement markings. A pilot of longer lasting thermoplastic markings was implemented on selected streets to determine if it is cost advantageous over time.

### **On Street Parking Changes**

A handicap space was relocated from 60-62 Monument Sq. to 48 Monument Sq. Changes were made for tour bus parking at 60-62 Monument Sq. and at 20 Lexington Rd.

### **Guardrail Replacement**

Contracted for the replacement of 1,242 feet of deteriorated guardrail on Annursnac Hill Rd.

### **Stormwater/Drainage Improvements**

Engineering designed improvements to correct drainage issues identified along Bedford St. and Annursnac Hill Rd. that included shoulder berms that were constructed by CPW forces. Also, drainage improvements have been incorporated into the design for the 2020/2021 Roads Programs.



*Bio-retention Area at Sandy Pond*

### *National Pollution Discharge Elimination System (NPDES) MS4 Permit*

The Town filed “Year Two” Annual report in September 2020 detailing the past year’s activities.

- Preliminary Stormwater Pollution Prevention Plans for the Public Works facility, the Municipal Light Plant, the school bus depot, and the wastewater treatment facility.
- Drainage outfall identification and screening; prioritized 50 outfalls for inspections.
- Illicit Discharge Detection and Elimination Investigations – 6 outfalls with dry weather flow sampled and analyzed for ammonia, chlorine, E.coli, and surfactants.

### **Roadway Bridges**

The five (5) Town-owned bridges: Heath’s Bridge (Sudbury Road), Pine Street Bridge (Pine Street), Flint’s Bridge (Monument Street), Hurd’s/Nashawtuc Bridge (Nashawtuc Road) and Pail Factory Bridge (Commonwealth Avenue) are inspected every two years by MassDOT and any needed repairs to be made by the Town are identified. Flints Bridge (C-19-013) was given an underwater inspection of its substructure in June 2020 with findings submitted to Engineering for review.

### **Municipal Dams**

The Town is responsible for maintaining the following three (3) dams: Warner’s Pond Dam, Dakin Brook Dam, and Dikes Dam. An Emergency Action Plan for Warner’s Pond Dam (MA00440) was prepared and filed with the State’s DCR.

### **Cambridge Turnpike Improvement Project (CTIP)**

The project is substantially completed from Lexington Road to the approach of the Crosby Pond area. This includes significant improvements at the Lexington Road intersection and interim pavement improvements on Hawthorne Lane and Sandy Pond Road. Installation of new box culverts and binder pavement were completed at Crosby Pond. Cambridge Turnpike was opened fully to through traffic on December 24, 2020. Some additional work still needs to be performed in the spring of 2021 for final completion of the project.



*Bridge across Cambridge Turnpike*

### **Right of Way/Driveway Permitting**

Issued a total of 247 permits - 150 Right of Way permits and 97 Driveway permits and performed inspections required for each permit.

### **Private Development Plan Reviews**

Reviewed approximately 21 projects including the following that required significant effort: 1440-1450 Main Street Definitive Subdivision, Concord Country Club Irrigation Pond, Waterside Commons Planned Residential Development at 1651-1657 Main Street.

### **Town-Requested Engineering Services**

- Field survey and base plans for the Annursnac Hill Reservoir landscaping design contractor
- Review and implementation of Outdoor Dining/Seating protection for 11 restaurants
- Review, design, and implementation of safety measures including barriers or road closures for 3 Weekend Shopping Events
- Review and design of parking for Town movie nights in 2 locations.
- Field survey and sketch for the proposed mausoleum sites in Sleepy Hollow Cemetery
- Review, design, and assistance to implementation of a Covid-19 testing and vaccination location at the Concord Carlisle High School
- Review on phases of Bruce Freeman Rail Trail under development, White Pond Improvement Project, Gerow Recreation Park and NPS Battle Road Trail.

## GIS

GIS staff started implementing an interdepartmental Work Order and Asset Management System to aid in routine operations and tracking resident requests. CPW mobile technology and applications continued to be leveraged to complete tasks such as hydrant winterization and flushing, catchbasin cleaning, sewer manhole inspections, registered irrigation, chlorine sampling and compost stickers. A dynamic webviewer containing all Public Works GIS layers and information was launched for all staff, and significant progress was made on the new electronic permitting system for driveway and right of way permits, which is expected to go live in early 2021.

### **Approved Grants of Location/Private Utilities in Public Ways**

- Main Street Bridge - National Grid's Gas Main Replacement
- Walden Street - National Grid's Gas Main Replacement
- Main Street - Comcast's Conduit Installation
- Bedford Court - National Grid's Gas Main Replacement
- Barnes Hill Road – National Grid's Gas Main extension
- Annursnac Hill Road and Strawberry Hill Road – Comcast's New Coaxial Cable Installation
- Walden Street – Walden Pond Reservation Bathhouse sewer force main

## HIGHWAY AND GROUNDS

Aaron Miklosko  
Highway & Grounds Superintendent

The Highway & Grounds Division of Concord Public Works maintains approximately 108 miles of public streets, along with the associated drainage systems consisting of approximately 61 miles of drain lines, 2,770 catch basins, 216 culverts, 1,214 drainage manholes, 431 outfalls, 162 leaching structures, 15 detention basins, 7 bio-retention areas, and 3 dams. CPW's Highway & Grounds Division also maintains 58 miles of sidewalks, 2,793 signs and over 90 pieces of CPW vehicles and equipment, in addition to managing the Town's compost site. The Division is also responsible for 82 acres of public parks and grounds that consist of 50 acres of active recreation areas, which include ten (10) athletic fields. CPW's Highway & Grounds Division maintains all public shade trees and park trees under the direction of the Town's Tree Warden.

### **Winter Maintenance Program**

CPW's approach to snow and ice management requires accurately predicting the timing of winter weather events and formulating strategic and economically prudent deployment of staff and resources. CPW relies on many resources to achieve this, including real-time weather forecasting information provided by our contracted weather service, Precision Weather Forecasting Inc. In the fall of 2020, state-of-the-art weather monitoring equipment (Frost Control Systems) was installed in strategic locations around town to provide real-time weather data during snow events.

Key winter maintenance activities include de-icing, roadway plowing, sidewalk clearing and snow removal from municipal lots and business district frontages. Concord's winter maintenance program includes anti-ice pre-treatment using a brine solution applied to designated roadways around Concord when conditions allow. This environmentally sustainable practice prevents snow and ice buildup on the roadway when snow begins to fall and decreases the ability for the snow and ice to "bond" to the roadway. This allows for a reduction in salt use before and after a weather

event, saving time and money, as well as reducing environmental impact.

The 2019-20 winter season was comparatively mild and produced a below average total snow accumulation of 36 inches for the entire season. The first significant snow response occurred on December 1st, 2019 and continued through December 3rd, 2019, with 16 inches of heavy, wet snow falling in Concord during that period. Throughout the season, CPW responded to only 16 winter weather events. However, in addition to the large snow event in December, the Town experienced three long duration ice storms requiring significant response efforts.

### **Roads, Sidewalk, and Drainage Maintenance**

CPW's Highway & Grounds Division completed ongoing maintenance and improvement to Concord's roads and sidewalks throughout the year. Asphalt patching efforts were substantial in 2020. The mild winter brought an increased amount of asphalt damage during the season as the frost/freeze cycle that causes pothole formation was exacerbated by the number of rain and freezing-rain weather events.

Early efforts for the annual Patriots' Day parade preparation began in March with the sweeping of streets and sidewalks, raking lawn areas, straightening street signs and leveling stone dust sidewalks along the route. CPW continued with these work details in spite of the new challenges and the eventual cancellation of the event due to the pandemic and declared State of Emergency.

The town-wide street sweeping program began in early spring and was completed by the end of June. Sidewalk sweeping in the business districts of downtown and West Concord was completed in April, along with select sidewalks that were impacted by winter maintenance activities.

CPW performed additional sweeping of all arterial roads again in November to remove leaves and other debris from catch basin grates in an effort to prevent clogging in the stormwater drainage system and prevent street flooding during heavy rain events. The Highway & Grounds Division also continued with weekly sweeping in the business districts,

which include Concord Center, Thoreau Depot and West Concord.

Street sign replacement continued with most work prioritized by CPW via the Town's Traffic Management Group. This interdepartmental working group includes representatives from CPW's Highway & Grounds and Engineering Divisions as well as the Concord Police Department. CPW prioritized improvements affecting sightlines for signage and pedestrian safety.

During the spring growing season, roadside mowing began with new challenges. Unable to utilize resources historically provided by the Massachusetts Correctional Institution (MCI) work crews, due to pandemic constraints, CPW relied more on the sidewalk tractor outfitted with a flail mower attachment to handle a bulk of roadside mowing. The additional workload for this aging piece of equipment was compromised by extensive downtime and costly repairs. Work was often completed manually with handheld equipment, especially in areas where vegetation affected traffic sightlines or pedestrian safety. CPW prioritized trimming in these areas throughout the growing season and addressed them accordingly.

Full-depth roadway patching and asphalt reconstruction activities continued to be a major priority for the Highway & Grounds Division. Numerous large asphalt patches were completed, in addition to asphalt improvements on Bedford Street, Annursnac Hill Rd, and at the Sanborn Middle School.

Drainage system maintenance and improvement efforts continued to be another priority of CPW's Highway & Grounds Division. CPW crews performed repairs to 49 catch basins and manhole structures in Town. Many of the needed repairs were identified during the inspections conducted as part of the catch basin cleaning program. CPW cleaned 922 catch basins in 2020, removing 428 cubic yards of material from the storm drain system. Additionally, with assistance from Engineering and the Water/Sewer Division, Highway & Grounds was able to identify and clear several stormwater drains via high-pressure jetting and vacuuming of debris in areas that had been problematic for several seasons.

Ongoing monitoring and maintenance of other drainage structures such as bio-retention areas, detention basins, drain swales, culvert headwalls and outfalls continued to be a priority this year.

### **Compost Site Management**

The compost site at 755 Walden Street continues to be a critical asset to CPW's operation and was a very popular place this year, with many residents working in their yards this spring, summer and fall. Despite the introduction of new "social distancing" practices that needed to be implemented, due to respectful compliance and positive feedback received from residents, CPW continued to seasonally offer Wednesday and Saturday hours for residents to access the compost site to dispose of brush, leaves and invasive species. CPW also continued to utilize the compost site for equipment storage and as a staging area for wood chips and logs that are a result of the Highway & Grounds Division tree maintenance efforts. The site is also critical to CPW's winter maintenance operations by providing a storage area for snow hauled to this location from parking lots and business district areas following large snow events.

### **Parks and Grounds**

CPW's Highway & Grounds Division continued to provide a high level of service to the Town's parks, open spaces, and trees throughout the year. The work performed by CPW's Highway & Grounds Division is performed in an environmentally sensitive and sustainable manner while caring for parks, athletic fields, traffic islands, and other Town owned outdoor facilities.

In an effort to improve upon the efficiency of operations, adherence to dedicated maintenance schedules became a priority for CPW's Highway & Grounds Division in 2020. Maintenance schedules were standardized, such as regular mowing, ball field preparation and field painting, in an effort to provide consistent playing conditions for Concord's youth sports programs and other users within the community. CPW's Highway & Grounds Division also continued to support several other community based programs including the hanging flower baskets that lined the streets in West Concord and the community gardens, which involved a daily watering regimen in conjunction with Minute Man Arc.

With sports programs on hold in the spring of 2020, CPW was able to take advantage of this unusual opportunity to perform several small athletic field renovation projects. The installation of new infield clay (100 tons) at the Ripley youth baseball field and the baseball fields at Rideout Park provided a consistent playing surface for the user groups.

Additionally, pitching mounds were re-built and new bases installed at some fields. Aggressive seeding and aeration work was also conducted at many parks and sports fields during the fall to improve turf resiliency and quality.

The Emerson Park Improvement project that had been slated to begin in 2020 experienced some delays in the project planning process due to the pandemic, but construction is now ready to break ground in the spring of 2021. Items in the first phase of the construction project will include improvements to the irrigation wells, a new irrigation system, a poured-in-place playground surface, ADA accessibility and general improvements to walking paths, fountains, and other utilities.

### **Trees**

CPW's Highway & Grounds Division and the Town's Tree Warden continued the implementation of a long-term urban forestry management plan, which was developed by Davey Resource Group. To assist CPW in its effort to maintain the Town's urban forest to the highest professional standards possible, CPW contracted with Davey Resource Group, via funding from the Commonwealth's Municipal Vulnerability Preparedness (MVP) Grant, to assist with the planting of 100 right-of-way and setback trees in 2020.

CPW tree crews performed routine right-of-way tree maintenance throughout the roadway network in 2020. Trees were trimmed up to a height of 15 feet and over-hanging hazards were removed. The CPW Highway & Grounds Division was also busy with several emergency storm response efforts involving tree damage from high wind events in 2020. The Highway & Grounds Division, with assistance from the Water/Sewer Division and CMLP staff, worked through the night and for several days following storms to clear trees and storm debris from public ways.

The Town publicly advertised for tree removal and trimming services in 2020 and the Town awarded the contract to Mayer Tree Services. This service contract has once again proved valuable to the Town for storm response, emergency hazardous tree issues, pruning and other forestry maintenance.

**Cemetery**

CPW’s Cemetery Division provided burials year round and properly maintained the Town’s three cemeteries. A great deal of pride is taken in the professional and compassionate service that is provided to residents. In 2020 there were 108 interments and 1 dis-interment at Sleepy Hollow Cemetery; of these interments 53 were Concord residents at the time of their death. Of the interments, 41 were full burials and 67 were cremations. Lot sales for the year totaled 114 with 10 of those being sold to eligible former residents.

The use of contracted landscaping services continued for the mowing and spring/fall cleanup needs of Sleepy Hollow Cemetery with a renewed contract that was advertised and awarded in the summer of 2020. CPW’s Cemetery Supervisor, with assistance from the Highway & Grounds Division, provided mowing and spring/fall cleanups for the Old Hill Burying Ground and South Burying Place. CPW crews performed all other maintenance for the cemetery including pothole patching, tree and stump removal and water system maintenance. Additionally, 25 new trees were planted in the cemetery this year.

CPW hired Historic Gravestone Services to perform long needed repairs to some of the older stones in the cemeteries that had been broken or damaged over time. Great care was taken to repair 28 grave markers and preserve the memory of the first Concord residents.

The Cemetery Committee held a public hearing on December 2, 2020 to review and set lot rates for Sleepy Hollow Cemetery. During the hearing, the Committee voted and approved new rates for five new Mausoleum lots in Sleepy Hollow Cemetery.

**RECYCLING AND WASTE**

Melissa Simoncini  
Environmental Services  
Program Administrator

**Curbside Collection, Disposal, and Processing**

The municipal curbside collection program provided trash and recycling services to 3,510 households. Subscribers to the municipal curbside collection program set out 997 tons of mixed paper, 696 tons of commingled containers, and 2,623 tons of trash for collection.

**Curbside Recycling Rate**

Residents using Concord’s municipal curbside collection program recycled 39% of the materials they set at the curb. This figure does not include yard waste, which residents manage at home or drop off at the Composting Site on Saturdays and Wednesdays, April through mid-January. It also does not include the tons of materials collected for recycling at the semi-annual DropOff-SwapOff events, nor does it include information on the more than 1,000 households that contract with private haulers for the collection of their trash and recyclable materials.

**Reuse and Recycling DropOff & SwapOff Events**

The Spring DropOff & SwapOff event was canceled due to logistical challenges introduced by COVID-19. A Fall DropOff event was scheduled on October 17th and was determined to be a great success by those that participated. 425 residents attended the event, which was achieved using on-line pre-registration and pre-payment tools to maximize social distancing and allow for required contact tracing. The event ran smoothly, thanks to the many volunteers who assisted with planning and made this event possible.

**DropOff SwapOff Participants**

Year	May	October
2016	918	749
2017	894	947
2018	945	865
2019	930	842
2020	-	425

**Unwanted Medication & Sharps Collection**

Residents were reminded that unwanted medication and sharps are no longer collected at the DropOff & SwapOff events as there are bins for Sharps and Unwanted Meds collection in the front vestibule of the Fire and Police Building at 209 Walden Street that is open to the public 24/7/365.

**Hazardous Products Collection**

Subscribers to the curbside collection program receive one free pass per year to the Minuteman Household Hazardous Products Facility in Lexington (for up to 25 lbs. or 25 gallons of hazardous waste). The facility is generally open one weekend day a month from April – November. The April, May and June events were canceled due to COVID-19. 114 curbside subscribers took advantage of this offering and visited the Minuteman facility during the July-November 2020 events.

Additionally, Concord Public Works (CPW) hosted a hazardous waste collection event for residents and businesses on September 14th. All 98 participants preregistered for the event in advance, again using an online tool, and were assigned an arrival time to allow for crowd/traffic control and contact tracing. Attendance included 95 curbside program subscribers, 2 non-curbside program subscribers, and one municipal site. The next event planned at Concord Public Works will be held in September 2022.

**Composting Site Turns Yard Waste into Garden Gold**

From April through December 2020, residents made more than 21,000 visits to the 755 Walden Street

Compost Site, dropping off leaves, grass clippings and brush. The paint shed was closed in 2020 due to challenges associated with social distancing controls and contact tracing requirements. Styrofoam™ block, string lights and Christmas Trees were accepted for recycling at the facility after the December Holidays.

**Visits to the Composting Site**

Year	Leaves & Grass	Brush	Paint Drop-Off	Paint Pickup
2016	6,558	590	267	183
2017	9,968	684	437	178
2018	8,459	5,250	492	177
2019	6,871	4,367	410	116
2020	14,257	7,040	<i>closed</i>	<i>closed</i>

**Landfill Inspection & Reporting**

MassDEP requires an annual landfill inspection by a third-party MassDEP-approved inspector for closed landfills in the Commonwealth. Concord Public Works coordinated the annual landfill inspection with Weston & Sampson. The inspection was conducted in November of 2020. Findings from this annual landfill inspection were provided in a report which included a summary of the 2020 monitoring results at the landfill. No deviations from applicable performance standards were identified in ground-water or air quality monitoring samples collected at the site. These samples are collected and analyzed in accordance with the Town’s closed landfill post closure monitoring and maintenance requirements outlined in 310 CMR 19.132. There are nine ground-water wells and 23 soil gas probes associated with the 755 Walden Street closed landfill. The former

Year	Number of Subscribers	Recyclables collected(tons)	Trash collected (tons)	Recycling Rate
FY16	3,608	1,761	2,581	40%
FY17	3,639	1,716	2,548	40%
FY18	3,671	1,720	2,637	39%
FY19	3,663	1,618	2,619	39%
FY20	3,564	1,616	2,563	39%

landfill, which has now been put back into productive beneficial reuse with the construction of a utility scale solar facility, received formal closure certification from MassDEP on 10/16/13.

### **Keeping Mercury Out Of the Environment**

During 2020, Concord Public Works collected 5,186 linear feet of fluorescent light bulbs and 2,681 lbs. of nickel cadmium, lithium, and lead acid batteries from residents and municipal facilities, for recycling.

Another 876 linear feet of fluorescent bulbs and 2,639 lbs. of computers and electronics were collected from local businesses at the September business recycling event. The April 2020 event was canceled due to COVID.

### **Grants**

Concord Public Works obtained a Recycling Dividends Program (RDP) grant from MassDEP in the amount of \$7,200. The grant has been utilized to purchase recycling-related equipment including curbside recycling bins, compost bins, public space recycling bins, etc.

### **Bike Giveaway**

Concord Public Works in partnership with The Bike Connector (Lowell, MA) was pleased to host a Bike Giveaway Event on Friday October 23 from 3-6pm. Bikes collected at the Concord Public Works DropOff events received tune-ups and a safety check by The Bike Connector volunteers. The bikes ranged in size from balance bikes & tricycles to adult bikes, with the majority of bikes for school aged children. The bike giveaway was very popular with residents.



*Popular Bike Give-Away Program at Concord Public Works*

## **WATER AND SEWER**

John H. Rogers, Superintendent

In 1974 and 1976, Annual Town Meeting established separate Water and Sewer Enterprise Funds, to ensure that the operation, maintenance and capital investments in Concord's water and sewer systems would be financially viable. Expenses incurred for each system are covered by revenues from customers of each respective enterprise. Monthly billing is performed, and dozens of requests for new, replacement and rehabilitated water and sewer services from customers are reviewed for compliance with system plans and policies, including connection fees, and monitoring. The Water and Sewer Division of Concord Public Works (CPW) is responsible for managing the day-to-day operations of drinking water and sanitary sewer infrastructure. As of 2020, the total assets for each system are 23.9 million and 15.3 million dollars, respectively.

While the Division's web pages continue to be relied on for information and processes, most community outreach activities were canceled in 2020 due to the pandemic.

### **Water System**

Concord was provided with legislative authority to establish a public water system in 1872. In 1874, water from Sandy Pond, Lincoln, began flowing through the original network of water mains to Concord Center. Today, the water system has evolved to include six groundwater wells and one surface water source, seven water pumping stations, two water treatment facilities, and a high-pressure water main network consisting of over 135 miles of pipe. Two covered storage reservoirs, one located on Annursnac Hill and the other located on Pine Hill in Lincoln provide total reserve capacity of 7.5 million gallons. There are presently 5,634 accounts receiving potable water service and fire protection from this supply. This represents approximately 95% of Concord residents and businesses, along with a small number of properties along the Route 2A water main from Nagog Pond that are in the Town of Acton.

## **Regulations and Policies**

Concord's Water Management Act (WMA) registration and permit presently provides a cap on "authorized" water withdrawals of up to 2.51 million gallons per day (MGD) on average, or 916 million gallons per year, to meet all residential, commercial, institutional and municipal needs. Conservation limits included in this permit are an allowance of 65 gallons per day per capita (RGPCD) for residences and a 10% allowance for system losses, primarily attributed to leaks. In 2020, the total water production required to meet our system demands was 1.97 million gallons per day or 722.0 million gallons for the year. A peak day demand of 3.85 million gallons was recorded on June 22, 2020. The RGPCD and total system losses (or "unaccounted" for water use) were calculated to be 75 gals/day and 9.9%, respectively.

### *Massachusetts Drought Management Plan*

The September 2019 Drought Management Plan guidelines were updated by the State's Office of Energy and Environmental Affairs (EEA), and a Significant Drought was declared for the Northeastern region of the Commonwealth in late June. This declaration coincided closely with the Town's implementation of a mandatory lawn watering restriction meant to reduce non-essential water use. Above average temperatures and below average rainfall persisted through the summer months, with some precipitation in the early fall. The Northeastern region was downgraded to a Mild Drought in November and after three months of normal or above-normal rainfall, an end to the drought was declared by EEA Secretary on January 7, 2021.

### **Water Use and Demand Management**

The Town's "State of Concord's Seasonal Demand Management Plan" went into effect on May 1st, as is often the case each year before the peak demand period. On June 24, 2020, the Public Works Commission elevated the level of Seasonal Demand Management Plan to a mandatory "Lawn Watering Restriction", limiting lawn watering to no more than 1-day per week.

### *Integrated Water Resource Planning Initiative*

Water & Sewer Division staff selected a team of consultants to aid in the development of an

Integrated Water Resources Plan (IWRP) for CPW. This plan will provide recommendations for addressing water supply, wastewater, and stormwater in a holistic, integrated manner, rather than the largely disconnected way programs and permits associated with each of these systems has been managed in the past. CPW will look to identify key stakeholders in the community to participate in the visioning process of setting goals and selecting implementable actions to achieve these goals associated with this plan.

*Water Main Leak Detection: New England Water Distribution Services LLC (Windham, NH)* performed a water main leak detection survey on approximately 50% of the water distribution system. A minor leak identified in one (1) hydrant accounted for an estimated loss of approximately 790 thousand gallons per year. This leak has been repaired.

**Water Quality and Drinking Water Compliance**  
In compliance with Federal and State requirements, Concord tests and reports about its drinking water for regulated substances, with routine and non-routine activities. Bromate, regulated with a Maximum Contaminant Level (MCL) of 10 parts per billion (10 ppb), averaged just under 11 ppb over any 12-month period from Nagog Pond. Water customers were sent Public Notices on May 20, 2020 and October 21, 2020. Concord Water staff continue to work with our consulting engineers and MassDEP to evaluate existing treatment practices in an effort to reduce bromate concentrations.

*Lead and Copper Rule*  
The Water Division performed lead and copper testing at 30 designated sample sites located throughout the water distribution system. Two schools/early education care facilities were also included in this sampling effort. Results confirmed that source water treatment efforts continue to reduce the risks of lead and copper leaching from private service lines and plumbing fixtures. The compliance values, which are based upon the 90th percentile concentration for lead and copper, were calculated as 0.006 ppm and 0.280 ppm respectively – well below the action levels of 0.015 ppm and 1.3 ppm, respectively, established by EPA.

*Per- and Poly-fluoroalkyl (PFAS) Substances*  
On October 2, 2020, MassDEP published its Maximum Contaminant Level (MCL) of 20 ppt for PFAS6, or the sum of the following 6 PFAS compounds: PFOS, PFOA, PFHxS, PFNA, PFHpA, and PFDA. As part of this new regulatory standard, the Water Division will begin compliance monitoring at each entry point to the distribution system starting in April 2021. Ongoing regulatory developments will continue to be monitored to evaluate potential emergency, short-term, and long-term implications.

**Nagog Pond: Filtration Plant Update**  
Environmental Partners Group (EPG) continued to partner with staff and special counsel (Mackie Shea Durning PC) to advance permitting and final design needs associated with the Nagog Pond Filtration Plant upgrade. The Town's Site Plan and Use Special Permit for the construction of the Water Treatment Facility and the replacement of the intake pipe would have lapsed on April 30, 2020, but the Acton Board of Selectmen granted an extension of the Special Permit through January 6, 2022; this is the same expiration date for the Order of Conditions (OOC) for the Water Treatment Plant issued by the Acton Conservation Commission. Also, a Chapter 91 Waterways License and 401 Water Quality Certification were issued by MassDEP and the Army Corp of Engineers for the intake pipe replacement project that was bid this, and D&C Construction of Weymouth, MA was selected as the general contractor for the project. An additional OOC was issued to the Town in December 2020 by the Acton Conservation Commission for barge access needed to perform the initial (Phase 1) intake improvements construction.

Concord Water prevailed in seeking a favorable decision from the Massachusetts Land Court relative to its longstanding water rights to Nagog Pond. Littleton Water Department appealed the Land Court decision, and Concord's counsel, Mackie, Shea & Durning, presented the Town's case to the Supreme Judicial Court in December, with a decision expected in early 2021. The Division continued to defend its position and interests. That includes monitoring of activities in the watershed and nearby, including commenting on Littleton's proposed Cobb's Pond Bedrock well, and Acton's

proposed Conant 2 Wellfield, which are both in the process of seeking State approvals.

### **Water Pumping Station Rehabilitation and Upgrades**

Division crews continued to perform routine operation and maintenance of the seven water production facilities and related treatment systems which make up our total water supply. In addition to these routine inspection and service activities, capital upgrades are also planned and performed on the millions of dollars of assets including associated mechanical, electrical, plumbing and instrumentation and control systems housed within these facilities. Notable improvements performed within the past year include:

- Jennie Dugan Well: D. L. Maher rehabilitated the well, including replacement of the pump and motor.
- Deaconess Satellite Well: D. L. Maher replaced well pump and motor.
- Annursnac Reservoir: Division staff replaced a failed “mixer” required to maintain water quality inside this 2.5 million gallon storage facility.
- Hugh Cargill Pump Station: D. L. Maher completed emergency pump repairs during the peak demand period to quickly return this station to service.
- SCADA System Upgrade: Working with a third party system integrator, Woodard & Curran, the supervisory control and data acquisition (SCADA) system, a critical component of all water and wastewater facility operations, was completely overhauled with specific attention placed on cybersecurity components.

### **Water Mains**

The water distribution system consists of approximately 134 miles of water main ranging in size from 6-inch to 16-inch. A replacement/rehabilitation program has been developed to maintain and improve upon system service reliability. New projects are prioritized based on age, condition, and material of pipe. Plans are further refined with consideration to other public works initiatives such as drainage improvements, annual Roads Program or CMLP underground initiatives. Each year, new mains may also be added to the system to allow for service to new or existing properties where frontage to the municipal water distribution system had not otherwise existed.



*Main and Thoreau Water Main Break*

Notable water main replacement or extension project activities performed within the past year include:

- Cambridge Turnpike Water Main Project: George R. Cairns & Sons (Windham, NH) replaced approximately 500 feet of existing water main with 10-inch and 14-inch HDPE water main.
- 2020 Water Mains Replacement Project - KJS, LLC (Walpole, MA) replaced approximately 7,190 LF of (circa 1953) 8-inch asbestos cement (AC) water main in Arrowhead Road, Cranefield Road, Minuteman Drive, Peter Spring Road and Prescott Road, and approximately 985 LF of (circa 1930) 8-inch cast iron water main in Potter Street with new 8-inch cement lined ductile iron (CLDI) pipe. The associated service laterals and hydrants in the right of way were also replaced. This included installation of 245 LF of 8-inch water main pipe on a Town owned parcel that now connects the new water main in the Peter Spring neighborhood with the existing water main in the WWTP/Great Meadows neighborhood to create a water system loop, which provides better water quality and greater service reliability for both neighborhoods and the overall distribution system.
- Keuka Road Water Main Extension – Onyx Corporation (Acton, MA) installed approx. 615 LF of 8-inch CLDI pipe along Keuka Road to create the necessary frontage for a 4 unit residential subdivision project. The work included the installation of 2 hydrants and 4 water services.
- Warner Street Water Main Extension -KJS, LLC (Walpole, MA) installed approximately 100 feet of 8-inch CLDI pipe from Warner Street to an existing

## Annual Water Report Summary Table

Water Statistics	2020	2019	2018	2017	2016
Miles of Main	135.7	134.7	133.6	133.5	133.3
Hydrants	1,330	1,330	1,328	1,328	1,327
Main Pipe - New (linear feet)	1,000	500	442	1,073	2,510
Main Pipe - Replaced or Rehabilitated (lf)	7,932	3,337	6,735	626	1,568
Main Breaks	4	3	4	5	6
Number of Service Accounts	5,641	5,634	5,623	5,605	5,601
Total Water Demand (million gal.)	722	664	673	674*	728
Daily Average Demand (million gal.)	1.97	1.82	1.84	1.85*	1.99
Peak Day Demand (million gal.)	3.85	3.36	3.18	3.04	4.15
Unaccounted for Water (percent)	9.9	6.0	6.0	8.7	11
Residential per Capital per day (gal.)	75	66	66	65	70
Annual Precipitation (inches)	42.26	51.18	57.53	45.49	35.59
Mean Annual Precipitation (inches)	42.16	42.15	42.09	41.98	41.95
<b>Residential Rate per Unit (unit = 7.48 gal.)</b>					
Base Rate- Step 1	\$.0592	\$.0564	\$.0537	\$.0516	\$.0496
Conservation Rate – Step 2 (May 1 – Oct. 31)	\$.1243	\$.1184	\$.1128	\$.1084	\$.0992
Conservation Rate – Step 3 (May 1 – Oct. 31)	\$.0583	\$.1495	\$.1423	\$.1367	\$.1240
<b>General Service Rate per Unit of 7.48 gallons</b>					
Step 1 - (<50 Units)	\$.0592	\$.0564	\$.0537	\$.0516	\$.0496
Step 2 - (>50 Units)	\$.0751	\$.0715	\$.0681	\$.0655	\$.0630

main in Laws Brook Road to complete the water system loop for a single family residential redevelopment project.

**Emergency Water Main Repairs:** The Division performed emergency repairs at the following locations:

- Barrett’s Mill Road, on July 13, 2020
- Main St. at Thoreau Street, on August 6, 2020
- Monument Street, on October 14, 2020
- Butternut Circle, on December 15, 2020

### Sewer System

Concord was provided with legislative authority to create a municipal sewer system in 1894. By early 1900 a small centralized collection system was designed and constructed, carrying wastewater from Concord center via a network of gravity mains to a collection chamber located at 141 Keyes Road where it was then pumped to a cluster of filter beds located approximately one mile away on fields located adjacent to Great Meadows. The present system consists of 34 miles of collector mains (gravity and

low pressure), two pumping stations, six neighborhood lift stations and a 1.2 MGD treatment plant. The present sewer system serves over 1,889 customers, or 35% of the community.

### **Regulations and Policies**

**NPDES Permit:** Concord continues to operate its wastewater treatment facility in accordance with a National Pollutant Discharge Elimination System (NPDES) permit in accordance with conditions issued in 2013. As these permits are issued for 5 year terms, a request for renewal was submitted and reviewed by EPA in August 2018. With consideration of long-standing wastewater capacity interests of the Town, the application included a request for an increase in permitted discharge from 1.2 MGD to 1.4 MGD. Other than acknowledgment of receipt, there has been no formal response issued by EPA.

### **Sewer Pumping Stations**

Kleinfelder completed the design of the long-anticipated upgrades of the Lowell Road and Assabet Sewer pumping stations. These stations

were last upgraded in the mid-1980s and have served well beyond their anticipated design life. The construction contract for this work was awarded to D&C Construction (D&C) of Weymouth, MA and was scheduled to begin in March 2020. The COVID-19 pandemic resulted in global manufacturing delays of goods and equipment, which had a significant effect on the construction schedule for the station upgrades. D&C began construction activities in October 2020 and final completion of the station upgrades is anticipated in early 2021.

Division crews continued to perform routine operation and maintenance of the eight operating sewer facilities. In addition to these routine inspection and service activities, non-routine improvements performed over the past year included; reprogramming of the Gifford Lane lift station PLC to correct for a memory module failure, and a temporary repair of a large grinder (macerator) located within the Lowell Road pump station to ensure miscellaneous debris (wood, cloth, plastic, etc) that enter the station would not bind the pumps.

### **Collection System**

The sewer collection system is composed of over 34 miles of gravity and low-pressure collection main (ranging in size 2-inch to 27-inch diameter) with manholes. Approximately 50% of Concord's sewer collection system is made up of clay pipes – much of it dating back to the original sewer system installed over 100 years ago. Concord continues to investigate the condition of this infrastructure and repair or replace it as needed to reduce preventable inflow and infiltration (I/I). Inflow and infiltration refers to stormwater and groundwater that flows into the sanitary wastewater collection system through illicit connections or leaking pipes.

### **Infiltration and Inflow Program**

Inflow & Infiltration Plan: In accordance with the a MassDEP approved Infiltration/Inflow (I/I) Control Plan (July 31, 2018), the Division completed scheduled work as part of Phase I which included the CCTV (video) inspection of approximately 48,900 LF of sewer main. The video inspections are being analyzed by the Town's consulting engineer, Weston & Sampson Engineers,

who will provide a detailed assessment that will prioritize any required repairs. Phase II of the I/I Control Plan had commenced and includes the procurement of the services qualified firms to smoke test, clean and perform CCTV (video) inspection of approximately 54,000 LF of sewer main;

There were no reportable sanitary sewer overflows identified within Concord's collection system. Furthermore, the 12-month (rolling average) of wastewater flow processed through Concord's wastewater treatment plant was .88 MGD, below the 1.2 MGD permitted capacity assigned to this facility. The infiltration rate (of groundwater) into the collection system was calculated at 26.30, and the inflow rate (stormwater) was estimated at approximately 1.96%. Both rates fall within acceptable industry limits and well below "excessive" rates as defined by the MassDEP.

### **Wastewater Treatment Plant Operations**

Woodard & Curran, Inc. (Portland, ME) continues to operate the Concord Wastewater Treatment Plant (WWTP), located off of Bedford Street. They are operating in the 10th year of a 10-year service contract. The Water and Sewer Division continues to work closely with Woodard & Curran to ensure day to day operations and maintenance is performed in a quality manner. Within the past year, the facilities and associated equipment ran reliably, in compliance with State and federally issued permits, with numerous equipment and facility rehabilitation and replacements.

<b>Sewer Statistics</b>	2020	2019	2018	2017	2016
<b>Assabet Pumping Station</b>					
Total Pumped (million gallons)	62.38*	88.18	94.28	88.09	74.47
Monthly Average (million gallons)	6.24*	7.35	7.86	7.34	6.21
Daily Average (million gallons)	0.20*	0.24	0.26	0.24	0.20
<b>Lowell Road Pumping Station</b>					
Total Pumped (million gallons)	297.27	314.07	350.37	312.64	258.44
Monthly Average (million gallons)	24.77	26.17	29.20	26.05	21.54
Daily Average (million gallons)	0.81	0.86	0.96	0.86	0.71
<b>Bedford Street</b>					
Total Pumped (million gallons)	7.41	7.33	7.92	6.18	5.80
Monthly Average (million gallons)	0.62	0.61	0.66	0.51	0.48
Daily Average (million gallons)	0.02	0.02	0.02	0.02	0.02
<b>Collection System</b>					
Number of Service Accounts	1,649	1889	1876	1,869	1,866
Miles of Sewer Main	34.03	34.03	34.03	34.03	34.03
Main Pipe Inspected (lf.)	48,941	48,000	4,515	11,350	1,500
Main Pipe Replaced/Rehabilitated (lf.)	12	0	0	0	0
Rate per Unit (unit = 7.48 gallons)	\$.1188	\$.1165	\$.1153	\$.1141	\$.1119